

APPENDIX A

Air Quality Calculations

Estimated Construction Equipment Needed

Equipment Type	#	Hours Per Day	Emission Factors (lb/hr ^a)					Daily Emissions (lb/day)				
			CO	VOC	NOx	SOx	PM10	CO	VOC	NOx	SOx	PM10
Backhoe	1	6	0.55	0.11	0.81	0.07	0.04	3.31	0.66	4.85	0.44	0.22
Crane	1	6	0.75	0.25	1.92	0.17	0.13	4.50	1.50	11.51	1.00	0.75
Weld Machine	2	6	0.17	0.03	0.28	0.03	0.02	2.08	0.38	3.40	0.38	0.19
Heavy Duty Trucks ^b	2	6						1.49	0.16	1.91	0.02	0.23
Total Emissions								11.38	2.70	21.67	1.84	1.39

^aEmission factors from SCAQMD CEQA Air Quality Handbook, Table A9-8-B.

Equipment horsepower rating based on CEQA Table A9-8-C and multiplied by load factor in CEQA Table A9-8-C.

^bHeavy Duty Truck emissions based on ARB's EMFAC2002 (model years 1965-2003) state-wide annual simple averages
Conservative assessment based on trucks driving around site continuously for 6 hours/day at 5 mph (30 miles/day)

Vehicle Emission Calculations on West Memphis Site

	Trucks/Day	Total Trucