FOURCHE BAYOU BASIN, ARKANSAS

US Army Corps of Engineers

Little Rock District

LIMITED REEVALUATION REPORT AND FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT FOR ACQUISITION OF 1,750-ACRES OF BOTTOMLAND WITH NATURE APPRECIATION FACILITIES

SEPTEMBER 2008

FOURCHE BAYOU BASIN, ARKANSAS
LIMITED REEVALUATION REPORT

1,750-ACRE BOTTOMLAND ACQUISITION WITH NATURE APPRECIATION AREA FACILITIES EXECUTIVE SUMMARY

The Fourche Bayou Basin project was authorized by Section 401(a) of the Water Resources Development Act of 1986 for flood control and allied purposes to include channelization and the acquisition of 1,750 acres of Fourche bottomland hardwoods with nature appreciation facilities for environmental preservation and recreation. The Assistant Secretary of the Army for Civil Works (ASA(CW)) made a Record of Decision (ROD) dated 31 May 1983, which excluded the 1,750-acre Fourche Bottoms acquisition with the nature appreciation facilities from Federal participation as these lands were not necessary for the flood damage reduction project to function properly.

The flood control portion of the project was constructed. In April 2000 after requests from the city of Little Rock, the ASA(CW) stated that a limited reevaluation report (LRR) would be prepared to decide whether to budget for the unconstructed work: the 1,750-acre acquisition with nature appreciation facilities.

The reevaluation found that the bottomland acquisition for environmental protection and flood reduction with nature appreciation facilities is consistent with policy. The recreation facilities include 3 miles of trails and boardwalks, bridges, restrooms, signage, parking, and an access road. The recreation features have a benefit to cost ratio of 1.8. An incremental analysis of the bottomland acquisition found that acquiring the entire 1,750 acres would result in the greatest increase to the wetland values and functions with an incremental cost per output of $2,337.

The work is estimated to cost a total of $5,185,000. The 1,750-acre acquisition is estimated to cost $2,650,000, the LRR is estimated to cost $520,000, and the nature appreciation facilities are estimated to cost $2,015,000. The sponsor is the city of Little Rock, which is responsible for cost sharing and the operation and maintenance after construction. It's share of costs are estimated to be $1,180,000 or $2,117,000 depending on whether the cost sharing percentage required is 25 or 35 percent for the environmental protection measure. Likewise, the Federal share is estimated to be $3,385,000 or $3,068,000 at 75 or 65 percent.

The costs are within the increases allowed by Section 902 on the maximum cost of a project. No additional Congressional authorization is required and the LRR is within the Division Commander's authority to approve. The proposed action would have no significant detrimental impact upon the human or natural environment. If the project is funded, a Record of Decision will be prepared for either the Southwestern Division Commander or the Assistant Secretary of the Army for Civil Works to sign.

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LIMITED REEVALUATION REPORT

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Location and Description

Fourche Bottoms is a highly productive ecosystem within the city limits of Little Rock, Pulaski County, Arkansas, that is threatened with degradation. Its hydrologic regime is integral to that of Fourche Creek. Within the basin's 160 square miles, the bottoms are the last remaining significant tract of natural bottomland hardwoods. This highly productive habitat type is in short supply in Arkansas and the Nation. Plate 1 shows the project area. The project location and vicinity maps are Figures 1 and 2 in the Engineering Appendix.

Background

A. The 4 September 1981, Report of the Chief of Engineers recommended a project for flood control and allied purposes in Fourche Bayou Basin to include Plan VII for flood control and the acquisition of 1,750 acres of Fourche bottomlands for environmental preservation.

B. The ASA(CW) Record of Decision (ROD) dated 31 May 1983, excluded the 1,750-acre acquisition of the Fourche Bottoms and construction of the nature appreciation facilities from Federal participation as they were not necessary for the flood damage reduction project to function properly. The Office of Management and Budget agreed.

C. The project was authorized by Section 401(a) of the Water Resources Development Act of 1986: *The project for flood control, Fourche Bayou Basin, Little Rock, Arkansas: Report of the Chief of Engineers, dated September 4, 1981, at a cost of $33,400,000, with an estimated first Federal cost of $25,100,000 and an estimated first non-Federal cost of $8,300,000.*

D. The Report of the Chief of Engineers concurred in the findings, conclusions, and recommendations of the Board (The Board of Engineers for Rivers and Harbors (BERH)). The Board recommended that modifications for flood control and allied purposes in Fourche Bayou Basin, Arkansas, be authorized generally in accordance with the District Engineer's Plan VII and include acquisition of 1,750 acres of Fourche bottomlands for environmental preservation with the nature appreciation facilities located on the 1,750 acres of Fourche bottomlands. The Fourche flood control channels and approximately 1.7 miles of hiking and biking trails (four miles of trails were included in Plan VII) have been constructed.

E. After repeated requests by the city of Little Rock to acquire Fourche Bottoms as part of the project, the ASA (CW) by letter dated 13 April 2000, responded to Mayor Dailey stating that the Corps would prepare a limited reevaluation report that would be the decision

document to support a Project Cooperation Agreement for the acquisition of the 1,750 acres of bottomlands and the nature appreciation facilities.

F. On 9 May 2000, an Issue Resolution Conference (IRC) was held to address how the study would be conducted. A Project Management Plan was developed based on IRC guidance. It was approved by the Corps of Engineers Southwestern Division (CESWD) on 19 March 2001. Study results were discussed in a second IRC held on 29 August 2003. The Limited Reevaluation Report (LRR) was then drafted based on the memorandum for record for the IRC. See Table 3 for the project timeline.

Purpose of Study

This LRR with NEPA documents is to be the decision document for potential implementation of the unconstructed environmental preservation increment – the acquisition of 1,750 bottomland acres with nature appreciation features. The report updates the costs and the environmental factors, conditions, and considerations. It identifies changes and or modifications from the authorized plan. Discussion on how the unconstructed increment meets current law and policy is included. (Protection is considered a synonym for preservation in the similar way that ecosystem and environment are used interchangeably.) The flood damage reduction benefits of the bottomlands (also a priority output) are discussed in the Engineering Appendix. The LRR includes the updated feature costs and a discussion on Section 902, WRDA 1986, as amended, on the maximum cost of a project, and has concluded that no additional authorization is needed.

A. Environmental Preservation Land Acquisition: There was concern that some of the originally designated environmental preservation lands are not suitable for acquisition as some lands in the vicinity might be contaminated with hazardous, toxic, or radiological wastes (HTRW). An HTRW investigation was done. Details of the analysis and review were forwarded to the HTRW expert at CESWD and the Arkansas Department of Environmental Quality (ADEQ). Both concurred in the analysis; ADEQ did express concern with lead levels in the closed landfill east of Interstate Park (the originally designated Nature Appreciation Area). However, sample results downstream show no apparent HTRW concerns. From the areas of no apparent HTRW concern, 1,750 acres of bottomlands have been identified for acquisition. The selected bottomland acres areas are within the floodplain, connected by the creeks/flood control channel and are generally contiguous although separated by road and railroad crossings. See Plate 1. The HTRW report is included in the Engineering Appendix.

The Office of the Chief Council provided the opinion that the 1,750-acre acquisition does not have to adhere to the original delineated 1, 750-acre site. The city of Little Rock currently owns approximately 1,342 acres of the bottomlands valued at $805,200. To reach the total authorization of 1,750 acres, an additional 408 acres would need to be acquired at a cost of $1,844,600. The already purchased lands are valued at the fair market value at time of purchase in accord with the Memorandum from CECW-AG, Subject Fourche Bayou Basin, Arkansas, dated 31 July 1996. The lands yet to be acquired are valued at their fair market value when they are made available for construction. The land acquisition costs are included

in the real estate plan attached to the LRR. The plan includes an acknowledgement that the lands to be acquired are free from HTRW. The changes in the project are addressed in the attached Supplemental Environmental Impact Statement.

The feasibility report inventoried the tree stands (1310), water areas (213), and the utility, road, and railroad acres (151) and determined that 5,467,437 board feet of lumber could be produced. The report projected that the benefits that would accrue to preservation of the bottomlands would not occur unless the lands were placed in public ownership. It stated that, if preserved, the native vegetation is the basic component of a flood plain ecosystem unique in an urban setting. It would prevent erosion, reduce downstream flooding, act as a pollution filter, increase percolation into the ground water system, and modify stream temperatures while maintaining fish and wildlife values. It would provide cultural resources values of open space, natural beauty, scientific study, outdoor education, and recreation.

The Engineering Appendix's General Environmental Setting documents the uniqueness and significance of habitat. It discusses endangered species and what could be lost without the bottomland preservation. The Engineering Appendix includes the environmental justification of acquiring the bottomlands. The incremental cost analysis has four increments: no action, and acquiring 1,342; 408; or 1,750 acres. The analysis is based on the degrading of the bottomlands significant habitat (without preservation) as its use changes. The acquisition of 1,750 acres has an incremental cost per output of $2,337. This cost is half or less than that for the other two alternatives that have outputs. The incremental cost per output for the 1,342-acre acquisition is $4,880 and it is $19,130 for the 408-acre acquisition. Thus, the acquisition of the entire 1,750 acres would result in the greatest increase to the wetland values and functions.

Planning guidance (ER 1105-2-100, Section E-30, paragraph b.) states "Protection may be included as part of Civil Works ecosystem restoration initiatives, when such measures involve efforts to prevent future degradation of elements of an ecosystem's structure and functions. Protection consists of measures undertaken to protect and preserve elements of an ecosystem's structure and functions against future degradation." Paragraph f. states that land acquisition in ecosystem restoration plans should be kept to a minimum, with land value not exceeding 25 percent of the total project costs. The Chief's Report, dated 4 September 1981, recommended Plan VII in concurrence with the BERH recommendation. The cost of the plan at October 1980 prices was $20,080,000 including the cost of nature appreciation facilities and the $2,310,000 cost for acquisition of 1,750 acres of land. If the plan had been implemented as proposed, the land acquisition cost would have been only 11.5 percent of the total project cost. The current escalated cost for the land acquisition, recreation, and report is estimated to be $5,185,200. The remaining increment is only 15.5 percent of the authorized total project cost of $33,400,000 and only 14.4 percent (the land cost of $2,649,800 is less than 7.4 percent) of the estimated total project cost of $35,914,000. Thus, the land cost does not exceed the 25 percent of total project costs.

Civil Works Ecosystem Restoration and Protection Policy (ER 1165-2-501) notes further that protection initiatives should be developed in the context of broader watershed or regional water resource management programs and objectives, which may involve contributive actions

by other Federal and non-Federal agencies and stakeholders. In this regard on 21 July 2003, Fourche Creek was selected by the U.S. Army Corps of Engineers and the Environmental Protection Agency to be one of eight water bodies to receive an Urban Rivers Restoration Initiative designation. This designation recognizes the efforts of several government agencies and non-profit groups who have been working together toward establishing and restoring an urban natural area along Fourche Creek in Little Rock, Arkansas. Works including public access, nature and canoeing trails, plantings, erosion and pollution control, creating stream buffers, wetland basins, and stream restoration are being planned and accomplished. This would result in an improved and protected urban hardwood bottomland with wildlife and aquatic habitat restored.

B. Flood Control/Hydrologic Regime: On 13 September 1978, Fourche Creek flooded. In Little Rock, the flood claimed eight lives and caused an estimated $11 million in property damages. It was observed that the railroad tracks that transect Fourche Bottoms acted like a dam, ponding the flood waters and increasing the flood heights upstream to University Avenue. However, the channel plans in the 1979 feasibility report were formulated on the basis that the Bottoms would act as one large retention pond and that the channelization downstream of the Bottoms would reduce upstream flood heights to University.

When the ASA(CW) signed the ROD on 31 May 1983 deleting the acquisition, he stated that ... "The Chief of Engineers also recommended acquisition of 1,750 acres of land in Fourche Creek Bottoms for environmental preservation, including a 20-acre nature appreciation area. However, these features are not required for the flood damage reduction project to function properly, and I have not concurred with Federal participation in their implementation... and that acquisition of Fourche Creek Bottoms may be accomplished by local interests if they find this to be desirable for environmental preservation. " ASA(CW)'s conclusion followed that of BERH that "the 1,750 acres of bottomlands are not required for the project to function properly nor are these lands directly or indirectly impacted by the project." However, the hydrology and hydraulic analysis in the 1985 General Design Memorandum (GDM) No. 1, showed that the Fourche Bottoms flood storage was needed to reduce upstream flood damages. The feasibility report channel plan that was recommended by the ASA(CW) for authorization had to be modified.

The GMD required relief openings added to three railroad embankments within the bottoms. Then the entire bottoms could act effectively as one retention pond to lower the upstream water surface elevations and the resulting flood damages at University Ave. As well as offering a flood storage area that could reduce upstream flood damages, the constructed railroad track relief openings partially restored the bottoms natural hydrologic regime to what it was prior to the construction of the railroads. Protection of the environment to prevent future degradation of an ecosystem if it requires Corps engineering expertise is an appropriate measure. Engineering expertise provided partial restoration of the bottoms with the construction of the relief openings. To protect the 1,750-acres of hardwood bottomlands from future degradation, the acquisition of the bottomlands would complete the measure.

Therefore, the relief openings provided two outputs: flood reduction and environmental restoration. Fourche Bottoms is a volumetrically determined floodway and contains wetlands;

however, preservation of these Fourche bottomland hardwoods would only be assured with acquisition. Further discussion is presented in the Engineering Appendix including the water surface elevation changes existing and modified with the Hydraulic differentials computed to demonstrate the flood storage function of Fourche Bottoms.

C. Nature Appreciation Facilities: The 1979 feasibility report had designated a 20-acre area for the nature appreciation facilities. (The 20-acre site is within the 30 acres shown on Plate 1 as being owned by Little Rock but not included in the 1,750-acre acquisition.) This area is and was at the time a covered landfill; the area currently has tornado damage debris deposited on it. Because of HTRW concerns, the originally designated 20-acre area was excluded from acquisition and another site was selected for the nature appreciation facilities. The report described the nature appreciation facilities as including: 0.75 miles of foot trails, information signs, plant labels, a restroom, access road, parking area, boardwalks and bridges in wet or swampy areas, and located in the Fourche Bottoms between Interstate 30 on the east and University Avenue on the west. The LRR has modified these features to adapt to a new site, to meet Americans with Disabilities Act (ADA), signed 26 July 1990, requirements, and to include 2.3 miles of trail length authorized but not constructed along with the channel. The facilities include approximately 3 miles of trail including boardwalk sections with 0.5 miles of ADA compliant trails for the purpose of recreation with the visitation experience taking advantage of the natural and educational values.

The access road is to be an improved existing gravel road approximately a mile in length with the first 600 feet paved. This road gives the least disturbance to the bottomlands while giving access to diverse settings. Two parking areas and a restroom site are provided to meet the expected visitation while having the least adverse effect to the area. Direction and plant signage is included along the trails that allow access to various natural settings. Marsh areas with water plants and wading birds are to be observed as are the Fourche Creek widening with giant cypress and on through the bottoms with its various its tree species. There are boardwalks at creek crossings and swampy areas. Because the current plan for the nature appreciation facilities spreads the human impacts to a larger area (although a less concentrated area than the originally designated 20-acre site), the nature appreciation facilities would be closed to public access from dawn to dusk. For further descriptions, see the engineering appendix. For a discussion on the recreation benefits, see the economic appendix. The cost of the facilities is estimated to be $1,904,000 (excluding escalation) at a June 2004 price level at 5.375 percent interest with annual benefits of $286,100 and a benefit to cost ratio of 1.8.

The recreation features for the Fourche Bayou project are within the 10 percent cap of the project cost without recreation as described in ER 1105-2-100, E-49. The facilities are limited to those shown in Exhibit E-3. Also, the features are compatible with the bottomland acquisition for environmental preservation. The visitation experience is to take advantage of the natural and educational values. With the exception of a narrow 1.5-acre strip owned by the city where the first segment of the access road leads into the bottomland acres, all of the recreation facilities are included in the 1,750-acres. The access road strip encompasses the utility road that goes between a trucking firm and the interstate to access the bottoms. As the strip is without significant environmental values, this acreage was excluded for the

environmental protection acquisition. In accord with ER 1105-2-100 and EP 1165-2-502, the strip could be acquired as recreation land for access.

D. Supplemental Environmental Impact Statement (SEIS): A SEIS is being prepared to evaluate the environmental impacts associated with the acquisition of 1,750 acres of bottomland hardwoods known as Fourche Bottoms and the installation of nature appreciation facilities. Agency coordination is ongoing and no sites of significant cultural resources are known to exist within the project area. The construction of this project could result in temporary and minor impacts to water quality and some loss of habitat in the immediate project area; however, none of the impacts have been determined to warrant further investigation or mitigation measures. Therefore, this office considers the proposed action to have no significant detrimental impact upon the human or natural environment. The implementation of the proposed project will serve to preserve and protect Fourche Bottoms from future development. The SEIS will support a new Record of Decision (ROD). This draft ROD will not be signed until the proposed action achieves environmental compliance with applicable laws and regulations.

E. Project Costs: The total estimated cost of the authorized project (the completed flood control channel project and the not completed land acquisition and implementation of the nature appreciation facilities) is $35,914,000 including escalation costs for the proposed features. The current Little Rock District estimate for the cost of the remaining features is $5,185,200; the 1,750-acre acquisition is estimated to cost $3,169,800 including the LRR cost and the nature appreciation facilities are currently estimated at $2,015,400. The project cost is within the constraints of Section 902, WRDA 86, and Maximum Cost of Projects and does not require a need for additional authorization. The maximum allowable cost of the project is calculated to be $62,458,000 and the recreation feature costs are less than ten percent of the total project cost. See the Economics Appendix for the maximum cost of project analysis.

F. Cost Sharing: Policy Guidance Letter (PGL) No. 48, Cost Sharing for Specifically Authorized Environmental Projects, sets forth U.S. Army Corps of Engineers policy regarding the cost sharing for construction (implementation) of specifically authorized projects and separable elements for ecosystem (environmental) protection and restoration and implements Section 210 of the Water Resources Development Act of 1996 (WRDA 96). The cost sharing established by Section 210 added environmental protection and restoration as a project purpose to be cost shared by the non-Federal sponsor at 35 percent. However, Section 210 applies only to projects authorized after 12 October 1996. Therefore, PGL 48 states that ecosystem restoration projects authorized by WRDA 96 and prior legislation will be cost shared in accordance with the provisions of the authorizing legislation.

Thus, the cost sharing for the 1,750-acre Fourche Bottoms acquisition would be 25 percent non-Federal and 75 percent Federal as provided by the percentages of costs in the authorizing legislation, Section 401 of WRDA 1986. The nature appreciation facilities are considered recreational features with a non-Federal cost share requirement of 50 percent of the separable costs as provided by the cost sharing provisions of Section 103 of WRDA 1986, as amended. Section 103 also provides that the sponsor is required to pay 100 percent of the costs for operation, maintenance, repair, replacement, and rehabilitation. See the following cost

apportionment tables. The first table has ecosystem protection cost shared at 25 percent non-Federal. The second apportionment displays the ecosystem protection cost sharing at 35 percent non-Federal, the current requirement for projects authorized after 12 October 1996. Following are Local Cooperation requirements for an environmental protection project.

a. Provide a minimum of 25 percent (or 35 percent, see above discussion on cost sharing) of total project costs as further specified below:

    1. Provide, during the first year of construction, any additional funds needed to cover the non-federal share of project costs;

    2. Provide all lands, easements, and rights-of-way, including suitable borrow and dredged or excavated material disposal areas, and perform or assure the performance of all relocations determined by the Federal Government to be necessary for the construction, operation, and maintenance of the project;

    3. Provide or pay to the Federal Government the cost of providing all retaining dikes, waste weirs, bulkheads, and embankments, including all monitoring features and stilling basins, that may be required at any dredged or excavated material disposal areas required for the construction, operation, and maintenance of the project; and

    4. Provide, during construction, any additional costs necessary to make its total contribution equal to 25 percent (or 35 percent, percentage yet to be determined) of total project costs;

b. Provide the non-Federal share of that portion of the costs of mitigation and data recovery activities associated with historic preservation, that are in excess of 1 percent of the total amount authorized to be appropriated for the project, in accordance with the cost sharing provisions of the agreement;

c. Do not use Federal funds to meet the non-Federal Sponsor's share of total project costs unless the Federal granting agency verifies in writing that the expenditure of such funds is authorized;

d. Operate, maintain, repair, replace and rehabilitate the project, or functional portion of the project, including mitigation, at no cost to the Federal Government, in a manner compatible with the project's authorized purposes and in accordance with applicable Federal and State laws and regulations and any specific directions prescribed by the Federal Government;

e. Give the Federal Government a right to enter, at reasonable times and in a reasonable manner, upon property that the Non-Federal Sponsor, now or hereafter, owns or controls for access to the project for the purpose of inspecting, operating, maintaining, repairing, replacing, rehabilitating, or completing the project. No completion, operation, maintenance, repair, replacement, or rehabilitation by the Federal Government shall relieve the Non-Federal Sponsor of responsibility to meet the

Non-Federal Sponsor's obligations, or to preclude the Federal Government from pursuing any other remedy at law or equity to ensure faithful performance;

f. Hold and save the United States free from all damages arising from the construction, operation, maintenance, repair, replacement, and rehabilitation of the project and any project-related betterments, except for damages due to the fault or negligence of the United States or its contractors;

g. Perform, or cause to be performed, any investigations for hazardous substances that are determined necessary to identify the existence and extent of any hazardous substances regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Public Law 96-510, as amended (42 U.S.C. 9601-9675), that may exist in, on, or under lands, easements, or rights-of-way that the Federal Government determines to be required for the initial construction, periodic nourishment, operation, and maintenance of the project. However, for lands that the Federal Government determines to be subject to the navigation servitude, only the Federal Government shall perform such investigations unless the Federal Government provides the Non-Federal Sponsor with prior specific written direction, in which case the Non-Federal Sponsor shall perform such investigations in accordance with such written direction;

h. Assume, as between the Federal Government and the non-Federal Sponsor, complete financial responsibility for all necessary cleanup and response costs of any CERCLA regulated materials located in, on, or under lands, easements, or rights-of-way that the Federal Government determines to be necessary for the initial construction, periodic nourishment, operation, or maintenance of the project;

i. Agree that, as between the Federal Government and the Non-Federal Sponsor, the Non-Federal Sponsor shall be considered the operator of the project for the purpose of CERCLA liability, and to the maximum extent practicable, operate, maintain, and repair the project in a manner that will not cause liability to arise under CERCLA;

j. Prevent obstructions of or encroachments on the project (including prescribing and enforcing regulations to prevent such obstruction or encroachments) which might reduce the level of protection it affords, hinder operation and maintenance, or interfere with its proper function, such as any new developments on project lands or the addition of facilities which would degrade the benefits of the project;

k. Keep and maintain books, records, documents, and other evidence pertaining to costs and expenses incurred pursuant to the project, for a minimum of 3 years after completion of the accounting for which such books, records, documents, and other evidence is required, to the extent and in such detail as will properly reflect total costs of construction of the Project, and in accordance with the standards for financial management systems set forth in the Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments at 32 Code of Federal Regulations (CFR) Section 33.20;

l. Comply with Section 221 of Public Law 91-611, Flood Control Act of 1970, as amended (42 U.S.C. 1962d-5), and Section 103 of the Water Resources Development Act of 1986, Public Law 99-662, as amended (33 U.S.C. 2213), which provides that the Secretary of the Army shall not commence the construction of any water resources project or separable element thereof, until the non-Federal sponsor has entered into a written agreement to furnish its required cooperation for the project or separable element;

m. Comply with all applicable Federal and State laws and regulations, including, but not limited to, Section 601 of the Civil Rights Act of 1964, Public Law 88-352 (42 U.S.C. 2000d), and Department of Defense Directive 5500.11 issued pursuant thereto, as well as Army Regulation 600-7, entitled "Nondiscrimination on the Basis of Handicap in Programs and Activities Assisted or Conducted by the Department of the Army", and all applicable Federal labor standards and requirements, including but not limited to 40 U.S.C. 3141- 3148 and 40 U.S.C. 3701 – 3708 (revising, codifying and enacting without substantial change the provisions of the Davis-Bacon Act (formerly 40 U.S.C. 276a *et seq.*), the Contract Work Hours and Safety Standards Act(formerly 40 U.S.C. 327 *et seq.*) and the Copeland Anti-Kickback Act (formerly 40 U.S.C. 276c *et seq.*); and,

n. Comply with all applicable provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, Public Law 91-646, as amended (42 U.S.C. 4601-4655), and the Uniform Regulations contained in 49 CFR Part 24, in acquiring lands, easements, and rights-of-way, necessary for the initial construction, periodic nourishment, operation, and maintenance of the project, including those necessary for relocations, borrow materials, and dredged or excavated material disposal, and inform all affected persons of applicable benefits, policies, and procedures in connection with said Act.

o. For the recreation features of the project provide 50 percent of the separable project costs allocated to recreation as further specified below:

1. Provide, during construction, any additional funds needed to cover the non-Federal share of design costs;

2. Provide all lands, easements, and rights-of-way, including suitable borrow and dredged or excavated material disposal areas, and perform or assure the performance of all relocations determined by the Government to be necessary for the construction, operation, and maintenance of the project;

3. Provide or pay to the Government the cost of providing all retaining dikes, waste weirs, bulkheads, and embankments, including all monitoring features and stilling basins, that may be required at any dredged or excavated material disposal areas required for the construction, operation, and maintenance of the project; and

4. Provide, during construction, any additional costs as necessary to make its total contribution equal to 50 percent of the separable project costs allocated to recreation.

Changes from Authorized Plan.

All of the deviations from the authorized project are listed below. The specific features for authorization were listed in the Fourche Bayou Basin Feasibility Report dated October 1979. All the deviations are within the Chief of Engineers discretionary privilege to grant.

A. Authorization provided for the acquisition of 1,750 acres of bottomlands for the purpose of Environmental Preservation. The report proposes the same acreage, but some different lands. The cost of the bottomland acquisition was $2,310,000 at an October 1978 price level. The current cost of the acquisition is estimated to be $2,649,800.

B. In the nature appreciation area, 0.75 miles of foot trails and boardwalks and bridges (in wet and swampy areas) were authorized. The plan proposes 3 miles of trail including the 0.75 miles plus another 2.3 miles that were not constructed in other segments of the authorized plan. Americans with Disabilities Act (ADA) compliance was added to 0.5 miles of the proposed trail length although not considered in the feasibility report. The cost of the nature appreciation facilities (including the trails, boardwalks, bridges, restroom, signage, parking, and access road) and the 2.3 miles of hiking trails in the feasibility report were estimated to be $286,000 at an October 1978 price level with annual recreation benefits of $128,000. The proposed facilities are estimated to cost $2,015,400 including escalation costs with annual benefits of $286,100 and a benefit to cost ratio of 1.8.

C. Information Signs (including plant labels) were authorized. The project proposes educational and directional signage to include plant labels, an open-air visitor's center/kiosk, and interpretive panel.

D. One restroom was authorized. Portable restroom facilities are proposed to be located at the main parking area in the northern utility right-of-way. These facilities will be easily removed to avoid flooding.

E. An access road was authorized without specific details provided. Approximately one mile of gravel and paved roadway is proposed. The road will also require the acquisition of 1.5 acres of land to be acquired for the road access.

F. One parking area was identified with no specifics on capacity. Proposed are one parking area for nine cars, one ADA space, and one bus space with another parking area for 11 cars, one ADA space, and two bus spaces. Sufficient parking spaces are proposed to accommodate the estimated visitation and are located to minimize environmental impact.

G. Change in Total Project First Cost is shown in the following display. Most of the increase in cost is attributable to a change in price levels. However, the nature appreciation facilities were required to be relocated to a different site and now cover a larger area.

Compliance with ADA and capacity needs was considered for the proposed plan for the parking that was not addressed in the feasibility report. The access road, boardwalks, and bridges may be longer than in the feasibility report but no details were provided in that report.

Project as:	Proposed with Escalation	Authorized	Updated Authorized	As last Reported w/o Escalation
Cost	$35,914,000	$33,400,000	$55,778,000	$35,400,000

Sponsor Support

The community has embraced the project. The mayor of Little Rock, Audubon Arkansas, and schools are behind the project. Fourche Bottoms is one of the largest urban wetlands and the city of Little Rock would like to showcase this important urban natural area. See the attached letter of intent from Mayor Dailey on the following page.

Sponsor Financial Capability

The city expects its cost sharing percentage to be the authorized 25 percent for the bottomland acquisition. After reviewing the project documentation, the city of Little Rock requested that costs be reduced to limit its out-of-pocket expenditures to $800,000. To that end, recreation features estimated to cost $440,000 were removed from the project. In addition, it was noticed that the already acquired lands cost included $195,000 for land cost contingency and escalation. This amount was not included in the following project cost apportionment. The features modified include removal of the flush restroom and the utilities. The path 1 boardwalk was shortened by 200 feet: the last 100 feet of path 1 south and the last 100 feet of path 1 north. Proportional reductions in the contingency, escalation, preconstruction engineering and design (PED) – design, and supervision and administration - construction inspection were reduced as reflected in the cost apportionment and benefit-to cost ratio.

Findings and Conclusions

The 1,750-acre Fourche Bayou bottomland acquisition for environmental protection and flood reduction with nature appreciation facilities is consistent with policy. The work is estimated to cost a total of $5,185,200. The 1,750-acre acquisition is estimated to cost $2,649,800, the LRR is estimated to cost $520,000, and the nature appreciation facilities are estimated to cost $2,015,400. The costs are within the increases allowed by Section 902 on the maximum cost of a project. Thus, the Secretary of the Army is authorized to make the changes without additional Congressional authorization. The Limited Reevaluation Report is within the Division Commander’s authority to approve. The proposed action would have no significant detrimental impact upon the human or natural environment. If the project is funded, a Record of Decision will be prepared for either the Southwestern Division Commander or the Assistant Secretary of the Army for Civil Works to sign.

City of Little Rock

Jim Dailey
Mayor

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August 15, 2005

8/19/2005

Colonel Wally Z. Walters
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Little Rock, Arkansas 72203-0867

Dear Colonel Walters:

The City of Little Rock intends to participate with the US Army Corps of Engineers as a project sponsor for the completion of the Fourche Bayou Basin project. The remaining work is the acquisition of 1,750-acres of bottomland hardwoods and the construction of nature appreciation facilities. I understand that the City of Little Rock's cost-sharing responsibility during construction would be 50 percent for the nature appreciation facilities and that the land acquisition is considered to be environmental restoration with the current non-Federal cost share requirement of 25 percent. I also understand that the costs of design shall be shared in the same percentage as the construction costs for each of these purposes, 50 percent for the nature appreciation facilities and 25 percent for environmental restoration. Further, it is understood that this letter is not a contractual obligation on the part of the City of Little Rock, and either party may discontinue the project development process.

With a current estimate of $4,665,000 to complete the Fourche Bayou Basin project consisting of the bottomland acquisition ($2,650,000) and the nature appreciation facilities ($2,015,000); I understand that Little Rock's remaining outlay is estimated to be $800,800 after accounting for the credit for the bottomlands already purchased by the city with an estimated value of $805,200. The city is still very interested in this project and when funding becomes available, we will to provide our share to preserve Fourche Bottoms as noted in the project cooperation agreement between the US Army Corps of Engineers Corps and the City of Little Rock.

Sincerely,

Jim Dailey
Mayor

TABLE 1

FOURCHE BAYOU BASIN, ARKANSAS

COST APPORTIONMENT, 75-25 ENVIRONMENTAL PRESERVATION COST SHARING

(includes $333,000 of Fourche PED costs not in total E&D costs in cost ledger)

ITEM	FEDERAL	NON-FEDERAL	TOTAL
Flood Control			
Lands and Damages	$47,948+	$3,561,204*	$3,609,152
Relocations			
Railroad Bridges	4,207,295+	0	4,207,295
Other	0	4,345,924*	4,345,924(1)
Channels	12,091,083+	0	12,091,083(3)
Channel work by city, 104 credit	160,000	0	160,000
Engineering and Design	3,743,486+	0	3,743,486
Supervision and Administration	2,213,860 +	0	2,213,860
Subtotal, Flood Control	22,463,672	7,907,128	30,370,800
Cash Contribution, 5%	(1,518,540)	1,518,540	
Subtotal, Flood Control	$ 20,945,132	$ 9,425,668	$ 30,370,800
Recreation			
Nature Appreciation Area, Estimated Cost	$ 1,007,700	$ 1,007,700	$ 2,015,400 (2)
Hiking and Biking Trails incl. w/ channel	179,000	179,000	358,000 (6)
Subtotal, Recreation	1,186,700	1,186,700	2,373,400
Environmental Preservation			
Bottomland Hardwood Acquisition, 1750 acres	$ 1,987,350	$ 662,450	$ 2,649,800
Limited Reevaluation Report	390,000	130,000	520,000
Subtotal, Environmental Preservation	2,377,350	792,450	3,169,800
Total Project Cost	$ 24,509,182	$ 11,404,818	$ 35,914,000
Percent of Total Cost	68%	32%	100%
Contributions to Date:	FEDERAL	CITY	
Lands		$4,366,404(4)	
Construction		4,505,924(5)	
Cash, (FED $20,597,000+333,000+520,000)	$ 21,450,000	1,731,678	
Total	$ 21,450,000	$ 10,604,006	
Contributions Required:	$3,059,182	$800,812	

(1) Includes city expenditures less Corps payments for channel work @ 36th, Parham, and Barrow Bridges ($112,179.5).

(2) Includes E&D, S&A, contingencies, escalation, and $3000 for land for road.

(3) Ledger amts less recreation costs included with channel costs ($358,000)

(4) Includes land acq. ($3,561,204) and bottomland acq. to date (est. value $805,200)

(5) Includes Section 104 credit for flood control work previously performed by city ($160,000).

(6) Recreation cost breakdown taken from PB-2A, 25 Jun 96

* City and +Corps costs taken from their cost ledgers.

TABLE 2

FOURCHE BAYOU BASIN, ARKANSAS

COST APPORTIONMENT, 65-35 ENVIRONMENTAL PRESERVATION COST SHARING

(includes $333,000 of Fourche PED costs not in total E&D costs in cost ledger)

ITEM	FEDERAL	NON-FEDERAL	TOTAL
Flood Control			
Lands and Damages	$47,948+	$3,561,204*	$3,609,152
Relocations			
Railroad Bridges	4,207,295+	0	4,207,295
Other	0	4,345,924*	4,345,924(1)
Channels	12,091,083+	0	12,091,083(3)
Channel work by city, 104 credit	160,000	0	160,000
Engineering and Design	3,743,486+	0	3,743,486
Supervision and Administration	2,213,860 +	0	2,213,860
Subtotal, Flood Control	22,463,672	7,907,128	30,370,800
Cash Contribution, 5%	(1,518,540)	1,518,540	
Subtotal, Flood Control	$ 20,945,132	$ 9,425,668	$ 30,370,800
Recreation			
Nature Appreciation Area, Estimated Cost	$ 1,007,700	$ 1,007,700	$ 2,015,400 (2)
Hiking and Biking Trails incl. w/ channel	179,000	179,000	358,000 (6)
Subtotal, Recreation	1,186,700	1,186,700	2,373,400
Environmental Preservation			
Bottomland Hardwood Acquisition, 1750 acres	$ 1,722,370	$ 927,430	$ 2,649,800
Limited Reevaluation Report	338,000	182,000	520,000
Subtotal, Environmental Preservation	2,060,370	1,109,430	3,169,800
Total Project Cost	$ 24,192,202	$ 11,721,798	$ 35,914,000
Percent of Total Cost	67%	33%	100%
Contributions to Date:	Federal	City	
Lands		$4,366,404(4)	
Construction		4,505,924(5)	
Cash, (FED $20,597,000+333,000+520,000)	$ 21,450,000	1,731,678	
Total	$ 21,450,000	$ 10,604,006	
Contributions Required:	$2,742,202	$1,117,792	

(1) Includes city expenditures less Corps payments for channel work @ 36th, Parham, and Barrow Bridges ($112,179.5).

(2) Includes E&D, S&A, contingencies, escalation, and $3000 for land for road.

(3) Ledger amts less recreation costs included with channel costs ($358,000)

(4) Includes land acq. ($3,561,204) and bottomland acq. to date (est. value $805,200)

(5) Includes Section 104 credit for flood control work previously performed by city ($160,000).

(6) Recreation cost breakdown taken from PB-2A, 25 Jun 96

* City and +Corps costs taken from their cost ledgers.

TABLE 3	
FOURCHE BAYOU BASIN, ARKANSAS	
TIMELINE	
DATE	EVENT
1971	Basic H&H for feasibility report done.
13 Sep 1978	September 1978 flood; the bottoms act as 3 detention ponds not one.
Oct 1979	Fourche Bayou Basin Feasibility Report and EIS, Plan X was recommended to include channel clearing and widening, highway and railroad bridge widening, utility relocations, 4 miles of trails, and a 20-acre nature appreciation area within 1750-acres of bottom land for environmental preservation.
29 Feb 1980	Supplemental Hydrology Report recommended hydrology revised in GDM I.
11 Mar 1980	SWL, despite above observation, tells BERH that Bottoms storage benefits are the same w/wo project and that channelization downstream of the Bottoms would have significant benefits upstream at University Avenue.
19 Jan 1981	BERH finds that the bottoms are not required for the proposed flood control project to function properly nor are these lands directly or indirectly impacted by the project. However, it recognized their exceptional environmental quality and recommended their preservation by acquisition.
4 Sep 1981	Chief of Engineers concurs in the findings, conclusions, and recommendations of the Board (BERH) in sending the Fourche Bayou Basin report to Congress.
29 April 1983	OMB agrees with ASA(CW) to delete bottomlands as they are not required for the project to function properly nor are these lands impacted by the project.
31 May 1983	ASA(CW) signed ROD to do channelization but excluded 1,750 acres for environmental preservation with nature appreciation facilities.
Sep 1985	Fourche Bayou General Design Memorandum No. 1 required relief openings added to 3 railroad embankments within the bottoms so that the entire bottoms can act as one retention pond and lower the water surface at University Ave.
28 Aug 1986	Supplement to GDM I submitted as sponsor refused to accept GDM I plan due to cost and in response to CESWD GDM I comments.
17 Nov 1986	PL 99-662 authorized the Fourche project with 1,750 acres of bottomlands for environmental protection, including nature appreciation facilities.
April 1987	FDM 2, Channel Improvements
20 Aug 1987	Local Cooperation Agreement (LCA) signed (flood control and recreation features - no environmental preservation or appreciation).
March 1988	FDM 3, Railroad Relocations
Sep 1987 - Sep 1995	Constructed flood control channel and approximately 1.7 miles of recreation trail.
26 July 1995	The City of Little Rock requested Corps to complete project by acquiring bottomlands.
25 Apr 1996	ASA(CW) memo asked HQUSACE for ways to obtain funds to amend the LCA and complete the project in response to the local sponsor's request.
12 July 1996	ASA(CW) memo concurred with Director of Civil Works to consider budgeting in FY 1998 using cost sharing policy at time of PCA execution.

22 Aug 1996	CESWL sent Letter Report as decision document to CESWD as PCA basis.
20 Nov 1996	HQUSACE memo to CESWD required a General Reevaluation Report and a preliminary assessment of hazardous waste.
March 1998	Preliminary assessment of potential HTRW sites was completed by CESWL.
6 April 1998	O&M Manual signed and submitted to the city of Little Rock on completed channel and recreation project work.
28 Jan 1999	After project cost estimate was revised, the city provided a letter of intent.
June 1999	CESWL memo to CESWD requested concurrence with preliminary assessment & Project Study Plan approval
13 Jan 2000	HQUSACE guidance thru CESWD to CESWL stated land acquisition for environmental protection was not a budget priority.
1 Feb 2000	Sponsor, by letter, asked ASA(CW) to budget for remaining increment.
13 Apr 2000	ASA(CW) memo agreed with HQUSACE to conduct Limited Reevaluation Report for acquisition & nature appreciation facilities. LRR would be decision document to determine if project should be budgeted for as a separable element new construction start.
9 May 2000	Issue Resolution Conference held with CESWL, CESWD, and HQUSACE.
26 July 2000	HQUSACE guidance provided.
5 Feb 2001	SWL memo to SWD asked for approval of Project Management Plan (PMP).
19 Mar 2001	PMP approved contingent on making revisions based on comments.
13 May 2002	HTRW analysis report completed.
20 June 2003	SEIS Notice of Intent published in Federal Register.
29 Aug 2003	Issue Resolution Conference held with sponsor, USFWS, CESWL, CESWD, HQUSACE, and GEC (AE contractor for the SEIS and engineering appendix).
17 Oct 2003	IRC Memorandum For Record for LRR completion was done.
28 Nov 2005	Public review of draft LRR and SEIS was completed.

TABLE 4

FOURCHE BAYOU BASIN, ARKANSAS
FUNDING SINCE AUTHORIZATION

Years	General Investigations	Funds Construction, General	Total
FY 1985 - 1986	$333,000	$ 0	$333,000
FY 1987 - 2000	0	20,597,000	20,597,000
FY 2001 – 2006	0	485,000	485,000
FY 2007- 2008	0	35,000	35,000
Totals	$333,000	$21,117,000	21,450,000

University Avenue
Asher Avenue
Roosevelt Blvd.
U.P.R.R.
I-440
I-540
I-30
11 ac
27 ac
154 ac
14 ac
65 ac
93 ac
21 ac
164 ac
10 ac
31 ac
55 ac
1062 ac
24 ac
5 ac
30 ac
7 ac.
57 ac
26 ac
19 ac
21 ac
30 ac.
36 ac
18 ac.
N

Plate 1
Fourche Creek Project Area

Additional Areas to be Acquired
City Owned Acreage Included in Study
City Owned Acreage NOT Included in 1,750 - acre acquisition
500 Year Flood Area (Zone X)
100 Year Flood Zone (Zone AE)
Floodway Areas in Zone AE
Rail Road Right-of-Way
A.H.T.D. Right-of-Way
Aerial Photo Date: 2000-2001

0.5 0.25 0 0.5 1 Miles

11/15/2004

SUPPLEMENTAL EIS

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SUPPLEMENTAL
ENVIRONMENTAL IMPACT STATEMENT

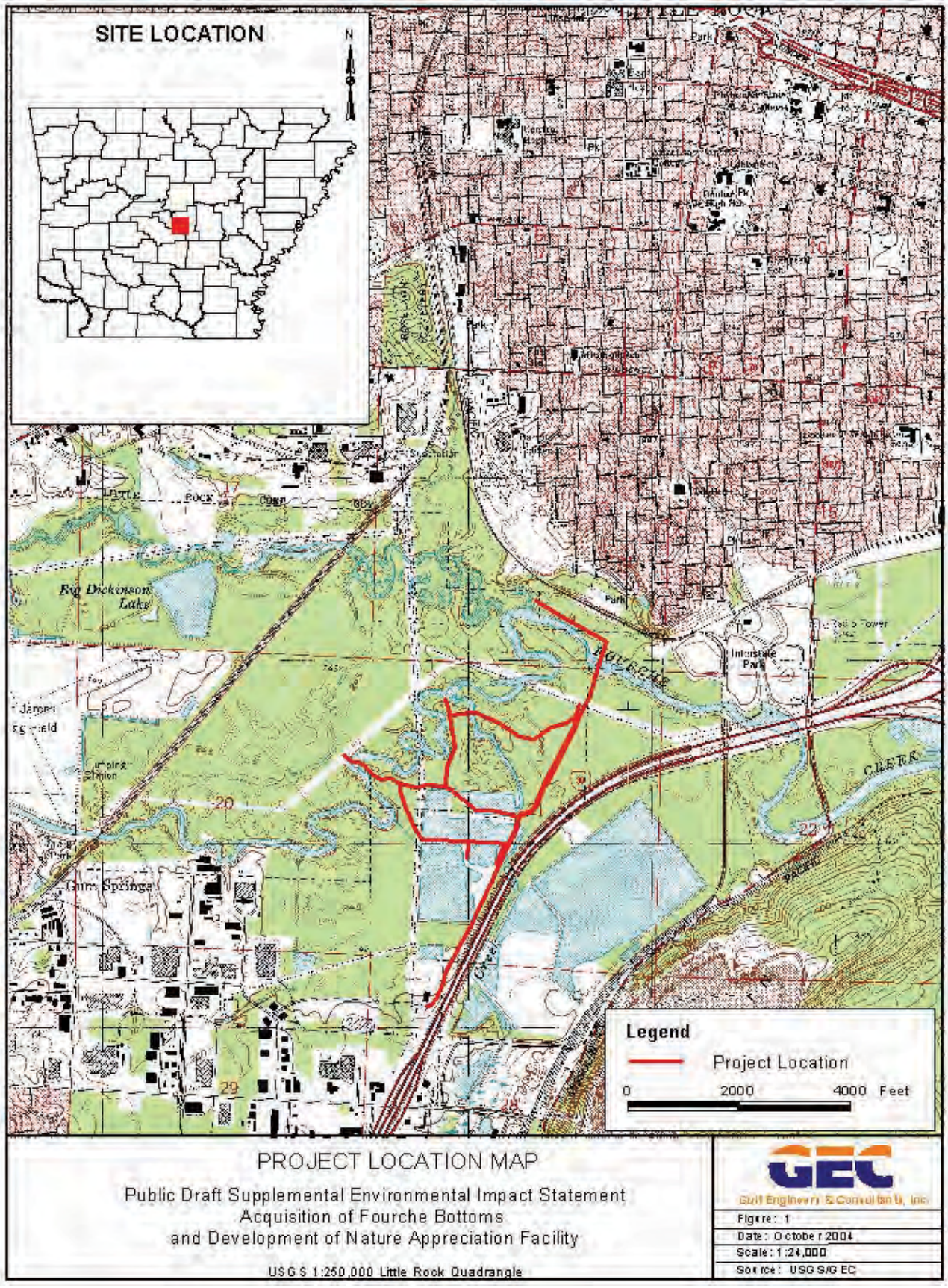
PREPARATION OF NATURE APPRECIATION FACILITIES DESIGN, ECONOMIC, AND ENVIRONMENTAL ANALYSIS FOR A LIMITED REEVALUATION REPORT (LRR) 1,750-ACRE BOTTOMLAND ACQUISITION, FOURCHE BAYOU BASIN, LITTLE ROCK, ARKANSAS

1.0 INTRODUCTION

This Supplemental Environmental Impact Statement (SEIS) has been prepared to evaluate the potential impacts associated with the acquisition of 1,750 acres of bottomland hardwood (BLH) habitat known as Fourche Bottoms as well as the development of a nature appreciation facility to showcase the intrinsic and natural beauty of the area. Fourche Bottoms is a highly productive, primarily undeveloped area amid the urban and industrial backdrop of the City of Little Rock, Pulaski County, Arkansas (Figure 1). Fourche Bottoms lies within the floodplain of Fourche Creek, which provides floodwater storage and drainage for much of Pulaski and part of Saline counties. Upon acquisition of the 1,750-acre tract, the U.S. Army Corps of Engineers proposes construction of a nature appreciation facility with amenities such as foot trails, information signs, plant labels, a restroom, access road, parking area, and boardwalks and bridges into wet or swampy areas. By others, monitoring programs for water quality, sedimentation, flood monitoring, vegetation studies, and fish and aquatic life surveys would also be implemented to provide data about the project area.

This document is prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 and guidelines contained in the U.S. Army Corps of Engineers (USACE) Engineering Regulation (ER) 200-2-2. The following sections include a discussion of the need for the proposed action, alternatives to the proposed action, significant resources affected, and the impacts of the proposed action.

This document is a supplement to a previous Environmental Impact Statement (EIS) produced for the project area in October 1979 by the USACE Little Rock District. This EIS evaluated potential impacts to the project area resulting from improvements to streams and waterways within the project area and floodplain management to preclude development in areas within the 100-year floodplain. Conditions within the project area have changed since the preparation of the EIS, however. Additionally, the location and description of the alternatives have changed since the EIS was formulated. Consequently, the development of a SEIS to evaluate impacts to current conditions within the project area resulting from the implementation of new or revised alternatives was deemed necessary.



PROJECT LOCATION MAP

Public Draft Supplemental Environmental Impact Statement
Acquisition of Fourche Bottoms
and Development of Nature Appreciation Facility

USGS 1:250,000 Little Rock Quadrangle

Gulf Engineers & Consultants, Inc.

Figure:	1
Date:	October 2004
Scale:	1:24,000
Source:	USGS/GEC

Figure 1. Back

2.0 NEED FOR THE PROPOSED ACTION

Fourche Bottoms is a unique and valuable component to the surrounding ecosystem. This 1,750-acre tract is the last remaining significant tract of natural bottomland hardwood forest in the Fourche Creek watershed. The proximity of such a natural site to a highly urbanized area, the City of Little Rock, is unusual. In recent years, Fourche Bottoms has become surrounded by industrial development. Acquisition of the tract would protect it from further encroachment by development and assist in protecting the natural characteristics of the site from detrimental effects associated with development (e.g., deterioration in air and water quality, degradation in habitat quality, etc.).

The Fourche Creek watershed provides drainage to most of Pulaski County and part of Saline County. Fourche Bottoms, in turn, provides floodwater storage from the Fourche Creek drainage. Acquisition of the site would ensure that the floodwater storage capacity of the site would be retained indefinitely.

3.0 PUBLIC CONCERNS

The proposed project that is the subject of this SEIS is the result of interagency coordination and takes into account public concerns. Among these concerns is the considerable amount of trash and debris throughout the facilities, ranging from common household garbage to larger items such as furniture, appliances, and automotive parts. A significant effort will be required to safely remove and dispose of this debris. There is also a perception that the security and personal safety of visitors may be compromised given the remote location of the proposed park. Further, information regarding the water quality in the facilities is unclear with regard to their potential as recreation sites. Until further investigations are conducted, activities in the facilities should be limited to secondary contact (i.e., no swimming). These concerns were taken into consideration in the development and design of the proposed action.

4.0 AUTHORITY FOR THE PROPOSED ACTION

The proposed action, acquisition of the 1,750-acre facilities known as Fourche Bottoms and the development of a nature appreciation area, was authorized by Section 401(a) of the Water Resources Development Act of 1986.

5.0 DESCRIPTION OF THE PROPOSED ACTION

Upon acquisition of Fourche Bottoms, a design for the nature appreciation area would be implemented. The facilities would be located between the Missouri Pacific railroad to the west and Interstate Highway 30 to the east and south. The prevailing attitude regarding the design and implementation of this component of the proposed action was an approach of least impact. Conceptual design and materials would provide the least amount of impact to the habitat designated for proposed activities within Fourche Bottoms. Construction would be subject to best management practices and limitations regarding acceptable weather conditions. Several of the proposed facilities would be created in accordance to the Americans with Disabilities Act

(ADA) standard of accessibility. Refer to Figure 2 for a detailed visual layout of proposed park amenities.

The originally designated 1,750 acres already contains railroads, Interstate Park (a city park) and power and sewer lines with roads/trails within the area. Currently, there is a gate on the access road into the bottoms. Thus, in addition to utility crews, people access the currently designated area by walking in even with the gates locked and some enter by canoe.

Any future trails constructed in the project area beyond those detailed in Section 9.0 of the Engineering Appendix are not part of the proposed project plan.

Roads and Parking: Entry to the park would be from the southeast from the east end of 60th Street. This location would provide the park with an entrance distinct from surrounding facilities. The existing driving route provides a pleasant approach, offering scenic views of the lake and woods, thus creating a nice first impression. To minimize impacts, existing roads would be utilized. However, an upgrade in road conditions, including the entrance, may be required because of deteriorated road conditions. Paving and fill would be limited as much as possible. Two parking lots would be placed at key points along the existing roadway. These parking areas would be located at the main entrance (nine car spaces, one ADA space, and one bus space) and the main parking area along the north utility right-of-way (11 car spaces, one ADA car space, two bus spaces, with future parking space that can hold up to 27 car spaces). Parking areas and roads would be designed to minimize the impact to the current hydrologic regime. Table 1 presents the construction requirements to construct 1.1 miles of access roads at grade level into the proposed park.

Table 1. Construction Quantities for Proposed Access Roads for Proposed Project

Number of Lanes	Cut (CY)	Fill (CY)	9" Concrete (SY)	6" Base SY)	Limestone (CY)
One lane**	826.63	1,665.70	1,450.78	263.32	906.09
Two lanes**	1,505.08	3,032.74	1,450.78	263.32	1,649.76

** Using 4" Limestone

Source: G.E.C., Inc., 2004.

Open Air Visitors Center/Kiosk: The open-air visitor center/kiosk is proposed as part of the facility's signage and would be located along Fourche Creek in the northeast corner of the project area. It would be constructed to compliment the surrounding natural environment not only in its design but also with regard to the use of the most environmentally sound methods and materials when possible. The open-air design of the visitor center/kiosk would withstand all flood conditions. The kiosk would also be ADA accessible. Energy efficient systems for any exterior lighting would be used when practicable. Educational signage and exhibits would be posted to welcome and familiarize visitors with the habitat, wildlife, and ecological significance of the area.

RECOMMENDED PLAN

Public Draft Supplemental Environmental Impact Statement
Acquisition of Fourche Bottoms
and Development of Nature Appreciation Facility

LOSCO Little Rock Digital Orthophotos

Figure: 2
Date: September 2004
Scale:1:10,500
Source: LOSCO/GEC
Map Author: C. Perez

Back of Figure 2.

Trails and Boardwalks: The proposed action calls for approximately three miles of hiking trails, 0.5 miles of which will be ADA accessible. The trail system within the park would consist of a main loop with an alternate spur. Trails would be designed to emphasize habitats and areas in Fourche Bottoms that are unique and of interest. Bridges would be provided for crossing the creek or areas that are frequently wet. Boardwalk overlook areas would be added to afford visitors the opportunity to view habitat and wildlife in areas that extend into shallow open water. These boardwalk areas would be located at the man-made lakes and along the ADA trail. Environmentally sound construction techniques and materials would be used to reduce impacts to habitat.

Restroom Facilities: Flush restroom facilities (were removed due to cost considerations) would be located near the entrance of the facilities to take advantage of already present sewer and water access. Portable restroom facilities would be located with the main parking area in the northern utility right-of-way. The portable restroom stalls would be modified with an environmentally suitable covering or housing to enhance their appearance. Both of these restroom facilities would be ADA accessible.

Other Site Amenities: The uniqueness of Fourche Bottoms would be the focus of the facility. Educational signage with information about the various habitats, wildlife, and ecological processes that take place in the area would be posted throughout the area, along trails and in the visitor center/kiosk. Plant species of special interest as well as those that are common to the area would be marked with labels.

Operations and Management: Trash receptacles would be placed throughout the area and trash collection would be conducted regularly. To discourage littering in the area, notices would be posted informing visitors of the strict enforcement fines for littering. The gate to the facilities would be closed at dusk and opened each morning. Additionally, the authorized plan provided a concentrated 20-acre area for the human experience; the remaining 1,730 acres had no trails or other recreation facilities and would not have been impacted by recreation activities. The current recommended plan no longer provides for a concentrated 20-acre nature appreciation area, but rather spreads an increased amount of recreation facilities and activities over approximately one third of the total site (approximately 600 acres). Because of this widespread areal extent, the concentration of human impacts would be lessened but would occur over a much larger area. Because of the increased impacts to a much larger area, closing the nature appreciation facilities from dusk to dawn would ameliorate the impacts.

Study and Monitoring: The Fourche Bottoms area is a unique habitat with abundant wildlife and plant communities. Several programs would be instituted to observe and monitor trends in water quality, flooding, sedimentation, vegetation, and fish and aquatic life. This information would be used to properly manage the habitat and water resources in the area. Monitoring by the sponsor is not proposed within the recommended plan. Ongoing monitoring is being conducted by other agencies; however, this feature is also not part of the recommended plan.

The implementation of the nature appreciation facilities could lead to possible partnerships with public and private organizations and interest groups. Public participation could be valuable to the continued monitoring and ongoing care of the area. Public involvement would increase

community awareness of the values of Fourche Creek and Bottoms and may provide assistance with the continuing care and maintenance of the park. Local university classes, ecological societies, and state agencies could assist in the inventory of plant and wildlife as well as other monitoring programs. Public, private, and educational groups could use and plan to use the bottoms as an outdoor nature school. Such items, however, are not features of the recommended plan.

6.0 COST SHARING

The local sponsor is the City of Little Rock, Arkansas. Policy Guidance Letter (PGL) No. 48, Cost Sharing for Specifically Authorized Environmental Projects, sets forth U.S. Army Corps of Engineers policy regarding the cost sharing for construction (implementation) of specifically authorized projects and separable elements for ecosystem (environmental) protection and restoration and implements Section 210 of the Water Resources Development Act of 1996. Section 210 established that environmental protection and restoration be cost shared by the non-Federal sponsor at 35 percent, the current cost sharing for projects authorized after 12 October 1996. PGL 48 states that ecosystem restoration projects authorized by prior legislation will be cost shared in accordance with the provisions of the authorizing legislation.

Thus, the cost sharing for the 1,750-acre Fourche Bottoms acquisition would be 25 percent non-Federal and 75 percent Federal as provided by the percentages of costs in the authorizing legislation, Section 401 of WRDA 1986. The nature appreciation facilities as recreational features would be cost shared 50-50 as established by Section 103 of WRDA 1986, as amended. Section 103 also provides that the sponsor is required to pay 100 percent of the costs for operation, maintenance, repair, replacement, and rehabilitation.

7.0 PRIOR REPORTS

Several reports have been issued regarding the acquisition of Fourche Bottoms:

U.S. Army Corps of Engineers, 1979
Feasibility Report and Environmental Impact Statement for Water Resource Development Volumes I and II, October 1979.

U.S. Army Corps of Engineers, 1985
Fourche Bayou Basin; Vicinity of Little Rock, Arkansas; General Memorandum No. 1; General; Volume I of II, September 1985.

City of Little Rock, Department of Parks and Recreation, 1996
Fourche Creek Park; Site Analysis and Conceptual Master Plan. April 30, 1996.

U.S. Army Corps of Engineers, 1998
Preliminary Assessment; Potential HTRW Sites at Fourche Bottomland Acquisition Acreage. February 1998.

Wetland Science Applications, 1995

Ecological Report; Fourche Creek Study Area, Pulaski County, Arkansas, October 1995.

8.0 ALTERNATIVES CONSIDERED

Several alternatives to the proposed action were considered. Among these alternatives were the no-action alternative and three action alternatives that explored variations in the placement of facilities. Although each plan had commonalities, such as the location of the entrance and the inclusion of hiking trails, the plans explored variations in development and optional locations for site features. For several of the plans, an enclosed visitor center was discussed with varied amenities, such as a modest meeting room to a presentation/theatre room. However, the project plan formulation was limited to the authorized project features with the exception of the addition of ADA features that were not considered when the original project was formulated. Different locations for the facilities were also suggested for each alternative. Placement and extent of parking areas also varied between each alternative. The proposed action was chosen because the design and placement of the park amenities kept with the initial approach of least impact. Other design options were eliminated from further detailed consideration.

No-Action: Under the no-action alternative, acquisition of the designated 1,750 acres of bottomland hardwoods, Fourche Bottoms, and the installation of nature appreciation facilities will not take place. Fourche Bottoms will be subject to natural processes and current developmental trends.

9.0 ENVIRONMENTAL SETTING

9.1 General

Fourche Bottoms, the site for the land acquisition and the nature appreciation facilities, is located south of Little Rock, Pulaski County, Arkansas. Fourche Bottoms lies within the floodplain of Fourche Creek basin and provides floodwater storage and drainage for most of Pulaski County and part of Saline County. Although the area is largely undeveloped, it is closely surrounded by areas of commercial, industrial, and residential development. Railroads, major highways, and utility rights-of–way are also a major presence in the area.

Fourche Bottoms is supported by both riverine swamp and bottomland hardwood habitats. The riverine swamp areas, closely associated with the Fourche Creek corridor, are dominated by bald cypress and water tupelo with the presence of other species such as water elm, green ash, buttonbush, box elder, and hibiscus. The bottomland hardwood areas occur around the edge of the riverine swamp habitats and include plant species such as willow oak, post oak, cedar elm, American elm, red mulberry, sweetgum, swamp dogwood, and others. These habitats, in turn, support a varied assortment of wildlife. Fish species found in Fourche Creek include shiners, sunfishes, catfish, chain pickerel, bullheads, crappie, largemouth bass, and spotted bass as well as other species of fish. However, quality game fish are difficult to locate in the lower reaches of the creek because of degraded conditions in water quality. Several species of wading birds including great blue herons and egrets are common in the area as well as various migratory birds and songbirds. Duck species such as mallards, teals and wood ducks are commonly found in the area. Terrestrial fauna occurring in the project site include swamp rabbits, white-tail deer, mink,

raccoons, opossums, fox and gray squirrels and beavers, among others. Fourche Bottoms also provides habitat for a wide variety of turtles (e.g., common snapper, mud turtle, soft-shelled turtle, slider, and box turtle), frogs (e.g., cricket frogs, spring peepers, tree frogs, leopard frogs, wood frogs, green frogs, and bullfrogs), and snakes (e.g., copperheads, cottonmouths, garter snakes, water snakes, king snakes, and hognose snakes).

9.2 Climate

Winters are generally mild with occasional polar and artic-types breaks. Summers are often hot with periods of high humidity. The average daily temperature in the summer is 82º F with an average daily winter temperature of 41ºF. The average annual precipitation is 48.66 inches.

9.3 Geology

The Fourche Creek Basin is divided into two major physiographic regions: the Interior Highlands and Coastal Plain. Most of the area north and west of Fourche Creek lies within the Interior Highlands. The remainder of the basin lies within the Coastal Plain. The basin north and west of Fourche Creek is characterized by east-west trending ridges that range from 200 to 300 feet above nearby valleys. Paleozoic consolidated shales and sandstones are the dominant geologic formations in the west-north basin .The south and east portion of the basin consists of low undulating hills, prairies, and flat-bottomland streams. Granite Mountain along the southeastern side of the bottom land area is a hill composed of Cretaceous age solid igneous rock composed of nepheline syenite. The east-south portion of the basin contains Tertiary semi-consolidated clays, silts and sands beneath a layer of Arkansas River alluvial and terrace deposits with igneous rock possibly underlying the stream deposits next to Granite Mountain.

10.0 AFFECTED ENVIRONMENT

This section contains a description of significant resources and the impacts of the proposed action and no-action alternatives on these resources. Significant resources identified include wetlands, threatened and endangered species/biological resources, cultural resources, water quality, air quality, soils, socio-economics, recreational resources, and hazardous, toxic and radioactive waste. The significant resources described in this section are those recognized by laws, executive order, regulations, and other standards of national, state, or regional agencies and organizations.

10.1 Wetlands

An evaluation of potential wetland impacts within the vicinity of the proposed action is included pursuant to the requirements of NEPA of 1969, 42 U.S.C. section 4321, *et seq*. Additional jurisprudence includes the Clean Water Act of 1977, as amended; the Coastal Zone Management Act, as amended through P.L. 104-150; the Estuary Protection Act (PL 90-454, as amended); the North American Wetlands Conservation Act; and, the Coastal Wetlands Planning, Protection, and Restoration Act. Additionally, Executive Order 11990 (*Protection of Wetlands*) and Executive Order 12630 (*Government Actions and Interference with Constitutionally Protected Property Rights*) are also considered.

10.1.1 Existing Conditions

Wetlands are defined by the U.S. Army Corps of Engineers as areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstance do support, a prevalence of vegetation typically adapted for life in saturated soil conditions [33 CFR 328.3 (b)]. These wetlands generally include marshes, swamps, lacustrine and palustrine habitats, littoral zones (shallow open waters) and similar areas. An Ecological Report prepared by Wetland Science Applications Inc., in October 1995, provided the following information. Detailed identification and characterization of wetlands within the area has not been undertaken. The habitats in the area were examined and identified using photographs, site visits and other sources of data.

Several habitat types have been identified within Fourche Bottoms. The two dominant habitats in the area are the riverine swamp, which is closely associated with the Fourche Creek corridor, and bottomland hardwood forest, which occurs around the edge of the riverine swamp habitats. The riverine swamp, some of the bottomland hardwood, and the pond areas have been categorized as wetland habitat. Although the ponds may not technically qualify as wetland habitat, they may be considered "waters of the United States" and are therefore included. Other habitat types are located on the outer fringe of the project area with lesser frequency.

10.1.2 Future Without Proposed Action (No-Action)

In the future, without the proposed action, wetlands in the project area will continue to be influenced by natural processes. Continued urbanization and its associated affects may continue to influence the quality of the wetland habitat in Fourche Bottoms.

10.1.3 Future With Proposed Action

In the future, with the proposed action, the wetland areas in Fourche Bottoms will remain largely unaffected. Acquisition of the designated acreage will serve to protect the area from encroaching development. Subsequent monitoring and observation will further serve to provide for the continued health of the area's wetland habitat. There may be some minor, temporary adverse impacts associated with the use of boardwalks in areas of shallow, open water or areas that are frequently flooded. Best management practices to eliminate or minimize increases in turbidity and suspended solids will be implemented over the duration of installation activities. Ecologically sound materials and design will be used when practicable to create the least impact.

10.2 Threatened and Endangered Species/Biological Resources

An analysis of potential impacts on threatened and endangered (T&E) species and biological resources within the vicinity of the proposed action is included pursuant to the requirements of the NEPA of 1969, 42 U.S.C. section 4321, *et seq.* Additional jurisprudence includes the Endangered Species Act of 1973 (PL 93-205; 16 U.S.C. 1531 *et seq.*, as amended); the Fish and Wildlife Conservation Act of 1958 (PL 85-624; 16 U.S.C. 661 *et seq.*); and Article VI of the U.S. Constitution.

10.2.1 Existing Conditions

Table 2 provides amplifying information on federally listed species that occur in Pulaski County.

Table 2. Threatened and Endangered Species for Pulaski County

Common Name	Scientific Name	Status
Fat pocketbook	*Potamilus capax*	E
Red-cockaded woodpecker	*Picoides borealis*	E
Interior least tern	*Sterna antillarum*	E
Bald eagle	*Haliaeetus leucocephalus*	T

Source: USFWS, 2002.

The fat pocketbook mussel is found primarily in river systems in the Midwestern and southeastern United States. The species inhabits slow-moving water bodies with a mud or sand substrate. Primary threats to the species are dredging operations and water impoundments.

The red-cockaded woodpecker occurs primarily in the southern United States. The species inhabits pine forests. Nesting and roosting occur in tree cavities. The red-cockaded woodpecker shows a marked preference for old trees, particularly those infected with red heart disease, which destroys the integrity of cell walls in the interior tissue of trees. The species is endangered by habitat loss resulting primarily from deforestation.

The interior least tern is found throughout most of the United States. Populations within the interior are typically found near riverine systems. Nesting typically occurs on riverine sandbars or salt flats exposed during low water periods. The species was once heavily hunted for its plumes. Current threats to the species include habitat loss from natural and artificial processes and flooding of breeding grounds.

The bald eagle is found throughout North America. The species primarily inhabits forests adjacent to significant water bodies (e.g., coastal areas, bays, rivers, and lakes). The species is threatened by habitat loss, biocide contamination, and illegal shooting.

In a letter dated January 30, 2003, the U.S. Fish and Wildlife Service (USFWS) stated that no federally listed or proposed threatened or endangered species or critical habitat occur in the project area. Additionally, the USFWS issued a Coordination Act Report (CAR) on 3 September 2004 which stated that no federally listed, threatened or endangered species are currently known to occur in the project impact area, and that the proposed action would not impact any listed species. The CAR is included as Attachment A. The requirements of Section 7 of the Endangered Species Act have consequently been fulfilled.

10.2.2 State Agency Listed Species

The Arkansas National Heritage Program (ANHP) was consulted in 1995 to determine the presence of any species listed by the agency within the study area. The ANHP determined that three listed species were known to occur in the general vicinity of Fourche Creek. The listed

species are the flat floater mussel (*Anodonta suborbiculata*), white-topped sedge (*Rhynchospora colorata*), and showy prairie gentian (*Eustoma grandiflorum*). No records of any of these species within the project area were located. Additionally, none of the species was observed during a field investigation.

10.2.3 Future Without Proposed Action (No-Action)

In the future, without the proposed action, current conditions for biological resources and protected species in the project area would persist. Continuing encroachment of residential and industrial development into the area could lead to the degradation of the Fourche Bottoms habitats, and therefore displace or otherwise adversely affect fish and wildlife in the area.

10.2.4 Future With Proposed Action

In the future, with the proposed action, acquisition of Fourche Bottoms would provide for the protection of habitats utilized by the fish and wildlife in the area. Designation of Fourche Bottoms as a natural, open area will keep the area from being lost to increasing development and urbanization. Initial temporary adverse impacts to designated parts of the project area because of construction of park amenities may include an increase of turbidity and suspended solids into areas where trails and boardwalks cross or extend into water. However, best management practices for the control increases in turbidity and high suspended solids implemented over the duration of the construction should minimize or eliminate these impacts.

Construction of the trail corridor within the proposed park would result in the loss of approximately 3.64 acres of habitat. While the loss of this habitat would be permanent, the acquisition of the 1,750-acre tract would ultimately result in the preservation of the designated area. Therefore, the loss of habitat by the creation of the hiking trail would be nominal in comparison to the greater amount of habitat saved upon acquisition of the proposed land.

10.3 Air Quality

10.3.1 Existing Conditions

Air quality within the project area is influenced by the industrial and commercial activities from the city of Little Rock. Highways and roads located close to the project site also have a great influence on the air quality in the area. There are several monitoring stations throughout the county that monitor air quality conditions. According to the United States Environmental Protection Agency (USEPA) air quality within the project area is located within an attainment zone for monitored parameters. Table 3 presents the air quality values provided by the EPA AirData database for Pulaski County.

10.3.2 Future Without Proposed Action (No-Action)

In the future, without the proposed action, it is unlikely that the quality of ambient air will be significantly affected.

Table 3. Air Quality Values for Pulaski County, Arkansas

Year	CO (ppm) 2nd max 8-hr	NO_2 (ppm) Annual mean	SO_2 (ppm) Annual mean	O_3 (ppm) 2nd max 1-hr	PM_{10} (μg/m3) Annual mean
1996	3.8	0.011	0.002	0.102	29.1
1997	4.7	0.010	0.002	0.100	27.0
1998	4.8	0.011	0.001	0.107	34.2
1999	4.0	0.011	0.001	0.107	32.5
2000	2.9	0.010	0.002	0.114	28.8
2001	2.0	0.010	0.001	0.102	28.8
NAAQS*	9 ppm	0.053 ppm	0.03 ppm	0.12 ppm	50.0 μg/m3

* National Ambient Air Quality Standards
Source: EPA, AirData database, online, October 23, 2002.

10.3.3 Future With Proposed Action

In the future, with the proposed action, ambient air quality is expected to be temporarily adversely impacted by emissions from construction equipment and possible fugitive dust within the project area. Once all construction activities cease, air quality within the vicinity is expected to return to pre-construction conditions.

10.4 Water Quality

10.4.1 Existing Conditions

Fourche Creek is a tributary of the Arkansas River, entering the river slightly downstream from Little Rock at navigation mile 111.6. The headwaters of Fourche Creek are in the Ouachita Mountains. The creek begins with clear, mountain water but accumulates sediment, debris, and nutrients as it travels through urban and industrial areas to the Arkansas River.

In an Arkansas River Basin survey published by the Arkansas Department of Pollution Control and Ecology in 1974, Fourche Creek is described as having water quality consistent with its urban setting and influences. While high water quality can be found in the upper reaches of Fourche Creek, water quality degrades as it reaches Fourche Bottoms. Samples taken near the site of the proposed action show elevated levels of phosphorus, fecal coliform bacteria, biochemical oxygen demand (BOD), and turbidity as well as decreased levels of dissolved oxygen. Urban runoff and sewage contamination are often associated with these conditions.

10.4.2 Future Without Proposed Action (No-Action)

In the future, without the proposed action, current conditions in water quality will persist. Urbanization will continue to influence the water quality in the area.

10.4.3 Future With Proposed Action

In the future, with the proposed action, the installation of certain park amenities, specifically the boardwalks, may result in temporary adverse changes in water quality. The proposed boardwalks will extend into shallow open water or areas that frequently flood, thus creating the potential for impacts to water quality. These changes are projected to be temporary and limited to increases in turbidity and suspended solids. Best management practices will be in place for the duration of the project activities thereby minimizing any potential impacts. The proposed action will not have any long-term effects on water quality.

10.5 Soils

10.5.1 Existing Conditions

Table 4 provides amplifying information about the primary soil series found in the vicinity of the project areas.

Table 4. Project Area Soils

Soil Name	Primary Series	Associated Series
Amy Silt Loam	Amy	Rexor
Amy-Urban Land Complex	Amy	Leadvale
Perry Clay	Perry	Latanier, Moreland, Umbraqualfs
Tiak-Urban Land Complex	Tiak	Leadvale, Smithdale

Source: Soil Survey of Pulaski County, Arkansas, 1975.

Amy Series. This series contains soils that are poorly drained and level. The soils are formed in loamy sediment in valleys and on the coastal plain. The surface layer of these soils is brown silt loam with a thickness of 6 inches. The subsoil is divided into two sublayers. The upper portion consists of about 8 inches of gray, mottled silt loam; the lower portion consists of 34 inches of gray, mottled silty clay loam. Permeability is slow, and available water capacity is high.

Latanier Series. These soils are somewhat poorly drained and level. They are formed in thin beds of clayey sediment and the underlying loamy sediment deposited by the Arkansas River. The surface layer of these soils is dark reddish brown silty clay about nine inches thick. The subsoil is divided into two sublayers. The upper part of the subsoil is dark reddish brown silty clay about 25 inches thick. The lower part is dark brown fine sandy loam about five inches thick. Permeability is very slow, and available water capacity is high.

Leadvale Series. Soils in the Leadvale series are moderately well drained and nearly level to gently sloping. They occur in valleys, atop low mountains, and on the coastal plain. The soils are formed primarily in loamy sediment washed from uplands of weathered sandstone and shale. The surface layer of Leadvale soils is seven inches thick and consists of dark yellowish brown silt loam. The subsoil, which extends to a depth of 72 inches or more, is divided into two

sublayers. The upper 9 inches of the sublayer is strong brown, friable silt loam. Beneath this sublayer, the subsoil is a firm, brittle fragipan that varies from very pale brown silt loam to mottled gray and brown silty clay loam. Permeability is moderately slow, and available water capacity is medium.

Moreland Series. The Moreland series is comprised of somewhat poorly drained, level soils that formed in thick beds of clayey sediment deposited by the Arkansas River. The soils have an 8-inch surface layer of dark reddish brown silty clay. The subsoil is dark reddish brown silty clay that extends to a depth of 41 inches. Permeability is very slow, and available water capacity is high.

Perry Series. This series contains poorly drained, level soils found on bottomlands. The soils are formed in thick beds of clayey slack-water deposits from the Arkansas River. A 3-inch layer of dark yellowish brown clay forms the surface layer. The subsoil varies from gray clay to dark reddish-brown clay and may extend to a depth of greater than 72 inches. Permeability is very slow, and available water capacity is high.

Rexor Series. These soils are well drained with level to gently undulating slopes. They are found in floodplains and local drainage ways. The soils are formed in alluvium washed from uplands of weathered sandstone and shale. Rexor soils have a surface layer of grayish brown and dark yellowish brown silt loam about eight inches thick. The subsoil, which extends to a depth of 66 inches or more, varies from dark brown silt loam to yellowish red silt loam. Permeability is moderate, and available water capacity is high.

Smithdale Series. The Smithdale series is comprised of well drained, gently sloping to moderately sloping soils located on uplands. The soils are formed in loamy coastal plain sediments. The surface layer of these soils is brown fine sandy loam with a thickness of five inches. The subsoil is divided into two sublayers. The upper portion of the subsoil is about 11 inches thick and is composed of red clay loam. The lower portion of the subsoil, which may extend to depths of greater than 72 inches, consists of red sandy loam with splotches of strong brown. Permeability is moderate, and available water capacity is medium.

Tiak Series. Soils in this series are moderately well drained and range from nearly level to gently sloping. The soils formed in loamy and clayey coastal plain sediment. The surface layer is brown fine sandy loam with a thickness of three inches. The subsurface layer consists of about seven inches of yellowish brown loam. The subsoil, which may extend to more than 72 inches in depth, varies from gray to red silty clay. Permeability is slow, and available water capacity is high.

Umbraqualfs. Umbraqualfs are poorly drained, level soils found on bottomlands. These soils are formed from thick beds of clayey slack-water sediments deposited by the Arkansas River. The soils have a surface layer of dark brown silty clay about 6 inches thick. The subsurface layer is dark-gray silty clay about five inches thick. The subsoil, which varies from dark-gray to black clay, is 19 inches thick. Permeability is very slow, and available water capacity is high.

10.5.2 Future Without Proposed Action (No-Action)

In the future, without the proposed action, soil quality will be subject to current natural processes. Persistent trends in residential and industrial development in the area could cause severe changes in soil characteristics.

10.5.3 Future With Proposed Action

In the future, with the proposed action, the construction activities under the proposed action may have temporary and localized effects on soils. The use of heavy equipment to build facilities and create trails may cause compaction and rutting. However, best management practices would be in place to minimize such impacts. The parking area will be placed within the utility right-of-way where vehicular traffic has caused soil compaction thereby avoiding any new impacts. Existing roads will be used, eliminating or minimizing the need to create new roads. Gravel or crushed limestone will be used to allow water to percolate through the surface.

10.6 Socioeconomics

10.6.1 Existing Conditions

Fourche Creek, as well as Fourche Creek watershed, offers a variety of recreational opportunities. However, the area is only minimally utilized by residents for recreational uses. The array of wildlife, availability of habitat, and its unique urban setting, make it an ideal location for the development of educational trails and recreation facilities. To determine if the implementation of the proposed park was economically feasible, an economic evaluation was conducted. Using the Statewide Comprehensive Outdoor Recreation Plan (SCORP '95) report as well as other data sources, an analysis was done to determine the overall recreational needs of the area, the demand by activity, an estimated account of activity occasions (visits), and an estimation of recreational benefits. Refer to the Economics Appendix for specific information regarding methodology, values, and data.

10.6.2 Future Without Proposed Action

In the future, without the proposed action, recreational activities will continue take place with minimal frequency through most of the bottomlands. Continued encroachment by residential and industrial development may lead to diminished recreational opportunity as well as a reduction in the quality of habitat and wildlife available to those who currently utilize the area for recreational purposes.

10.6.3 Future With Proposed Action

In the future, with the proposed action, the opportunity for recreational enjoyment will certainly increase. The acquisition of the proposed acres will serve to maintain its intrinsic beauty for the public's enjoyment. Further, implementation of proposed park facilities will satisfy the public's demand for recreational opportunities. Surveys conducted determined that there was a demand

for the activities that are proposed for the park as well as evidence of participation in these activities within the study area's population.

Estimated recreational visits for walking/hiking in the base year (2005) was 17,800 and continued to increase in successive years. Estimated wildlife observation visits were 21,000 for the base year and also increased over time. Estimated visits for canoeing and fishing were 400 and 3,000 respectively and were assumed that no change would occur over time. Based on the total investment cost, the total annual costs, and average annual benefits, a Benefit-to-Cost ratio of 1.8 was derived.

10.7 Recreational Resources

An examination of recreational resources within the vicinity of the proposed action is also included pursuant to the requirements of the NEPA. Additional jurisprudence includes the Federal Water Project Recreation Act of 1965 and Executive Order 12962, *Recreational Fisheries*. Recreational resources are significant because of the high value that the public places on fishing, hunting, boating, hiking, camping, and other outdoor activities such resources contribute to local, state, and national economics.

10.7.1 Existing Conditions

Fourche Bottoms offers an extensive number of existing and potential recreational activities. However, because of its remote and concealed location, the area designated for the proposed action is rarely utilized for recreational purposes. The scenic views and habitat make it an ideal location for hiking. Fishing opportunities in Fourche Creek were at one time considerable. While fishing is still considered good in the upper reaches of the creek, water quality degradation in the lower parts of the creek has diminished fishing activities. Intermittent canoeing of Fourche Creek is also popular with access points in surrounding parks such as Benny Craig Park and Interstate Park. Fourche Bottoms attracts many and varied species of wading, migratory, and songbirds as well as predatory birds like owls and hawks. Consequently, birding opportunities in Fourche Bottoms are plentiful and highly valued.

10.7.2 Future Without Proposed Action (No-Action)

In the future, without the proposed action, the recreational use of the project area will continue to be subject to natural processes. Recreational opportunities may be lost as ongoing residential and industrial development continues to infringe on Fourche Bottoms.

10.7.3 Future With Proposed Action

In the future, with the proposed action, recreational opportunities will increase. Construction activities should have little effect on any recreational activities that may be taking place in the area. Temporary turbidity increases during construction of boardwalks that extend into open water and areas that are frequently flooded may temporarily inhibit aesthetics. Best management practices will be in place to diminish such impacts. Following project completion, aesthetics should improve over present conditions. Once proposed park amenities are in place, many new

recreational, as well as educational, opportunities will be available. Hiking trails will allow visitors to enjoy scenic areas and view wildlife. Educational signage will provide information about the surrounding habitats and wildlife thus providing a valuable educational opportunity for local schools, youth organizations, and community groups.

10.8 Cultural Resources

10.8.1 Existing Conditions

Cultural resources are significant for their association or linkage to past events, historically important persons, design and/or construction value, and for their ability to yield important information about prehistory and history. The National Historic Preservation Act of 1966 and the Archaeological Resource Protection Act of 1979 provide for the protection of significant cultural resources.

A field survey of the project area was conducted by Historic Preservation Associates (HPA). No sites reflecting early historic or prehistoric activities were located within the project area. HPA has prepared a report on the results of the survey.

10.8.2 Future Conditions With No-Action

No sites reflecting early historic or prehistoric activities are known to occur within the project area. Consequently, in the future, without the proposed action, no cultural resources will be affected.

10.8.3 Future Conditions With Proposed Action

No sites reflecting early historic or prehistoric activities are known to occur within the project area. Consequently, in the future, with the proposed action, no impact to cultural resources is likely to occur as a result of project implementation.

10.9 Hazardous, Toxic, and Radioactive Wastes

The Corps is obligated under ER 1165-2-132 to assume responsibility for the reasonable identification and evaluation of all hazardous, toxic, and radioactive waste (HTRW) contamination within the vicinity of the proposed action. The U.S. Army Corps of Engineers-LRD conducted a preliminary assessment of potential HTRW sites within the Fourche Bottoms acquisition area, the findings of which were published in February 1998. The executive summary of this preliminary assessment and a map of all sites of concern are included as Attachment A of the Engineering Appendix. The following is a summary of those findings.

The investigation of potential HTRW sites in Fourche Bottoms was conducted using information derived from record reviews, interviews, and site reconnaissance to identify any sites of concern. The initial investigation examined 2,100 acres of bottomland proposed for purchase through a cost-sharing agreement between the city of Little Rock and the ACOE-LRD. The amount of land to be acquired was limited to the authorized 1,750 acres. The purpose of this examination

was to distinguish between those sites that posed little to no threat to the human and natural environment and those that would require further investigation before the acquisition of the designated acreage would take place. The area was divided into sectors for reporting and examination purposes. Table 5 lists the sites requiring additional investigation.

Table 5. HTRW Sites Recommended for Additional Investigation

Sector	Site	Location Description
1	1.1	South of automobile salvage operations west of University Avenue
2	2.1	Machine Tools Inc. on Mabelvale Pike
	2.2	Elrod's Imports on Mabelvale Pike
3	3.1	Glen Daniel Transmission on Mabelvale Pike
	3.2	Twin City Trucking on Mabelvale Pike
	3.3	Discolored discharge from Quality Foods
	3.4	Septic discharge from Quality Foods
	3.5	Oil release from Odum Sausage
	3.6	Ponds south of Wessel Brothers
	3.7	Down-gradient from Jimelco Site
4	4.1	Septic discharge from Brown Packing Company
	4.2	Oil release (two locations) from Pirelli Tire
	4.3	Discharged paint material north of 60th Street
5	5.1	South of Arkla Gas compressor station
	5.2	Closed landfill west of Interstate Park
6	6.1	Particulate accumulation south of quarry

Source: USACE-LRD, Preliminary Assessment; Potential HTRW Sites at Fourche Bottomland Acquisition Acreage, February 1998.

The study concluded by noting that further investigation into the above areas was required prior to the purchase of the Fourche Bottoms acquisition acreage.

A Phase II Environmental Investigation was conducted in September 2002 by the USACE Little Rock District. Samples were collected from the sites listed in Table 5. Of the 16 sites surveyed, two (sites 5.2 and 6.1) were found to contain items of significant HTRW concern. The areas around these two sites were subsequently eliminated for consideration for acquisition. Out of the area investigated, 1,750 acres were identified as being suitable for acquisition. The Phase II Environmental Investigation is included in the Engineering Appendix as Attachment B.

11.0 CUMULATIVE IMPACTS

Cumulative impacts are defined as impacts on the environment that result from the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions. The cumulative impacts associated with the proposed action would be in the minor and temporary disturbance of a minimal amount of shallow water habitat and the loss of a narrow corridor of habitat associated with the placement hiking trails. Industrial and residential development of the city of Little Rock and surrounding area has resulted in deteriorated conditions in Fourche Creek. This development has adversely impacted water quality, fish and

wildlife communities, and the quality of habitat. The completed project would offer long-term benefits of continued preservation of this ecologically important area as well as offering educational and recreational opportunities to the public.

Other development may encroach on the Fourche Bottoms area. BFI Waste Services proposes to expand its Fourche Bottoms landfill. It would use dirt excavated from a 40-acre area to cap the landfill. Eighty three acres would be used for offices and a park with sports fields, a lake, wetlands, and wildlife habitat as reported in the Arkansas Democrat Gazette on April 3, 2005. After the landfill is closed in 14 years, nature trails would be built. See BFI's Standard Permit Modification No. 11945-3 dated May 2, 2006, in Attachment B, Correspondence.

Future encroachment into the area including the BFI proposal would be limited with the implementation of the proposed project. If the BFI proposal is implemented prior to the proposed action then adverse impacts and reduced beneficial impacts to the project area could be realized. No other projects have been completed or are planned for the project area that, when combined with the proposed action, would result in significant cumulative impacts to the natural or socioeconomic environments. Consequently, the combined effect of past, present, and future actions along with the proposed action is a net beneficial effect on the project area.

12.0 COORDINATION

Coordination has been maintained with the following agencies concerning the proposed project: U.S. Fish and Wildlife Service (USFWS), Arkansas Game and Fish Commission (AGFC), Arkansas Department of Environmental Quality (ADEQ). Coordination with the Arkansas Office of Cultural Development, State Historic Preservation Officer (SHPO) was begun on 14 May 2003 concerning this project. Comments received from SHPO will be addressed in accordance with procedures provided in Section 106 of the National Historic Preservation Act (NHPA) (36 CFR Part 800, "Protection of Historic Properties").

Pursuant to the Council of Environmental Quality Regulations (40 CFR 1500 -1508) supplemented by ER 200-2-2 the draft report and draft SEIS were circulated to interested agencies and the public for a minimum 45 calendar day review period from October 14 to November 28, 2005. Comments from the public were as follows:

Federal Agencies: U.S. Department of the Interior, no comment; US Fish and Wildlife Service; support; U.S. Environmental Protection Agency, strongly support, and Federal Emergency Management Agency, commented that the local floodplain administrator be contacted for review and permit requirements.

State Agencies: Arkansas Department of Environmental Quality; support; Arkansas Game and Fish Commission; no comment; Arkansas State Historic Preservation Officer, commented to monitor during construction; University of Arkansas at Little Rock, support. The State of Arkansas Clearinghouse supports the project; Arkansas Natural Heritage, supports; Arkansas Geological Commission, commented by providing geological information; and Arkansas Forestry Commission, supports the project.

Public and other Entities: BFI Waste Management Systems of Arkansas, L.L.C and Build Coleman Park, Inc. commented to oppose the project proposal for the Coleman Dairy acres. The League of Women Voters of Pulaski County, supports; Coalition of Little Rock Neighborhoods, supports; Heights Neighborhood Association, supports; Clayton Johnson, supports; Sharon Woodson Stark, supports; and Ralph Desmarais, support the project.

The state and agency comments had no objection to the project. Any recommendation included in the comments received was evaluated and, if practicable, was incorporated into the proposed action. The BFI and Build Coleman Park, Inc. preference for their initiative to acquire approximately 124 acres of Coleman Dairy rather than the project proposal for environmental protection by the acreage's acquisition was not incorporated into the proposed action. A complete list of public comments is in Attachment B.

Federal, state, and local agencies/offices, as well as other interested parties, will receive a copy of this SEIS and draft Record of Decision (ROD). A copy of the complete mailing list is available upon request. The following agencies, as well as other interested parties, will receive a copy of this SEIS:

U.S. Department of the Interior, Fish and Wildlife Service
U.S. Environmental Protection Agency, Region VI
U.S. Department of Agriculture, Natural Resources Conservation Service
Advisory Council on Historic Preservation
Arkansas Department of Environmental Quality
Arkansas Game and Fish Commission
Arkansas State Historic Preservation Officer
Arkansas Natural Heritage Commission
Arkansas Department of Health
Arkansas Natural Resources Commission
Audubon Arkansas
City of Little Rock Department of Parks and Recreation

After completion of the SEIS and all coordination, a draft ROD will be prepared for signature by either the Southwestern Division Commander or the Assistant Secretary of the Army for Civil Works. The draft ROD will include a description of the proposed action and alternatives analyzed, the selected plan, and adverse impacts associated with the plan. The draft ROD will describe justification for selection of the plan, mitigation measures for any adverse impacts from implementation, and a description of any impacts that cannot be avoided. The ROD will be prepared in full compliance with NEPA, ER 200-2-2, and CEQ guidelines.

13.0 MITIGATION

Acquisition of the designated 1,750 acres of bottomland hardwoods known as Fourche Bottoms and installation of the facilities proposed for the nature appreciation area will not significantly impact any wildlife or vegetative habitat in the area. Any adverse impacts resulting from the implementation of the proposed action will be temporary and minor in nature. Implementation of the proposed project will serve to preserve and protect Fourche Bottoms from future

development. No permanent or long-lasting affects are expected; therefore, no mitigation will be required.

14.0 COMPLIANCE WITH ENVIRONMENTAL LAWS AND REGULATIONS

Environmental compliance for the proposed action would be achieved upon: Coordination of this SEIS and draft ROD with appropriate agencies, organizations, and individuals with their review and comments; USFWS confirmation that the proposed action would not be likely to adversely affect any threatened or endangered species; receipt of the SHPO Determination of No Affect on Cultural Resources; receipt and acceptance or resolution of all USFWS Fish and Wildlife Coordination Act recommendations. The draft ROD will not be signed until the proposed action achieves environmental compliance with applicable laws and regulations, as described above. A Section 404(b)(1) Evaluation was signed by the LR District Engineer on May 8, 2006. A copy of the 404(b)(1) Evaluation is included as Attachment C.

15.0 PREPARERS

This SEIS has been prepared by U.S. Army Corps of Engineers, Little Rock District and contractor personnel. The Little Rock District may be contacted through Mr. James D. Ellis; U.S. Army Corps of Engineers, Little Rock District; Planning, Environmental, and Regulatory Division; CESWL-PR, P.O. Box 867, Little Rock, Arkansas 72201.

16.0 CONCLUSION

This SEIS evaluates the environmental impacts associated with the acquisition of 1,750 acres of bottomland hardwoods known as Fourche Bottoms and the installation of a nature appreciation facility. The project construction could result in temporary and minor impacts to water quality and some loss of habitat in the immediate project area; however, none of the impacts have been determined to warrant further investigation or mitigation measures. Therefore, this office has determined that the proposed action would have no significant detrimental impact upon the human or natural environment.

Attachment A

USFWS COORDINATION ACT REPORT (CAR)

United States Department of the Interior

FISH AND WILDLIFE SERVICE
1500 Museum Road, Suite 105
Conway, Arkansas 72032
Tel.: 501/513-4470 Fax: 501/513-4480

IN REPLY REFER TO:

September 3, 2004

Colonel Wally Z. Walters
District Engineer
U.S. Army Corps of Engineers
P.O. Box 867
Little Rock, Arkansas 72203-0867

Dear Colonel Walters:

The Fish and Wildlife Service (Service) has prepared this Fish and Wildlife Coordination Act report (FWCA) in response to the Corps of Engineers (Corps) request for planning assistance relative to the proposed acquisition of 1,750 acres of bottomland hardwoods within the Fourche Bottoms, and the development of a nature appreciation facility in the Fourche Creek flood plain, Pulaski County, Arkansas. The study is being conducted under Section 401(a) of the Water Resources Development Act of 1986 and sponsored by the city of Little Rock. Our report has been coordinated with the Arkansas Game and Fish Commission and their comments are attached This report is submitted in accordance with the Fish and Wildlife Coordination Act (48 Stat. 401. 16 U.S.C. as amended 616 et seq.), and has been coordinated with the Arkansas Game and Fish Commission.

Description of Study Area

The proposed project will be located in the northeastern portion of the Fourche Bayou basin, on the south side of the city of Little Rock. Fourche Bottoms is subject to periodic inundation, and is dominated by bottomland hardwoods and riverine swamps. Fourche Bottoms is unique in that it is an expanse of bottomland hardwood forest close to a major urban area. The area also provides flood water storage for a significant part of Pulaski and Saline Counties. The area is undeveloped but surrounded by commercial, industrial, and residential development which threatens to encroach into this wetland complex. The proposed acquisition of the 1,750 acre tract and development of a nature appreciation and recreation area would provide urban residents with a chance to experience and learn about this ecosystem and protect the natural wetland values and functions.

Description of Fish and Wildlife Resources

The 1,750 acre project area is a bottomland hardwood wetland complex. Vegetation within the area consists of bald cypress and water tupelo at the lower elevations and other bottomland hardwood species such as willow oak, post oak, cedar and American elm, sweetgum, and others. This habitat supports opossum; swamp rabbits; and several fur bearers including beaver,

raccoons, and fox. Migratory birds including songbirds, wading birds, and waterfowl use habitats with the tract as do many species of snakes, lizards, turtles, frogs, and salamanders.

Open water areas including Fourche Creek, sloughs, and ponds provide habitat for a variety of fish such as spotted bass, crappie, sunfishes, bullheads, and a variety of minnows.

In accordance with the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.), a list of endangered and threatened species that may occur in the project area should be provided to the Corps. No federally listed, threatened or endangered species are currently known to occur in the project impact area. Therefore, the proposed action would not impact any listed species.

Description of Potential Alternatives

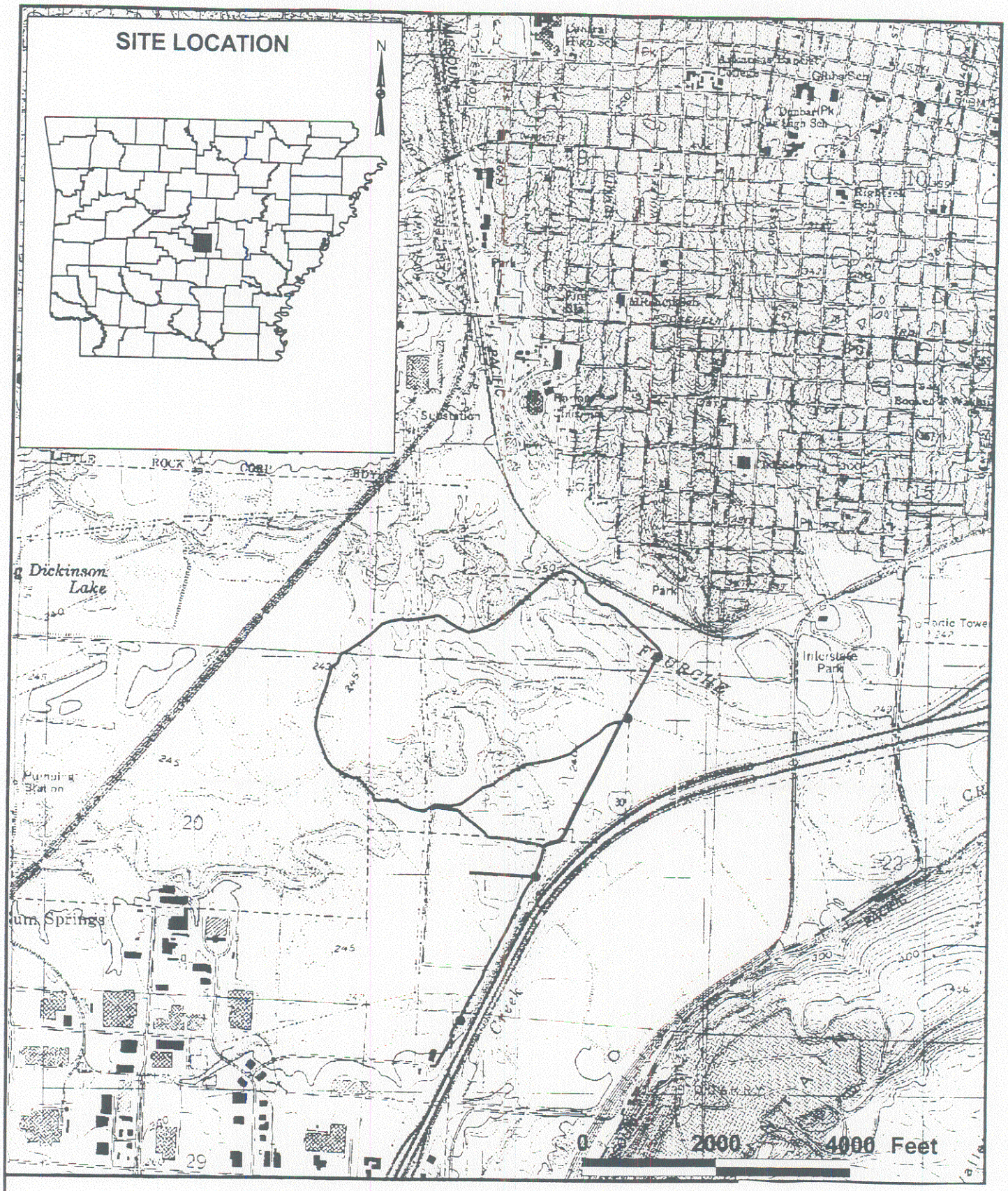
The no action alternative along with several other alternatives was explored. The action alternatives explored variations in development and location of park facilities within the 1,750 acre site in the Fourche Bottoms area.

The recommended alternative consists of the acquisition of 1,750 acres of bottom land hardwoods within Fourche Bottoms, located between the Missouri Railroad to the west and Interstate 30 to the east and south, (Figure 1) and development of a nature appreciation and recreational area. Entry to the park will be from the east end of 60th Street and existing roadway right of way would be used, although the road would need to be upgraded. Two parking areas would be developed and include bus space and disabled parking. Handicapped accessible restrooms would be provided near the parking areas. An open air visitor center/kiosk would be constructed in the northwest corner of the project. Approximately 3.0 mile of hiking trails, including 0.5 miles of handicapped accessible trails would be designed and located to showcase habitats and resources in Fourche Bottoms that are unique and of interest. Portions of the trails within wet or swampy area would consist of boardwalks and bridges. The facility would focus on the unique features of Fourche Bottoms, educational signs with information about habitats, wildlife, vegetation, and ecological processes would be posted throughout the area, along trails and at the visitor center/kiosk. Limited canoeing presently takes place in the project area and plans include removing man made obstacles and other debris in order to improve the canoeing experience.

Description of Potential Impacts

The proposed project consists of the acquisition of 1,750 acres of bottomland hardwood wetland complex and development of hiking trails, educational signs, parking, and restroom facilities.

The project would benefit the fish and wildlife populations and habitats within the area by protecting them from potential residential, commercial, and industrial encroachment and the resulting loss of habitat values. Further, the proposed project would protect the functional values of flood water storage and filtration which the tract provides.



PROJECT LOCATION MAP

Figure 1

The development of hiking trails and interpretative signage would provide the residents of Little Rock with opportunities to learn about and appreciate the bottomland wetland ecosystem and its vegetation, fish, and wildlife. Increased opportunities for recreation including hiking, fishing, and canoeing also would be provided. The hiking trails, boardwalk, and bridges will result in the permanent loss of approximately 3.64 acres of wetland habitat, however, there is an overall benefit to the wetland habitat obtained by the acquisition of the tract and protection against urban development. Development of parking areas, restroom facilities, and trails would result in a temporary increase in turbidity and sediment entering the adjacent waterway. Best management practices to control sediment and erosion will be implemented over the duration of the construction period. Long term benefits would outweigh temporary adverse impacts associated with construction. Limited canoeing presently occurs in the area, the project would improve canoeing opportunities by removing man made obstacles and debris. A temporary increase in sediment and turbidity would be offset by the increase in recreational opportunities.

After the initial development of project features, the Corps would turn over the operation and maintenance to the project sponsor, the city of Little Rock. This project provides opportunities for partnering to further improve educational, research, and habitat monitoring. The Audubon Arkansas plans to construct a nature center in the general vicinity of this tract. Each facility would contribute to the value of the other. Partnering with high schools and universities for research on trends in water quality, flooding and water filtration, vegetation, wildlife, aquatic life, and bottomland hardwood habitat values would be possible and is encouraged. Interpretive staff could be hired to provide information to visitors that would make visits to the park more enjoyable and meaningful. The city and the Arkansas Game and Fish (AGGFC) could partner to manage the habitats and resources within the 1,750 acre tract. The AGFC could provide advice on the management of habitats to improve wildlife values and improve fishery resources. For instance, fishery habitat and recreational fishery opportunities could be improved by cleaning out old borrow pits and ponds and stocking with fish. Further, the sponsor would need to provide personnel and funding to clean and maintain the facilities features such as restrooms, parking lots, trails, etc.

Recommendations and Service Position

The Service supports the further study and implementation of the proposed project since it will benefit fish and wildlife resources and provide opportunities for people to learn about and enjoy these resources. Our recommendations are as follows.

1. Construction of project facilities should be accomplished during periods of little to no rainfall, and best management practices to reduce erosion, sediment and turbidity should be used to minimize the amount of sediment in run-off from the construction area.

2. The sponsor should coordinate the management of habitats and fish and wildlife resources within the tract with the Arkansas Game and Fish Commission.

3. The sponsor should seek opportunities to partner with other entities that can assist with furthering knowledge of the resources and improve or monitor habitat values within the

tract such as universities and other agencies and organizations within the community.

We appreciate the opportunity of working with your staff and the opportunity to provide these comments.

Sincerely,

Allan J. Mueller
Field Supervisor

cc: Bob Leonard, Arkansas Game and Fish Commission, Little Rock, AR
Cindy Osborne, Arkansas Natural Heritage Commission, Little Rock, AR
Kenneth Colbert, Arkansas Soil and Water Conservation Commission, Little Rock, AR
Steve Drown, Arkansas Department of Environmental Quality, Little Rock, AR
Wanda Boyd, Environmental Protection Agency, Dallas, TX

Arkansas Game & Fish Commission

2 Natural Resources Drive Little Rock, Arkansas 72205

David Cozad
Deputy Director

Loren Hitchcock
Deputy Director

Scott Henderson
Director

September 3, 2004

Allan J. Mueller
USFWS
1500 Museum Rd., Suite 105
Conway, AR 72032

Dear Mr. Mueller:

Our agency is in receipt of your draft Fish and Wildlife Coordination Act Report that evaluates the request for planning assistance relative to the proposed acquisition of 1,750 acres of bottomland hardwoods within the Fourche Bottoms, and the development of a nature appreciation facility in the Fourche Creek flood plain, Pulaski County, Arkansas.

Biologists from our agency have reviewed this report and concur with the recommendations in this draft report.

Our agency appreciates the opportunity to review these comments and looks forward to working cooperatively with your agency in the future.

Sincerely,

Robert K. Leonard

Robert K. Leonard, Biologist
River Basins Division

Cc: Doyle Shook
Mike Gibson

Attachment B

CORRESPONDENCE

MAY 2 2006

Regulatory Office

STANDARD PERMIT MODIFICATION NO. **11945-3**

Wm. Doug Ford, PE
Pollution Management, Incorporated
3512 South Shackleford Road
Little Rock, Arkansas 72205-6933

Dear Mr. Ford:

Please refer to your submittal dated January 11, 2006, on behalf of BFI Waste Systems of Arkansas, LLC, and to the site visit of March 16, 2006, which you and representatives of BFI conducted with Regulatory Office personnel. To expand their existing landfill operation, BFI proposes to place dredged and fill material in approximately 0.16 acre of wetlands. The project is located in section 19, T. 1 N., R. 12 W., in Little Rock, Pulaski County, Arkansas.

Under authority of Section 404 of the Clean Water Act (33 U.S. Code 1344), Department of the Army Permit No. **11945**, which authorized the discharge of dredged material in a 1.9-acre wetland, is hereby modified as follows: The placement of dredged and fill material in waters of the United States associated with expansion of the existing landfill is hereby authorized; the waters of the US which will be filled consist of 0.16 acre of wetlands, designated as Wetland #4 on the enclosed Sheet 2 of 5. The time limit for completing the work authorized ends on **December 31, 2009**. Please note that the previously authorized work of filling 1.9 acres of wetland was not accomplished; therefore, the mitigation for that work was not done.

This letter becomes a part of and should be attached to the original permit, No. **11945**. The activity shall be constructed/conducted and maintained as shown on the enclosed drawings, Sheets 1 and 2 of 5, and in compliance with the applicable conditions of the original permit and the following Special Condition. It is the permittee's responsibility to understand and comply with the conditions of the permit and to make their employees or agents involved in the operation continuously aware of the permit conditions. If changes are proposed in the design or location of the facility, the permittee is required by law to submit revised plans to the District Engineer for approval before construction of the change is begun.

Special Condition:

For the filling of 0.16 acre of wetlands at the landfill, a portion of the mitigation shall be done previously to the filling of wetlands at the landfill and a portion shall be done

concurrently with the filling of wetlands at the landfill. This mitigation shall be the creation of wetlands at Coleman Park.

To mitigate for filling 0.16 acre of wetlands, the applicant proposes to develop Coleman Park, which would be built in phases to ultimately include a fishing pond, over 60 acres of wetlands, family recreation areas, and flood storage, as shown on the enclosed Sheets 3, 4, and 5 of 5.

Corps personnel have reviewed the submitted delineation of wetlands and other waters of the United States for the 100-acre area which will be developed into Coleman Park and concur with the findings that the project area contains the following jurisdictional waters: Fourche Creek, Coleman Creek, and Rock Creek, and 7.17 acres of wetlands. This approved jurisdictional determination is valid for a period of 5 years from the date of this letter unless new information warrants revision of the determination before the expiration date. Before any work is done in one of these jurisdictional waters, please contact the Regulatory Office and provide detailed plans to determine if further Department of the Army authorization is required.

Please read the attached "Notification of Administrative Appeal Options and Process and Request for Appeal" which describes your options regarding this action.

If you have any questions, please contact Mrs. Elaine Edwards, Environmental Engineer, at (501) 324-5295 and refer to DA Permit No. **11945-3**.

Sincerely,

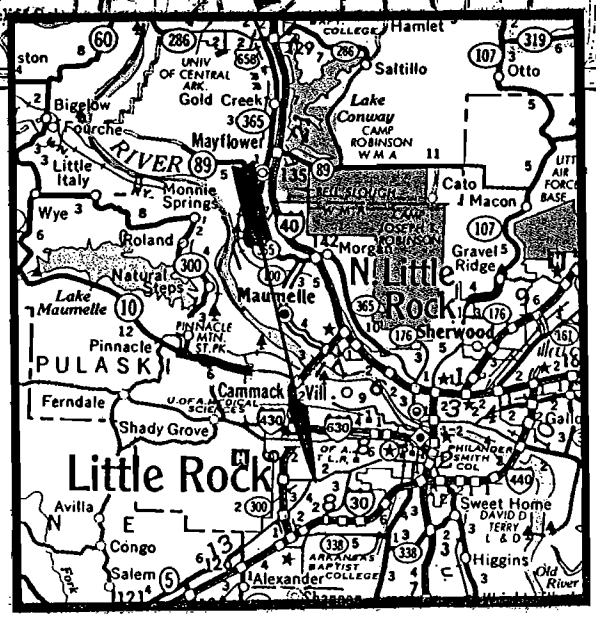
SIGNED

Jerry L. Harris, PE
Chief, Regulatory Office

Enclosures

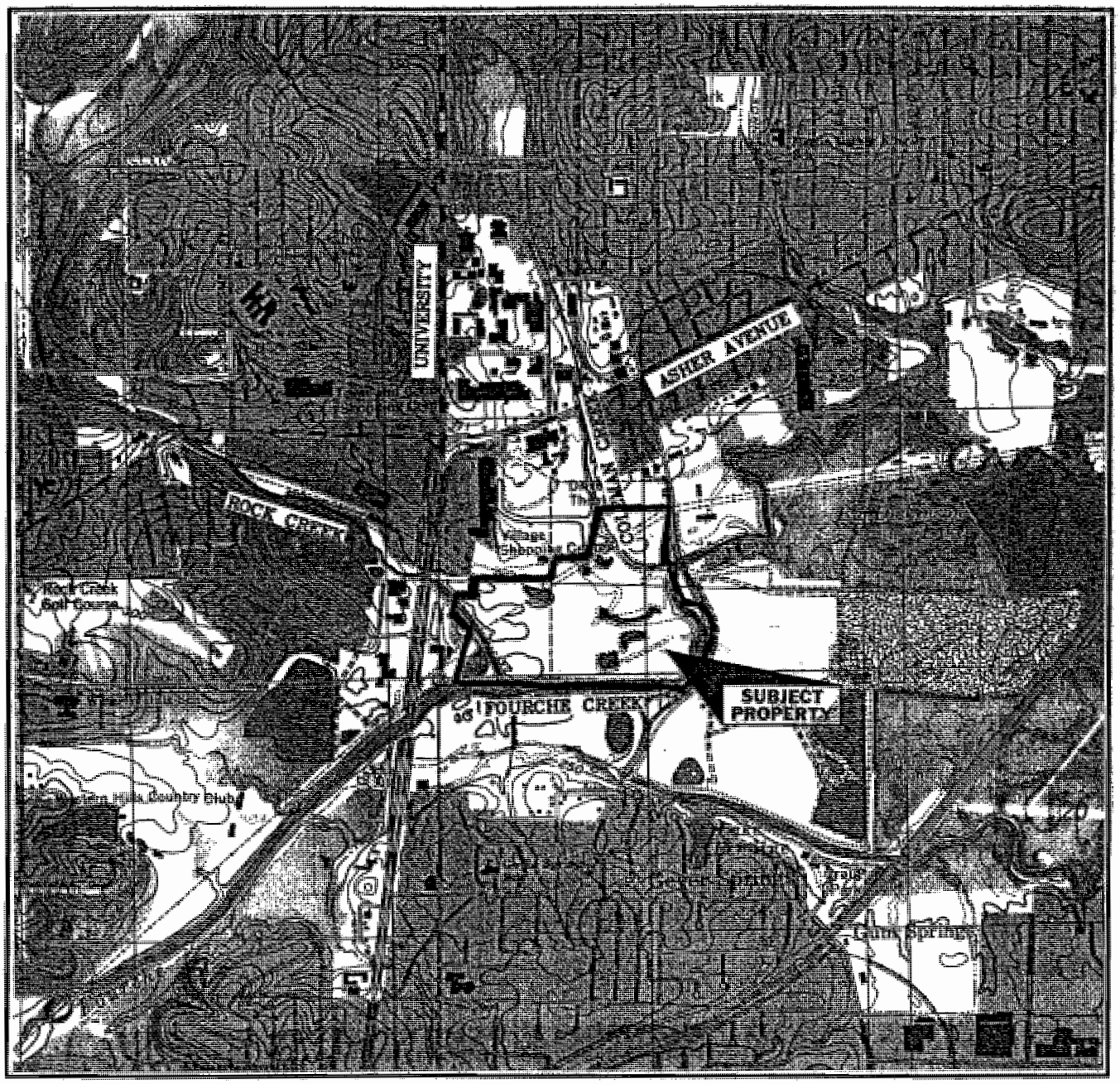
CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Copy Furnished:
Proj Mgr, Pine Bluff PO, w/cy dwgs
Planning Office (Attention: Ms. Julia Smethurst)
Regulatory Enf, w/cy dwgs
Team Leader, Regulatory Office



BFI Waste Systems of Arkansas, LLC
LANDFILL

ACTION NO. **11945-3**
BFI Waste Systems of Arkansas
Wetland Fill, Sec. 19, T1N, R12W,
Little Rock, Pulaski County, AR
April 2006

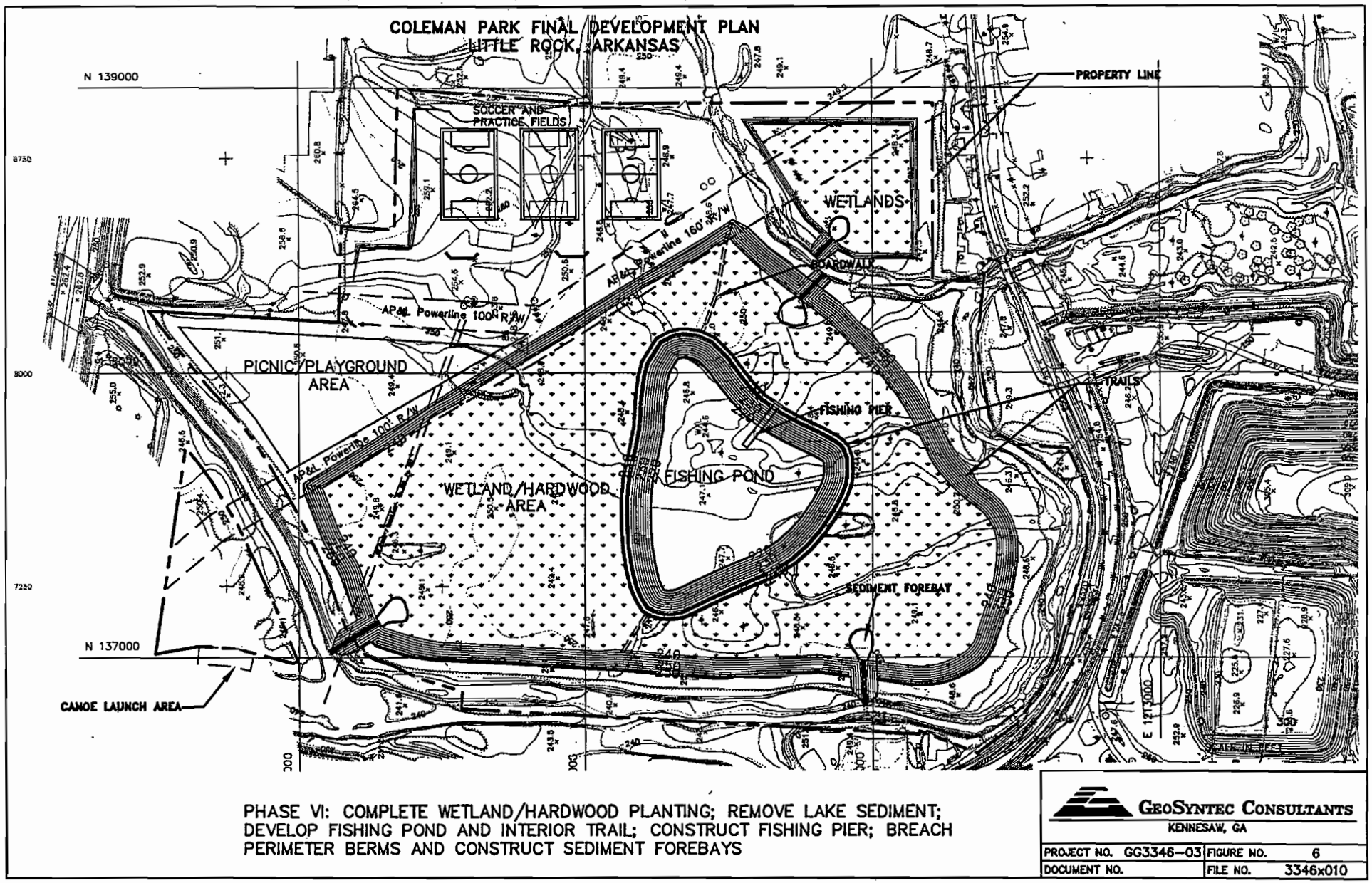


N
W E
S

Coleman Park Property

POLLUTION MANAGEMENT INC.
3512 SOUTH SHACKLEFORD
LITTLE ROCK, ARKANSAS 72205

ACTION NO. **11945-3**
BFI Waste Systems of Arkansas
Wetland Fill, Sec. 19, T1N, R12W,
Little Rock, Pulaski County, AR
April 2006 Sheet 3 of 5

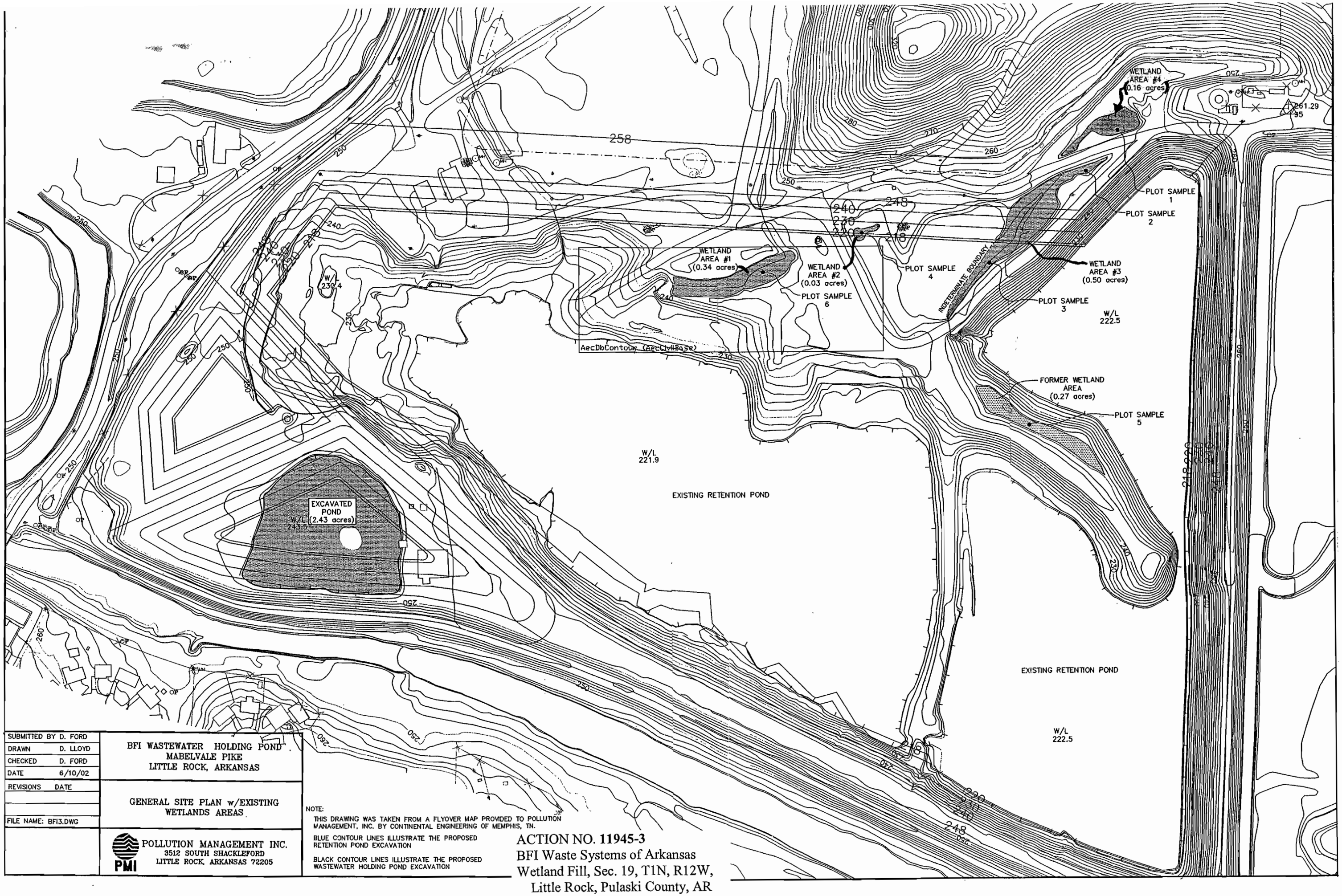


PHASE VI: COMPLETE WETLAND/HARDWOOD PLANTING; REMOVE LAKE SEDIMENT; DEVELOP FISHING POND AND INTERIOR TRAIL; CONSTRUCT FISHING PIER; BREACH PERIMETER BERMS AND CONSTRUCT SEDIMENT FOREBAYS

GeoSyntec Consultants
KENNESAW, GA

PROJECT NO. GG3346-03		FIGURE NO.	6
DOCUMENT NO.		FILE NO.	3346x010

ACTION NO. **11945-3**
BFI Waste Systems of Arkansas
Wetland Fill, Sec. 19, T1N, R12W,
Little Rock, Pulaski County, AR
April 2006 Sheet 5 of 5



SUBMITTED BY	D. FORD
DRAWN	D. LLOYD
CHECKED	D. FORD
DATE	6/10/02
REVISIONS	DATE
FILE NAME:	BFI3.DWG

BFI WASTEWATER HOLDING POND
MABELVALE PIKE
LITTLE ROCK, ARKANSAS

GENERAL SITE PLAN w/EXISTING WETLANDS AREAS

POLLUTION MANAGEMENT INC.
3512 SOUTH SHACKLEFORD
LITTLE ROCK, ARKANSAS 72205

NOTE:
THIS DRAWING WAS TAKEN FROM A FLYOVER MAP PROVIDED TO POLLUTION MANAGEMENT, INC. BY CONTINENTAL ENGINEERING OF MEMPHIS, TN.

BLUE CONTOUR LINES ILLUSTRATE THE PROPOSED RETENTION POND EXCAVATION

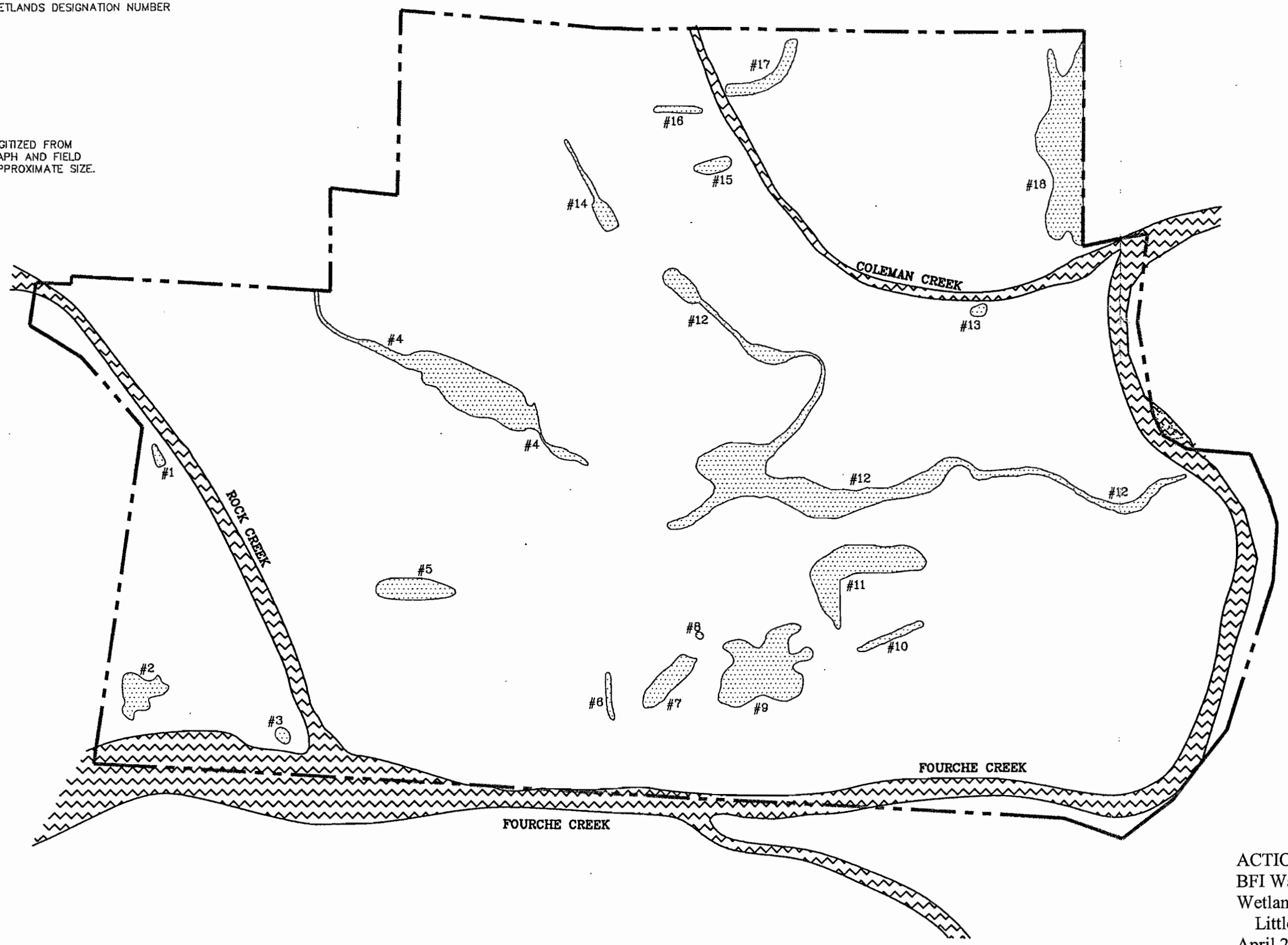
BLACK CONTOUR LINES ILLUSTRATE THE PROPOSED WASTEWATER HOLDING POND EXCAVATION

ACTION NO. **11945-3**
BFI Waste Systems of Arkansas
Wetland Fill, Sec. 19, T1N, R12W,
Little Rock, Pulaski County, AR
April, 2006 Sheet 2 of 5

— — — — COLEMAN PROPERTY BOUNDARY

#XX WETLANDS AREA/WETLANDS DESIGNATION NUMBER

NOTE:
THE WETLANDS AREAS WERE DIGITIZED FROM AN INFRARED AERIAL PHOTOGRAPH AND FIELD VERIFIED FOR LOCATION AND APPROXIMATE SIZE.



ACTION NO. **11945-3**
BFI Waste Systems of Arkansas
Wetland Fill, Sec. 19, T1N, R12W,
Little Rock, Pulaski County, AR
April 2006 Sheet 4 of 5

POLLUTION MANAGEMENT INC.
3512 SOUTH SHACKLEFORD
LITTLE ROCK, ARKANSAS 72205
(501) 221-7122 fax (501) 221-7775

SUBMITTED BY	D. FORD	DATE	sep 23 2004	SCALE: 1"=300'	WETLANDS STUDY OLD COLEMAN DAIRY PROPERTY ASHER AVENUE LITTLE ROCK, ARKANSAS
DRAWN	D. LLOYD	JOB NUM	BFII-3138		PROPERTY BOUNDARY w/WETLANDS AREAS
CHECKED	D. FORD	FILE NAME	FIG 4		

STATE OF ARKANSAS
Department of Finance and Administration

OFFICE OF INTERGOVERNMENTAL SERVICES
1515 West Seventh Street, Suite 417
Post Office Box 8031
Little Rock, Arkansas 72203-8031
Phone: (501) 682-1074
Fax: (501) 682-5206
http://www.state.ar.us/dfa

November 14, 2005

Ms. Julia A. Smethurst, Project Manager
Department of the Army
Little Rock District, Corps of Engineers
P. O. Box 867
Little Rock, AR 72203-0867

RE: Fourche Bayou Basin, Arkansas Public Draft Limited Reevaluation Report/Supplemental Environmental Impact Statement for Acquisition of 1,750 Acres of Bottomland with Nature Appreciation Facilities

Dear Ms. Smethurst:

The State Clearinghouse has received the above document pursuant to the Arkansas Project Notification and Review System.

To carry out the review and comment process, this document was forwarded to members of the Arkansas Technical Review Committee. Resulting comments received from the Technical Review Committee which represents the position of the State of Arkansas are attached.

The State Clearinghouse wishes to thank you for your cooperation with the Arkansas Project Notification and Review System.

Sincerely,

Tracy L. Copeland, Manager
State Clearinghouse

TLC/th
Enclosure
CC: Randy Young, ANRC

Arkansas Natural Resources Commission

J. Randy Young, PE
Executive Director

101 East Capitol, Suite 350
Little Rock, Arkansas 72201
http://www.anrc.arkansas.gov/

Phone: (501) 682-1611
Fax: (501) 682-3991
E-mail: anrc@arkansas.gov

Mike Huckabee
Governor

MEMORANDUM

TO: Mr. Tracy Copeland, Manager
State Clearinghouse

FROM: Mr. J. Randy Young, P.E., Chairman
Technical Review Committee

SUBJECT: Fourche Bayou Basin, Arkansas
Public Draft
Limited Reevaluation Report/Supplemental Environmental Impact Statement for Acquisition of 1,750-Acres of Bottomland with Nature Appreciation Facilities

DATE: November 10, 2005

Members of the Technical Review Committee have reviewed the above referenced project; the Limited Reevaluation Report (LRR) and the National Environmental Policy (NEPA) is the decision document for potential implementation of the unconstructed environmental preservation increment - the acquisition of 1,750 bottomland acres with nature appreciation features. The report updates the costs and the environmental factors, conditions, and considerations. It identifies changes and/or modifications from the authorized plan.

The Committee supports this project. Agency comments are included for your review.

The opportunity to comment is appreciated.

JRY/ddavis

STATE OF ARKANSAS
OFFICE OF INTERGOVERNMENTAL SERVICES

Department of Finance and Administration

1515 West Seventh Street, Suite 412
Post Office Box 8031
Little Rock, Arkansas 72203-8031
Phone: (501) 682-1074
Fax: (501) 682-5206
http://www.state.ar.us/dfa

MEMORANDUM

#1889

TO: All Technical Review Committee Members

FROM: Tracy L. Copeland, Manager - State Clearinghouse

DATE: October 7, 2005

SUBJECT: FOURCHE BAYOU BASIN, ARKANSAS -(PUBLIC DRAFT)-LIMITED REEVALUATION REPORT & SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT FOR ACQUISITION OF 1,750-ACRES OF BOTTOMLAND WITH NATURE APPRECIATION FACILITIES

Please review the above stated document under provisions of Section 404 of the Clean Water Act, Section 102(2) of the National Environmental Policy Act of 1969 and the Arkansas Project Notification and Review System.

Your comments should be returned by October 24, 2005 to - Mr. Randy Young, Chairman, Technical Review Committee, 101 E. Capitol, Suite 350, Little Rock, AR 72203.

If you have no reply within that time we will assume you have no comments and will proceed with the sign-off.

NOTE: It is Imperative that your response be in to the ASWCC office by the date requested. Should your Agency anticipate having a response which will be delayed beyond the stated deadline for comments, please contact Ms. Debby Davis of the ASWCC at (501) 682-1611 or the State Clearinghouse Office.

_____ Support

_____ Do Not Support (Comments Attached)

_____ Comments Attached

_____ Support with Following Conditions

✓ No Comments

_____ Non-Degradation Certification Issues (Applies to ADEQ Only)

Name(print) Collins Agency ANRC Date 11-1-05

Telephone Number _____

STATE OF ARKANSAS

Department of Finance and Administration

OFFICE OF INTERGOVERNMENTAL SERVICES

1515 West Seventh Street, Suite 412
Post Office Box 8031
Little Rock, Arkansas 72203-8031
Phone: (501) 682-1074
Fax: (501) 682-5206
http://www.state.ar.us/dfa

MEMORANDUM

TO: All Technical Review Committee Members

FROM: Tracy L. Copeland, Manager - State Clearinghouse TLC

DATE: October 7, 2005

SUBJECT: FOURCHE BAYOU BASIN, ARKANSAS -(PUBLIC DRAFT)-LIMITED REEVALUATION REPORT & SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT FOR ACQUISITION OF 1,750-ACRES OF BOTTOMLAND WITH NATURE APPRECIATION FACILITIES

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✓ Support

_____ Do Not Support (Comments Attached)

_____ Comments Attached

_____ Support with Following Conditions

_____ No Comments

_____ Non-Degradation Certification Issues (Applies to ADEQ Only)

Name(print) Kevin Dorman Agency ADEQ Date 10-12-05

Telephone Number 501-682-0645

STATE OF ARKANSAS

Department of Finance and Administration

OFFICE OF INTERGOVERNMENTAL SERVICES

1515 West Seventh Street, Suite 412
Post Office Box 8031
Little Rock, Arkansas 72203-8031
Phone: (501) 682-1074
Fax: (501) 682-5206
http://www.state.ar.us/dfa

MEMORANDUM

TO: All Technical Review Committee Members

FROM: Tracy L. Copeland, Manager - State Clearinghouse

DATE: October 7, 2005

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_____ Support

_____ Comments Attached

_X_ No Comments

_____ Do Not Support (Comments Attached)

_____ Support with Following Conditions

_____ Non-Degradation Certification Issues (Applies to ADEQ Only)

Name(print) HAROLD R. SEIBERT Agency Division of Engineering Arkansas Department of Health Date 10-12-05

Telephone Number 501-661-2623

4815 West Markham
Little Rock, AR 72205-3867

Bob

STATE OF ARKANSAS

Department of Finance and Administration

OFFICE OF INTERGOVERNMENTAL SERVICES

1515 West Seventh Street, Suite 412
Post Office Box 8031
Little Rock, Arkansas 72203-8031
Phone: (501) 682-1074
Fax: (501) 682-5206
http://www.state.ar.us/dfa

MEMORANDUM

Received
OCT 13 2005
River Basins

TO: All Technical Review Committee Members

FROM: Tracy L. Copeland, Manager - State Clearinghouse TLC

DATE: October 7, 2005

SUBJECT: FOURCHE BAYOU BASIN, ARKANSAS -(PUBLIC DRAFT)-LIMITED REEVALUATION REPORT & SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT FOR ACQUISITION OF 1,750-ACRES OF BOTTOMLAND WITH NATURE APPRECIATION FACILITIES

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_____ Support	_____ Do Not Support (Comments Attached)
_____ Comments Attached	_____ Support with Following Conditions
✓ No Comments	_____ Non-Degradation Certification Issues (Applies to ADEQ Only)

Name(print) Robert K. Leonard Agency AGFC Date 10-14-05

Telephone Number 479-7301

STATE OF ARKANSAS

Department of Finance and Administration

OFFICE OF INTERGOVERNMENTAL SERVICES

1515 West Seventh Street, Suite 412
Post Office Box 8031
Little Rock, Arkansas 72203-8031
Phone: (501) 682-1074
Fax: (501) 682-5206
http://www.state.ar.us/dfa

MEMORANDUM

TO: All Technical Review Committee Members

FROM: Tracy L. Copeland, Manager - State Clearinghouse

DATE: October 7, 2005

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_____ Support

_____ Do Not Support (Comments Attached)

_____ Comments Attached

_____ Support with Following Conditions

__✓__ No Comments

_____ Non-Degradation Certification Issues (Applies to ADEQ Only)

Name(print) Steve Jones Agency ADEQ Date 10-17-05

Telephone Number 501-682-7311

STATE OF ARKANSAS

RECEIVED
05 OCT 28 AM 9:27
NATURAL RESOURCES COMMISSION

OFFICE OF INTERGOVERNMENTAL SERVICES

Department of Finance and Administration

1515 West Seventh Street, Suite 412
Post Office Box 8031
Little Rock, Arkansas 72203-8031
Phone: (501) 682-1074
Fax: (501) 682-5206
http://www.state.ar.us/dfa

MEMORANDUM

TO: All Technical Review Committee Members

FROM: Tracy L. Copeland, Manager - State Clearinghouse TLC

DATE: October 7, 2005

SUBJECT: FOURCHE BAYOU BASIN, ARKANSAS -(PUBLIC DRAFT)-LIMITED REEVALUATION REPORT & SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT FOR ACQUISITION OF 1,750-ACRES OF BOTTOMLAND WITH NATURE APPRECIATION FACILITIES

Please review the above stated document under provisions of Section 404 of the Clean Water Act, Section 102(2) of the National Environmental Policy Act of 1969 and the Arkansas Project Notification and Review System.

Your comments should be returned by October 24, 2005 to - Mr. Randy Young, Chairman, Technical Review Committee, 101 E. Capitol, Suite 350, Little Rock, AR 72203.

If you have no reply within that time we will assume you have no comments and will proceed with the sign-off.

NOTE: It is Imperative that your response be in to the ASWCC office by the date requested. Should your Agency anticipate having a response which will be delayed beyond the stated deadline for comments, please contact Ms. Debby Davis of the ASWCC at (501) 682-1611 or the State Clearinghouse Office.

_____ Support	_____ Do Not Support (Comments Attached)
✓ Comments Attached	_____ Support with Following Conditions
_____ No Comments	_____ Non-Degradation Certification Issues (Applies to ADEQ Only)

Name(print) BILL PRIOR Agency AGC Date 10-20-05

Telephone Number 683-0117

Arkansas GEOLOGICAL COMMISSION

VARDELLE PARHAM GEOLOGY CENTER•3815 WEST ROOSEVELT ROAD• LITTLE ROCK, ARKANSAS 72204

Mike Huckabee
Governor
Bekki White
Director and State Geologist

October 14, 2005

Mr. Randy Young
Chairman, Technical Review Committee
101 E. Capitol, Suite 350
Little Rock, Arkansas 722o3

Dear Mr. Young:

This letter is a response to your request foe comments on the Public Draft of the Supplemental Environmental Report on 1,750 acre Fourche Bayou Basin Bottomland and Nature Center. The following comments pertain to the geology section in the Supplemental EIS Public Draft Report.

The geology description on page 10 of this report does not mention that Granite Mountain that lies along the southeastern side of this bottom land area is a hill composed of Cretaceous age solid igneous rock with the composition of nepheline syenite. This igneous rock may underlie some of the stream deposits next to Granite Mountain itself. The other geologic descriptions that are given are generalized but are basically correct.

If you have any questions about these comments please feel free to contact me.

Sincerely,

William Lee Prior

William Lee Prior
Geologist Supervisor

PHONE: (501) 296-1877; FAX: (501) 663-7360
agc@arkansas.gov
www.state.ar.us/agc/agc.htm
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STATE OF ARKANSAS

Department of Finance and Administration

OFFICE OF INTERGOVERNMENTAL SERVICES

1515 West Seventh Street, Suite 412
Post Office Box 8031
Little Rock, Arkansas 72203-8031
Phone: (501) 682-1074
Fax: (501) 682-5206
http://www.state.ar.us/dfa

MEMORANDUM

TO: All Technical Review Committee Members

FROM: Tracy L. Copeland, Manager - State Clearinghouse TLC

DATE: October 7, 2005

SUBJECT: FOURCHE BAYOU BASIN, ARKANSAS -(PUBLIC DRAFT)-LIMITED REEVALUATION REPORT & SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT FOR ACQUISITION OF 1,750-ACRES OF BOTTOMLAND WITH NATURE APPRECIATION FACILITIES

Please review the above stated document under provisions of Section 404 of the Clean Water Act, Section 102(2) of the National Environmental Policy Act of 1969 and the Arkansas Project Notification and Review System.

Your comments should be returned by October 24, 2005 to - Mr. Randy Young, Chairman, Technical Review Committee, 101 E. Capitol, Suite 350, Little Rock, AR 72203.

If you have no reply within that time we will assume you have no comments and will proceed with the sign-off.

NOTE: It is Imperative that your response be in to the ASWCC office by the date requested. Should your Agency anticipate having a response which will be delayed beyond the stated deadline for comments, please contact Ms. Debby Davis of the ASWCC at (501) 682-1611 or the State Clearinghouse Office.

✓ Support _____ Do Not Support (Comments Attached)

_____ Comments Attached _____ Support with Following Conditions

_____ No Comments _____ Non-Degradation Certification Issues (Applies to ADEQ Only)

Name(print) James L. Norman Agency Ark. Fish & Game Date 10/20/05

Telephone Number 501-296-1803

Ellis, Jim D SWL

From: Cindy Milazzo [cdmilazzo@ualr.edu]
Sent: Monday, November 28, 2005 4:16 PM
To: Ellis, Jim D SWL
Cc: 'Joel Anderson'
Subject: DSEIS for Fourche Bayou Basin

Mr. Ellis:

The University of Arkansas at Little Rock has just become aware of the draft Fourche Bayou Basin Limited Reevaluation Report. This plan to acquire the 1,750 acres of bottomland hardwoods for flood storage and environmental preservation as well as to construct nature appreciation areas is one that the University supports with a degree of enthusiasm. After review of the drawings, it is apparent that this plan is consistent with the long range plans of the University as well as consistent with the City of Little Rock's Park Master Plan.

We understand that today is the last day for public comments, but request that you do not hesitate to contact me if you have questions.

Sincerely,

Cynthia D. Milazzo
Associate Vice Chancellor
for Facilities and Services
University of Arkansas at Little Rock
2801 South University Avenue
Little Rock, Arkansas 72204
501/569-3202 – voice
501/569-8611 - fax

League of Women Voters of Pulaski County
7200 Briarwood Dr.
Little Rock, Arkansas 72205-4212
(501) 664-1136

November 28, 2005

TO: The Corp of Engineers

FROM: League of Women Voters of Pulaski County

RE: Comment on proposed reclamation of the Fouche Wetlands

The League of Women Voters has long supported the Fouche's clean up and return to a wetlands. We concur with and support the City of Little Rock's plan to develop the Fouche as a wetlands park, With the help of Audubon Arkansas, the City is making progress toward that goal. However, progress is slow, and the polluted areas identified by your study call for more financial and technical resources then the City and Aubudon Arkansas have available to them. We are especially concerned about the proposed expansion of the BFI Landfill, an existing landfill sited in the Fouche wetland. It is an example of a use that is inappropriate in a reclaimed wetland. We hope that as your plans for restoring the Fouche proceed, the BFI landfill will be shut down and the Fouche protected from possible drainage or flooding from it.

The League supports the restoration of the Fouche, and is supportive of your reclamation plan for it.

Ruth Bell

Ruth Bell, Action Chair, League of Women Voters of Pulaski County

Ellis, Jim D SWL

From: Jim Lynch [jrlynch@ualr.edu]
Sent: Monday, November 28, 2005 12:32 PM
To: Ellis, Jim D SWL
Cc: Smethurst, Julia A SWL
Subject: Fourche Bottomland Acquisition

MR. ELLIS --

I have received and read the Corps of Engineers DSEIS for the Fourche Bottomlands Acquisition. On behalf of the Coalition of Little Rock Neighborhoods I believe this proposal to greatly enhance the flood control protections in the City of Little Rock as well as provide an outstanding opportunity to conserve and protect for public enjoyment the Fourche Creek vicinity. The proposal to acquire acreage and construct public nature appreciation facilities closely dovetails with the Master Parks Plan of the City of Little Rock. This approach also reinforces the plans of Audubon Arkansas to restore the Fource Creek area and make it available as an outdoor environmental education asset for our community.

The Coalition of Little Rock Neighborhoods, organized since 1990, endorses the Fource Bottomlands Acquisition plan. Would you please add our endorsement to the public comments as solicited by the Fact Sheet dated October 20 2005?

Thank you.

JIM LYNCH

President
Coalition of Little Rock Neighborhoods
c/o 16 Lenon Drive
Little Rock, Arkansas 72207

Daytime 501.569.3302
Evening 501.661.0406

Ellis, Jim D SWL

From: Trudie Cromwell [twcromwell@comcast.net]
Sent: Monday, November 28, 2005 4:13 PM
To: Ellis, Jim D SWL
Cc: Kathy Johnson; 'Jim Lynch'
Subject: Support for Project Fourche Bayou Basin
Attachments: HNA letter twc.doc

Mr. Ellis,

Please accept the Height's Neighborhood Association letter of endorsement for the Corps' Fourche Bayou Basin acquisition project, see attachment.

Thank you.

Trudie

Trudie Cromwell, Vice President, HNA
5400 Country Club Blvd., 72207
twcromwell@comcast.net
Phone: 501-663-8668
Cell: 501-350-1099
Fax: 501-671-6936

Heights Neighborhood Association
P.O. Box 7228
Little Rock, Arkansas 72217

November 28, 2005

Re: Project Name — Fourche Bayou Basin

Mr. Jim Ellis
c/o Dept. of the Army
LR District Corps of Engineers

Dear Mr. Ellis:

The Heights Neighborhood Association strongly endorses the proposal of the Corps of Engineers to acquire approximately 1,750 acres of the Fourche Bayou Basin of bottomland hardwoods for flood control and environmental preservation and design. We anticipate that the area would remain substantially undeveloped, but that if you were to get the funds appropriated by Congress, the Corps would build boardwalks and interpretative graphics for public use in this area.

This idea closely parallels the City of Little Rock's Master Parks Plan for the Fourche Bottoms and the Arkansas Audubon plant to restore the Fourche vicinity into a one-of-a-kind urban environmental park.

Yours truly,

Trudie Cromwell

Trudie Cromwell, Vice President
Heights Neighborhood Association

cc: Kathy Johnson, President, HNA
Jim Lynch, President, Coalition of Little Rock Neighborhoods

Ellis, Jim D SWL

From: clayton johnson [chjohnson@uams.edu]
Sent: Monday, November 28, 2005 4:34 PM
To: Ellis, Jim D SWL
Subject: Fourche Bayou Basin

Dear sirs and madams,

> I believe that Allied Waste, Inc. dba BFI, Inc. with a Model Fill Land
> Fill in the middle of the two Fourche Creek branches should not be
> allowed a permit to expand.
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> As shown in ADEQ, Genesis Environmental Consulting, Inc. and BFI's
> Second and Third Quarter Leachate Reports, there are problems.
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> As we know, engineers can fix any problem given enough time and money.
> But the Fourche Creek issue is one that common sense can control.
> First, we should never have allowed a landfill where three major creeks converge:
> Fourche, Coleman and Rock which drain much of western Pulaski County.
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>
> The Coleman Farm area, which BFI is advertising in the Arkansas
> Democrat Gazette to acquire support for permit to increase the
> capacity of the existing landfill, by enticing local residents with
> the promise of a park sometime in the future. BFI also needs to
> harvest the soil from Coleman Farm for cover for the landfill. This
> dirt will be moved by conveyor belt across Mabelvale Pike. Ultimately
> this 50" pit is planned to form a fishing lake in Coleman Park.
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>
> According to the Corp maps, Coleman Farm is in the 500 year flood
> plain, the 100 year flood plain, the floodway, contain wetlands and in
> the Additional Areas to be Acquired.
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>
> We would like to see the Corp's Fourche Creek Project go forward
> without the additional problems brought on by an expanding BFI, Inc. landfill.

Also, mayor Dailey says he wants to know when the end date is - this seems to be something that is unlikely to be uncovered since BFI has made these agreements before and then not kept them.

It is time they shut this operation down as previously agreed and move to a location more fitting to place the garbage of all the surrounding counties (meaning, they need to start putting their trash in their own back yards).
>

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>
>
> Thank you for your consideration,

Clayton Johnson - Pres./Meriwether NA

Vice Pres./CLRN

Ellis, Jim D SWL

From: BnFree2@aol.com

Sent: Tuesday, November 22, 2005 10:09 AM

To: Ellis, Jim D SWL

Cc: Jim_Lynch@swbell.net; pamadcock@sbcglobal.net

Subject: RE:sws:DSEIS Fourche Bayou Basin Comment -BFI, Inc.

I believe that Allied Waste, Inc. dba BFI, Inc. with a Model Fill Land Fill in the middle of the two Fourche Creek branches should not be allowed a permit to expand.

As shown in ADEQ, Genesis Environmental Consulting, Inc. and BFI's Second and Third Quarter Leachate Reports, there are problems.

As we know, engineers can fix any problem given enough time and money. But the Fourche Creek issue is one that common sense can control. First, we should never have allowed a landfill where three major creeks converge: Fourche, Coleman and Rock which drain much of western Pulaski County.

The Coleman Farm area, which BFI is advertising in the Arkansas Democrat Gazeete to acquire support for permit to increase the capacity of the existing landfill, by enticing local residents with the promise of a park sometime in the future. BFI also needs to harvest the soil from Coleman Farm for cover for the landfill. This dirt will be moved by conveyor belt across Mabelvale Pike. Ultimately this 50" pit is planned to form a fishing lake in Coleman Park.

According to the Corp maps, Coleman Farm is in the 500 year flood plain, the 100 year flood plain, the floodway, contain wetlands and in the Additional Areas to be Acquired.

We would like to see the Corp's Fourche Creek Project go forward without the additional problems brought on by an expanding BFI, Inc. landfill.

Thank you for your consideration,

Sharon Woodson Stark
Little Rock

Ellis, Jim D SWL

From: Smethurst, Julia A SWL
Sent: Monday, November 28, 2005 1:41 PM
To: 'Jim Lynch'
Cc: Ellis, Jim D SWL
Subject: RE: Fourche Bottoms study mailing list

Thanks for your comments. We will add you to the notification list.

Julia Smethurst
Project Manager

mailto:julia.a.smethurst@usace.army.mil
tel: (501) 324-5602 fax: (501) 324-5605
Planning Section, Little Rock District
US Army Corps of Engineers
700 W. Capitol
P.O.Box 867
Little Rock, Arkansas 72203-0867

From: Jim Lynch [mailto:jrlynch@ualr.edu]
Sent: Monday, November 28, 2005 12:49 PM
To: Smethurst, Julia A SWL
Subject: Re: FourcheMapNov15 2004, plate1.pdf

MS. SMETHURST --

I did receive the file with the Fourche Bottoms map and I was able to open it.

Thanks very much for your help !

Best Regards,

JIM LYNCH

President
Coalition of Little Rock Neighborhoods
Daytime 569-3302
Evening 661-0406

P.S.

I learned about the 45-day public comment on the Fourche Bottomland project

Ellis, Jim D SWL

From: RDesmar246@aol.com
Sent: Monday, November 21, 2005 11:30 AM
To: Ellis, Jim D SWL
Cc: BnFree2@aol.com; Jim_Lynch@swbell.net; bmoore@littlerock.state.ar.us
Subject: Re: Comments on Supplemental Environmental Impact Statement for the ...

To: Jim.D.Ellis@swl02.usace.army.mil

Re: Comments on Supplemental Environmental Impact Statement for the Fourche Bayou Basin

As a resident of Little Rock with a home in the Fourche Basin, I am pleased that the Corps is acquiring the property in the Bottoms to prserve and make accessable for recreation this valuable urban wetlands. I have lived here over twenty years and watched with dismay as the quality of the Creek water declined and the wetland area was steadily reduced in size. Sedimentation from development upstream turned the Creek brown after rains. Inadequate sewage capacity along the creek spill filth into the surrounding area after every significant rain. The creek widened as trees on the banks toppled into it. The threat of a filth laden flood as in 1978 is always upon us. Now another major threat looms with the expansion of the BFI landfill and the introduction of massive quantities of commercial waste - some hazardous - into the system. Expansion of nearby UALR and new housing developments strains sewage systems already over flowing into the creek. Behind all this has been a lack of systematic sampling and protection from either the city or the state ADEQ. Simple management practices such as enforcing setback provisions from the creek for development were and are ignored. EPA and state rules against discharges into the creek also were ignored. The results are evident in the dismal water quality stats in the report and in the groundwater sampling in the BFI reports at ADEQ. Dichloroethane, a signature component of leaded gas, is the most worrisome discovery - high levels of metals and e-coliform also appear. Sewer lines crossing the property and paralleling proposed trails are old, cracked, and sure to overflow bringing a public health problem to those looking for healthy recreation.

It is my profound hope, that by working with the community, the Corps can help resolve some of these concerns rather than adding to them as it has in the past by rubber stamping development that threatened wetlands.

Ralph Desmarais
4821 Darragh Dr.
Little Rock, AR 72204

Anslow, Patricia M SWL

From: BnFree2@aol.com

Sent: Monday, November 14, 2005 9:42 AM

To: Anslow, Patricia M SWL

Subject: RE:sws:DSEIS Fourche Bayou Basin project

I have just become aware of this report. Knew about Little Rock having Fourche Bottoms Park and Audubon and the trails, wetland, wildlife project.

Our neighborhood groups have been receiving information on BFI, Inc. and their request for a permit to dig a fifty foot lake on the Coleman Farm property on which they have an option. According to your map this appears to be in the 500 year floodplain, floodways, wetlands with every imaginable reason not to allow this huge lake to be dug with the dirt transported across Mabelvale to use as cover for their Model Landfill.

Presently BFI, Inc. is advertising in the Arkansas Democrat-Gazette to join them in getting a permit to enlarge the Landfill bringing it to various heights, up to 450 feet, and destroying the wetlands of the Coleman property.

My question is: what are we doing with a dump in the middle of Fourche Bayou?

Sharon Woodson Stark
5304 Park Village
Little Rock, AR
501.570.0336
Wakefield Neighborhood Association
Southwest Little Rock United for Progress.

November 28, 2005

Jim D. Ellis
Julia A. Smethurst
Planning, Environmental and Regulatory Division (Planning Branch)
Department of the Army Little Rock District, Corps of Engineers
Post Office Box 867
Little Rock, Arkansas 72203-0867

Re: Public Draft, Limited Evaluation Report and Supplemental Environmental Impact Statement for Acquisition of 1750 Acres of Bottomland with Nature Appreciation Facilities

Dear Mr. Ellis and Ms. Smethurst:

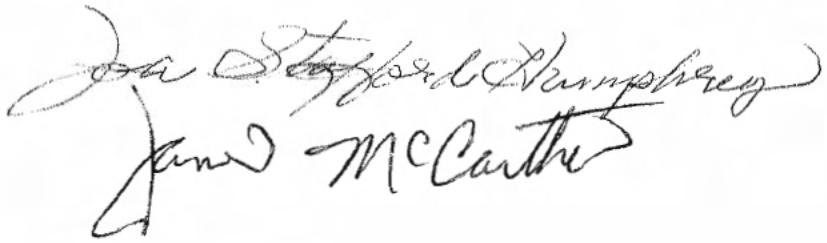
This letter is sent on behalf of Build Coleman Park, Inc., which is a not for profit corporation whose mission is to assist with the planning, construction and operation of Coleman Park, a 150 acre site on the West side of Mabelvale Pike that was part of the Coleman dairy. Of course, the development of Coleman Park cannot be realized without an expansion of BFI's Model Fill landfill, located on the East side of Mabelvale Pike. Attached to this letter is a list of the members of the Board of Directors of Build Coleman Park, Inc. Build Coleman Park, Inc. has an active web site, www.buildcolemanpark.org and through this and other outreach programs widespread community support for the construction of Coleman Park has been realized.

We understand that the Corps of Engineers has requested comment about a plan to acquire wetlands in the Fourche Creek bottomlands and to develop recreational facilities east of the railroad tracks. Part of the planned acquisition includes the 150 acres identified for Coleman Park. While we applaud the efforts of the City of Little Rock and the Corps to enhance this unique urban wetland, we support an alternative development design proposed by BFI for Coleman Park. BFI has proposed to develop Coleman Park into a comprehensive park, that will include creating natural bottomland forested hardwood wetlands, a fishing lake, canoe launch, walking trails, sports and recreational fields and a playground. The community has worked with BFI to design Coleman Park in a manner that will be compatible with and actually enhance the Fourche Creek Basin nature appreciation facilities, while at the same time providing opportunities for the children and families in our community that will not otherwise be available. After development of Coleman Park, it will be donated to the City of Little Rock and can become part of the protected urban wetlands. We oppose the the proposal for Coleman

Park as described in the Corps proposal because it will deprive the City of Little Rock and its residents of the much needed recreational features, flood storage improvements, and environmental benefits planned for Coleman Park.

We urge you to incorporate BFI's Coleman Park design into your plans for Fourche Creek.

Yours very truly,



BUILD COLEMAN PARK, INC.
MEMBERS AS OF 11/28/05

James McCarthur, President Build Coleman Park, Inc.; President and General Manager, Global Services
Donna Hall, Principal, Geyer Springs Elementary School
Dale Stevener, Consultant, Build Coleman Park, Inc.
Tyrone McGraw, Head Basketball Coach, Philander Smith College
William Hawkins, University of Arkansas Medical System
Carolyn Foster, Board of Directors, Geyer Springs Neighborhood Association
Betty Snyder, Board of Directors, Geyer Springs Neighborhood Association
Michael A. Miller, Board of Directors, Geyer Springs Neighborhood Association
Carolyn Heitman, Board of Directors, John Barrow Neighborhood Association
Joa Stafford Humphries, Board of Directors, Geyer Springs Neighborhood Association
Doris Wright, Board of Directors, John Barrow Neighborhood Association

PE

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

NOV 17 2005

11/30/05

Colonel Wally Z. Walters
District Engineer
Corps of Engineers
Little Rock District
700 West Capitol
P.O. Box 867
Little Rock, AR 72203-0867

Dear Colonel Walters:

In accordance with our responsibilities under Section 309 of the Clean Air Act, the National Environmental Policy Act (NEPA), and the Council on Environmental Quality (CEQ) Regulations for Implementing NEPA, the U.S. Environmental Protection Agency (EPA) Region 6 office in Dallas, Texas, has completed its review of the Limited Reevaluation Report and Supplemental Draft Environmental Impact Statement (SDEIS) for the proposed acquisition of 1,750-acres of bottomland hardwoods with nature appreciation facilities for environmental preservation and recreation.

On behalf of the U.S. Environmental Protection Agency, we strongly support the U.S. Army Corps of Engineers plans to proceed with purchase of the 1,750 acres of bottomland hardwoods as was envisioned in the 1981 Report of the Chief of Engineers when planning flood control in the Fourche Bayou Basin plan. This decision is consistent with the original plan, and is a significantly sized tract that will provide both additional water storage and filtration, as well as important habitat, immediately and over the future when this area might otherwise have been subjected to developmental pressures. The Corps of Engineers is to be commended for taking this important step to bring the Fourche Basin project to closure.

EPA rates the DEIS as "**LO,**" i.e., EPA has "**Lack of Objections** " to the proposed action as described in the DEIS. Our classification will be published in the Federal Register according to our responsibility under Section 309 of the Clean Air Act to inform the public of our views on proposed Federal actions. If you have any questions, please contact Michael Jansky of my staff at 214-665-7451 or by e-mail at jansky.michael@epa.gov.

EPA appreciates the opportunity to review the DEIS. Please send our office two copies of the FEIS when it is sent to the Office of Federal Activities, EPA (Mail Code 2252A), Ariel Rios Building, 1200 Pennsylvania Ave, N.W., Washington, D.C. 20460.

Sincerely yours,

Rhonda M. Smith, Chief
Office of Planning and
Coordination (6EN-XP)

United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
P.O. Box 26567 (MC-9)
Albuquerque, New Mexico 87125-6567

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:

November 16 2005

ER 05/897

Colonel Wally Z. Walters
District Engineer
U.S. Army Corps of Engineers
ATTN: Ms. Julia Smethurst, Project Manager
PO Box 867
Little Rock, Arkansas 72203-0867

Dear Colonel Walters:

The U.S. Department of the Interior has reviewed the Limited Reevaluation Report and Supplemental Draft Environmental Impact Statement (DEIS) for Acquisition of 1,750-acres of Bottomland with Nature Appreciation Facilities, Fourche Bayou Basin, Arkansas. In this regard, we have NO COMMENT.

Thank you for the opportunity to review this document.

Sincerely,

Stephen R. Spencer
Regional Environmental Officer

The Department of
Arkansas Heritage

Mike Huckabee, Governor
Cathie Matthews, Director

Arkansas Arts Council

Arkansas Historic Preservation Program

Delta Cultural Center

Historic Arkansas Museum

Mosaic Templars Cultural Center

Old State House Museum

Arkansas Natural Heritage Commission

1500 Tower Building
323 Center Street
Little Rock, AR 72201
(501) 324-9619
fax: (501) 324-9618
tdd: (501) 324-9811
e-mail: info@arkansasheritage.org
website:
http://naturalheritage.com

An Equal Opportunity Employer

Date: December 1, 2005
Subject: Public Draft, Limited Reevaluation Report and Supplemental Environmental Impact Statement for Acquisition of 1,750-acres of Bottomland with Nature Appreciation Facilities
ANHC No.: F-COEL-05-073

Mr. Randy Young, Chairman
Technical Review Committee
101 E. Capitol, Suite 350
Little Rock, AR 72203

Dear Mr. Young:

Staff members of the Arkansas Natural Heritage Commission (ANHC) have reviewed the Public Draft of the Limited Reevaluation Report and Supplemental Environmental Impact Statement for the Acquisition of 1,750-acres of Bottomland with Nature Appreciation Facilities. Acquisition of the land and construction of the Nature Appreciation Facilities were originally part of the flood control project recommended by the Chief of Engineers in 1981. A 1983 Record of Decision excluded this section of the project from funding. The project, as recommended in the 1981 report, was authorized by Section 401(a) of the Water Resources Development Act of 1986. After requests by the City of Little Rock, the Corps agreed to prepare a limited reevaluation report for the land acquisition and nature appreciation facilities. This report evaluated costs, environmental impacts, and project changes. The report concluded that the land acquisition for environmental protection and flood reduction with nature appreciation facilities is consistent with policy and within the Division Commander's authority to approve.

This agency is supportive of the acquisition of 1,750-acres within the Fourche Bayou Basin. This area is a highly significant urban wetland. The Forested Channel natural community appears to be of high natural quality, and one of the few remaining examples in the area. Also, with increased urban development in Little Rock, these bottoms are increasingly important in terms of flood water storage. ANHC staff worked for the inclusion of this feature in the original project design. Had the project been funded at that time, some of the wetland fills that have since occurred could have been averted.

The opportunity to comment is appreciated.

Sincerely,

Cindy Osborne

Cindy Osborne
Data Manager

CC: Julia Smethurst, Corps of Engineers, Little Rock District

The Department of
Arkansas
Heritage

Mike Huckabee, Governor
Cathie Matthews, Director

Arkansas Arts Council
▪
Arkansas Natural Heritage Commission
▪
Delta Cultural Center
▪
Historic Arkansas Museum
▪
Mosaic Templars Cultural Center
▪
Old State House Museum

Arkansas Historic Preservation Program

1500 Tower Building
323 Center Street
Little Rock, AR 72201
(501) 324-9880
fax: (501) 324-9184
tdd: (501) 324-9811
e-mail:
info@arkansaspreservation.org
website:
www.arkansaspreservation.org

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November 18, 2005

Ms. Julia A. Smethurst
Project Manager
Little Rock District Corps of Engineers
Planning, Environmental and Regulatory Division
Post Office Box 867
Little Rock, Arkansas 72203-0867

RE: Pulaski County - Little Rock
Section 106 Review - COE
Fourche Bayou Basin Nature Appreciation Facilities
AHPP Tracking No: 49674

Dear Ms. Smethurst:

My staff has reviewed the draft Supplemental Environmental Impact Statement and the draft report entitled "Fourche Creek Basin Nature Appreciation Facilities Historic Properties Review of the 1750-Acre Bottomland Acquisition and Phase I Survey of Approximately 3 Miles Access Roads and Foot Trails in the City of Little Rock and within the Ozark-Arkansas-Ouachita Region, Pulaski County, Arkansas" by Historic Preservation Associates. This report meets the standards contained in "A State Plan for the Conservation of Archeological Resources in Arkansas" and is acceptable. We concur with the recommendations of the author that the construction of the access road in the vicinity of the Allis Mill should be monitored by a professional archeologist to determine if evidence of the mill exists in the area. A report of the monitoring should be submitted to this office for review after the monitoring is complete.

Thank you for the opportunity to comment on this undertaking. If you have any questions, please contact Steve Imhoff of my staff at (501) 324-9880.

Sincerely,

Ken Grunewald
Deputy State Historic Preservation Officer

cc: Mr. Christopher G. Davies, Little Rock District Corps of Engineers
Dr. Ann M. Early, Arkansas Archeological Survey
Ms. Carrie V. Wilson, Quapaw Tribe of Oklahoma

The Department of
Arkansas
Heritage

Mike Huckabee, Governor
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info@arkansaspreservation.org
website:
www.arkansaspreservation.org

An Equal Opportunity Employer

November 10, 2005

Ms. Julia A. Smethurst
Project Manager
Little Rock District Corps of Engineers
Planning, Environmental and Regulatory Division
Post Office Box 867
Little Rock, Arkansas 72203-0867

RE: Pulaski County - Little Rock
Section 106 Review - COE
Fourche Bayou Basin Limited Reevaluation Report
AHPP Tracking No: 49674

Dear Ms. Smethurst:

My staff has reviewed the Limited Reevaluation Report and Supplemental Environmental Impact State for Acquisition of 1,750-Acres of Bottomland with Nature Appreciation Facilities.

On June 4, 2003, we recommended that a cultural resources survey be conducted in areas of new construction. This work has been completed by Historic Preservation Associates but we have no record that the report was submitted to our office for Section 106 review. The District Archeologist has forwarded a copy to my staff and we will review this document as expeditiously as possible.

Thank you for the opportunity to comment on this undertaking. If you have any questions, please contact Steve Imhoff of my staff at (501) 324-9880.

Sincerely,

Ken Grunewald
Deputy State Historic Preservation Officer

cc: Mr. Tracy L. Copeland, State Clearinghouse
Mr. Christopher G. Davies, Little Rock District Corps of Engineers
Dr. Ann M. Early, Arkansas Archeological Survey
Ms. Carrie V. Wilson, Quapaw Tribe of Oklahoma

U.S. Department of Homeland Security
FEMA Region 6
800 North loop 288
Denton, TX 76209-3698

FEMA

FEDERAL EMERGENCY MANAGEMENT AGENCY
REGION VI
MITIGATION DIVISION

PUBLIC NOTICE REVIEW

☐ **We have no comments to offer** ☒ **We offer the following comments**

WE WOULD REQUEST THAT THE LOCAL FLOODPLAIN ADMINISTRATOR BE CONTACTED FOR THE REVIEW AND POSSIBLE PERMIT REQUIREMENTS FOR THIS PROJECT

REVIEWER MITIGATION DIVISION **DATE** 11-7-05

Richardson
10-7-05

DEPARTMENT OF THE ARMY
LITTLE ROCK DISTRICT, CORPS OF ENGINEERS
POST OFFICE BOX 867
LITTLE ROCK, ARKANSAS 72203-0867

REPLY TO
ATTENTION OF

October 3, 2005

Planning, Environmental and Regulatory Division
Planning Branch

MT DIVISION - Region VI
LOG# 05-10-1092
Received 10/7/05
BY CE
DE-LOG
BY

AR Regional Director
FEMA, Region VI
Federal Regional Center
800 North Loop 288
Denton, TX 76210

Dear Mr. :

On behalf of the Corps of Engineers, enclosed for your review and comment is a copy of the Draft Supplemental Environmental Impact Statement (DSEIS) for the Fourche Bayou Basin Limited Reevaluation Report (LRR), Arkansas. The DSEIS has been prepared in accordance with the National Environmental Policy Act (NEPA) and the U.S. Army Corps of Engineers NEPA Implementing Regulation ER 200-2-2.

The 45-day public comment period will end 28 November 2005. Comments may be sent to the following e-mail address: jim.d.ellis@usace.army.mil. Questions regarding this report may be addressed to Ms. Julia Smethurst, project manager, at 501-324-5602, or Mr. Jim Ellis at 501-324-5629.

Sincerely,

Julia A Smethurst

Julia A. Smethurst
Project Manager

05-10-5032

Date Rec'd: 10-6-05			
Initiator: JT			
	Action	Info	Initial
RD		X	
DRD			
XA			
EO			
EA			
RR			
NP			
IM	X		
AR			
FCO			
MERS		X	
File			
Suspense Date: 10-21-05			

Enclosure

PMI
POLLUTION MANAGEMENT, INC.

November 28, 2005

Ms. Julia Smithurst
Planning Division
U.S. ARMY CORPS OF ENGINEERS
Little Rock District
700 West Capitol Avenue
Little Rock, Arkansas 72201

RE: Public Comments
Supplemental Environmental Impact Statement and Limited Reevaluation Report
Fourche Bayou Basin

Dear Ms. Smithhurst:

Please accept this letter and the accompanying attachments and figures that are submitted on behalf of BFI Waste Systems of Arkansas, L.L.C (BFI) and its attachments as comments on the Supplemental Environmental Impact Statement (SEIS) and the Limited Reevaluation Report (LRR) prepared by the U.S. Army Corps of Engineers (USACE). The SEIS and LRR were prepared to support the reevaluation of the by the U.S. Congress to exclude acquisition of 1,750 acres within the Fourche Creek Bottomlands from funding. In 1983, Congress funded the Fourche Creek channelization project for flood control. At that time a proposed 1,750 acre bottomlands acquisition and recreational area development was rejected for funding. The 1,750 acre area under consideration for acquisition was a single, contiguous parcel of bottomland wetlands as identified in Attachment A, a figure originally presented in the SEIS. This parcel is hereinafter referenced as the Initial Project Area. The SEIS and LRR continue to propose recreational facilities within the Initial Project Area, but substitute lands that are non-contiguous to the Initial Project Area, including lands west of Mabelvale Pike. These new lands comprise the parcel hereinafter referenced as the Proposed Project Area. The purported rationale for the substitution of properties is to eliminate properties with potential hazardous substances, and substitute properties with the potential to be developed such that the project area could be adversely impacted. (1) As expressed in the SEIS and LRR, the vast majority of the 1,750 acres of bottomlands in the project are proposed to be left "unconstructed" to preserve/protect the

(1) The potential legal implications of this substitution could jeopardize the Congressional funding for this project.

bottomland hardwoods in the Initial and Proposed Project Areas.

These comments primarily address a 124 acre tract of land west of Mabelvale Pike, which was formerly part of the Coleman Dairy. This area is identified in Attachment B, a figure originally presented in the SEIS and referenced hereinafter as the Coleman Park property. The SEIS includes an incorrect description of the proposed BFI landfill expansion project and does not acknowledge the proposed utilization of the Coleman Park property. Furthermore, the SEIS incorrectly suggests that the proposed BFI development would encroach into the Proposed Project Area, potentially resulting in adverse impacts and reduced beneficial impacts to the Proposed Project Area.

The purpose of these comments is to correct the record regarding BFI's proposed landfill expansion project, which does not encroach upon the Proposed Project Area. BFI's proposed landfill expansion project is limited to the lands located east of Mabelvale Pike that are currently used for landfill operations. None of the lands identified in the SEIS for acquisition are part of the proposed landfill expansion. Furthermore, these comments correct the record regarding BFI's proposed utilization of the Coleman Park property. The Coleman Park property is a parcel of land previously used as upland pasture lands in support of the Coleman Dairy operations in Little Rock. This area is highlighted on the attached Figure 1. BFI has acquired an option to purchase the Coleman Park property. BFI's proposed plans for Coleman Park include an improvement and development strategy for approximately 124 of the 1,750 acres designated for acquisition. The Coleman Park area is on the western side of Mabelvale Pike and west of the Initial Project Area. The remainder of this letter is organized to provide: (i) a brief introduction of the proposed landfill development activities; (ii) a brief summary of the proposed Coleman Park development strategy; and (iii) a formal response and a series of comments to the SEIS and the LRR.

Landfill Expansion Project Synopsis:

BFI proposes to expand the existing landfill located on the east side of Mabelvale Pike shown on Figure 1. The proposed expansion will include a lateral expansion within the diked parcel of land east of Mabelvale Pike and a vertical expansion that places new waste on top of the existing landfill. The landfill will be designed to meet the Arkansas Department of Environmental Quality (ADEQ) Solid Waste regulations. The entire landfill expansion will be confined to the existing landfill site.

Expansion of the landfill will require the need for a borrow source of soil and low-permeability materials necessary for landfill construction. BFI proposes to excavate the borrow materials needed for construction from the previously referenced Coleman Dairy property located on the west side of Mabelvale Pike. The excavated materials will be excavated from the Coleman Dairy property, temporarily stockpiled within the Coleman Dairy property, and ultimately placed on a conveyor system for transport across Mabelvale Pike to the landfill site where the materials will be used for landfill construction. The total volume of soil removed from the Coleman Dairy property will be approximately 536 acre feet or 864,746 cubic yards.

Coleman Park Development Synopsis:

The strategy for the proposed BFI landfill expansion project includes: (i) soil excavation on the adjacent Coleman Dairy property; (ii) development of an extensive wetland and bottomland hardwood park; and (iii) development of a diverse public-access recreational and educational park on the Coleman Dairy property. This area will be hereinafter referenced as the Coleman Park. As part of these proposed development activities, a significant amount of additional flood storage will be provided to help protect this area in Southwest Little Rock from flooding during low-frequency storm events. The proposed Coleman Park development strategy includes the following integral components.

- Coleman Dairy Property (Total) ≃124 acres
- Coleman Park Constructed Wetlands ≃53 acres
- Coleman Park Constructed Pond ≃11 acres
- Coleman Park Athletic Fields ≃17 acres
- Coleman Park Picnic Areas ≃8 acres
- Coleman Park Canoe Launch Area ≃4 acres
- Undeveloped Setbacks and Easements ≃31 acres

The soil materials needed to support the landfill expansion activities will be excavated in phases from the Coleman Dairy property. The initial phase will remove the topsoil from the future fishing pond and stockpile the materials for future use in developing wetlands and bottomland hardwoods. Additional soil will be excavated from the pond and stockpiled for future landfill expansion activities. Future stages of the Coleman Park will be developed incrementally to minimize the amount of disturbed area and to allow the seasonal re-vegetation of disturbed areas. In all stages, the topsoil will be initially removed and stockpiled, followed by the excavation of the non-topsoil materials. As described in subsequent sections of this letter, stormwater management during the staged development is a primary consideration and extensive phasing plans have been developed.

As shown on Drawing Number 1, Coleman Park will be developed to provide a diverse environment for the public, including the development of soccer fields, practice ballfields, picnic and playgrounds, a canoe launch area, and a series of walking and jogging trails. These public recreational areas will be developed as soon a practicable in the early stages of the overall project. The heart of the Coleman Park, however, will be the extensive wetland and bottomland hardwood development. Upon completion of the excavation within the future wetland areas and the pond, the stockpiled topsoil will be replaced in the wetland areas and the wetland vegetation, including bottomland hardwoods, will be planted throughout the areas. The wetland and bottomland hardwood areas will be constructed with locally depressed areas to allow water to pond within the wetland. The wetland areas will be connected to Rock Creek, Fourche Creek and Coleman Creek to allow occasional flooding of the areas. The goal of the wetlands development component of the project is to establish the designated wetland areas as bottomland hardwood flats that will compliment the existing Fourche Creek Bottomlands.

The Coleman Park development will also be connected to the proposed University of Arkansas Little Rock (UALR) Track and Field Complex as shown on Drawing Number 1. UALR owns the property to the north of (and contiguous with) the future Coleman Park area formerly known as the Asher Drive Inn. UALR's Master Plan calls for this property to be developed as a competition-level facility for both track and field and soccer activities. As part of the Coleman Park development, BFI will provide for grading of the UALR property to accept the new athletic complex.

BFI has developed the conceptual plans for Coleman Park in coordination with Build Coleman Park Coalition, a grassroots coalition of community leaders and other community supporters of the Coleman Park development. The Build Coleman Park Coalition has provided, and will continue to provide BFI with comments and ideas regarding the local neighborhood's needs and desires for the park. Attached for your reference are artist renderings of the proposed Coleman Park developments. You can see these renderings and other information at www.BuildColemanPark.org.

Public Comment to the SEIS and the LRR

As will be described in these public comments, it is believed that BFI's proposed development strategy for Coleman Park is completely consistent with the proposed USACE plan. However, when this development strategy is compared to the USACE plan as outlined in the SEIS and the LRR, BFI believes that these proposed developments reduce adverse environmental impacts and significantly better utilize the natural resources with regards to the following eight topical areas: (i) preservation/protection; (ii) flood control; (iii) wetlands development; (iv) bottomland hardwood preservation/enhancement; (v) recreational/environmental opportunities for the public; (vi) post-development water quality; (vii) water quality during construction; and (viii) cost sharing. The remainder of this document is organized to provide a brief summary of the USACE proposed strategy for the Coleman Park parcel with regards to each of these seven topical areas followed immediately by a description of the proposed alternative strategy that includes the development of Coleman Park

(i) Preservation/Protection: The SEIS and LRR promote preservation and protection of the Proposed Project Area. The narrative in these reports includes a lengthy discussion of the benefits of a park and nature center on the eastern side of the 1,750 acre parcel to help achieve this objective. The Coleman Park parcel is on the extreme western side of the proposed parcel and is physically divided from the other portions of the parcel by Mabelvale Pike. It will be difficult to preserve and protect this parcel in its current natural setting because it is at a significantly higher elevation and physically separated from the eastern parcel. Under BFI's proposed Coleman Park development strategy, this area will be developed into a public park and a wetland and bottomland hardwood preserve. Extensive new plantings are proposed to help enhance this area, not merely preserve it in its natural condition. Under the proposed strategy, BFI has proposed a source of funding that will generate over $2.0 million to help maintain the park and wetland/hardwood preserve that will significantly help achieve the objectives desired by USACE. Attachment C includes a copy of the proposed Community Commitment Agreement that has been endorsed by the Build Coleman Park Coalition and has been submitted to the City of Little Rock for review and consideration.

(ii) Flood Control: The SEIS and LRR appear to have a small net fill into the floodplain of about 1 ac-ft on the eastern side of the 1,750-acre parcel but there is no discussion of flood volume compensation or a discussion of the potential negative impacts to flood storage under the USACE proposal, nor is there any reference to the requirements established by the Federal Emergency Management Agency (FEMA) regarding the compensation for the filling needed to support the proposed plan. In 1995, the City of Little Rock required BFI to mitigate filling activities that had occurred in the floodway of Fourche Creek during the early phases of the landfill development prior to BFI's ownership of the landfill site. BFI's mitigation effort could only be accomplished through the construction of a large flood shortage basin and a series of pumps to maintain adequate compensatory flood storage. The floodway management strategy approved at that time by the City of Little Rock and USACE involved permanent pumps that maintain the required flood storage volumes in the storage basin located on the landfill property. As part of BFI's proposed landfill expansion design, the City of Little Rock has requested that BFI advance a development and mitigation plan to eliminate the need for long-term pumping. BFI responded to the City's request by utilizing the proposed excavation and development strategy at Coleman Park. BFI's proposed efforts will eliminate the necessity to maintain active pumping at the landfill for flood control after closure of the expanded landfill. Under the proposed flood mitigation strategy, Coleman Park will be developed in a manner that will provide additional flood storage for low-frequency storm events through excavation and development of the wetland and bottomland hardwood preserve. As a result, the pumping strategy will no longer be necessary at the landfill after closure of the expanded landfill. There will also be a net increase in overall flood storage capacity for both the 100-year flood and low-frequency storm events. The revised flood storage proposal has been presented formally to FEMA with the requisite request for a conditional letter of map revision (CLOMR) required by FEMA and the City of Little Rock prior to any filling in the floodway of Fourche Creek. As demonstrated in the CLOMR request (copy attached to these comments), BFI's proposed development strategy results in a net gain of flood storage, additional protection from flooding during low-frequency storm events, and the elimination of the long-term active pumping. None of these important flood management benefits will be available under the proposed development included in the SEIS and the LRR.

(iii) Wetlands: The SEIS and LRR reference the importance of wetlands in the Fourche Bayou Basin. Currently, there are fewer than five acres of wetlands in the Coleman Dairy parcel, as the elevation of the area is typically six to eight feet above the base flow elevation of Fourche Creek. These wetlands appear to be manmade as a result of ponds that were excavated for the grazing dairy cattle. BFI's proposed strategy includes the excavation of an approximately 11 acre pond and the development of approximately 53 acres of high-quality wetland and bottomland hardwoods. These wetlands will be created by significant excavation of soils in the area down to within approximately one foot of the base flow elevation of Fourche Creek. The existing topsoil and surficial hydric soils in the area will be excavated and stockpiled and will ultimately be placed as the uppermost soil in the newly created wetlands. Waters from Rock Creek, Coleman Creek, and Fourche Creek will be allowed to recharge the newly created wetlands. In this manner, BFI's proposed Coleman Park development strategy will significantly increase the size and enhance the quality of the wetland habitat in the area, not merely "preserve" a few acres of low quality stock pond wetlands.

(iv) Natural Bottomland Hardwood Forest: In the SEIS, it is noted that the 1,750-acre tract is the last remaining significant tract of natural bottomland hardwood forest in the area. While this is true of the vast majority of the 1,750-acre parcel, it does not appear to be the case on the referenced Coleman Park parcel. Specifically, the portions of the referenced USACE purchase located west of Mabelvale Pike, including the Coleman Park property, are at a significantly higher elevation than Fourche Creek and currently consist of former pasture land, not hardwoods. The highest density of hardwoods in this area is along the banks of Fourche, Rock, and Coleman Creeks. Under the proposed alternative development strategy, a minimum 50-foot wide buffer zone adjacent to each of the creeks is protected, providing for preservation of the existing hardwoods. In addition, significant new planting of bottomlands hardwoods is proposed under the alternative strategy. The proposed source of funding would help assure the establishment and ultimate preservation of these new resources. It is noted that part of the Coleman Park development includes the creation of recreational ballfields in the areas previously used as pasture. In the SEIS and LRR, USACE proposes to "maintain" these pasture lands. In the BFI strategy, while only a limited amount of trees will be planted in this area, there will be a limited amount of impervious surfaces and very large areas of relatively flat contours and pervious ground cover that promote infiltration of stormwater. Therefore, BFI believes that the USACE goal of protection of resources will be provided under the proposed strategy. BFI plans to deed the Coleman Park property to the City of Little Rock, therefore, eliminating the possibility for future adverse development of this property.

(v) Recreational and Environmental Opportunities for the Public: The SEIS and the LRR demonstrate the vitality of the Fourche Creek Bottomlands as a recreational and environmental education resource for the public. Under the proposed alternative strategy, significant acreage of wetlands, bottomland hardwoods, and ponds is created for use by the public. This portion of Coleman Park is extensively crossed by a series of boardwalks and trails to provide access and education opportunities for the public. In addition, BFI's proposed development strategy includes approximately 17 acres of soccer fields and practice ballfields, 8 acres for picnic and playgrounds, and 4 acres for a canoe launch. These areas collectively provide public access for a diverse range of recreational activities. These areas are adjacent to and contiguous with the wetland and bottomland hardwood preserve, which will facilitate access to the newly created environmental resources in the area.

(vi) Post-Development Water Quality : The construction of pond and wetland/hardwood areas within Coleman Park with connections to Rock Creek, Coleman Creek and Fourche Creek will allow the wetland area to function as a water filter during small flood events. The interconnection of the constructed wetland areas will establish natural hydrologic conditions in the areas, where the flood waters will recharge and will be temporarily stored. These conditions will allow a significant portion of the suspended materials to settle out before flowing back into Fourche Creek. Discharge points from the constructed wetlands will include sediment forebays to facilitate removal of coarse sediments. These recharge/discharge areas will also include constructed litter booms or other screening devices to remove floating litter debris. The sediment forebays and litter debris will be cleaned and maintained regularly, with the collected materials being disposed at the BFI landfill. At a minimum, the combination of these best management practice (BMP) devices (i.e., sediment forebays, litter booms, and wetlands) will collectively remove a large percent of the sediment/debris that would otherwise be transported into the lower reaches of Fourche Bottoms. This degree of water quality improvement is not possible by simply preserving the natural upland conditions. Therefore, BFI

believes that the proposed strategy is entirely consistent with the USACE objectives and will significantly improve water quality when compared to the USACE protection and preservation option.

(vii) Water Quality During Construction: During the October 27, 2005 meeting between Pollution Management, Inc. (PMI) and USACE, several questions were raised regarding erosion and sediment control management practices during construction. The answer to controlling stormwater quality, sediment and erosion control during construction is to implement Best Management Practices (BMP's) that will allow BFI to construct the various features on the Coleman property during removal of the clay materials. As described in the previous item, BFI proposes to implement several physical BMPs to provide stormwater protection during and after construction. An additional BMP that is proposed includes the phased construction of the improvements on Coleman Park to facilitate control of stormwater at the site from the perspective of erosion and sediment control. The tentative phasing of the construction improvements is enumerated below and presented visually in the six figures presented in Attachment D.

> Phase I: Excavate and stockpile soil from sediment pond; construct Perimeter berm and trail; develop wetland area in northeast corner; grade playground, soccer fields, and practice fields. See Figure 1 in Attachment D.
>
> Phase II: Excavate Stage 1 borrow area; develop picnic/playground, soccer fields, and practice fields; construct canoe launch area. See Figure 2 in Attachment D.
>
> Phase III: Develop Stage 1 wetland/hardwood area; excavate Stage 2 borrow area. See Figure 3 in Attachment D.
>
> Phase IV: Excavate Stage 3 borrow area; continue wetland planting; construct boardwalks. See Figure 4 in Attachment D.
>
> Phase V: Excavate Stage 4 borrow area; continue wetland/hardwood planting. See Figure 5 in Attachment D.
>
> Phase VI: Complete wetland/hardwood planting; remove pond sediment' develop fishing pond and interior trail; construct fishing pier; breach perimeter berms and construct sediment forebays. See Figure 6 in Appendix A.

The perimeter berms will be constructed to the design flood elevation required by the City of Little Rock (i.e., the 25-year, 24-hour storm event) to protect the working area from inundation during low-frequency flood events. Flood events greater than the design storm will result in water overtopping the perimeter berm. This water will, however, be fully captured within the bermed area, thus allowing a portion of the suspended sediment to settle prior to discharge into the Fourche Creek.

(viii) Cost Sharing: The SEIS and the LRR require cost sharing by the City of Little Rock in the amount of 20 percent for land acquisition, 50 percent for nature appreciation facilities, and 100 percent for operation and maintenance. Based on the prevailing market land

vicinity of University and Asher Avenues in Southwest Little Rock, the SEIS-estimated land acquisition cost for the Coleman Park property is grossly undervalued. Under the BFI proposal, the Coleman Park property will be purchased by BFI and ultimately donated to the City of Little Rock, after construction of the nature appreciation facilities proposed for Coleman Park. Through the development of the Coleman Park as a wetland and bottomland hardwood preserve, coupled with the donation of the property to the City of Little Rock, it is apparent that the City of Little Rock will be able to contribute to the USACE project an extremely valuable parcel of land that offers significant recreational features in addition to the unprecedented stormwater management benefits and wetland habitat benefits. BFI believes that this proposed development strategy provides significant cost sharing toward this project, without impacting its already strained budget of the City of Little Rock.

Closure

Attached with this letter is a draft Construction Stormwater Pollution Prevention Plan (SWPPP) for the proposed project. The SWPPP describes the construction phase BMP's and maintenance of these BMP's. BFI will coordinate the development of this SWPPP with Audubon Arkansas to provide maximum protection of Fourche Creek during and following construction. On behalf of BFI, I hope this information is helpful to USACE. If USACE has any questions upon review of this document, please do not hesitate to contact me.

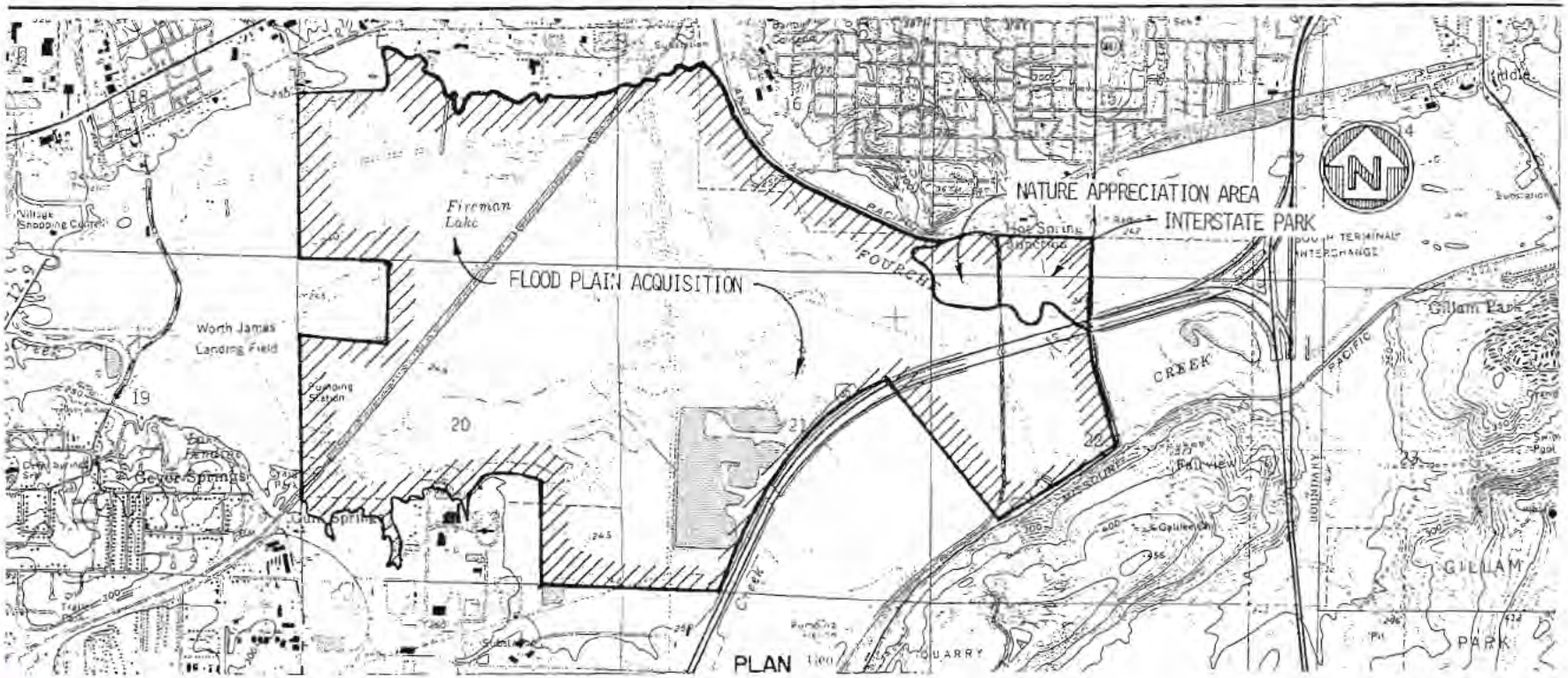
Sincerely,

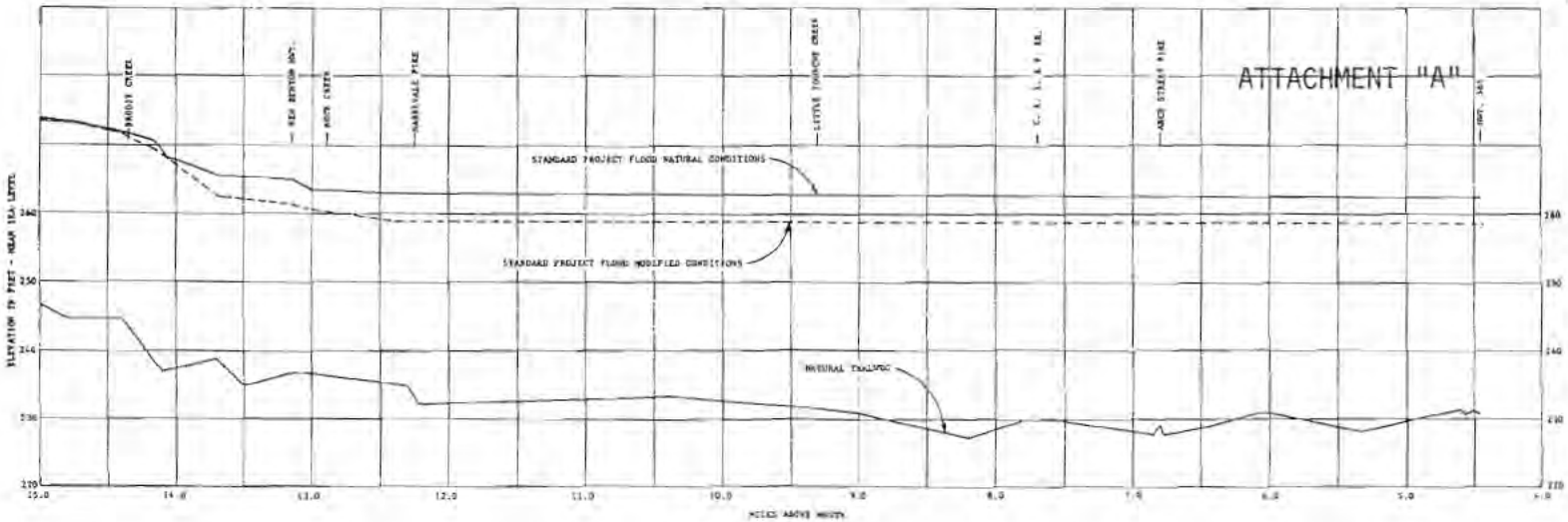
POLLUTION MANAGEMENT, INC.

Wm. Doug Ford, P.E.

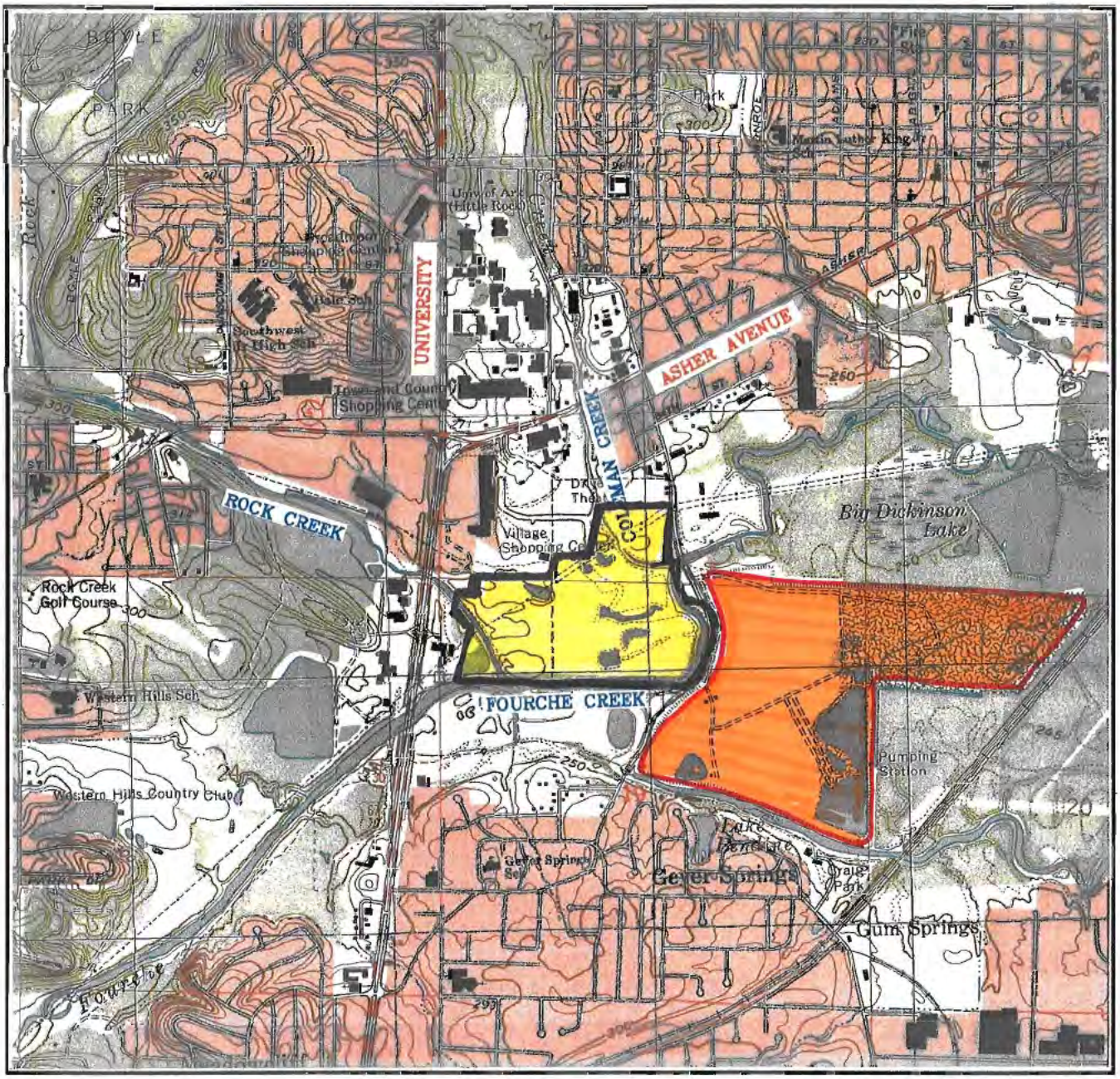
WDF/mef

Copy: Jimmy Fleming – BFI Waste Systems of Arkansas
Johan Linker - BFI Waste Systems of Arkansas
Robert Bachus – GeoSyntec Consultants
Chuck Nestrud – Chisenhall, Nestrud, and Julian, P.A.
Craig Douglas – Craig Douglas Communications
Dale Stevener – Build Coleman Park Coalition





ATTACHMENT "A"



N
W E
S

FIGURE NO. 1

- denotes Coleman Property proposed for development into Coleman Park.

- denotes BFI Landfill.

POLLUTION MANAGEMENT INC. 3512 SOUTH SHACKLEFORD LITTLE ROCK, ARKANSAS 72205	TOPOGRAPHIC SITE LOCATION MAP taken from LITTLE ROCK QUADRANGLE

Attachment C

404(b)(1) EVALUATION

SHORT FORM
Evaluation of Section 404(b)(1) Guidelines

Formal Review Should Follow Close of Public Notice Comment Period.

APPLICANT: USACOE, LRD - Fourche Land Acquisition APPLICATION NUMBER:

1. Review of Compliance (Section 230.10(a)-(d). Preliminary 1/ Final 2/
A review of the permit application indicates that:

a. The discharge represents the least environmentally damaging practicable alternative and if in a special aquatic site, the activity associated with the discharge must have direct access or proximity to, or be located in the aquatic ecosystem to fulfill its basic purpose (if no, see section 2 and information gathered for EA alternative); ..... YES [X] NO [ ]* YES [X] NO[ ]

b. The activity does not appear to: 1) violate applicable state water quality standards or effluent standards prohibited under Section 307 of the CWA; 2) jeopardize the existence of Federally listed endangered or threatened species or their habitat; and 3) violate requirements of any Federally designated marine sanctuary (if no, see section 2b and check responses from resource and water quality certifying agencies); ..... YES [X] NO [ ]* YES [X] NO[ ]

c. The activity will not cause or contribute to significant degradation of waters of the U.S. including adverse effects on human health, life stages of organisms dependent on the aquatic ecosystem, diversity, productivity and stability, and recreational, aesthetic, and economic values (if no, see section 2); ..... YES [X] NO [ ]* YES [X] NO[ ]

d. Appropriate and practicable steps have been taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem (if no, see section 5) ..... YES [X] NO [ ]* YES [X] NO[ ]
*1/, 2/ see page 3.

2. Technical Evaluation Factors (Subparts C-F)

	N/A	Not Significant	Significant
a. Physical and chemical characteristics of the Aquatic Ecosystem (Subpart C-F).			
1) Substrate impacts		X	
2) Suspended particulate/turbidity impacts.		X	
3) Water column impacts.		X	
4) Alteration of current patterns and water circulation		X	
5) Alteration of normal water fluctuations/hydroperiod.		X	
6) Alteration of salinity gradients.	X		
b. Biological Characteristics of the Aquatic Ecosystem (Subpart D).			
1) Effect on threatened/endangered species and their habitat.	X		
2) Effect on aquatic food web.		X	
3) Effect on other wildlife (mammals, birds, reptiles, amphibians).		X	
c. Special Aquatic Sites (Subpart E).			
1) sanctuaries and refuges.	X		
2) wetlands.	X		
3) mudflats.	X		
4) vegetated shallows.	X		
5) coral reefs.	X		
6) riffle and pool complexes	X		

d. Human Use Characteristics (Subpart F).	N/A	Not Significant	Significant
1) Effects on Municipal and Private Water Supplies.	X		
2) Recreational and Commercial Fisheries Impacts.	X		
3) Effects on Water-Related Recreation.		X	
4) Aesthetic Impacts.		X	
5) Effects on parks, national and historical monuments, national seashores, wilderness areas, research sites, similar preserves.		X	

REMARKS: Where a check is placed under the significant category, preparer should add explanation below.

3. Evaluation of Dredged or Fill Material (Subpart G) 3/

a. The following information has been considered in evaluating the biological availability of possible contaminants in dredged or fill material. (Check only those appropriate.)

1) Physical characteristics	X
2) Hydrography in relation to known or anticipated sources of contaminants.	X
3) Results from previous testing of the material or similar material in the vicinity of the project.	
4) Known, significant, sources of persistent pesticides from land runoff or percolation .	
5) Spill records for petroleum products or designated (Section 311 of CWA) hazardous substances.	
6) Other public records of significant introduction of contaminants from industries, cities or other sources.	
7) Known existence of substantial material deposits of substances which could be released in harmful quantities to the	X
8) Other sources (Specify).	
List appropriate references (attach sheet if necessary).	

b. An evaluation of the appropriate information in 3a above indicates that there is reason to believe the proposed dredge or fill material is not a carrier of contaminants, or that levels of contaminants are substantively similar at extraction and that the dredged material will be constrained and not allowed to flow beyond the boundaries of the disposal site. The material meets the testing exclusion criteria .....YES [X] NO[ ]

4. Disposal Site Delineation (Section 230.11(f).

a. The following factors as appropriate, have been considered in evaluating the disposal site.

1) Depth of water at disposal site.	X
2) Current velocity, direction, and variability at disposal site.	X
3) Degree of turbulence.	X
4) Water column stratification.	X
5) Discharge vessel speed and direction.	
6) Rate of discharge.	
7) Dredged material characteristics (constituents, amount, and type of material, settling velocities).	
8) Number of discharges per unit of time.	
9) Other factors affecting rates and patterns of mixing (Specify).	
List appropriate references (attach sheet if necessary).	

PROJECT DOCUMENTS

b. An evaluation of the appropriate factors in 4a above indicates that the disposal site and/or size of mixing zone are acceptable ..... YES [X] NO [ ]

5. Actions to minimize Adverse Effects (Subpart H).

All appropriate and practicable steps have been taken, through application of recommendation of Section 230.70-230.77 to ensure minimal adverse effects of the proposed discharge. ..... YES [X] NO [ ]
List action taken. (attach sheet if necessary)

REFERENCE CE1300, JUNE 1973, GUIDE SPECS.
CIVIL WORKS CONSTRUCTION-ENGINEERING PROTECTION

N.B. Return to section 1 for final stage of compliance review. See also note 3/, page 3.

6. Factual Determination (Section 230.11)

A review of appropriate information as identified in items 2-5 above indicates that there is minimal potential for short or long-term environmental effects of the proposed discharge as related to:

a. Physical substrate at the disposal site (review sections 2a, 3, 4, and 5 above) ..... YES [X] NO [ ]
b. Water circulation, fluctuation and salinity (review sections 2a, 3, 4, and 5) ..... YES [X] NO [ ]
c. Suspended particulate/turbidity (review sections 2a, 3, 4, and 5) ..... YES [X] NO [ ]
d. Contaminant availability (review sections 2a, 3, and 4) ..... YES [X] NO [ ]
e. Aquatic ecosystem structure and function (review sections 2b and c, 3, and 5) ..... YES [X] NO [ ]
f. Disposal site (review sections 2, 4, and 5) ..... YES [X] NO [ ]
g. Cumulative impact on the aquatic ecosystem ..... YES [X] NO [ ]
h. Secondary impacts on the aquatic ecosystem ..... YES [X] NO [ ]

7. Evaluation Responsibility (*See page 3)

a. This evaluation was prepared by:

Jim Ellis.
Position: Biologist, Planning & Env. Office

Date: 5 MAY 2006.

b. This evaluation was reviewed by:

Roger C. Hicklin
Position: Deputy Chief, Planning & Env. Office

Date: 8 MAY 2006.

8. Findings

a. The proposed disposal site for discharge of dredged or fill material complies with the Section 404(b)(1) guidelines. ..... [X]

b. The proposed disposal site for discharge of dredged or fill material complies with the Section 404(b)(1) guidelines with the inclusion of the following condition: (attach sheet if necessary)..... [ ]

c. The proposed disposal site for discharge of dredged or fill material does not comply with the Section 404(b)(1) guidelines for the following reason(s):

1) There is a less damaging practicable alternative ..... [ ]
2) The proposed discharge will result in significant degradation of the aquatic ecosystem ..... [ ]
3) The proposed discharge does not include all practicable and appropriate measures to minimize potential harm to the aquatic ecosystem ..... [ ]

SIGNATURE.

Wally Z. Walters
Colonel, Corps of Engineers
District Engineer

* A negative, significant, or unknown response indicates that the permit application may not be in compliance with the Section 404(b)(1) Guidelines.

1/ Negative responses to three or more of the compliance criteria at this stage indicates the proposed projects may not be evaluated using this "short term procedure". Care should be used in assessing pertinent portions of the technical information of items 2a through d above before completing the final review of compliance.

2/ Negative responses to one of the compliance criteria at this stage indicates that the proposed project does not comply with guidelines. If the economics of navigation and anchorage of Section 404(b)(2) are to be evaluated in the decision-making process, the "short form evaluation process" is inappropriate.

3/ If the dredged or fill material cannot be excluded from the individual testing, the "short form evaluation process" is inappropriate.

ENGINEERING APPENDIX

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ENGINEERING APPENDIX

PREPARATION OF NATURE APPRECIATION FACILITIES DESIGN, ECONOMIC, AND ENVIRONMENTAL ANALYSIS FOR A LIMITED REEVALUATION REPORT (LRR) 1,750-ACRE BOTTOMLAND ACQUISITION, FOURCHE BAYOU BASIN, LITTLE ROCK, ARKANSAS

1.0 INTRODUCTION

1.1 Authorization

The proposed action, acquisition of the 1,750-acre area known as Fourche Bottoms and the development of a nature appreciation area, was authorized by Section 401(a) of the Water Resources Development Act of 1986.

1.2 Project Location

Fourche Bottoms is a 1,750-acre tract of land located in the Fourche Bayou Basin (Figure 1). The Fourche Bayou Basin is located in central Arkansas and extends from the Fourche Mountains of the Ouachita Province eastward into the Arkansas River alluvial plain. The basin is about 24 miles long with an average width of seven miles.

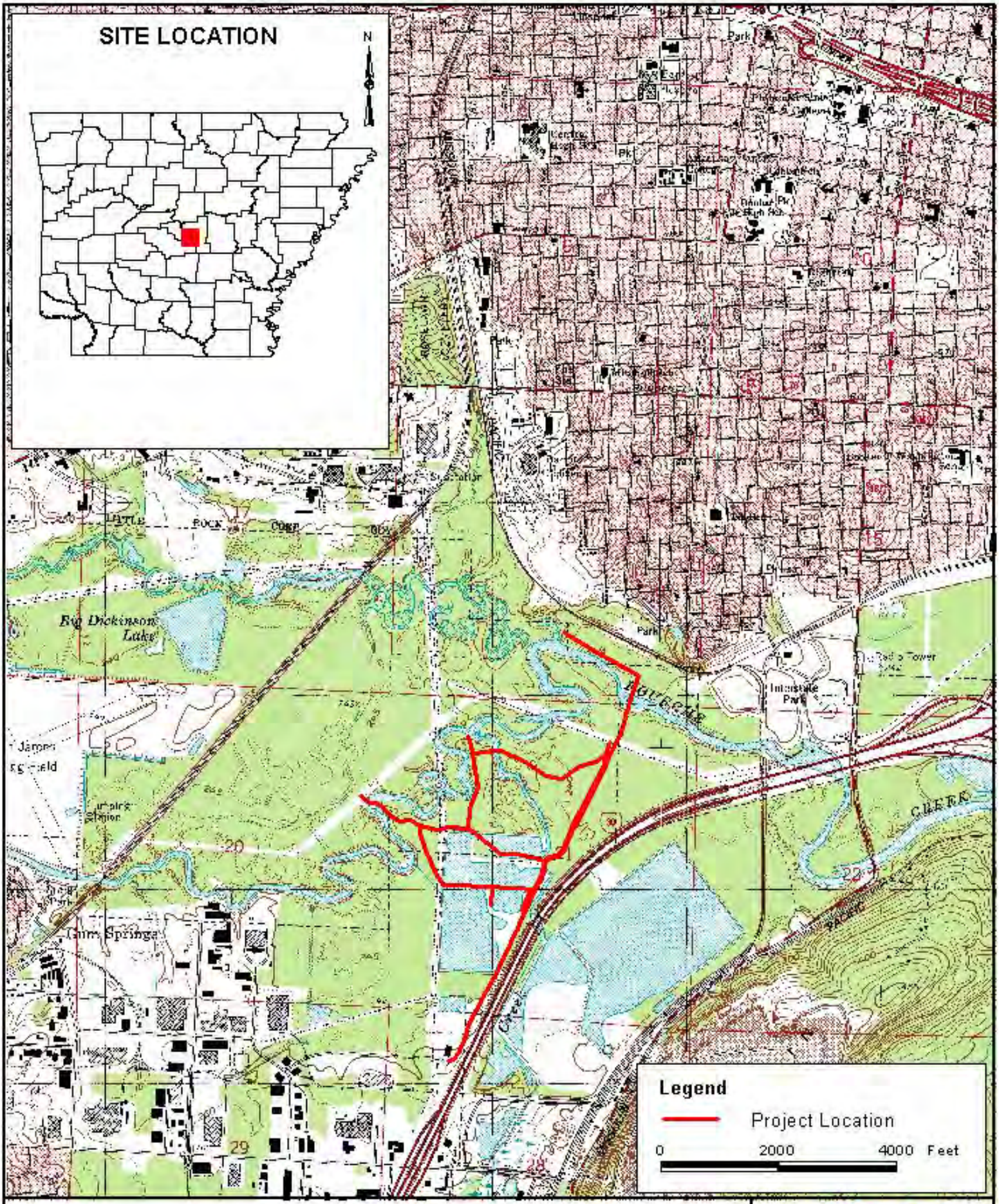
Fourche Bottoms is located in the northeastern portion of the Fourche Bayou Basin, on the outskirts of the City of Little Rock (Figure 2). The area is dominated by bottomland hardwoods and riverine swamps and is subject to periodic inundation during intervals of heavy precipitation.

All of the recreation facilities are located within the 1,750-acre environmental preservation area with the exception of a narrow strip owned by the city where the first segment of the access road leads into the bottomland acres. The strip encompasses the utility road that goes between a trucking firm and the interstate to access the bottoms. The strip is without significant environmental values. Thus, this acreage was excluded for the environmental protection acquisition. In accord with ER 1105-2-100 and EP 1165-2-502, the strip could be acquired as recreation land for access. The value of this land is included in the nature appreciation facilities cost.

1.3 Purpose and Scope

1.3.1 Purpose of Study

The purpose of the study is to acquire a 1,750-acre tract in the Fourche Bayou Basin and to subsequently construct a nature appreciation facility on that tract to showcase the intrinsic and natural beauty of the area.



PROJECT LOCATION MAP

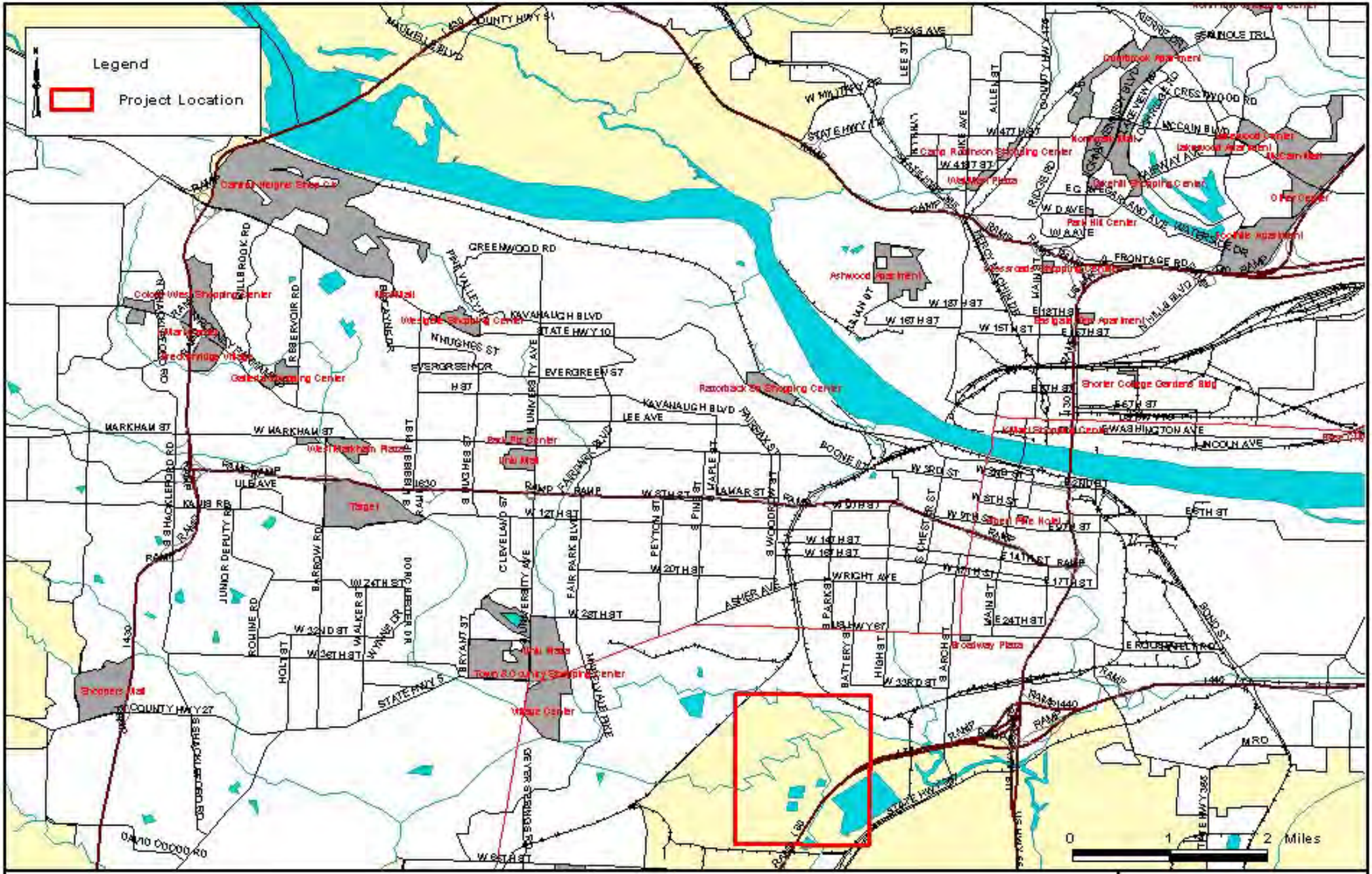
Public Draft Engineering Appendix
Acquisition of Fourche Bottoms
and Development of Nature Appreciation Facility

USGS 1:250,000 Little Rock Quadrangle

Gulf Engineers & Consultants, Inc.

Figure:	1
Date:	October 2004
Scale:	1:24,000
Source:	USGS/GEC

Figure 1. Project Location Map



PROJECT VICINITY MAP

Public Draft Engineering Appendix
Acquisition of Fourche Bottoms
and Development of Nature Appreciation Facility

Gulf Engineers & Consultants, Inc.

Figure: 2
Date: September 2004
Scale: 1:72,000
Source: GEC

Figure 2. Project Vicinity Map

Fourche Bottoms is a unique and valuable ecosystem. This 1,750-acre tract comprises the last remaining significant tract of natural bottomland hardwood forest in the Fourche Creek watershed. In recent years, Fourche Bottoms has become surrounded by industrial development. Acquisition of the tract would protect it from further encroachment by development and assist in the protection of existing natural resources from detrimental effects associated with development (e.g., deterioration in air and water quality, degradation in habitat quality, etc.).

Additionally, the Fourche Creek watershed provides drainage to most of Pulaski County and part of Saline County. Fourche Bottoms, in turn, provides floodwater storage from the Fourche Creek drainage. Acquisition of the site would ensure that the floodwater storage capacity of the site would be retained indefinitely.

Upon acquisition of the 1,750-acre tract, the U.S. Army Corps of Engineers proposes to construct a nature appreciation facility with amenities such as an access road, foot trails, information signs, plant labels, restrooms, parking areas, and boardwalks and bridges into wet or swampy areas.

1.3.2 Scope of Study

This study is based on the results of on-site inspections, engineering, and environmental analysis, in accordance with the authority of Section 401(a) of the Water Resources Development Act of 1986. The study and recommended alternatives for Fourche Bottoms have focused on structural modifications to create a nature appreciation facility for the project area. The proposed modifications include: construction of a single-track access roadway with pullouts; installation of toilet facilities; construction of a boardwalk trail and boardwalk overlook; and construction of a 0.5-mile Americans with Disabilities Act (ADA) accessible trail. These modifications were developed into alternatives that were formulated with due regard to all pertinent tangible and intangible benefits and costs. Selection of the preferred alternative involved consideration of all factors, including those expressed by local interests, concerned agencies, and the State of Arkansas.

1.4 Cost Sharing

The local sponsor is the City of Little Rock, Arkansas. Policy Guidance Letter (PGL) No. 48, Cost Sharing for Specifically Authorized Environmental Projects, sets forth U.S. Army Corps of Engineers policy regarding the cost sharing for construction (implementation) of specifically authorized projects and separable elements for ecosystem (environmental) protection and restoration and implements Section 210 of the Water Resources Development Act of 1996. Section 210 established that environmental protection and restoration be cost shared by the non-Federal sponsor at 35 percent, the current cost sharing for projects authorized after 12 October 1996. PGL 48 states that ecosystem restoration projects authorized by prior legislation will be cost shared in accordance with the provisions of the authorizing legislation.

Thus, the cost sharing for the 1,750-acre Fourche Bottoms acquisition would be 25 percent non-Federal and 75 percent Federal as provided by the percentages of costs in the authorizing legislation, Section 401 of WRDA 1986. The nature appreciation facilities as recreational features would be cost shared 50-50 as established by Section 103 of WRDA 1986, as amended.

Section 103 also provides that the sponsor is required to pay 100 percent of the costs for operation, maintenance, repair, replacement, and rehabilitation.

1.5 Prior Studies

Several reports have been previously issued regarding the acquisition of Fourche Bottoms:

- *National Resource Conservation Service; Soil Survey of Pulaski County, Arkansas* (U.S. Department of Agriculture; September 1975);

- *Feasibility Report and Environmental Impact Statement for Water Resource Development, Volumes I-III* (U.S. Army Corps of Engineers, October 1979);

- *Fourche Bayou Basin; Vicinity of Little Rock, Arkansas; General Memorandum No. 1; General, Volumes I and II* (U.S. Army Corps of Engineers, September 1985);

- *Ecological Report: Fourche Creek Study Area, Pulaski County, Arkansas* (Wetland Science Applications, October 1995);

- *Fourche Creek Park; Site Analysis and Conceptual Master Plan* (City of Little Rock, Department of Parks and Recreation, April 30, 1996); and

- *Preliminary Assessment; Potential HTRW Sites at Fourche Bottomland Acquisition Acreage* (U.S. Army Corps of Engineers, February 1998).

2.0 GENERAL ENVIRONMENTAL SETTING

2.1 Climate

Summers in central Arkansas are moderately long and hot, with periods of high humidity. Winters are short and generally mild, with occasional polar and artic-type breaks. The area occasionally experiences high winds, and relative humidity ranges from moderate to high. The average daily temperature is 82 degrees Fahrenheit (ºF) in summer and 41ºF in winter; mean annual temperature is 62ºF. Precipitation in the area is relatively uniform throughout the year, with heavier amounts usually occurring in spring and lesser amounts occurring in summer. The region experiences an average annual precipitation of 48.66 inches.

2.2 Hydrology

Located in south Little Rock, Fourche Creek is a 6,000-acre wetland ecosystem that drains and filters 98 percent of the city's stormwater runoff.

Fourche Bottoms experiences occasional rapid inflows from Coleman Creek, Rock Creek, and Fourche Creek above the mouth of Rock Creek. The average ground elevation in the project area is 240 feet (ft) elevation. Water levels are estimated to rise approximately 15 ft across the site in a 100-year flood, attaining a level of 257.3 ft above sea level. The 10-year flood level is

252.5 ft. The areal extent of both the 10- and 100-year floodplains spans the project site, reaching from the base of the interstate and railroad levees on the east, west, and north, to the interior of Southside Park. Both flood levels encroach upon the industrial and residential property to the south of the project area.

Fourche Bottoms is characterized by the flat alluvial portion of the Fourche Bayou Basin. The tract is bounded upstream by University Avenue and downstream by Confederate Boulevard. Fourche Bottoms acts as a natural reservoir for the area by retaining runoff from sudden inflows, thereby significantly reducing peak discharges at the downstream end from precipitation events. During storm events in the late 1970s, the attenuating effect of Fourche Bottoms resulted in peak discharges at least 70 percent lower than peak inflows.

Ground water yields in the vicinity of Fourche Bottoms range from less than 10 U.S. gallons per minute (gpm) in the uplands to approximately 1,000 gpm near the mouth of Fourche Creek. Ground water in the project area generally contains calcium bicarbonate or sodium bicarbonate. Iron concentrations vary from less than 0.1 to greater than 50 parts per million (ppm).

The Little Rock District Corps of Engineers provided the following information on flood inundation at the project site.

Fourche Bottoms has historically functioned as three ponding areas prior to relief opening modifications:

- Ponding Area 1 - from University Avenue (River Mile 13.135) downstream to the Union Pacific Railroad near Worth James Airfield (River Mile 11.500);

- Ponding Area 2 - from the Union Pacific Railroad near Worth James Airfield (River Mile 11.500) downstream to the Union Pacific Railroad near Arch Street Pike (River Mile 7.700); and

- Ponding Area 3 - from the Union Pacific Railroad near Arch Street Pike (River Mile 7.700) downstream to Confederate Boulevard at Biddle Shops (River Mile 4.555).

Table 1 indicates the average number of days that the water level in Fourche Bottoms is expected to be above the 240-foot elevation in Ponding Area 2 (the site of the major facilities and trails in the proposed nature appreciation facility).

Table 1. Frequency of Water Levels Above the 240-Foot Elevation in Ponding Area 2

Month	Days Above 240-ft Elevation
January	5
February	5
March	8
April	7
May	6

Month	Days Above 240-ft Elevation
June	2
July	1
August	1
September	2
October	3
November	5
December	8

Source: USACE, 2003.

2.3 Biological Resources

2.3.1 Vegetation

The dominant vegetation communities in the project area are bottomland hardwoods and riverine swamps, with other habitat types interspersed along the fringe of the area. The riverine swamp areas, closely associated with the Fourche Creek corridor, are dominated by bald cypress and water tupelo. The bottomland hardwood areas occur around the edge of the riverine swamp habitats and include plant species such as willow oak, hackberry, or cedar elm.

2.3.2 Wetlands

Wetlands are defined by the Corps as areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstance do support, a prevalence of vegetation typically adapted for life in saturated soil conditions [33 CFR 328.3 (b)]. These wetlands generally include marshes, swamps, lacustrine and palustrine habitats, littoral zones (shallow open waters) and similar areas.

The riverine swamp, pond areas, and some of the bottomland hardwood have been categorized as wetland habitat. Although the pond areas may not technically qualify as wetland habitat, they may be considered “waters of the United States” and are therefore included.

2.3.3 Fisheries

Fish species found in Fourche Creek include shiners, sunfishes, catfish, chain pickerel, bullheads, crappie, largemouth bass, and spotted bass. However, quality game fish are difficult to locate in the lower reaches of the creek due to degraded conditions in water quality.

No state or federally listed fish species are known to occur in the project area.

2.3.4 Wildlife

Fourche Bottoms is supported by both riverine swamp and bottomland hardwood habitats. These habitats, in turn, support a varied assortment of wildlife. Several species of wading birds are common in the area as well as various migratory birds and songbirds. Duck species such as

mallards, teals and wood ducks are commonly found in the area. Mammals occurring in the project site include swamp rabbits, white-tail deer, mink, raccoons, opossums, fox and gray squirrels, and beavers, among others. Fourche Bottoms also provides habitat for a wide variety of turtles (e.g., common snapper, mud turtle, soft-shelled turtle, slider, and box turtle), frogs (e.g., cricket frogs, spring peepers, tree frogs, leopard frogs, wood frogs, green frogs, and bullfrogs), and snakes (e.g., copperheads, cottonmouths, garter snakes, water snakes, king snakes, and hognose snakes).

2.3.5 Wading Birds

The frequent inundation of Fourche Bottoms provides an ideal habitat for wading birds. Several species of wading birds including great blue herons and egrets are common in the area.

No state or federally listed species of wading birds are known to occur in the project area.

2.3.6 Threatened and Endangered Species

Federally Listed Species

Table 2 provides amplifying information on federally listed species that occur in Pulaski County.

Table 2. Threatened and Endangered Species for Pulaski County

Common Name	Scientific Name	Status
Fat pocketbook	*Potamilus capax*	E
Red-cockaded woodpecker	*Picoides borealis*	E
Interior least tern	*Sterna antillarum*	E
Bald eagle	*Haliaeetus leucocephalus*	T

Source: USFWS, 2002.

The fat pocketbook mussel is found primarily in river systems in the Midwestern and southeastern United States. The species inhabits slow-moving water bodies with a mud or sand substrate. Primary threats to the species are dredging operations and water impoundments.

The red-cockaded woodpecker occurs primarily in the southern United States. The species inhabits pine forests, and nests and roosts in tree cavities. The red-cockaded woodpecker shows a marked preference for old trees, particularly those infected with red heart disease, which destroys the integrity of cell walls in the interior tissue of trees. The species is endangered by habitat loss resulting primarily from deforestation.

The interior least tern is found throughout most of the United States. Populations within the interior are typically found near riverine systems. Nesting typically occurs on riverine sandbars or salt flats exposed during low water periods. The species was once heavily hunted for its plumes. Current threats to the species include habitat loss from natural and artificial processes and flooding of breeding grounds.

The bald eagle is found throughout North America. The species primarily inhabits forests adjacent to significant water bodies (e.g., coastal areas, bays, rivers, and lakes). The species is threatened by habitat loss, biocide contamination, and illegal shooting.

In a letter dated January 30, 2003, the USFWS stated that no federally listed or proposed threatened or endangered species or critical habitat occur in the project area.

State Agency Listed Species

The Arkansas National Heritage Program (ANHP) was consulted in 1995 to determine the presence of any species listed by the agency within the study area. The ANHP determined that three listed species were known to occur in the general vicinity of Fourche Creek. The listed species are the flat floater mussel (*Anodonta suborbiculata*), white-topped sedge (*Rhynchospora colorata*), and showy prairie gentian (*Eustoma grandiflorum*). No records of any of these species within the project area were located. Additionally, none of the species was observed during a field investigation.

2.4 Historic Conditions

Access to the project area has been limited historically due to heavy forestation and frequent flooding. In recent history the project area has been surrounded by industrial and residential growth, although such growth has not yet heavily encroached upon the area.

The wetlands and surrounding floodplain in the project area have served as floodwater storage for the Greater Little Rock area. More recently, land within the project area has been used as a route for major utility lines and transportation corridors. Additionally, the project area is often used as an unauthorized local dumping ground.

The project area is the only remaining portion of the surrounding watershed that has maintained its historic condition as natural bottomland hardwood forest. The project area remains a significant resource for local wildlife as it has for recorded history.

2.5 Environmental Justification

U. S. Army Corps of Engineer ecosystem restoration activities include the restoration of ecosystem function, structure, and dynamic processes with the end goal of a naturalistic, functioning self-regulating system. In accordance with ER 1165-2-501, Civil Works Ecosystem Restoration Policy, "Protection may be included as part of Civil Works ecosystem restoration initiatives, when such measures involve efforts to prevent future degradation of an ecosystem's structure and functions." The federal objectives are established under the guidance of the Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies (P&G). The following analysis will describe monetary and non-monetary benefits. This will serve to view the project based on non-monetary outputs compatible with P&G selection criteria; however, it will not demonstrate the national economic development (NED) benefits.

2.5.1 Background

The Fourche Creek watershed has a 109,000-acre drainage basin to include 90% of the drainage of the city of Little Rock, Arkansas. The Fourche Bayou Basin consists of nearly 1,750 acres of bottomland forest and over 650 acres of wetlands that play a vital role in retention and filtration of water resources in the drainage basin. This has resulted in flood damage reduction and enhanced water quality for the surrounding area. Fourche Creek drains directly into the Arkansas River and has numerous miles of tributaries. Environmental resources of importance in the Fourche Bayou Basin consist of flora, fauna, unique habitats, recreational opportunities, and aesthetic qualities. Adding to the significance of this area is its location in metropolitan Little Rock, Arkansas.

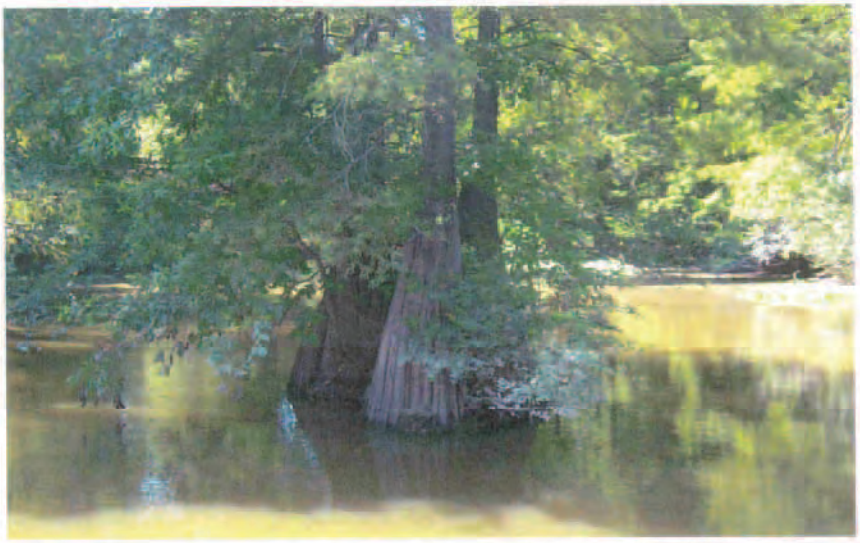
A green belt such as Fourche Bayou, with its approximately 650 acres of wetlands, provides a welcome break for viewers from square miles of developed land covered by residences, businesses, and infrastructure facilities. It is believed to be the largest urban wetland in the United States. It is a remarkable aesthetically pleasing site nested in the heart of a sprawling urban environment (figures 3 and 4). Between 1780 and 1980 Arkansas lost 90 percent of its bottomland-forested hardwoods and 72 percent of its wetlands. The remaining wetlands are critical to maintain this scarce and every decreasing ecosystem. Arkansas' remaining wetlands are some of the most valuable in the country because of their importance in the national spectrum.

However, under current conditions the area is under constant attack from urban sprawl and development. The City of Little Rock has worked with numerous partners to maintain the flood retention and water filtration function of the area, but often losses ground. Poor construction practices along the creek result in an increase to turbidity. The constant transfer of surrounding area to impervious surface (parking lots, bare soil, mowed areas, and buildings) has greatly increased the flow regime and pollutants into the Creek. Development on old landfills nearby has led to reintroduction of the pollutants into the watershed from runoff. The increased flow and pollutants are degrading the function of the wetland and reducing the flood retention capacity.

2.5.2 Analysis

Fourche Bayou Basin bottomland hardwood wetlands are functioning at a moderate rate. Pulaski County, Arkansas conducted an evaluation of its surrounding wetlands. Using a rating scale ranging from 1(low) to 10 (high) Fourche's wetlands received a rating of 6. (For comparison, the Dark Hollow's 112 acres of wetlands in the city of North Little Rock were rated from 2-5.) Two other areas in Pulaski County, Rosenbaum (40 acres) and Faulkner Lake (600 acres), located north and downstream of the mouth of Fourche Creek on the Arkansas River, each received a rating of 8. The greatest impact leading to the degradation of the wetland function in Fourche Creek and the surrounding area is the infringement from development along the wetlands. (*Ecological Report: Fourche Creek Study Area, Pulaski County, Arkansas* [*Wetland Science Applications, October 1995*])

10M006 to 10L003 (District 201)
Fourche Creek (Looking Downstream)



10M006 to 10L003 (District 201)
Fourche Creek (Looking Upstream)

Figure 3. Characteristic Photographs of Fourche Creek

Figure 4. Characteristic Photograph of Fourche Creek

Audubon Arkansas has established seven permanent water quality stations on Fourche Creek within the Fourche Bayou Basin. During their two-year sampling period they have detected increases in turbidity and spiked values of metals downstream of old landfills and adjacent to recent development in Southwest Little Rock. During a HTRW study conducted by the U.S. Army Corps of Engineers, lead was found in the creek. The source of the lead is believed to be an old landfill. If left undisturbed the lead may be contained. However, if the property is not preserved under this program it will remain vulnerable to expansion and possible introduction of new contaminants into the watershed. Protecting the Fourche Bayou Basin through purchasing lands and setting it aside from development will improve the function of the wetland by reducing sedimentation from erosion and keeping capped pollutants buried.

Based on these facts we have addressed the quality of the wetland in two factors: increased function of flood retention capacity; and increased water quality (reduce introduction of contaminants) through the protection of this bottomland forest by preserving it and limiting its use.

These two factors were then considered to arrive at a value expressed from 0.1 to 1.0 based on professional judgment (0.1 being poor and 1.0 being optimum). A modified Habitat Evaluation Procedures (HEP) analysis was then performed to determine the change in habitat value that would occur with the “no action” and the other three acquisition alternatives. Table 3 depicts the

change in habitat units over a period of analysis of 40 years. The HEP software calculates the average annual habitat units (AAHU's) over the project life. One should note that the no action alternative will result in the loss of wetland habitat value over the project life for both the 1,342 acres and 408 acre tracts involved. The analysis is important because it reflects the influence that the tracts of land have on the future wetland values of the other tracts.

Table 3. Change in Habitat Units by Acquisition Alternative

No Action Alternative									
ACRES	TIME YEAR 0		TIME YEAR 10		TIME YEAR 20		TIME YEAR 40		AAHU's
	HSI	HU	HSI	HU	HSI	HU	HSI	HU	
1,342	0.6	805.2	0.5	671	0.4	536.8	0.3	402.6	**571**
408	0.3	122.4	0.2	81.6	0.1	40.8	0.1	40.8	**62**
Acquisition Alternative 1 Purchase 1,750 acres									
ACRES	TIME YEAR 0		TIME YEAR 10		TIME YEAR 20		TIME YEAR 40		AAHU's
	HSI	HU	HSI	HU	HSI	HU	HSI	HU	
1,342	0.6	805.2	0.7	939.4	0.8	1073.6	0.9	1207.8	**1,037**
408	0.3	122.4	0.4	163.2	0.5	204	0.5	204	**184**
Acquisition Alternative 2 Purchase 1,342 acres									
ACRES	TIME YEAR 0		TIME YEAR 10		TIME YEAR 20		TIME YEAR 40		AAHU's
	HSI	HU	HSI	HU	HSI	HU	HSI	HU	
1,342	0.6	805.2	0.6	805.2	0.5	671	0.5	671	**720**
408	0.3	122.4	0.3	122.4	0.2	81.6	0.1	40.8	**87**
Acquisition Alternative 3 Purchase 408 acres									
ACRES	TIME YEAR 0		TIME YEAR 10		TIME YEAR 20		TIME YEAR 40		AAHU's
	HSI	HU	HSI	HU	HSI	HU	HSI	HU	
1,342	0.6	805.2	0.5	671	0.5	671	0.5	671	**688**
408	0.3	122.4	0.4	163.2	0.4	163.2	0.5	204	**168**

Source: USACE, 2004.

2.5.3 Incremental Cost Analysis

Table 4 depicts the combined change (output) in AAHU's for the 1,342 acres and 408 acres under each alternative with the corresponding costs, incremental output, incremental cost, and then incremental cost per output.

Acquisition Alternative 1, or acquisition of the entire 1,750 acres, would result in the greatest increase to the wetland values and functions. This is due to the fact that the greatest number of contiguous acres would be acquired. The 1,342 acres of land would be protected from future encroachment by development and the 408 acres would increase in wetland values. The

purchase of the 408 acres would enhance the value of the 1,342 acres, because they are located downstream of a large portion of the 408 acres. Without the 408 acres, the creation of pockets of a buffer strip around the creek is better than no buffers, but this would still result in some intrusion from industrial encroachment.

Table 4. Combined Change in AAHU's by Alternative

Plan	Output	Cost	Cost/Output	Incremental Output	Incremental Cost	Incremental Cost/Output
No Action (Baseline)	0	$0	$0	0	$0.00	$0
Acquisition Alternative 2 (1,342 acres)	174	$850,000	$4,885	174	$850,000	$4,885
Acquisition Alternative 3 (408 acres)	223	$1,800,000	$8,072	49	$950,000	$19,388
Acquisition Alternative 1 (1,750 acres)	588	$2,650,000	$4,507	365	$850,000	$2,329

Source: USACE, 2005.

Acquisition Alternative 2, or acquisition of only the 1,342 acres already acquired by the city, would result in a long-term loss in wetland function and value as development would continue in the surrounding pockets of private domain land including the 408-acre tracts. Since the land was acquired, reports by Audubon have indicated that development and poor construction practices have resulted in increased turbidity in Fourche Creek. Acquiring the first 1,342 acres was critical to protection of the area, but will not alone result in the greatest long-term increase in values and functions. The 408 acres of land, if not acquired, will also be vulnerable to development and will decline in wetland value over the period of study.

Acquisition Alternative 3, or acquisition of only the additional 408 acres, would result in a short-term increase in wetland value and function, but would have little long-term impact as a stand alone alternative. This area includes land that is currently generally of lower ecological value as it is closest to the fringe of industrial development. A portion of it is a former dairy farm, and another portion is adjacent to the landfill that is hoping to expand. While the current ecological value is lower than the ecological value of the 1,342 acres in Acquisition Alternative 2, it has greater potential for improvement through preservation. Also, it is critical acreage for ensuring the complete success as projected by Acquisition Alternative 1.

2.5.4 Additional Considerations

Regulatory programs (Section 404, Flood Plain Management, etc.) can affect the use of these wetlands. However, the potential for land alterations is beyond regulatory control and would significantly degrade this significant and scarce resource. In addition, the city of Little Rock's flood plain ordinances would not preclude excavation or filling in the flood plain fringe, the area outside the designated floodway, as long as the flood capacity is not changed. Therefore, although the city has purchased some property now, the status quo would only be maintained, at

best, in terms of wetland value. In the long term it may even sustain a small amount of degradation. Improvements would only be seen through purchase of land for preservation. This is the only way to create a contiguous buffer and prevent long-term destruction of an extremely valuable and rare resource. It is also assumed that the city and numerous partners like Audubon Arkansas would continue to use the area as a living classroom and increase awareness of this valuable resource. This should also contribute to improvements in land practices and reduce erosion and pollution.

3.0 BASE CONDITION

3.1 Condition of the Existing Facility

3.1.1 Location

All of the recreation facilities are located within the 1,750-acre environmental preservation area with the exception of a narrow strip owned by the city where the first segment of the access road leads into the bottomland acres. The strip encompasses the utility road that goes between a trucking firm and the interstate to access the bottoms. The strip is without significant environmental values. Thus, this acreage was excluded for the environmental protection acquisition. In accord with ER 1105-2-100 and EP 1165-2-502, the strip could be acquired as recreation land for access. The value of this land is included in the nature appreciation facilities cost.

3.1.2 Description

Fourche Bottoms is a unique and valuable component to the surrounding ecosystem. This 1,750-acre tract comprises the last remaining significant tract of natural bottomland hardwood forest in the Fourche Creek watershed. Additionally, the Fourche Creek watershed provides drainage to most or Pulaski County and part of Saline County. Fourche Bottoms, in turn, provides floodwater storage from the Fourche Creek drainage.

Access

The project area is accessible by car at the southeast corner, from the east end of 60th Street. The approach passes by light industrial properties and enters the site through a gate for which local utilities have a key. This entry leads to the interior of the proposed nature appreciation area, which lies southeast of the southern fork of Fourche Creek. The access road provides views to the west across existing borrow pits, then passes northward through bottomland forest to the creek.

Roads: Existing roads provide routes to desirable areas of the project site; consequently major clearing to provide circulation is not necessary. The roads within the project area are maintained by local utility companies. Conditions of these roads vary, however. The entrance road in the southeast begins as a well-graded gravel tract. In the direction of the creek on the north end, however, the road becomes an earthen path. In wet weather the road becomes muddy and develops deep ruts, requiring four-wheel drive vehicles for safe passage. In high water, the road

washes out at the culvert that carries runoff under the interstate. The connecting dirt road that traverses east to west across the peninsula bridging the borrow pits is moderately passable. The road becomes virtually non-existent beyond the power line right-of-way to the creek.

Utilities: Several utility rights-of-way transect the project area. Electrical power lines with overhead wires occupy the most prominent right-of-way, a wide cut swath through the bottomland forest. The sanitary sewer corridors are narrower. The sewer lines are underground for the majority of their extent and are detectable by above-grade manholes that follow the roads and rights-of-way and are visible where the line crosses Fourche Creek.

These rights-of-way are not suitable for vehicular use because of large quantities of broken stumps of woody vegetation left behind by rough clearing by bush hog.

Existing utility information was provided by the City of Little Rock Department of Sewage and Water. Sanitary sewer lines (two 24-inch diameter pipes) parallel the existing access road to Fourche Creek (Figure 5). Plan drawings of existing facilities indicate the two 24-inch lines combine into a single 36-inch sanitary sewer near the southeast portion of the project site. If flush toilets are selected for use, sewer service will not be an issue.

Potable water is currently unavailable at the project site. Information provided by the City of Little Rock indicates an existing 12-inch diameter cast iron water main south of West 60th Street. This existing water line provides potable and fire service water to the light industries along 60th Street. Existing water service ends approximately 250 feet from the proposed entrance/access road to Fourche Creek.

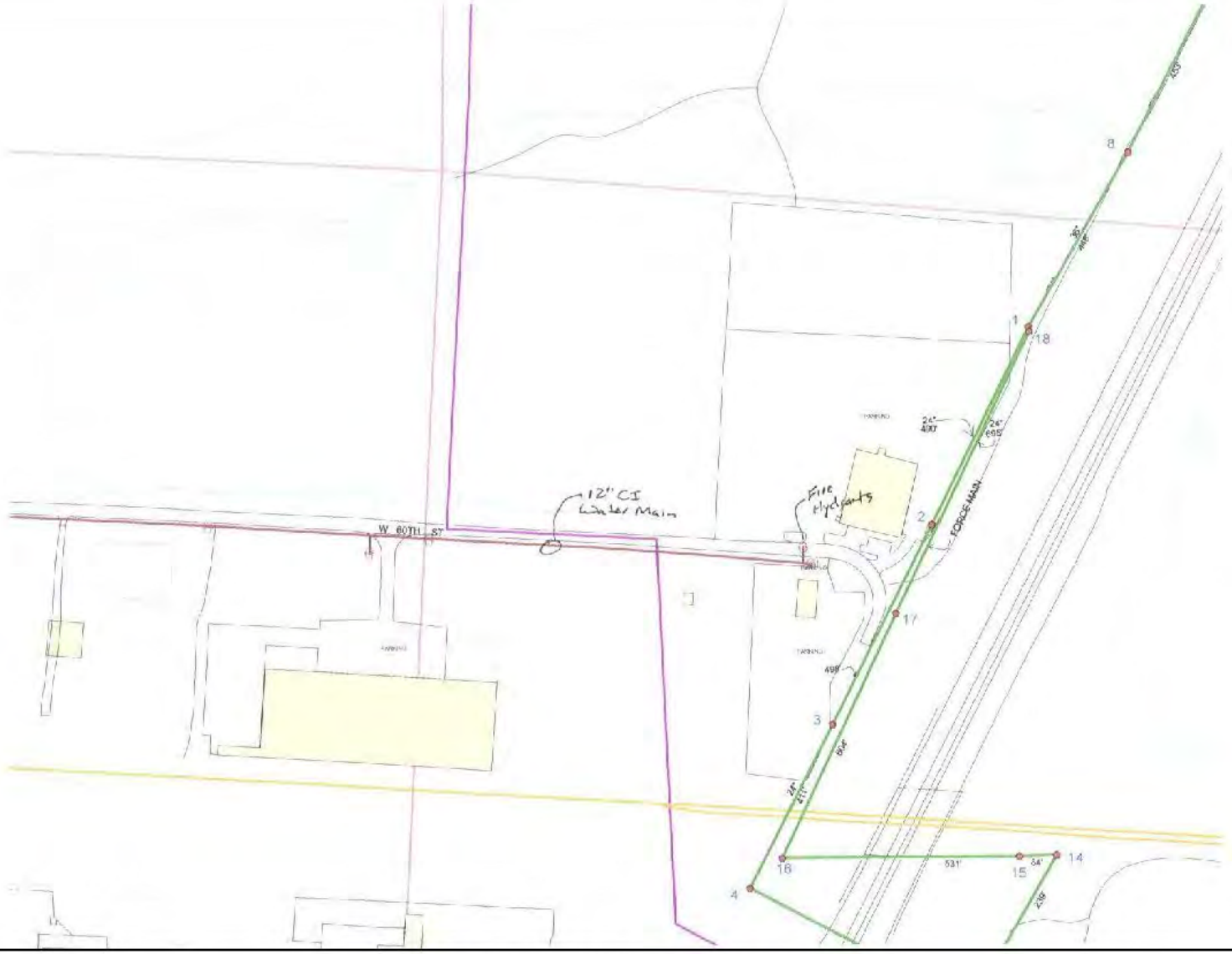
Railroads: Two active Missouri Pacific Railroad lines traverse the project area. One line runs along the site's northern boundary; the other line transects the southwest corner of the southwest corner of the project site. These railroad lines are restrictive barriers for automobile and pedestrian access and circulation. The tracks are elevation on embankments above the surrounding bottomland, and on bridges across watercourses. Trains traveling at high speeds frequently utilize the lines.

3.1.3 Current Annual Maintenance Activities and Costs

Entergy, the electrical provider, maintains the trees and shrubs along the right-of-way using a cycle maintenance program. A cycle refers to the number of growing seasons between prunings. Fourche Bottoms is on a five-year cycle meaning that Entergy allows the trees to grow for four growing seasons, then prunes before the fifth growing season. Little Rock Parks and Recreation does not currently maintain the area.

3.1.4 Programmed Improvements and Costs

There are no known improvements for the Fourche Bottoms area.



EXISTING SEWER AND WATER FACILITIES

Public Draft Engineering Appendix
Acquisition of Fourche Bottoms
and Development of Nature Appreciation Facility

GEC
Gulf Engineers & Consultants, Inc.

Figure:	5
Date:	September 2004
Scale:	NTS
Source:	City of Little Rock

3.2 Biological Resources

The dominant vegetation communities in the project area are bottomland hardwoods and riverine swamps, with other habitat types interspersed along the fringe of the area. The riverine swamp, pond areas, and some of the bottomland hardwood have been categorized as wetland habitat. The project area is inhabited by a variety of fish, wading birds, migratory songbirds, mammals, amphibians, and reptiles.

No federally listed fish species or wading birds are known to occur in the project area.

A request was submitted to the USFWS in 2002 for the notification of any wildlife management areas, swamps and marshes, wetlands, habitats for threatened and endangered species, and/or other sensitive ecological areas located within the project area. The USFWS submitted a Coordination Act Report (CAR) on 3 September 2004 in which it stated that no federally listed, threatened, or endangered species are currently known to occur in the project impact area, and that the proposed action would not impact any listed species. The CAR is included as Attachment A in the Supplemental Environmental Impact Statement.

No state listed species are known to occur in the project area.

3.3 Cultural Resources

Significant cultural resources are protected under the National Historic Preservation Act of 1966 and the Archaeological Resource Protection Act of 1979.

Archaeologists have found evidence indicating the presence of Native Americans in the Fourche Bayou Basin as long ago as 3,000-10,000 years Before Present. The Arkansas Archaeological Survey has indicated that artifacts from the Archaic and later periods have been found within one to two miles of the proposed project site. It is believed that early cultures utilized Fourche Creek as a transport route between the Ouachita Mountains (where novaculite stone was collected for tools) and the Delta lands (the site of many early settlements). In the 18th century the area in the general vicinity of the project site was occupied by the Quapaw tribe. The tribe occupied a reservation east of the project area from 1818-1824.

Archaeological sites within the project boundaries have likely been buried by thousands of years of sedimentary deposits; recovery of such sites is likely unfeasible.

A field survey of the project area was recently conducted by Historic Preservation Associates (HPA). No sites reflecting early historic or prehistoric activities were located within the project area. HPA prepared a report, *Fourche Creek Nature Appreciation Facilities Historic Properties Review*, which provides details of the results of the survey.

3.4 Future Development

Audubon Arkansas and Little Rock Parks and Recreation do not currently have plans for future development until the acquisition of the 1,750-acre tract. Upon acquisition of the 1,750-acre

tract, the U.S. Army Corps of Engineers proposes construction of a nature appreciation facility with amenities such as foot trails, information signs, plant labels, a restroom, access road, parking area, and boardwalks and bridges into wet or swampy areas.

The acquisition of the tract would protect it from further encroachment by development and assist in the protection of natural resources of the site from detrimental effects associated with development (e.g., deterioration in air and water quality, degradation in habitat quality, etc.). Tract acquisition would also ensure that the floodwater storage capacity of the site would be retained indefinitely.

4.0 FUTURE WITHOUT PROJECT CONDITION

4.1 Condition of the Existing Facility (No Improvements)

4.1.1 Description

Fourche Bottoms is a unique and valuable component to the surrounding ecosystem. This 1,750-acre tract comprises the last remaining significant tract of natural bottomland hardwood forest in the Fourche Creek watershed. In recent years, Fourche Bottoms has become surrounded by industrial development. Without improvements, there would be further encroachment by development and decreased protection of natural resources at the site from detrimental effects associated with development (e.g., deterioration in air and water quality, degradation in habitat quality, etc.).

Additionally, the Fourche Creek watershed provides drainage to most of Pulaski County and part of Saline County. Fourche Bottoms, in turn, provides floodwater storage from the Fourche Creek drainage. Without the proposed acquisitions, there would be no certainty that the floodwater storage capacity of the site would be retained.

4.1.2 Estimated Impact Upon Annual Maintenance Activities and Costs

Entergy, the electrical provider, would still maintain the trees and shrubs along the right-of-way using a cycle maintenance program. A cycle refers to the number of growing seasons between prunings. Fourche Bottoms is on a 5-year cycle meaning that Entergy allows the trees to grow for four growing seasons, then prunes before the fifth growing season. Little Rock Parks and Recreation would not maintain the area.

4.1.3 Programmed Improvements

BFI Waste Services proposes to expand its Fourche Bottoms landfill. It would use dirt excavated from a 40-acre area to cap the landfill. Eighty three acres would be used for offices and a park with sports fields, a lake, wetlands, and wildlife habitat as reported in the Arkansas Democrat Gazette on April 3, 2005. After the landfill is closed in 14 years, nature trails would be built. Other development may encroach on the Fourche Bottoms area.

4.2 Biological Resources

4.2.1 Vegetation

The current vegetation community may be lost or dramatically change in species diversity and dominance due to encroaching development.

4.2.2 Wetlands

The encroaching development would affect the ability of wetlands to support a prevalence of vegetation typically adapted for life in saturated soil conditions in the current condition.

Although the riverine swamp, some of the bottomland hardwood, and the pond areas have been categorized as wetland habitat, the potential development would alter the structure of the current environment by potentially diminishing water quality. The ponds as well would be adversely affected.

4.2.3 Fisheries

Because of development, fish species would dramatically change in population size, diversity and dominance. The lower reaches of the creek already have decreased fish populations due to degraded conditions in water quality.

4.2.4 Wildlife

The wildlife population dynamics of Fourche Bottoms would change due to development. As above, wildlife would change in population size, diversity and dominance.

4.2.5 Wading Birds

With encroaching development, the water dynamics including water quality and fish species would change effecting wading birds of Fourche Bottoms.

4.2.6 Threatened and Endangered Species

Without the implementation of the project condition, federally and state listed species may be affected by potential development.

4.3 Cultural Resources

As no sites of significant cultural resources are known to exist within the project area, without-project conditions would have no significant impact on cultural resources.

4.4 Future Development

Audubon Arkansas and Little Rock Parks and Recreation do not currently have plans for future development. BFI Waste Services proposes to expand its Fourche Bottoms landfill. It would use dirt excavated from a 40-acre area to cap the landfill. Eighty three acres would be used for offices and a park with sports fields, a lake, wetlands, and wildlife habitat as reported in the Arkansas Democrat Gazette on April 3, 2005. After the landfill is closed in 14 years, nature trails would be built.

In recent years, Fourche Bottoms has become surrounded by industrial development. Without preservation, there would be further encroachment by development and decreased protection of natural resources from detrimental effects associated with development (e.g., deterioration in air and water quality, increased sedimentation, degradation in habitat quality, etc.). Additionally, there would be no certainty that the floodwater storage capacity of the site would be retained.

5.0 OBJECTIVES AND CONSTRAINTS

5.1 Objectives

The primary objectives for this project are to preserve the remaining natural setting of the Fourche Bayou Basin, to provide floodwater storage, and to provide a nature appreciation facility on the site to showcase the abundant natural resources and beauty of the area.

5.2 Problems and Constraints

During the formulation of alternative plans to meet the project objective, several problems and constraints were identified. These issues influenced the types of measures considered, led to new measures that would resolve problems caused by a plan, or resulted in the rejection of certain measures.

5.2.1 Access

Access to the site is limited. Two interchanges from Interstate 30 provide approaches to the east and southeast sides of the project site. Automobile access to the west side of the project area is restricted by railroad levees and a landfill. The project area can be accessed from the west via Mabelvale Pike, through Benny Craig Park, and also through Fourche Creek via watercraft.

5.2.2 Potential Cultural Resources

Cultural resources are abundant in the vicinity of the project area, given the proximity to the city of Little Rock, a key site in the history of the settlement of Arkansas. The Fourche Bayou Basin, which contains the project area, is the site of 28-recorded archaeological sites. These sites are believed to represent a small portion of the total number of cultural resource sites of significance. A field survey of the project area was conducted by Historic Preservation Associates (HPA). No sites reflecting early historic or prehistoric activities were located within the project area. HPA has prepared a report on the results of the survey.

5.2.3 Business Facilities

A well-maintained light industrial park is located on the entrance road on the southeastern border of the project area. No business facilities are located within the proposed nature appreciation facility.

5.2.4 Utilities

The project area is intersected by utility rights-of-way containing electrical power lines and storm sewer corridors. Entergy is the electrical utility provider within this project area and provides maintenance of vegetation along the rights-of-way using a cycle maintenance program. The electrical power lines are suspended and occur in deforested cut swaths. The storm sewer corridors are primarily underground, with above grade access manholes.

5.2.5 Noise

The project area is bounded by two lines of the Missouri Pacific Railroad on the west and Interstate 30 on the southeast. Railroad activity results in loud but intermittent noise activity. Interstate traffic creates noise that, while constant, dissipates rapidly with distance. The interior of the project area is relatively free of noise.

5.2.6 HTRW Concerns

Engineer Regulation (ER) 1165-2-132 obliges the Corps of Engineers to assume responsibility for the reasonable identification and evaluation of all hazardous, toxic, and radioactive waste (HTRW) contamination within the vicinity of the proposed action. A preliminary assessment of potential HTRW sites within the Fourche Bottoms acquisition area was prepared in February 1998. The executive summary of this preliminary assessment and a map of all sites of concern are included as Attachment A.

The investigation of potential HTRW sites examined 2,100 acres of bottomland proposed for purchase through a cost-sharing agreement between the city of Little Rock and the Corps of Engineers. The area was divided into sectors for reporting and examination purposes. Sites that posed little to no threat to the human and natural environment were eliminated from further consideration. Sixteen sites were identified that would require further investigation before the acquisition of the designated acreage would take place. These sites are presented in Table 5.

Samples were collected from these sites in a 2002 investigation performed by the Corps. The *Fourche Creek Bottomlands Environmental Investigation,* published in September 2002, contains the results of the investigation. Of the 16 sites surveyed, two (sites 5.2 and 6.1) were found to contain items of significant HTRW concern. The areas around these two sites were subsequently eliminated for consideration for acquisition. Out of the area investigated, 1,750 acres were identified as being suitable for acquisition. The *Fourche Creek Bottomlands Environmental Investigation* is included as Attachment B.

Table 5. HTRW Sites Recommended For Additional Investigation

Sector	Site	Location description
1	1.1	South of automobile salvage operations west of University Avenue
2	2.1	Machine Tools Inc. on Mabelvale Pike
	2.2	Elrod's Imports on Mabelvale Pike
3	3.1	Glen Daniel Transmission on Mabelvale Pike
	3.2	Twin City Trucking on Mabelvale Pike
	3.3	Discolored discharge from Quality Foods
	3.4	Septic discharge from Quality Foods
	3.5	Oil release from Odum Sausage
	3.6	Ponds south of Wessel Brothers
	3.7	Down-gradient from Jimelco Site
4	4.1	Septic discharge from Brown Packing Company
	4.2	Oil release (2 locations) from Pirelli Tire
	4.3	Discharged paint material north of 60th Street
5	5.1	South of Arkla Gas compressor station
	5.2	Closed landfill west of Interstate Park
6	6.1	Particulate accumulation south of quarry

Source: USACE-LRD, Preliminary Assessment; Potential HTRW Sites at Fourche Bottomland Acquisition Acreage, February 1998.

5.2.7 Water Quality Concerns

Although high water quality can be found in the upper reaches of Fourche Creek, water quality degrades in the direction of Fourche Bottoms. The poor water quality in the lower reaches of Fourche Creek is attributed to runoff from the surrounding urban area. Water quality in the lower reaches is further aggravated by regional topography. The basin occupies a topographic low, which results in the temporary impoundment of runoff waters and the subsequent deposition of *in situ* trash, debris, and silt.

Samples taken near the site of the proposed action show elevated levels of phosphorus, fecal coliform bacteria, biochemical oxygen demand (BOD), and turbidity as well as decreased levels of dissolved oxygen. Urban runoff and sewage contamination are often associated with these conditions.

The Arkansas Department of Economic Quality (ADEQ) has two monitoring stations on Fourche Creek: Station ARK0130, located at I-430 Bridge in Little Rock, and Station ARK013, located at I-440 Bridge in Little Rock. The data presented in tables 6 through 9 was collected from ARK0130; both stations exhibit similar data.

The United States Geological Survey (USGS) and other agencies collected samples for water quality analysis of Fourche Creek in October 2002 in observance of 30th anniversary of the Clean Water Act. Samplings were collected at Hindman Park in southwestern Little Rock; the data from sample analysis is presented in Table 10.

Table 6. Water Quality Data for Fourche Creek (I)

Date Collected	12/8/1998							
Aluminum:	301.1	µg/L	Arsenic:	BDL	µg/L	Barium:	34.5	µg/L
Beryllium:	BDL	µg/L	Boron:	17.6	µg/L	Cadmium:	BDL	µg/L
Calcium:	13.6	mg/L	Chromium:	BDL	µg/L	Cobalt:	BDL	µg/L
Copper:	1.59	µg/L	Iron:	496.7	µg/L	Lead:	0.30	µg/L
Magnesium:	3	mg/L	Manganese:	48.4	µg/L	Nickel:	BDL	µg/L
Potassium:	2.5	mg/L	Selenium:	BDL	µg/L	Silver:		µg/L
Sodium:	5.3	mg/L	Vanadium:	BDL	µg/L	Zinc:	4.9	µg/L
Hardness:	46	mg/L						
Date Collected	2/16/1999							
Aluminum:	137.0	µg/L	Arsenic:	BDL	µg/L	Barium:	30.3	µg/L
Beryllium:	BDL	µg/L	Boron:	10.0	µg/L	Cadmium:	BDL	µg/L
Calcium:	11.5	mg/L	Chromium:	0.61	µg/L	Cobalt:	BDL	µg/L
Copper:	1.26	µg/L	Iron:	330.5	µg/L	Lead:	BDL	µg/L
Magnesium:	3.1	mg/L	Manganese:	90.2	µg/L	Nickel:	BDL	µg/L
Potassium:	1.8	mg/L	Selenium:	BDL	µg/L	Silver:		µg/L
Sodium:	4.1	mg/L	Vanadium:	BDL	µg/L	Zinc:	4.1	µg/L
Hardness:	41	mg/L						
Date Collected	4/20/1999							
Aluminum:	131.3	µg/L	Arsenic:	BDL	µg/L	Barium:	28.6	µg/L
Beryllium:	BDL	µg/L	Boron:	15.4	µg/L	Cadmium:	BDL	µg/L
Calcium:	9.6	mg/L	Chromium:	BDL	µg/L	Cobalt:	BDL	µg/L
Copper:	1.33	µg/L	Iron:	463.5	µg/L	Lead:	0.30	µg/L
Magnesium:	2.7	mg/L	Manganese:	87.0	µg/L	Nickel:	BDL	µg/L
Potassium:	BDL	mg/L	Selenium:	BDL	µg/L	Silver:		µg/L
Sodium:	4.1	mg/L	Vanadium:	BDL	µg/L	Zinc:	2.9	µg/L
Hardness:	35	mg/L						
Date Collected	6/8/1999							
Aluminum:	155.7	µg/L	Arsenic:	BDL	µg/L	Barium:	31.0	µg/L
Beryllium:	BDL	µg/L	Boron:	21.4	µg/L	Cadmium:	BDL	µg/L
Calcium:	14.0	mg/L	Chromium:	BDL	µg/L	Cobalt:	BDL	µg/L
Copper:	0.54	µg/L	Iron:	580.6	µg/L	Lead:	BDL	µg/L
Magnesium:	2.9	mg/L	Manganese:	116.7	µg/L	Nickel:	BDL	µg/L
Potassium:	1.2	mg/L	Selenium:	BDL	µg/L	Silver:		µg/L
Sodium:	4.4	mg/L	Vanadium:	BDL	µg/L	Zinc:	1.2	µg/L
Hardness:	47	mg/L						
Date Collected	8/24/1999							
Aluminum:	BDL	µg/L	Arsenic:	1.12	µg/L	Barium:	26.2	µg/L
Beryllium:	BDL	µg/L	Boron:	25.3	µg/L	Cadmium:	BDL	µg/L
Calcium:	17.6	mg/L	Chromium:	BDL	µg/L	Cobalt:	BDL	µg/L
Copper:	BDL	µg/L	Iron:	241.0	µg/L	Lead:	BDL	µg/L
Magnesium:	4.1	mg/L	Manganese:	83.4	µg/L	Nickel:	BDL	µg/L
Potassium:	2.4	mg/L	Selenium:	BDL	µg/L	Silver:		µg/L
Sodium:	5.5	mg/L	Vanadium:	BDL	µg/L	Zinc:	19.7	µg/L

Table 6 (cont'd). Water Quality Data for Fourche Creek (I)

Date Collected	10/23/2001							
Hardness:	61	mg/L						
Aluminum:	BDL	µg/L	**Arsenic:**	BDL	µg/L	**Barium:**	42.5	µg/L
Beryllium:	BDL	µg/L	**Boron:**	28.3	µg/L	**Cadmium:**	BDL	µg/L
Calcium:	12.7	mg/L	**Chromium:**	BDL	µg/L	**Cobalt:**	BDL	µg/L
Copper:	1.34	µg/L	**Iron:**	198.0	µg/L	**Lead:**	BDL	µg/L
Magnesium:	3.0	mg/L	**Manganese:**	134.0	µg/L	**Nickel:**	BDL	µg/L
Potassium:	1.5	mg/L	**Selenium:**	BDL	µg/L	**Silver:**		µg/L
Sodium:	4.8	mg/L	**Vanadium:**	BDL	µg/L	**Zinc:**	3.7	µg/L
Hardness:	44	mg/L						
Date Collected	1/29/2002							
Aluminum:	BDL	µg/L	**Arsenic:**		µg/L	**Barium:**	VOID	µg/L
Beryllium:	BDL	µg/L	**Boron:**	VOID	µg/L	**Cadmium:**		µg/L
Calcium:	8.4	mg/L	**Chromium:**		µg/L	**Cobalt:**		µg/L
Copper:		µg/L	**Iron:**	168.0	µg/L	**Lead:**		µg/L
Magnesium:	2.2	mg/L	**Manganese:**	69.8	µg/L	**Nickel:**		µg/L
Potassium:	0.9	mg/L	**Selenium:**		µg/L	**Silver:**		µg/L
Sodium:	6.1	mg/L	**Vanadium:**		µg/L	**Zinc:**	VOID	µg/L
Hardness:	30	mg/L						
Date Collected	3/26/2002							
Aluminum:	136	µg/L	**Arsenic:**	BDL	µg/L	**Barium:**	27	µg/L
Beryllium:	BDL	µg/L	**Boron:**	12.8	µg/L	**Cadmium:**	BDL	µg/L
Calcium:	7.1	mg/L	**Chromium:**	0.49	µg/L	**Cobalt:**	0.5	µg/L
Copper:	1.54	µg/L	**Iron:**	305	µg/L	**Lead:**	BDL	µg/L
Magnesium:	1.7	mg/L	**Manganese:**	55.5	µg/L	**Nickel:**		µg/L
Potassium:	0.7	mg/L	**Selenium:**	BDL	µg/L	**Silver:**		µg/L
Sodium:	2.5	mg/L	**Vanadium:**	BDL	µg/L	**Zinc:**		µg/L
Hardness:	25	mg/L						
Date Collected	5/22/2002							
Aluminum:	BDL	µg/L	**Arsenic:**		µg/L	**Barium:**	32.3	µg/L
Beryllium:	BDL	µg/L	**Boron:**	16.7	µg/L	**Cadmium:**		µg/L
Calcium:	12.1	mg/L	**Chromium:**		µg/L	**Cobalt:**		µg/L
Copper:		µg/L	**Iron:**	410	µg/L	**Lead:**		µg/L
Magnesium:	3.1	mg/L	**Manganese:**	107	µg/L	**Nickel:**		µg/L
Potassium:	1.2	mg/L	**Selenium:**		µg/L	**Silver:**		µg/L
Sodium:	4.2	mg/L	**Vanadium:**		µg/L	**Zinc:**	2.7	µg/L
Hardness:	43	mg/L						
Date Collected	7/30/2002							
Aluminum:	BDL	µg/L	**Arsenic:**	1.24	µg/L	**Barium:**	34.6	µg/L
Beryllium:	BDL	µg/L	**Boron:**	29.1	µg/L	**Cadmium:**	BDL	µg/L
Calcium:	16.6	mg/L	**Chromium:**	BDL	µg/L	**Cobalt:**	BDL	µg/L
Copper:	1.02	µg/L	**Iron:**	179.0	µg/L	**Lead:**	BDL	µg/L
Magnesium:	3.7	mg/L	**Manganese:**	32.0	µg/L	**Nickel:**	BDL	µg/L
Potassium:	2.3	mg/L	**Selenium:**	BDL	µg/L	**Silver:**		µg/L
Sodium:	5.4	mg/L	**Vanadium:**	BDL	µg/L	**Zinc:**	10.2	µg/L
Hardness:	57	mg/L						

Source: ADEQ, 2003.

Table 7. Water Quality Data for Fourche Creek (II)

Date Collected	Ammonia mg/L	NO2 NO3_N mg/L	Ortho-phosphate	Total P mg/L	TKN mg/L	TOC mg/L	BOD mg/L	Turbidity NTU	TSS mg/L	TDS mg/L
10/27/1998	0.03	0.047	0.012	0.027	0.278	6.5	0.7	6	2.5	81
12/8/1998	BDL	0.115	0.017	0.057	0.674	8.3	1.4	23	9	89
2/16/1999	BDL	0.082	0.008	0.027	0.352	4.6		8.1	5.5	75
4/20/1999	0.041	0.081	0.015	0.033	0.305	4.9	1.04		4.5	73
6/8/1999	BDL	0.072	0.008	0.064	0.764	6.05	2.68	7.5	8.5	81
8/24/1999	BDL	0.024	BDL	0.09	1.054	5.86	3.99	12	26.5	91
10/23/2001	BDL	0.046	0.061	BDL	0.48	5.635	1.53	8.6	8	81
1/29/2002	BDL	0.15	0.01	BDL	0.353	4.487	0.55	13	8.5	67
3/26/2002	0.017	0.1	0.013		0.72	6.8	1.26	43	24.3	71
5/22/2002	0.014	0.094	0.006	0.05	0.571	4.379	1.17	9	8	79
7/30/2002	BDL	0.057	BDL	0.883		6.47	Void	8.2	10	96

Source: ADEQ, 2003.

Table 8. Water Quality Data for Fourche Creek (III)

Date Collected	DO mg/L	pH	Water Temp ◦C	Chloride mg/L	Sulfate mg/L	Bromide mg/L	Fluoride mg/L
10/27/1998	17.71	7.03	16	4.46	8.85	BDL	0.15
12/8/1998		6.98	14	5.09	11.4	BDL	0.118
2/16/1999	11.49	7.09	11	4.88	10.7	0.063	0.098
4/20/1999	7.1	7.49		3.44	8.13	0.075	0.131
6/8/1999	8.4	5.64	28	3.48	6.4	0.039	0.217
8/24/1999	9.45	7.73	32	5.53	6.43	0.073	0.329
10/23/2001	5.8	6.86	20	5.43	17.78	0.05	0.13
1/29/2002	9.6	6.08	12	4.32	10.43	0.03	0.11
3/26/2002	9.8	7.29	12	2.93	6.97	BDL	0.12
5/22/2002		7.05	21	4.11	8.46	0.02	0.15
7/30/2002	8.08	7.5	29	4.08	8.42	0.04	0.2

Source: ADEQ, 2003.

Table 9. Fecal Coliform Values for Fourche Creek

Date Collected	Fecal Coliform Colonies/100 mL
4/22/98	100
5/6/98	~8
6/9/98	116
7/15/98	>600
7/29/98	~66
8/26/98	~11
9/10/98	~11
10/1/98	~14
10/27/98	~46
12/8/98	>660
2/16/99	~83
4/20/99	220
6/8/99	~56
8/24/99	~64

Source: ADEQ, 2003.

Table 10. USGS Water Quality Data of Fourche Creek

Parameter	Value
pH (SU)	7.0
Temperature (˚C)	15.0
Turbidity (NTU)	8.6
Dissolved oxygen (mg/L or ppm)	8.5
Fecal coliform bacteria (cols./100 mL)	129

Source: USGS, 2003.

ADEQ has not categorized the waters of Fourche Creek. The *2002 Integrated Water Quality Monitoring and Assessment Report* does not contain any discussion on water quality of Fourche Creek. According to Mr. Bill Keith of the ADEQ Water Division, no fish tissue data exist for the determination of a fish consumption advisory. Mr. Keith stated that if water quality data for Fourche Creek are analyzed according to the *Assessment Criteria*, some conclusions can be drawn about Fourche Creek's supporting conditions. A comparison of the above data with the *Assessment Criteria* supplied in the report *Water Quality Limited Waterbodies-303(d) List-2002* suggests that aquatic life use, primary and secondary contact and agricultural or industrial uses are supported.

6.0 ALTERNATIVES

6.1 Process

The process of alternatives analysis proceeded through a series of steps detailed below:

1. Identification of alternatives;
2. Review and refinement of alternatives;
3. Development of practical alternatives in greater details;
4. Comparative evaluation; and
5. Recommended improvement plan.

The alternatives considered in the analysis were the following:

a. Alternative 1: Existing Alignment and Profile with Single Track Road and Pullouts
b. Alternative 2: Existing Alignment and Profile with Dual Track Road and No Pullouts

6.2 Design Criteria

This section provides a description of the relevant design criteria to be incorporated into the definition and depiction of the study alternatives. The design criteria discussed in this section are as follows:

a. Roadway/Parking
b. Structures
c. Drainage
d. Other

6.2.1 Roadway/Parking

An access road with two parking facilities is proposed for the nature appreciation facility. These features will be in accordance with the guidelines of the American Association of State Highway and Transportation Officials (AASHTO) and will include appropriate ADA parking facilities. Paved surface or an aggregate/crushed stone surface was considered for the access road and parking areas. Because of backwater flooding, poor subgrade, construction and maintenance concerns, and stormwater runoff issues, the aggregate/crushed stone surface was selected for further design consideration. The ADA parking facilities, however, will be paved.

6.2.2 Structures

Required structures for the nature appreciation facility include restrooms (two toilet stalls and one sink each for men and women) and a culvert/bridge under the road. The road bridge/culvert will be in accordance with AASHTO requirements. Restrooms will be in accordance with ADA guidelines. **Note: The restroom and associated utilities was removed as a project feature at the request of the city of Little Rock to lower its share of project costs.**

6.2.3 Other

Other features of the proposed nature appreciation center include foot trails with boardwalks over low areas and water bodies, drinking fountains, signage, and boardwalk overlooks and interpretive kiosks.

ADA provides Accessibility Guidelines for trails designed and constructed for pedestrian use. Under these guidelines, an accessible trail must meet the following minimum technical provisions:

- Clear tread width: 36" maximum.
- Tread obstacles: 2" high maximum (up to 3" high where running and cross slopes are 5 percent or less).
- Cross slope: 5 percent maximum.
- Running slope (trail guide) meets one or more of the following:
    - 5 percent or less for any distance;
    - Up to 8.33 percent for 200' maximum (resting intervals $\leq$ 200' apart);
    - Up to 10 percent for 30' maximum (resting intervals 30');
    - Up to 12.5 percent for 10' maximum (resting intervals 10').
- No more than 30 percent of the total trail length may exceed a running slope of 8.33 percent.
- Passing space provided $\leq$ 100' where trail width is less than 60".
- Signs provided indicating the length of the accessible trail segment.

6.3 Alternative 1

This alternative involves retaining the existing alignment and profile of the access road. The road would be surfaced with aggregate or crushed stone and filled as necessary. The road would be a single-track road with pullouts placed at strategic intervals to allow approaching vehicles to safely pass each other. Two ADA-accessible parking areas with restrooms would be constructed along the roadway. Nature appreciation facilities would be constructed adjacent to the roadway. The facilities would contain approximately three miles of hiking trails, of which 0.5 mile would be ADA accessible; a boardwalk trail, and boardwalk overlooks along borrow ponds; and an open air visitor center/kiosk.

6.4 Alternative 2

This alternative is identical to Alternative 1, with the exception that the access road would be a dual track road without pullouts, allowing approaching vehicles to safely pass each other.

6.5 Required Features

6.5.1 Flush/Composting/Vault Toilet

The Scope of Work identifies a restroom facility (two toilet stalls, one sink each for men and women) to be included in the engineering appendix. Further guidance from the Little Rock District recommended flushing toilets for this facility. Several challenges exist to implement this recommendation. **Note: Due to cost considerations, the flush restroom will not be included.**

Recommendations from park planners suggest not locating interpretive facilities, comfort (restroom) facilities, or parking facilities near the park entrance. Location of these facilities within the park would facilitate a greater immersion experience with regard to the park's natural setting.

In an effort to minimize the length of pipe needed for water service, the recommended flush toilet location lies approximately 3,000 ft from the entrance gate rather than at the cul-de-sac parking near the northernmost utility right-of-way.

The flush toilet facility is proposed to be ADA accessible. However, the 100-year flood level at the project site is approximately 14 ft. In order to accommodate ADA and flooding concerns, the restroom facility's first floor elevation would have to be elevated to 255 ft NGVD (natural ground elevation is approximately 240 ft NGVD). This elevation would require approximately 200 ft of ramps and landings to provide ADA access.

An alternative to this action, if allowed, is slab construction of the restroom in the flood zone. However, monthly inundation from backwater flooding would shorten the functional life of the facility and increase the operation and maintenance cost as well as hasten the replacement of the facility.

A further option/alternative/addition to the flush toilet facility is the emplacement of a vault toilet. The standard for this device must not be less than those established by the American National Standards Institute, Inc. (ANSI) Z4.3-1979 *Minimum Requirements for Non-Water Carriage Disposal Systems* or its subsequent revisions.

Toilet buildings and restrooms provide as much visitor contact as visitor centers. These facilities greatly influence visitors' impressions of the nature appreciation center. Additional criteria considered in siting toilet buildings for Fourche Creek include the following:

- Facilities should be designed suitable to the context, from highly detailed designs in highly developed and visible areas to more utilitarian designs in less developed and less visible areas.

- Vegetation, rock outcrops, boulders, or screens can be used to buffer views of more utilitarian structures.

- Restrooms should be placed locations convenient to parking areas and trailheads and within functional needs of service vehicles.

- Placements that dominate or disrupt attractive views or vistas while allowing visitors easy identification of location should be avoided.

- Restrooms should be located away from stream corridors, rivers, wetlands, or lakes in accordance with state water quality standards.

- To optimize ventilation of vault toilet buildings, an unobstructed airflow should be ensured across the top of the vent pipe and near the wall vent.

- A shut-off valve would be needed on the associated sewer line with an electronic control to shut the valve in the event that the valve becomes submerged before it closes.

- Backflow procedures would be required to seal the park's water lines from their supply during a flood.

- Where possible, toilet buildings should be located downwind of other developments and use areas.

The vault toilet facility proposed at the cul-de-sac parking lot near the northeast corner of the project area would be designed to be ADA accessible but not flood proof. The recommendation for the facility is to provide an environmentally sound and aesthetically pleasing enclosure surrounding readily available ADA accessible Port-o-Lets. The Port-o-Lets would be removed and replaced during and after flood events.

6.5.2 Boardwalk Trail and Interpretive Panel

A boardwalk trail will be constructed along the borrow ponds in the southeastern portion of the project area. An interpretive panel has been proposed for the southernmost borrow pond. The panel would allow visitors to observe waterfowl and other wildlife at close proximity without disturbing them.

6.5.3 0.5-Mile ADA Accessible Trail

Approximately 0.5 mile of the proposed hiking trails will be constructed in accordance with ADA guidelines. The ADA-accessible trail will provide access to the nature appreciation facilities' boardwalks, fishing piers, and interpretive panels located on the borrow ponds as well as provide access to features of key natural and/or aesthetic interest.

7.0 MITIGATION AND MONITORING MEASURES

Mitigation is not anticipated due to the ecosystem restoration purpose of the project. If mitigation requirements are identified, they will be incorporated into the final design.

8.0 RECOMMENDED PROJECT

The recommended project involves retaining the existing alignment and profile of the access road. The road would be paved and filled as necessary. The road would be a single-track road with pullouts placed at strategic intervals to allow approaching vehicles to safely pass each other. Two ADA-accessible parking areas **(one with a restroom)** would be constructed along the roadway. Nature appreciation facilities would be constructed adjacent to the roadway. The facilities would contain approximately three miles of hiking trails, of which 0.5 mile would be ADA accessible; a boardwalk trail, and interpretive panel along borrow ponds; and an open-air visitor center/kiosk (Figure 6).

9.0 FEATURES OF THE RECOMMENDED PLAN

Designs for features of the Recommended Plan are presented in attachments C and D to this Engineering Appendix. Attachment C contains plans and profiles of the proposed roadways and paths. Attachment D contains designs for the nature appreciation facilities structures.

9.1 Description

Upon acquisition of the Fourche Bottoms land tract, a design for the nature appreciation facilities would be implemented. The proposed location of the facilities is between the Missouri Pacific railroad to the west and Interstate Highway 30 to the east and south. Conceptual design and materials would provide the least amount of impact to the habitat designated for proposed activities within Fourche Bottoms. Construction would be subject to best management practices and limitations regarding acceptable weather conditions. Several of the proposed facilities would be created in accordance with ADA standards of accessibility.

Any future trails beyond those detailed in this section are not part of the recommended plan. No equestrian trails are proposed in this Engineering Appendix.

9.2 Roadways

Entry to the facilities would be at the southeast from the east end of 60th Street. This location would provide the facilities with an entrance distinct from surrounding facilities. To minimize impacts, existing roads would be utilized. However, an upgrade in road conditions, including the entrance, may be required due to deteriorated road conditions. Paving and fill would be limited to the extent possible. Two parking lots would be placed at key points along the existing roadway. Parking areas and roads would be designed to minimize the impact to the current hydrologic regime.

9.3 Toilet Facilities

Portable restroom facilities would be located by the main parking area in the northern utility right-of-way. Flush restroom facilities could be located near the entrance of the park to take

advantage of current sewer and water access but were deleted from the plan due to cost constraints.
Permanent restroom facilities would be constructed of typical concrete block above a concrete water table and split face concrete block below this water table. The structure would be roofed with architectural fiberglass shingles. A total of six double hung vinyl clad wood windows would be inset into the rear and side walls. Two acrylic skylights would be emplaced on each side of the roof. Steel doors with wood trim would provide entrance to each restroom. Two toilets and one sink would be installed in each restroom.

The portable restroom stalls would be modified with an environmentally suitable covering or housing to enhance their appearance. Rough sawn overhead and upright lumber is proposed. Both of these restroom facilities would be ADA accessible.

9.4 Boardwalk Bridges

Boardwalk overlook areas would be added to afford visitors the opportunity to view habitat and wildlife in areas that extend into shallow open water. These boardwalk areas would be located at the artificial lakes and along the ADA trail.

The boardwalks would be of picket-rail construction and would be supported by reinforced concrete piers. Vinyl covered wire mesh would be placed between rail posts. An interior width of 5’6” (exterior width 6’) is recommended. Helical piers would be used to anchor the boardwalks into the silt substrate. Anocised aluminum tube interpretive panels would be placed at strategic points along the boardwalks to indicate features of particular interest in the surrounding environment.

9.5 Interpretive Panel

An interpretive panel has been proposed for the southernmost borrow pond. The panel would allow visitors to observe waterfowl and other wildlife at close proximity without disturbing them. The panel would be ADA accessible and would contain an interpretive center to inform visitors of noteworthy features and wildlife visible from the panel.

The interpretive panel would be constructed to allow visitors to view the pond and its associated wildlife while blocking the wildlife’s view of the visitors. The panel would have a back and sides made of cypress with viewing slots arranged to provide a three-sided view of the pond. The panel would be supported on reinforced concrete piers. The panel would offer views from three different directions.

9.6 Fishing Pier (Future Phase by Others)

The fishing pier would be constructed of wood and would be supported by reinforced concrete piers. ADA-accessible fishing stations would be provided on the pier. A roof would be constructed in the center of the pier.

RECOMMENDED PLAN

Public Draft Engineering Appendix
Acquisition of Fourche Bottoms
and Development of Nature Appreciation Facility

LOSCO Little Rock Digital Orthophotos

GEC

Figure: 6
Date: September 2004
Scale:1:10,500
Source: LOSCO/GEC
Map Author: C. Perez

Back of Figure 6

9.7 Parking

Two parking facilities are proposed for the nature appreciation facilities.

The main parking area would be located along the north utility right-of-way (11 car spaces, one ADA car space, two bus spaces, with future parking space that can hold up to 27 car spaces). The parking area would be ovoid in shape. A landscape island would occupy the center of the parking area. Concrete walks would line the outside of the parking area to provide access to vehicles. Curb ramps would be provided along these walks at the sites of ADA parking spaces.

A secondary parking area would be located at the main entrance (nine car spaces, one ADA space, and one bus space). A continuous concrete curb would be constructed along the inside curve of the parking area, and a concrete walk would provide access to vehicles parked along the outside curve. Curb ramps would be provided along these walks at the sites of ADA parking spaces.

In accordance with ADA regulations, the facilities would be accessible to disabled people. Trail access points would be provided at each parking facility.

9.8 Three-Mile Trail

The proposed action calls for approximately three miles of hiking trails, 0.5 mile of which would be ADA accessible. The proposed trail system within the facilities consists of a main loop with an alternate spur. Trails would be designed to emphasize unique and interesting habitats and areas in the project area. Bridges would be provided for crossing the creek or areas that are frequently wet. Environmentally sound construction techniques and materials would be used to reduce impacts to habitat.

9.8.1 Trail Surface Materials

The vast majority of trails are unsurfaced (i.e., native soil). Trails should be surfaced only if absolutely necessary as the process is extremely labor intensive. Other issues to consider when choosing a surface material include: availability of the surface material, cost to purchase the material and install it, life expectancy, accessibility, cost of maintaining the surface, and user acceptance and satisfaction.

Native soil: Soft natural surfaces, including existing soil and vegetation, require less preparation than hard natural surfaces, but rocks, tree roots, and other obstructions require removal. Maintenance consists of correcting drainage problems, repairing eroded areas, and removing new vegetation. If a natural surface is well drained and properly sloped, it will last longer and serve its purpose well.

Wood and bark chips: Wood chips blend well with most natural surroundings and provide a comfortable substrate for foot traffic. However, this surface decomposes rapidly under prolonged exposure to the sun, heat, and humidity, requiring virtually continual maintenance to

maintain proper trail width and depth. Minimum thickness at the time of installation should be no less than three inches, and the entire surface will require replacement every two years.

Crushed stone: Crushed stone, or gravel, provides a smooth, firm, durable surface that is very suitable for trails with high use requirements. Crushed stone surfaces are more easily repaired than asphalt surfaces and the patched areas do not show. Gravel trail surfaces are suitable for a wide range of trail activities. Clay-gravel mixtures provide a trail surface that approaches asphalt or concrete in consistency and helps reduce the spreading seen on gravel-only trails. Sorted or pit run gravel is relatively inexpensive if locally available. This material compacts well and is durable and smooth.

Crushed limestone: Crushed limestone is similar to gravel surfaces. Limestone is generally rolled to provide a smooth surface suitable for most uses. The material must be graded regularly to maintain an even tread, however. Construction procedures are similar to those for gravel surfaces.

Soil cement: Soil cement produces a hard, durable trail surface by shallow mixing of parent material (preferably gravel) with cement and water. When properly "crowned," this tread will shed surface water with little or no erosion. The surface is suitable for heavily used trails.

Road Oyl®: Road Oyl® is an emulsion formulated with pine tree resin solids in suspension. Road Oyl® does not contain petroleum products and is considered an environmentally friendly surface treatment. Consideration of an environmentally suitable surface treatment was requested by the local sponsor. Road Oyl® is designed as a cold applied product and performs best when combined with dense graded aggregated materials. Road Oyl® was applied to the trail surface at the Lorance Creek Natural Area south of Little Rock. This application was the first use of the product in the state of Arkansas. The performance of the product is currently being evaluated. Road Oyl® is costly to produce and difficult to install. Additionally, the product does not appear to adapt well to a high-moisture environment.

Asphalt: Bituminous concrete, or asphalt, trails with a compacted gravel subbase are suitable for Type I foot and bicycle trails. Although development costs are high, annual maintenance cost for paved trails are much lower than for trails with other types of surface treatments.

Concrete: Portland Cement Concrete (PCC) surface depth for Class I recreational trails on natural subgrade or aggregate subbase should be four inches for an 8-ft path and a desirable five inches for a 10-ft path if periodic maintenance trucks use the path. Traverse joints should be cut at 8 ft and 10 ft, respectively. Normally a four-inch thick aggregate subbase or flyash treated subgrade is necessary when soils are of poor quality (i.e., CBR of less than three), are non-uniform, or exhibit high moisture content. Recreational trail pavements should be machine laid. Surface texture is needed but care must be exercised not to create operational problems with too little or too much texture. Broom finish or burlap drag concrete surfaces are preferred over towel finishes.

Other considerations: Designing and selecting pavement sections for recreational trails is in many ways similar to designing and selecting highway pavement sections. At a minimum, a

preliminary soils investigation should be constructed to determine the load carrying capabilities of the native soil and the need for any special provisions. Several basic principles should be followed to recognize some basic differences between the operating characteristics of trails and those of motor vehicles. Although loads on trails are substantially less than highway loads, paths should be designed to sustain without damage wheel loads of occasional emergency, patrol, maintenance, and other motor vehicles that are expected to use or cross the path. Special considerations should be given to the location of vehicle wheel loads on the path. Because wheel loading can cause edge damage that, in turn, will result in the lowering of the effective operating width of the path, adequate edge support should be provided. Edge support can be either in the form of stabilized shoulders in constructing additional pavement width at the edge, or in a thickened pavement edge.

9.9 0.5-Mile ADA Accessible Trail

Approximately 0.5 mile of the proposed hiking trails will be accessible to handicapped people in accordance with ADA guidelines. Proposed future ADA accessible trail will provide access to the boardwalks, fishing piers, and interpretive panels located on the borrow ponds. Additionally, the trail has been designed to pass through areas of unique and interesting habitats.

9.10 Typical Sections

Typical sections are provided in Plan/Profile Sheet 2.

9.11 Alignment

Alignment is provided in Plan/Profile Sheets 3-38. **Note: For cost considerations, the trail will end before crossing the last boardwalk on Path 1 North and 100 feet beyond the start of the last boardwalk on Path 1 South.**

9.12 Other Structures

9.12.1 Open Air Visitors Center/Kiosk

The open-air visitor center/kiosk is proposed as part of the park's signage and would be located along Fourche Creek in the northeast corner of the project area. The open-air design of the visitor center/kiosk would withstand all flood conditions. The kiosk would also be ADA accessible. Energy efficient systems for any exterior lighting would be used when practicable. Educational signage and exhibits would be posted to welcome and familiarize visitors with the habitat, wildlife, and ecological significance of the area. The interpretive panel would be placed on a rough sawn tongue and groove backing supported by rough sawn columns.

10.0 HYDROLOGY AND HYDRAULICS

Changes in the hydrologic regime in the project area can be found in the flood height difference analysis presented in Attachment E of the Engineering Appendix. Any fill required for the

proposed project will be taken as surface removals within the study area. No net loss of storage capacity will occur in the project area as a result of project implementation.

11.0 SURVEY MAPPING AND OTHER GEOSPATIAL DATA

Geospatial data is present in Attachment F to the Engineering Appendix.

12.0 GEOTECHNICAL DATA

Table 11 provides amplifying information about the primary soil series found in the vicinity of the project areas.

Table 11. Project Area Soils

Soil Name	Primary Series	Associated Series
Amy Silt Loam	Amy	Rexor
Amy-Urban Land Complex	Amy	Leadvale
Perry Clay	Perry	Latanier, Moreland, Umbraqualfs
Tiak-Urban Land Complex	Tiak	Leadvale, Smithdale

Source: Soil Survey of Pulaski County, Arkansas, 1975.

Soils in the project area are primarily poorly drained and level. Most of these soils were formed from either coastal plain sediments or from riverine deposits. Permeability ranges from moderate to very slow, with most series experiencing slow permeability. Water capacity is high in all cases.

Additional geotechnical data is provided in Appendix II of the *Fourche Bayou Basin, Vicinity of Little Rock, Arkansas Design Memorandum No. 1*. The conditions presented in this appendix remain current for the project area.

13.0 OPERATION AND MAINTENANCE

Entergy, the electrical provider, maintains the trees and shrubs along the right-of-way using a cycle maintenance program. A cycle refers to the number of growing seasons between prunings. Fourche Bottoms is on a 5-year cycle meaning that Entergy allows the trees to grow for four growing seasons, then prunes before the fifth growing season.

Operation Maintenance Repair Replacement and Rehabilitation (OMRR&R) quantities and costs for the Fourche Bottoms project for a 50-year period of analysis are estimated. Replacement of the structural items is estimated to occur at 25 years. Replacement of the access road, parking areas, and the ADA trail is estimated to occur at 15 years. The replacement period for the non-ADA trails and the boardwalks is estimated to be 20 years. These assumptions are very conservative because of poor site conditions and recurring backwater flooding. Therefore, each of these project components would require complete replacement at the assumed intervals.

Additionally, it should be noted that the sponsor will be responsible for the project OMRR&R for a period far beyond that of the period of analysis.

Roads and parking areas would require leveling and grading semi-annually at a minimum. Mowing of the access right-of-way, parking lots, and trail system would be required semi-annually.

The sewer line for the toilet buildings would require an electronic control to shut the valve in the event that the valve becomes submerged before it closes. Additionally, backflow procedures would be required to seal the park's water lines from their supply during a flood.

Little Rock Parks and Recreation does not currently maintain the area; however, upon the acquisition of the 1,750-acre tract, the operations and maintenance (O&M) costs will occur. There will be two mowing and cleanups every year costing $250 per acre. This would include the nature appreciation facilities with amenities such as foot trails, information signs, plant labels, restrooms, access road, parking area, and boardwalks and bridges into wet or swampy areas. The cost of the nature trail upkeep is approximately $10,000/mile/year with the occasional cut and debris removal. The occasional cleanup including trash and debris removal would occur after major community events and sporadic flooding. Included in this cost, the gate to the facilities would be closed at dusk and opened each morning. Additionally, the authorized plan provided a concentrated 20-acre area for the human experience - the remaining 1,730 acres had no trails or other recreation facilities and would not have been impacted by recreation activities. The current recommended plan no longer provides for a concentrated 20-acre nature appreciation area, but rather spreads an increased amount of recreation facilities and activities over approximately one third of the total site (approximately 600 acres). Because of this widespread areal extent, the concentration of human impacts would be lessened but would occur over a much larger area. Because of the increased impacts to a much larger area, closing the nature appreciation facilities from dusk to dawn would ameliorate the impacts.

14.0 TRAIL MAINTENANCE

In conjunction with the design and construction of the trail system, a maintenance manual will need to be developed. The manual should address the uniqueness of each route relative to its particular need for surfacing, railings, signage, trash removal and sweeping, tree and shrub pruning, mowing of vegetation and edging, drainage control, re-vegetation, and graffiti control. Several of the items that should be addressed are presented below.

The following items would be performed on a continuous, scheduled basis:

Trail user safety: Safety is central to all maintenance operations and is the single most important trail maintenance concern. Items for consideration include scheduling and documentation of inspections, the condition of railings, bridges and trail surfaces, proper and adequate signage, removal of debris, and coordination with others who may be associated with trail maintenance.

Trail inspections: Trail inspections are integral to all trail maintenance operations. Inspections should occur on a regularly scheduled basis, the frequency of which will depend on the amount

of trail use, location, age, and the type of construction. All trail inspections should be documented.

Trail sweeping: Trail sweeping is one of the most important aspects of trail maintenance, helping to ensure trail user safety. The type of sweeping to be performed depends on trail design and location. Sweeping should be performed on a regular schedule.

Trash removal: Trash removal from trail corridors is important from both a safety and an aesthetic viewpoint and includes the removal of ground debris and emptying of trash containers. Trash removal should take place on a regularly scheduled basis, the frequency of which would depend on trail use and locations.

Tree and shrub pruning: Tree and shrub pruning should be performed for the safety of trail users. Pruning should be performed to establish specifications on a scheduled and as-needed basis.

Mowing of vegetation: Trail maintenance personnel should mow vegetation along trail corridors on a scheduled basis.

Scheduling maintenance tasks: Inspections, maintenance, and repair of trail-related concerns should be regularly scheduled. Inspection and repair priorities should be dictated by trail use, location, and design. Scheduling maintenance tasks is a key item towards the goal of consistently clean and safe trails.

The following items would be performed on an irregular or as-needed basis:

Trail repair: Repair of asphalt or concrete trails should be closely tied to the inspection schedule. Setting priorities for repairs is part of the process. The time between observation and repair of a trail would depend on whether the needed repair is deemed a hazard, to what degree the needed repair will affect the safety of the trail user, and whether the needed repair can be performed by the trail maintenance crew or if contracted services will be required.

Trail replacement: The decision to replace a trail and type of replacement depends on many factors. These factors include the age of the trail and the money available for replacement. Replacement involves a new crushed limestone surface, completely overlaying a crushed limestone or asphalt trail with a new asphalt surface, or replacement of an asphalt trail with a concrete trail.

Weed control: Weed control along trails can be limited to areas in which certain weeds create a hazard to users. Environmentally safe weed removal methods should be used, especially along waterways.

Trail edging: Trail edging maintains trail width and improves drainage. Problem areas include trail edges where berms tend to build up and where uphill slopes erode onto the trails. Removal of this material allows proper draining of the trail surface, allows the flowing action of the water to clean the trail, and limits standby water on trail surfaces.

Trail drainage control: In places where low spots on the trail catch water, trail surfaces should be raised, or drains built to carry the water away. Boardwalks may also be constructed over these areas. Some trail drainage control can be achieved through the proper edging of trails. If trail drainage is corrected near steep slopes, the possibility of erosion must be considered.

Trail signage: Trail signs fall into two categories: safety and information. Trail users should be informed of their location with respect to important trail features and should also be informed of trail safety measures. Signs related to safety are most important; consequently, these signs should receive the highest priority. Information signage can enhance the trail users' experience. A system of trail information signage should also be a high priority.

Re-vegetation: Areas adjacent to trails that have been disturbed for any reason should be re-vegetated to minimize erosion.

Habitat enhancement and control: Habitat enhancement is achieved by planting vegetation (primarily trees and shrubs) along trails. Vegetation can improve trail aesthetics, help prevent erosion, and provide habitat for wildlife. An example of this process is the protection of trees along waterways from damage caused by beavers.

Graffiti control: Effective graffiti control is done through prompt observation and removal. During scheduled trail inspections, graffiti should be noted and removed as soon as possible.

15.0 QUANTITY ESTIMATES

Table 12 presents amplifying information on quantity estimates.

Table 12. Fourche Creek Nature Appreciation Center Quantity Estimates

Item	Unit	Quantity*
9" Concrete Road	SY	1451
Gravel Road	CY	1279
Base Course	CY	643
6' Sidewalk	LF	1042
Crusher Dust	CY	1304
6' Boardwalk#	LF	1115
8' Boardwalk	LF	40
9' Boardwalk	LF	100
Geotextile	SY	30855
30" RCP	LF	152
18" RCP	LF	380
12" RCP	LF	44
Water Line&	LF	3000
Sewer Line&	LF	120
Estimated Cut^	CY	3238

Item	Unit	Quantity*
Estimated Fill^	CY	2480
Parking Lot Demolition/ Clearing	LS	1
Port-o-Let with Structure	LS	1
Restroom with Sewer Connection&	SF	605
Remove Existing CMPs (2 Pipes 24")	LF	60
Helical Pier System Boardwalks	LF	1555
Entrance Landscape	LS	1
Entrance Gate and Fence	LS	1
Entrance Sign	EA	1
Light Poles	EA	3
Kiosk Structure	EA	2
Interpretive Sign	EA	16
Interpretive Sign Frame	EA	10
Identification Sign and Frame	EA	20
Trash Removal	LS	1
Site Entry Planning	LS	1
Landscape at Trailhead/Parking Facilities	LS	1

Note: CY = cubic yard; LS = lump sum; LF = linear foot; EA = each; SF = square foot

*Quantities may change in the course of the design process. #Boardwalk distance reduced by 210 feet.

^Trail shortened by 100 feet. &Removed

Source: GEC/MESA, 2004.

Quantity calculations are provided in Attachment G of the Engineering Appendix.

16.0 COST ESTIMATE

The cost estimate is provided in Attachment H of the Engineering Appendix. **It is estimated that the recreation features costs shown would be reduced by $440,000 with the flush restroom and its utilities removed along with 200-feet of boardwalk and 100-feet of trail and $3,000 added for road access. Also, the land costs would be $195,000 less by excluding the contingency and escalation costs associated with the already acquired land.**

17.0 CONCLUSIONS

The following items are to be included in the report:

- Single-track access road with pullouts at existing roadway elevation;
- Crushed stone surface treatment for all access roads, parking facilities (except ADA parking spaces), and non-ADA trails (the initial portion of the access road is to be concrete);

- Non-flush toilet facility at cul-de-sac parking facility;
- Portland Concrete Cement as surface for ADA trails (ADA trails are to be non-graded, minus ¼ aggregates/crushed stone);
- Boardwalks at trail crossings of low areas; and
- Informational signs/interpretive kiosks/plant labels at sites of interest.

18.0 REFERENCES

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Attachment A

PRELIMINARY HTRW ASSESSMENT

EXECUTIVE SUMMARY

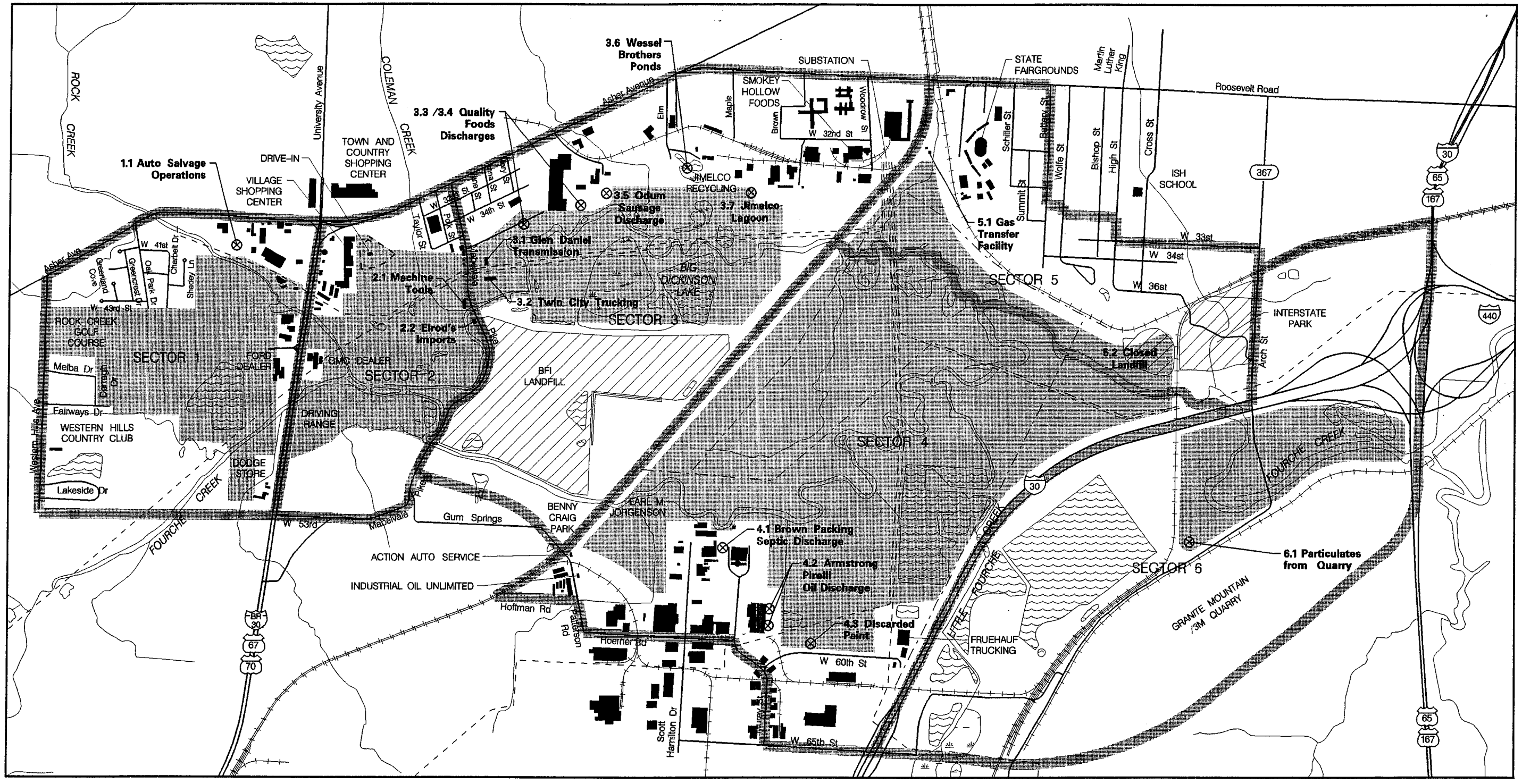
The purpose of this Preliminary Assessment (PA) is to determine the presence of significant hazardous, toxic, and radioactive wastes (HTRW) contamination on approximately 2,100 acres of bottomland lying along Fourche Creek that may be purchased through a cost sharing agreement between the City of Little Rock and the Little Rock District Corps of Engineers. The objective is to distinguish between sites that pose little or no threat to human health and the environment and those sites that require further investigation. Background information derived from historic records reviews, interviews and site reconnaissance of the Study Area and adjacent properties was used to evaluate the potential for a site to act as a source of negative impacts to public health or the environment through past hazardous substance handling and waste disposal practices.

The possible land acquisition area lies within the corporate limits of the City of Little Rock in Pulaski County, Arkansas. Located south of downtown Little Rock, most of the Study Area lies within the floodplain of Fourche Creek. The acquisition land is primarily undeveloped yet contains several utility corridors and is bordered by areas developed for commercial, residential, institutional and industrial uses.

The primary areas containing land uses most likely to have generated hazardous wastes are the commercial and industrial developments that lie to the northwest and southeast of the Fourche Creek Study Area. Data gathered from the records review and visual site investigation concluded that 16 sites within the Study Area warrant further investigations prior to proceeding with acquisition. Twelve of these sites of concern involve current businesses that may be acquired or have discharge practices that need corrected. The two sites of greatest environmental concern are the former Jimelco recycling facility and an old landfill west of Interstate Park.

Approximately 1,900 acres of the 2,100 acre study area appear to pose little or no threat to human health or the environment. Acquisition of the areas containing sites of environmental concern should not proceed until the additional investigations are concluded and those sites are cleared of any recognized environmental conditions.

Additional investigations are recommended for the sites of environmental concern. In some cases, the recognized environmental condition is associated with current activities on an adjacent property. In those cases, the property owner may voluntarily, or following encouragement by a governing agency, agree to investigate and correct the recognized environmental condition identified during this PA.



LEGEND:

- STUDY AREA (Potential Acquisition)
- LANDFILLS
- SITES OF CONCERN
- RAILROAD TRACKS
- OVERHEAD UTILITY LINES
- UNDERGROUND UTILITY LINES
- MARSH OR SWAMP
- OPEN WATER
- SECTOR BOUNDARY

N

2,000' 1,000' 0 2,000' 4,000'

SCALE IN FEET

PARSONS ENGINEERING SCIENCE, INC. ST LOUIS, MISSOURI

LITTLE ROCK DISTRICT US ARMY CORPS OF ENGINEERS LITTLE ROCK, ARKANSAS

FOURCHE CREEK BOTTOMS
PRELIMINARY ASSESSMENT

FIGURE 7.1
SITES OF CONCERN

DATE: NOVEMBER 1997

FOURCHE.DGN

Attachment B

PHASE II ENVIRONMENTAL ASSESSMENT

Fourche Creek
Little Rock, Arkansas

Fourche Creek Bottomlands Environmental Investigation

September, 2002

US Army Corps of Engineers
Little Rock District

TABLE OF CONTENTS

1.0 INTRODUCTION

1.1 Executive Summary

The Preliminary Assessment of the Fourche Creek bottomland was prepared by Parsons Engineering Science, Inc (Preliminary Assessment, Potential HTRW Sites at Fourche Bottomland Acquisition Acreage, Final Submittal, February, 1998). The purpose of the Preliminary Assessment was to distinguish between sites that pose little or no threat to human health and the environment and those sites that require further investigation. The Preliminary Assessment recommended soil and water sampling and analyses to determine if portions of the site to be acquired were contaminated.

This work described in this report constitutes Phase II of the Environmental Assessment. The soil and water sampling and analyses that were recommended by the Parsons Engineering Science, Inc. Preliminary Assessment (Parsons) were performed.

Some of the lands around the industrial sites and the closed Little Rock landfill, now Interstate Park, were eliminated from consideration for acquisition because of contamination.

1.2 Project Location

The Fourche Creek Bottomland area is located south of downtown Little Rock within the floodplain of Fourche Creek and spans approximately 2,100 acres. It lies completely within the corporate limits of the city of Little Rock. The study Area is primarily undeveloped but contains several utility corridors and is bordered by commercial, residential, institutional and industrial uses.

2.0 DESCRIPTION OF INVESTIGATION

The study area was divided into sectors by the Parsons study. Parson's recommendations for each area are listed by sector. The actual samples and analyses are also described. The sample locations are shown on Figure 1.

2.1 SECTOR 1

West of the study area upstream from Sector 1: Parsons recommended that surface water samples be collected from Rock Creek and Fourche Creek to serve as background water quality conditions.

Two Fourche Creek water samples (K110118, K110200) were obtained. One sample was obtained from Fourche Creek at the Railroad Bridge at Interstate Park and the other water sample was obtained at the south Fork of Fourche Creek at Benny Craig Park. The samples were analyzed for volatile organic analytes (VOA), semivolatile organic analytes (Semi-VOAs), and priority pollutant metals (metals).

2.1.1 Site 1.1 - South of Auto Salvage Operations

Two auto salvage operations are located south of Asher Avenue and west of University Avenue. During the Parsons visual site inspection, evidence of stressed vegetation was observed south of the property fence for the eastern most salvage yard within 100 feet of Rock Creek's northern bank. Parsons recommended that two shallow soil samples be obtained from the area south of the salvage yard property fence, north of Rock Creek. They also recommended that one surface water sample be collected where drainage from the auto salvage yard passes toward Rock Creek. These samples should be analyzed using EPA Method 8015 (modified) for total petroleum hydrocarbons (TPH).

One water sample (K106191) was obtained south of the auto salvage operations, between the auto salvage lots and the creek, and analyzed for TPH. The other samples were not obtained since this area was already eliminated from project consideration.

2.2 SECTOR 2

The sites recommended for additional investigation in Sector 2 are associated with current businesses located on the west side of Mabelvale Pike within the study area.

2.2.1 Site 2.1 – Machine Tools Inc.

A garage or machine shop has been located at the current site of Machine Tools since prior to 1966 (USDA, 1966). The current building at this location has seven bay doors that indicate that the facility may have once been used for automobile maintenance and repair.

Parsons recommended that two shallow soil samples be taken from the property at locations where petroleum products may have been used or discharged. It is also recommended that one surface water sample be collected from property drainage moving toward Fourche Creek. The samples should be analyzed for TPH.

Two soil samples (K106195, K106196) and one water sample (K106197) were obtained from the area around the Machine Tools, Inc. site. One soil sample was obtained near the bridge on Geyer Springs Road in front of the facility. The other soil sample and water sample were obtained near the center of the facility where wastes could have been discharged. The samples were analyzed for TPH.

2.2.2 Site 2.2 - Elrod's Imports

A garage or shop has been located at the current site of Elrod's Imports (4700 Mabelvale Pike) since prior to 1974 (USDA, 1974). The facility may have once been used for automobile maintenance and repair. Such operations could generate waste oils, petroleum products or solvents.

Parsons recommended that two shallow soil samples be taken from the property at locations where petroleum products may have been used or discharged. It is also recommended that one surface water sample be collected drainage moving toward Fourche Creek. The samples should be analyzed for TPH.

The facility was used for automotive maintenance when the samples were obtained. Two soil samples (K106198, K106199) and one water sample (K106200) were obtained from areas around Elrod’s Imports from locations where petroleum products could have been used or discharged. One soil sample was obtained between the maintenance building and the creek. The other soil sample was obtained from the field west of the maintenance building where vehicles and other debris had been dumped. The water sample was obtained at the drainage from the facility into Fourche Creek. The samples were analyzed for TPH.

2.3 SECTOR 3

2.3.1 Site 3.1 - Glen Daniels Transmission

A garage has been located at the current site of Glen Daniel Transmission (3611 Mabelvale Pike, Little Rock, AR 72204, 562-3075) since prior to 1983 (USDA, 1983). The facility has

been used for automobile maintenance and repair that could generate waste oils, petroleum products or solvents.

Parsons recommended that two shallow soil samples be taken from the property at locations east of Mabelvale Pike where petroleum products may have been used or discharged. It was also recommended that one surface water sample be collected from the drainage moving toward Fourche Creek. The samples should be analyzed for TPH.

Two shallow soil samples (K106192, K106193) and one water sample (K106194) were obtained from the Glen Daniels Transmission site. One soil sample and the water drainage sample were obtained near the center of the facility. The other soil sample was obtained at the east side of the facility at the drainage toward the creek. The samples were analyzed for TPH.

2.3.2 Site 3.2 - Twin City Trucking

A garage or warehouse has been located at the current site of Twin City Trucking since prior to 1983 (USDA, 1983). The facility may have been used for truck maintenance, repair or servicing that could generate waste oils, petroleum products or solvents.

Parsons recommended that two shallow soil samples be taken from the property at locations east of Mabelvale Pike where petroleum products may have been used or discharged. It is also recommended that one surface water sample be collected from the drainage moving toward Fourche Creek. The samples should be analyzed for TPH.

Two shallow soil samples (K106304, K106305) and one water sample (K106306) were obtained from the Twin City Trucking site. The two soil samples were obtained from the south and southeast areas of the site from depressed areas where contaminants could have been deposited or flowed. The water sample was from Fourche Creek on the south side of the site. The samples were analyzed for TPH.

2.3.3 Site 3.3 - Brown-colored Discharge from Quality Foods

The Quality Foods facility and Ruan Trucking maintenance facility were constructed north of Fourche Creek, east of Mabelvale Pike (north of the study area) after 1983 (USDA, 1983). At the time of this study, the Quality Foods, distribution center was located at 4901 Asher Avenue, and the Ruan Leasing Co. was at 2301 60th Street. The odd brown color of the discharge observed during Parson's visual site inspection may have indicated that the water contained wastes from these businesses. The bright green algae near the point of discharge into Fourche Creek may also indicated that the brown-colored discharge contained a high nutrient load.

Parsons recommended that two water samples be collected for analysis for Oil & Grease, chemical oxygen demand (COD) and biological oxygen demand (BOD). One sample should be collected from the discharge pipe, and one sample should be collected near the point of discharge into Fourche Creek.

One water sample (K106307) was obtained from the stream flowing from the east side of Quality Foods area toward Fourche Creek. No other discharge was determined to exist. This sample was analyzed for BOD, COD, and Oil & Grease.

2.3.4 Site 3.4 – Septic Discharge from Quality Foods

The septic discharge from the Quality Foods facility was identified based on color and odor. The discharge was being released into a grassy low-lying area within the bottomland. There was no channel in which the discharge was flowing, and it did not appear to be reaching Fourche Creek. Parsons recommended that one water sample be collected to quantify the oil and grease and COD/BOD created by the discharge.

This discharge location could not be determined to exist. Therefore, no samples could be obtained.

2.3.5 Site 3.5 – Oil Release from Odum Sausage

A food processing facility has been located north of Fourche Creek, east of Mabelvale Pike at the Odum Sausage site since prior to 1955. Evidence of an oil release was observed emanating from a discharge pipe south of the facility. An oil sheen was observed on standing water and oil stains were observed in a drainageway leading to Fourche Creek. The appearance of the oil sheen and staining would indicate that the release had occurred since the last prior high flow event in the stream leading to Fourche Creek.

Parsons recommended that two sediment samples and two water samples to be analyzed for oil and grease. One sediment and one water sample should be collected near the point of discharge, and one sediment and one water sample should be collected near a point where the stream discharges into Fourche Creek.

Two sediment samples (K106308, K106309) and two water samples (K106310, K106311) were obtained between the Odum Sausage discharge point and Fourche Creek. One water sample and one sediment sample were obtained at the discharge location. The other set of samples was obtained from the stream before its discharge into Fourche Creek. The samples were analyzed for Oil and Grease.

2.3.6 Site 3.6 – Ponds South of Wessel Brothers, Inc.

The ponds south of Wessel Brothers Drilling Company may receive runoff from the Jimelco site. At the time of this study, Wessell Bros. Foundation Drilling Company was located at 3300 S. Elm Street. Additional dumping has occurred in and around these ponds. The northern pond appears in aerial photos as early as 1955. The southern pond does not appear to have formed until recent years. Its formation may have occurred as a result of the parcel previously owned by M & P Equipment receiving large amounts of fill material in the 1980s.

Parsons recommended that two water samples be collected and analyzed for PCB and TPH. One sample should be collected from drainage entering the ponds from the east. The other sample should be collected from the spillway or drainage ditch leading to the south. This site is north of Fourche Creek, south of the Jimelco site.

One water sample (K106342) was collected from drainage entering the ponds from the east. Another water sample (K106343) was collected from the drainage ditch leading to the south. These samples were analyzed for PCB and TPH.

2.3.7 Site 3.7 - Downgradient from Jimelco Site

The Jimelco site has a history of environmental contamination from PCB. Jimelco Recycling Co. was located on S. Maple Street. Stressed and dead vegetation was observed in a marshy area downgradient and on the south side of the Jimelco site. Drainage from the marshy area may either discharge south through a pipe under a vehicle trail or west in a man-made ditch. PCBs can adsorb onto sediment particles that are transportable. Although the marsh lies north of the study area, Parsons recommended that samples be collected from the swamp to help determine if PCBs have been transported off-site and possibly into the study area.

Parsons recommended that a water and a sediment sample be collected from within the marshy area and analyzed for PCBs and TPH. In addition, they recommended that one sediment sample should be collected from the west drainage ditch, and one sediment sample should be collected from beneath the discharge pipe spillway south of the marsh. They recommended that these samples should be analyzed for PCBs and TPH. They suggested that if a water sample can be collected from the drainage either west or south of the Jimelco site, samples should be obtained and analyzed for PCBs and TPH. This site is north of Fourche Creek, south of Jimelco site.

A water sample (K106341) and a sediment sample (K106340) were collected from within the marshy area south of the Jimelco site and analyzed for PCBs and TPH. In addition, one sediment sample (K106339) was collected from the west drainage ditch, and one sediment sample (K106338) was collected from beneath the discharge pipe spillway south of the marsh, and analyzed for PCBs and TPH. A water sample (K106337) was collected from the drainage culvert south of the Jimelco site, and analyzed for PCBs and TPH.

2.4 SECTOR 4

2.4.1 Site 4.1 - Septic Discharge from Brown Packing Company

Parsons detected a septic discharge from Brown Packing Company based on color and odor. Brown Packing Company, a meat processing company, was located at 5301 Scott Hamilton Drive. The discharge was being released into a drainage ditch that proceeded north to Fourche Creek. Evidence of the septic discharge was visible in Fourche Creek at the point of release

from the drainage ditch. Parsons recommended that one water sample be collected at the point of release behind Brown Packing and one water sample be collected at the point of release into Fourche Creek to quantify the COD / BOD and oil and grease created by the discharge. The site is south of Fourche Creek, east of Earl M. Jorgenson Company.

Brown Packing Company has not been in operation in several years. The discharge location no longer exists. No septic discharge was found. Therefore a sample could not be obtained.

2.4.2 Site 4.2 – Oil Release from Pirelli Tire

A manufacturing facility has been located at the Pirelli Tire site since prior to 1971. Parsons observed oil releases emanating from discharge pipes at the northeast and southeast corners of the property. At the southern discharge pipe, an oil sheen was observed on standing water and oil stains were observed in a drainage way leading to a small lake to the east. At the northern discharge pipe, a pool with black oil on the surface was observed, and to the east, a patch of stressed vegetation was observed. Assuming the pipes carry storm water, the pool of oil beneath the north discharge pipe suggests that the release had occurred since the last prior high flow event.

Parsons recommended that four sediment samples and four water samples be analyzed for TPH. Their specific recommendations follow. For each discharge location, one sediment and one water sample should be collected near the point of discharge. At the south discharge location, one sediment and one water sample should be collected near a point where the drainage would typically discharge into the small lake. At the north discharge location, one sediment and one water sample should be collected where the stressed vegetation was observed. The sample locations are east of Pirelli Tire.

Four soil samples and three water samples were obtained from discharge points at the Pirelli Tire site. One soil sample (K106389) and one water sample (K106390) were collected at the northeast corner of the Pirelli Tire site. Another soil sample (K106391) and water sample (K106392) were collected from the receiving swampy area by the northeast discharge location. A soil sample (K106393) was collected from the southeast corner of the Pirelli Tire site at the discharge point. Another soil sample (K106394) and water sample (K106395) were collected from the pond that receives the combined discharges from the Pirelli Tire site, before the water discharges to Fourche Creek. These samples were analyzed for TPH.

2.4.3 Site 4.3 - Discarded Paint Material North of 60th Street

Parsons observed paint materials discarded along the north embankment of 60th Street, west of Freuhauf Trucking. The paint materials included drop cloths and several gallon cans containing partial amounts of paint. Some cans still held their paper labels, suggesting that the materials had been dumped at this location within the year previous to the Parsons Investigation. Paint may be regulated as a hazardous waste because of ignitability and heavy metal content. Sampling could be conducted to determine if the discarded paint materials should be classified as a release of hazardous wastes into the environment. Because of the small and confined nature of

the discarded materials, removal of the wastes and excavation of a small amount of soil if staining were observed beneath the debris were recommended by Parsons instead of an investigation. Therefore, no further investigations were recommended by Parsons for this site. Removal of the discarded materials should occur prior to any property transaction.

2.5 SECTOR 5

2.5.1 Site 5.1 – South of Arkla Gas Compressor

The natural gas line crossing the Sector 5 study area and the associated compressor station located north of the Sector 5 study area have been in place since prior to 1955 (USDA, 1955). Lubricating oils used by some natural gas transmission operators prior to the mid-1970s have been known to contain PCBs. During blowdowns or clean out activities, used lubricating oils are removed that historically may have contained PCBs. Stressed vegetation was observed downgradient from the compressor station, but the cause of the stress could not be determined.

Parsons recommended that two surface soil samples be collected. They said one sample should be collected in the drainage swale just east of the compressor station, and the other sample should be collected from the vicinity of the stressed vegetation. They recommended that the samples be analyzed for PCBs and TPH as an indicator of hydrocarbons that may have been used as lubricating oils. The stressed vegetation was south of the Arkla Gas site.

Two surface soil samples were collected. One soil sample (K106396) was collected in the drainage swale just east of the Arkla Gas meter site, and the other soil sample (K106397) was collected from the vicinity of the stressed vegetation. The samples were analyzed for PCBs and TPH as an indicator of hydrocarbons that may have been used as lubricating oils.

2.5.2 Site 5.2 – Landfill West of Interstate Park

Aerial photos indicated that the landfill was in operation between 1966 and 1974. Soil used for the cap appears to be shallow, and in some locations trees are growing from atop the landfill. It is likely that moisture is penetrating the cap that would increase the amount of leachate escaping from the former landfill. Evidence of a seep and possible leachate zone were observed during Parson's visual site inspection. Although the landfill appeared to have been used for domestic solid waste, stressed and dying vegetation was observed in an apparent leachate zone. Escaping leachate flows downgradient into a marshy area, that also contained drying cypress trees, before migrating to Fourche Creek.

Parsons recommended that samples be collected and analyzed for priority pollutant metals, volatile organic and semi-volatile organic compounds to evaluate whether hazardous leachate is being released into the environment. To assist in this evaluation, three soil borings and groundwater monitoring wells were recommended spaced evenly around the perimeter and offset from the base of the landfill. They recommended that two soil samples be collected from each

boring: one near the surface and one at the depth exhibiting the greatest likelihood of contamination. They recommended that groundwater samples be collected from each monitoring well along with sufficient samples for analytical quality assurance/quality control. Because of the expense and maintenance, and environmental liability associated with the installation of monitoring wells, and since the same information can be obtained from soil analyses, only soil analyses from continuously monitored borings were recommended to be used for the investigation.

Parsons recommended that a water sample be collected from the seep identified near the southeast corner of the landfill and from the marsh containing the dead cypress trees. In addition, Parsons recommended that two surface water samples be collected from along Fourche Creek.

Three soil borings (IP-1, IP-2, and IP-3) were made into the capped landfill. From the Boring IP-1, a sample of suspect material from the 23'-26' depth range (K110015) and a soil sample from the bottom of the landfill at the 27.5'-29' depth range (K110016) were analyzed. From the Boring IP-2, a soil sample from the depth of most likely contamination at the 15'-16.5' range (K110049), a composite soil sample from the range beneath the first sample (K110050), and a ground water sample (K110051) were analyzed. This was the only ground water encountered. From the Boring IP-3, a composite soil sample from the 6'-12' depth range (K110052), a soil sample from the 13.5'-15' depth range (K110053), and a soil sample from the 18'-19.5' depth range (K110054) were analyzed. Two of the samples from Boring IP-3 were split and sent to the quality control laboratory. The composite soil sample from the 6'-12' depth range (0110077-01) and the soil sample from the 18'-19.5' depth range (0110077-02) were analyzed by the quality control lab. Soil samples from the borings were analyzed for volatile organic analytes (VOA), semivolatile organic analytes (Semi-VOAs), total petroleum hydrocarbons (TPH), polychlorinated biphenyls (PCBs), pesticides, and priority pollutant metals (metals). The groundwater sample was analyzed for volatile organic analytes (VOA), semivolatile organic analytes (Semi-VOAs), total petroleum hydrocarbons (TPH), and priority pollutant metals (metals).

A water sample was collected from the seep near the southeast corner of the landfill (K110119). A water sample was collected from the marsh that contained the dead cypress trees (K110089).

Two Fourche Creek water samples (K110118, K110200) were obtained. One sample was obtained from Fourche Creek at the Railroad Bridge at Interstate Park and the other water sample was obtained at the southeast corner of the capped landfill (Interstate Park). The samples were analyzed for volatile organic analytes (VOA), semivolatile organic analytes (Semi-VOAs), and priority pollutant metals (metals).

2.6 SECTOR 6

2.6.1 Site 6.1 - Particulate Accumulation South of Quarry

A large amount of particulate sediment (dust) from the gravel quarry was observed in the southwest corner of the Sector 6 study area. According to the Parsons study, this sediment may indicate that a discharge permit for suspended solids is being exceeded. Although the particulate disposition may detract from the aesthetic quality of this location, tailings from the gravel quarry are inert.

In addition, the Parsons investigators observed a significant amount of particulate dust was evident on the foliage in this vicinity. The dust that migrates into the Sector 6 study area may create a human health concern if the area is to be used by the public for recreation since fine particulates in the air can cause respiratory problems. A long-term ambient air monitoring station would be recommended to determine if the concentration of airborne particulate matter could cause a human health concern.

The estimate to conduct the only initial air monitoring of the area around the gravel quarry for particulate missions was exorbitant ($25,000). Based on this estimate, it was deemed more appropriate to eliminate the sector from consideration than to do a dust study.

2.7 Additional Samples

Additional soil samples were obtained from various locations that were not recommended by Parsons. These soil samples were obtained West of Railroad Bridge - South of I-30 (K10091), West of Arch Street - South of I-30 (K10092), Southwest of I-30/Hwy 65 (K10093), Southeast of I-30/Hwy 65 (K10094), East of I-30 - under overpass (K10095), from the Union Pacific Sump (K10096), and from the Radio Tower Lot (K10097). These samples were analyzed for TPH.

The water used by the drilling company (Anderson Engineering Consultants Inc.) that bored the holes in the landfill was analyzed as the water blank (K110090).

3.0 ANALYTICAL RESULTS

3.1 Laboratory Analyses

Soil and water samples obtained during the investigation were analyzed by Arkansas Analytical Laboratory, Inc. in Little Rock, Arkansas. The quality assurance laboratory was Environmental Technical & Consulting, Inc. of Memphis, Tennessee. The laboratory analyses are at Attachment 1. The Chemical Data Quality Assurance Report (CDQAR) was performed by Fort Worth District Corps of Engineers. The CDQAR is at Attachment 2. The statement from Arkansas Analytical, Inc. is at Attachment 3. Their recalculated data is at Attachment 4. A statement from the Arkansas Department of environmental Quality is at Attachment 5. After Arkansas Analytical laboratory satisfactorily modified the data and addressed the concerns expressed by the CDQAR, the laboratory results were accepted for the purpose of this study, which is to delineate lands that are acceptable for acquisition to be used as the Fourche Creek Restoration and Education Project.

The analytical results were compared to established levels. A synopsis of the analytical results is presented in Table 1. The concentrations of analytes in the soil samples were compared with the EPA Human Health Medium Specific Screening Levels for Outdoor Workers without Dermal contact. The concentrations of analytes in the aqueous samples were compared with the EPA's Maximum Contaminant Level (MCL) from the National Primary Drinking Water Regulations and the Tap Water Screening Levels for Chronic exposure.

Several of the analytes from the water sample (K110051) from the second monitoring well (IP-2) that was drilled into the closed landfill adjacent to Interstate Park exceeded the comparison values. The arsenic concentration in the sample was 0.015 mg/L. The MCL for arsenic is 0.01 mg/L, and the Tap Water Screening Level for Chronic exposure is .0000448 mg/L (0.04 μg/L). Therefore the arsenic concentration exceeded the MCL but not the Screening Level. The concentration of cadmium from the same water sample was 0.01 mg/L. The MCL for cadmium is 0.005 mg/L, and the Screening Level is 0.01825 mg/L (18.25 μg/L). Therefore the cadmium concentration exceeded the MCL, but not the Screening Level. The concentration of lead from the same water sample was 0.286 mg/L. The MCL for lead is 0.015 mg/L, and the Screening Level is also 0.015 mg/L (15 μg/L). Therefore the lead concentration exceeded both the MCL and the Screening Level. The concentration of mercury in the same sample was 0.0021 mg/L. The MCL for mercury is 0.002 mg/L, and the Screening Level is 0.01095 mg/L (10.95 μg/L). Therefore the mercury concentration exceeded both the MCL and the Screening Level.

Several of the analytes from the surface water sample (K110089) from the marsh that contained the dead cypress trees exceeded the comparison values. The arsenic concentration in the sample was 0.035 mg/L. The MCL for arsenic is 0.01 mg/L, and the Tap Water Screening Level for Chronic exposure is .0000448 mg/L (0.04 μg/L). Therefore the arsenic concentration exceeded the MCL and the Screening Level. The concentration of cadmium from the same

water sample was 0.022 mg/L. The MCL for cadmium is 0.005 mg/L, and the Screening Level is 0.01825 mg/L (18.25 μg/L). Therefore the cadmium concentration exceeded the MCL and the Screening Level. The concentration of chromium from the same water sample was 0.21 mg/L. The MCL for chromium is 0.1 mg/L, and the Screening Level is 0.10950 mg/L (109.50 μg/L). Therefore the chromium concentration exceeded the MCL and the Screening Level. The concentration of lead from the same water sample was 0.317 mg/L. The MCL for lead is 0.015 mg/L, and the Screening Level is also 0.015 mg/L (15 μg/L). Therefore the lead concentration exceeded both the MCL and the Screening Level.

The concentration of arsenic from the water sample blank (K110090) was 0.001 mg/L. The MCL for arsenic is 0.01 mg/L, and the Tap Water Screening Level for Chronic exposure is .0000448 mg/L (0.04 μg/L). Therefore the arsenic concentration exceeded the Screening Level but not the MCL. The concentration of chloroform from the water blank (K110090) was 42 μg/L. The Tap Water Screening Level for Chronic exposure to chloroform is 0.16 μg/L. Therefore the chloroform concentration exceeded the Screening Level. (There was no MCL listed for chloroform.) The concentration of bromodichloromethane from the water sample blank (K110090) was 6 μg/L. The Tap Water Screening Level for Chronic exposure is 0.18 μg/L. Therefore the bromodichloromethane concentration exceeded the Screening Level. (There was no MCL listed for bromodichloromethane.)

The concentration of chloroform from the Seep at Southeast corner of landfill (K110119) was 27 μg/L. The Tap Water Screening Level for Chronic exposure to chloroform is 0.16 μg/L. Therefore the chloroform concentration exceeded the Screening Level. (There was no MCL listed for chloroform.)

The concentration of total petroleum hydrocarbons (TPH) in several of the samples exceeded the state limit of 100 parts per million. The TPH concentration in the soil from the NE Point of Discharge at the Pirelli Tire site was 180 mg/Kg (parts per million). The TPH concentration in the soil from the monitoring well IP-1 from the 23'-26' depth range (suspect material) was 331 mg/Kg. The TPH concentration in the sediment from the Union Pacific Sump was 26,000 mg/Kg.

The detection level for antimony (<0.06) in the aqueous samples exceeded the comparison values. The detection level for thallium (<0.05 mg/L) in the aqueous samples exceeded the MCL (0.002 mg/L) and the Screening Level (0.00292 mg/L). The actual concentrations may or may not have exceeded the comparison levels.

3.2 Chemical Data Quality Assurance Report

The Chemical Data Quality Assurance Report (CDQAR) was performed by Fort Worth District Corps of Engineers (Attachment 2). Several problems with the data were revealed by the CDQAR. Several of the samples were outside of the method required holding time. The quality control procedures were not followed by the laboratory for some analyses. (EPA SW-846 states “the analyst should not force the line through the origin, but have the intercept calculated from the data points, i.e., a line through the origin will not meet the quality control

specifications"). The CDQAR also noted that some of the samples were outside of the method required temperature.

The primary laboratory recalculated the results after the curves were regenerated without forcing the origins, reexamined questionable data, and regenerated all reports with any revisions (Attachment 4). This work affected some of the data. The samples that were analyzed outside of the method required holding time were considered acceptable for the purposes of this study, and the land area represented by the samples was not recommended for purchase. The reason that the CDQAR reported that some of the samples were outside of the method required temperature was that the samples were delivered to the laboratory before their temperature had reached equilibrium with the cooler. Fort Worth District Corps of Engineers and the Arkansas Department of Environmental Quality concurred that the modified data were acceptable.

4.0 DATA ANALYSIS

4.1 SECTOR 1

4.1.1 Site 1.1 - South of Auto Salvage Operations:

The water sample that was obtained south of the auto salvage operations, between the auto salvage lots and the creek was not found to contain TPH. The other samples were not obtained since this area was already eliminated from project consideration.

4.2 SECTOR 2

(west of Mabelvale Pike)

4.2.1 Site 2.1 - Machine Tools Inc.:

The site is now used for ceramics production, not a petroleum related industry. The concentrations of TPH in the samples were less than the detection limit.

4.2.2 Site 2.2 - Elrod's Imports:

The concentrations of TPH in the samples were less than the detection limit.

4.3 SECTOR 3

4.3.1 Site 3.1 - Glen Daniels Transmission:

The concentrations of TPH in the samples were less than the detection limit.

4.3.2 Site 3.2 - Twin City Trucking:

The concentrations of TPH in the samples were less than the detection limit.

4.3.3 Site 3.3 - Brown-colored Discharge from Quality Foods:

One water sample (K106307) was obtained from the stream flowing from the east side of Quality Foods area toward Fourche Creek and analyzed for BOD, COD, and Oil & Grease. BOD and COD were detected in the water sample of 5.18 and 26.6 mg/L respectively. This is a low level and contributes minimally to the nutrient load of the receiving stream.

4.3.4 Site 3.4 - Septic Discharge from Quality Foods:

This discharge location could not be determined to exist. Therefore, no samples could be obtained.

4.3.5 Site 3.5 - Oil Release from Odum Sausage:

The Oil & Grease concentration in the aqueous samples was less than the detection limit. Concentrations of Oil & Grease were detected in the soil samples. The concentrations decreased as from the discharge point to the creek. Discharges of Oil & Grease that are not absorbed before they reach the stream will increase the BOD and COD in the stream.

4.3.6 Site 3.6 - Ponds South of Wessel Brothers:

Concentrations of PCBs and TPH were not detected in the water samples from the Wessell Brothers site.

4.3.7 Site 3.7 - Downgradient from Jimelco Site:

A concentration of 73 mg/L of TPH was detected in the sediment sample from the marsh area south of the Jimelco site No other concentrations of PCBs and TPH were detected in the water or sediment samples from the Jimelco site.

4.4 SECTOR 4

4.4.1 Site 4.1 - Septic Discharge from Brown Packing Company:

Brown Packing Company has not been in operation in several years. The discharge location no longer exists. No septic discharge was found.

4.4.2 Site 4.2 - Oil Release from Pirelli Tire:

Pirelli Tire no longer operates a production facility at the site. Petroleum hydrocarbons were detected in the soil and water samples from the area at the northeast corner of the Pirelli Tire site. The sample at the discharge point contained 180 mg/Kg. This exceeds the state limit of 100. Apparently the petroleum hydrocarbons that were predominantly discharged when Pirelli Tire was in operation at the site have been dissipated since the hydrocarbon concentration at the swampy area downgradient from the discharge point was less than the detection limit.

4.5 SECTOR 5

4.5.1 Site 5.1 - South of Arkla Gas Compressor:

. The "Arkla Gas Compressor" site is not presently a compressor site. It is merely a meter station. Concentrations of PCB and TPH were not detected in the soil samples from the Arkla Gas Compressor site.

4.5.2 Site 5.2 - Landfill West of Interstate Park:

The occurrence of many metals, volatile, and semi-volatile organic analytes in the landfill at Boring IP-1 was documented. The only analyte that exceeded one of the limits was the diesel range organics (TPH) identified in the suspect material from the 23'-26' range.

Metals, volatiles, and semi-volatiles were also detected in the landfill at Boring IP-2. The only analytes that exceeded any of the limits were some of the metals in the groundwater sample.

Metals, volatiles, semi-volatiles, pesticides, and PCBs were detected in the landfill at Boring IP-3. However, none of the analytes exceeded any of the limits.

Chloroform was detected in the water sample that was collected from the seep near the southeast corner of the landfill. Chloroform is a byproduct of the chlorination of city water. The seep at the southeast corner of the landfill was probably a water line leak.

Relatively high concentrations of some metals were detected in the water sample that was collected from the marsh that contained the dead cypress trees. The concentrations of arsenic, cadmium, chromium, and lead in this water sample exceeded both the MCLs and the Tap Water Screening Levels.

The Fourche Creek water samples that were obtained at Fourche Creek at the Railroad Bridge at Interstate Park and south fork of Fourche Creek at Benny Craig Park were not contaminated.

4.6 SECTOR 6

4.6.1 Site 6.1 - Particulate Accumulation South of Quarry

This area was eliminated from consideration for purchase for this project because of the exorbitant cost of a dust study. It was deemed cheaper to eliminate the sector from consideration rather than to perform a dust study. . Although the Parsons study contended that the tailings from the gravel quarry were inert, exposing the unsuspecting public to inspirable, thoracic, and

respirable particulate matter could create a course of future litigation. The southwest corner of Sector 6 was eliminated from consideration for purchase.

4.6.2 Additional Samples:

Contaminants were detected in the control water sample. The water used by the drilling company that bored the holes in the landfill (Anderson Engineering Consultants Inc.) was analyzed as the water blank. Chloroform, bromodichloromethane, and arsenic were detected in the water blank that exceeded the limits. Chloroform and bromodichloromethane are a byproduct of the chlorination of city water.

The additional soil samples were obtained from various locations that were not recommended by Parsons were analyzed for total petroleum hydrocarbon content. Only the sediment sample obtained from the Union Pacific Sump contained a concentration of TPH that exceeded the state limit.

5.0 LAND RECOMMENDED FOR PURCHASE

Based on the data presented in this report and visual observation of the site, the area that was considered uncontaminated and suitable for purchase was selected. This area is shown on Figure 2. The areas that were excluded from consideration for acquisition include the area around the closed landfill (Interstate Park), which could generate contaminated leachate, the southwest corner of Sector 6 which could receive dust from the adjacent quarry, and the area west of University Avenue.

6.0 LIST OF PREPARERS

1. Max Frauenthal, Engineer, Planning, Environmental and Regulatory Division, Planning Branch, U. S. Army Corps of Engineers**,** Little Rock District

APPENDIX A: LIST OF ACRONYMS AND ABBREVIATIONS

LIST OF ACRONYMS AND ABBREVIATIONS

BOD	Biological Oxygen Demand
CDQAR	Chemical Data Quality Assurance Report
COD	Chemical Oxygen Demand
EPA	Environmental Protection Agency
MCL	Maximum Contaminant Level
ug/L	micrograms per liter
mg/Kg	milligrams per kilogram
mg/L	milligrams per liter
Parsons	Parsons Engineering Science, Inc. Preliminary Assessment
PCB	Polychlorinated Biphenyls
Semi-VOAs	Semi-Volatile Organic Analytes
TPH	Total Petroleum Hydrocarbons
VOA	Volatile Organic Analytes

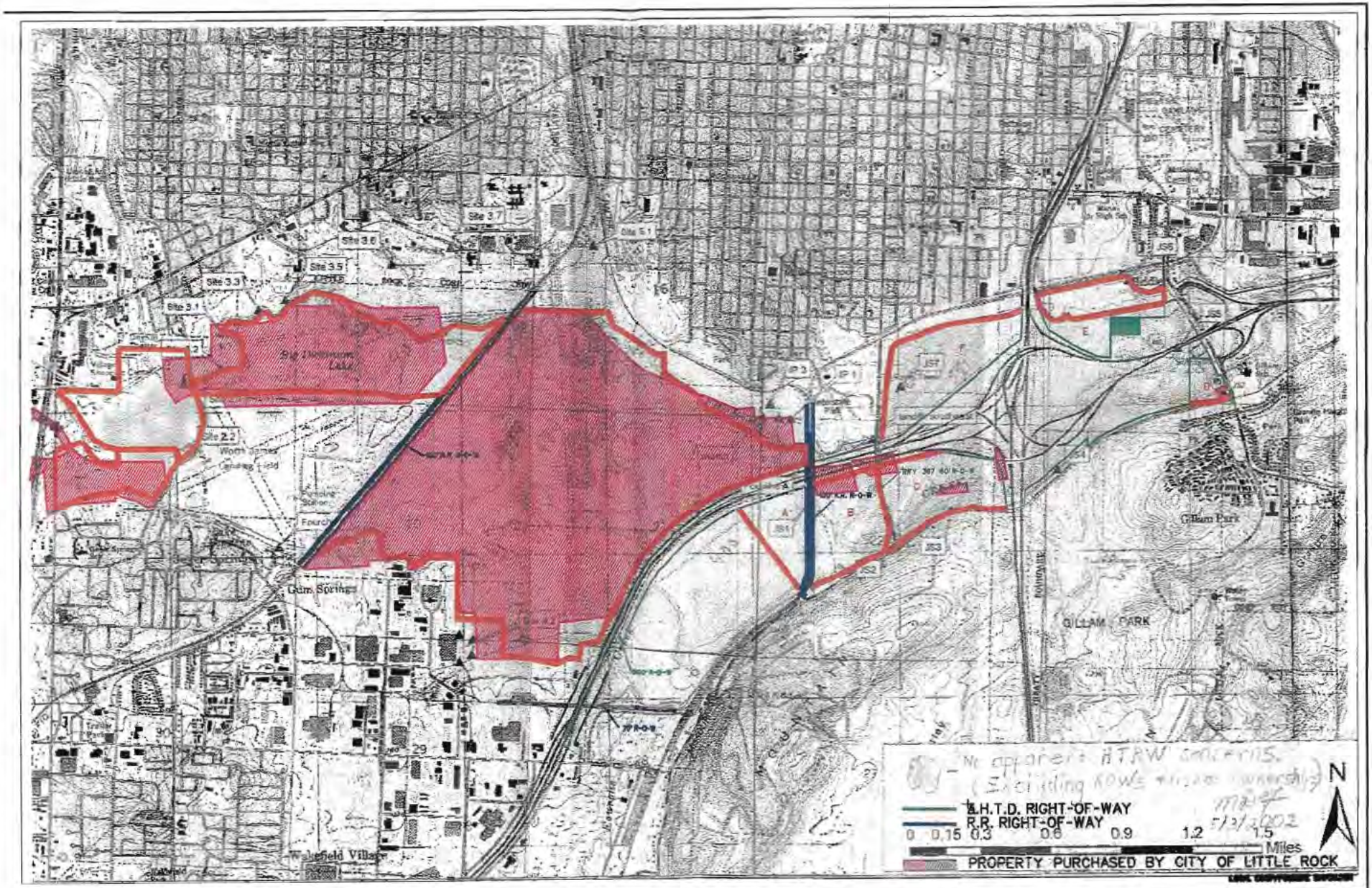
ATTACHMENTS

SYNOPSIS OF ANALYTICAL RESULTS - FOURCHE CREEK BOTTOMLANDS ENVIRONMENTAL ASSESSMENT

	Sector 1			Site 1.1	Site 2.1			Site 2.2			Site 3.1			Site 3.2			Site 3.3	Site 3.5			
	Human Health Medium Specific Screening Levels; Outdoor Worker w/o Dermal	Maximum Contaminant Level	Screening Level; Tap Water, Chronic; ug/L	Site 1.1: Surface Water Sample- drainage to Rock Creek	Machine Tools Inc. on Mabelvale Pike - S. Center Soil	Machine Tools Inc. on Mabelvale Pike - Soil at Bridge	Machine Tools Inc. (water sample)	Elrod's Imports on Mabelvale Pike - Soil Behind Building	Elrod's Imports on Mabelvale Pike -Soil, West Field	Water Sample drainage to Fourche Creek	Glen Daniel Transmission on Mabelvale Pike - Middle Soil Sample	Glen Daniel Transmission on Mabelvale Pike -East Side Soil Sample	Water Sample drainage to Fourche Creek	Twin City Trucking on Mabelvale Pike - Soil, S.E. Corner	Twin City Trucking on Mabelvale Pike - Soil, Middle of Lot	Water Sample drainage to Fourche Creek, South Side	Water Discharge from Quality Foods - East Side	Odum Sausage, Sediment Sample-Discharge Point	Odum Sausage, Water Sample Discharge Point	Odum Sausage, Sediment Sample-toward Creek	Odum Sausage, Water Sample Toward Creek
Lab ID Number				K106191	5	K106196	K106197	8	K106199	K160200	K106192	K106193	K106194	K106304	K106305	K106306	K106307	K106308	K106310	K106309	K106311
METALS	mg/Kg	mg/L	ug/L	mg/L	mg/Kg	mg/Kg	mg/L	mg/Kg	mg/Kg	mg/L	mg/Kg	mg/Kg	mg/L	mg/Kg	mg/Kg	mg/L	mg/L	mg/Kg	mg/L	mg/Kg	mg/L
Antimony	511.00	0.006	14.60																		
Arsenic	383.25	0.01	0.04																		
Beryllium	2425.87	0.004	73.00																		
Cadmium	637.90	0.005	18.25																		
Chromium VI	560.40	0.1	109.50																		
Copper	47450.00	1.3	1355.71																		
Lead	2000.00	0.015	15.00																		
Mercury	383.25	0.002	10.95																		
Nickel	25550.00		730.00																		
Selenium	6387.50	0.05	182.50																		
Silver	6387.50		182.50																		
Thallium	114.98	0.002	2.92																		
Zinc	100000.00	5	10950.00																		
VOLATILES																					
Acetone	7559.98		608.33																		
n-Butylbenzene	237.09		60.83																		
2-Butanone (MEK)	33946.49		1904.35																		
Carbon Disulfide	721.25		1042.86																		
Chlorobenzene	676.64	0.1	106.83																		
1,2-Dichlorobenzene	372.61		370.14																		
1,4-Dichlorobenzene	9.07		0.47																		
Ethylbenzene	233.95	0.7	1339.87																		
Isopropylbenzene	646.84																				
4-Isopropyltoluene																					
Methylene Chloride	25.04		4.28																		
Naphthalene	235.11		6.20																		
Styrene	1733.84	0.1	1641.09																		
1,2,4-Trimethylbenzene	213.29		12.33																		
1,3,5-Trimethylbenzene	87.32		12.33																		
Benzene	1.80	0.005	0.35																		
Toluene	521.17	1	723.42																		
1,3-Dimethylbenzene	214.48																				
1.4-Dimethylbenzene	374.56																				
1,2-Dimethylbenzene	282.26																				
n-Propylbenzene	237.09		60.83																		
1,1,2-Trichloroethane	2.34	0.005	0.20																		
Chloroform	0.65		0.16																		
Bromodichloromethane	2.88		0.18																		
SemiVolatiles																					
Bis(2-Ethylhexyl)phthalate	255.46		4.80																		
Phenanthrene (surrogate =anth	100000.00		1825.00																		
Fluoranthene	51092.24		1460.00																		
Pyrene	35976.81		182.50																		
Chrysene	489.97		9.21																		
Benzo(k)fluoranthene	49.00		0.92																		
2-methyl Naphthalene																					
Dimethylphthalate	100000.00		365000.00																		
Diethylphthalate	100000.00		29200.00																		
Pesticides	mg/Kg																				
4,4'-DDD	14.90		0.28																		
4,4'-DDE	10.52		0.20																		
4,4'-DDT	10.52		0.20																		
Dieldrin	0.22		0.00																		
Endrin Aldehyde (Endrin)	383.19		10.95																		
Gamma Chlordane	10.218	0.002	0.19																		
Alpha Chlordane	10.218		0.19																		
PCBs																					
PCB-1242	1.79		0.03																		
PCB-1260	1.79		0.03																		
TPH																					
TPH-DRO				<	<	<	<	<	<	<	<	<	<	<	<	<					
TPH-GRO				<	<	<	<	<	<	<	<	<	<	<	<	<					
Oil & Grease																	<	1500	<	470	<
BOD																	5.18				
COD																	26.6				
ND: <x: Less than the detection limit of "x".			mg/Kg: milligrams per kilogram				TPH: Total Petroleum Hydrocarbon					42	Value exceeded a comparison value								
NA: Not Analyzed			ug/Kg: micrograms per kilogram				DRO/GRO: Diesel/Gasoline Range Organics														

	Site 3.6		Site 3.7					Site 4.2							Site 5.1	
	Water Sample-drainage entering ponds south of Wessel Brothers	Water Sample-drainage leaving ponds south of Wessel Brothers	Jimelco - Culvert Under Vehicle Trail S.E. of Jimelco, Water	Jimelco - Culvert Under Vehicle Trail S.E. of Jimelco, Sediment	Drainage Ditch, West of Jimelco - sediment sample	Marsh Area, South of Jimelco - sediment sample	Marsh Area, South of Jimelco - water sample	Pirelli Tire - Soil, NE Point of Discharge	Pirelli Tire - WATER, NE Point of Discharge	Pirelli Tire - Soil, NE Swamp	Pirelli Tire - WATER, NE Receiving Swamp	Pirelli Tire - Soil, SE Point of Discharge	Pirelli Tire - Soil, SE Pond	Pirelli Tire - WATER, SE Pond	Arkla Gas compressor station - swale east of compressor station	Arkla Gas compressor station - Stressed Veg. Area
Lab ID Number	K106342	K106343	K106337	K106338	K106339	K106340	K106341	K106389	K106390	K106391	K106392	K106393	K106394	K106395	K106396	K106397
METALS	mg/L	mg/L	mg/L	mg/Kg	mg/Kg	mg/Kg	mg/L	mg/Kg	mg/L	mg/Kg	mg/L	mg/Kg	mg/Kg	mg/L	mg/Kg	mg/Kg
Antimony																
Arsenic																
Beryllium																
Cadmium																
Chromium VI																
Copper																
Lead																
Mercury																
Nickel																
Selenium																
Silver																
Thallium																
Zinc																
VOLATILES																
Acetone																
n-Butylbenzene																
2-Butanone (MEK)																
Carbon Disulfide																
Chlorobenzene																
1,2-Dichlorobenzene																
1,4-Dichlorobenzene																
Ethylbenzene																
Isopropylbenzene																
4-Isopropyltoluene																
Methylene Chloride																
Naphthalene																
Styrene																
1,2,4-Trimethylbenzene																
1,3,5-Trimethylbenzene																
Benzene																
Toluene																
1,3-Dimethylbenzene																
1.4-Dimethylbenzene																
1,2-Dimethylbenzene																
n-Propylbenzene																
1,1,2-Trichloroethane																
Chloroform																
Bromodichloromethane																
SemiVolatiles																
Bis(2-Ethylhexyl)phthalate																
Phenanthrene (surrogate =anth																
Fluoranthene																
Pyrene																
Chrysene																
Benzo(k)fluoranthene																
2-methyl Naphthalene																
Dimethylphthalate																
Diethylphthalate																
Pesticides																
4,4'-DDD																
4,4'-DDE																
4,4'-DDT																
Dieldrin																
Endrin Aldehyde (Endrin)																
Gamma Chlordane																
Alpha Chlordane																
PCBs	<	<	<	<	<	<	<								<	<
PCB-1242																
PCB-1260																
TPH																
TPH-DRO	<	<	<	<	<	73	<	180	4.84	<10	1.47	<	<	<	<	<
TPH-GRO	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<
Oil & Grease																
BOD																
COD																

	Site 5.2																					
	IP-1	IP-1	IP-2	IP-2	IP-2	IP-3	IP-3	IP-3	QC	QC						JS-1	JS-2	JS-3	JS-4	JS-5	JS-6	JS-7
	Monitoring Well No. 1; Suspect Material, 23'-26'	Monitoring Well No. 1; Bottom of Landfill; 27.5'-29'	IP- 2, Depth of most likely contaminatio n; 15-16.5'	IP-2, Composite	IP-2, Ground-water	6'-12' Composite	13.5-15.'	18.0-19.5'	IP-3, 6-12'; QC Sample by ETC, Inc.	IP-3 18.0-19.5'; QC Sample by ETC, Inc.	Marsh that contains dead cypress trees	Fourche Creek, Back-ground water sample A, Interstate Park at Railroad Bridge	Seep at Southeast corner of landfill	Fourche Creek Back-ground water sample B; South Fork of Fourche, Benny Craig Park	Blank; Anderson Water	West of Railroad Bridge, South of I-30	Westof Arch Street, South of I-30	Southwestof I 30/Hwy 65	Southeast of I-30/Hwy 65	East on I-30, under overpass	Union Pacific Sump	Radio Tower Lot
Lab ID Number	K110015	K110016	K110049	K110050	K110051	K110052	K110053	K110054	0110077-01	0110077-02	K110089	K110118	K110119	K110200	K110090	K110091	K110092	K110093	K110094	K110095	K110096	K110097
METALS	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/L	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/L	mg/L	mg/L	mg/L	mg/L	NA	NA	NA	NA	NA	NA	NA
Antimony	<11.1	<7.96	<7.34	<7.53	<0.06	<7.51	<8.64	<4.94	<1	<1	<0.06	<0.06	<0.06	<0.06	<0.06							
Arsenic	78.5	1.57	1.13	13.2	0.015	25.9	8.73	2.41	15.8	4.64	0.035	0.002	<0.001	<0.001	0.001							
Beryllium	<0.927	<0.663	<0.612	<0.627	<0.005	<0.626	<0.72	<0.412	0.309	0.74	<0.005	<0.005	<0.005	<0.005	<0.005							
Cadmium	28.2	1.22	0.873	7.76	0.01	9.14	20	1.33	4.88	0.856	0.022	<0.005	<0.005	<0.005	<0.005							
Chromium VI	139	16.6	9.43	32	0.074	45.6	40.2	12.1	26.7	16.5	0.21	<0.02	<0.02	<0.02	<.02							
Copper	155	15	80.4	121	0.187	313	126	14	89.7	30.8	0.31	0.035	<0.01	<0.01	0.013							
Lead	546	24.4	8.61	317	0.286	339	668	14.7	343	29	0.317	<0.04	<0.04	<0.04	<.04							
Mercury	2.98	1.32	0.102	0.618	0.0021	1.14	0.821	0.099	0.667	0.077	0.0019	<0.0002	<0.0002	<0.0002	<.0002							
Nickel	82.1	9.56	87.9	62	0.209	141	32.3	10.6	85.3	21.1	0.323	<0.04	<0.04	<0.04	<.04							
Selenium	<0.371	<0.265	<0.245	<0.251	<0.002	<0.250	<0.288	<0.165	0.618	0.707	<.002	<0.002	<0.002	<0.002	<.002							
Silver	<3.71	<2.65	<2.45	<2.51	<0.02	<2.50	<2.88	<1.65	1.31	<0.5	0.021	<0.02	<0.02	<0.02	<.02							
Thallium	<9.27	<6.63	<6.12	<6.27	<0.05	<6.26	<7.20	<4.11	.659J	<1	<.05	<0.05	<0.05	<0.05	<.05							
Zinc	82.1	9.56	26.1	3110	1.52	774	749	36.5	618	81	1.86	0.016	0.032	0.005	0.016							
VOLATILES	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/L	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/L	ug/L	ug/L	ug/L	ug/L	NA	NA	NA	NA	NA	NA	NA
Acetone	514	281	<40	<40	<50	192	127	<40	369	130	<50	<50	<50	<50	<50							
n-Butylbenzene	53	<8	<8	<8	<5	<8	22	<8	8.04	<2	<5	<5	<5	<5	<5							
2-Butanone (MEK)	<40	<40	<40	<40	<50	<40	<40	<40	90.6	<40	<50	<50	<50	<50	<50							
Carbon Disulfide	<40	<40	<40	<40	<50	<40	<40	<40	19.6	20.3	<50	<50	<50	<50	<50							
Chlorobenzene	64	<8	<8	<8	<5	<8	23	<8	9.71	<2	<5	<5	<5	<5	<5							
1,2-Dichlorobenzene	29	<8	<8	<8	<5	<8	18	<8	8.27	<2	<5	<5	<5	<5	<5							
1,4-Dichlorobenzene	119	<8	<8	20	<5	41	88	<8	71	3.92	<5	<5	<5	<5	<5							
Ethylbenzene	12	<8	<8	<8	<5	<8	30	<8	9.24	<2	<5	<5	<5	<5	<5							
Isopropylbenzene	61	<8	<8	<8	<5	<8	50	<8	5.48	<2	<5	<5	<5	<5	<5							
4-Isopropyltoluene	75	<8	<8	<8	<5	<8	<8	<8	49.5	<2	<5	<5	<5	<5	<5							
Methylene Chloride	27	11	<8	<8	<5	<8	<8	<8	32.1	<10	<5	<5	<5	<5	<5							
Naphthalene	128	<8	<8	<8	<5	<8	17	<8	3.17	<2	<5	<5	<5	<5	<5							
Styrene	<8	<8	<8	<8	<5	<8	<8	<8	4.61	<2	<5	<5	<5	<5	<5							
1,2,4-Trimethylbenzene	50	<8	<8	<8	<5	<8	48	<8	3.18	<2	<5	<5	<5	<5	<5							
1,3,5-Trimethylbenzene	11	<8	<8	<8	<5	<8	16	<8	5.48	<2	<5	<5	<5	<5	<5							
Benzene	12	<8	<8	<8	<5	<8	8	<8	<2	<2	<5	<5	<5	<5	<5							
Toluene	<8	<8	<8	<8	<5	<8	36	<8	<4	<4	<5	<5	<5	<5	<5							
1,3-Dimethylbenzene	<8	<8	<8	<8	<5	<8	46	<8			<5	<5	<5	<5	<5							
1.4-Dimethylbenzene	<8	<8	<8	<8	<5	<8	46	<8			<5	<5	<5	<5	<5							
1,2-Dimethylbenzene	<8	<8	<8	<8	<5	<8	38	<8			<5	<5	<5	<5	<5							
n-Propylbenzene	76	<8	<8	<8	<5	<8	24	<8	<2	<2	<5	<5	<5	<5	<5							
1,1,2-Trichloroethane	15	<8	<8	<8	<5	<8	<8	<8	<2	<2	<5	<5	<5	<5	<5							
Chloroform	<8	<8	<8	<8	<5	<8	<8	<8	<2	<2	<5	<5	27	<5	42							
Bromodichloromethane	<8	<8	<8	<8	<5	<8	<8	<8	<2	<2	<5	<5	<5	<5	6							
SemiVolatiles	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/L	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/L	ug/L	ug/L	ug/L	ug/L	NA	NA	NA	NA	NA	NA	NA
Bis(2-Ethylhexyl)phthalate	<650	3220	<650	710	<16	2070	1480	<650	<17,000	<1,700	<13	<13	<13	<7	<7							
Phenanthrene (surrogate =anth	<650	<650	<650	<650	<16	<650	530J	<650	<6,700	<670	<13	<13	<13	<7	<7							
Fluoranthene	680	<650	<650	<650	<16	1910	640J	<650	<6,700	<670	<13	<13	<13	<7	<7							
Pyrene	520	<650	<650	<650	<16	1510	540J	<650	<6,700	<670	<13	<13	<13	<7	<7							
Chrysene	<650	<650	<650	<650	<16	1300	<650	<650	<6,700	<670	<13	<13	<13	<7	<7							
Benzo(k)fluoranthene	<650	<650	<650	<650	<16	870	<650	<650	<6,700	<670	<13	<13	<13	<7	<7							
2-methyl Naphthalene	1400	<650	<650	<650	<16	<650	<650	<650	<17,000	<1,700	<13	<13	<13	<7	<7							
Dimethylphthalate	270J	<650	<650	<650	<16	<650	<650	<650	<17,000	<1,700	<13	<13	<13	<7	<7							
Diethylphthalate	570J	<650	<650	<650	<16	<650	<650	<650	<17,000	<1,700	<13	<13	<13	<7	<7							
Pesticides	ug/Kg	ug/Kg	ug/Kg	ug/Kg	NA	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDD	<3.68	<3.68	<3.68	<3.68		188	<3.68	<3.68	37.6	<2												
4,4'-DDE	73	<1.34	<1.34	<1.34		65	<1.34	<1.34	11.7	<2												
4,4'-DDT	<4.02	<4.02	<4.02	<4.02		<4.02	<4.02	<4.02	7.87	<2												
Dieldrin	<0.67	<0.67	<0.67	<0.67		<0.67	<0.67	<0.67	53.6	<2												
Endrin Aldehyde (Endrin)	<7.70	<7.70	<7.70	<7.70		<7.70	<7.70	<7.70	46.7	<2												
Gamma Chlordane						176																
Alpha Chlordane						136																
PCBs	mg/Kg	mg/Kg	mg/Kg	mg/Kg	NA	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	NA	NA	NA	NA	NA	NA	mg/Kg	NA	NA	NA	NA	NA
PCB-1242	<1	<1	<1	<1		<1	<1	<1	0.324	0.0791							<1					
PCB-1260	<1	<1	<1	<1		<1	<1	<1	0.141	<0.035							<1					
TPH	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/L	mg/Kg	mg/Kg	mg/Kg	NA	NA	NA	NA	NA	NA	mg/L	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
TPH-DRO	331	27.2	<10	<10	<.5	14	17.6	<10							<0.100	<10	<10	<10	<10	<10	26000	67
TPH-GRO	0.313	<.100	<.1	<.1	NA	<.1	1.27	<.1							<0.5	<0.100	<0.100	<0.100	<0.100	<0.100	4.14	<0.100


Site 3.7
Site 3.6
Site 3.5
Site 3.3
Site 3.1
Site 5.1
Site 2.2
Big Dam Bow
Lake
Gum Springs
Wakefield Village
Gillam Park
GILLAM PARK
A.H.T.D. RIGHT-OF-WAY
R.R. RIGHT-OF-WAY
0 0.15 0.3 0.6 0.9 1.2 1.5
Miles
PROPERTY PURCHASED BY CITY OF LITTLE ROCK
N

ADEQ

ARKANSAS
Department of Environmental Quality

Date: April 25, 2002

Mr. Max Frauenthal
U.S. Corp of Engineers
P.O. Box 867
Little Rock, AR 72203

Ref: Requested analytical Data review of project Fourche Creek

After reviewing the Arkansas Analytical and ETC data reports I agree with all the statements listed in the CDQAR for Fourche Creek dated April 3, 2002. I would like to bring to your attention an item that may need to be further investigated.

Metals:
ID# K110051 and K110089,
Lead levels above limits.

Sincerely,

Jeff Ruehr
ADEQ, QA Officer

TECHNICAL SERVICES DIVISION
8001 NATIONAL DRIVE / POST OFFICE BOX 8913 / LITTLE ROCK, ARKANSAS 72219-8913 / TELEPHONE 501-682-0937 / FAX 501-682-0936
www.adeq.state.ar.us

HTRW

From: Taylor, Patricia A SWD
Sent: Monday, May 13, 2002 11:26 AM
To: Frauenthal, Max D SWL
Subject: RE: Fourche Creek land acquisition, Little Rock, Arkansas
Max:
Sounds like you have it covered. Good job.
Patty

-----Original Message-----
From: Frauenthal, Max D SWL
Sent: Monday, May 13, 2002 11:10 AM
To: Taylor, Patricia A SWD
Cc: Smethurst, Julia A SWL; Barber, David W SWD
Subject: RE: Fourche Creek land acquisition, Little Rock, Arkansas

Patty:
Thanks for the response and welcome back.

Yes, I believe the confines of the landfill have been adequately defined. A recreational area (baseball & soccer fields) was built over a large portion of the landfill, and the rest of the landfill is fairly obvious. In addition to this, yes, Parsons did perform an adequate records search/field inspection documented with historical records and photographs, etc., and many people still remember when the landfill was active. HQ USACE reviewed the Parsons report 21 December 1999, and stated the report was well prepared, and agreed that we could avoid contaminated sites, but stated that we had to be certain that the lands to be acquired were free from contamination.

Thanks,
Max

-----Original Message-----
From: Taylor, Patricia A SWD
Sent: Monday, May 13, 2002 10:11 AM
To: Frauenthal, Max D SWL
Cc: Smethurst, Julia A SWL; Barber, David W SWD
Subject: RE: Fourche Creek land acquisition, Little Rock, Arkansas

Max:
Based upon what you have told me, I believe you have satisfied the requirements. Avoiding the landfill was a wise decision. My only question/concern is that you are certain you have adequately defined the confines of the landfill area. Did Parsons perform an adequate records search/field inspection (looking at historical records/pictures/newspaper articles, research State records, did they conduct an actual field visit, documented with pictures?).
I would be happy to take a look at the Parsons report if you think it would assist you.
Let me know.
Thanks.
Patty
P.S. I'm back to work full-time now. Thank you for your patience with me.

-----Original Message-----
From: Frauenthal, Max D SWL
Sent: Friday, May 03, 2002 3:47 PM
To: Taylor, Patricia A SWD

Cc: Smethurst, Julia A SWL
Subject: Fourche Creek land acquisition, Little Rock, Arkansas

Hi Patty,

We are in the process of performing a limited re-evaluation report for the acquisition of 1,750 acres of bottomland in Fourche bayou. Parsons Engineering Science, Inc. performed the preliminary assessment report. There were some HTRW concerns. Our requirement was to acquire no land contaminated with HTRW.

We performed the site inspection as recommended by the Parsons assessment. An Arkansas certified laboratory was used because of their experience with PCBs instead of a Corps validated lab. Ft. Worth District (Roxanne Welch) performed the Chemical Data Quality Assessment Report. The CDQAR noted several problems. After discussion with laboratory personnel and receipt of feedback from Ft. Worth on the lab's response, we requested the primary lab to correct the errors that could be corrected after the fact. The Arkansas Department of Environmental Quality confirmed the CDQAR and expressed concern about lead in the landfill.

We took into consideration that the purpose of the investigation was to eliminate land that we do not wish to purchase. Since it was for screening purposes only, the data confirmed that we will not purchase the former city dump. The most questionable data pertained to the dump area. It also appears that the landfill contents have not contaminated the land downstream.

Based on our investigations, we are certifying to our Real Estate Division which land we consider acceptable for purchase with respect to HTRW concerns.

Are there any additional requirements that we need to meet at this time?

Max Frauenthal

Attachment C

PLANS AND PROFILES

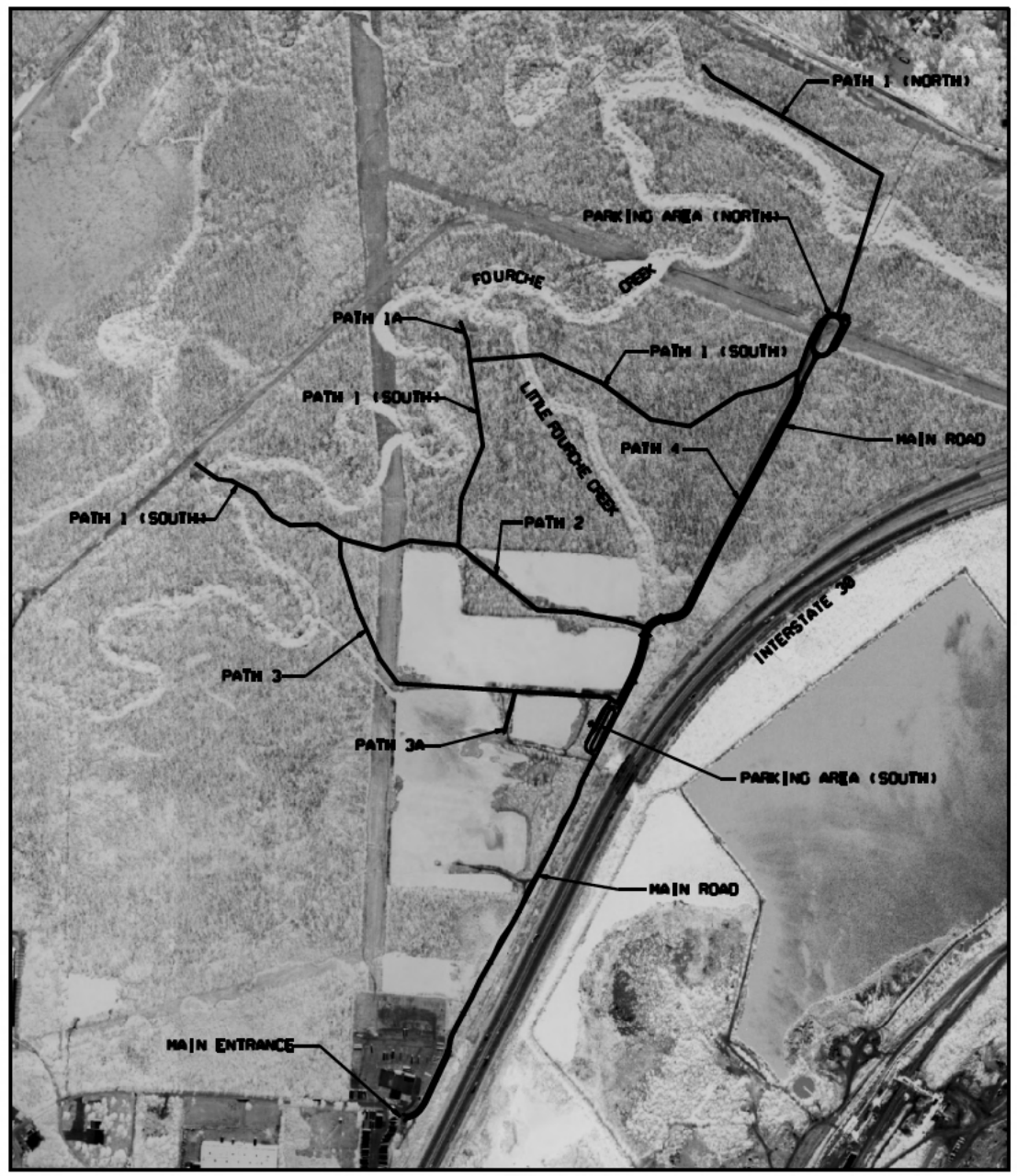
INDEX TO SHEETS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	LAYOUT PLAN
3	PARKING AREAS SITE PLAN
4	TYPICAL SECTIONS
5-12	MAIN ROAD PLAN/PROFILE
13-16	PATH 1 (NORTH) PLAN
17-25	PATH 1 (SOUTH) PLAN
26	PATH 1A PLAN
27-28	PATH 2 PLAN
29-32	PATH 3 PLAN
33	PATH 3A PLAN
34-37	PATH 4 PLAN

DEPARTMENT OF THE ARMY
LITTLE ROCK DISTRICT, CORPS OF ENGINEERS
PLANS OF PROPOSED

LIMITED RE-EVALUATION REPORT (LRR)

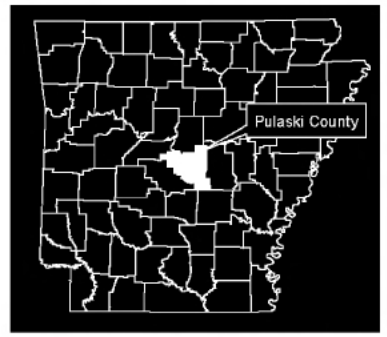
PREPARATION OF NATURE APPRECIATION FACILITIES
DESIGN, ECONOMIC, AND ENVIRONMENTAL ANALYSIS
1,750-ACRE BOTTOMLAND ACQUISITION
FOURCHE BAYOU BASIN, LITTLE ROCK, ARKANSAS
CONTRACT NUMBER DACA03-02-D-0003, TASK ORDER 0002



LAYOUT MAP

SCALE: 1 INCH = 600 FEET

0 600 1200 1800 2400



ARKANSAS VICINITY MAP

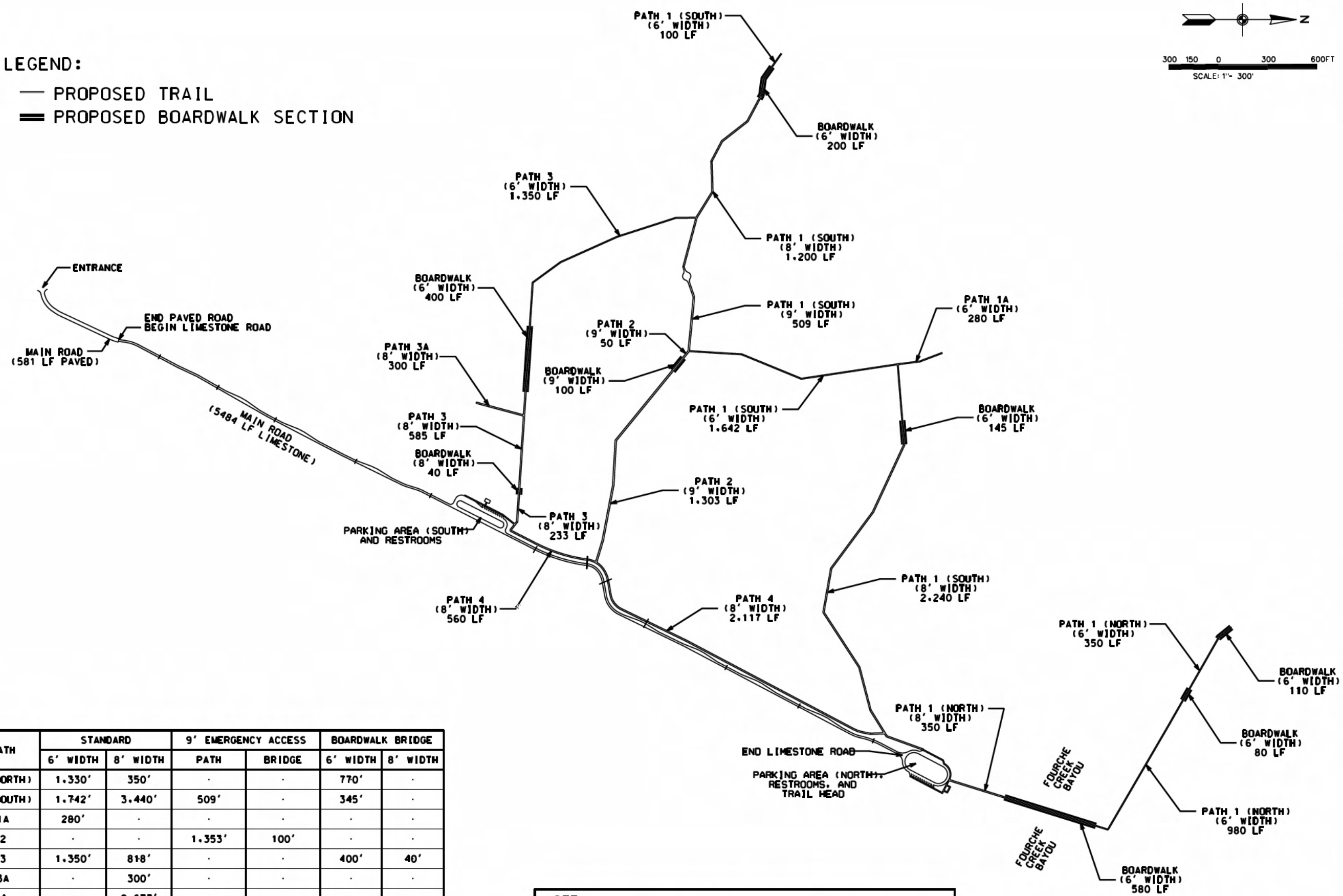
NOTE:
ALL DRAWINGS ARE PRELIMINARY AND ARE NOT TO BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.

SHEET NUMBER 1
COUNTY: PULASKI COUNTY, AR
FEDERAL PROJECT: XXX
STATE PROJECT: XXX
DESIGNED / CHECKED: R. HAMES
DETAILED / CHECKED: B. CHEMIN
DATE / SHEET: APRIL, 2004
BY
NO. REVISION DESCRIPTION DATE
FOURCHE CREEK
TITLE SHEET
GEC

LEGEND:

PROPOSED TRAIL

PROPOSED BOARDWALK SECTION



PATH	STANDARD		9' EMERGENCY ACCESS		BOARDWALK BRIDGE	
	6' WIDTH	8' WIDTH	PATH	BRIDGE	6' WIDTH	8' WIDTH
1 (NORTH)	1,330'	350'	·	·	770'	·
1 (SOUTH)	1,742'	3,440'	509'	·	345'	·
1A	280'	·	·	·	·	·
2	·	·	1,353'	100'	·	·
3	1,350'	818'	·	·	400'	40'
3A	·	300'	·	·	·	·
4	·	2,677'	·	·	·	·
TOTALS	4,702'	7,585'	1,862'	100'	1,515'	40'

NOTE:
ALL DRAWINGS ARE PRELIMINARY AND ARE NOT TO BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.

SHEET NUMBER 2

COUNTY: PULASKI COUNTY, AR

FEDERAL PROJECT: XXX

STATE PROJECT: XXX

DESIGNED: R. MANES

DETAILED: B. CHEMIN

CHECKED:

DATE: OCT. 2004

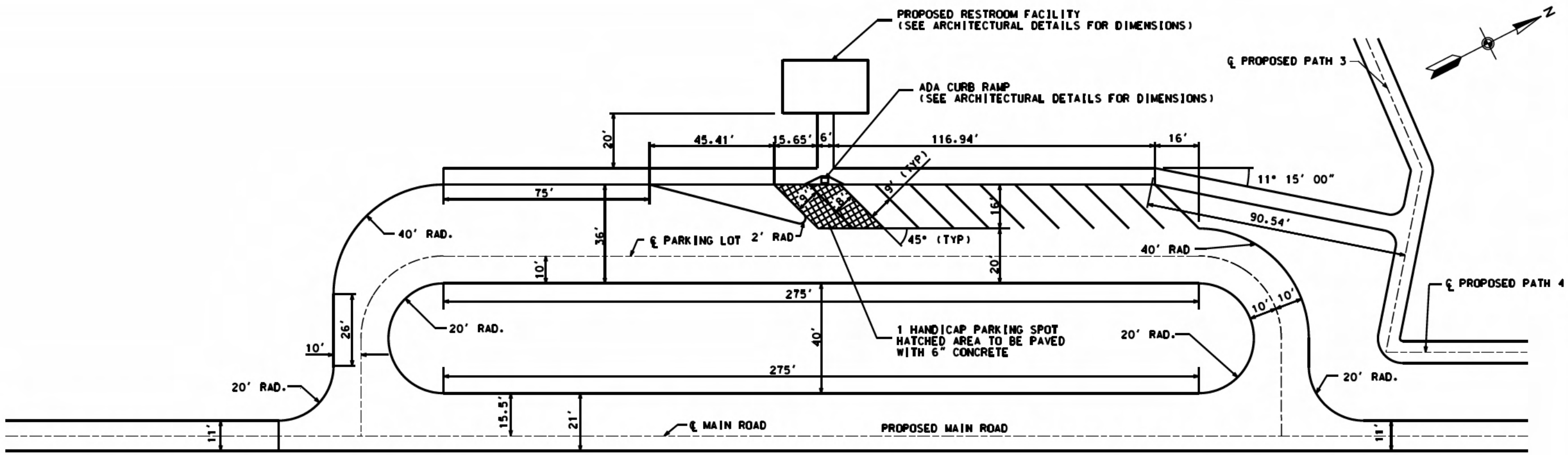
SHEET:

REVISION DESCRIPTION | NO. | DATE | BY

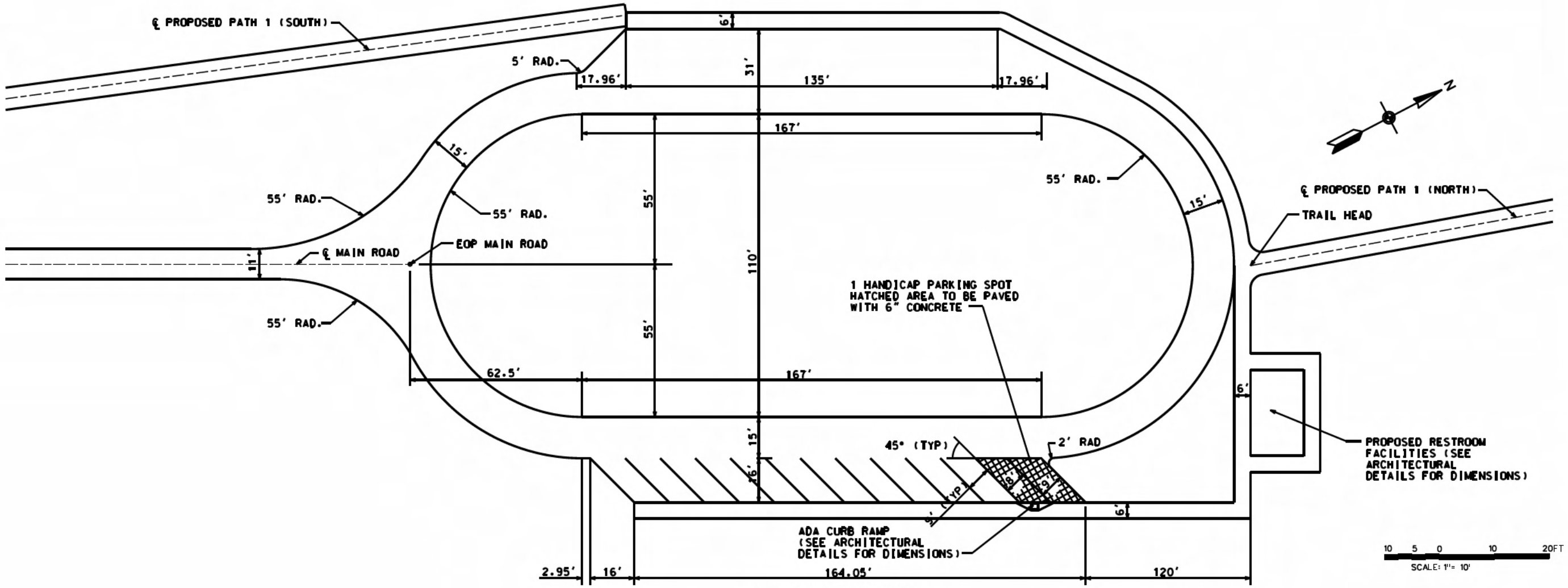
FOURCHE CREEK

LAYOUT PLAN

GEC



PARKING AREA (SOUTH)



PARKING AREA (NORTH)

SHEET NUMBER 3

PULASKI COUNTY, AR

COUNTY | FEDERAL PROJECT: XXX | STATE PROJECT: XXX

DESIGNED: R. MANES | DETAILED: B. CHEMIN | DATE: APRIL, 2004 | SHEET SIZE: 24"x36" 1:100

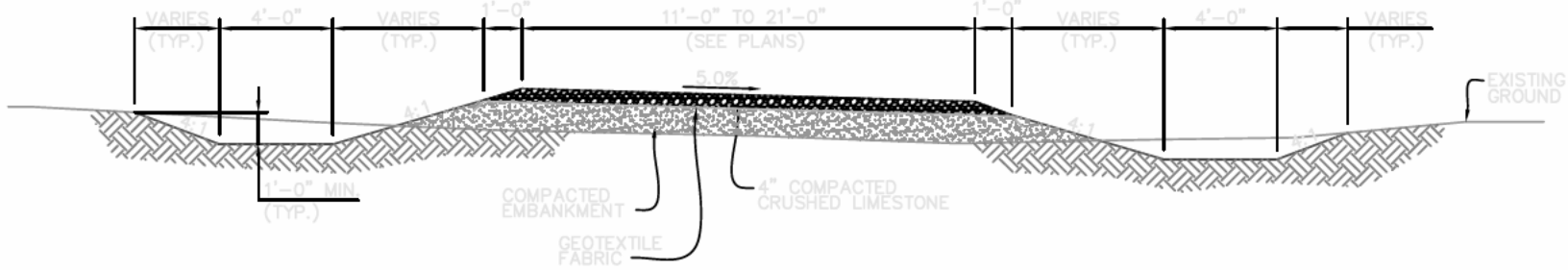
CHECKED | CHECKED | DATE | SHEET | BY

REVISION DESCRIPTION | NO. | DATE

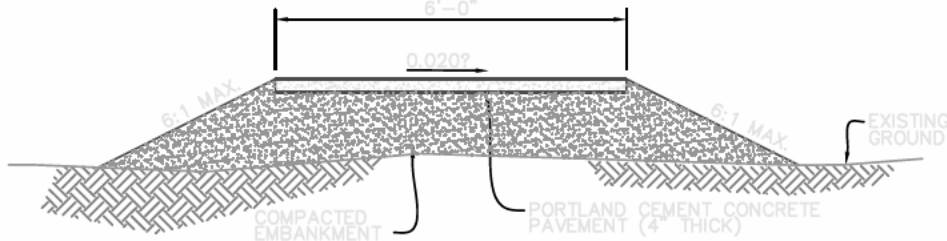
FOURCHE CREEK

PARKING AREAS SITE PLAN

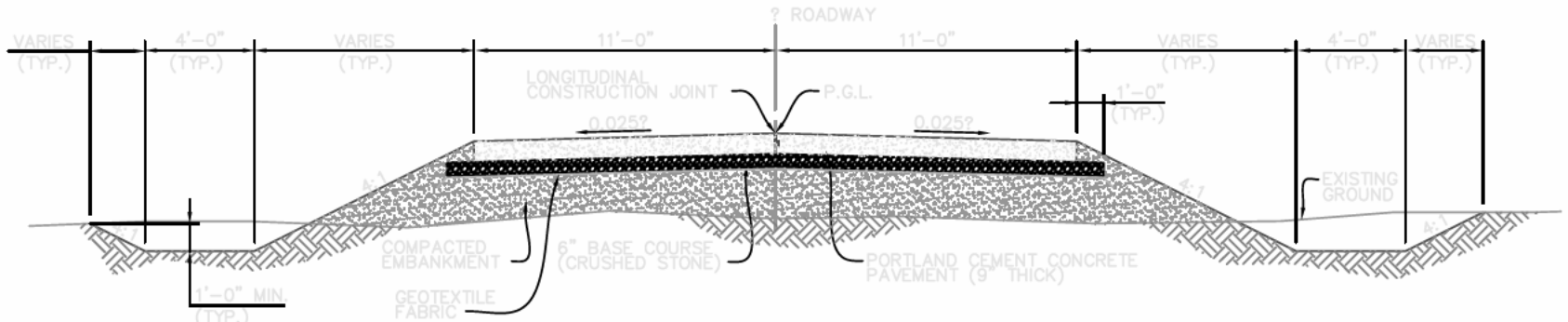
GEC



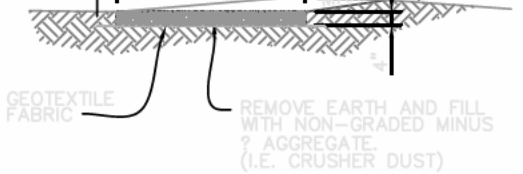
MAIN ROADWAY (NON-PAVED)
TYPICAL SECTION
(N.T.S.)



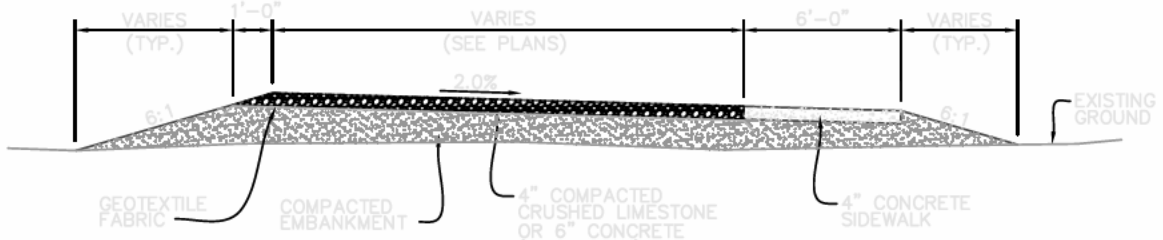
SIDEWALK TYPICAL SECTION
(N.T.S.)



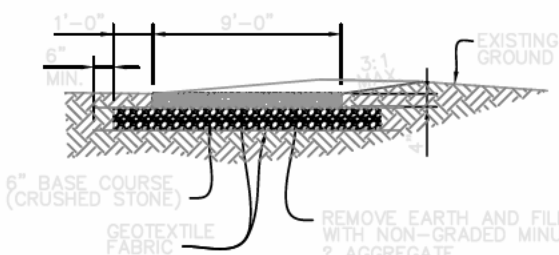
MAIN ROADWAY (PAVED)
TYPICAL SECTION
(N.T.S.)



STANDARD TRAIL TYPICAL SECTION
(N.T.S.)



PARKING LOT
TYPICAL SECTION
(N.T.S.)



EMERGENCY ACCESS TRAIL TYPICAL SECTION
(N.T.S.)

NOTE:
ALL DRAWINGS ARE PRELIMINARY AND ARE NOT TO BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.

SHEET NUMBER 4

PULASKI COUNTY, ARK.

PARISH | FEDERAL PROJECT . | STATE PROJECT .

DESIGNED R. MANES | DETAILED R. SHOEMAKER | DATE JULY 2003

CHECKED R. TRUXILLO | CHECKED R. TRUXILLO | SHEET 15-DWG

BY | NO. | DATE

FOURCHE CREEK

TYPICAL SECTIONS

GEC Gulf Engineers & Consultants

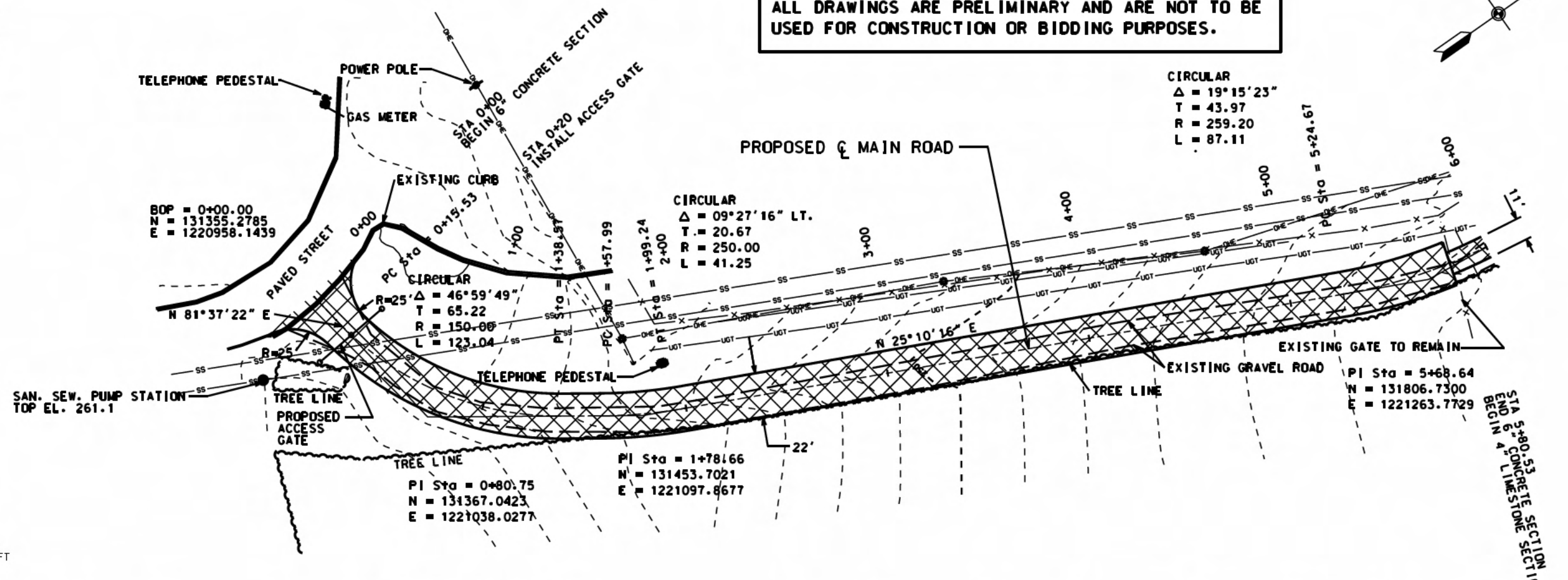
NOTE:
ALL DRAWINGS ARE PRELIMINARY AND ARE NOT TO BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.

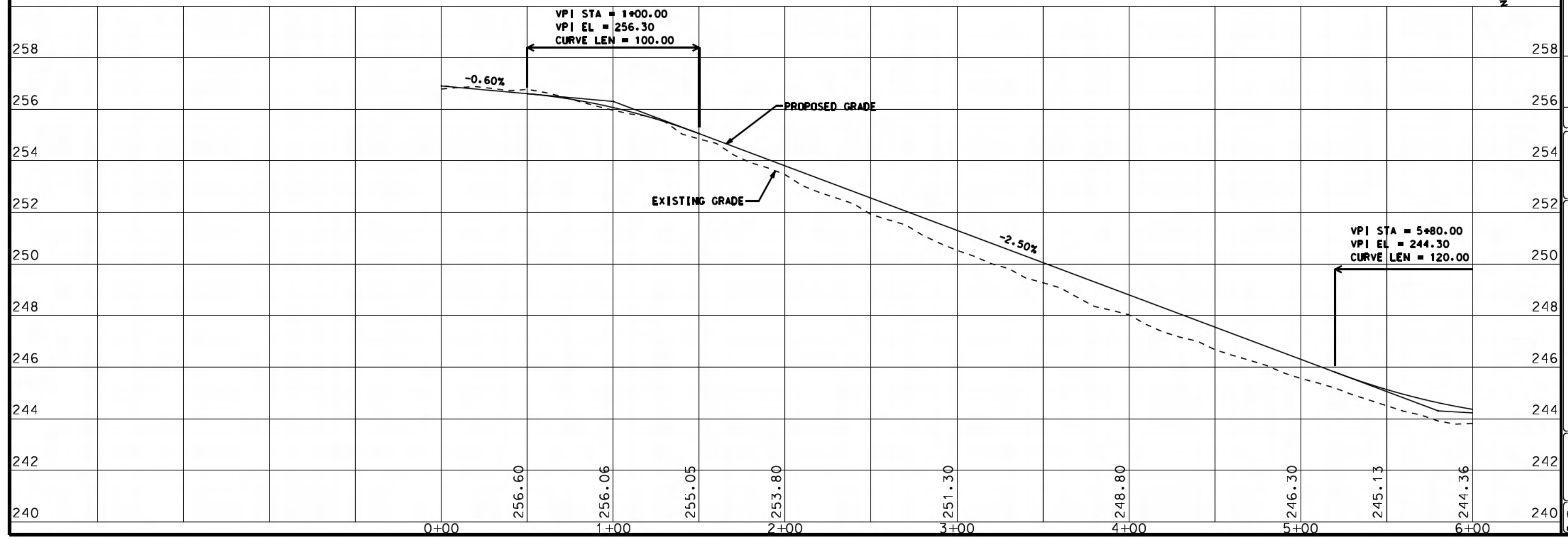
LEGEND

- FENCE
- OVERHEAD ELECTRIC
- SANITARY SEWER
- UNDERGROUND TELEPHONE
- POWER POLE
- LIGHT POLE

FULL SIZE SCALES:
1" = 30' HOR.
1" = 2' VERT.

30 15 0 30 60FT





SHEET NUMBER 5

PULASKI COUNTY, AR

COUNTY	FEDERAL PROJECT	STATE PROJECT
	XXX	XXX

DESIGNED / CHECKED	DETAILED / CHECKED	DATE SHEET
R. MANES	D. TRUXILLO	APRIL, 2004

ROADPP01

REVISION DESCRIPTION | NO. | DATE | BY

FOURCHE CREEK

MAIN ROAD PLAN/PROFILE

GEC

NOTE:
ALL DRAWINGS ARE PRELIMINARY AND ARE NOT TO BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.

PI Sta = 6+59.03
N = 131897.4692
E = 1221273.1736

EXISTING MANHOLE
RIM EL: 248.00

EXISTING MANHOLE
RIM EL: 249.80

CIRCULAR
Δ = 22°02'14"
T = 47.25
R = 242.68
L = 93.34

PRC Sta = 6+11.78

PT Sta = 7+05.12

N 27°57'07" E

N 05°58'53" W

TREE LINE

PROPOSED ℄ MAIN ROAD

CIRCULAR
Δ = 02°51'06"
T = 6.22
R = 250.00
L = 12.44

PC Sta = 9+71.83

PT Sta = 9+84.27

PI Sta = 9+78.05
N = 132180.3034
E = 1221423.2553

N 25°06'01" E

PI Sta = 11+05.80
N = 132295.9927
E = 1221477.4487

N 89°46'41" E

EXISTING MANHOLE
RIM EL: 248.00

EXISTING GRAVEL ROAD

CIRCULAR
Δ = 04°40'40"
T = 10.21
R = 250.00
L = 20.41

PC Sta = 10+95.59

PT Sta = 11+16.00

STA 6+50
INSTALL 18" x 30"
RCP EQUALIZER

STA 12+50
INSTALL 18" x 30"
RCP EQUALIZER

STA 13+00
BEGIN TRANSITION
TO 21' SECTION

STA 13+00
BEGIN 21' SECTION

11'

21'

FULL SIZE SCALES:
1" = 30' HOR.
1" = 2' VERT.

30 15 0 30 60FT
SCALE: 1"= 30'

-0.40%

PROPOSED GRADE

EXISTING GRADE

-0.11%

VPI STA = 10+10.00
VPI EL = 242.60
CURVE LEN = 200.00

6+00	7+00	8+00	9+00	10+00	11+00	12+00	13+00	14+00
244.36	243.83	243.43	243.03	242.85	242.70	242.58	242.50	242.40	242.29	242.18

250 248 246 244 242 240 238 236 234 232

SHEET NUMBER 6

COUNTY: PULASKI COUNTY, AR
FEDERAL PROJECT: XXX
STATE PROJECT: XXX

DESIGNED: R. MANES
DETAILED: D. TRUXILLO
CHECKED:
DATE: APRIL 2004
SHEET: ROADPP02

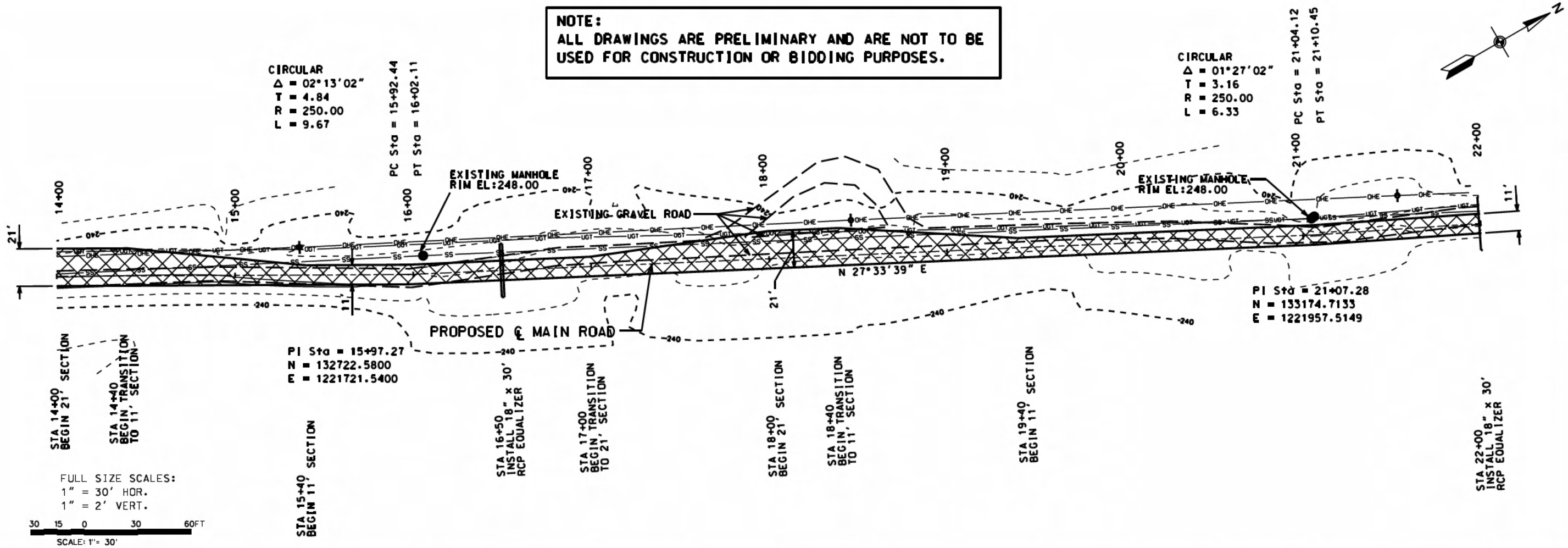
REVISION DESCRIPTION | DATE | BY

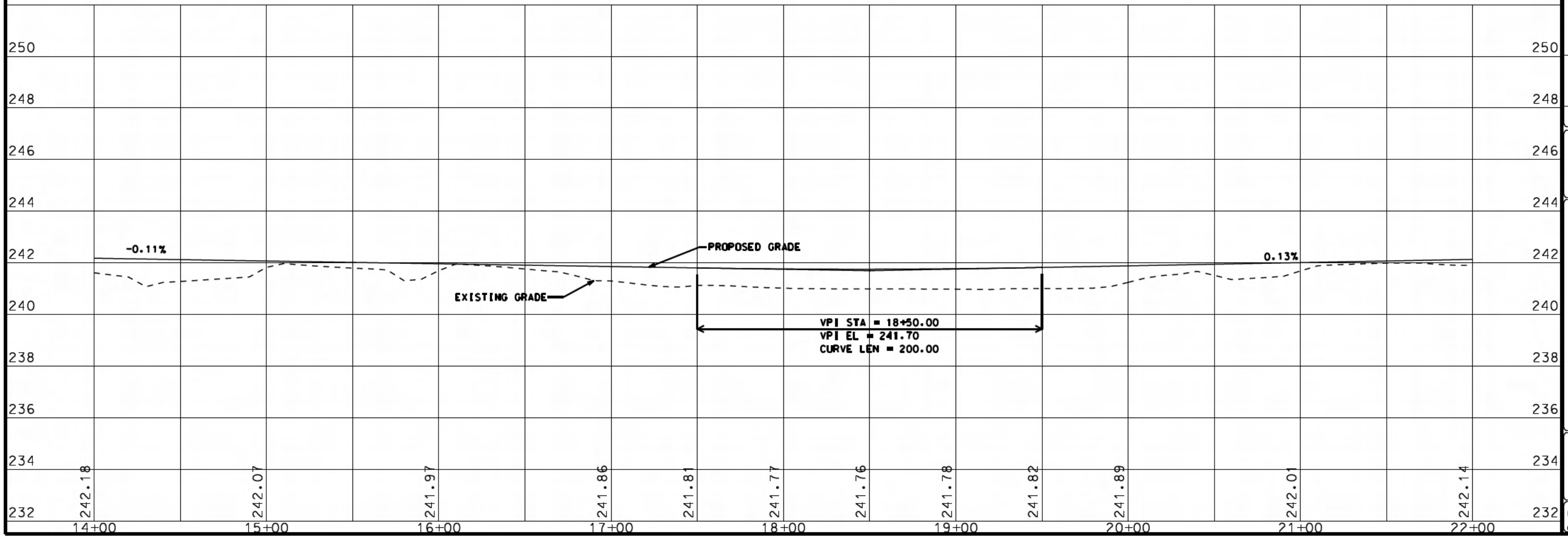
FOURCHE CREEK

MAIN ROAD PLAN/PROFILE

GEC

NOTE:
ALL DRAWINGS ARE PRELIMINARY AND ARE NOT TO BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.





SHEET NUMBER 7

PULASKI COUNTY, AR

COUNTY | FEDERAL PROJECT: XXX | STATE PROJECT: XXX

DESIGNED R. MANES | DETAILED D. TRUXILLO | DATE APRIL, 2004 | SHEET ROADPP03

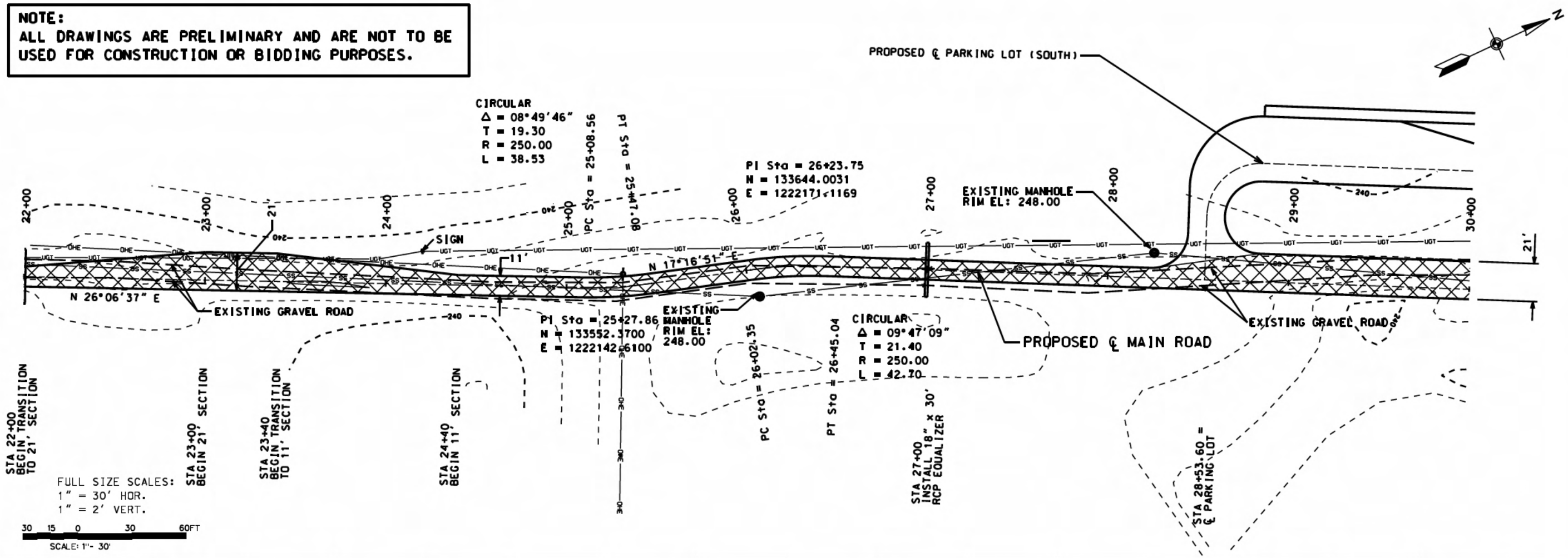
REVISION DESCRIPTION | NO. | DATE | BY

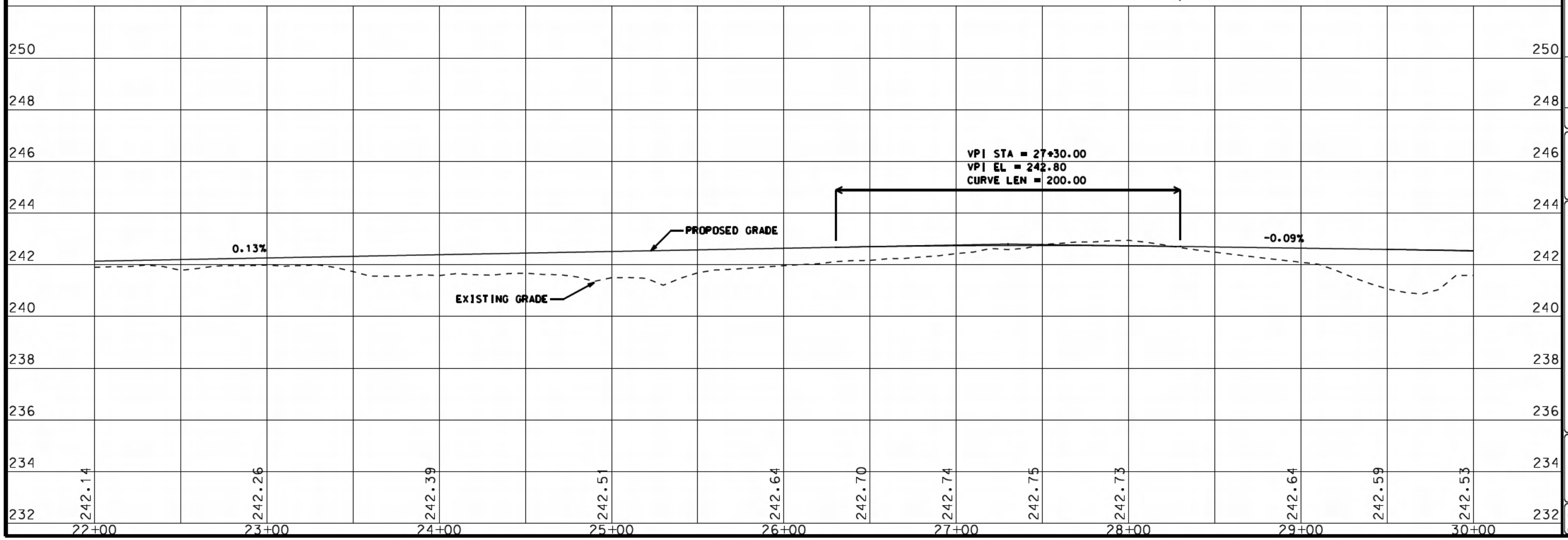
FOURCHE CREEK

MAIN ROAD PLAN/PROFILE

GEC

NOTE:
ALL DRAWINGS ARE PRELIMINARY AND ARE NOT TO BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.





SHEET NUMBER 8
COUNTY PULASKI COUNTY, AR
FEDERAL PROJECT XXX
STATE PROJECT XXX
DESIGNED R. MANES
DETAILED D. TRUXILLO
CHECKED
DATE OCT. 2004
SHEET ROADPP04
REVISION DESCRIPTION BY DATE NO.
FOURCHE CREEK
MAIN ROAD PLAN/PROFILE
GEC

NOTES:

1. APPROXIMATELY 3000 LF OF WATER LINE FROM THE PARK ENTRANCE TO THE RESTROOM FACILITY WITH ALL APPROPRIATE APPURTENANCES IS TO BE DESIGNED. THIS SHOULD INCLUDE BACKFLOW PREVENTORS TO SEAL THE PARK'S WATER LINES FROM THEIR SUPPLY DURING A FLOOD.
2. APPROXIMATELY 120 LF OF SANITARY SEWER LINE FROM THE PROPOSED RESTROOM CONNECTING TO THE EXISTING LINE WITH A "WYE" IS TO BE DESIGNED. THIS SHOULD INCLUDE AN ELECTRONIC CONTROL TO SHUT A VALVE ON THE NEW LINE SHOULD THE SYSTEM BECOME SUBMERGED.

PROPOSED RESTROOM FACILITY

PROPOSED 6' SIDEWALK

PROPOSED ℄ PARKING LOT (SOUTH)

FUTURE ℄ PATH 3

FUTURE ℄ PATH 4

FUTURE ℄ PATH 2

EXISTING GRAVEL ROAD

EXISTING 10" PIPE TO BE REMOVED

EXISTING 24" x 29' CMP
EXISTING 24" x 31' CMP
TO BE REMOVED

PROPOSED ℄ MAIN ROAD

N 27°04'00" E

N 08°00'26" E

TREE LINE

EXISTING MANHOLE
RIM EL: 248.00

EXISTING MANHOLE
RIM EL: 248.00

STA 34+14
INSTALL 12" x 44'
RCP EQUALIZER
FL = 237.06

STA 37+45
INSTALL 2-30"x76' RCP
CROSS DRAIN
FL. = 235.4

STA 31+88.60 =
℄ PARKING LOT

PC Sta = 34+01.96

PC Sta = 37+34.61

PI Sta = 35+69.84
N = 134486.5699
E = 1222601.6600

PI Sta = 37+89.53
N = 134707.1894
E = 1222632.6944

CIRCULAR
Δ = 19°03'34"
T = 167.88
R = 1000.00
L = 332.65

CIRCULAR
Δ = 46°34'32"
T = 45.19
R = 105.00
L = 85.35

SCALES:
1" = 30' HOR
1" = 2' VER

30 15 0 30 60FT
SCALE: 1"= 30'

NOTE:
ALL DRAWINGS ARE PRELIMINARY AND ARE NOT TO BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.

VPI STA = 30+50.00
VPI EL = 242.50
CURVE LEN = 200.00

PROPOSED GRADE

EXISTING GRADE

-0.35%

0.29%

VPI STA = 37+00.00
VPI EL = 240.20
CURVE LEN = 200.00

248 246 244 242 240 238 236 234 232 230

242.53 242.43 242.31 242.15 241.97 241.62 241.26 240.91 240.55 240.42 240.36 240.38 240.49

30+00 31+00 32+00 33+00 34+00 35+00 36+00 37+00 38+00

SHEET NUMBER 9

PULASKI COUNTY, AR

COUNTY | FEDERAL PROJECT XXX | STATE PROJECT XXX

DESIGNED R. MANES
DETAILED D. TRUXILLO
CHECKED
DATE OCT. 2004
SHEET ROADPP05

REVISION DESCRIPTION | DATE | BY

FOURCHE CREEK

MAIN ROAD PLAN/PROFILE

GEC

NOTE:
ALL DRAWINGS ARE PRELIMINARY AND ARE NOT TO BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.

PI Sta = 38+62.84
N = 134752.5947
E = 1222696.5453

STA 38+00 INSTALL 1-18"x80' RCP CROSS DRAIN FL=235.0

EXISTING 18" x 25' RCP TO BE REMOVED

PC Sta = 39+81.94

PT Sta = 41+23.23

CIRCULAR
Δ = 53°58'12"
T = 76.38
R = 150.00
L = 141.29

N 79°56'25" E

PCC Sta = 38+29.69

PT Sta = 38+94.91

CIRCULAR
Δ = 25°21'26"
T = 33.16
R = 147.38
L = 65.22

PI Sta = 40+58.32
N = 134786.9291
E = 1222890.0842

EXISTING MANHOLE
RIM EL: 248.00

TREE LINE

PROPOSED ℄ PATH 4

EXISTING 18" x 24' RCP TO BE REMOVED

STA 41+50 BEGIN TRANSITION TO 21' SECTION

STA 42+50 BEGIN 21' SECTION

STA 42+90 BEGIN TRANSITION TO 11' SECTION

STA 42+94 INSTALL 18" x 60' RCP EQUALIZER FL = 438.00

STA 45+90 BEGIN 21' SECTION

STA 45+50 BEGIN TRANSITION TO 21' SECTION

PROPOSED ℄ MAIN ROAD

EXISTING GRAVEL ROAD

PI Sta = 45+63.68
N = 135251.5702
E = 1223116.4063

EXISTING MANHOLE
RIM EL: 248.00

PC Sta = 45+59.50

PT Sta = 45+67.87

CIRCULAR
Δ= 01°55'10"
T = 4.19
R = 250.00
L = 8.37

FULL SIZE SCALES:
1" = 30' HOR.
1" = 2' VERT.

30 15 0 30 60FT
SCALE: 1"= 30'

VPI STA = 45+00.00
VPI EL = 242.50
K = 955.84

EXISTING GRADE

PROPOSED GRADE

0.29%

0.08%

38+00	39+00	40+00	41+00	42+00	43+00	44+00	45+00	46+00
240.49	240.77	241.06	241.35	241.64	241.93	242.21	242.34	242.45	242.53	242.58

248 246 244 242 240 238 236 234 232 230

SHEET NUMBER 10

PULASKI COUNTY, AR

COUNTY	FEDERAL PROJECT	STATE PROJECT
	XXX	XXX

DESIGNED R. MANES
CHECKED
DETAILED D. TRUXILLO
CHECKED
DATE APRIL, 2004
SHEET ROADPP06

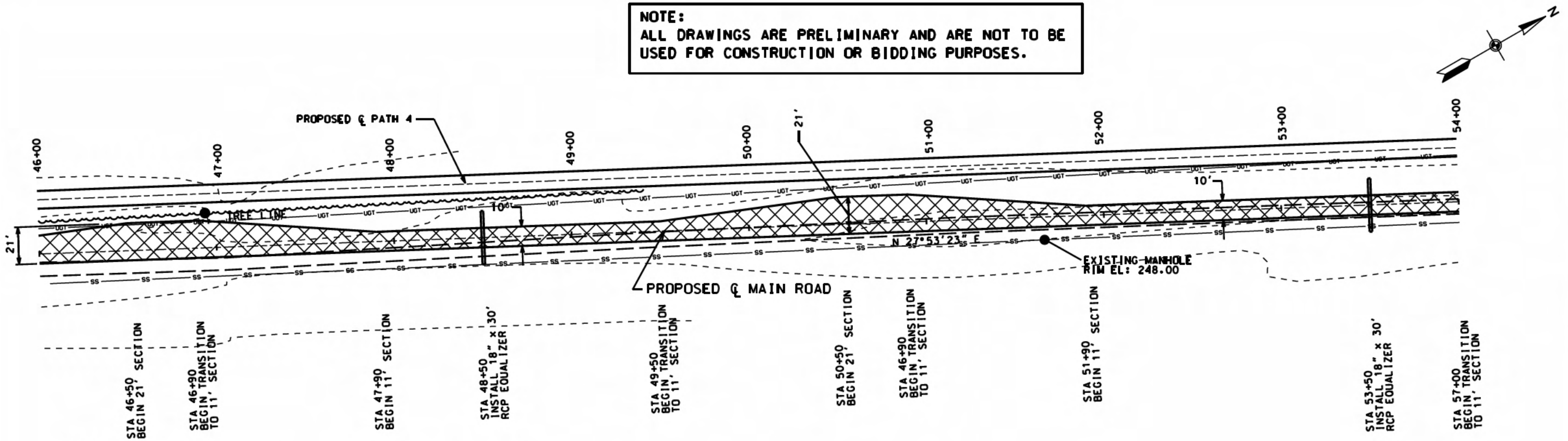
REVISION DESCRIPTION BY NO. DATE

FOURCHE CREEK

MAIN ROAD PLAN/PROFILE

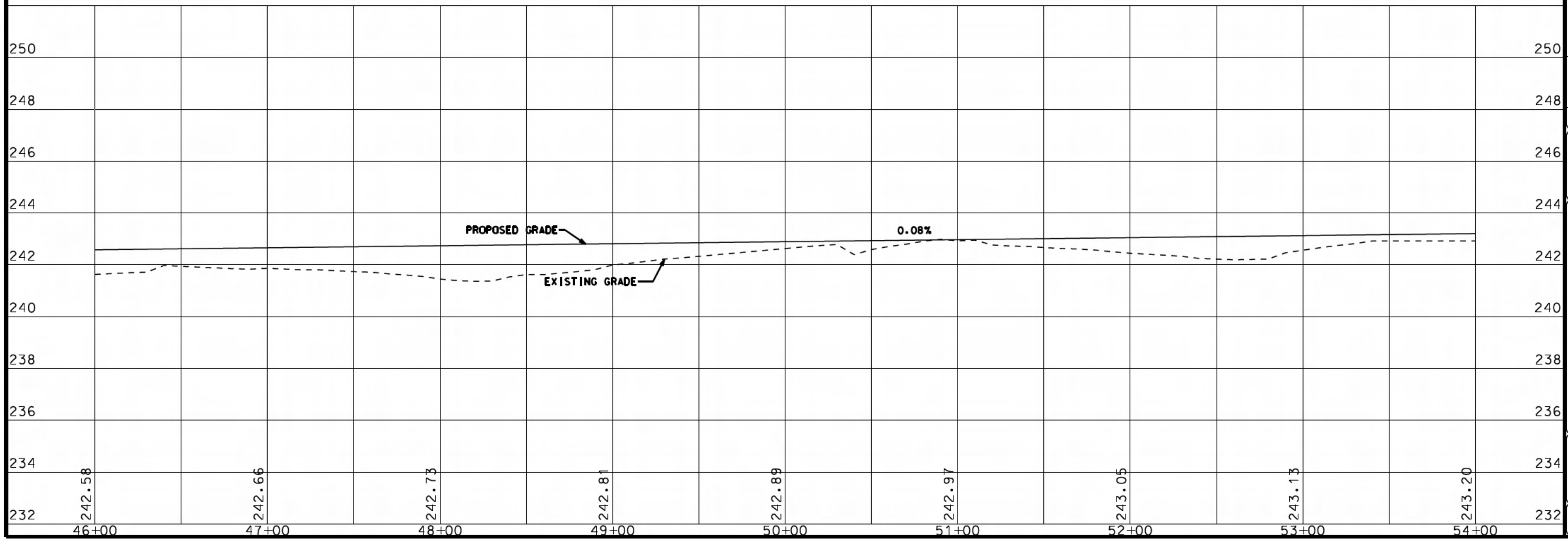
GEC

NOTE:
ALL DRAWINGS ARE PRELIMINARY AND ARE NOT TO BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.



SCALES:
1" = 30' HOR
1" = 2' VER

30 15 0 30 60FT
SCALE: 1"= 30'



SHEET NUMBER 11
COUNTY PULASKI COUNTY, AR
FEDERAL PROJECT XXX
STATE PROJECT XXX
DESIGNED R. MANES
CHECKED
DETAILED D. TRUXILLO
CHECKED
DATE APRIL, 2004
SHEET ROADPP07
REVISION DESCRIPTION
NO. DATE BY
FOURCHE CREEK
MAIN ROAD PLAN/PROFILE
GEC

PROPOSED ℄ PATH 1

FUTURE ℄ PATH 4

CIRCULAR
Δ = 15°36'32"
T = 34.27
R = 250.00
L = 68.11

PC Sta = 57+04.09

PRC Sta = 57+72.20

PI Sta = 58+36.98
N = 136386.5896
E = 1223686.9511

EOP = 60+65.10
N = 136589.3536
E = 1223793.1636

55' RAD.

TREE LINE

EXISTING GRAVEL ROAD

11'

21'

N 27°38'48" E

N 12°16'51" E

55' RAD.

55' RAD.

TREE LINE

15'

PROPOSED ℄ MAIN ROAD

PI Sta = 57+38.36
N = 136289.8056
E = 1223665.8828

CIRCULAR
Δ = 15°21'57"
T = 64.78
R = 480.24
L = 128.79

PRC Sta = 57+72.20

PT Sta = 59+00.99

EXISTING MANHOLE
RIM EL: 248.00

PROPOSED PARKING LOT (NORTH)

54+00
55+00
56+00
57+00
58+00
59+00
60+00

STA 54+00
BEGIN TRANSITION
TO 21' SECTION

STA 55+00
BEGIN 21' SECTION

STA 55+40
BEGIN TRANSITION
TO 11' SECTION

STA 56+40
BEGIN 11' SECTION

STA 58+50
INSTALL 18" x 30'
RCP EQUALIZER

FULL SIZE SCALES:
1" = 30' HOR.
1" = 2' VERT.

30 15 0 30 60FT
SCALE: 1"= 30'

NOTE:
ALL DRAWINGS ARE PRELIMINARY AND ARE NOT TO BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.

VPI STA = 56+50.00
VPI EL = 243.40
CURVE LEN = 200.00

Centerline

PROPOSED GRADE -0.17%

EXISTING GRADE

EOP STA = 60+65.10
EOP EL = 242.69

250
248
246
244
242
240
238
236
234
232

243.20 243.28 243.32 243.35 243.36 243.35 243.33 243.29 243.22 243.15 243.08 243.01

54+00 55+00 56+00 57+00 58+00 59+00 60+00 61+00 62+00

SHEET NUMBER 12

PULASKI COUNTY, AR

COUNTY | FEDERAL PROJECT: XXX | STATE PROJECT: XXX

DESIGNED: R. MANES
CHECKED
DETAILED: D. TRUXILLO
CHECKED
DATE: OCT. 2004
SHEET: ROADPP03

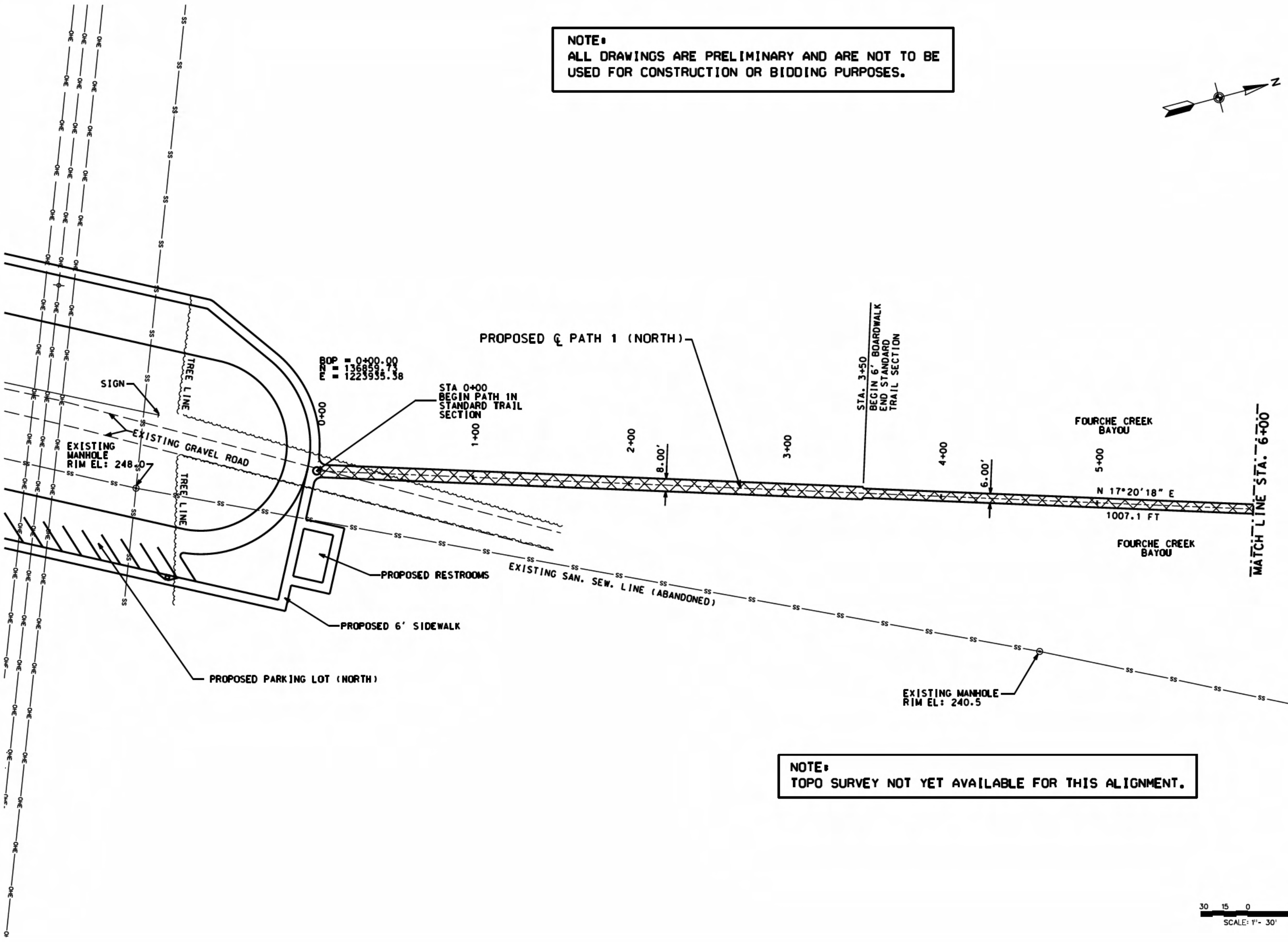
REVISION DESCRIPTION | DATE | BY | NO.

FOURCHE CREEK

MAIN ROAD PLAN/PROFILE

GEC

NOTE:
ALL DRAWINGS ARE PRELIMINARY AND ARE NOT TO BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.



NOTE:
TOPO SURVEY NOT YET AVAILABLE FOR THIS ALIGNMENT.

SHEET NUMBER 13

COUNTY	FEDERAL PROJECT	STATE PROJECT
PULASKI COUNTY, AR	XXX	XXX

DESIGNED	DETAILED	DATE
R. MANES	B. CHEMIN	APRIL, 2004
CHECKED	CHECKED	SHEET PATHINPP01

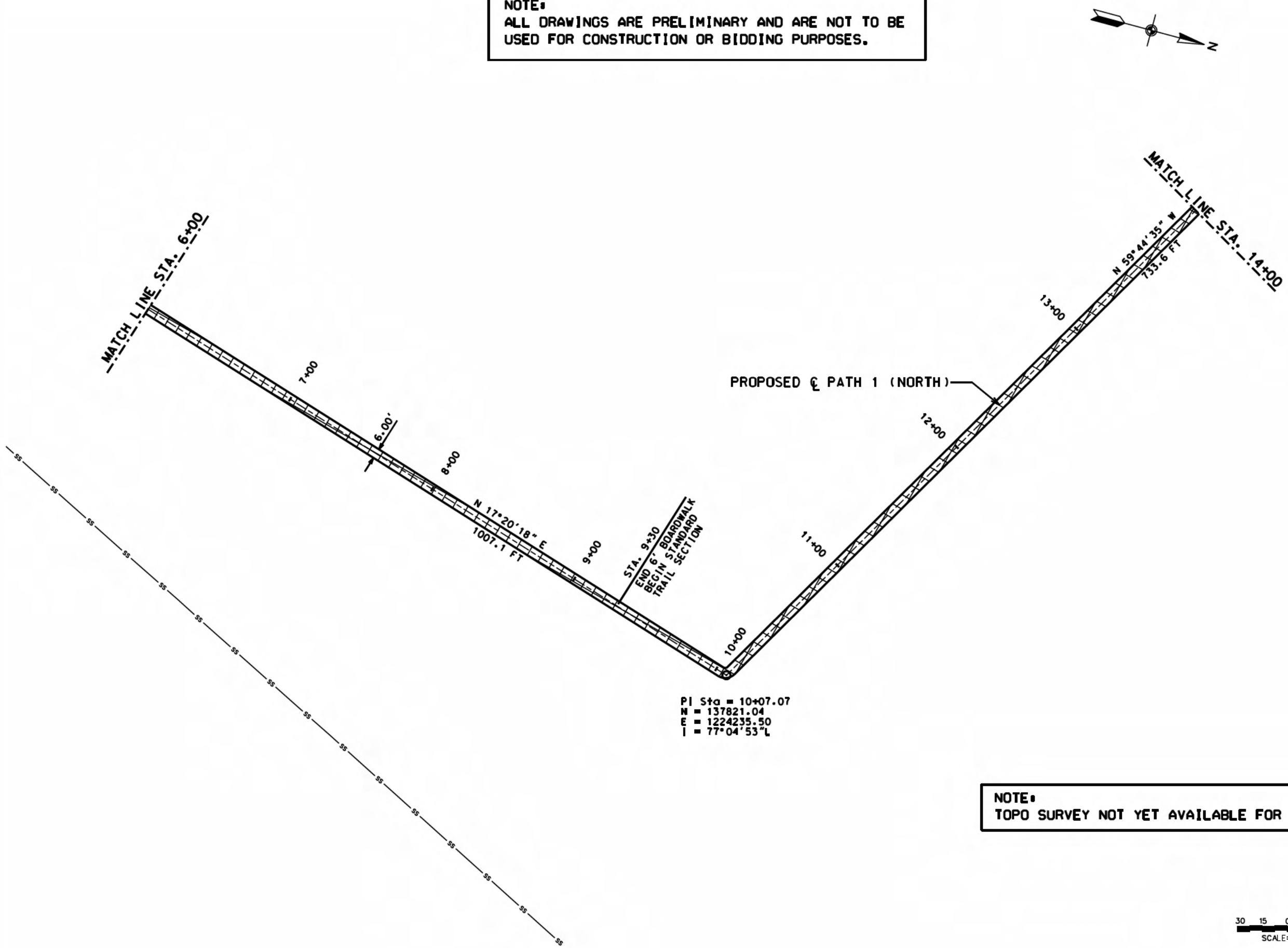
NO.	DATE	REVISION DESCRIPTION	BY

FOURCHE CREEK

PATH 1 (NORTH) PLAN

GEC
Gel Engineer & Consultants

NOTE:
ALL DRAWINGS ARE PRELIMINARY AND ARE NOT TO BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.



NOTE:
TOPO SURVEY NOT YET AVAILABLE FOR THIS ALIGNMENT.

30 15 0 30 60FT
SCALE: 1"= 30'

SHEET NUMBER 14

COUNTY	FEDERAL PROJECT	STATE PROJECT
PULASKI COUNTY, AR	XXX	XXX

DESIGNED R. MANES
DETAILED B. CHEHIN
CHECKED
DATE APRIL, 2004
SHEET PATH1NPP02

NO.	DATE	REVISION DESCRIPTION	BY

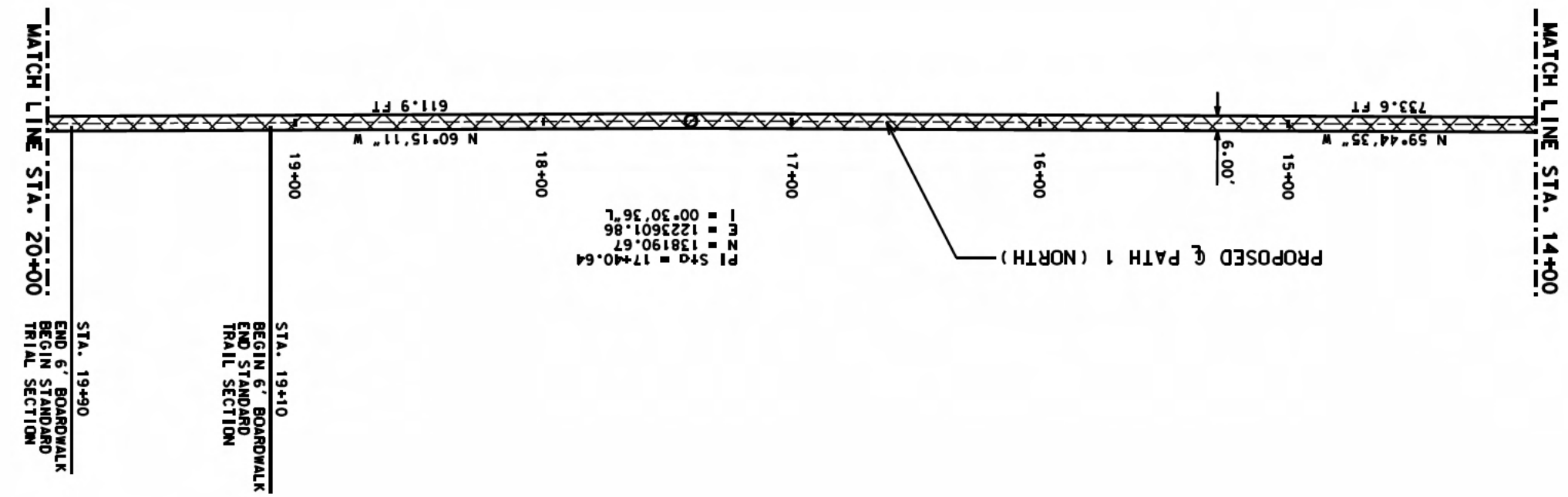
FOURCHE CREEK

PATH 1 (NORTH) PLAN

GEC
Gill Engineers & Consultants

NOTE:
TOPO SURVEY NOT YET AVAILABLE FOR THIS ALIGNMENT.

SCALE: 1"= 30'
30 15 0 30 60FT



NOTE:
ALL DRAWINGS ARE PRELIMINARY AND ARE NOT TO BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.

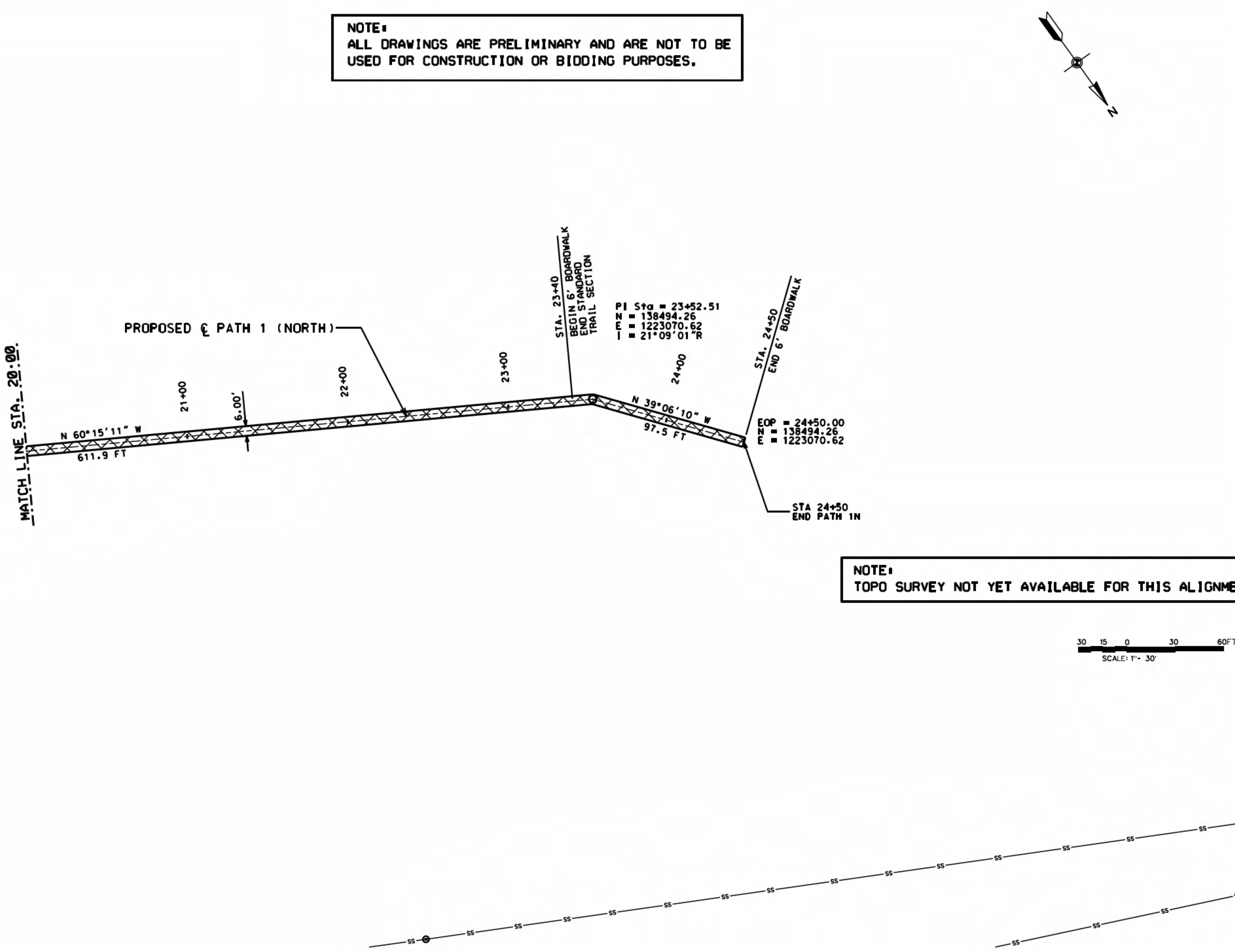
N

FOURCHE CREEK
PATH 1 (NORTH) PLAN

NO.	DATE	REVISION DESCRIPTION	BY

DESIGNED	R. MANES
CHECKED	
DETAILED	B. CHEMIN
CHECKED	
DATE	APRIL, 2004
SHEET	PATH1NPP03
COUNTY	PULASKI COUNTY, AR
FEDERAL PROJECT	XXX
STATE PROJECT	XXX
SHEET NUMBER	15

NOTE:
ALL DRAWINGS ARE PRELIMINARY AND ARE NOT TO BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.



NOTE:
TOPO SURVEY NOT YET AVAILABLE FOR THIS ALIGNMENT.

SHEET NUMBER	16		
COUNTY	PULASKI COUNTY, AR	DESIGNED	R. MANES
FEDERAL PROJECT	XXX	CHECKED	
STATE PROJECT	XXX	DETAILED	B. CHEMIN
		CHECKED	
		DATE	APRIL, 2004
		SHEET	PATH1NPP04

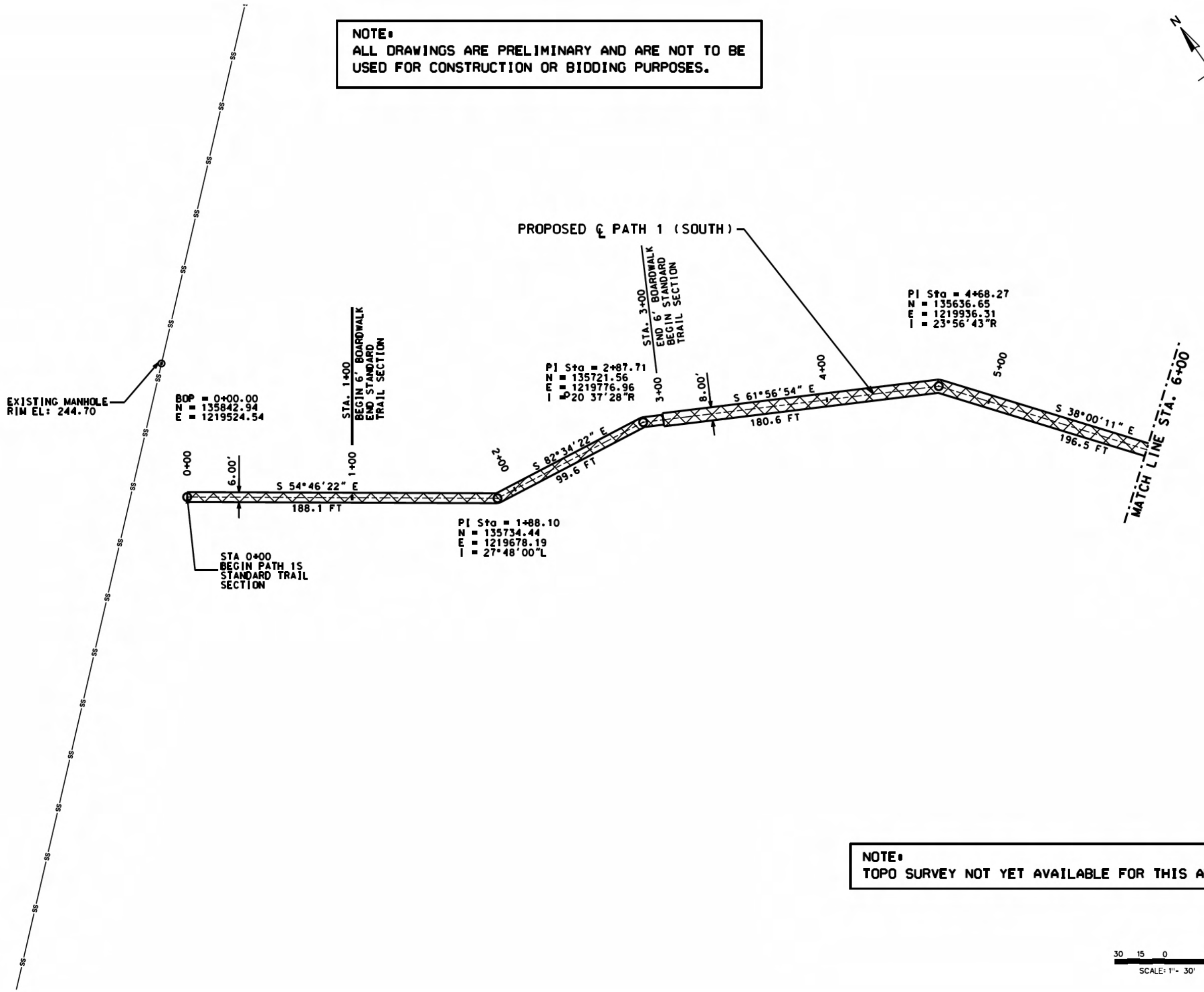
NO.	DATE	REVISION DESCRIPTION	BY

FOURCHE CREEK

PATH 1 (NORTH) PLAN

GEC

NOTE:
ALL DRAWINGS ARE PRELIMINARY AND ARE NOT TO BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.



NOTE:
TOPO SURVEY NOT YET AVAILABLE FOR THIS ALIGNMENT.

30 15 0 30 60FT
SCALE: 1"= 30'

SHEET NUMBER 17

COUNTY: PULASKI COUNTY, AR
FEDERAL PROJECT: XXX
STATE PROJECT: XXX

DESIGNED R. MANES
CHECKED
DETAILED B. CHENIN
CHECKED
DATE APRIL, 2004
SHEET PATH1SPP01

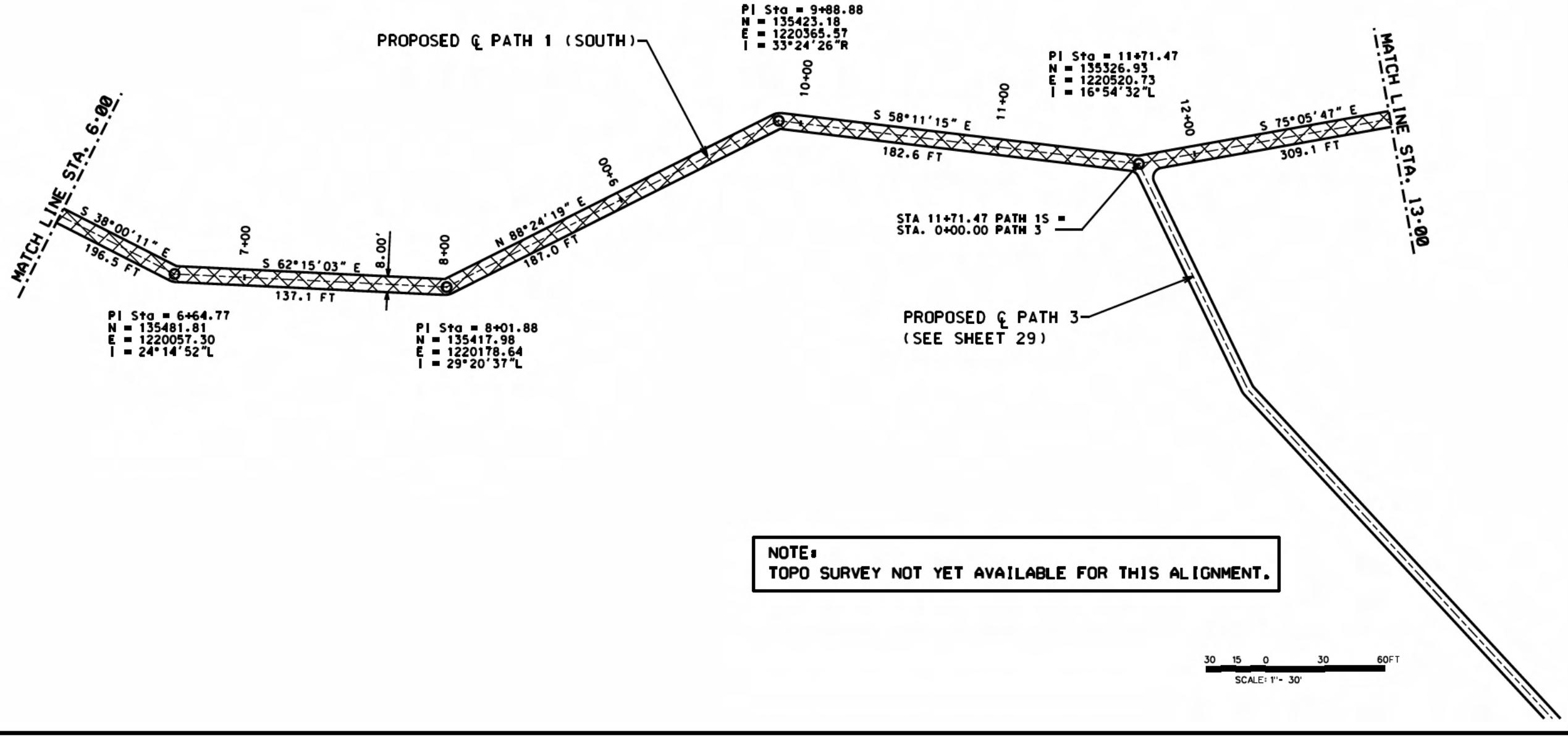
REVISION DESCRIPTION | DATE | BY | NO.

FOURCHE CREEK

PATH 1 (SOUTH) PLAN

GEC

NOTE:
ALL DRAWINGS ARE PRELIMINARY AND ARE NOT TO BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.



NOTE:
TOPO SURVEY NOT YET AVAILABLE FOR THIS ALIGNMENT.

SHEET NUMBER 18

PULASKI COUNTY, AR

COUNTY	FEDERAL PROJECT	STATE PROJECT
PULASKI COUNTY, AR	XXX	XXX

DESIGNED / CHECKED	DETAILED / CHECKED	DATE / SHEET
R. MANES	B. CHEMIN	APRIL, 2004 PATH1SPP02

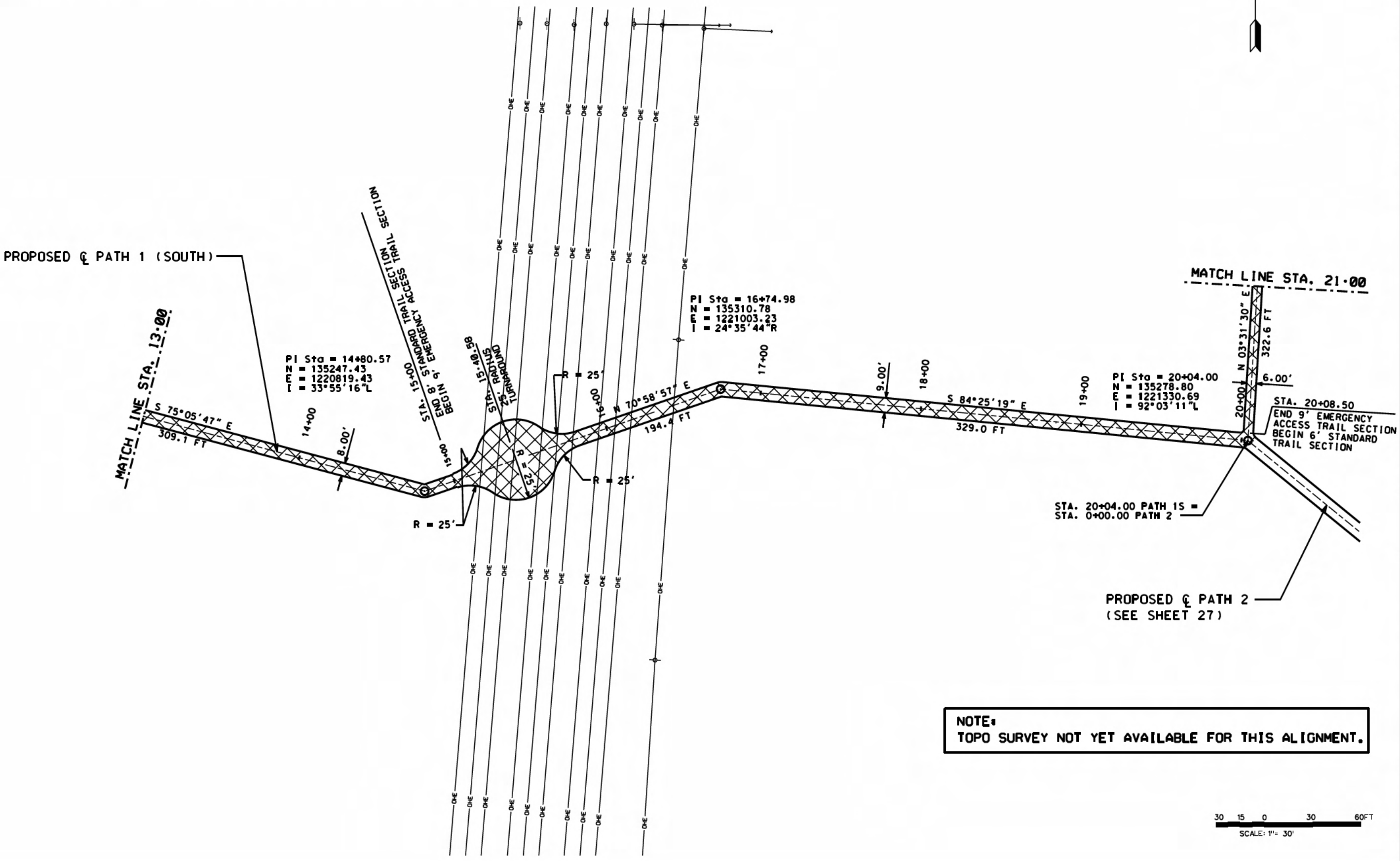
REVISION DESCRIPTION | NO. | DATE | BY

FOURCHE CREEK

PATH 1 (SOUTH) PLAN

GEC

NOTE:
ALL DRAWINGS ARE PRELIMINARY AND ARE NOT TO BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.



NOTE:
TOPO SURVEY NOT YET AVAILABLE FOR THIS ALIGNMENT.

30 15 0 30 60FT
SCALE: 1"= 30'

SHEET NUMBER 19

PULASKI COUNTY, AR

COUNTY	FEDERAL PROJECT	STATE PROJECT
	XXX	XXX

DESIGNED	R. MANES	DATE	OCT. 2004
CHECKED		SHEET	PATH1SPP03
DETAILED	B. CHEMIN		
CHECKED			

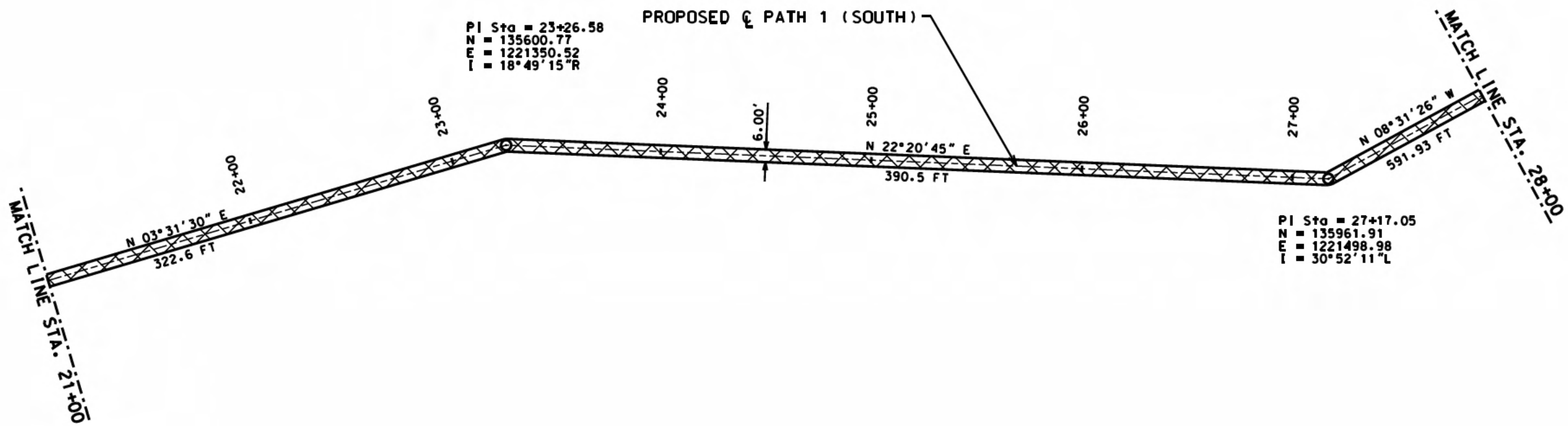
NO.	DATE	REVISION DESCRIPTION	BY

FOURCHE CREEK

PATH 1 (SOUTH) PLAN

GEC

NOTE:
ALL DRAWINGS ARE PRELIMINARY AND ARE NOT TO BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.



NOTE:
TOPO SURVEY NOT YET AVAILABLE FOR THIS ALIGNMENT.

30 15 0 30 60FT
SCALE: 1"= 30'

SHEET NUMBER 20

COUNTY	FEDERAL PROJECT	STATE PROJECT
PULASKI COUNTY, AR	XXX	XXX

DESIGNED R. MANES
CHECKED
DETAILED B. CHENIN
CHECKED
DATE APRIL, 2004
SHEET PATH1SPP04

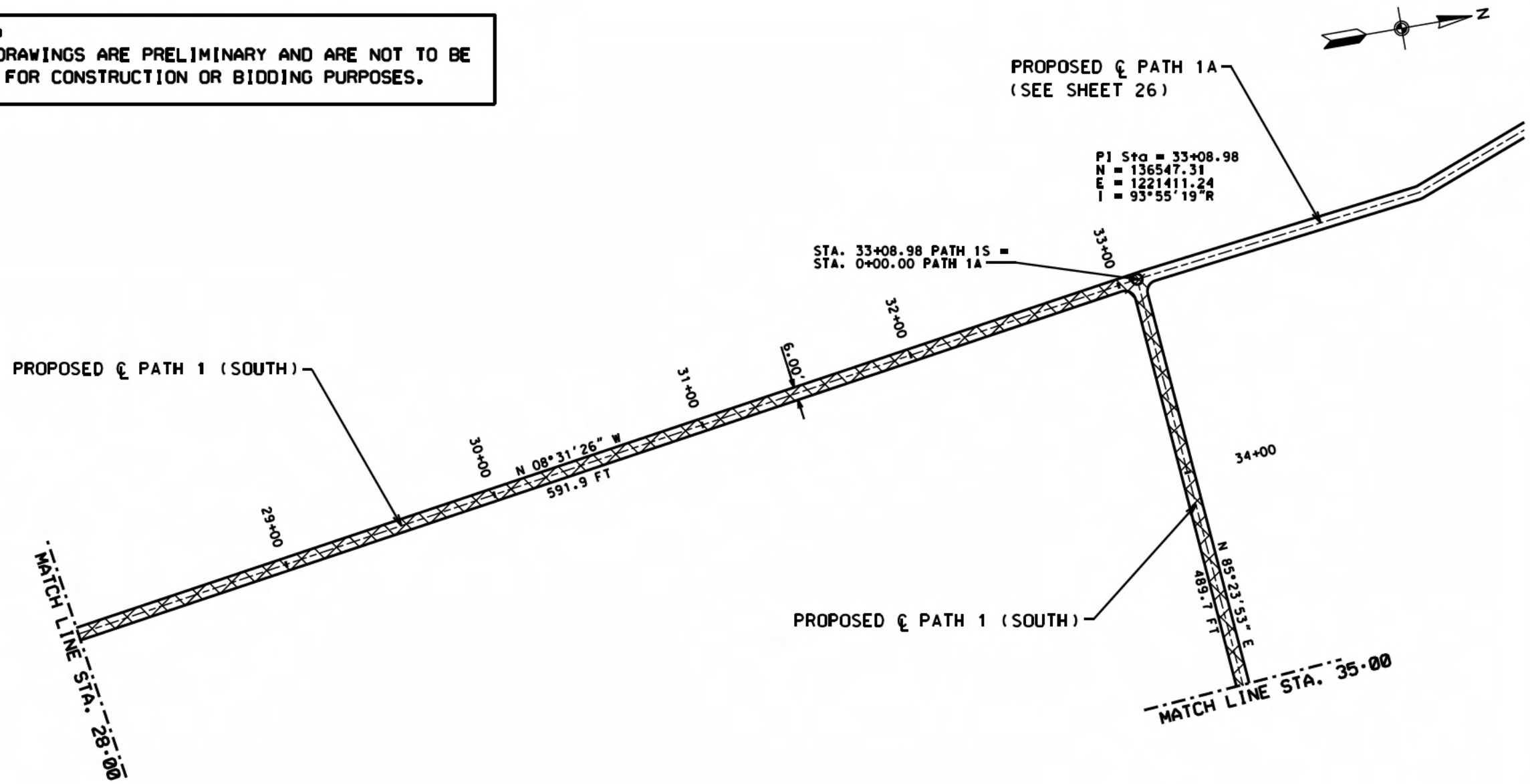
NO.	DATE	REVISION DESCRIPTION	BY

FOURCHE CREEK

PATH 1 (SOUTH) PLAN

GEC

NOTE:
ALL DRAWINGS ARE PRELIMINARY AND ARE NOT TO BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.

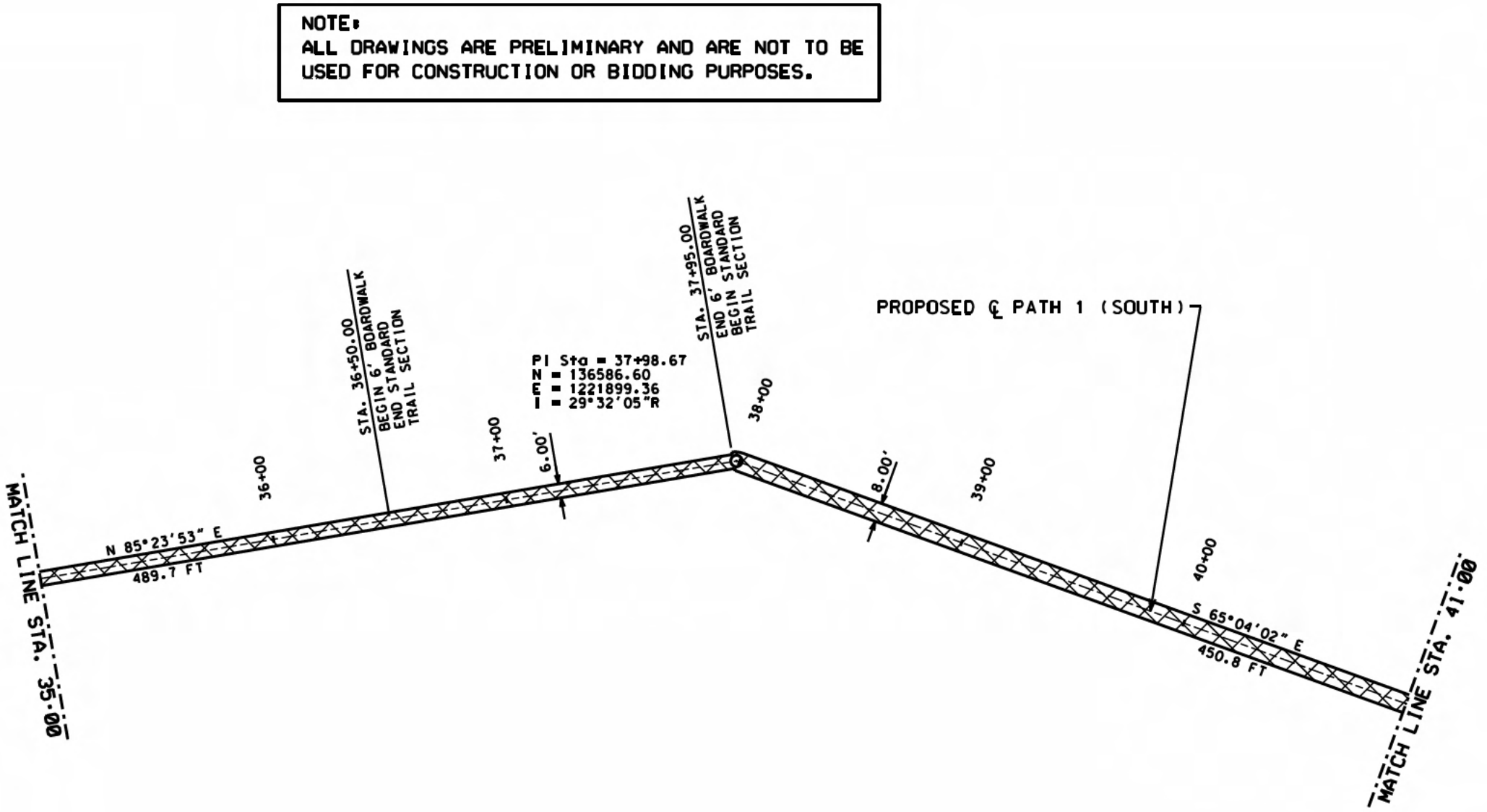


NOTE:
TOPO SURVEY NOT YET AVAILABLE FOR THIS ALIGNMENT.

30 15 0 30 60FT
SCALE: 1"= 30'

SHEET NUMBER 21
PULASKI COUNTY, AR
COUNTY XXX
FEDERAL PROJECT
STATE PROJECT XXX
DESIGNED R. MANES
CHECKED
DETAILED B. CHEMIN
CHECKED
DATE APRIL, 2004
SHEET PATH1SPP05
NO. DATE REVISION DESCRIPTION BY
FOURCHE CREEK
PATH 1 (SOUTH) PLAN
GEC Gulf Engineers & Consultants

NOTE:
ALL DRAWINGS ARE PRELIMINARY AND ARE NOT TO BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.

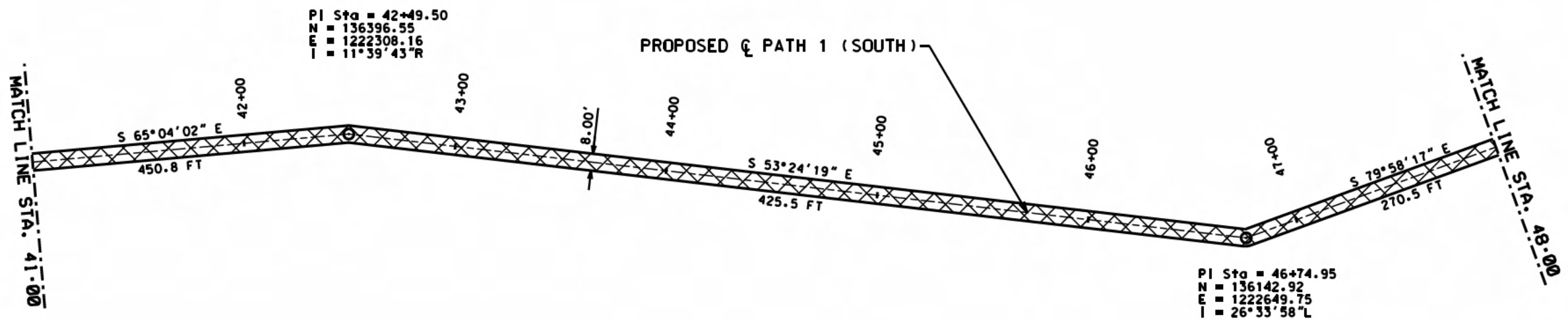


NOTE:
TOPO SURVEY NOT YET AVAILABLE FOR THIS ALIGNMENT.

30 15 0 30 60FT
SCALE: 1"= 30'

SHEET NUMBER 22
COUNTY PULASKI COUNTY, AR
FEDERAL PROJECT XXX
STATE PROJECT XXX
DESIGNED R. MANES
CHECKED
DETAILED B. CHEMIN
CHECKED
DATE APRIL, 2004
SHEET PATH1SPP06
NO. DATE BY REVISION DESCRIPTION
FOURCHE CREEK
PATH 1 (SOUTH) PLAN
GEC

NOTE:
ALL DRAWINGS ARE PRELIMINARY AND ARE NOT TO BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.



NOTE:
TOPO SURVEY NOT YET AVAILABLE FOR THIS ALIGNMENT.

30 15 0 30 60FT
SCALE: 1"= 30'

SHEET NUMBER 23

PULASKI COUNTY, AR

COUNTY

FEDERAL PROJECT: XXX

STATE PROJECT: XXX

DESIGNED CHECKED: R. MANES
DETAILED CHECKED: B. CHEMIN
DATE SHEET: APRIL, 2004 PATH1SPP07

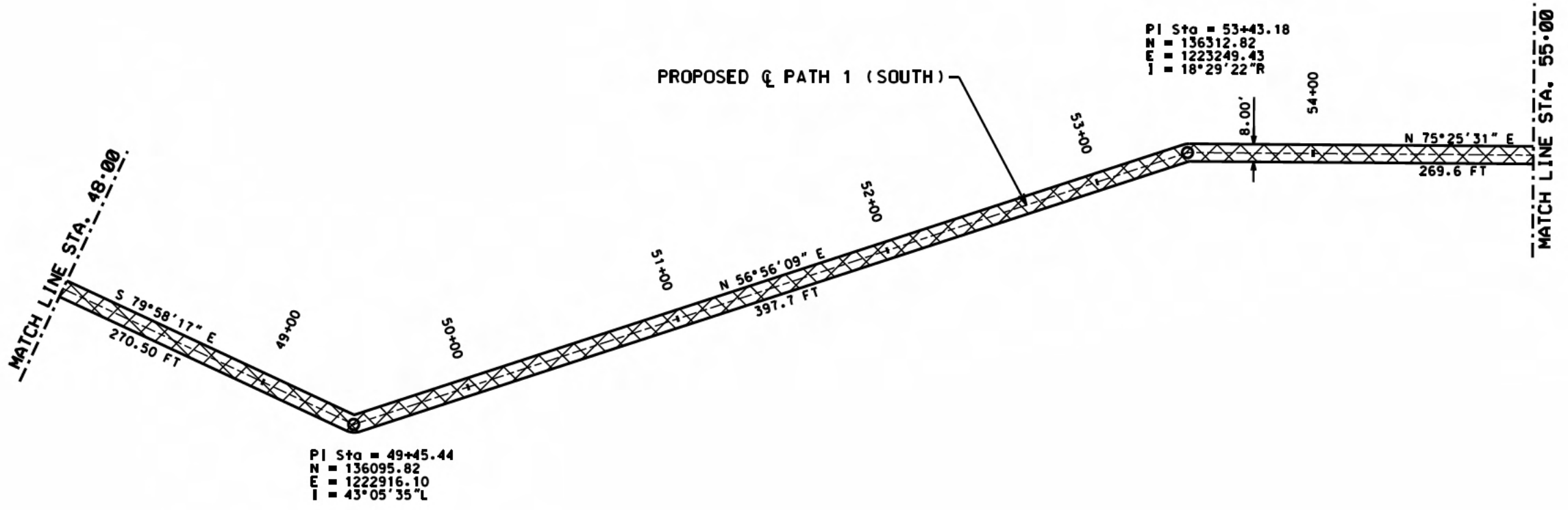
REVISION DESCRIPTION | NO. | DATE | BY

FOURCHE CREEK

PATH 1 (SOUTH) PLAN

GEC

NOTE:
ALL DRAWINGS ARE PRELIMINARY AND ARE NOT TO BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.



NOTE:
TOPO SURVEY NOT YET AVAILABLE FOR THIS ALIGNMENT.

30 15 0 30 60FT
SCALE: 1"= 30'

SHEET NUMBER	24
COUNTY	PULASKI COUNTY, AR
FEDERAL PROJECT	XXX
STATE PROJECT	XXX
DESIGNED / CHECKED	R. MAMES
DETAILED / CHECKED	B. CHEMIN
DATE / SHEET	APRIL, 2024 PATH1SPP03

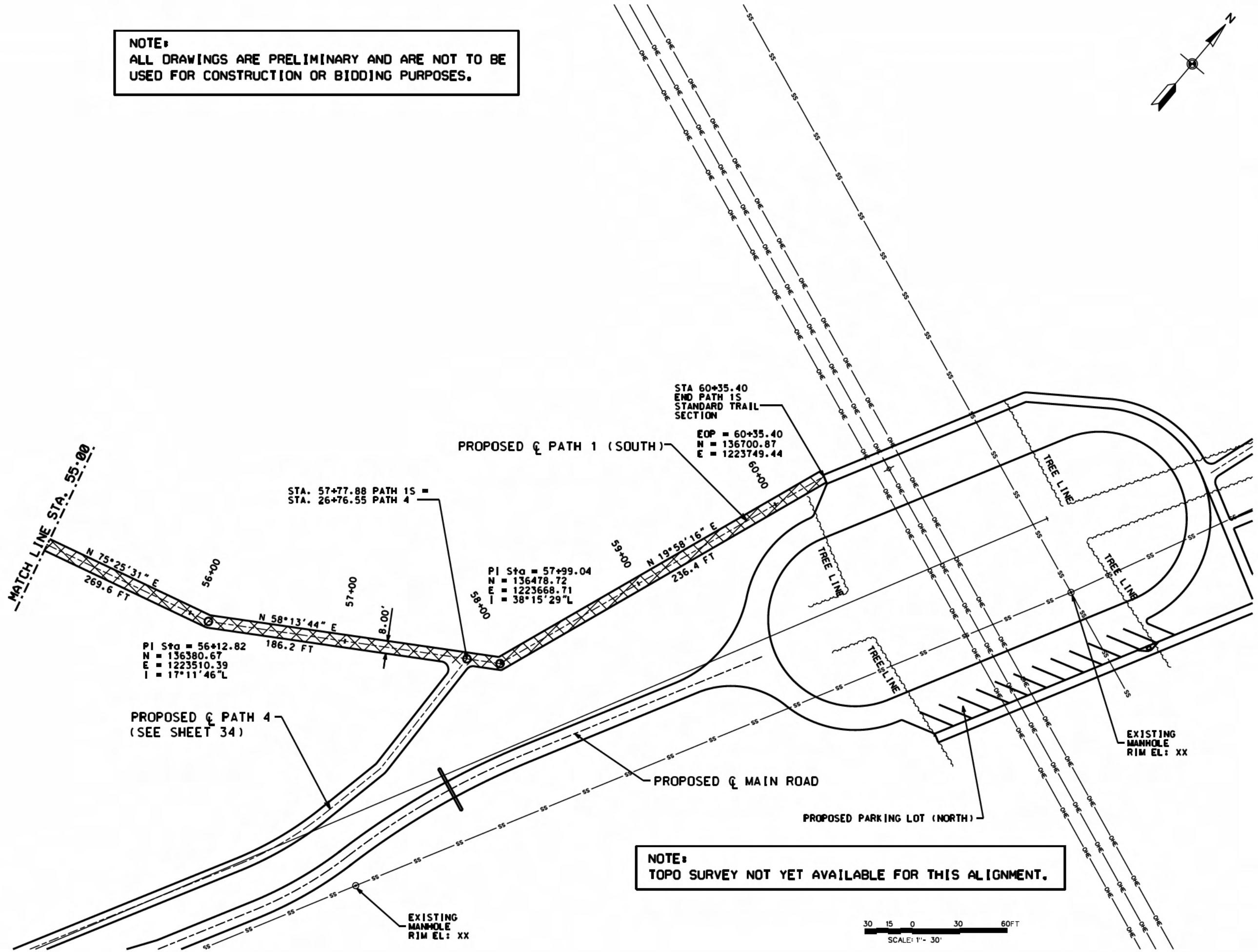
NO. | DATE | REVISION DESCRIPTION | BY

FOURCHE CREEK

PATH 1 (SOUTH) PLAN

GEC

NOTE:
ALL DRAWINGS ARE PRELIMINARY AND ARE NOT TO BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.



NOTE:
TOPO SURVEY NOT YET AVAILABLE FOR THIS ALIGNMENT.

SHEET NUMBER 25

PULASKI COUNTY, AR

COUNTY	FEDERAL PROJECT	STATE PROJECT
	XXX	XXX

DESIGNED	R. MANES	DATE	APRIL, 2004
DETAILED	B. CHEMIN	SHEET	PATH1SPP01
CHECKED			

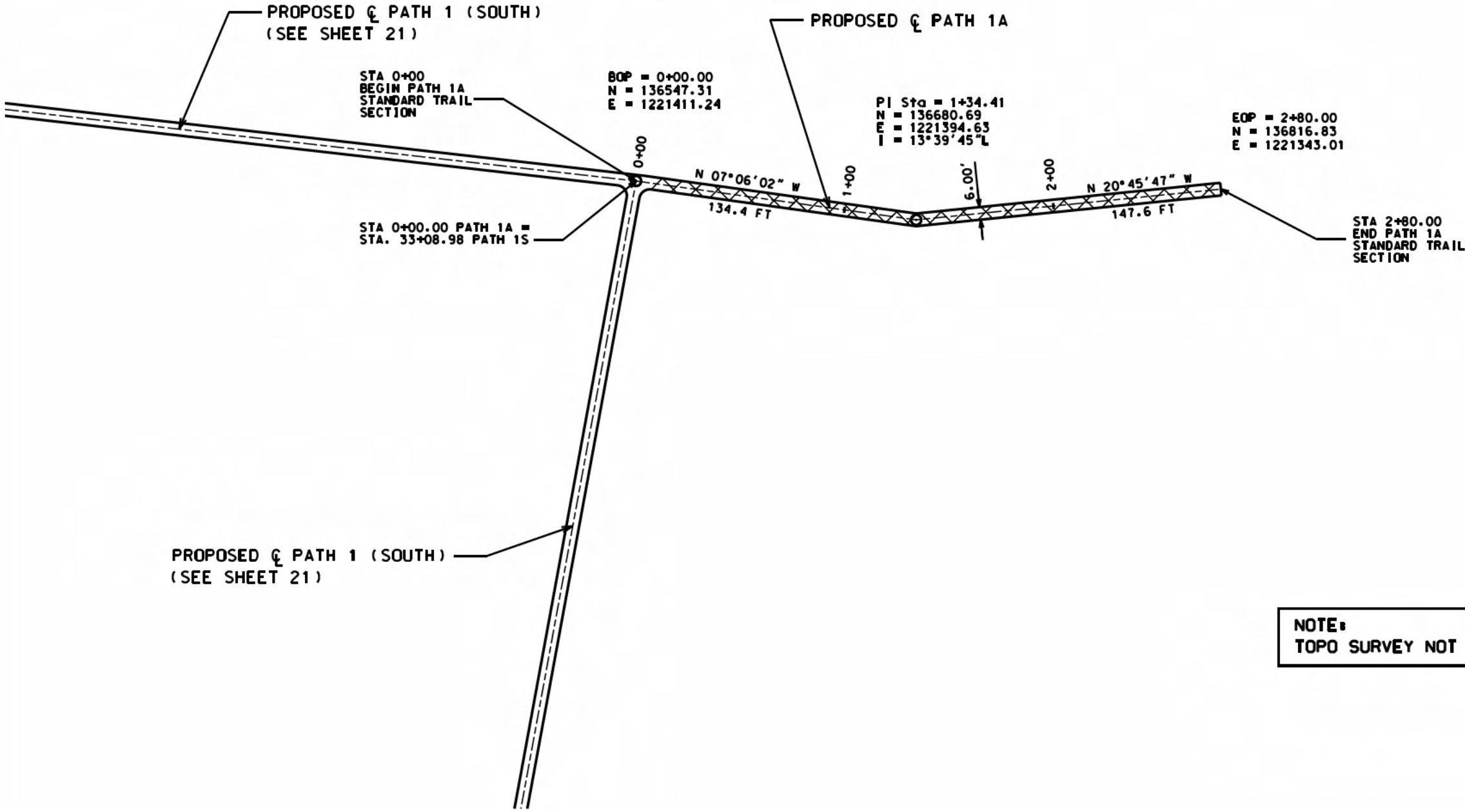
NO.	DATE	REVISION DESCRIPTION	BY

FOURCHE CREEK

PATH 1 (SOUTH) PLAN

GEC

NOTE:
ALL DRAWINGS ARE PRELIMINARY AND ARE NOT TO BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.

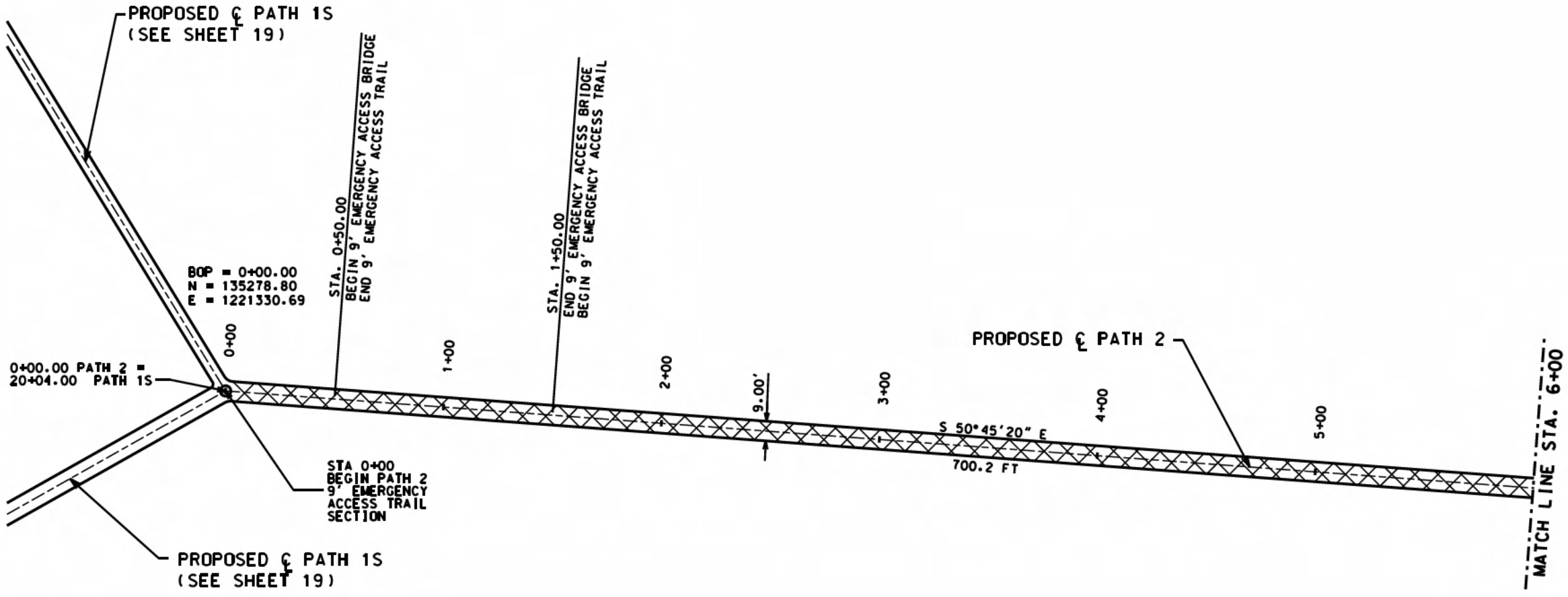


NOTE:
TOPO SURVEY NOT YET AVAILABLE FOR THIS ALIGNMENT.

30 15 0 30 60FT
SCALE: 1"= 30'

SHEET NUMBER 26
PULASKI COUNTY, AR
COUNTY
XXX
FEDERAL PROJECT
XXX
STATE PROJECT
DESIGNED R. MANES
CHECKED
DETAILED B. CHEMIN
CHECKED
DATE APRIL, 2004
SHEET PATH1APP01
REVISION DESCRIPTION
BY
NO.
DATE
FOURCHE CREEK
PATH 1A PLAN
GEC

NOTE:
ALL DRAWINGS ARE PRELIMINARY AND ARE NOT TO BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.



NOTE:
TOPO SURVEY NOT YET AVAILABLE FOR THIS ALIGNMENT.

30 15 0 30 60FT
SCALE: 1"= 30'

SHEET NUMBER 27

PULASKI COUNTY, AR

COUNTY	FEDERAL PROJECT	STATE PROJECT
	XXX	XXX

DESIGNED R. MANES
CHECKED
DETAILED B. CHEMIN
CHECKED
DATE APRIL, 2004
SHEET PATH2PP01

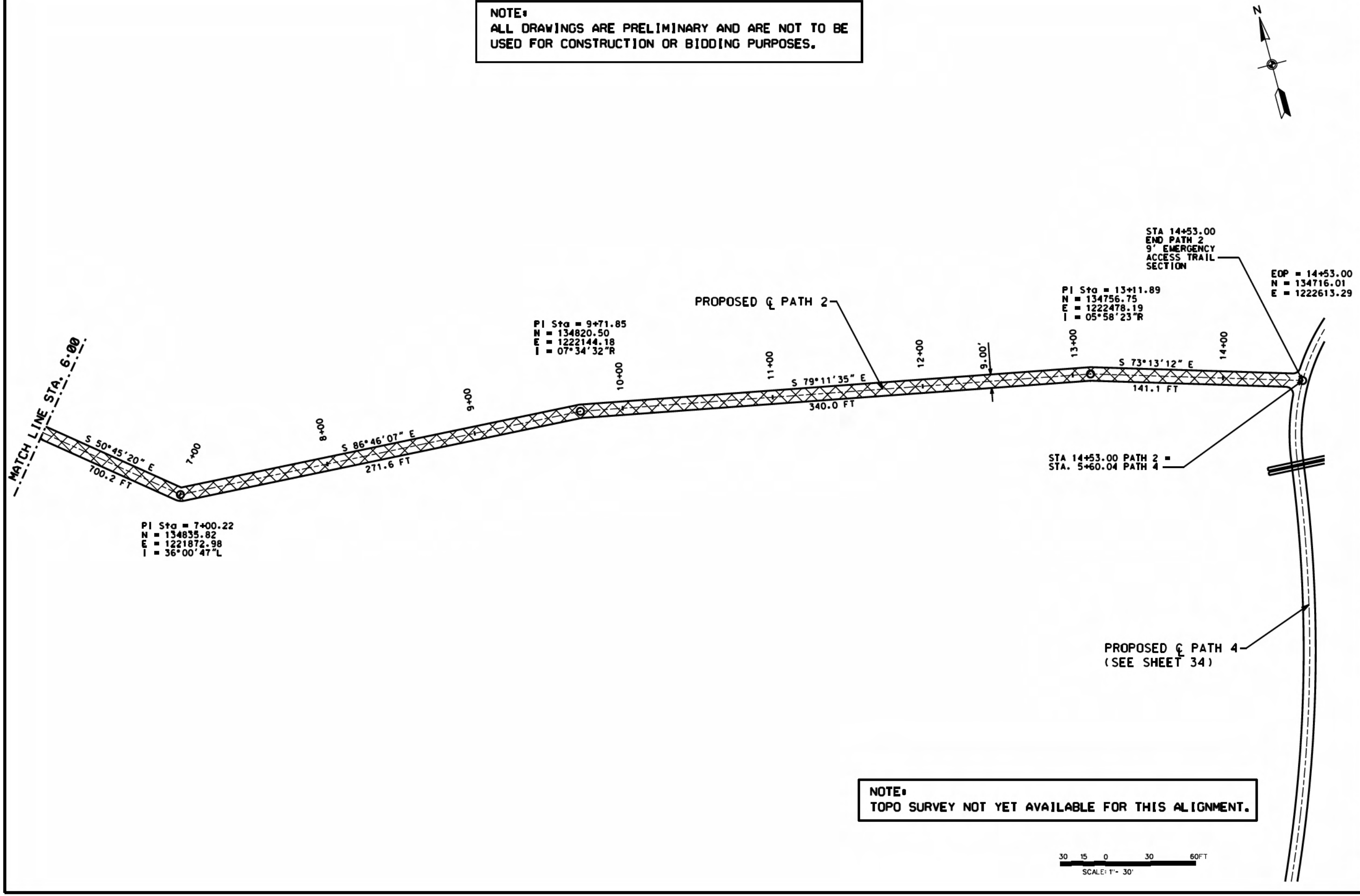
NO.	DATE	REVISION DESCRIPTION	BY

FOURCHE CREEK

PATH 2 PLAN

GEC

NOTE:
ALL DRAWINGS ARE PRELIMINARY AND ARE NOT TO BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.



NOTE:
TOPO SURVEY NOT YET AVAILABLE FOR THIS ALIGNMENT.

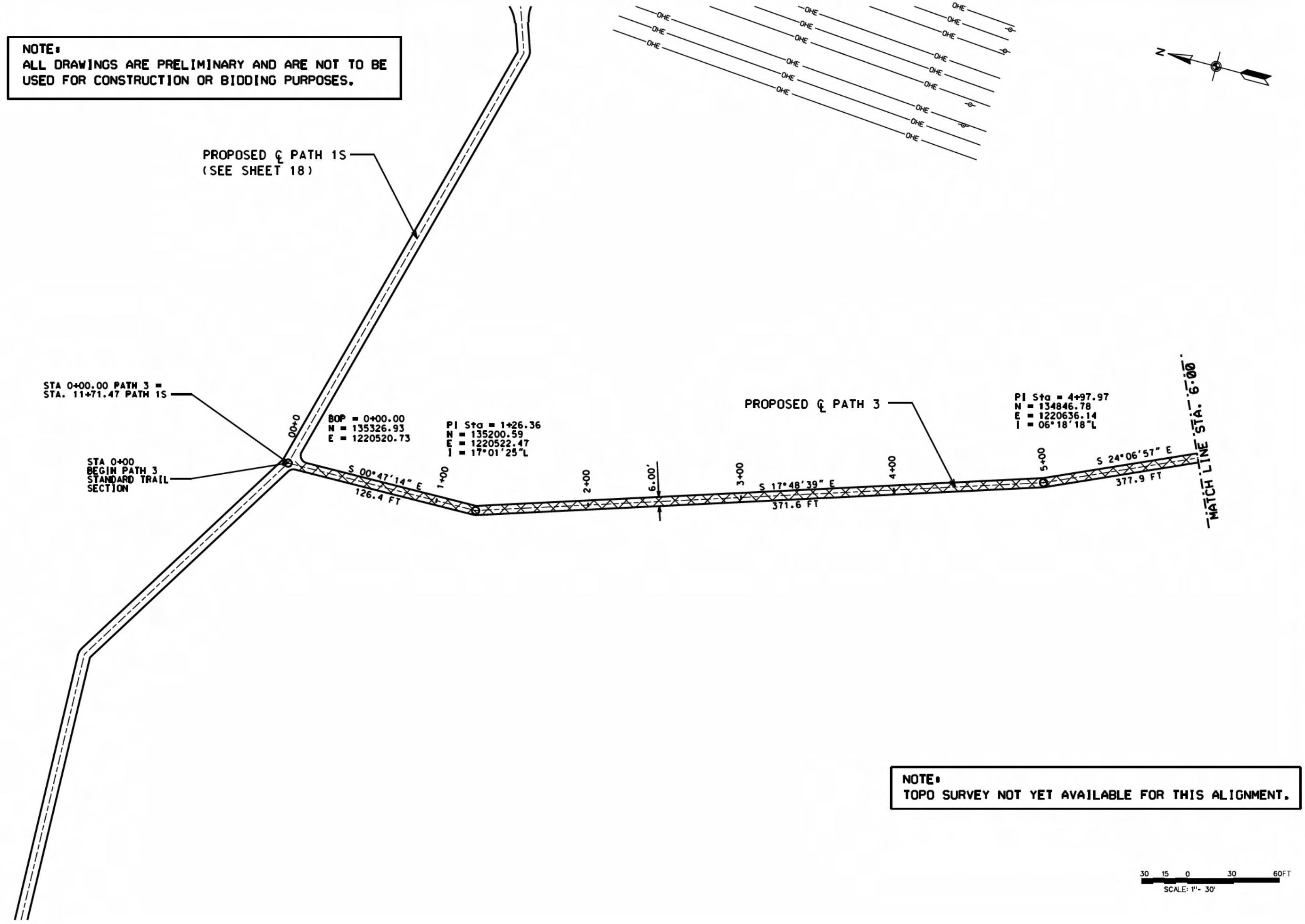
30 15 0 30 60FT
SCALE: 1"= 30'

SHEET NUMBER 28
COUNTY PULASKI COUNTY, AR
FEDERAL PROJECT XXX
STATE PROJECT XXX
DESIGNED R. MANES
CHECKED
DETAILED B. CHEMIN
CHECKED
DATE APRIL, 2004
SHEET PATH2PP02
REVISION DESCRIPTION
NO. DATE BY

FOURCHE CREEK
PATH 2 PLAN

GEC Gulf Engineers & Consultants

NOTE:
ALL DRAWINGS ARE PRELIMINARY AND ARE NOT TO BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.



NOTE:
TOPO SURVEY NOT YET AVAILABLE FOR THIS ALIGNMENT.

SHEET NUMBER 29

COUNTY	FEDERAL PROJECT	STATE PROJECT
PULASKI COUNTY, AR	XXX	XXX

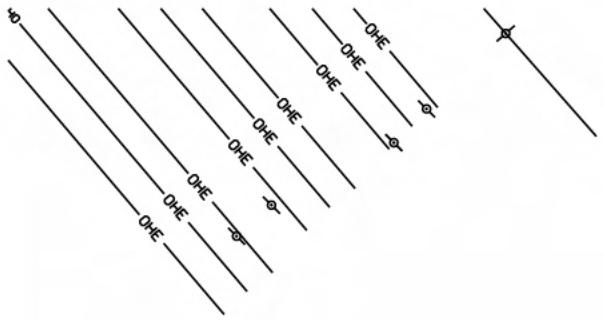
DESIGNED	R. MANES	DETAILED	B. CHEWIN
CHECKED		CHECKED	
DATE	APRIL, 2004	SHEET	PATH3PP01

NO.	DATE	REVISION DESCRIPTION	BY

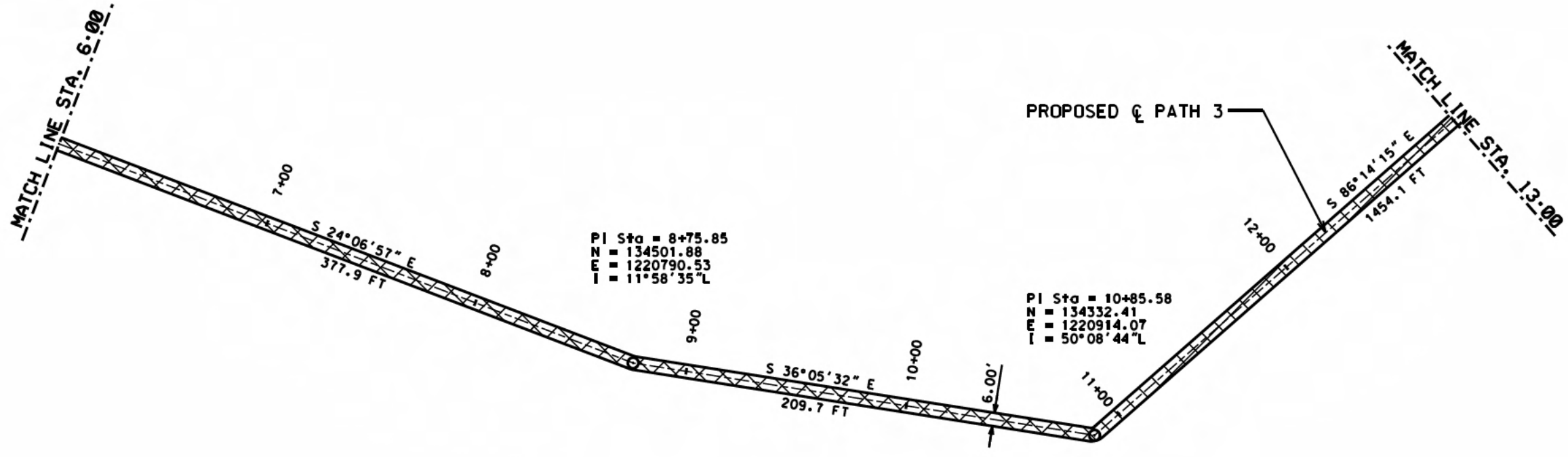
FOURCHE CREEK

PATH 3 PLAN

GEC Civil Engineers & Consultants



NOTE:
ALL DRAWINGS ARE PRELIMINARY AND ARE NOT TO BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.



NOTE:
TOPO SURVEY NOT YET AVAILABLE FOR THIS ALIGNMENT.

30 15 0 30 60FT
SCALE: 1"= 30'

SHEET NUMBER 30

COUNTY	PULASKI COUNTY, AR	
FEDERAL PROJECT	XXX	
STATE PROJECT	XXX	
DESIGNED / CHECKED	R. MANES	
DETAILED / CHECKED	B. CHEMIN	
DATE / SHEET	APRIL, 2004 PATH3PP02	

NO.	DATE	REVISION DESCRIPTION	BY

FOURCHE CREEK

PATH 3 PLAN

GEC Gulf Engineers & Consultants

NOTE:
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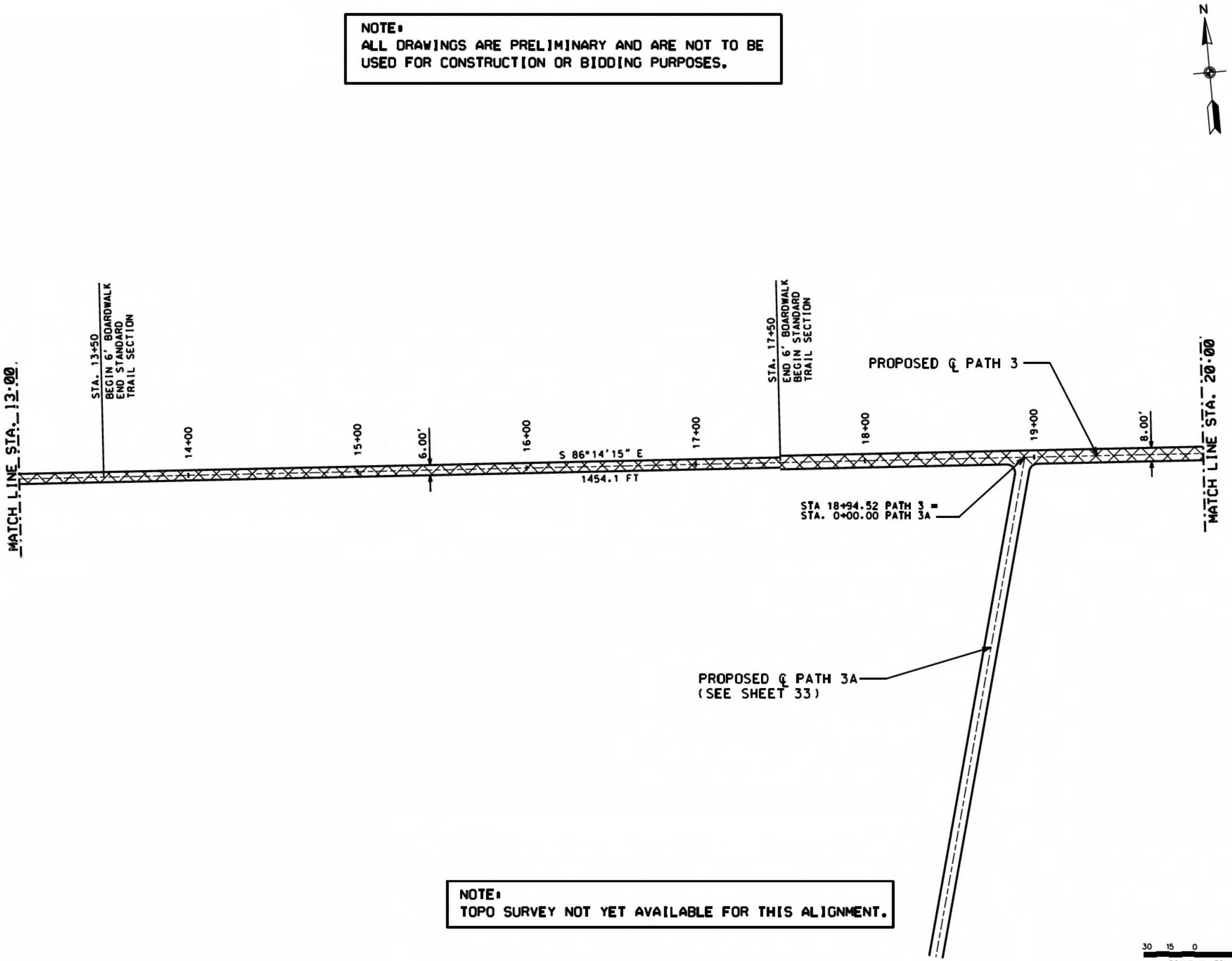

NOTE:
TOPO SURVEY NOT YET AVAILABLE FOR THIS ALIGNMENT.

30 15 0 30 60FT
SCALE: 1"= 30'

SHEET NUMBER 31

COUNTY	FEDERAL PROJECT	STATE PROJECT
PULASKI COUNTY, AR	XXX	XXX

DESIGNED R. MANES
CHECKED
DETAILED B. CHEMIN
CHECKED
DATE APRIL, 2004
SHEET PATH3PP03

NO.	DATE	REVISION DESCRIPTION	BY

FOURCHE CREEK

PATH 3 PLAN

GEC

NOTE:
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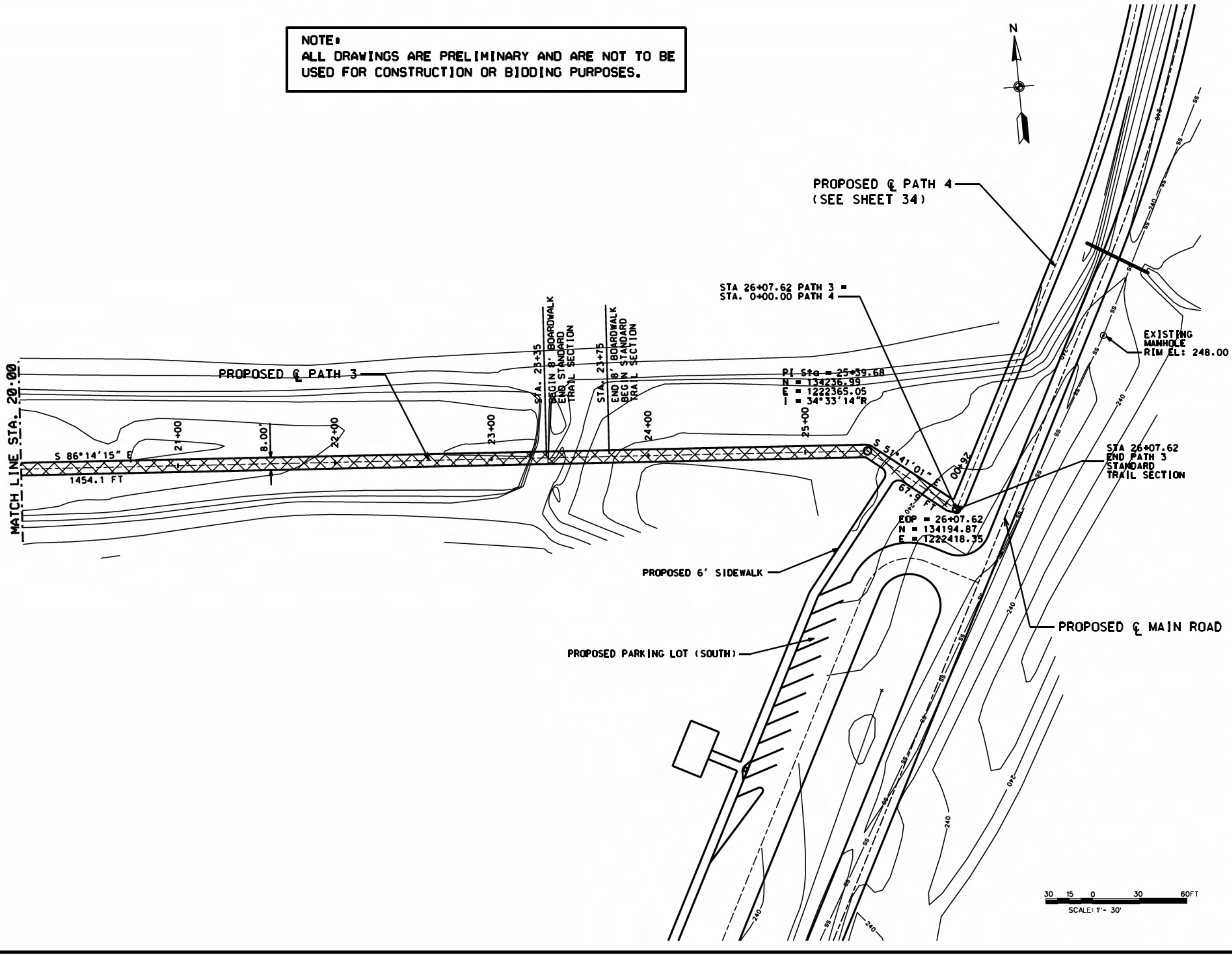

SHEET NUMBER	32
COUNTY	PULASKI COUNTY, AR
FEDERAL PROJECT	XXX
STATE PROJECT	XXX
DESIGNED / CHECKED	R. MANES
DETAILED / CHECKED	B. CHEMIN
DATE / SHEET	APRIL, 2004 PATH3PP04

REVISION DESCRIPTION | DATE | BY | NO.

FOURCHE CREEK

PATH 3 PLAN

GEC

NOTE:
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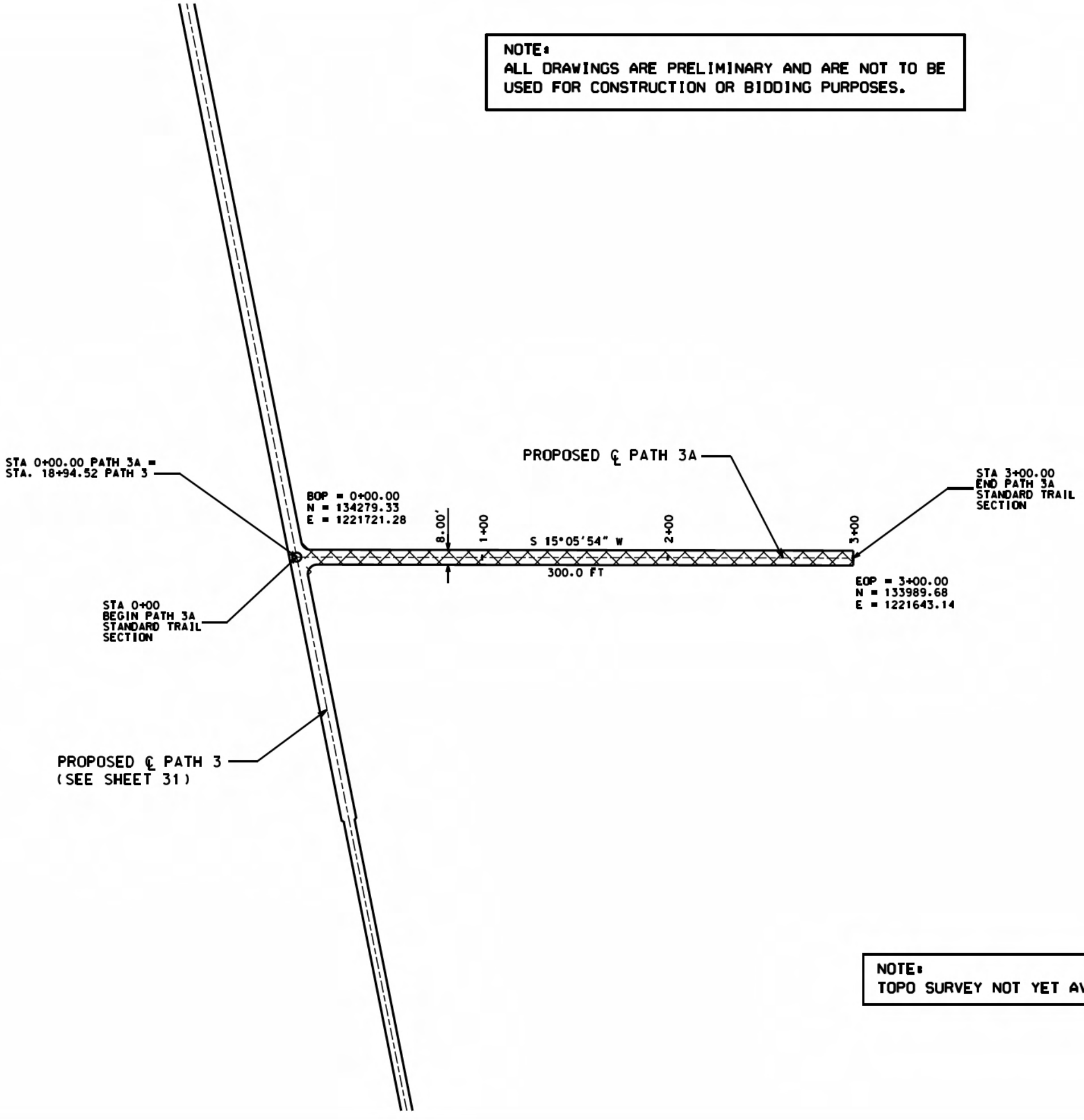


NOTE:
TOPO SURVEY NOT YET AVAILABLE FOR THIS ALIGNMENT.

30 15 0 30 60FT
SCALE: 1"= 30'

SHEET NUMBER 33

PULASKI COUNTY, AR

COUNTY	FEDERAL PROJECT	STATE PROJECT
	XXX	XXX

DESIGNED / CHECKED	R. MANES	
DETAILED / CHECKED	B. CHEMIN	
DATE / SHEET	APRIL, 2004 PATH3APP01	

NO.	REVISION DESCRIPTION	BY	DATE

FOURCHE CREEK

PATH 3A PLAN

GEC

NOTE:
ALL DRAWINGS ARE PRELIMINARY AND ARE NOT TO BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.

PROPOSED ℄ PATH 2
(SEE SHEET 28)

PROPOSED ℄ PATH 3
(SEE SHEET 32)

PROPOSED ℄ PATH 4

PROPOSED 6' SIDEWALK

STA 0+00
BEGIN PATH 4
STANDARD TRAIL SECTION

BOP = 0+00.00
N = 134194.87
E = 1222418.35

N 27°03'58" E
338.0 FT

PC Sta = 1+75.30

CIRCULAR
D = 19°03'32"
T = 162.75
R = 969.50
L = 322.49

PI Sta = 3+38.05
N = 134495.90
E = 1222572.17
I = 19°03'32"L

N 08°00'26" E
230.8 FT

PI Sta = 4+97.79

CIRCULAR
D = 46°34'32"
T = 58.32
R = 135.50
L = 110.15

PI Sta = 5+65.83
N = 134724.44
E = 1222604.32
I = 46°34'32"R

STA 5+60.04 PATH 4 =
STA. 14+53.00 PATH 2

CIRCULAR
D = 25°21'26"
T = 40.02
R = 177.88
L = 78.72

PI Sta = 6+57.68
N = 134781.43
E = 1222684.46
I = 25°21'26"R

N 54°34'58" E
98.3 FT

N 79°56'25" E
187.9 FT

PC Sta = 7+83.41

PCC Sta = 6+07.51

PT Sta = 6+96.36

MATCH LINE STA. 8+00

PROPOSED ℄ MAIN ROAD

STA 0+00.00 PATH 4 =
STA. 26+07.62 PATH 3

EXISTING
MANHOLE
RIM EL: 248.00

EXISTING
MANHOLE
RIM EL: 248.00

30 15 0 30 60FT
SCALE: 1"= 30'

SHEET NUMBER 34

COUNTY: PULASKI COUNTY, AR
FEDERAL PROJECT: XXX
STATE PROJECT: XXX

DESIGNED: R. MANES
CHECKED:
DETAILED: B. CHEMIN
CHECKED:
DATE: APRIL, 2004
SHEET: PATH4PP01

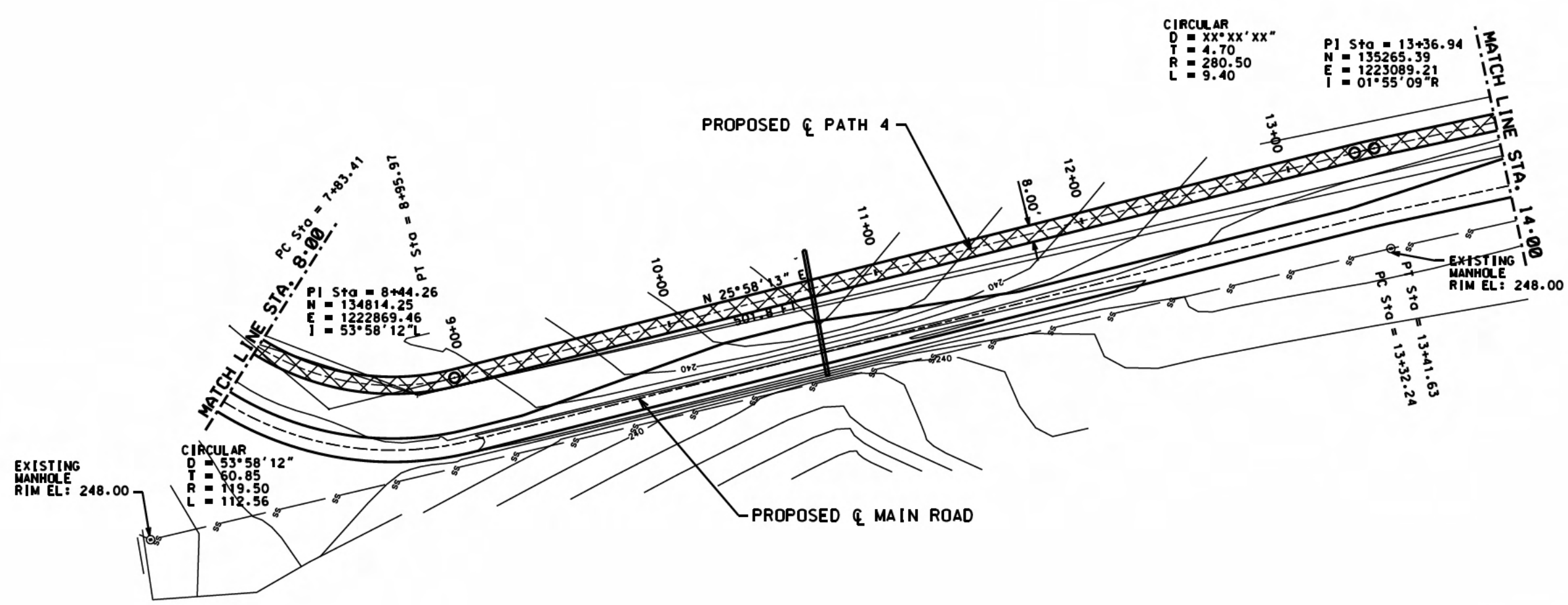
REVISION DESCRIPTION | BY | NO. | DATE

FOURCHE CREEK

PATH 4 PLAN

GEC

NOTE:
ALL DRAWINGS ARE PRELIMINARY AND ARE NOT TO BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.



30 15 0 30 60FT
SCALE: 1"= 30'

SHEET NUMBER 35

COUNTY	FEDERAL PROJECT	STATE PROJECT
PULASKI COUNTY, AR	XXX	XXX

DESIGNED R. MANES
DETAILED B. CHEMIN
CHECKED
DATE APRIL, 2004
SHEET PATH4PP02

REVISION DESCRIPTION | DATE | NO. | BY

FOURCHE CREEK
PATH 4 PLAN

GEC Civil Engineers & Consultants

NOTE:
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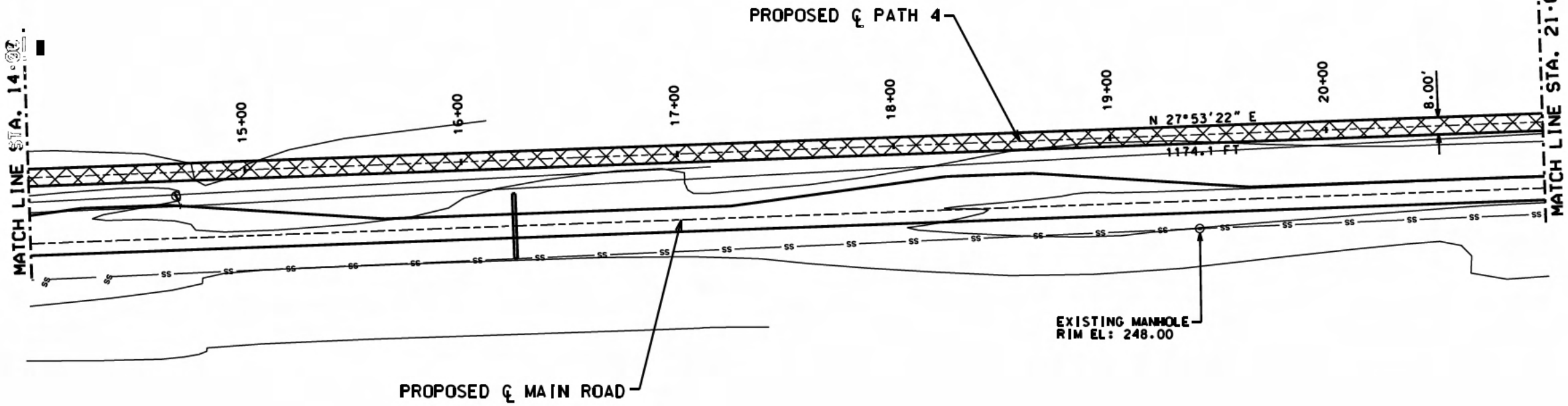

30 15 0 30 60FT
SCALE: 1"= 30'

SHEET NUMBER 36
COUNTY PULASKI COUNTY, AR
FEDERAL PROJECT XXX
STATE PROJECT XXX
DESIGNED R. MANES
DETAILED B. CHEMIN
CHECKED
DATE APRIL, 2004
SHEET PATH4PP03
NO. DATE BY REVISION DESCRIPTION

FOURCHE CREEK
PATH 4 PLAN

GEC Gal Engineers & Consultants

NOTE:
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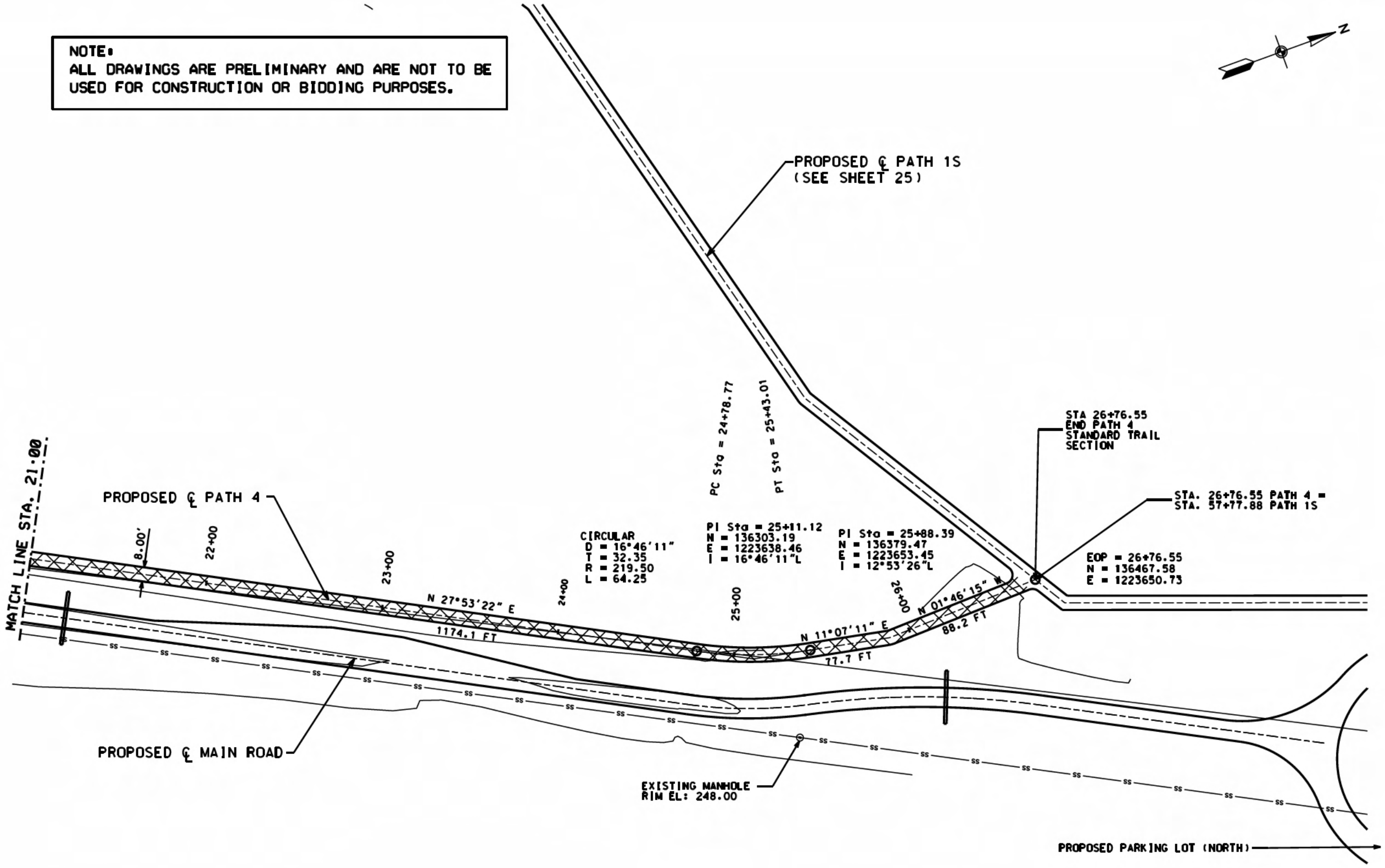


30 15 0 30 60FT
SCALE: 1"= 30'

SHEET NUMBER 37
PULASKI COUNTY, AR
COUNTY
XXX
FEDERAL PROJECT
XXX
STATE PROJECT
DESIGNED R. MANES
CHECKED
DETAILED B. CHEMIN
CHECKED
DATE APRIL, 2004
SHEET PATH4PP04
NO. DATE BY REVISION DESCRIPTION

FOURCHE CREEK
PATH 4 PLAN

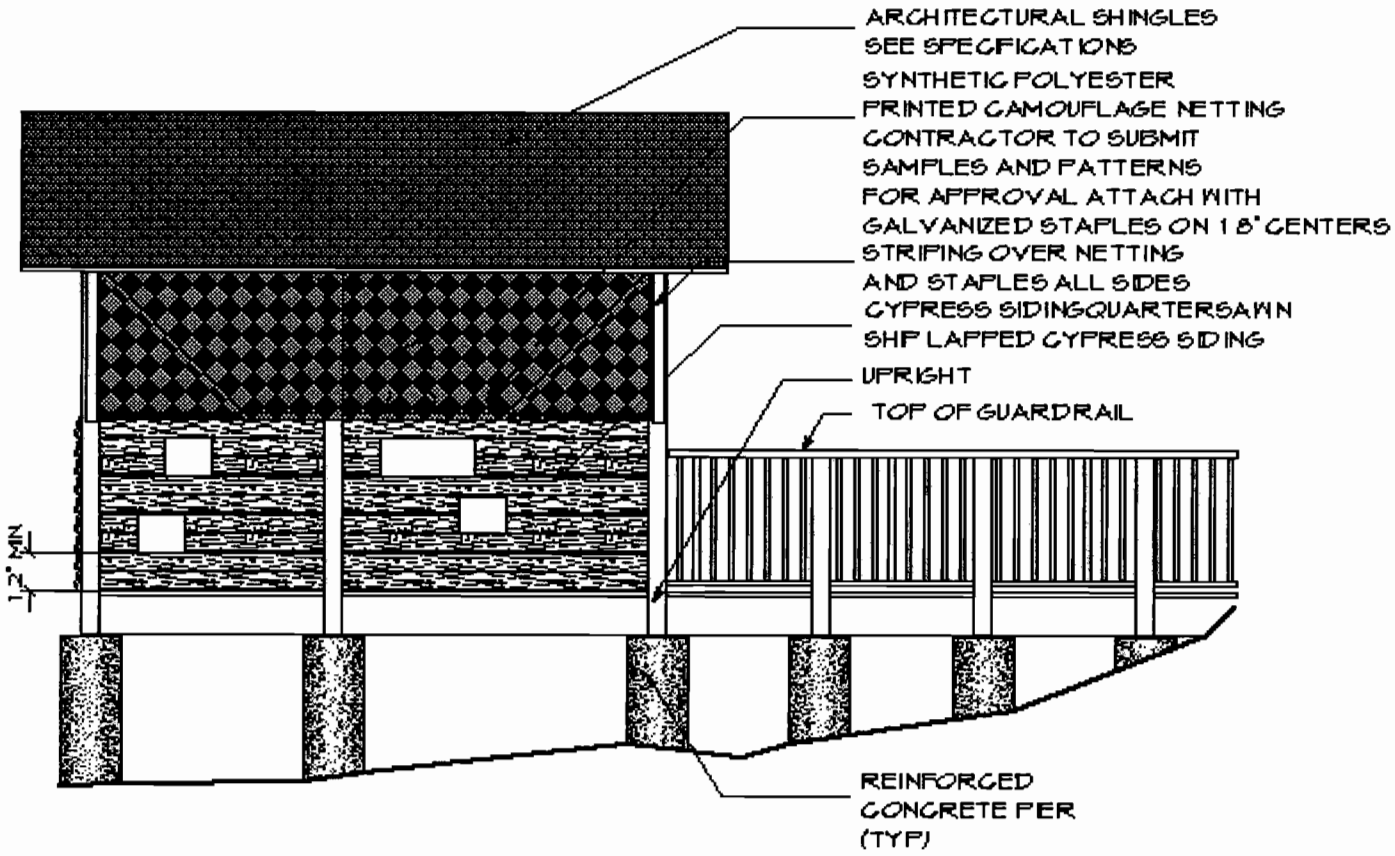
GEC
Gulf Engineers & Consultants

Attachment D

NATURE APPRECIATION CENTER DESIGNS

CONTENTS

Environmental Assessment Acquisition of Fourche Bottoms and Development of Nature Appreciation Facility, Pulaski County, Arkansas



BLIND ELEVATION

SCALE: 1/4" = 1'-0"

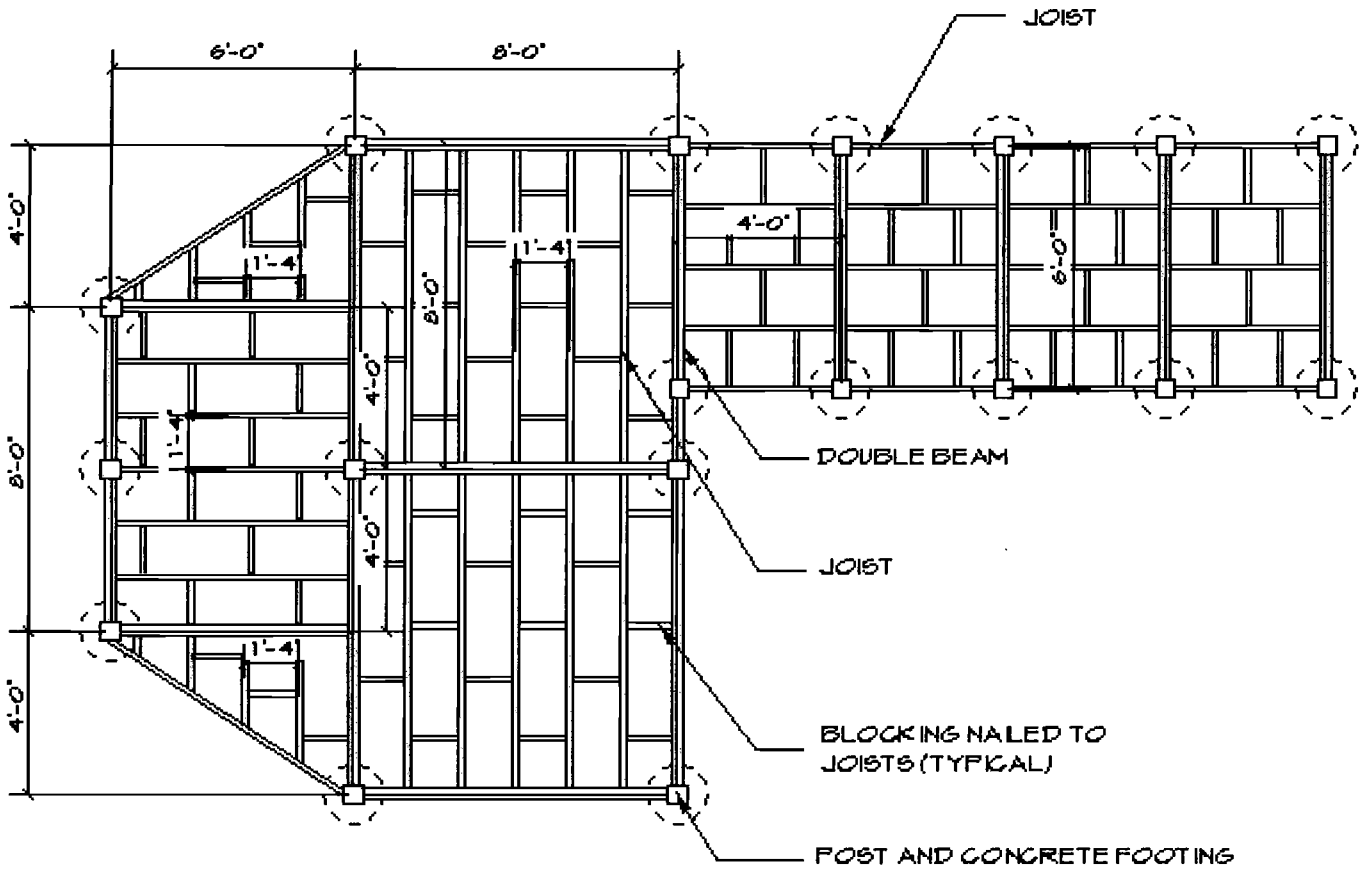
Environmental Assessment Aquisition of Fourche Bottoms
And Development of Nature Appreciation Facility

Pulaski County, Arkansas

PRELMINARY DRAWINGS
NOT FOR CONSTRUCTION

GEC
Gulf Engineers and Consultants
mesa
LANDSCAPE ARCHITECTS, INC.

Date: January 31, 2008



WILDLIFE BLIND PLAN

SCALE: 1/4" = 1'-0"

Environmental Assessment Aquisition of Fourche Bottoms
And Development of Nature Appreciation Facility

Pulaski County, Arkansas

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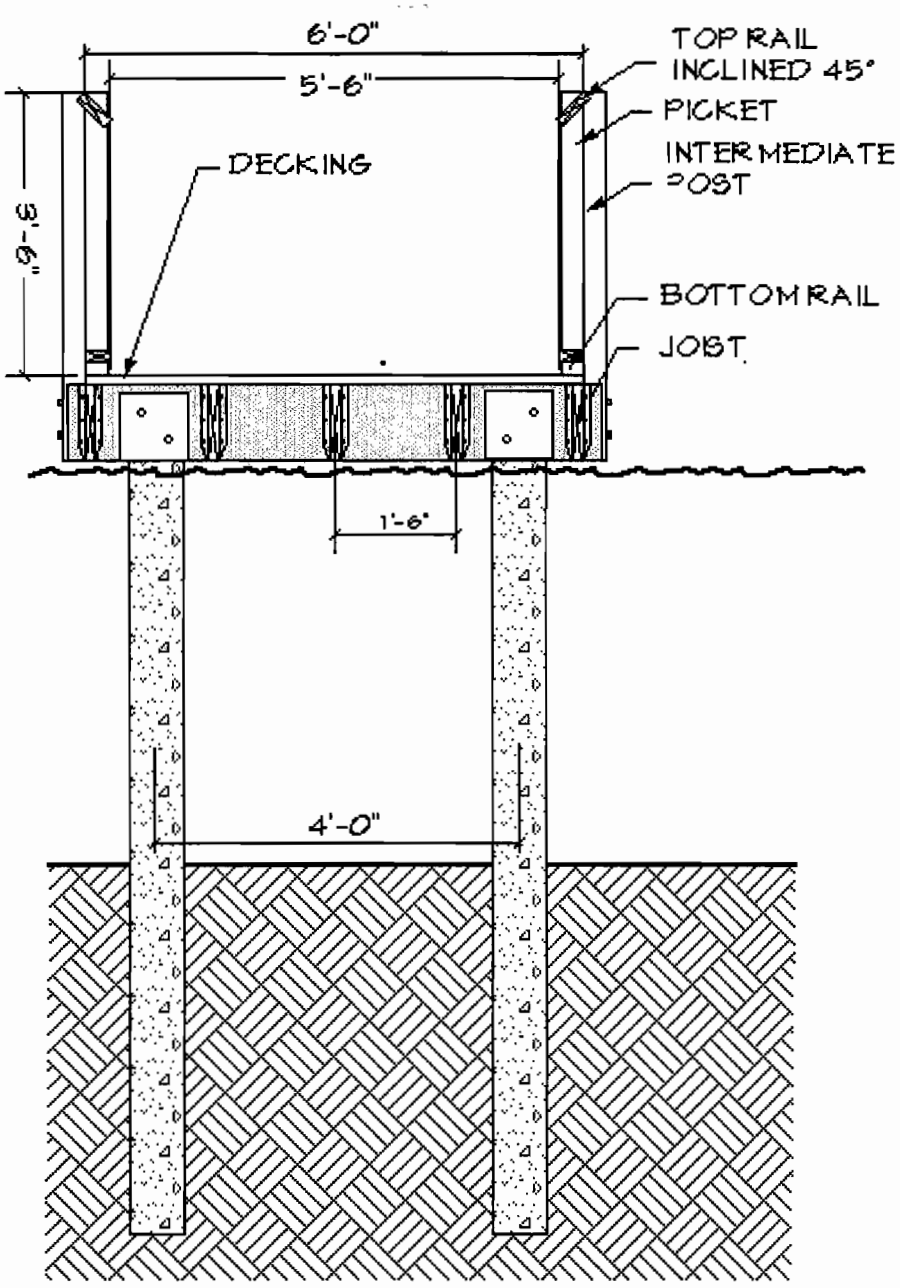
Date: January 31, 2003



BOARDWALK WITH CONCRETE PIERS

SCALE: NOT TO SCALE

Environmental Assessment Aquisition of Fourche Bottoms
And Development of Nature Appreciation Facility

Pulaski County, Arkansas

PRELMINARY DRAWINGS
NOT FOR CONSTRUCTION

GEC
Civil Engineers and Consultants
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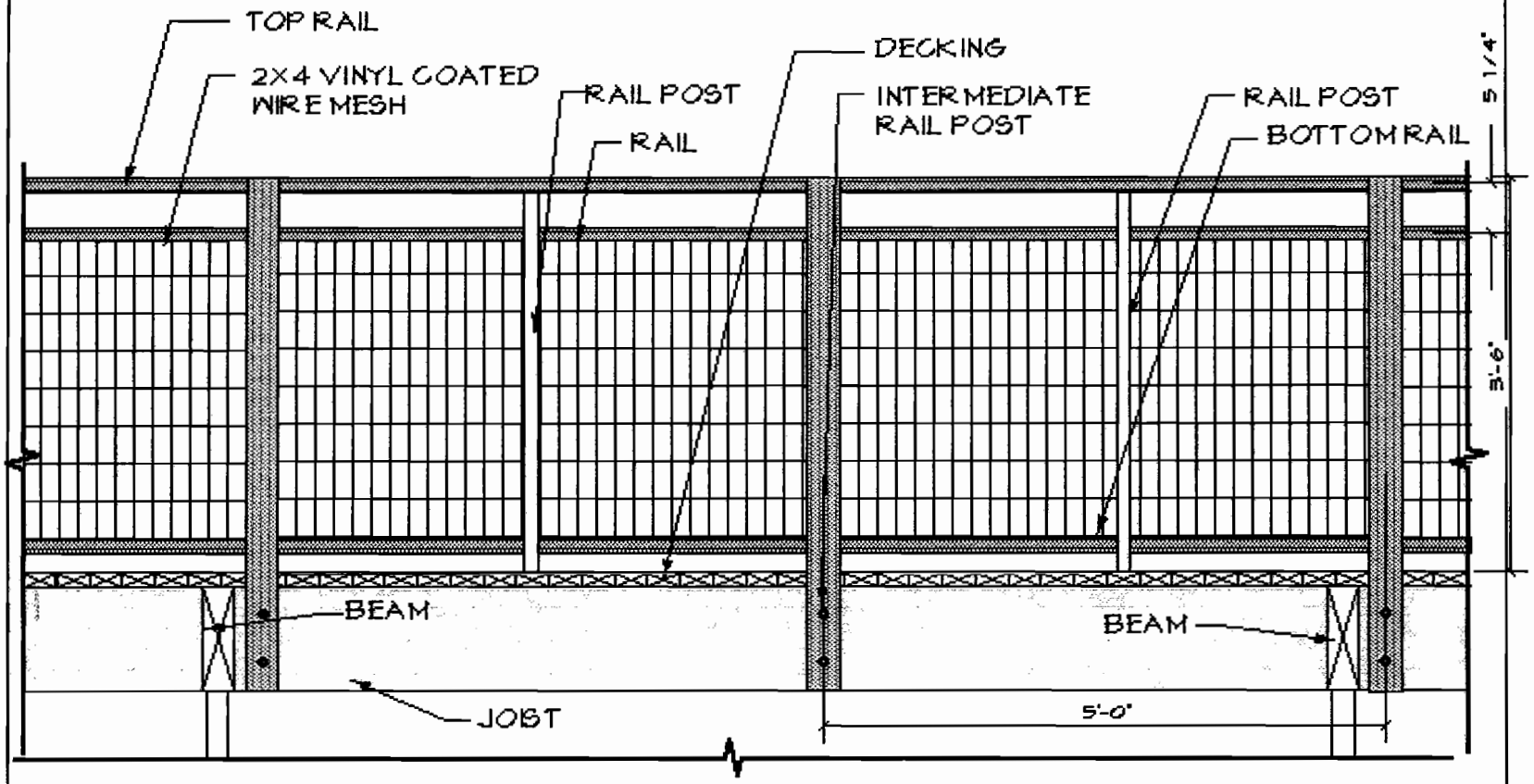
LANDSCAPE ARCHITECTS, INC.

Date: January 31, 2008



BOARDWALK RAILING

SCALE: 3/4" = 1'-0"

Environmental Assessment Aquisition of Fourche Bottoms
And Development of Nature Appreciation Facility

Pulaski County, Arkansas

PRELMINARY DRAWINGS
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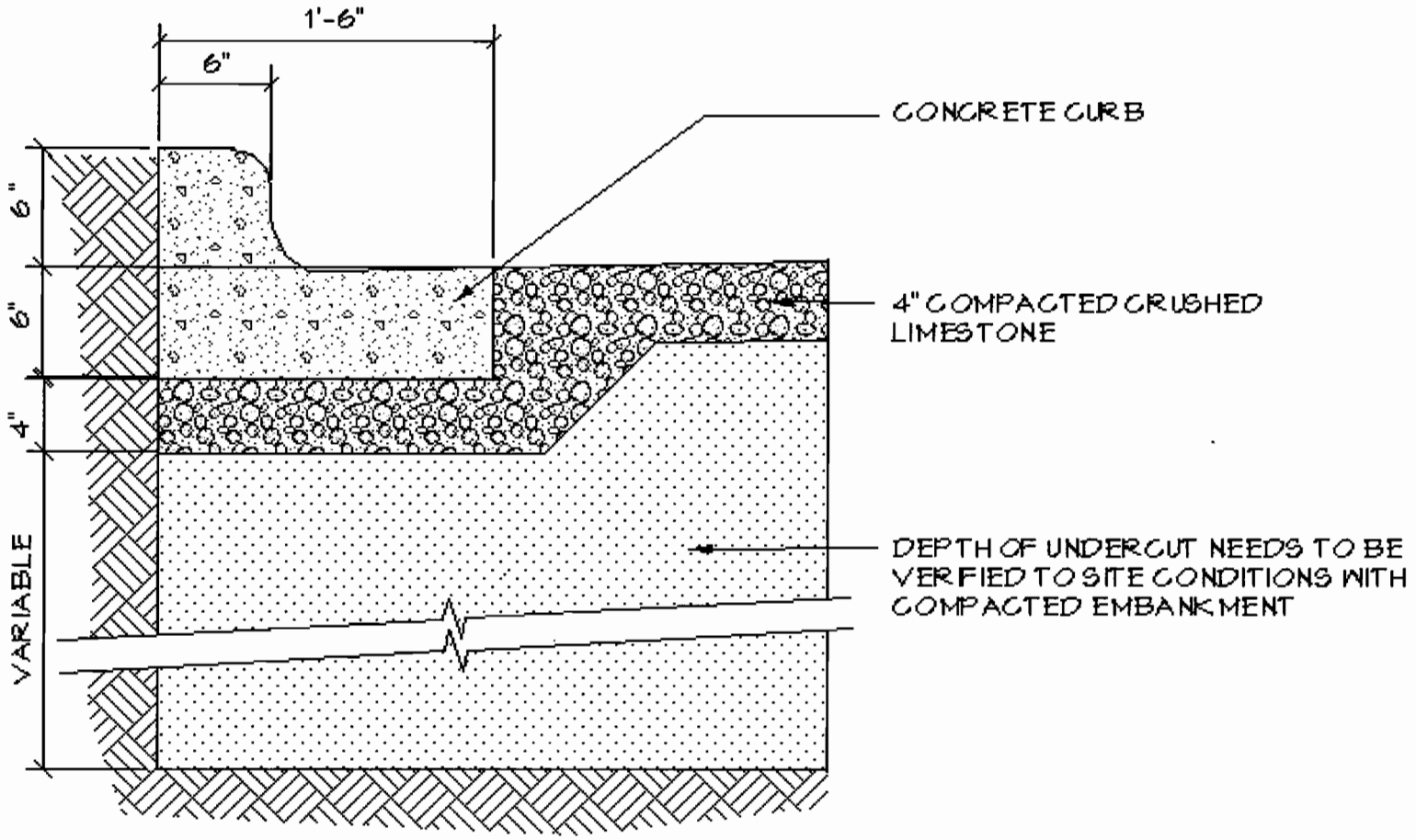
Date: January 31, 2008



CONCRETE CURB AND ROAD PROFILE

SCALE: 1 1/2" = 1'-0"

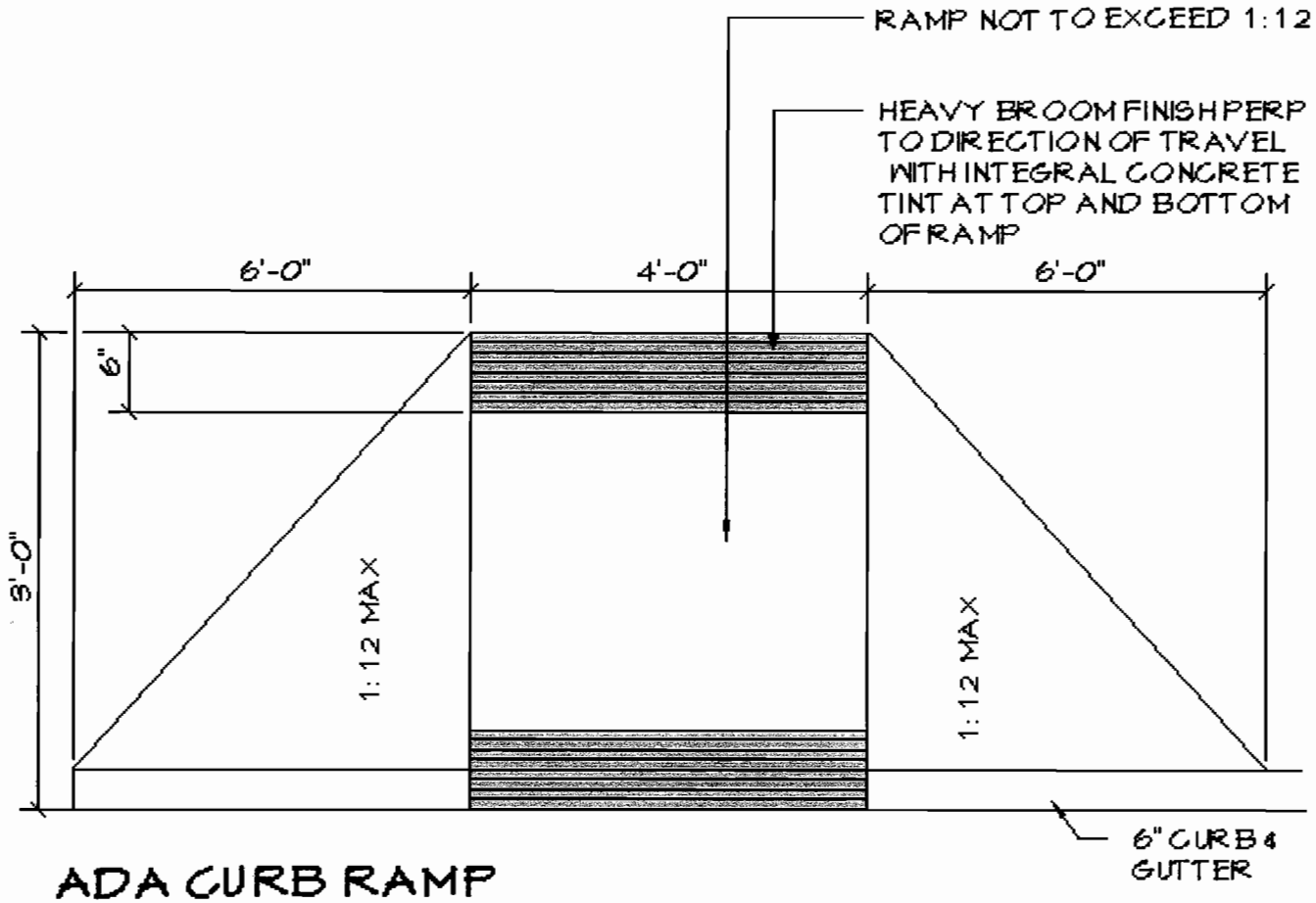
Environmental Assessment Aquisition of Fourche Bottoms
And Development of Nature Appreciation Facility

Pulaski County, Arkansas

PRELMINARY DRAWINGS
NOT FOR CONSTRUCTION

GET
Civil Engineers and Consultants
mesa
Landscape Architects, Inc.

Date: January 31, 2003



ADA CURB RAMP

SCALE: NOT TO SCALE

Environmental Assessment Aquisition of Fourche Bottoms
And Development of Nature Appreciation Facility

Pulaski County, Arkansas

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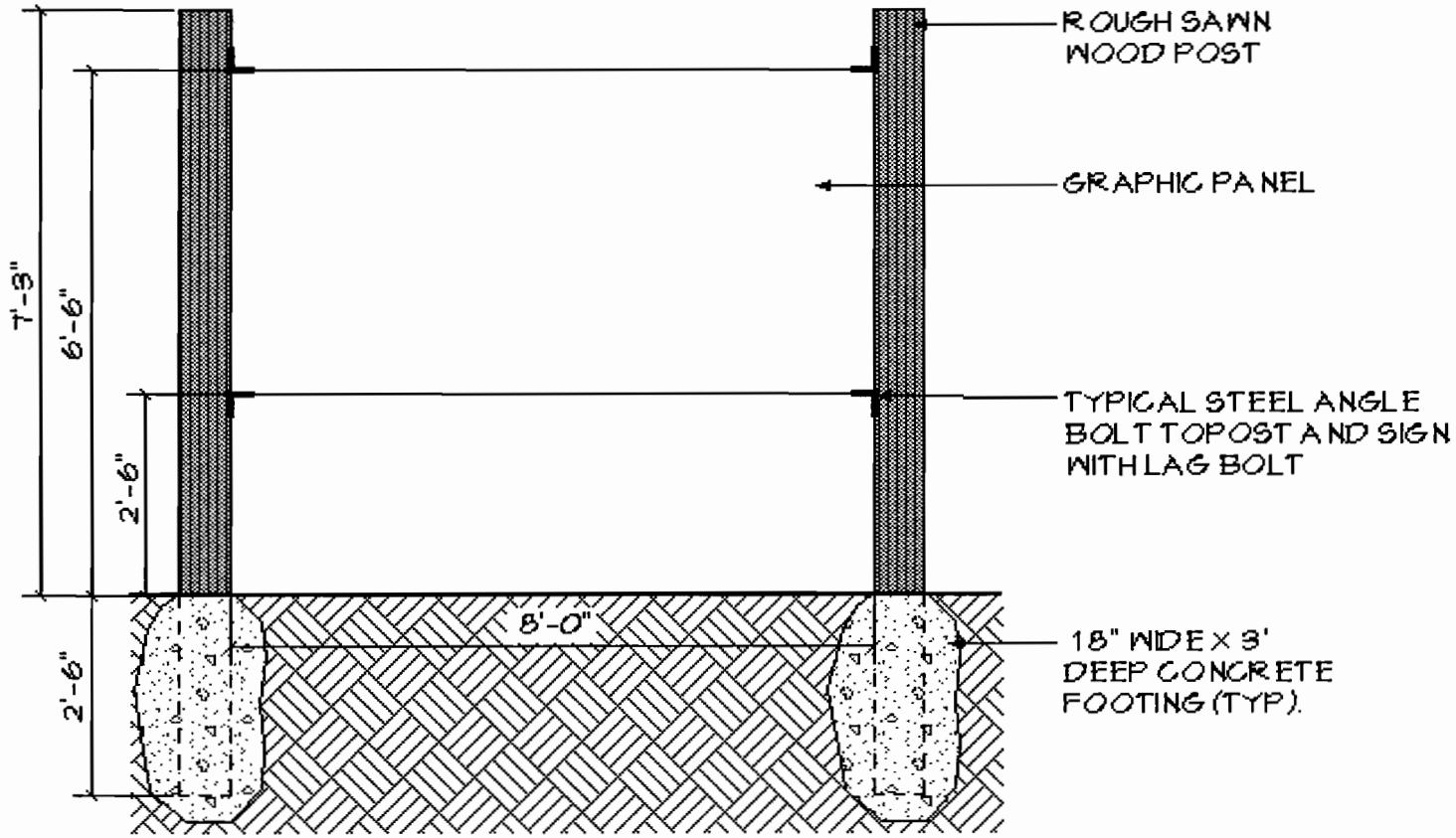
mesa ENGINEERS & ARCHITECTS, INC.

Date: January 31, 2008



ENTRY SIGN

SCALE: 1/2" = 1'-0"

Environmental Assessment Aquisition of Fourche Bottoms
And Development of Nature Appreciation Facility

Pulaski County, Arkansas

PRELMINARY DRAWINGS
NOT FOR CONSTRUCTION

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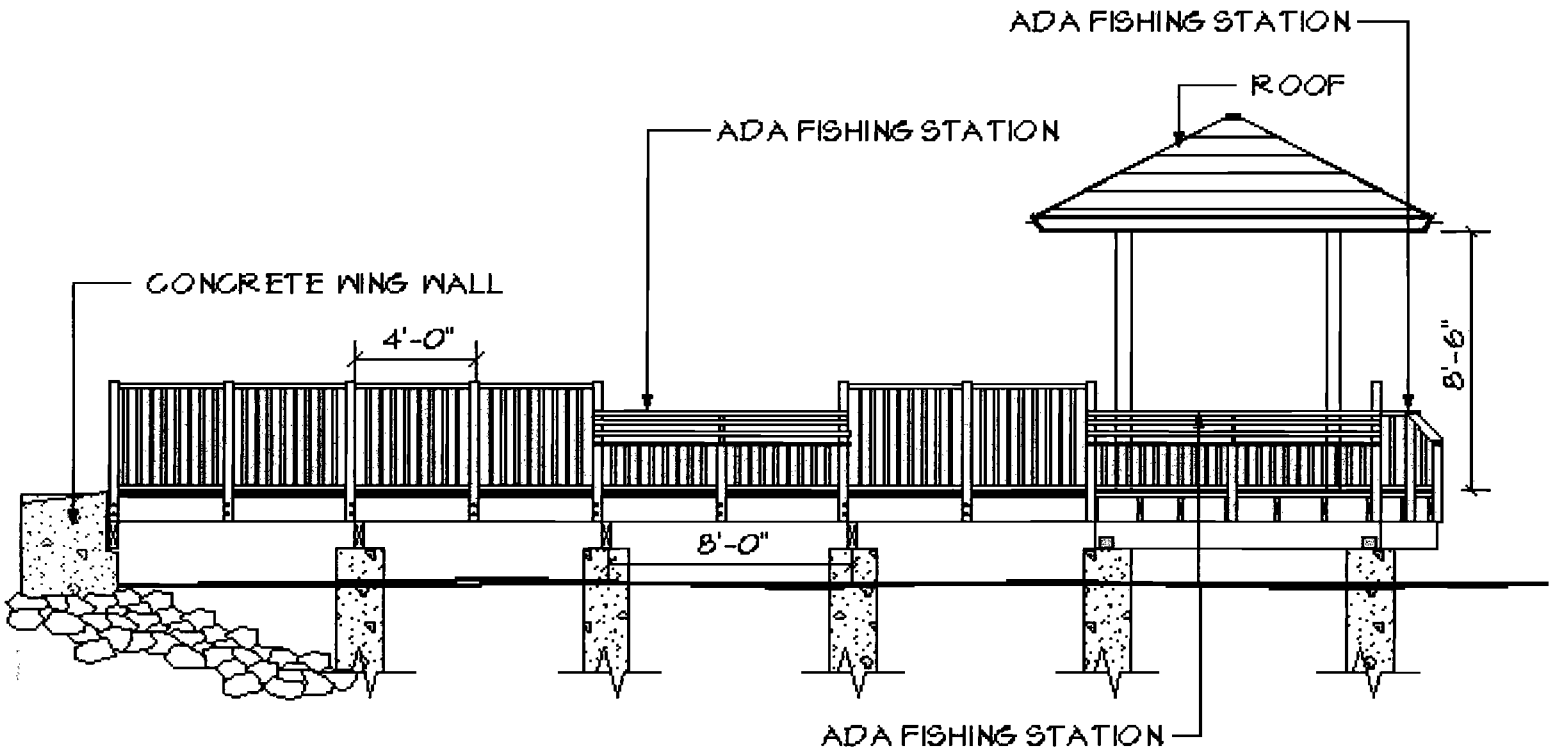
mesa
LANDSCAPE ARCHITECTS, INC.

Date: January 31, 2003



FISHING PIER ELEVATION

SCALE: 3/16" = 1'-0"

Environmental Assessment Aquisition of Fourche Bottoms
And Development of Nature Appreciation Facility

Pulaski County, Arkansas

PRELMINARY DRAWINGS
NOT FOR CONSTRUCTION

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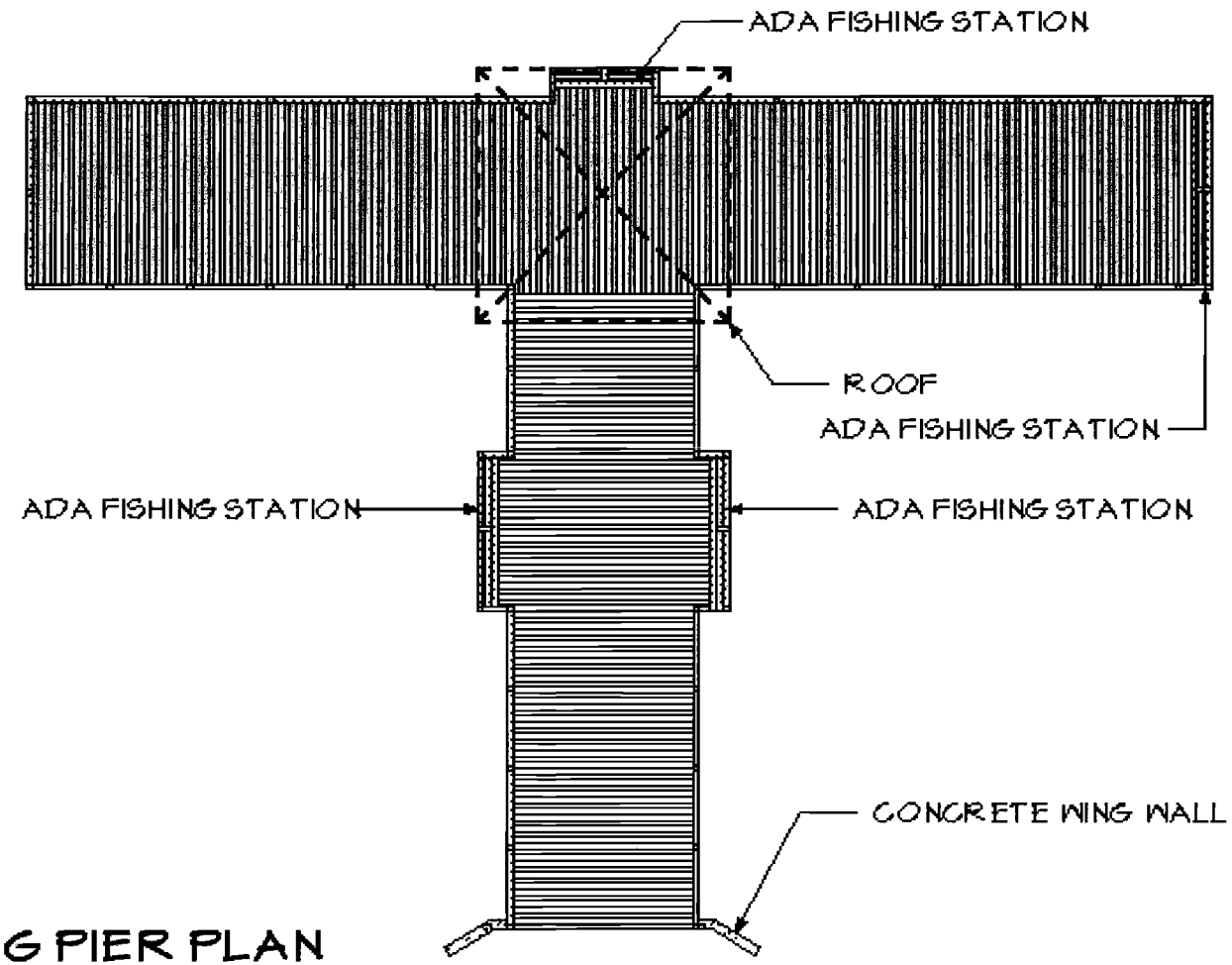
Gulf Engineers and Consultants
mesa
LANDSCAPE ARCHITECTS, INC.

Date: January 31, 2008



FISHING PIER PLAN

SCALE: 1/8" = 1'-0"

Environmental Assessment Aquisition of Fourche Bottoms
And Development of Nature Appreciation Facility

Pulaski County, Arkansas

PRELMINARY DRAWINGS
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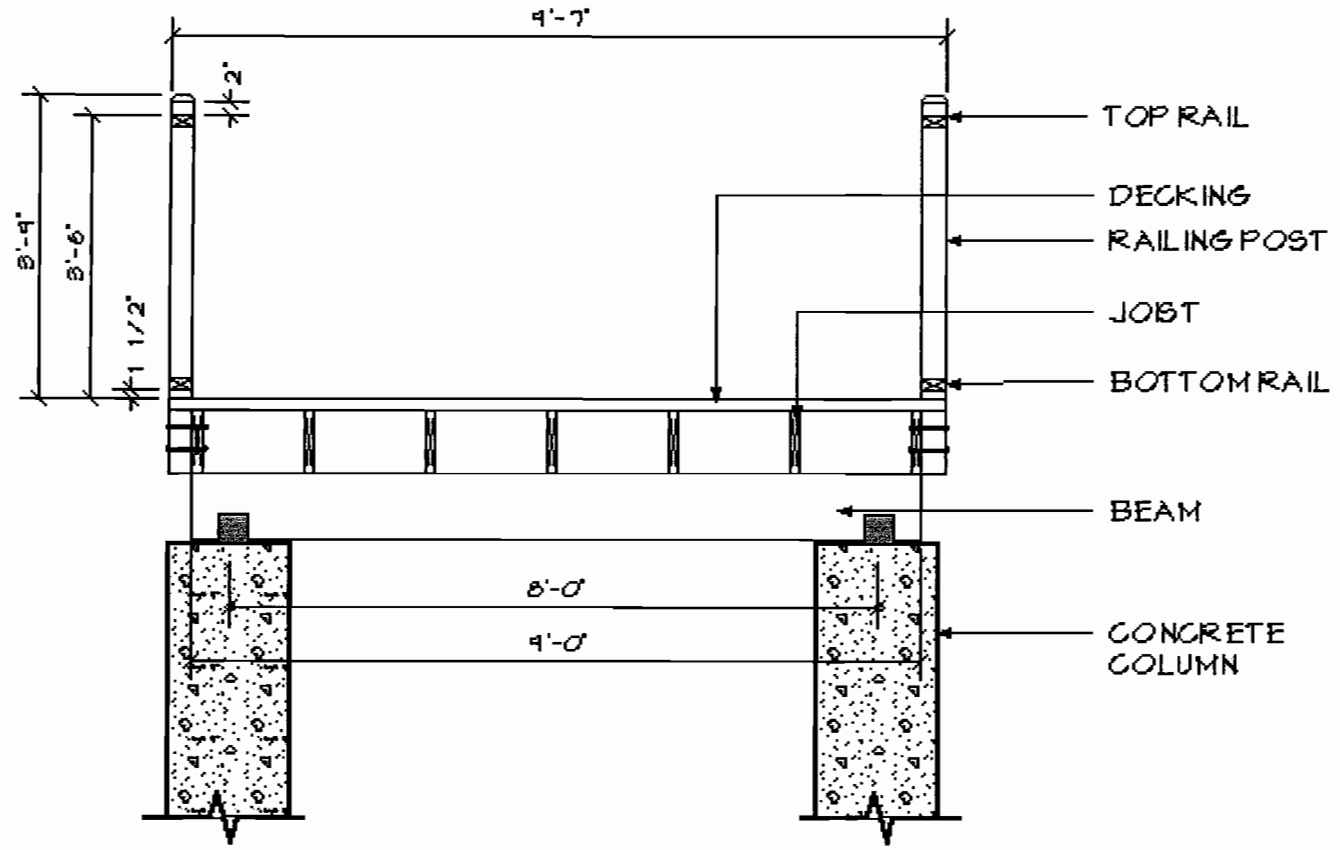
LANDSCAPE ARCHITECTS, INC.

Date: January 31, 2003



FISHING PIER SECTION

SCALE: 1/2" = 1'-0"

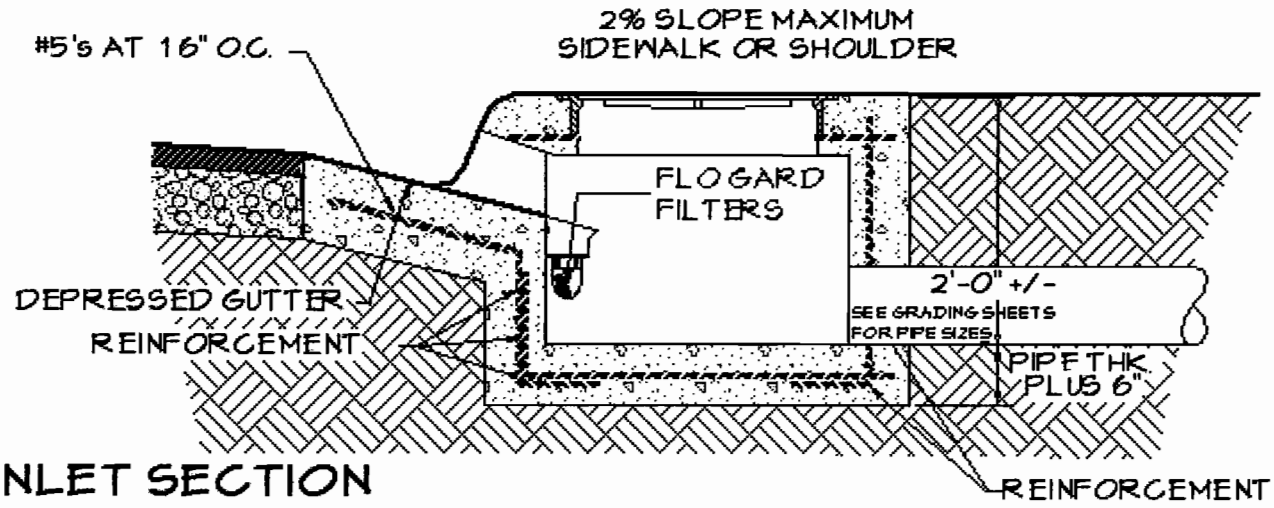
Environmental Assessment Aquisition of Fourche Bottoms
And Development of Nature Appreciation Facility

Pulaski County, Arkansas

PRELMINARY DRAWINGS
NOT FOR CONSTRUCTION

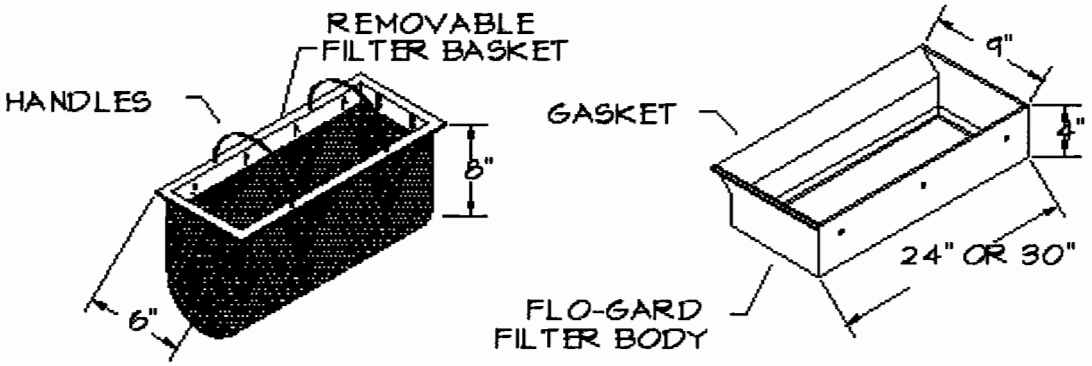
GEC Civil Engineers and Consultants
mesa Landscape Architects, Inc.

Date: January 31, 2008



INLET SECTION

SCALE: 3/4" = 1'-0"



FLO GARD FILTER

NOT TO SCALE

Environmental Assessment Aquisition of Fourche Bottoms
And Development of Nature Appreciation Facility

Pulaski County, Arkansas

PRELMINARY DRAWINGS
NOT FOR CONSTRUCTION

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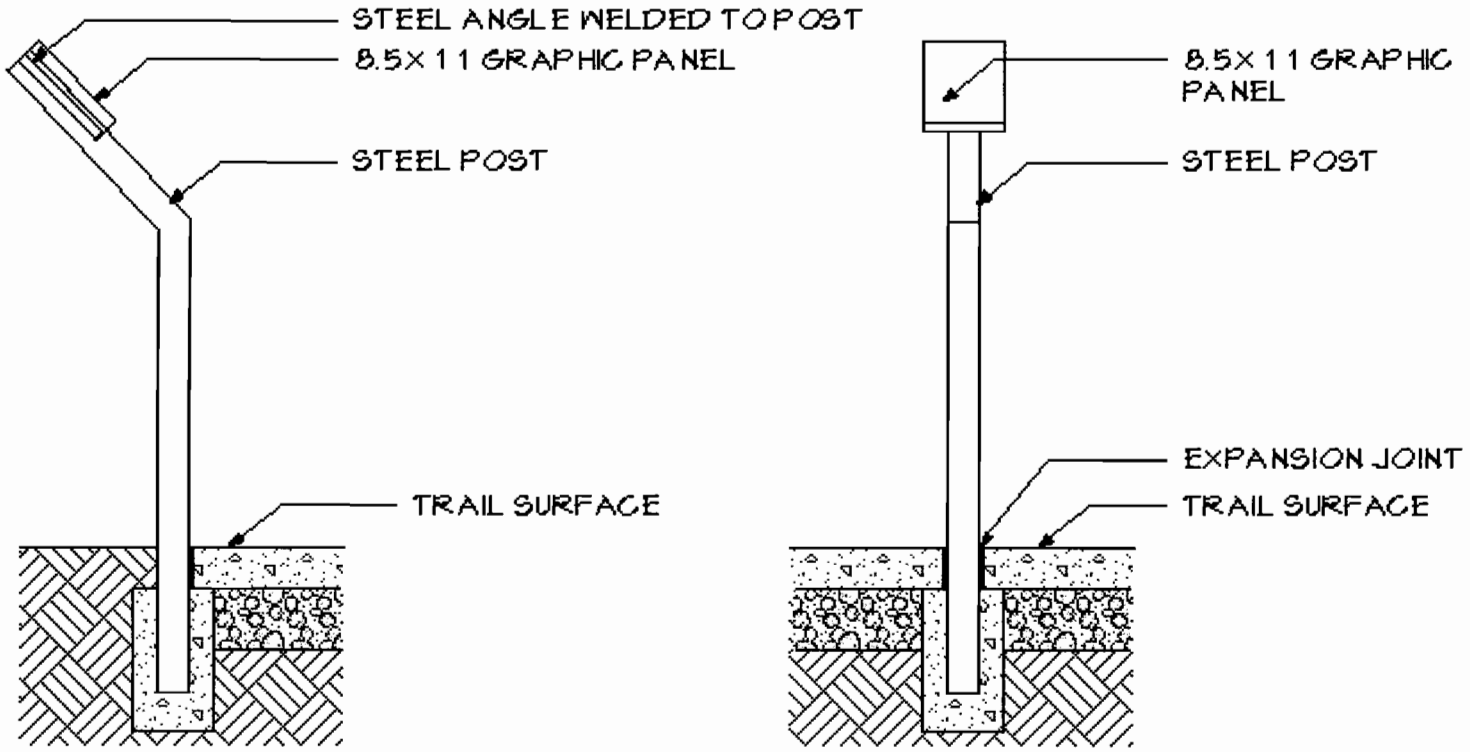
Civil Engineers and Consultants
mesa
LANDSCAPE ARCHITECTURE, INC.

Date: January 31, 2003



IDENTIFICATION GRAPHIC PANEL

SCALE: 3/4" = 1'-0"

Environmental Assessment Aquisition of Fourche Bottoms
And Development of Nature Appreciation Facility

Pulaski County, Arkansas

PRELMINARY DRAWINGS
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Gulf Engineers and Consultants
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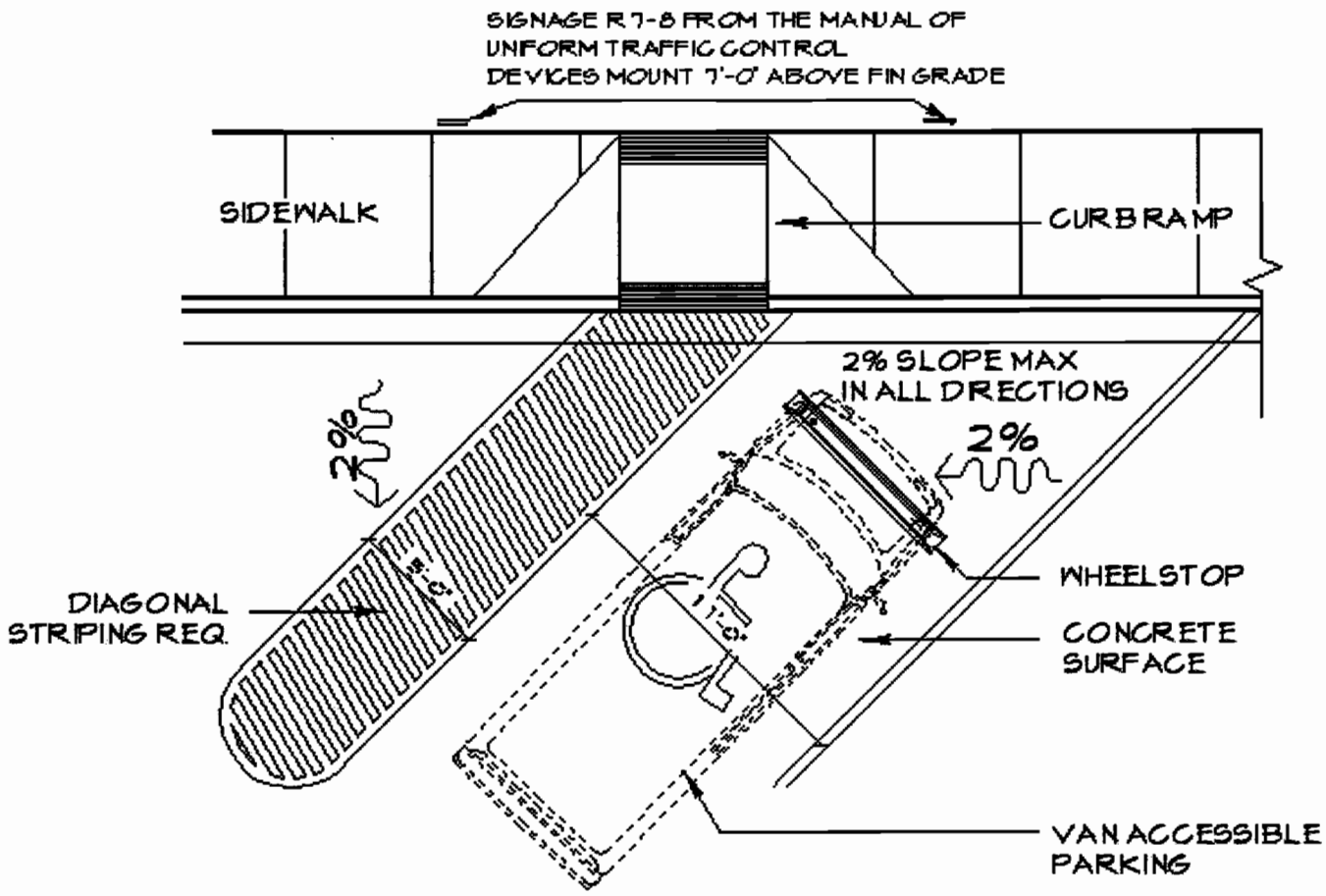
LANDSCAPE ARCHITECTS, INC.

Date: January 31, 2008



ADA PARKING

SCALE: 3/16"=1'-0"

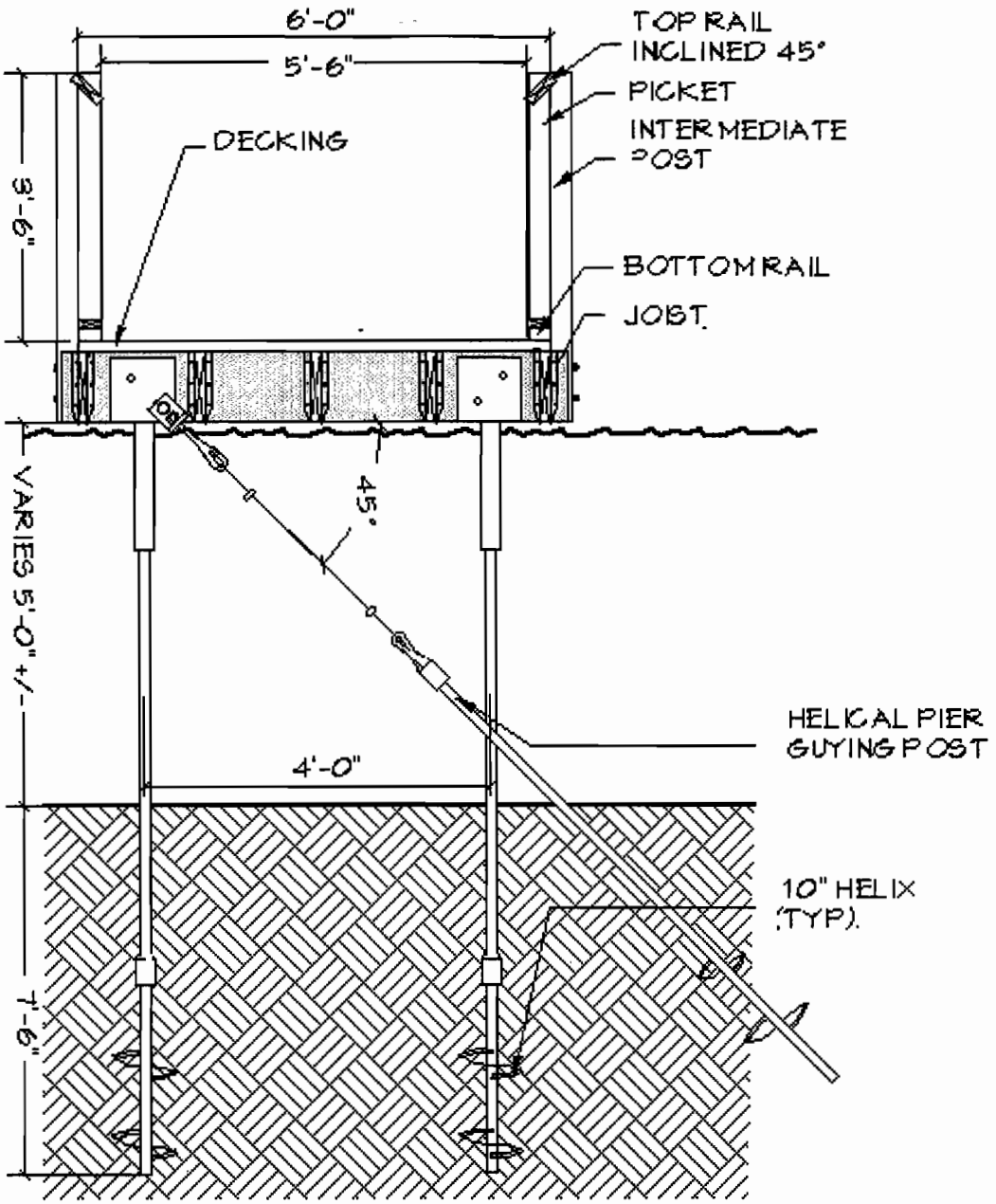
Environmental Assessment Aquisition of Fourche Bottoms
And Development of Nature Appreciation Facility

Pulaski County, Arkansas

PRELMINARY DRAWINGS
NOT FOR CONSTRUCTION

GEC Civil Engineers and Consultants
mesa

Date: January 31, 2008



BOARDWALK CROSS SECTION

SCALE: NOT TO SCALE

Environmental Assessment Aquisition of Fourche Bottoms
And Development of Nature Appreciation Facility

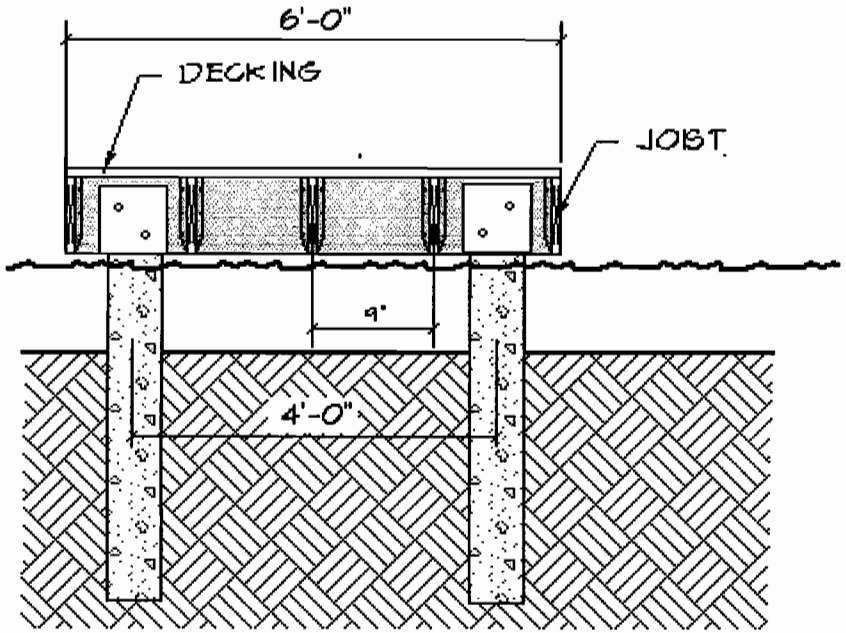
Pulaski County, Arkansas

PRELMINARY DRAWINGS
NOT FOR CONSTRUCTION

GEC Engineers and Consultants

mesa Landscape Architects, Inc.

Date: January 31, 2008



BOARDWALK W/O RAILING WITH CONCRETE PIERS

SCALE: NOT TO SCALE

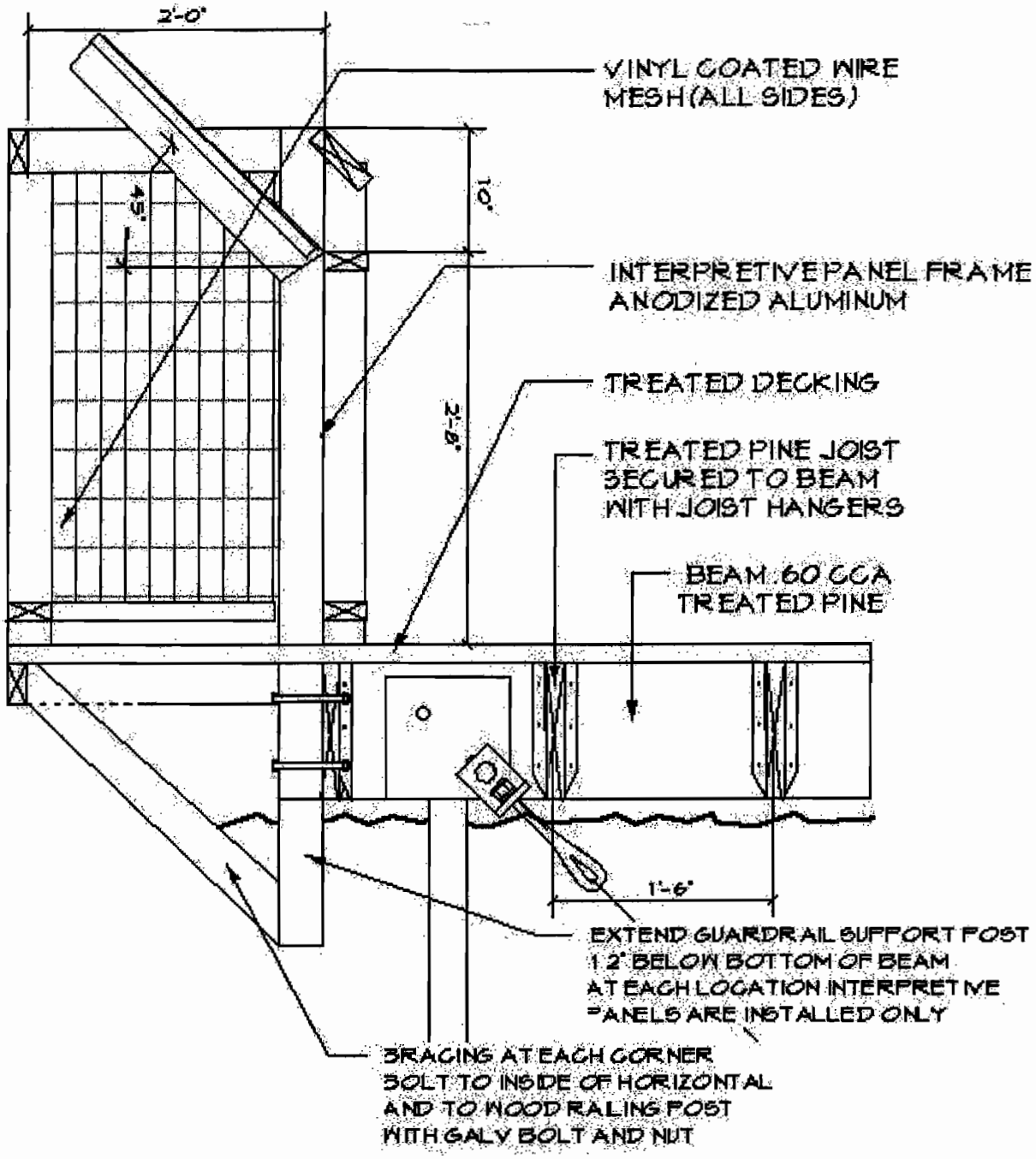
Environmental Assessment Aquisition of Fourche Bottoms
And Development of Nature Appreciation Facility

Pulaski County, Arkansas

PRELMINARY DRAWINGS
NOT FOR CONSTRUCTION

GEC Civil Engineers and Consultants
mesa Landscape Architects, Inc.

Date: January 31, 2008



INTERPRETIVE PANEL ON BOARDWALK

SCALE: 1" = 1'-0"

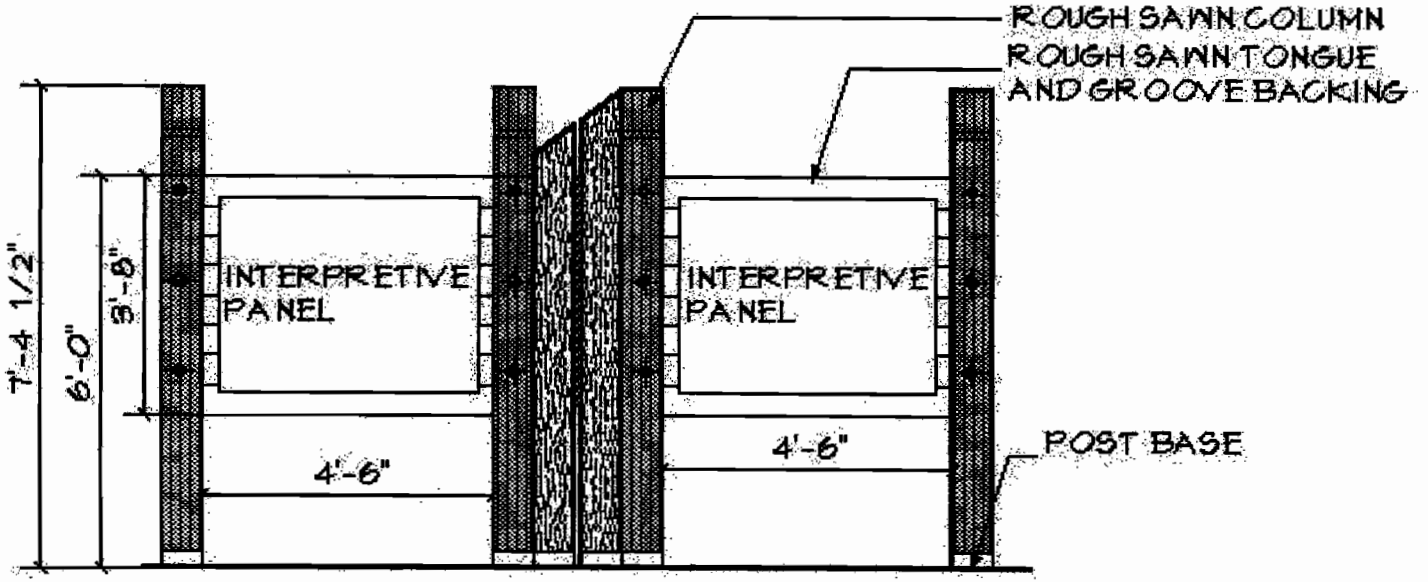
Environmental Assessment Aquisition of Fourche Bottoms
And Development of Nature Appreciation Facility

Pulaski County, Arkansas

PRELMINARY DRAWINGS
NOT FOR CONSTRUCTION

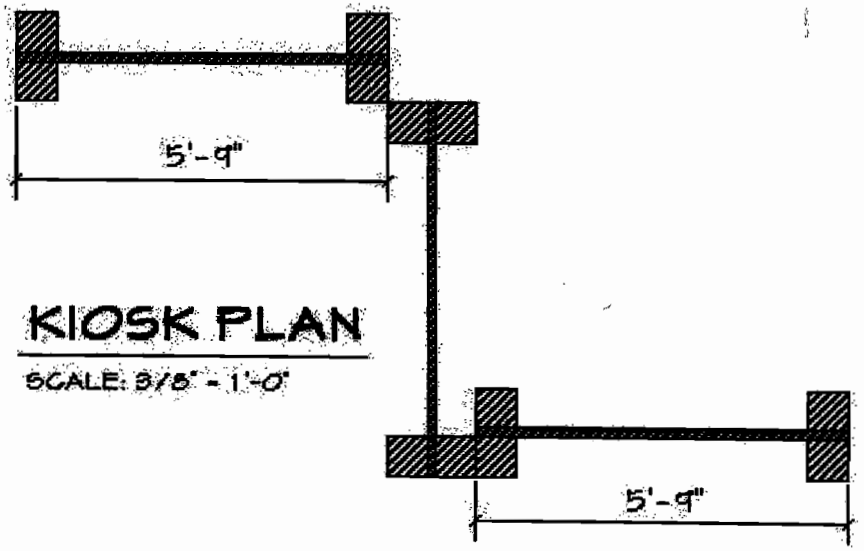
GEC Engineers and Consultants
mesa Engineering Application, Inc.

Date: January 31, 2008



KIOSK ELEVATION

SCALE: 3/8" = 1'-0"



KIOSK PLAN

SCALE: 3/8" = 1'-0"

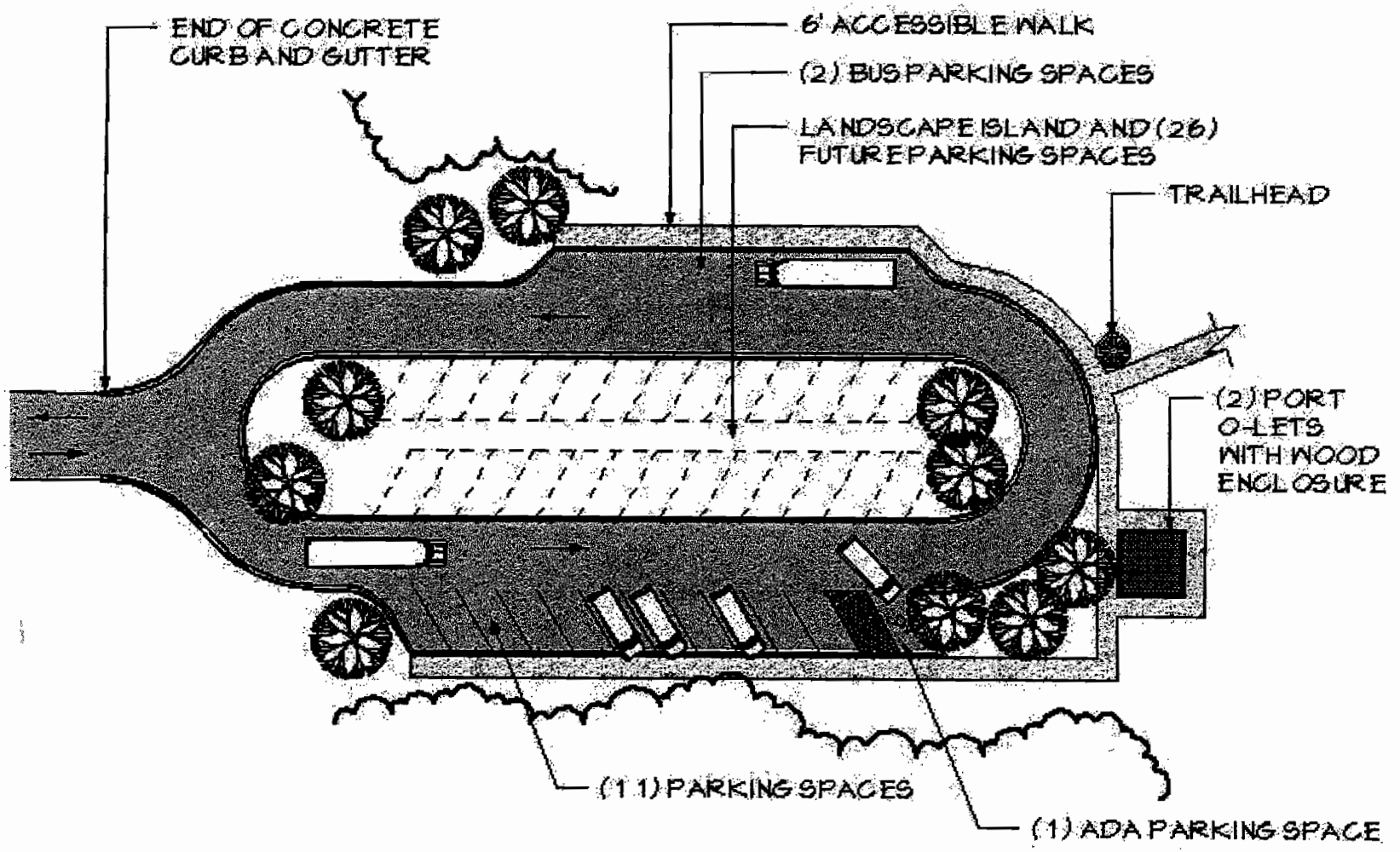
Environmental Assessment Aquisition of Fourche Bottoms
And Development of Nature Appreciation Facility

Pulaski County, Arkansas

PRELIMINARY DRAWINGS
NOT FOR CONSTRUCTION

GEC
mesa

Date: January 31, 2003



LARGE PARKING LOT AND TRAILHEAD

SCALE: 1" = 40'-0"

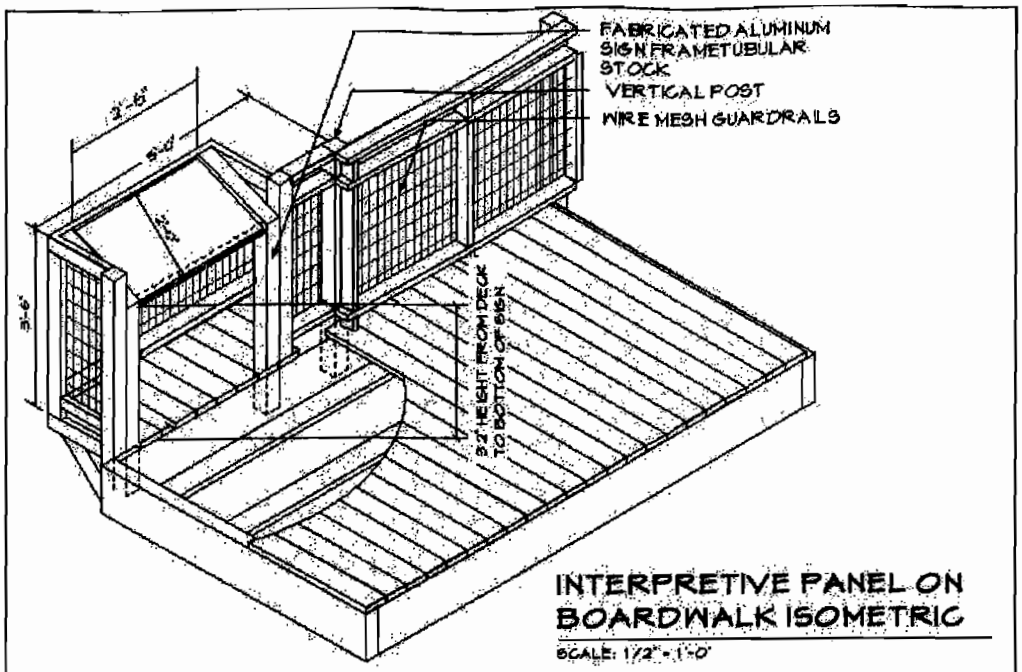
Environmental Assessment Aquisition of Fourche Bottoms
And Development of Nature Appreciation Facility

Pulaski County, Arkansas

PRELMINARY DRAWINGS
NOT FOR CONSTRUCTION

GEC Civil Engineers and Consultants
mesa Landscape Architects, Inc.

Date: January 31, 2008



INTERPRETIVE PANEL ON BOARDWALK ISOMETRIC

SCALE: 1/2" = 1'-0"

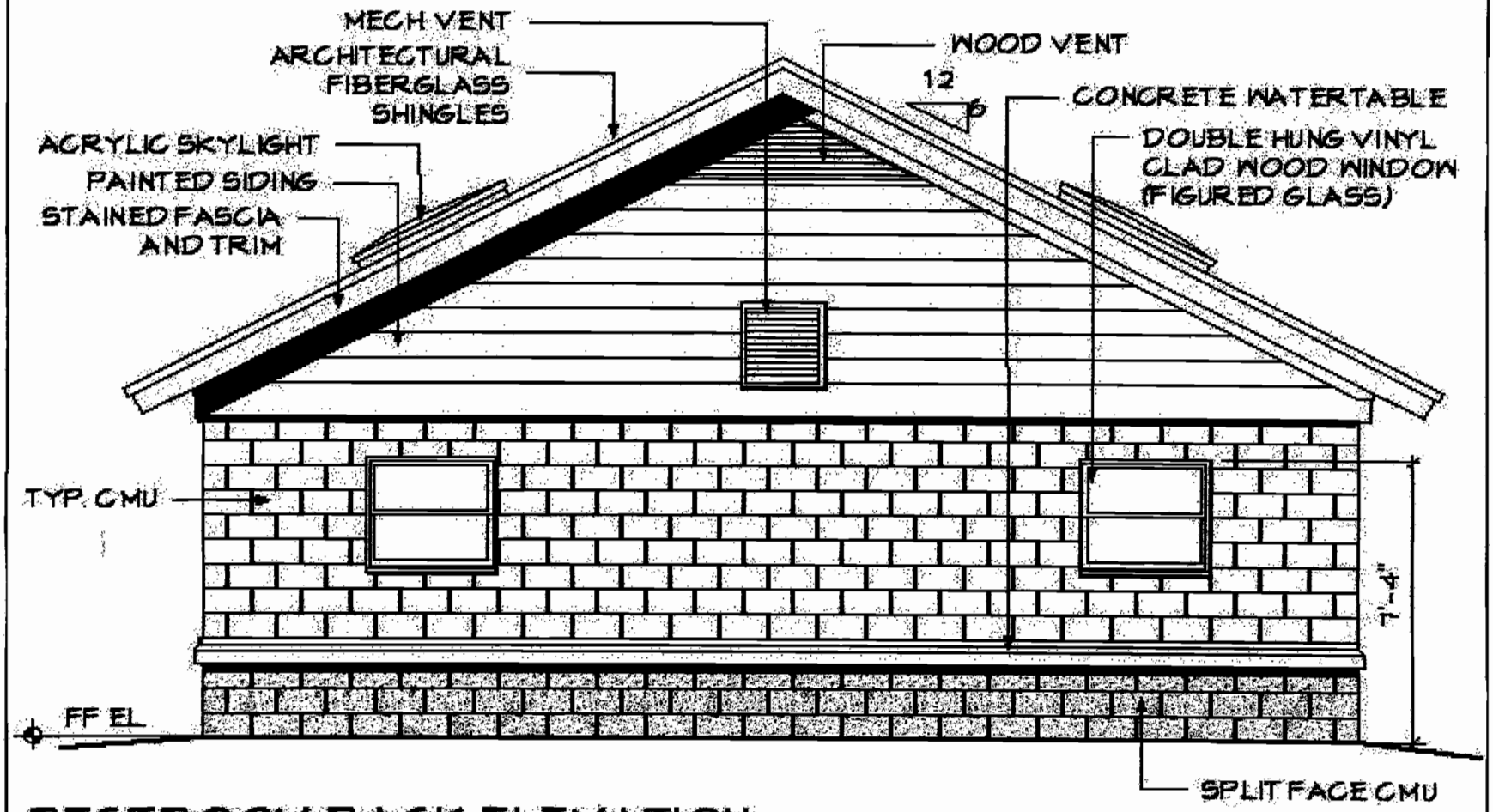
Environmental Assessment Aquisition of Fourche Bottoms
And Development of Nature Appreciation Facility

Pulaski County, Arkansas

PRELIMINARY DRAWINGS
NOT FOR CONSTRUCTION

GEC
meea

Date: January 31, 2008



RESTROOM BACK ELEVATION

SCALE: 1/4" = 1'-0"

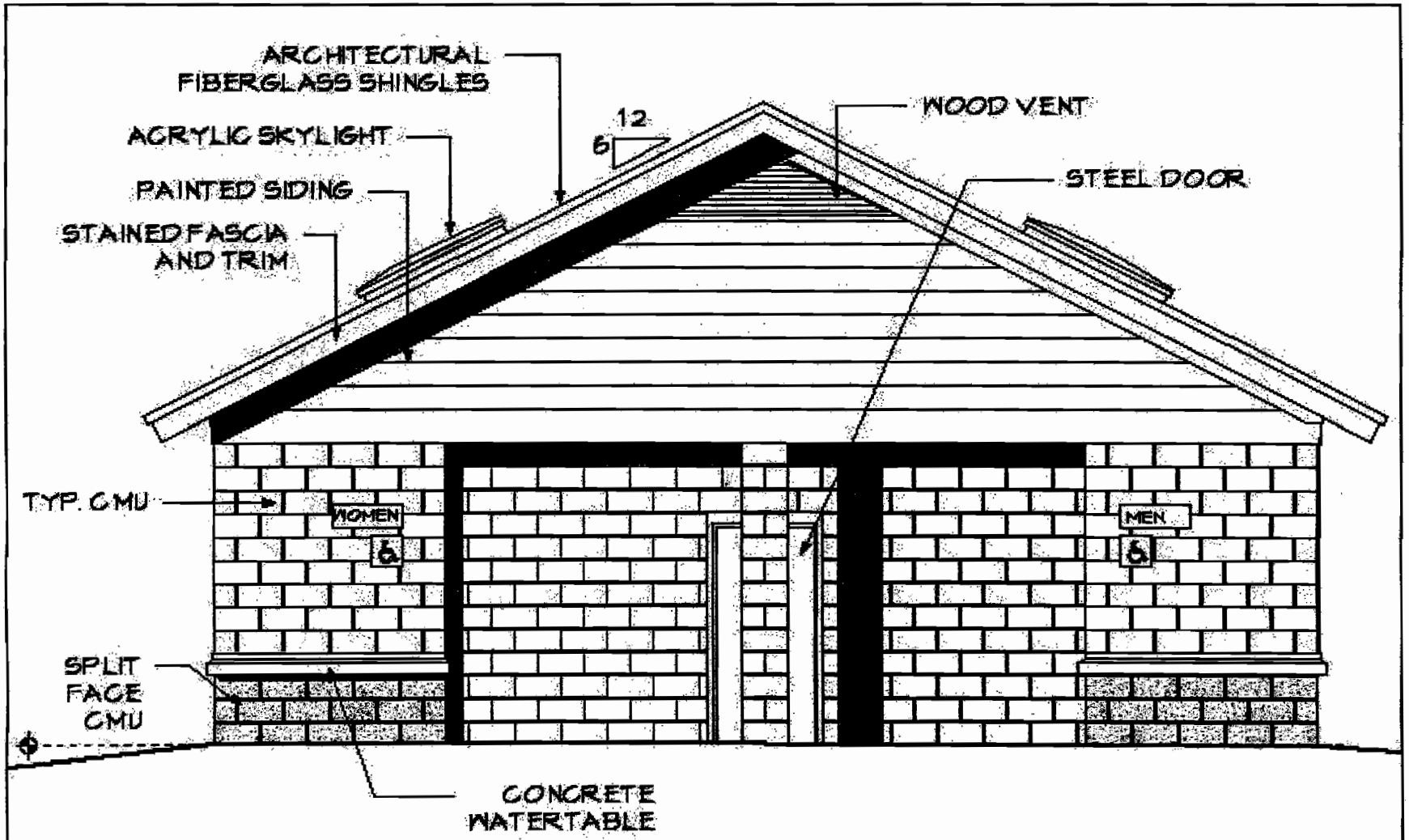
Environmental Assessment Aquisition of Fourche Bottoms
And Development of Nature Appreciation Facility

Pulaski County, Arkansas

PRELMINARY DRAWINGS
NOT FOR CONSTRUCTION

GEC Gulf Engineers and Consultants
mesa LANDSCAPE ARCHITECTS, INC.

Date: January 31, 2008



RESTROOM FRONT ELEVATION

SCALE: 1/4" = 1'-0"

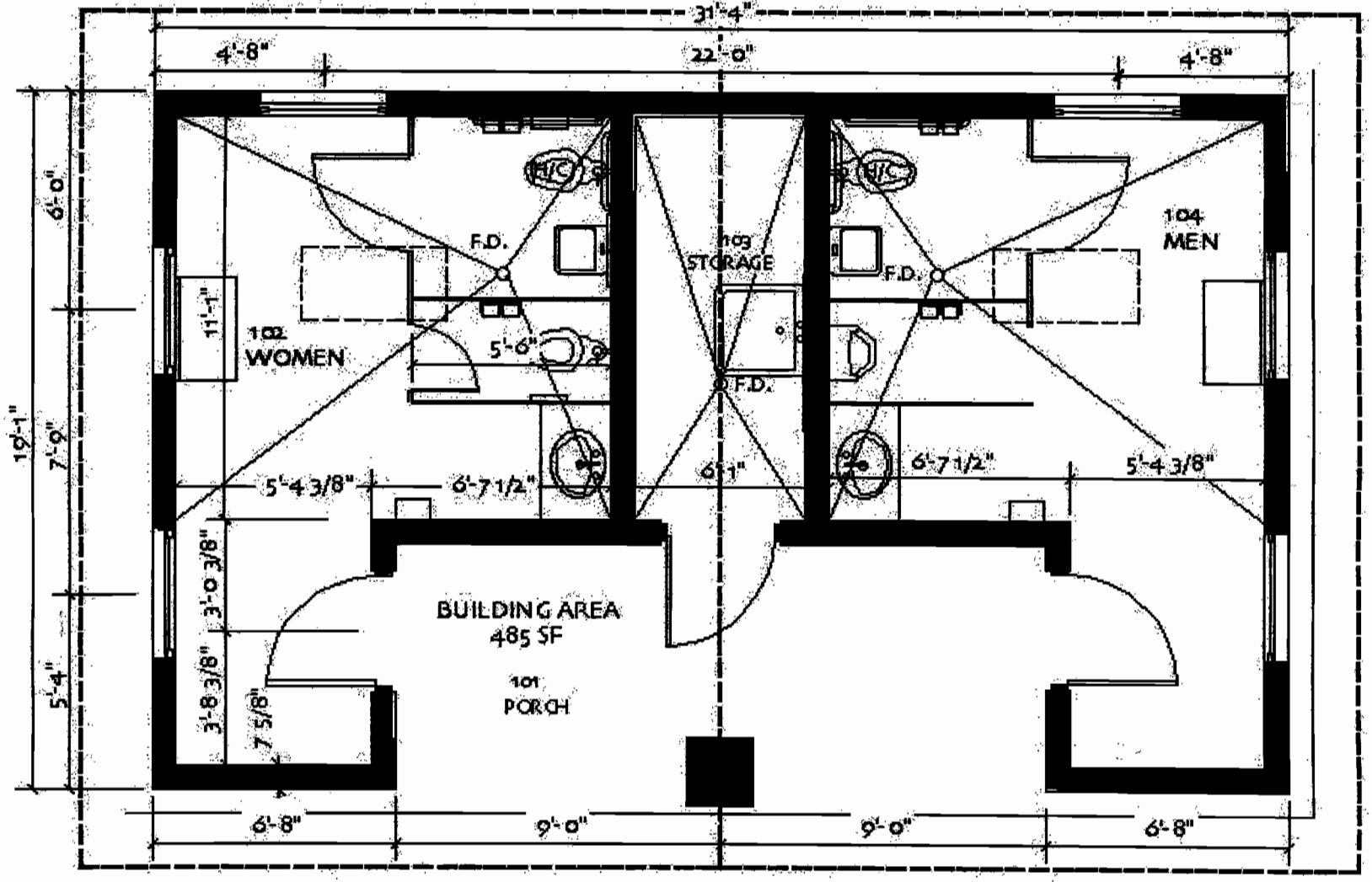
Environmental Assessment Aquisition of Fourche Bottoms
And Development of Nature Appreciation Facility

Pulaski County, Arkansas

PRELMINARY DRAWINGS
NOT FOR CONSTRUCTION

GEC Civil Engineers and Consultants
mesa

Date: January 31, 2008



RESTROOM PLAN

SCALE: 1/4" - 1'-0"

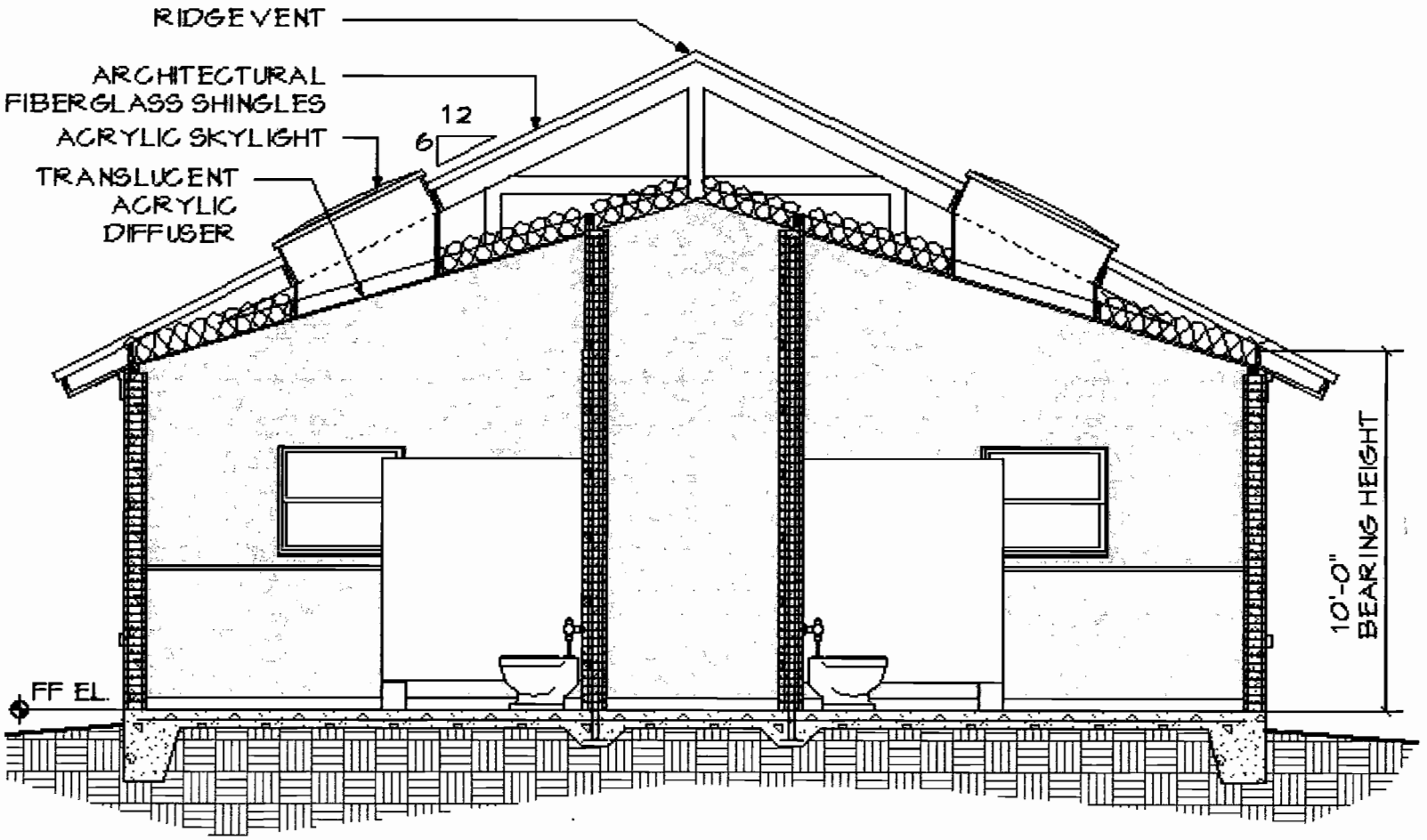
Environmental Assessment Aquisition of Fourche Bottoms
And Development of Nature Appreciation Facility

Pulaski County, Arkansas

PRELMINARY DRAWINGS
NOT FOR CONSTRUCTION

GEC
Civil Engineers and Consultants
mesa
LANDSCAPE ARCHITECTURE, INC.

Date: January 31, 2003



RESTROOM SECTION

SCALE: 1/4" = 1'-0"

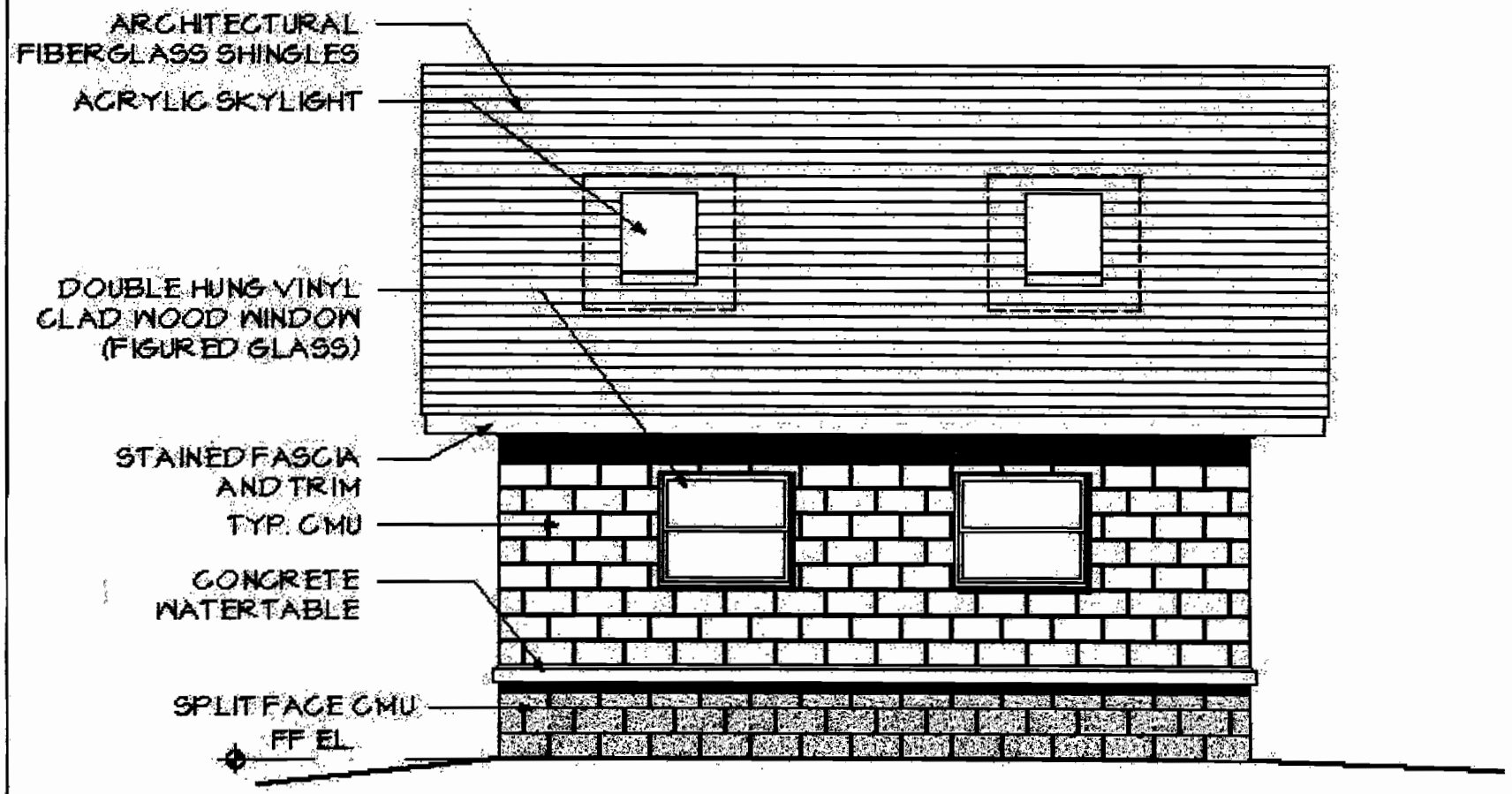
Environmental Assessment Aquisition of Fourche Bottoms
And Development of Nature Appreciation Facility

Pulaski County, Arkansas

PRELMINARY DRAWINGS

GEC Civil Engineers and Consultants
mesa Landscape Architects, PC

Date: January 31, 2008



RESTROOM SIDE ELEVATION

SCALE: 1/4" = 1'-0"

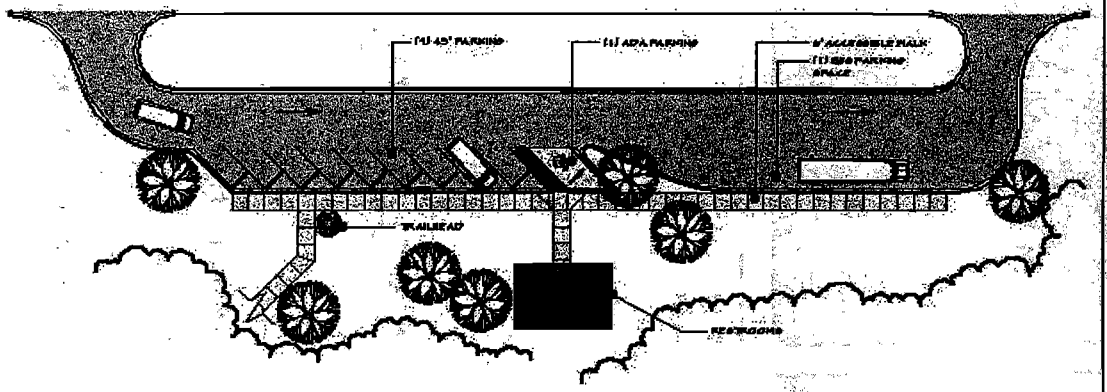
Environmental Assessment Aquisition of Fourche Bottoms
And Development of Nature Appreciation Facility

Pulaski County, Arkansas

PRELMINARY DRAWINGS
NOT FOR CONSTRUCTION

GEC Civil Engineers and Consultants
mesa Architects & Planners, Inc.

Date: January 31, 2008



SMALL PARKING LOT AND TRAILHEAD

SCALE: 1" = 40'-0"

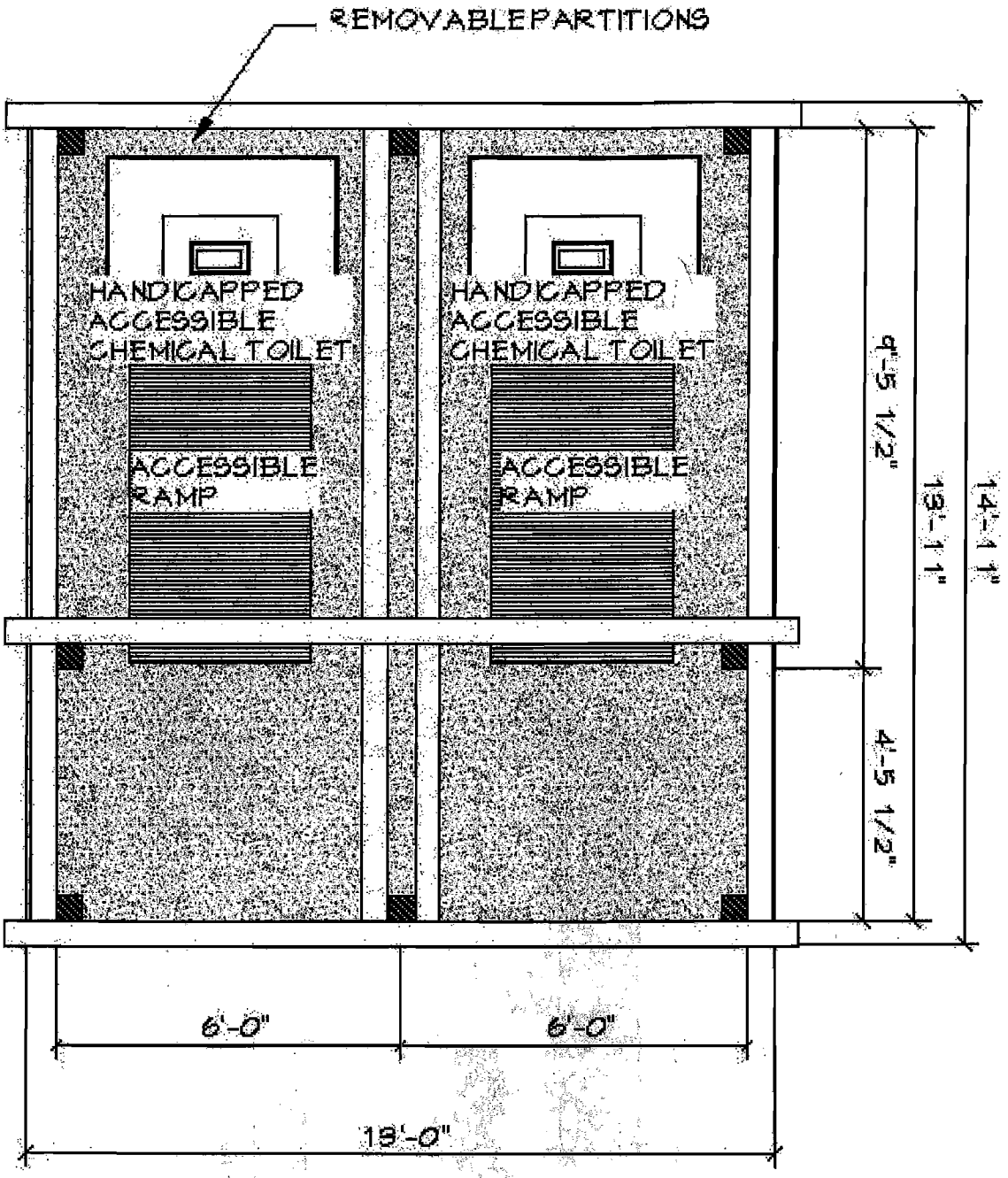
Environmental Assessment Aquisition of Fourche Bottoms
And Development of Nature Appreciation Facility

Pulaski County, Arkansas

PRELIMINARY DRAWINGS
NOT FOR CONSTRUCTION

GEC
mesa

Date: January 31, 2008



TOILET ENCLOSURE ARBOR PLAN

SCALE: 3/8" = 1'-0"

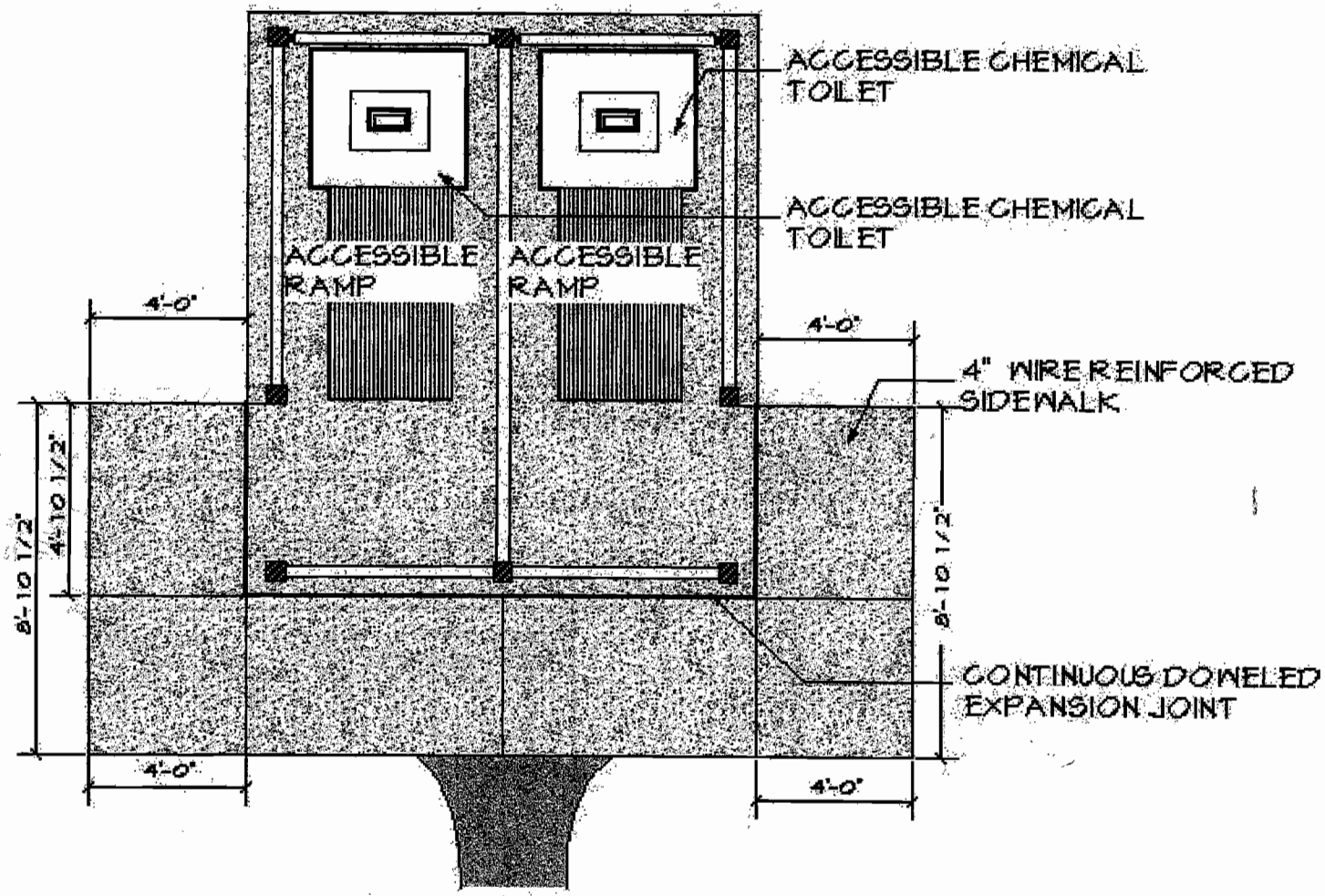
Environmental Assessment Aquisition of Fourche Bottoms
And Development of Nature Appreciation Facility

Pulaski County, Arkansas

PRELMINARY DRAWINGS
NOT FOR CONSTRUCTION

GEC Civil Engineers and Consultants
mesa Landscape Architects, Inc.

Date: January 31, 2008



TOILET ENCLOSURE SIDEWALK PLAN

SCALE: 1/4" = 1'-0"

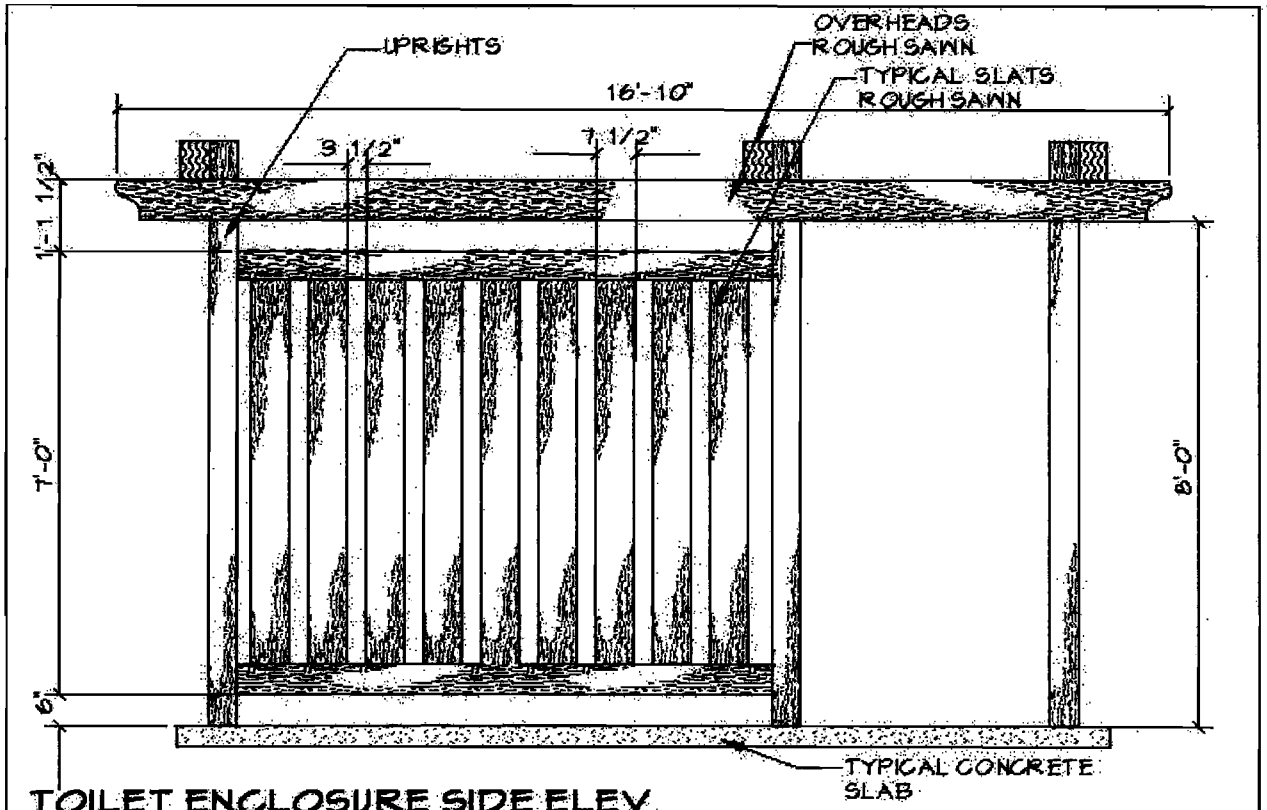
Environmental Assessment Aquisition of Fourche Bottoms
And Development of Nature Appreciation Facility

Pulaski County, Arkansas

PRELMINARY DRAWINGS
NOT FOR CONSTRUCTION

GET Gulf Engineers and Consultants
mesa Engineers & Architects, Inc.

Date: January 31, 2003



TOILET ENCLOSURE SIDE ELEV.

SCALE: 1/2" = 1'-0"

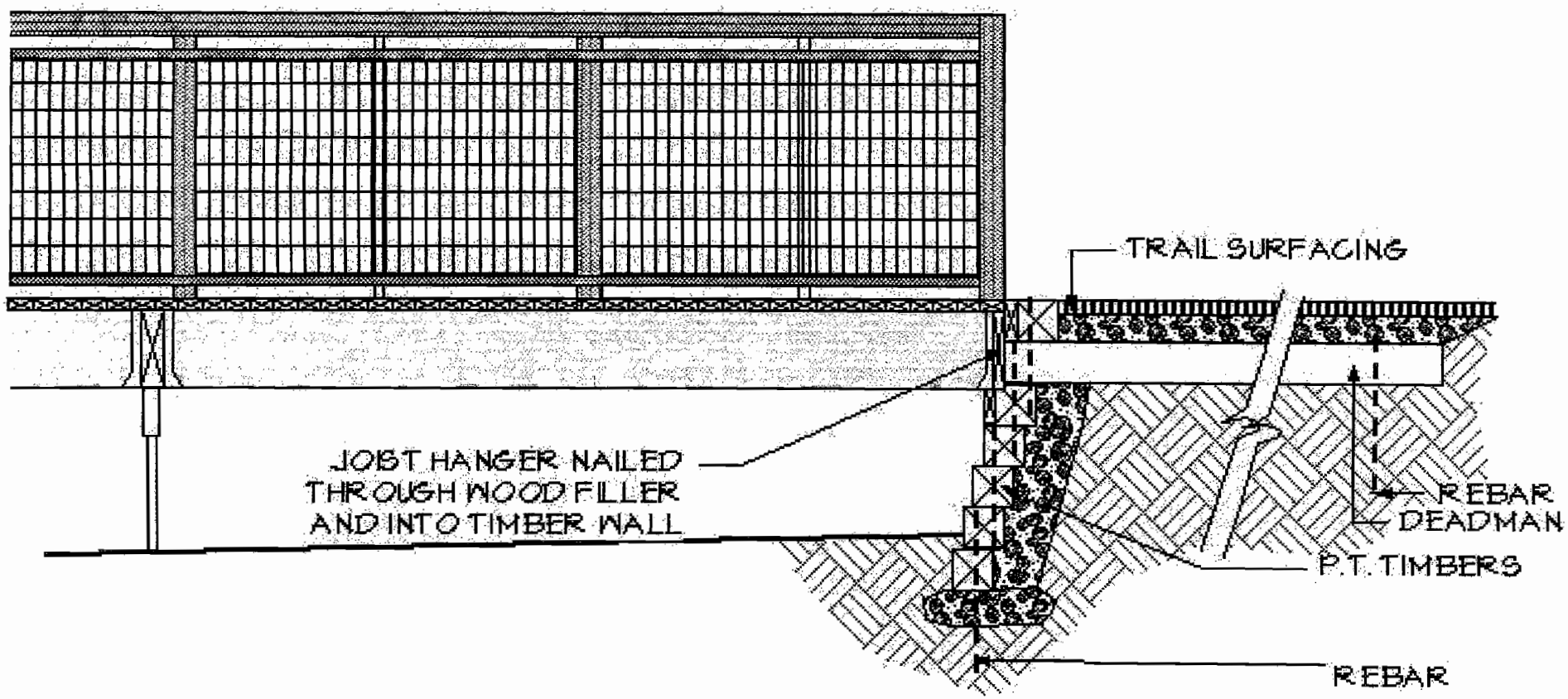
Environmental Assessment Aquisition of Fourche Bottoms
And Development of Nature Appreciation Facility

Pulaski County, Arkansas

PRELIMINARY DRAWINGS
NOT FOR CONSTRUCTION

GEC Civil Engineers and Consultants
mesa Professional Engineering Firm

Date: January 31, 2008



TRAIL TO BOARDWALK CONNECTION

SCALE: 1/2"= 1'-0"

Environmental Assessment Aquisition of Fourche Bottoms
And Development of Nature Appreciation Facility

Pulaski County, Arkansas

PRELMINARY DRAWINGS
NOT FOR CONSTRUCTION

GEC Civil Engineers and Consultants
mesa Landscape Architects, Inc.

Date: January 31, 2003

Attachment E

SURVEY DATA POINTS

pt,x,y,z,type
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146,131415.2312,1220878.882,256.2695,TELEPHONE RISER
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283,132158.5233,1221387.366,241.6095,GROUND SURFACE
284,132161.7352,1221380.278,240.6195,GROUND SURFACE
285,132183.6855,1221415.636,242.9395,POWER POLE1
287,132144.6043,1221328.33,239.8295,GROUND SURFACE
289,132356.7673,1221447.649,239.9595,GROUND SURFACE
290,132342.3564,1221478.011,239.6295,GROUND SURFACE
291,132342.3432,1221478.037,239.6295,TREE LINE3 JPT 271
292,132335.5507,1221488.641,242.4195,EDGE OF GRAVEL1
293,132330.7317,1221501.048,242.7495,EDGE OF GRAVEL2
294,132325.2171,1221516.755,241.6595,GROUND SURFACE
295,132312.3107,1221571.527,240.5495,GROUND SURFACE
296,132317.6834,1221542.403,239.4995,GROUND SURFACE
297,132340.427,1221522.804,241.7395,TREE LINE2
298,132336.18,1221509.315,247.4395,SSMH DNC
299,132399.4029,1221528.44,241.7595,POWER POLE1
300,132442.9019,1221494.748,239.4995,GROUND SURFACE
301,132427.9406,1221525.791,239.2195,GROUND SURFACE
302,132416.1504,1221540.62,241.9395,GROUND SURFACE
303,132413.0187,1221544.912,242.6395,EDGE OF GRAVEL1
304,132407.9065,1221552.618,242.8595,EDGE OF GRAVEL2
305,132404.2533,1221558.122,241.5795,TREE LINE2
306,132399.2611,1221567.983,239.5495,GROUND SURFACE
307,132377.8081,1221599.168,238.8395,GROUND SURFACE
308,132547.1125,1221557.178,238.7195,GROUND SURFACE
309,132539.1648,1221580.881,238.7195,GROUND SURFACE
310,132533.7653,1221593.27,239.9295,GROUND SURFACE
311,132530.8613,1221606.641,241.9095,EDGE OF GRAVEL1
312,132525.5634,1221614.529,242.1395,EDGE OF GRAVEL2
313,132521.5485,1221626.492,239.8295,GROUND SURFACE
314,132505.0354,1221658.771,238.6895,GROUND SURFACE
316,132677.189,1221675.358,241.1095,POWER POLE1
317,132650.3426,1221627.334,238.6695,GROUND SURFACE
318,132643.9234,1221647.883,238.9095,GROUND SURFACE
319,132631.1605,1221661.402,241.8795,EDGE OF GRAVEL1
320,132626.2755,1221667.534,242.1095,EDGE OF GRAVEL2
321,132615.5676,1221682.44,239.1295,GROUND SURFACE
322,132598.5229,1221710.258,239.4495,GROUND SURFACE
323,132698.2589,1221762.217,239.8595,GROUND SURFACE
324,132715.0611,1221735.359,240.1495,GROUND SURFACE
325,132716.9566,1221732.29,241.7695,GROUND SURFACE
326,132720.4211,1221726.324,241.9895,EDGE OF GRAVEL2
327,132724.7395,1221716.75,241.9695,EDGE OF GRAVEL1
328,132735.0931,1221693.857,239.3995,GROUND SURFACE
329,132746.4116,1221672.272,239.1895,GROUND SURFACE
330,132734.2188,1221716.46,247.6995,PUMP STATION DNC
331,132738.7241,1221733.699,241.9195,EDGE OF GRAVEL2
332,132803.2702,1221748.465,241.9895,EDGE OF GRAVEL1
333,132796.0056,1221756.159,241.8295,EDGE OF GRAVEL2
334,132828.5802,1221772.115,241.9095,EDGE OF GRAVEL2
335,132833.0235,1221763.945,241.9695,EDGE OF GRAVEL1
336,132850.8095,1221722.855,239.6195,GROUND SURFACE
337,132842.4418,1221743.557,238.8995,GROUND SURFACE
338,132838.843,1221749.52,240.3895,GROUND SURFACE
339,132814.5658,1221794.43,239.3195,GROUND SURFACE

340,132803.064,1221813.65,239.9195,GROUND SURFACE
341,132952.7189,1221817.194,240.7395,POWER POLE1
342,132872.7208,1221784.172,241.3495,EDGE OF GRAVEL1
343,132869.4758,1221793.213,241.5295,EDGE OF GRAVEL2
344,132896.3184,1221795.533,240.6695,EDGE OF GRAVEL3 ST
345,132889.0905,1221786.333,240.5395,EDGE OF GRAVEL1
346,132952.8027,1221779.587,239.1495,EDGE OF GRAVEL1
347,132967.7976,1221784.75,239.0995,EDGE OF GRAVEL1
348,132980.2154,1221800.257,239.0595,EDGE OF GRAVEL1
349,132930.9906,1221789.686,239.4895,EDGE OF GRAVEL3
350,132950.3643,1221791.65,239.3495,EDGE OF GRAVEL3
351,132964.5562,1221801.314,239.4695,EDGE OF GRAVEL3
352,132969.0966,1221816.015,239.7595,EDGE OF GRAVEL3
353,132969.1707,1221831.189,241.0995,EDGE OF GRAVEL3
354,132896.6815,1221796.088,240.6995,EDGE OF GRAVEL3
355,132942.9608,1221830.792,241.4495,EDGE OF GRAVEL2
356,132981.2478,1221832.152,240.6195,EDGE OF GRAVEL1
357,132987.0364,1221842.212,241.6795,EDGE OF GRAVEL1
358,132937.5873,1221841.315,240.3095,GROUND SURFACE
359,132922.9228,1221876.455,239.9295,GROUND SURFACE
360,132980.2229,1221858.972,239.9195,DUCTILE IRON PIPE
361,132989.9767,1221840.412,239.8495,DUCTILE IRON PIPE
362,133072.7046,1221850.736,238.6495,GROUND SURFACE
363,133060.6211,1221870.308,239.9495,GROUND SURFACE
364,133056.1589,1221879.232,241.3595,EDGE OF GRAVEL1
365,133051.6684,1221887.149,241.7295,EDGE OF GRAVEL2
366,133047.5753,1221897.051,240.2995,GROUND SURFACE
367,133025.4544,1221935.367,239.2495,GROUND SURFACE
369,133108.132,1221907.907,241.5895,EDGE OF GRAVEL1
370,133102.5795,1221915.69,241.8495,EDGE OF GRAVEL2
371,133150.8655,1221946.933,241.7595,EDGE OF GRAVEL2
372,133157.0838,1221938.595,241.9495,EDGE OF GRAVEL1
373,133145.6421,1221954.295,240.2895,GROUND SURFACE
374,133133.187,1221981.83,240.4795,GROUND SURFACE
375,133169.409,1221922.503,239.5595,GROUND SURFACE
376,133184.3813,1221898.078,239.1395,GROUND SURFACE
377,133178.8653,1221945.771,248.0595,PUMP STATION DNC
378,133176.7358,1221949.079,247.9895,EDGE OF CONCRETE SEPTIC TANK DNC
379,133182.447,1221946.955,247.9995,EDGE OF CONCRETE DNC
380,133180.4506,1221941.949,248.0295,EDGE OF CONCRETE DNC
381,133175.1577,1221943.388,247.9895,EDGE OF CONCRETE CL DNC
382,133176.9529,1221945.915,248.5295,SSMH JPT 422 DNC
383,133225.1559,1221958.947,241.6395,POWER POLE1
384,133183.5951,1221964.899,241.8995,EDGE OF GRAVEL2
385,133177.4095,1221951.929,242.0695,EDGE OF GRAVEL1
386,133253.8456,1221983.321,242.0795,EDGE OF GRAVEL1
387,133247.311,1221991.631,242.0895,EDGE OF GRAVEL2
388,133242.024,1222001.243,240.3895,GROUND SURFACE
389,133230.8861,1222030.528,240.0795,GROUND SURFACE
390,133261.0928,1221972.754,239.8495,GROUND SURFACE
391,133275.7997,1221944.942,239.4495,GROUND SURFACE
392,133306.8588,1222009.398,241.9295,EDGE OF GRAVEL1
393,133301.9899,1222017.124,242.3095,EDGE OF GRAVEL2
394,133365.889,1222052.202,241.9195,EDGE OF GRAVEL2
395,133371.5443,1222044.733,241.5195,EDGE OF GRAVEL1
396,133379.6019,1222032.518,240.1495,GROUND SURFACE
397,133393.447,1222006.762,238.6595,GROUND SURFACE

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398,133360.8759,1222064.655,240.4095,GROUND SURFACE
399,133345.8468,1222091.349,240.2695,GROUND SURFACE
400,133463.3362,1222076.293,240.7495,SIGN
401,133491.0971,1222108.034,241.7495,EDGE OF GRAVEL1
402,133486.2128,1222115.784,241.9095,EDGE OF GRAVEL2
403,133480.5658,1222124.583,239.9095,GROUND SURFACE
404,133461.895,1222158.937,238.8995,GROUND SURFACE
405,133500.5173,1222090.293,240.7795,GROUND SURFACE
406,133514.2653,1222058.105,238.7795,GROUND SURFACE
407,133558.4252,1222134.56,242.5995,POWER POLE1
408,133514.7348,1222224.917,242.5995,OHE
409,133548.7926,1222146.603,242.4095,EDGE OF GRAVEL2
410,133555.9571,1222138.631,242.2395,EDGE OF GRAVEL1
411,132732.5265,1221719.584,247.6695,EDGE OF CONCRETE SEPTIC TANK DNC
412,132738.1404,1221717.916,247.6195,EDGE OF CONCRETE DNC
413,132736.5355,1221712.352,247.8495,EDGE OF CONCRETE DNC
414,132731.3209,1221713.866,247.8895,EDGE OF CONCRETE CL DNC
415,132734.908,1221714.138,248.3395,SSMH JPT 382 DNC
418,133623.9823,1222173.013,243.6995,EDGE OF CONCRETE SEPTIC TANK DNC
419,133618.9228,1222175.098,243.9595,EDGE OF CONCRETE DNC
420,133620.0873,1222179.905,243.9395,EDGE OF CONCRETE DNC
421,133625.5875,1222179.079,243.6595,EDGE OF CONCRETE CL DNC
422,133621.7479,1222177.762,247.5295,SSMH SEPTIC TANK DNC
423,133618.424,1222168.166,242.9995,EDGE OF GRAVEL2
424,133616.8645,1222173.535,242.0595,GROUND SURFACE
425,133602.6025,1222211.538,240.4095,GROUND SURFACE
426,133623.6364,1222159.77,242.5495,EDGE OF GRAVEL1
427,133628.4368,1222147.774,241.2195,GROUND SURFACE
428,133636.816,1222120.428,240.3895,GROUND SURFACE
429,133706.5104,1222210.416,242.5495,EDGE OF GRAVEL2
430,133699.537,1222226.281,240.8595,GROUND SURFACE
431,133680.0077,1222249.189,241.4395,GROUND SURFACE
432,133713.9703,1222203.715,242.2795,EDGE OF GRAVEL1
433,133720.5825,1222185.776,240.9195,GROUND SURFACE
434,133718.6594,1222159.582,241.5295,GROUND SURFACE
435,133793.3836,1222243.972,243.0495,EDGE OF GRAVEL1
436,133798.9028,1222234.987,241.8495,GROUND SURFACE
437,133805.7346,1222208.559,241.8095,GROUND SURFACE
438,133787.0538,1222252.691,242.9595,EDGE OF GRAVEL2
439,133782.9433,1222256.536,242.2995,GROUND SURFACE
440,133761.3376,1222296.009,242.2995,GROUND SURFACE
441,133827.3149,1222252.412,243.3295,EDGE OF CONCRETE SEPTIC TANK DNC
442,133833.3013,1222249.553,243.4295,EDGE OF CONCRETE DNC
443,133830.8139,1222245.312,243.4295,EDGE OF CONCRETE DNC
444,133825.6543,1222247.639,243.4195,EDGE OF CONCRETE CL DNC
445,133829.5984,1222248.063,248.3795,SSMH DNC
447,133931.4815,1222309.251,242.3695,EDGE OF GRAVEL2
448,133924.4358,1222328.009,239.1495,GROUND SURFACE
449,133916.0986,1222356.839,240.1595,GROUND SURFACE
450,133935.7007,1222301.191,242.1795,EDGE OF GRAVEL1
451,133940.3839,1222284.913,240.6395,GROUND SURFACE
452,133959.3861,1222256.415,239.3995,GROUND SURFACE
453,133991.2059,1222327.601,241.9395,EDGE OF GRAVEL1
454,133989.6119,1222336.165,241.9695,EDGE OF GRAVEL2
455,134041.8625,1222367.28,242.3395,EDGE OF GRAVEL2
456,134039.3517,1222373.197,242.2195,GROUND SURFACE
457,134030.538,1222385.911,240.0095,GROUND SURFACE
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458,134020.2822,1222396.507,239.8195,GROUND SURFACE
459,133999.78,1222418.741,239.2295,GROUND SURFACE
460,134043.6057,1222355.651,241.9195,EDGE OF GRAVEL1
461,134054.8821,1222345.605,240.4995,GROUND SURFACE
462,134070.9348,1222317.433,241.5595,GROUND SURFACE
463,134083.7452,1222358.328,241.3395,FIBER OPTIC CABLE
464,134151.2718,1222424.787,241.9795,EDGE OF GRAVEL1
465,134158.0509,1222418.306,241.1395,GROUND SURFACE
466,134170.2124,1222390.726,241.3095,GROUND SURFACE
467,134147.4349,1222433.82,242.1295,EDGE OF GRAVEL2
468,134140.1334,1222442.369,240.8195,GROUND SURFACE
469,134116.38,1222468.368,237.3495,GROUND SURFACE
471,134271.5875,1222471.028,239.6595,TOP OF BANK1 st
472,134290.4754,1222465.068,234.9495,TOE OF BANK1 st
473,134311.2701,1222452.469,233.9695,GROUND SURFACE
474,134247.8957,1222449.821,239.4195,GROUND SURFACE
475,134248.5628,1222349.913,237.9795,GROUND SURFACE
476,134276.415,1222349.038,237.5195,TOP OF BANK1
477,134287.7867,1222347.188,235.0095,TOE OF BANK1
478,134308.1078,1222349.878,233.1495,GROUND SURFACE
479,134255.8775,1222243.924,238.0395,GROUND SURFACE
480,134288.0729,1222249.416,237.6095,TOP OF BANK1
481,134294.9776,1222251.508,234.8595,TOE OF BANK1
482,134314.7641,1222252.329,233.0295,GROUND SURFACE
483,134258.7299,1222197.796,237.6695,GROUND SURFACE
484,134296.2115,1222197.222,235.8495,TOP OF BANK1
485,134291.0704,1222192.53,235.9895,TOP OF BANK1
486,134267.3225,1222185.796,236.4095,TOP OF BANK1
487,134297.4857,1222180.599,235.0695,TOE OF BANK1
488,134289.5918,1222180.346,235.5895,TOE OF BANK1
489,134273.4838,1222181.514,235.4095,TOE OF BANK1
490,134289.7352,1222176.401,235.7395,TOE OF BANK3 st
491,134284.5126,1222173.17,236.8695,TOP OF BANK3 st
492,134286.4032,1222164.784,237.0995,TOP OF BANK3
493,134291.3321,1222163.468,234.6695,TOE OF BANK3
494,134251.3427,1222159.199,234.2995,TOE OF BANK3
495,134245.3504,1222158.841,234.9595,TOE OF BANK3
496,134249.8367,1222164.969,234.8295,TOE OF BANK3
497,134251.4276,1222160.088,236.9395,TOP OF BANK3
498,134269.2514,1222172.445,237.0195,TOP OF BANK3
499,134272.1375,1222178.118,235.3495,TOE OF BANK3
500,134256.1336,1222176.251,235.2195,TOE OF BANK1
501,134235.17,1222161.718,234.6295,TOE OF BANK1
502,134230.3732,1222168.774,236.5595,TOP OF BANK1
503,134230.6504,1222161.385,237.3095,TOP OF BANK1
504,134213.6297,1222166.217,236.8595,TOP OF BANK1
505,134191.0596,1222171.4,234.0495,TOP OF BANK1
506,134213.5604,1222151.495,234.7495,TOE OF BANK1
507,134188.6174,1222153.178,232.7495,TOE OF BANK1
508,134260.8725,1222108.049,238.0995,GROUND SURFACE
509,134271.9525,1222000.179,238.7995,GROUND SURFACE
510,134279.7454,1221901.468,239.3595,GROUND SURFACE
511,134293.1115,1221753.284,239.7895,GROUND SURFACE
512,134316.4271,1221745.317,238.6095,TOP OF BANK2 st

513,134331.0429,1221748.962,235.0595,TOE OF BANK2 st

514,134355.0744,1221752.107,232.5195,GROUND SURFACE
515,134309.8515,1221887.93,237.2895,TOP OF BANK2
516,134315.9883,1221891.569,234.9895,TOE OF BANK2
517,134339.4516,1221894.783,232.7095,GROUND SURFACE
518,134299.802,1222002.184,236.9795,TOP OF BANK2
519,134306.6981,1222001.092,234.9395,TOE OF BANK2
520,134328.8406,1222005.033,232.1995,GROUND SURFACE
521,134292.4887,1222089.043,237.0495,TOP OF BANK2
522,134304.9085,1222090.315,234.8495,TOE OF BANK2
523,134322.0454,1222090.635,232.8895,GROUND SURFACE
524,134290.3508,1222157.361,236.5295,TOP OF BANK2
525,134294.6952,1222159.506,234.7995,TOE OF BANK2
526,134260.1036,1222154.485,234.2995,TOE OF BANK2
527,134259.927,1222151.75,238.1895,TOP OF BANK2
528,134233.537,1222138.265,237.5695,TOP OF BANK2
529,134221.0706,1222137.458,234.6395,TOE OF BANK2
530,134245.1931,1221995.585,237.5295,TOP OF BANK2
531,134235.1269,1221994.604,234.6595,TOE OF BANK2
532,134222.246,1221992.97,233.3695,GROUND SURFACE
533,134255.8129,1221880.178,238.4895,GROUND SURFACE
534,134242.3599,1221876.175,237.6895,TOP OF BANK2
535,134231.0601,1221874.475,234.8595,TOE OF BANK2
536,134210.9323,1221873.046,232.9695,GROUND SURFACE
537,134251.0672,1221739.343,238.8495,TOP OF BANK2
538,134240.0155,1221742.101,234.9895,TOE OF BANK2
539,134212.2758,1221733.87,234.3395,TOE OF BANK2
540,134214.1479,1221723.44,240.5795,TOP OF BANK2
541,134225.5868,1222233.716,239.9395,GROUND SURFACE
542,134200.6163,1222234.947,239.9395,GROUND SURFACE
543,134222.4343,1222348.633,238.7595,GROUND SURFACE
544,134197.5784,1222351.322,238.7595,GROUND SURFACE
545,134233.4596,1222419.794,239.7595,GROUND SURFACE
547,134298.2557,1222516.546,242.4595,EDGE OF CONCRETE SEPTIC TANK DNC
548,134300.6919,1222520.748,242.4095,EDGE OF CONCRETE DNC
549,134295.0607,1222523.677,242.4295,EDGE OF CONCRETE DNC
550,134293.2747,1222517.9,242.4195,EDGE OF CONCRETE CL DNC
551,134297.0229,1222518.871,247.3895,SSMH DNC
552,134339.4244,1222540.43,239.8795,EDGE OF GRAVEL2
553,134334.7502,1222552.665,237.0595,FLOW LINE
554,134314.6508,1222567.492,237.2195,FLOW LINE
555,134307.4724,1222582.978,237.9295,FLOW LINE
556,134305.5554,1222588.328,238.1095,TOP OF BANK5 st
557,134308.2008,1222590.388,238.3495,TOP OF BANK5
558,134318.2708,1222573.715,238.8295,TOP OF BANK5
559,134332.525,1222560.759,238.8495,TOP OF BANK5
560,134341.3872,1222548.285,239.4795,TOP OF BANK5
561,134334.2872,1222542.594,239.6195,TOP OF BANK5
562,134305.1771,1222569.967,239.0195,TOP OF BANK5
563,134304.3983,1222587.015,238.3095,TOP OF BANK5
564,134355.4967,1222518.307,236.2295,STL
565,134334.7717,1222553.188,237.3795,STL
566,134272.7691,1222476.699,239.9995,TOP OF BANK4 st
567,134275.3223,1222487.69,240.5395,TOP OF BANK4
568,134294.2949,1222472.404,235.1195,TO4 st

569,134292.8465,1222498.06,240.4095,TOP OF BANK4

570,134352.614,1222524.111,238.6295,TOP OF BANK4
571,134355.2676,1222518.558,235.2695,TO4
573,134463.3363,1222578.554,240.2495,EDGE OF GRAVEL1
574,134461.1984,1222587.473,240.6795,EDGE OF GRAVEL2
575,134556.5766,1222614.294,239.7595,EDGE OF GRAVEL2
576,134559.1009,1222604.458,239.4895,EDGE OF GRAVEL1
577,134565.5801,1222580.486,234.6395,GROUND SURFACE
578,134563.7981,1222587.12,235.8095,TO4
579,134563.6433,1222603.788,239.3595,TOP OF BANK4
580,134565.9499,1222607.209,239.5395,EDGE OF GRAVEL1
581,134569.6825,1222671.861,239.4695,GROUND SURFACE
582,134569.6806,1222671.905,239.4695,TREE LINE2
583,134621.4816,1222625.86,239.3895,EDGE OF GRAVEL2
584,134622.0149,1222617.015,239.1195,EDGE OF GRAVEL1
585,134622.2685,1222612.88,238.8495,TOP OF BANK4
586,134631.242,1222601.437,235.8795,TO4
587,134661.0981,1222603.825,236.3095,TO4
588,134662.6261,1222614.034,238.4495,TOP OF BANK4
589,134669.2974,1222615.635,238.4995,TOP OF BANK4
590,134670.752,1222623.928,238.8295,TOP OF BANK4
591,134674.3054,1222614.755,239.2595,TOP OF BANK4
592,134665.0161,1222610.816,236.2395,TO4
593,134669.9009,1222612.083,236.3495,TO4
594,134672.7201,1222621.408,236.3995,TO4
595,134673.3574,1222597.094,236.5495,TO4
596,134669.2484,1222561.459,235.4295,TO4
597,134694.5238,1222586.779,239.3995,TOP OF BANK4
598,134661.4598,1222638.661,235.7995,FLOW LINE2 st
599,134653.4283,1222685.933,235.8295,FLOW LINE2
600,134642.1548,1222674.702,240.4395,TOP OF BANK5 st
601,134626.3823,1222681.853,243.3095,EDGE OF CONCRETE JPT 602 DNC
602,134621.9054,1222683.526,243.2995,EDGE OF CONCRETE JPT 604 DNC
603,134624.8287,1222676.244,243.3695,EDGE OF CONCRETE JPT 601 DNC
604,134619.4039,1222679.221,243.3495,EDGE OF CONCRETE JPT 603 DNC
605,134622.6188,1222680.769,242.0095,SSMH DNC
606,134618.3566,1222693.182,240.5195,TREE LINE2
607,134655.1257,1222633.22,239.5095,TREE LINE2
608,134655.0825,1222633.212,239.5095,TOP OF BANK5
609,134671.9078,1222637.316,239.3295,TOP OF BANK5
610,134671.8969,1222637.314,239.3295,TREE LINE2
611,134671.2627,1222668.949,238.8095,TOP OF BANK5
612,134671.8095,1222680.045,239.6795,TOP OF BANK5
613,134667.4482,1222679.048,236.4995,TOE OF BANK5 st
614,134669.2683,1222667.105,236.3295,TOE OF BANK5
615,134668.5869,1222642.319,236.8895,TOE OF BANK5
616,134667.8662,1222639.222,236.7995,TOE OF BANK5
617,134656.8345,1222637.738,236.3895,TOE OF BANK5
618,134650.1526,1222682.693,236.7895,TOE OF BANK5
620,134660.4361,1222639.346,235.3595,CORRUGATED METAL PIPE JPT 621
621,134666.5001,1222609.235,235.4195,CORRUGATED METAL PIPE
622,134668.761,1222610.268,235.4295,CORRUGATED METAL PIPE JPT 623
623,134663.651,1222638.687,235.6695,CORRUGATED METAL PIPE
624,134676.093,1222633.947,239.6995,EDGE OF GRAVEL2
625,134682.765,1222623.086,240.0595,EDGE OF GRAVEL1
626,134709.9763,1222633.788,240.6795,EDGE OF GRAVEL1
627,134705.1022,1222649.372,241.1295,EDGE OF GRAVEL2
628,134734.409,1222681.689,241.6995,EDGE OF GRAVEL2

629,134743.3541,1222674.013,241.6195,EDGE OF GRAVEL1
630,134787.1859,1222650.209,241.6195,GROUND SURFACE
631,134760.3434,1222714.676,241.0595,EDGE OF GRAVEL1
632,134752.1701,1222719.61,241.0895,EDGE OF GRAVEL2
633,134775.3996,1222733.101,235.9395,FLOW LINE3 st
634,134817.9015,1222711.457,234.5595,TOE OF BANK6 st
635,134773.7062,1222734.847,236.5495,TOE OF BANK6
636,134819.8883,1222721.585,238.8595,TOP OF BANK6 st
637,134774.9871,1222743.594,239.8595,TOP OF BANK6
638,134769.9233,1222739.171,240.2195,TOP OF BANK6
639,134772.9801,1222734.015,236.7995,TOE OF BANK6
640,134772.5715,1222732.975,236.6995,TOE OF BANK6
641,134767.3889,1222725.925,240.2695,TOP OF BANK6
642,134772.4156,1222722.291,238.8795,TOP OF BANK6
643,134815.6164,1222697.118,237.4795,TOP OF BANK6
644,134774.6435,1222727.968,236.6295,TOE OF BANK6
645,134818.0621,1222703.174,234.7795,TOE OF BANK6
646,134773.5499,1222732.964,236.1695,CORRUGATED METAL PIPE JPT 647
647,134749.2232,1222738.298,236.5495,CORRUGATED METAL PIPE
648,134715.7979,1222687.541,240.9295,TOP OF BANK5
649,134711.4188,1222706.415,236.9295,TOE OF BANK5
650,134740.6329,1222730.464,239.9295,TOP OF BANK5
651,134735.8965,1222731.631,234.9095,TOE OF BANK5
652,134748.6363,1222736.676,236.6795,TOE OF BANK5
653,134753.1809,1222731.99,240.7195,TOP OF BANK5
654,134754.9579,1222743.245,240.2995,TOP OF BANK5
655,134749.6499,1222739.632,236.7495,TOE OF BANK5
656,134705.7558,1222749.76,235.1595,GROUND SURFACE
657,134739.0866,1222758.959,240.2595,TOP OF BANK5
658,134736.1045,1222759.686,234.2595,TOE OF BANK5
660,134741.9507,1222640.749,241.1795,TREE LINE4
661,134823.7061,1222758.973,241.6295,GROUND SURFACE
662,134785.5529,1222770.987,241.6295,TREE LINE4 JPT 660
663,134802.3716,1222813.177,241.1495,FIBER OPTIC CABLE
664,134761.3453,1222764.208,241.3295,EDGE OF GRAVEL2
665,134769.898,1222762.929,241.3395,EDGE OF GRAVEL1
666,134782.1094,1222836.854,242.3895,EDGE OF GRAVEL1
667,134773.796,1222842.08,242.6795,EDGE OF GRAVEL2
668,134786.2517,1222869.628,242.6295,EDGE OF GRAVEL2
669,134794.4934,1222864.98,242.3395,EDGE OF GRAVEL1
670,134821.1604,1222897.488,242.0595,EDGE OF GRAVEL1
671,134818.5694,1222905.089,242.2195,EDGE OF GRAVEL2
672,134850.7138,1222889.248,241.2295,TREE LINE4 JPT 662
673,134850.1851,1222888.708,241.2295,FIBER OPTIC CABLE
674,134712.407,1222855.909,241.1395,EDGE OF CONCRETE SEPTIC TANK DNC
675,134705.57,1222857.878,241.1495,EDGE OF CONCRETE DNC
676,134708.2168,1222863.183,241.5895,EDGE OF CONCRETE DNC
677,134713.4242,1222861.491,241.8995,EDGE OF CONCRETE CL DNC
678,134710.2761,1222860.112,247.3695,SSMH DNC
679,134733.6981,1222809.575,240.4195,TOP OF BANK5
680,134728.9859,1222806.039,237.7995,TOE OF BANK5
681,134721.8749,1222829.176,240.1395,TOP OF BANK5
682,134716.2805,1222820.998,237.1295,TOE OF BANK5
683,134750.5233,1222754.042,239.5795,TREE LINE2
684,134760.0242,1222816.377,242.2095,TREE LINE2
685,134726.0619,1222828.478,240.5395,TREE LINE2
686,134692.9118,1222882.4,240.6995,TREE LINE2

687,134732.5625,1222911.146,241.3995,TREE LINE2
688,134732.4936,1222911.144,241.3995,GROUND SURFACE
689,134760.4696,1222916.095,242.0995,TREE LINE2
690,134808.3655,1222927.02,241.2895,TREE LINE2
691,134877.0787,1222878.905,240.9495,GROUND SURFACE
692,134843.8002,1222912.929,242.0795,EDGE OF GRAVEL1
693,134845.1109,1222924.479,242.0295,EDGE OF GRAVEL2
695,135015.9435,1222987.114,238.0295,CORRUGATED METAL PIPE JPT 696
696,135004.0899,1223008.248,238.3395,CORRUGATED METAL PIPE
697,135018.0428,1222947.533,237.7895,GROUND SURFACE
698,135027.5134,1222953.477,236.9795,GROUND SURFACE
699,135001.539,1223014.72,238.0895,GROUND SURFACE
700,135000.319,1223030.077,238.4395,GROUND SURFACE
701,134987.0859,1223051.288,235.0295,GROUND SURFACE
702,135036.9319,1223090.977,239.5395,GROUND SURFACE
703,135191.0993,1223096.034,242.7995,EDGE OF GRAVEL2
704,135193.8312,1223087.661,242.5895,EDGE OF GRAVEL1
705,135208.5235,1223042.682,241.0495,GROUND SURFACE
706,135159.6602,1223125.097,240.7995,GROUND SURFACE
707,135245.8787,1223127.131,242.7895,EDGE OF CONCRETE SEPTIC TANK DNC
708,135241.2416,1223129.36,242.3995,EDGE OF CONCRETE DNC
709,135242.6341,1223134.601,241.8795,EDGE OF CONCRETE DNC
710,135248.0853,1223133.056,241.7995,EDGE OF CONCRETE CL DNC
711,135245.0181,1223130.129,246.8195,SSMH JPT 736 DNC
712,135375.2294,1223162.86,241.7795,FIBER OPTIC CABLE
713,135375.6916,1223157.638,242.2295,FIBER OPTIC MANHOLE
714,135373.0472,1223185.184,242.5695,EDGE OF GRAVEL1
715,135369.3272,1223191.022,242.3595,EDGE OF GRAVEL2
716,135368.5903,1223197.803,241.6795,GROUND SURFACE
717,135346.8243,1223237.19,240.6695,GROUND SURFACE
718,135381.376,1223169.883,241.0995,GROUND SURFACE
719,135396.8306,1223135.166,240.5995,GROUND SURFACE
721,135596.3286,1223269.519,241.2395,GROUND SURFACE
722,135596.344,1223269.515,241.2395,TREE LINE4 JPT 672
723,135607.4089,1223247.163,241.2995,GROUND SURFACE
724,135583.6975,1223290.515,242.7695,EDGE OF GRAVEL1
725,135581.3938,1223298.881,242.5895,EDGE OF GRAVEL2
726,135571.8386,1223312.132,241.2695,CL BRIDGE
727,135556.9854,1223333.387,240.9895,CL BRIDGE
728,135736.6031,1223378.995,243.4695,EDGE OF GRAVEL2
729,135711.2692,1223416.012,241.0495,GROUND SURFACE
730,135738.2193,1223369.92,243.1795,EDGE OF GRAVEL1
731,135760.6843,1223327.233,241.2695,GROUND SURFACE
732,135779.5781,1223403.999,243.5595,EDGE OF CONCRETE SEPTIC TANK DNC
733,135781.2017,1223408.794,242.7095,EDGE OF CONCRETE DNC
734,135777.5651,1223410.348,242.7695,EDGE OF CONCRETE DNC
735,135775.1412,1223405.005,243.2095,EDGE OF CONCRETE CL DNC
736,135777.7745,1223407.146,247.3095,SSMH JPT 771 DNC
737,135897.0426,1223463.457,243.0095,EDGE OF GRAVEL2
738,135878.5285,1223479.431,241.5195,GROUND SURFACE
739,135859.8315,1223509.019,241.5195,GROUND SURFACE
740,135901.7037,1223456.314,243.2195,EDGE OF GRAVEL1
741,135915.4812,1223430.574,241.4595,GROUND SURFACE
742,135924.5267,1223409.429,241.4595,GROUND SURFACE
744,136129.6108,1223579.471,242.93,EDGE OF GRAVEL1
745,136141.8224,1223556.479,241.51,GROUND SURFACE
746,136147.2626,1223541.893,241.51,GROUND SURFACE

747,136125.0791,1223586.438,242.87,EDGE OF GRAVEL2
748,136120.7532,1223594.689,241.72,GROUND SURFACE
749,136100.9667,1223617.598,241.25,GROUND SURFACE
750,136259.6744,1223647.086,243.18,EDGE OF GRAVEL1
751,136273.9934,1223619.971,241.62,GROUND SURFACE
752,136281.2209,1223610.463,241.56,GROUND SURFACE
753,136253.6412,1223653.289,242.88,EDGE OF GRAVEL2
754,136249.889,1223661.448,242.06,GROUND SURFACE
755,136238.6295,1223673.902,241.65,GROUND SURFACE
756,136295.5312,1223661.116,242.89,EDGE OF GRAVEL1
757,136292.3626,1223670.071,242.98,EDGE OF GRAVEL2
758,136359.1369,1223678.36,242.73,EDGE OF GRAVEL1
759,136355.9075,1223685.913,242.98,EDGE OF GRAVEL2
760,136389.5624,1223687.54,242.45,EDGE OF GRAVEL1
761,136386.598,1223695.551,242.95,EDGE OF GRAVEL2
762,136421.4781,1223700.573,242.41,EDGE OF GRAVEL1
763,136426.3583,1223690.553,242.33,GROUND SURFACE
764,136442.1026,1223653.846,242.34,GROUND SURFACE
765,136417.8948,1223708.025,242.79,EDGE OF GRAVEL2
766,136395.4337,1223744.069,242.08,GROUND SURFACE
767,136313.9788,1223686.717,242.08,EDGE OF CONCRETE1 JPT 769 DNC
768,136310.9695,1223692.172,241.4,EDGE OF CONCRETE1 JPT 770 DNC
769,136310.6498,1223687.362,241.89,EDGE OF CONCRETE1 JPT 768 DNC
770,136314.88,1223689.928,241.44,EDGE OF CONCRETE1 JPT 767 DNC
771,136312.6024,1223689.03,247.08,SSMH JPT 776 DNC
772,136730.9343,1223777.893,242.36,POWER POLE1 ST
773,136545.6575,1224261.891,242.21,POWER POLE1
774,136743.8676,1223918.32,240.89,EDGE OF CONCRETE2 DNC
775,136745.2386,1223913.124,241.1,EDGE OF CONCRETE2 DNC
776,136745.0743,1223916.191,248.25,SSMH JPT 2143 DNC
777,136924.5848,1223438.323,241.07,EDGE OF CONCRETE DNC
778,136928.9469,1223441.6,241.17,EDGE OF CONCRETE DNC
779,136926.7155,1223439.643,245.9,SSMH DNC JPT 776
780,136753.7528,1223791.242,241.83,GROUND SURFACE
781,136713.0713,1223849.598,242.17,EDGE OF GRAVEL1
782,136718.1853,1223869.022,242.51,EDGE OF GRAVEL2
783,136692.685,1223912.653,242.17,GROUND SURFACE
784,136653.8372,1223808.069,242.33,TREE LINE
785,136625.1392,1223893.164,242.05,TREE LINE
786,136776.8548,1223903.186,243.26,TREE LINE 1 ST
787,136785.2165,1223877.406,243.09,TREE LINE 2 ST
788,136771.283,1223874.729,243.33,SIGN
789,136993.6358,1224024.475,241.54,EDGE OF GRAVEL2
790,136993.6356,1224024.473,241.54,TREE LINE 1
791,136984.1313,1224047.594,241.54,GROUND SURFACE
792,137000.2652,1224014.238,241.92,EDGE OF GRAVEL1
793,137002.6169,1224009.826,241.92,TREE LINE 2
794,137012.0166,1223992.173,241.92,GROUND SURFACE
795,131366.8111,1221014.588,256.4939,CL ROAD1 ST
796,131389.0937,1221051.54,256.1164,CL ROAD1
797,131449.0719,1221097.002,254.0698,CL ROAD1
798,131474.5293,1221073.574,254.0788,UNDERGROUND TELEPHONE1 ST
799,131564.1016,1221119.66,251.8625,UNDERGROUND TELEPHONE1
800,131554.1996,1221148.038,250.8827,CL ROAD1
801,131713.481,1221220.873,246.3533,CL ROAD1
802,131722.3833,1221197.513,246.9782,UNDERGROUND TELEPHONE1
803,131811.7948,1221242.848,244.8238,UNDERGROUND TELEPHONE1

804,131804.1596,1221264.167,244.1335,CL ROAD1
805,131848.5145,1221271.413,243.3134,CL ROAD1
806,131851.6317,1221260.08,244.0292,UNDERGROUND TELEPHONE1
807,131908.2158,1221273.117,243.4981,UNDERGROUND TELEPHONE1
808,131904.2917,1221283.142,243.735,CL ROAD1
809,132009.361,1221333.257,243.3969,CL ROAD1
810,132021.9058,1221311.494,241.8931,UNDERGROUND TELEPHONE1
811,132143.6032,1221386.05,242.2194,UNDERGROUND TELEPHONE1
812,132133.447,1221401.056,242.905,CL ROAD1
813,132281.1312,1221466.444,242.2787,CL ROAD1
814,132283.7532,1221458.744,241.2492,UNDERGROUND TELEPHONE1
815,132344.7395,1221492.655,242.1836,UNDERGROUND TELEPHONE1
816,132345.297,1221503.087,242.4404,CL ROAD1
817,132379.6692,1221526.904,242.51,CL ROAD1
818,132412.9772,1221535.334,242.2716,UNDERGROUND TELEPHONE1
819,132525.0994,1221592.857,240.2925,UNDERGROUND TELEPHONE1
820,132684.8636,1221683.274,240.4292,UNDERGROUND TELEPHONE1
821,132678.9041,1221695.588,241.7464,CL ROAD1 ST
822,132729.6076,1221727.661,241.9853,CL ROAD1
823,132800.0383,1221752.839,241.81,CL ROAD1
824,132803.7027,1221744.675,241.1778,UNDERGROUND TELEPHONE1
825,132888.6415,1221790.989,240.5,CL ROAD2 ST
826,132964.2109,1221788.592,239.2,CL ROAD2
827,132977.1057,1221838.622,240.5,CL ROAD2
828,133001.1431,1221853.406,241.1783,UNDERGROUND TELEPHONE1
829,133002.1768,1221856.053,241.2035,CL ROAD1
830,133171.8344,1221952.605,242,CL ROAD1 ST
831,133173.7146,1221946.718,240.3816,UNDERGROUND TELEPHONE1
832,133287.6125,1222007.543,242.1607,CL ROAD1
833,133396.7534,1222066.128,242.0491,CL ROAD1
834,133439.6952,1222072.325,240.6066,UNDERGROUND TELEPHONE1
835,133534.9077,1222137.765,242.4788,CL ROAD1
836,133644.1875,1222176.669,242.5719,CL ROAD1
837,133782.4825,1222246.487,242.8531,CL ROAD1
838,133913.467,1222299.767,242.327,CL ROAD1
839,134014.5992,1222347.858,241.7567,CL ROAD1
840,134165.1308,1222441,241.9011,CL ROAD1
841,134264.4658,1222494.442,241.3743,CL ROAD1
842,134365.5956,1222546.078,240.1088,CL ROAD1
843,134470.9177,1222588.393,240.4219,CL ROAD1
844,134575.3553,1222615.901,239.4411,CL ROAD1
845,134648.1195,1222623.148,239.2,CL ROAD1
846,134712.9502,1222649.431,240.7704,CL ROAD1
847,134730.4947,1222666.676,241.7124,CL ROAD1
848,134755.69,1222717.764,240.9233,CL ROAD1
849,134775.516,1222835.333,242.5807,CL ROAD1
850,134795.8375,1222878.159,242.4715,CL ROAD1
851,134853.5249,1222924.616,242.0449,CL ROAD1
852,135068.4143,1223030.723,240.8713,CL ROAD1
853,135270.9869,1223135.269,242.5176,CL ROAD1
854,135436.631,1223224.89,242.7204,CL ROAD1
855,135609.4721,1223311.04,242.4912,CL ROAD1
856,135847.5143,1223435.301,243.3718,CL ROAD1
857,136077.6356,1223558.186,243.0546,CL ROAD1
858,136250.302,1223647.19,243.0969,CL ROAD1
859,134708.6494,1222637.693,240.6157,CL ROAD3 ST
860,134720.0679,1222644.996,241.1775,GROUND SURFACE

861,134698.0223,1222631.312,240.3469,GROUND SURFACE
862,134756.7461,1222478.188,238.8112,CL ROAD3
863,134743.374,1222472.724,239.1313,GROUND SURFACE
864,134770.882,1222481.05,238.3564,GROUND SURFACE
865,134784.5173,1222295.616,239.3064,CL ROAD3
866,134772.3901,1222289.772,239.7035,GROUND SURFACE
867,134791.3196,1222292.376,239.1535,GROUND SURFACE
868,134797.3494,1222294.618,238.234,GROUND SURFACE
869,134820.5037,1222144.178,239.4274,CL ROAD3
870,134805.6987,1222142.73,239.7233,GROUND SURFACE
871,134825.2321,1222147.885,239.1679,GROUND SURFACE
872,134836.8929,1222149.643,238.219,GROUND SURFACE
873,134835.6576,1221968.149,240.0598,CL ROAD3
874,134820.5562,1221971.475,241.3956,GROUND SURFACE
875,134849.5662,1221968.83,239.7546,GROUND SURFACE
876,134835.815,1221872.98,239.7104,CL ROAD3
877,134850.5536,1221876.591,239.104,GROUND SURFACE
878,134825.0143,1221871.423,240.2943,GROUND SURFACE
879,134937.0498,1221750.84,240.583,CL ROAD3
880,134926.0555,1221740.901,240.3959,GROUND SURFACE
881,134946.2795,1221758.634,240.6593,GROUND SURFACE
882,135037.802,1221623.4,239.9942,CL ROAD3
883,135047.2517,1221633.729,240.1453,GROUND SURFACE
884,135024.9247,1221618.429,240.4892,GROUND SURFACE
886,135137.1406,1221510.219,240.2663,CL ROAD3
887,135127.976,1221498.348,240.5599,GROUND SURFACE
888,135147.1579,1221518.987,240.1692,GROUND SURFACE
889,135184.4682,1221443.789,238.7084,CL ROAD3
890,135175.1435,1221437.064,239.9145,GROUND SURFACE
891,135191.338,1221456.811,239.7148,GROUND SURFACE
892,135224.9466,1221409.403,234.9857,CL ROAD3
893,135213.9441,1221397.732,234.6254,CL CREEK1 ST
894,135237.9613,1221418.991,234.6441,CL CREEK1
895,135243.6371,1221385.257,238.3513,CL ROAD3
896,135234.0578,1221378.062,238.8183,GROUND SURFACE
897,135253.4945,1221394.435,238.9889,GROUND SURFACE
898,135218.3748,1221416.704,236.4257,TOP OF BANK
899,135226.1413,1221434.157,237.2137,TOP OF BANK
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1013,135764.5772,1222446.063,238.26,TOP OF BANK
1014,135689.4462,1222393.94,234.48,EDGE OF WATER SEPTIC TANK JPT 1015
1015,135672.8936,1222400.818,234.41,EDGE OF WATER ST
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1018,135679.6185,1222379.371,237.61,TOP OF BANK
1019,135666.1973,1222387.452,238.11,TOP OF BANK
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1022,135693.5151,1222415.273,233.12,CL CREEK
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1028,135576.1736,1222210.255,240.26,GROUND SURFACE
1029,135553.3478,1222205.568,240.69,DECIDUOUS TREE (>18”)
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2137,137583.8949,1224321.77,235.69,DUCTILE IRON PIPE
2138,137601.2743,1224330.373,235.68,DUCTILE IRON PIPE
2139,137617.4038,1224338.601,235.7,DUCTILE IRON PIPE
2140,137637.191,1224348.704,235.66,DUCTILE IRON PIPE
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2142,137278.8271,1224168.002,237.51,GROUND SURFACE
2143,137276.8155,1224166.843,240.51,SSMH JPT 2143 DNC

Attachment F

FLOOD HEIGHT DIFFERENCE ANALYSIS

FOURCHE BOTTOMS' FLOOD HEIGHTS

		1985 Analysis			1979 Analysis		
		Existing Conditions	Modified Conditions	Reduction in flood elevation	Existing Conditions	Modified Conditions	Reduction in flood elevation
Major Road	**River Mile**	**Elevation (NGVD)**	**Elevation (NGVD)**	**Feet**	**Elevation (NGVD)**		**Feet**
South University Ave.	13.14	268.00	262.75	5.25	265.00	263.00	2.00
North University Ave.	13.12	267.75	262.25	5.50	264.50	262.50	2.00
	13.11	267.75	262.25	5.50	264.00	262.00	2.00
	13.10	267.79	262.23	5.56	264.00	261.98	2.02
	13.09	267.83	262.21	5.62	264.00	261.96	2.04
	13.08	267.87	262.19	5.67	264.00	261.94	2.06
	13.07	267.90	262.17	5.73	264.00	261.92	2.08
	13.06	267.94	262.15	5.79	264.00	261.90	2.10
	13.05	267.98	262.13	5.85	264.00	261.88	2.12
	13.04	268.02	262.12	5.90	264.00	261.87	2.13
	13.03	268.06	262.10	5.96	264.00	261.85	2.15
	13.02	268.10	262.08	6.02	264.00	261.83	2.17
	13.01	268.13	262.06	6.08	264.00	261.81	2.19
	13.00	268.17	262.04	6.13	264.00	261.79	2.21
	12.99	268.21	262.02	6.19	264.00	261.77	2.23
	12.98	267.50	262.00	5.50	263.00	260.50	2.50
	12.25	267.50	262.00	5.50	262.75	258.50	4.25
Union Pacific Railroad	11.5						
	9.50	267.00	261.25	5.75	262.75	258.50	4.25
Railroad Spur	7.70						
	6.00	266.50	261.00	5.50	262.75	258.50	4.25
Highway 365	4.55	266.25	261.00	5.25	262.75	258.50	4.25

*Comparisions are of the Strandard Project Flood for "Present Conditions"

*The 1979 Analysis had no modification to the channel between river miles 4.575 and 12.980 in Fourche Bottoms. This analysis incorrectly assumed that the channelization downstream of Fourche Bottoms would reduce flood heights at University Ave.

*The 1985 Analysis found that it was necessary to added or increased relief openings at rivermiles 7.7 and 11.5 to reduce flood heights upstream at University Avenue.

Attachment G

QUANTITY CALCULATIONS

Fourche Creek Quantities

5/12/2005

Item	Unit	Quantity	Main Road	Path 1N	Path 1S	Path 1A	Path 2	Path 3	Path 3A	Path 4	Parking Areas
9" Concrete Road	**SY**	**1,450.78**	1,450.78								
Gravel Road	**CY**	**1,278.74**	906.09								372.64
Base Course	**CY**	**642.51**	263.32		103.58		275.61				
6' Sidewalk	**LF**	**1,042.04**									1,042.04
Crusher Dust	**CY**	**1,304.19**		133.09	525.29	20.74	150.33	180.75	29.63	264.35	
6' Boardwalk	**LF**	**1,115.00**		770.00	345.00						
8' Boardwalk	**LF**	**40.00**						40.00			
9' Boardwalk	**LF**	**100.00**					100.00				
Geotextile	**SY**	**30,854.85**	10,953.39	1,384.44	6,150.90	217.78	3,608.00	1,867.62	300.00	2,676.55	3,696.16
30" RCP	**LF**	**152.00**	152.00								
18" RCP	**LF**	**380.00**	380.00								
12" RCP	**LF**	**44.00**	44.00								
Water Line	**LF**	**3,000.00**	3,000.00								
Sewer Line	**LF**	**120.00**									120.00
Estimated Cut	**CY**	**3,238.44**	826.63	169.21	793.21	26.62	551.22	228.26	36.67	327.13	279.48
Estimated Fill	**CY**	**2,479.76**	1,665.70	20.74	92.22	3.46	75.17	26.76	3.70	33.04	558.97

Other Quantities

Item	Unit	Quantity
Parking Lot Demolition/ Clearing	**LS**	**1**
Port-o-Let with Structure	**LS**	**1**
Restroom with Sewer Connection	**SF**	**605**
Remove Existing CMPs (2 Pipes 24")	**LF**	**60**
Helical Pier System Boardwalks	**LF**	**1555**
Entrance Landscape	**LS**	**1**
Entrance Gate and Fence	**LS**	**1**
Entrance Sign	**EA**	**1**
Light Poles	**EA**	**3**
Kiosk Structure	**EA**	**2**
Interpretive Sign	**EA**	**16**
Interpretive Sign Frame	**EA**	**10**
Identification Sign and Frame	**EA**	**20**
Trash Removal	**LS**	**1**
Site Entry Planning	**LS**	**1**
Landscape at Trailhead/Parking Facilities	**LS**	**1**

NOTE: Quantities provided in the above table are for preliminary planning purposes only and do not represent 100% design/construction quantities.

Main Road Earthwork Quantities Based on Eaglepoint Surface Model
Parking Area Quantities Estimated: Cut = Parking Area * 0.25'; Fill = Parking Area * 0.50'
See Fourche Creek Quantities notes by RJM from 4/14/05 (Edited 5/12/04) for 10% adjustment

Sheet	6' Path	8' Path	9' Path	6' BW	8' BW	9' BW	Geotextile	Base Course	Crusher Dust	Cut	Fill
Path1NPP01		350		250			3150	0	933.3333333	38.88888889	4.320987654
Path1NPP02	470			330			3290	0	940	40.61728395	5.802469136
Path1NPP03	520			80			3640	0	1040	44.9382716	6.419753086
Path1NPP04	340			110			2380	0	680	29.38271605	4.197530864
Total Path 1N	**1330**	**350**	**0**	**770**	**0**	**0**	**12460**	**0**	**3593.333333**	**153.8271605**	**20.74074074**
Path1SPP01	100	300		200			3400	0	1000	41.97530864	4.938271605
Path1SPP02		700					6300	0	1866.666667	77.77777778	8.641975309
Path1SPP03	91.5	200	508.5				14644.5	2796.75	2241.833333	218.462963	31.84876543
Path1SPP04	700						4900	0	1400	60.49382716	8.641975309
Path1SPP05	700						4900	0	1400	60.49382716	8.641975309
Path1SPP06	150	305		145			3795	0	1113.333333	46.85185185	5.617283951
Path1SPP07		700					6300	0	1866.666667	77.77777778	8.641975309
Path1SPP08		700					6300	0	1866.666667	77.77777778	8.641975309
Path1SPP09		535.4					4818.6	0	1427.733333	59.48888889	6.609876543
Total Path 1S	**1741.5**	**3440.4**	**508.5**	**345**	**0**	**0**	**55358.1**	**2796.75**	**14182.9**	**721.1**	**92.22407407**
Path1APP01	**280**						**1960**	0	**560**	**24.19753086**	**3.456790123**
Path2PP01			500			100	12000	2750	1500	185.1851852	27.77777778
Path2PP02			853				20472	4691.5	2559	315.9259259	47.38888889
Total Path 2	**0**	**0**	**1353**	**0**	**0**	**100**	**32472**	**7441.5**	**4059**	**501.1111111**	**75.16666667**
Path3PP01	600						4200	0	1200	51.85185185	7.407407407
Path3PP02	700						4900	0	1400	60.49382716	8.641975309
Path3PP03	50	250		400			2600	0	766.6666667	32.09876543	3.703703704
Path3PP04		567.62			40		5108.58	0	1513.653333	63.06888889	7.007654321
Total Path 3	**1350**	**817.62**	**0**	**400**	**40**	**0**	**16808.58**	0	**4880.32**	**207.5133333**	26.76074074
Path3APP01		**300**					**2700**	0	**800**	**33.33333333**	**3.703703704**
Path4PP01		800					7200	0	2133.333333	88.88888889	9.87654321
Path4PP02		600					5400	0	1600	66.66666667	7.407407407
Path4PP03		700					6300	0	1866.666667	77.77777778	8.641975309
Path4PP04		576.55					5188.95	0	1537.466667	64.06111111	7.117901235
Total Path 4		**2676.55**	**0**	**0**	**0**	**0**	**24088.95**	**0**	**7137.466667**	**297.3944444**	**33.04382716**
TOTALS:	**4701.5**	**7584.57**	**1861.5**	**1515**	**40**	**100**	**145847.63**	**10238.25**	**35213.02**	**1938.47691**	**255.0965432**

	Concrete	Gravel	30" Pipe	18" Pipe	12" Pipe		Geo	Base Course		
RoadPP01	13057.05	215					13272.05	14219.05		
RoadPP02		9299.35		60.00			9299.35			
RoadPP03		11101.11		60.00			11101.11			
RoadPP04		11363.63		30.00			11363.63			
RoadPP05		10387.73	152.00		44.00		10387.73			
RoadPP06		10311.53		140.00			10311.53			
RoadPP07		11469.3		60.00			11469.3			
RoadPP08		9245.85		30.00			9245.85			
							12130		Length	6065.0000
TOTALS:	**13057.05**	**73393.5**	**152**	**380**	**44**	**0**	**86450.55**	**14219.05**		

	Concrete	Gravel				Sidewalk	Geo			
Parking Lot S	384.67	14237.51				371.86	15480.68		Length	429.25
Parking Lot N	384.67	15946.71				670.18	17784.76		Length	726.69
TOTALS:	**769.34**	**30184.22**				**1042.04**	**33265.44**			

Attachment H

COST ESTIMATE

CESWL-EC-DC (1110-2-1150a) 30 June 2004

MEMORANDUM FOR Chief, Planning Section, (Julia Smethurst)

SUBJECT: Estimate for Bottomland Acquisition Re-Eval Feasibility Study, Fourche Bayou Basin, Little Rock, Arkansas

1. Enclosed is the cost estimate (Encl 1) for the subject project. The basis of the estimate is taken from the quantities submitted on 25 May 04.

2. Point of contact is Rajesh Gandhi, ext. 5116.

A.J. PAPAGEORGE, P.E
Chief, Cost Engineering and Support Section

Encl as

Limited Re-Evaluation Report
Feasibility Study
Fourche Bayou Basin
Little Rock, Arkansas

Designed By: GEC, Inc.
Estimated By: Cost Engineering & Support Sect

Prepared By: David Howell, Rajesh Gandhi
Cost Engineering & Support Sect

Preparation Date: 06/30/04
Effective Date of Pricing: 06/30/04
Est Construction Time: 365 Days

Sales Tax: 7.50%

M C A C E S G O L D E D I T I O N
Composer GOLD Software Copyright (c) 1985-2000
by Building Systems Design, Inc.
Release 5.31

SCOPE OF WORK:

The work consists of minor cleanup and clearing prior to consturction of new walking trails, boardwalks, restroom and upgrade of existing roadway as described in Engineering Appendix for Preperation of Nature Appreciation Facilities Design, Economic, and Environmental Analysis for a Limited Reevaluation Report (LRR) 1,750-Acre Bottomland Acquisition, located at Fourche Bayou Basin, Little Rock, Arkansas.

This estimate is based on revised quantities dated 12 May 04 and submitted on 25 May 04.

INCLUSIONS:

1. Sales Tax of 7.5%
2. Profit for the Prime calculated to be 6.53% using weighted guidelines
3. Bond calculted to be 0.86%
4. Escalation Index dated 30 Sep 03 was used. The escalation range was 3.55% to 5.26%
5. Contingency of 10% - 25%
6. Land and Damages cost was provided by Real Estate Division
7. PED cost of $125,000 was provided by the Project Manager
8. The S&A cost at 7.5%, and the additional amount of $66,000 was provided by the Project Manager

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SUMMARY REPORTS SUMMARY PAGE

No Detailed Estimate...

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

		QUANTITY UOM	CONTRACT	CONTINGN	ESCALATN	TOTAL COST	UNIT COST
01	Land and Damages		2,215,500	531,720	97,616	2,844,836	
14	Recreation Facilities		1,721,812	258,272	104,232	2,084,315	
30	Planning, Engineering & Design		125,000	12,500	4,886	142,386	
31	COE Supervision & Administration		194,900	19,490	11,285	225,675	
99	Operation and Maintenance	40.00 YR	39,540	9,885	0	49,425	1235.62
TOTAL	Limited Re-Evaluation Report	1.00 EA	4,296,752	831,867	218,018	5,346,637	5346637

	QUANTITY	UOM	CONTRACT	CONTINGN	ESCALATN	TOTAL COST	UNIT COST
01 Land and Damages							
01.23 Construction Contract Documents							
01.23.03 Real Estate Analysis Documents			2,215,500	531,720	97,616	2,844,836	
TOTAL Construction Contract Documents			2,215,500	531,720	97,616	2,844,836	
TOTAL Land and Damages			2,215,500	531,720	97,616	2,844,836	
14 Recreation Facilities							
14.00 Recreational Facilities							
14.00.01 Mob, Demob & Preparatory Work			14,421	2,163	873	17,457	
14.00.18 Utilities			64,633	9,695	3,913	78,240	
14.00.22 Road, Trails, & Parking Lots			381,851	57,278	23,116	462,245	
14.00.23 Site Grading and Landscaping			91,703	13,755	5,551	111,010	
14.00.27 Buildings, Public Use-New Restrm			90,775	13,616	5,495	109,887	
14.00.71 Activity Guides and Controls			1,078,429	161,764	65,284	1,305,477	
TOTAL Recreational Facilities			1,721,812	258,272	104,232	2,084,315	
TOTAL Recreation Facilities			1,721,812	258,272	104,232	2,084,315	
30 Planning, Engineering & Design			125,000	12,500	4,886	142,386	
31 COE Supervision & Administration			194,900	19,490	11,285	225,675	
99 Operation and Maintenance							
99.01 Operation and Maintenance			39,540	9,885	0	49,425	
TOTAL Operation and Maintenance	40.00	YR	39,540	9,885	0	49,425	1235.62
TOTAL Limited Re-Evaluation Report	1.00	EA	4,296,752	831,867	218,018	5,346,637	5346637

	QUANTITY UOM	CONTRACT	CONTINGN	ESCALATN	TOTAL COST	UNIT COST
01 Land and Damages						
01.23 Construction Contract Documents						
01.23.03 Real Estate Analysis Documents						
01.23.03.01 Real Estate Planning Documents						
01.23.03.01.01 Planning by Local Sponsor		20,000	4,800	881	25,681	
01.23.03.01.02 Review of Local Sponsor		6,500	1,560	286	8,346	
01.23.03.01.03 Construction Contract Documents		5,000	1,200	220	6,420	
01.23.03.01.04 Real Estate Analysis Documents		5,000	1,200	220	6,420	
TOTAL Real Estate Planning Documents		36,500	8,760	1,608	46,868	
01.23.03.02 Real Estate AcquisitionDocuments						
01.23.03.02.01 Acquisition by Local Sponsor		250,000	60,000	11,015	321,015	
01.23.03.02.02 Review of Local Sponsor		10,000	2,400	441	12,841	
TOTAL Real Estate AcquisitionDocuments		260,000	62,400	11,456	333,856	
01.23.03.03 Real Estate Condemnation Documts						
01.23.03.03.01 Condemnation by Local Sponsor		20,000	4,800	881	25,681	
01.23.03.03.02 Review of Local Sponsor		600	144	26	770	
TOTAL Real Estate Condemnation Documts		20,600	4,944	908	26,452	
01.23.03.05 Real Estate Appraisal Documents						
01.23.03.05.01 Appraisals by Local Sponsor		50,000	12,000	2,203	64,203	
01.23.03.05.02 Review of Local Sponsor		12,000	2,880	529	15,409	
TOTAL Real Estate Appraisal Documents		62,000	14,880	2,732	79,612	
01.23.03.06 Real Estate PL 91-646 Asst. Docu						
01.23.03.15 Real Estate Payment Documents						
01.23.03.15.01 Payments by Local Sponsor - Land		1,820,000	436,800	80,190	2,336,990	
01.23.03.15.02 Payments by Local Sponsor - Land		400	96	18	514	
01.23.03.15.04 Review of Local Sponsor		10,000	2,400	441	12,841	
TOTAL Real Estate Payment Documents		1,830,400	439,296	80,648	2,350,344	

	QUANTITY	UOM	CONTRACT	CONTINGN	ESCALATN	TOTAL COST	UNIT COST
01.23.03.17 Real Estate LERRD Crediting Docu							
01.23.03.17.01 Review of Local Sponsor			1,000	240	44	1,284	
01.23.03.17.02 Real Estate LERRD Crediting Docu			5,000	1,200	220	6,420	
TOTAL Real Estate LERRD Crediting Docu			6,000	1,440	264	7,704	
TOTAL Real Estate Analysis Documents			2,215,500	531,720	97,616	2,844,836	
TOTAL Construction Contract Documents			2,215,500	531,720	97,616	2,844,836	
TOTAL Land and Damages			2,215,500	531,720	97,616	2,844,836	
14 Recreation Facilities							
14.00 Recreational Facilities							
14.00.01 Mob, Demob & Preparatory Work							
14.00.01.05 Prime Mob, Demob & Prep Work							
14.00.01.05.01 Prime Mob, Demob & Prep Work			5,993	899	363	7,255	
TOTAL Prime Mob, Demob & Prep Work			5,993	899	363	7,255	
14.00.01.10 Surveying							
14.00.01.10.05 Surveying	60.00	HR	8,428	1,264	510	10,202	170.04
TOTAL Surveying	60.00	HR	8,428	1,264	510	10,202	170.04
TOTAL Mob, Demob & Preparatory Work			14,421	2,163	873	17,457	
14.00.18 Utilities							
14.00.18.02 Site Work							
14.00.18.02.01 2" Water Line Trench	3000.00	LF	13,178	1,977	798	15,953	5.32
14.00.18.02.10 Road Crossing Near Wellhouse	1.00	EA	418	63	25	507	506.55
14.00.18.02.15 Road Crossing-Pavilion Entrance	1.00	EA	656	98	40	794	794.21
14.00.18.02.20 Road Crossing-Near Parking Lot	1.00	EA	592	89	36	716	716.50
14.00.18.02.25 Road Crossing-Drain Line	1.00	EA	1,624	244	98	1,965	1965.44
14.00.18.02.30 Drain Line Trench	105.00	LF	2,090	314	127	2,530	24.10
TOTAL Site Work			18,559	2,784	1,123	22,466	
14.00.18.15 Mechanical							

		QUANTITY	UOM	CONTRACT	CONTINGN	ESCALATN	TOTAL COST	UNIT COST
14.00.18.15. 3	Valves			2,673	401	162	3,236	
14.00.18.15.02	Piping and Fittings			30,154	4,523	1,825	36,503	
	TOTAL Mechanical			32,827	4,924	1,987	39,739	
14.00.18.16	Electrical							
14.00.18.16. 4	Panels and Controllers	1.00	EA	3,281	492	199	3,971	3971.42
14.00.18.16.01	Sec Power Lines-Pole to Restroom	0.93	MLF	3,688	553	223	4,464	4800.04
14.00.18.16.02	Sec Pwr Lines-Restroom to Rack	0.48	MLF	1,537	231	93	1,861	3876.38
14.00.18.16.03	Sec Pwr Line-Pnl Rack to Paviln	0.44	MLF	1,431	215	87	1,732	3936.66
14.00.18.16.04	Sec Pwr Line-Pnl Rack to Wellhse	1.04	MLF	2,054	308	124	2,487	2391.23
14.00.18.16.05	Sec Pwr Line-Launch Ramp Light			288	43	17	348	
14.00.18.16.10	Start-Up & Testing			968	145	59	1,172	
	TOTAL Electrical			13,247	1,987	802	16,036	
	TOTAL Utilities			64,633	9,695	3,913	78,240	
14.00.22	Road, Trails, & Parking Lots							
14.00.22.02	Site Work							
14.00.22.02.08	Culverts			30,271	4,541	1,833	36,645	
14.00.22.02.10	Paving			351,035	52,655	21,250	424,941	
14.00.22.02.11	Striping			461	69	28	558	
14.00.22.02.12	Handicap Parking Sign	2.00	EA	84	13	5	101	50.69
	TOTAL Site Work			381,851	57,278	23,116	462,245	
	TOTAL Road, Trails, & Parking Lots			381,851	57,278	23,116	462,245	
14.00.23	Site Grading and Landscaping							
14.00.23.01	Site Work							
14.00.23.01.01	Clearing	1.00	ACR	10,306	1,546	624	12,476	12476.31
14.00.23.01.03	Grading	0.12	ACR	11,889	1,783	720	14,392	119934.49
14.00.23.01.05	Establishment of Turf	13300.00	SY	30,171	4,526	1,826	36,523	2.75
14.00.23.01.08	Fence, Gates and Entrance Sign			2,695	404	163	3,262	
14.00.23.01.12	Trees and Shrubs			31,927	4,789	1,933	38,649	
14.00.23.01.14	Trash Removal			4,714	707	285	5,707	
	TOTAL Site Work			91,703	13,755	5,551	111,010	
	TOTAL Site Grading and Landscaping			91,703	13,755	5,551	111,010	

		QUANTITY	UOM	CONTRACT	CONTINGN	ESCALATN	TOTAL COST	UNIT COST
14.00.27	Buildings, Public Use-New Restrm							
14.00.27.02	Site Work							
14.00.27.02.01	Excavation for Basemnt Slab	189.00	CY	1,802	270	109	2,181	11.54
14.00.27.02.02	Soil Treatment	70.00	SY	81	12	5	98	1.41
14.00.27.02.03	Gravel Bedding/Drainage Fill	12.00	CY	811	122	49	982	81.86
14.00.27.02.04	Structural Backfill	53.00	CY	804	121	49	973	18.35
14.00.27.02.06	French Drain	74.00	LF	335	50	20	405	5.47
14.00.27.02.08	Dispose of Spoil Material	76.00	CY	188	28	11	228	3.00
14.00.27.02.10	Finish Grade for Slab - by hand	220.00	SF	54	8	3	65	0.30
	TOTAL Site Work			4,075	611	247	4,933	
14.00.27.03	Concrete							
14.00.27.03.01	Cast-In Place Concr-Slab on Grde	12.00	CY	1,733	260	105	2,098	174.87
14.00.27.03.02	Cast-In Place Concr-Retain. Beam	6.65	CY	784	118	47	949	142.69
14.00.27.03.08	Reinforcing Steel- Slab/Wall	4033.00	LBS	467	70	28	565	0.14
	TOTAL Concrete			2,984	448	181	3,612	
14.00.27.04	Masonry							
14.00.27.04.02	Reinf CMU Walls - Exterior Wall	398.00	SF	18,290	2,743	1,107	22,140	55.63
	TOTAL Masonry			18,290	2,743	1,107	22,140	
14.00.27.05	Metals							
14.00.27.05.05	Louver			65	10	4	79	
	TOTAL Metals			65	10	4	79	
14.00.27.06	Wood and Plastic							
14.00.27.06.01	Wood Framing			1,424	214	86	1,724	
14.00.27.06.02	Wood Trim			372	56	23	450	
14.00.27.06.03	Sheathing, Roof	990.00	SF	1,156	173	70	1,399	1.41
14.00.27.06.04	Vanities	2.00	EA	862	129	52	1,043	521.51
	TOTAL Wood and Plastic	240.00	SF	3,813	572	231	4,616	19.23
14.00.27.07	Moisture and Thermal Insulation							
14.00.27.07.01	Insulation	834.00	SF	454	68	27	549	0.66

		QUANTITY	UOM	CONTRACT	CONTINGN	ESCALATN	TOTAL COST	UNIT COST
14.00.27.07.02	Roofing	840.00	SF	2,127	319	129	2,575	3.06
14.00.27.07.04	Waterproofing	640.00	SF	124	19	8	150	0.23
14.00.27.07.05	Flashing and Fascia			648	97	39	785	
14.00.27.07.06	Skylights	4.00	EA	1,498	225	91	1,813	453.36
	TOTAL Moisture and Thermal Insulation			4,851	728	294	5,872	
14.00.27.08	Doors and Windows							
14.00.27.08.01	Metal Doors and Frames	3.00	EA	6,648	997	402	8,048	2682.52
14.00.27.08.03	Metal Frame Windows	6.00	EA	3,657	548	221	4,427	737.75
	TOTAL Doors and Windows			10,305	1,546	624	12,474	
14.00.27.09	Finishes							
14.00.27.09.03	Floor Covering	380.00	SF	2,615	392	158	3,165	8.33
14.00.27.09.04	Ceiling FRP on Plywood	84.00	SF	225	34	14	273	3.25
14.00.27.09.05	Wall FRP on Plywood adhered CMU	340.00	SF	913	137	55	1,105	3.25
14.00.27.09.06	Wall FRP on Plywood to Metal Std	66.00	SF	221	33	13	268	4.06
14.00.27.09.08	Painting	84.00	SF	61	9	4	73	0.87
	TOTAL Finishes			4,035	605	244	4,884	
14.00.27.10	Specialties							
14.00.27.10.02	Toilet Accessories	8.00	EA	2,046	307	124	2,477	309.57
14.00.27.10.05	Signage	2.00	EA	698	105	42	845	422.43
	TOTAL Specialties			2,744	412	166	3,321	
14.00.27.15	Mechanical							
14.00.27.15.01	Plumbing System			10,445	1,567	632	12,644	
	TOTAL Mechanical			10,445	1,567	632	12,644	
14.00.27.16	Electrical							
14.00.27.16.01	Electric Service & Distribution			4,069	610	246	4,925	
14.00.27.16.02	Lighting and Branch Wiring			5,779	867	350	6,996	
14.00.27.16.03	Heating, Cooling and Ventilati	2.00	EA	2,783	417	168	3,368	1684.18
	TOTAL Electrical			12,630	1,895	765	15,290	

	QUANTITY UOM	CONTRACT	CONTINGN	ESCALATN	TOTAL COST	UNIT COST
14.00.27.99 Port-o-let Area		16,538	2,481	1,001	20,020	
TOTAL Buildings, Public Use-New Restrm		90,775	13,616	5,495	109,887	
14.00.71 Activity Guides and Controls						
14.00.71.06 Wood and Plastic						
14.00.71.06.01 Boardwalks		1,043,720	156,558	63,183	1,263,461	
14.00.71.06.02 Kiosks		2,696	404	163	3,263	
14.00.71.06.03 Interpretive & Entrance Signs		28,461	4,269	1,723	34,453	
14.00.71.06.04 Identification Signs		3,552	533	215	4,300	
TOTAL Wood and Plastic		1,078,429	161,764	65,284	1,305,477	
TOTAL Activity Guides and Controls		1,078,429	161,764	65,284	1,305,477	
TOTAL Recreational Facilities		1,721,812	258,272	104,232	2,084,315	
TOTAL Recreation Facilities		1,721,812	258,272	104,232	2,084,315	
30 Planning, Engineering & Design		125,000	12,500	4,886	142,386	
31 COE Supervision & Administration		194,900	19,490	11,285	225,675	
99 Operation and Maintenance						
99.01 Operation and Maintenance		39,540	9,885	0	49,425	
TOTAL Operation and Maintenance	40.00 YR	39,540	9,885	0	49,425	1235.62
TOTAL Limited Re-Evaluation Report	1.00 EA	4,296,752	831,867	218,018	5,346,637	5346637

ECONOMIC APPENDIX

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ECONOMIC APPENDIX

PREPARATION OF NATURE APPRECIATION FACILITIES DESIGN, ECONOMIC, AND ENVIRONMENTAL ANALYSIS FOR A LIMITED REEVALUATION REPORT (LRR) 1,750-ACRE BOTTOMLAND ACQUISITION, FOURCHE BAYOU BASIN, LITTLE ROCK, ARKANSAS

1.0 INTRODUCTION

The proposed park consists of 1,750 acres of bottomland hardwoods and swampland along Fourche Bayou in the southern portion of the city of Little Rock, Arkansas. A large variety of plant and animal life is found in this area. Presented in this section of the report is an economic assessment of the establishment of a nature appreciation area and associated facilities along a segment of Fourche Bayou. The assessment began with a field reconnaissance to determine the type and extent of resources found in the study area. The proposed development is intended to preserve the quality of the resources in this unique area, and provide public access to its innermost parts for nature appreciation and enjoyment.

The purpose of this section is to estimate the number of visitor/activity days that could be expected to utilize the facilities if the plan were to be implemented. Planned nature appreciation facilities would include hiking trails with wildlife observation areas. The improved access with parking and restrooms provided would increase opportunities for fishing and canoeing within the Fourche Bottoms. In order to determine the economic viability of the project, it is necessary to quantify the number and types of visitors that would utilize the proposed facilities.

2.0 DESCRIPTION OF AREA RESOURCES

Environmental resources of importance in the Fourche Bayou Basin consist of flora, fauna, unique habitats, recreational opportunities, and aesthetic qualities. Adding to the significance of this area is its location in metropolitan Little Rock, Arkansas. A green belt such as Fourche Bayou with its approximately 650 acres of wetlands, provides a welcome break for viewers from square miles of developed land covered by residences, businesses, and infrastructure facilities.

Flora found in wetland area of Fourche Bayou may include bald cypress, water tupelo, water elm, green ash, buttonbush, box elder, and hibiscus. The bottomland hardwood areas occur around the edge of the riverine swamp habitats and include plant species such as willow oak, post oak, cedar elm, American elm, red mulberry, sweetgum, swamp dogwood, and others. Fish species found in Fourche Creek include shiners, sunfishes, catfish, chain pickerel, bullheads, crappie, largemouth bass, and spotted bass as well as other species of fish. Several species of wading birds including great blue herons and egrets are common in the area as well as various migratory birds and songbirds. Duck species such as mallards, teals and woodducks are commonly found in the area. Terrestrial fauna occurring in the project site include swamp

rabbits, white-tail deer, mink, raccoons, opossums, fox and gray squirrels and beavers, among others. Fourche Bottoms also provides habitat for a wide variety of turtles, frogs, and snakes.

A request was submitted to the USFWS in 2002 for the notification of any wildlife management areas, swamps and marshes, wetlands, habitats for threatened and endangered species, and/or other sensitive ecological areas located within the project area. The USFWS submitted a Coordination Act Report (CAR) on 3 September 2004 in which it stated that no federally listed, threatened or endangered species are currently known to occur in the project impact area, and that the proposed action would not impact any listed species. The CAR is included in the Supplemental Environmental Impact Statement. No state listed species are known to occur in the project area.

3.0 SOURCES OF DATA

Data for this report was obtained from numerous federal, state, and local agencies that have indicated a strong interest in the proposed Fourche Bayou development. Included in this group are the Arkansas Natural Heritage Commission, Arkansas Nature Conservancy, the Audubon Society (Audubon Arkansas), and the Canoe Club of Arkansas. These agencies represent a coalition of partners that will assist with education and conservation programs on site. Audubon Arkansas intends to co-manage the site with the Little Rock Parks and Recreation Department, and will partner with federal and state agencies, private companies, and non-profit organizations to carry out the project purposes.

Additional important information was obtained from the Arkansas Department of Parks and Tourism (Research Division), the Arkansas Game and Fish Commission, Arkansas State Parks (Office of Outdoor Recreation Grants), Pinnacle Mountain State Park, the U.S. Fish and Wildlife Service (USFWS), and the U.S. Bureau of the Census. The University of Arkansas at Little Rock, Division of Demographic Research, provided important data on population projections for the study area. Other background information was obtained from an earlier (October 1979) study of the Fourche Bayou Basin by the U.S. Army Corps of Engineers, Little Rock District.

4.0 METHODOLOGY

Plans for the proposed development include the creation of facilities for four recreational activities: (1) hiking and walking -- three miles of hiking trails are planned, some sections with handicap access features for wildlife viewing; (2) wildlife observation -- wildlife observation platforms are proposed for viewing the areas varied and abundant wildlife; (3) fishing -- plans include dredging some of the borrow pits to compensate for the trails' fill placement. This will improve fishing opportunities along with the improved access. Also, as an adjunct to the project, the Arkansas Game and Fish Commission has plans to stock some of these ponds; and (4) canoeing -- the city is currently removing man-made obstacles and other debris, which will afford a unique canoeing experience for wildlife and nature lovers.

As was done in the earlier Corps of Engineers study, the initial step in this analysis was to estimate the overall recreational needs or demand that exists within the study area. This was accomplished primarily through the use of the *Statewide Comprehensive Outdoor Recreation*

Plan (SCORP 1995) report compiled by the Arkansas Department of Parks and Tourism, Outdoor Recreation Grants Section, along with information from Audubon Arkansas, the Nature Conservancy, and the Arkansas Department of Parks and Tourism. The 1995 SCORP placed a greater focus on the needs or demands of individual localities as opposed to regional needs, as was the case in earlier SCORP reports.

As a part of that report, a survey to determine recreation needs as well as facility utilization was conducted by the University of Arkansas at Little Rock. Interviews were obtained from a stratified random sample of adult Arkansans. By using a specific selection procedure, interviewers maintained a representative sample of the population with respect to age, gender, and income of the respondents at the time of the survey. The sample had a sampling error of slightly less than five percent at the 95 percent confidence interval.

Table 1 shows the results of the survey for a specific set of outdoor recreational activities that are of particular relevance to the subject study. The table shows the percentages of persons by age group who participated in various outdoor activities at least 10 times or more during the preceding 12-month period. Three of these activities are ones that are included in the plans for the proposed development: walking for pleasure, short hikes, and wildlife observation.

The activity labeled "Walked for Pleasure" appeared in each of the eight age groupings, while the activity "Wildlife Observation appeared in six of the eight age groups. The latter activity is more popular with older segments of the population as can be seen from the results of the survey. While wildlife observation was not among the top 20 outdoor activities by order of popularity in the 1985 SCORP, it ranked as the seventh most popular activity in the 1995 SCORP. As the population ages, as it is predicted to do in almost every state, wildlife observation will most likely grow in popularity and importance.

Estimating the overall needs (or demand) in the study area involves merging the SCORP data shown in Table 1 with population figures for the study area. Both current and projected population data are required in order to estimate use over the life of the project. The study area for this report includes Pulaski and Saline counties, which is the same geographic area as that used in the original Fourche Basin study. Population figures for these counties, both historical and projected are given in Table 2. The projected figures are based on county projections of population prepared by the University of Arkansas at Little Rock. Since those projections extend only to the year 2012, projected data beyond that date are extrapolations of the 2002-2012 data.

5.0 DATA ANALYSIS

Table 3 shows estimated recreation demand, by recreation activity, for the proposed Fourche Bottoms park study area (or market area). For the purpose of estimating usage of the proposed park and its facilities, the primary pool of users was assumed to be the residents of Pulaski and Saline counties, which comprise the study area. This is the same study area used in the earlier Fourche Bayou Basin Feasibility Report published in 1979, and is the counties in which Fourche Bayou is located. The majority of potential users were estimated to come from the population of this area, with a small percentage of usage by visitors coming from outside the area, both from within and outside Arkansas.

Table 1. Outdoor Activities Participated in at Least 10 Times or More in the Past 12 Months--by Age[1,2,3]

Age 18 to 20	Percent	Age 55 to 59	Percent
Total No.: 17,126	5%	Total No.: 21,900	7%
Walked for Pleasure	43%	Walked for Pleasure	31%
Swimming	43%	Wildlife Observation	24%
Fishing	36%	Fishing	17%
Driving for Pleasure	29%	Driving for Pleasure	17%
Bicycling	21%	Swimming	14%
Age 21-24		**Age 60-64**	
Total No.: 23,859	7%	Total No.: 17,528	5%
Driving for Pleasure	52%	Walked for Pleasure	46%
Swimming	39%	Driving for Pleasure	38%
Walked for Pleasure	39%	Wildlife Observation	32%
Wildlife Observation	30%	Fishing	19%
Fishing	26%	Swimming	14%
Age 25-44		**Age 65-74**	
Total No.: 137,604	41%	Total No.: 27,705	8%
Driving for Pleasure	46%	Walked for Pleasure	43%
Swimming	41%	Driving for Pleasure	42%
Walked for Pleasure	37%	Wildlife Observation	27%
Fishing	32%	Fishing	23%
Bicycling	31%	Short Hikes	21%
Age 45-54		**Age 75 and Over**	
Total No.: 62,655	19%	Total No.: 24,140	7%
Walked for Pleasure	49%	Driving for Pleasure	29%
Driving for Pleasure	31%	Wildlife Observation	29%
Wildlife Observation	23%	Walked for Pleasure	24%
Fishing	22%	Fishing	19%
Short Hikes	20%	Golf	10%

[1]SCORP '95, Statewide Comprehensive Outdoor Recreation Plan, Arkansas, Arkansas State Parks, Recreation, and Travel Commission, December 1995, page A19.
[2]U.S. Census: PCT12 Sex by Age
Dataset: Census 2000 Summary Files 1, 100 Percent Data
[3]Total Population: 332,517

Table 2. Historical and Projected Population, Study Area and State of Arkansas

Area	U.S. Bureau of Census			UALR Projections[1]		
	1980	1990	2000	2005	2015	2025
State	2,286,357	2,350,624	2,673,400	2,805,767	3,067,491	3,282,094
% Change	--	2.8%	13.7%	5.0%	9.3%	7.0%
Study Area:						
Pulaski Co.	340,597	349,596	361,464	366,292	375,624	384,956
Saline Co.	53,156	64,183	83,520	92,985	101,415	107,500
Area Total	393,753	413,779	444,984	459,277	477,039	492,456
% Change	--	5.1%	7.5%	3.2%	3.9%	3.2%

[1]Projected population figures shown were developed by the University of Arkansas at Little Rock (UALR), Institute for Economic Advancement. The UALR projections were for the period 2002 through 2012. The figures shown for the years 2015 and 2025 are extrapolations of the trends implied by the 2002-2012 projections. Area totals for the years 2035, 2045, and 2055, based on similar extrapolation, are 507,230, 522,210, and 537,880, respectively. These projections are shown in Table 3.

The target population used in estimating use was those persons 18-years old and over. This group was estimated to comprise about 74.5 percent of the total area population based on U.S. Census data**.** This proportion was assumed to hold constant throughout the analytical period, starting with the base year of 2005, and continuing to 2055. This segment of the population was the focus of a recreation survey conducted by the University of Arkansas at Little Rock for the Arkansas Department of Parks and Tourism and published in 1995 (SCORP). The results of this survey formed a large part of the analytical techniques used in estimating potential recreational demand for the Fourche Park study area. Derivation of estimated demands for each activity the park is proposed to accommodate is shown in Table 3. Techniques and methodology used in their derivation follows.

Table 3. Estimated Recreation Demand by Activity, Proposed Fourche Bottoms Park Study Area, Base Year and Projected to 2055

Activity	Base Year 2005	2015	2025	2035	2045	2055
Study Area Population[1]	459,277	477,039	492,456	507,230	522,210	537,880
Pct. Pop. 18 and Over	74.5%	74.5%	74.5%	74.5%	74.5%	74.5%
Pop. 18 & Over (No.)	342,161	355,394	366,880	377,886	389,046	400,721
1. Walking/Hiking						
Age-weighted Avg. Pct.[2]	39.6%	39.6%	39.6%	39.6%	39.6%	39.6%
Potential No. of Users[3]	135,496	140,736	145,284	149,643	154,062	158,685
Repeat Visit Factor	10	10	10	10	10	10
No. of Act. Occasions	1,354,959	1,407,360	1,452,844	1,496,430	1,540,624	1,586,854
Act. Occ./ Outside Area	422,719	436,246	449,333	460,568	469,778	479,174
Total Activity Occasions	1,777,678	1,843,607	1,902,177	1,956,997	2,010,402	2,066,028
2. Wildlife Observation						
Age-weighted Avg. Pct.[2]	23.4%	23.4%	23.4%	23.4%	23.4%	23.4%
Potential No. of Users[3]	80,066	83,162	85,850	88,425	91,037	93,769
Repeat Visit Factor	10	10	10	10	10	10
No. of Act. Occasions	800,658	831,622	858,499	884,254	910,369	937,686
Act. Occ./ Outside Area	249,789	257,782	265,515	272,154	277,596	283,149
Total Activity Occasions	1,050,446	1,089,404	1,124,014	1,156,408	1,187,965	1,220,835
3. Fishing[4]						
No. of Activity Occasions	3,000	3,000	3,000	3,000	3,000	3,000
4. Canoeing[4]						
No. of Activity Occasions	400	415	429	442	455	468

[1]Study/Market Area of Proposed Park defined as Pulaski and Saline Counties, same as in 1979 Fourche Bayou Basin Report.

[2]Weighted average of participation (for 18+ age group) in this recreation activity. Estimated participation by detailed age groupings are taken from SCORP data and are shown in Table 1.

[3]Estimated number of persons, age 18 and over, who participated in this activity ten or more times during the previous 12-month period.

[4]Estimates derived from independent sources for the actual Fourche Bayou Park area. These data represent actual demand estimates, as opposed to potential activity occasions, which are represented in the first two categories (walking for pleasure and wildlife observation).

1. **Walking/Hiking.** Using data from the SCORP, it was estimated that 39.6 percent of the population 18-years and over either walked or hiked at least 10 or more times during the past year. It was assumed that this activity rate would continue into the future. This percentage is a weighted average of all age groups of the study area population, 18-years and over, who participate in the activity. Multiplying this percentage by the estimated population 18-years old and over provided an estimate of potential users of walking/hiking trails in the study area, who engaged in the activity 10 or more times during the year. Expanding these estimates by a factor of 10 yielded the total number of estimated activity occasions (or demand) for this recreation pursuit by projected time period in the study area.

   The existing and future projected population totals of Faulkner and Lonoke counties were used to estimate activity occasions from outside the study or market area (Pulaski and Saline counties). Faulkner and Lonoke counties are part of the Little Rock Metropolitan Statistical Area (MSA) and their combined population was reported by the 2000 Census at 138,842, or just below 25 percent of the MSA total. This population base was projected through the period of analysis using the same growth factors as shown in Table 2, and thus were used as a proxy for estimating activity occasions that would originate from outside the Pulaski/Saline county study area.

2. **Wildlife Observation.** It was estimated that 23.4 percent of the population 18-years and over in the study area participates in wildlife observation and nature viewing at least 10 or more times during the year (SCORP). It was assumed that this activity rate would continue into the future. This percentage is a weighted average of all age groups of the study area population, 18-years and over, who participated in this activity. This percentage times the estimated population 18-years and over provided an estimate of the more active potential users engaging in this activity. Again, expanding these estimates by a factor of 10 yielded the total number of estimated activity occasions (or demand) for this recreation pursuit in the study area, by projected time period. The number of activity occasions by individuals and groups outside the two-county market areas was estimated using the same method that was used in the walking/hiking activity.

3. **Fishing.** Estimated fishing activity occasions were confined to estimates of fishing activity in the area's city parks. The estimated number of fishing occasions (or demand) was based on a recent study of anglers conducted by the University of Arkansas at Pine Bluff (see attachment). This study provided considerable information on fishing numbers at parks in Little Rock. The estimates were derived by using total hours fished per month and assuming that two hours constituted an activity occasion. Based on the size of fishing ponds, an average number of activity occasions per acre of water area was derived. This factor was then multiplied by an estimate of water surface area to be made available for fishing in the proposed Fourche Bayou Park to arrive at an estimated number of fishing activity occasions the facilities would provide. It was assumed

that the activity rate used would continue unchanged for the base year and projected years.

4. **Canoeing.** The estimated number of canoeing activity occasions was derived using information provided by the Canoe Club of Arkansas. They expressed considerable interest in this aspect of the proposed facilities and indicated they would probably sponsor two or three organized group activities annually that would use the facilities. Also, it was their opinion that there would be a significant number of individual floats by their members. This echoed the sentiments on likely Fourche Bayou usage by the Arkansas Nature Conservancy. Additional data obtained from the Arkansas State Parks Department on usage of a similar canoe water trail at Pinnacle Mountain State Park were incorporated in the estimates. Based on this information, a total of 400 canoeing activity occasions was estimated for the base year. It can be expected that the number of activity occasions for this element will increase as more individuals and groups become aware of the opportunities afforded by the project. For consistency with other activities, the canoeing totals were projected to increase according to the rate of population growth (see Table 4).

6.0 VISITATION/USER ESTIMATES

The estimated utilization of the facilities (activity occasions) shown in Table 4 are based on the potential needs (demand) figures that were developed from the SCORP survey and population data for the study area (Table 3). In the original report, it was estimated that annual visitation would be about 50,000 persons, but they were not allocated by activity. As shown in Table 4, the current estimate for the base year is 43,200, a figure that increases to about 44,900 in 2015, and 46,300, 47,600, 48,900, and 50,200 in succeeding decades.

According to the SCORP 1995 report, the demand for and use of urban trail facilities in Arkansas far exceeds the supply. The report notes that urban trails should be provided for both the general population and people with disabilities. In a 1994 survey of state trail administrators, it was reported that trail use is on the rise, particularly in suburban areas. Given the uniqueness of the park's wetland area, easy road and trail access to some of its most remote sites, and the appeal of its nature and wildlife habitat for wildlife viewing, and other special recreational experiences, it was assumed it would receive considerable use from the unsatisfied recreation demand of the study area.

In this report, users of the walking and hiking activity were estimated separately from the wildlife observation experience. For many individuals, this distinction may not be completely valid. It was done mainly for two reasons. First, there will be many users who are interested mainly in the exercise and enjoyment of the walking experience. Secondly, there is likely to be a different value placed on the walking/hiking experience as opposed to those who visit the area primarily for the observation of wildlife, an activity which has greater educational value.

Table 4. Estimated Recreational Activity Occasions, Proposed Fourche Bottoms Park, Base Year, and Projected, 2005-2055

Activity	Base Year 2005	Future Years 2015	2025	2035	2045	2055
1. Walking / Hiking						
Potential No. Occasions[1]	1,777,678	1,843,607	1,902,177	1,956,997	2,010,402	2,066,028
Estimated No. Actual Visits:						
Individuals & Families	17,800	18,500	19,100	19,700	20,200	20,800
Schools & Other Groups[2]	---	---	---	---	---	---
Total Activity Occasions	17,800	18,500	19,100	19,700	20,200	20,800
2. Wildlife Observation						
Potential No. Occasions[1]	1,050,446	1,089,404	1,124,014	1,156,408	1,187,965	1,220,835
Estimated No. Actual Visits:						
Individuals & Families	21,000	21,800	22,500	23,100	23,800	24,400
Schools & Other Groups[3]	1,000	1,100	1,100	1,100	1,100	1,100
Total Activity Occasions	22,000	22,900	23,600	24,200	24,900	25,500
3. Fishing						
Estimated Activity Occasions	3,000	3000	3000	3000	3000	3000
4. Canoeing						
Estimated Activity Occasions	400	415	429	442	455	468
Total All Activity Occasions	43,200	44,815	46,129	47,342	48,555	49,768

[1]Based on estimates from Table 3. See text for explanation of how activity occasions were derived.
[2]Schools and other groups were not included in this activity, since their purpose is mainly educational. Pinnacle Mountain State Park and the Little Rock School District were contacted to obtain information regarding field trips by school groups to park facilities and trails. The estimates shown are based upon information obtained from these two sources.
[3]Based on 50 groups in the base year, and 55 groups in succeeding decades, at 20 persons per group.

It is believed that school groups and other organized groups would use the facilities mainly for educational purposes, while many of the individuals and families would be there mainly for enjoyment and relaxation. The number of users in the walking/hiking category was estimated by a procedure similar to that used in the original 1979 study. That is, only a certain percentage of the overall needs or demand would be expected to utilize the trails.

In the original study, the percentage used in this calculation was about one percent of the total activity occasion demand, giving an estimate of about 16,000 activity occasions annually during the base year. This is believed to be a conservative estimate, given the assumptions used in the original study, which were: A nature appreciation area of 20 acres, 0.75 miles of foot trails, information signs, a restroom, access road, and parking area. The current proposal is adjusted to provide handicap accessible trails that include wildlife observation platforms.

The plan includes approximately three miles of foot trails (to include the authorized trails not included with the flood control channel), additional acreage, and it more fully incorporates the nature appreciation facilities into the area of the land acquisition.

Wildlife observation is likely to be the most popular activity within the proposed park for several reasons. First, the diverse nature of the resources found within the area will provide excellent nature and wildlife viewing opportunities. For that reason, the number of repeat visitations could be expected to be much greater than those who visit mainly to hike the trails for exercise and relaxation. Second, the SCORP data suggest that this activity is becoming much more popular with outdoor recreationists, and in fact, now ranks above camping and pleasure boating among outdoor recreationists in Arkansas (see SCORP 1995, page 23).

For these reasons, the estimated participation rate for the wildlife observation category was estimated to be about two percent of the total potential activity occasions. Using this percentage gives estimated totals of 22,000 user visits in the base year, with future increases to 22,900 in 2015, 23,600 in 2025, 24,200 in 2035, 24,900 in 2045, and 25,500 in the year 2055. According to the 1979 report, "the facility will conservatively experience an annual visitation in excess of 50,000." As shown in Table 4, total visitation in this analysis is estimated at 43,200 during the base year (2005), and 49,768 at the end of the period of analysis (2055).

The area containing the proposed recreation and nature appreciation facilities is known as the Fourche Creek Bottoms. As noted in other sections of the report it functions as a ponding or holding area, which absorbs the peak discharge during floods on Fourche Creek. This dampens the rate at which water is discharged into lower Fourche Creek, thus preventing flooding in the lower reaches.

Occasional flooding of the Bottoms area will impact recreation use to a limited extent. The access road, parking lot, observation platforms and trailheads are all at an elevation of 240 feet or more. Much of the three miles of hiking trail is above 240 feet as well. Past records show the water surface elevation in the Bottoms exceeds 240 feet in elevation for 53 days (15.5 percent of the time) during the course of an average year. Most of this is during late winter and early spring. For the months of May-August, a time of peak usage, only 10 days (eight percent) are likely to be lost to flooding. See Table 1, Engineering Appendix.

7.0 RECREATION BENEFITS

The benefits of the proposed recreation project were estimated by applying unit day values (UDV) obtained from Economic Guidance Memorandum 04-03, Unit Day Values for Recreation, Fiscal Year 2004, to estimated user days shown in Table 4. Using criteria enumerated in Table 1 of the Memorandum 04-03, the recreation facilities were evaluated and assigned a point value of 49. A value of 49 converts to a General Recreation unit-day value of $6.31, which was used to derive annual recreation benefits. Table 5 describes the point allocation process and gives a brief explanation of the way in which points were assigned to each of the criteria listed in EGM 04-03.

Table 5. Point Assignment for Value of a Day of Recreation

Criteria	Number of Points	Explanation
Recreation Experience	13	Facility includes several general activities, with at least one of high quality value.
Availability of Opportunity	8	There are no more than one or two similar activities within 1 hour of travel time.
Carrying Capacity	8	The facilities are adequate for estimated usage without deterioration of the experience.
Accessibility	10	Site has fair access, good roads to site, and good roads within site, with good access to activities.
Environmental and Esthetic	10	Site has above average esthetic quality; limiting factors can be reasonable corrected.
Total Points	49	(A point total of 49 results in a UDV of $6.31 using Conversion of Points to Dollar Values Table in EGM 04-03.)

Source: Economic Guidance Memorandum 04-03.

The UDV methodology requires that in order for a project to be justified there must be unmet or excess demand that is not being met by existing facilities. All trails in the area get heavy use. Those at Pinnacle Mountain State Park are being used almost to the point of abuse. (Personal communication, Ian Hope, State Trails Coordinator/Project Officer, Arkansas Department of Parks and Tourism Recreation, 4/28/04) A recent survey found that there are a total of 78.6 miles of trails in the cities of Little Rock and North Little Rock and at Pinnacle Mountain State Park. (Personal communication, Julia Smethurst, CESWL, 3/17/2004) The Arkansas Department of Parks and Tourism does not currently use the capacity method in planning for new trails. (Hope, 4/28/04) However, usage projections used in calculating recreation benefits in the original Fourche Bayou study used the following formula and assumptions from the 1974 Arkansas SCORP.

Units X users/unit X daily turnover X length of season = activity occasions per year/unit

Within the study area today this would result in a capacity of 1,509,120 activity days.

78.6 (miles) X 20 (hikers/mile) X 4 (T.O. rate) X 240 (days/year) = 1,509,120 user days

The very conservative estimate of 1,777,678 potential trail walking or hiking occasions (tables 3 and 4) exceeds the existing capacity by 18 percent. With the Fourche Bayou trail added, demand exceeds capacity by 13 percent. This demonstrated excess demand meets the COE requirements for using the capacity method to estimate recreation benefits accruing to the project. Recreation benefits for the base year and future years are shown in Table 6. From those values, estimated average annual equivalent benefits were derived using the current Federal discount rate of 5.375 percent. Base year benefits were estimated at just over $272,000, increasing to $314,000 during the 50-year period of analysis.

Table 6. Estimated Recreation Benefits, Base Year (2005), and Projected 2015 to 2055, October 2004

Years	Activity Occasions	Unit-Day Value	Total Value
2005 (Base)	43,200	$6.31	$272,592
2015	44,815	$6.31	282,783
2025	46,129	$6.31	291,074
2035	47,342	$6.31	298,728
2045	48,555	$6.31	306,382
2055	49,768	$6.31	314,036
Average Annual Benefits[1]			$286,064

[1]Based on a period of analysis of 50 years and a discount rate of 5.375 percent.

8.0 ECONOMIC ANALYSIS

An analysis of project costs and benefits is shown in Table 7. Total investment cost, including interest during construction, is estimated to be $1,953,500. Average annual costs, including interest, amortization, and annual operation and maintenance costs were estimated at $162,700, compared with average annual benefits of $286,100, giving a benefit-to-cost ratio of 1.8.

Section 902 of WRDA 1986 requires that the cost of all post-authorization work added to a project not exceed certain limits. Additional permissions/authorizations are required if the cost of proposed new elements exceed the calculated cap. The cap is essentially the amount of the originally authorized total project cost indexed to a current dollar value plus a sum equal to 20 percent of the original total project cost (but not indexed forward). The original total project cost was calculated to be $33,400,000 in October 1985 dollars. The *Civil Works Construction Cost Index System (CWCCIS)* was used to calculate an index (1.67) to bring the early year dollars to October 2005 levels. This amount was added with 20 percent of the original cost to calculate the cap of $62,458,000 (($33,400,000 * 1.67) + ($33,400,000 * 0.2)).

Table 7. Economic Analysis, Fourche Bayou Basin, Nature Appreciation Area, Little Rock, Arkansas (Updated May 2005)

Item	Amount
Period of Analysis (Years)	50
Construction Period	1
Interest Rate (Percent)	5.375%
Estimated Construction Cost	$1,904,000
Access Road Land (1.5 acres)	3,000
Interest During Construction	46,500
Total Investment Cost	$1,953,500
Annual Costs:	
Interest	$105,000
Amortization	8,300
Operation & Maintenance	49,400
Total Annual Costs	$162,700
Average Annual Benefits:	
Recreation Benefits	$286,100
Benefit-to-Cost Ratio	1.8
Net Benefits	$123,400

NOTE: Construction and O&M costs were provided by CESWL, Cost Engineering and Support Section dated June 2004.

Little Rock District has calculated the cost of the constructed flood control portion of the project to be $30,728,800. Estimates (including escalation) for the remaining additional elements are -- recreation facilities -- $2,015,400; environmental restoration acquisition -- $1,844,600 (to be acquired) + $805,200 (value of acquired land); and, limited reevaluation report -- $520,000. The sum of these estimates is $35,914,000 or 58 percent of the calculated cap.

9.0 DATA SOURCES AND INFORMATION CONTACTS

A Pilot Urban and Community Fishing Program for Central and Southeast Arkansas (unpublished report), Aquaculture and Fisheries Center, University of Arkansas at Pine Bluff.

Arkansas Department of Parks and Tourism: Ian Hope.

Arkansas Game and Fish Commission.

Arkansas Game and Fish Commission, Benton, Arkansas.

Arkansas Nature Conservancy.

Arkansas Natural Heritage Commission.

Arkansas State Parks, Office of Outdoor Recreation Grants.

Audubon Society, The. Little Rock, Arkansas.

Canoe Arkansas, Little Rock, Arkansas.

City of Little Rock, Parks and Recreation.

Jackson, Dr. John R. Aquaculture and Fisheries Center, University of Arkansas at Pine Bluff.

Joe Hogan Fish Hatchery. Arkansas Game and Fish Commission, Lonoke, Arkansas.

Pinnacle Mountain State Park, Little Rock, Arkansas.

Research Division, Arkansas Department of Parks and Tourism.

U. S. Army Corps of Engineers. *Economic Guidance Memorandum 43-03, Unit Day Values for Recreation, Fiscal Year 2004*. March 1, 2004.

U.S. Army Corps of Engineers, EM 1110-2-1304, Civil Works Construction Cost Index System (CWCCIS), 31 March 2000, (tables revised as of 1 October 2004).

U.S. Army Corps of Engineers, ER 1105-2-100, Planning and Guidance Notebook, April 2000, Appendix G, Section 15.

U. S. Army Corps of Engineers, Little Rock, Arkansas: Julia Smethurst.

U. S. Army Corps of Engineers, Little Rock District, Little Rock, Arkansas. *Fourche Bayou Basin Feasibility Report, Volume III, Appendix E, Recreation and Natural Resources, Vicinity of Little Rock, Arkansas.* October 1979.

U. S. Census Bureau. *Statistical Abstract of the United States: 2001.* November 2001.

U.S. Fish and Wildlife Service.

University of Arkansas at Little Rock, Division of Demographic Research.

Field Trip Coordinator, Little Rock School District.

REAL ESTATE PLAN

Real Estate Plan
Fourche Bayou Basin, Arkansas

Prepared for
U.S. Army Corps of Engineers
Southwestern Division
Little Rock District

As of
21 September 2004

Prepared by
Ronald Bridges
Real Estate Division

Real Estate Plan
Fourche Bayou Basin, Arkansas

Table of Contents

Attachments:

Exhibit A	Project Area Map
Exhibit B	Assessment of Local Sponsor's Capability

Prepared By: Ronald Bridges
Real Estate Division

Date: 21 September 2004

Real Estate Plan

Fourche Bayou Basin, Arkansas

[1] Purpose of the Real Estate Plan

The purpose of this Real Estate Plan is to outline the real estate requirements necessary for the completion of the Fourche Bayou Basin Project Area study. The project is to preserve a large remaining tract of bottomland conifers and hardwoods in the Fourche Bayou Basin and establish nature appreciation areas within the boundary of this project. A project area map, attached as Exhibit A, shows the location of the project. The City of Little Rock will be the non-federal or local sponsor for this proposed project.

[2] Description of Lands, Easements and Rights-of-Way (LER's)

The proposed project will cover an aggregate area of approximately 1,750 acres. The project properties consist of commercial, manufacturing or industrial, open spaces, and wooded areas. Many of these areas are subject to some degree of flooding from Fourche Creek. A clearly defined boundary has not been established for the proposed study project. The project properties are situated in parts of Sections 14, 15, 16, 17, 18, 19, 20, 21, and 22, Township 1 North, Range 12 West and Section 13, Township 1 North, Range 13 West, all in Pulaski County, Arkansas. All of the lands are within the corporate limits of the City of Little Rock, Arkansas.

A map depicting the proposed project area is shown in Exhibit A.

[3] LER owned by Sponsor

The non-federal sponsor has acquired approximately 1,342 acres of the proposed project area over more than a 35-year period. There are approximately 408 acres of non-contiguous land that are to be acquired to fulfill the total 1,750-acre area for this proposed project.

[4] Non-Standard Estates

There are no non-standard estates for this proposed project. Fee simple is the estate for the acquisition of the land for the project that is yet to be acquired.

Fee Simple

The fee simple title to (land described in Schedule A) 1/ (Tract Nos. _____, _____, and _____), subject, however, to existing easements for public roads and highways, public utilities, railroad and pipelines.

[5] Any existing federal project that lies fully or partially within the LER required for the project.

None of the lands in this project site are part of a previously authorized federal project.

[6] Any federally owned land

None of the lands are federally owned that lie within this proposed site.

[7] LER that lies below the ordinary high water mark

None of the Land, Easement and Rights-of-Way (LER) for the proposed project lies under the ordinary high-water mark.

[8] Map depicting project area

The map depicting the location of the proposed project is shown in Exhibit A. There are no known or potential Hazardous, Toxic, and Radiological Waste (HTRW) affecting the lands for the proposed project. There are no utilities or facilities to be relocated due to the construction of this project.

[9] Any possible flooding

No induced flooding will occur as a result of the construction of the proposed project.

[10] Real Estate Cost Estimate

The real estate cost estimate is based upon value estimate memorandum dated August 16, 1996, a gross appraisal dated September 24, 2003 and another value estimate memorandum dated December 16, 2003. Ronald Bridges, Review Appraiser, U.S. Army Corps of Engineers, Little Rock District prepared the reports.

Approximately 1,342.0 acres of the 1,750-acre project had been acquired by the non-federal sponsor and were valued at the time of purchase over a 35-year period of time. The estimated value for this acreage is $805,200. $1,015,200 is the estimated value of the yet to be acquired 408 acres for the Fourche project.

$2,750,000 (rounded up from $2,749,170) is the indicated baseline real estate cost estimate for the Fourche Bayou Basin project.

BASELINE COST ESTIMATE FOR REAL ESTATE
FOURCHE BAYOU BASIN, ARKANSAS

01	Lands & Damages		
01.23	Construction Contract Documents		
01.23.03	Real Estate Analysis Documents		
01.23.03.01	Real Estate Planning Documents		
	Planning by Local Sponsor	$2,400	20% = $480
	Corps of Engineers Real Estate Plan	$8,000	20% = $1,600
	Review of Local Sponsor	$1,600	20% = $320
01.23.03.02	Real Estate Acquisition Documents		
	Acquisitions by Local Sponsor (includes estimated survey cost	$390,120	25% = $97,530
	Review of Local Sponsor	$20,800	20% = $4,160
01.23.03.03	Real Estate Condemnation Documents		
	Condemnations by Local Sponsor	0	0
	Review of Local Sponsor	0	0
01.23.03.05	Real Estate Appraisal Documents		
	Appraisals by Local Sponsor	$21,000	20% = $4,200
	Review of Local Sponsor	$4,000	20% = $800
01.23.03.06	Real Estate PL 91-646 Asst. Documents		
	PL 91-646 Asst. by Local Sponsor	0	0
	Review of Local Sponsor	0	0
01.23.03.15	Real Estate Payment Documents		
	Payments by Local Sponsor (Land)	$1,820,400	20% = $364,080
	Payments by Local Sponsor (Damages)	0	0
	Payments by Local Sponsor (PL 91-646 Asst.)	0	0
	Review of Local Sponsor	0	0
01.23.03.17	Real Estate LERRD Crediting Documents		
	Preparation by Local Sponsor	$4,000	20% = $800
	Review of Local Sponsor	$2,400	20% = $480
	TOTAL ADMIN & PAYMENTS	$2,274,720	
	TOTAL CONTINGENCY		$474,450
	ESTIMATED TOTAL		(R) $2,749,170 **$2,750,000**

[11] Relocation Assistance Benefits

No relocation benefits will be involved with this project.

[12] Mineral Activity

There is no ongoing or anticipated mineral activity within the project area.

[13] Assessment of Non-Federal Sponsor

See Assessment of Local Sponsor's Capability (Exhibit B). The non-federal sponsor has been advised of the requirement for documenting expenses for crediting purposes.

[14] Application of Zoning Ordinances

The subject properties for the proposed project are zoned as commercial, industrial, manufacturing, single family, multifamily, and open space.

[15] Land Acquisition Milestones

The non-federal sponsor is already in possession of approximately 77% or 1,342 acres of the lands required for this proposed project. Barring condemnation, it is considered that the remaining 408 acres of real estate for this project can be acquired within a twelve-month period.

[16] Facility or Utility Relocations

There are no anticipated facility or utility relocations associated with this project.

[17] Known Contaminants

There are no known or suspected contaminated sites within the proposed project area.

[18] Support or opposition to the project

This Project has received considerable support from the local community due to the fact that the wildfowl habitat will be restored. No opposition by any individual or group has been expressed regarding the proposed project.

[19] Statement that non-federal sponsor has been notified in writing about the risks associated with acquiring land.

The non-federal has been notified regarding the risks associated with acquiring the land for this proposed project.

[20] Other Real Estate Issues

There are no other issues that need be considered or addressed relevant to this proposed project.

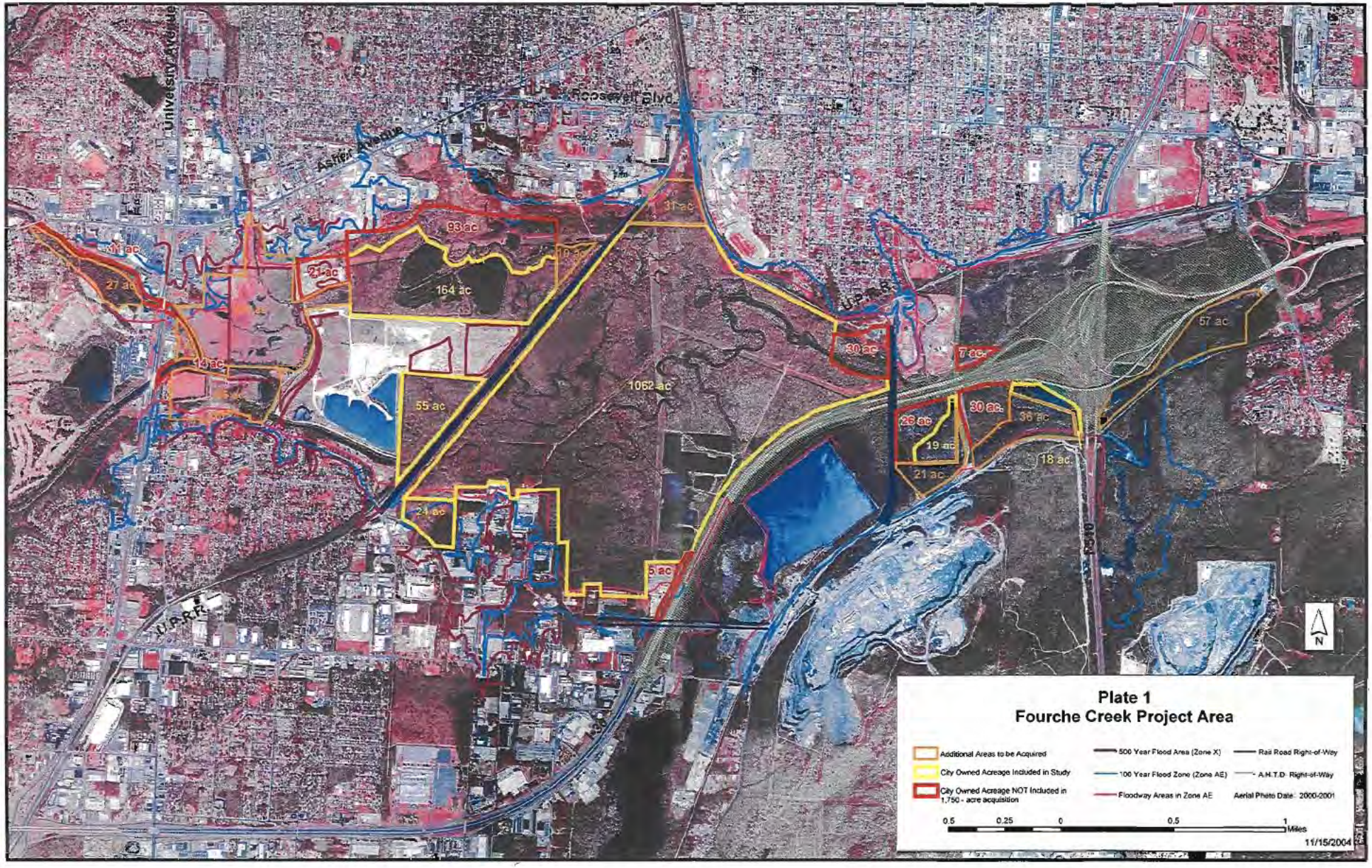
University Avenue
Roosevelt Blvd.
Ashley Avenue
U.P.R.R.
93 ac
31 ac
21 ac
164 ac
27 ac
14 ac
55 ac
1062 ac
30 ac
7 ac
57 ac
29 ac
30 ac
36 ac
19 ac
21 ac
18 ac
24 ac
5 ac
N
Plate 1
Fourche Creek Project Area
Additional Areas to be Acquired
City Owned Acreage Included in Study
City Owned Acreage NOT Included in 1,750 - acre acquisition
500 Year Flood Area (Zone X)
100 Year Flood Zone (Zone AE)
Floodway Areas in Zone AE
Rail Road Right-of-Way
A.H.T.D. Right-of-Way
Aerial Photo Date: 2000-2001
0.5 0.25 0 0.5 1 Miles
11/15/2004

Exhibit A

FOURCHE BAYOU BASIN, ARKANSAS
(CITY OF LITTLE ROCK, ARKANSAS – NON-SPONSOR)

ASSESSMENT OF NON-FEDERAL SPONSOR'S
REAL ESTATE ACQUISITION CAPABILITY

1. LEGAL AUTHORITY:

(a) Does the sponsor have legal authority to acquire and hold title to real property for project purposes? YES

(b) Does the sponsor have the power of eminent domain for this project? YES

(c) Does the sponsor have "quick-take" authority for this project? NO

(d) Are any of the lands/interests in land required for the project located outside of the sponsor's political boundary? NO

(e) Any of the lands/interests in land required for the project owned by an entity whose property the sponsor cannot condemn? NO.

2. HUMAN RESOURCE REQUIREMENTS:

(a) Will the sponsor's in-house staff require training to become familiar with the real estate requirements of Federal projects including P.L. 91-646, as amended? NO

(b) If the answer to 2.a is "yes", has a reasonable plan been developed to provide such training? N/A

(c) Dose the sponsor's in-house staff have sufficient real estate acquisition experience to meet its responsibilities for the project? YES

(d) Is the sponsor's projected in-house staffing level sufficient considering its other workload, if any, and the project schedule? YES

(e) Can the sponsor obtain contractor support, if required, in a timely fashion? YES

(f) Will the sponsor likely request USACE assistance in acquiring real estate? NO (If "yes", provide description).

Exhibit B

3. OTHER PROJECT VARIABLES:

(a) Will the sponsor's staff be located within reasonable proximity to the project site? YES

(b) Has the sponsor approved the project/real estate schedule milestones? YES

4. OVERALL ASSESSMENT:

(a) Has the sponsor performed satisfactorily on other USACE projects? YES

(b) With regard to this project, the sponsor is anticipated to be: X. Highly capable; _____Fully capable; _____Moderately capable; _____Marginally capable; _____Insufficiently capable. (If sponsor is believed to be ?Insufficiently capable?, provide explanation).

5. COORDINATION:

(a) Has this assessment been coordinated with the sponsor? YES

(b) Does the sponsor concur with this assessment? YES (If "No", provide explanation).

Prepared by:

_____(Signature)
JENNIFER DALTON
Attorney Advisor

Reviewed and Approved by:

_____(Signature)
MARK W. MOORE
Chief, Real Estate Division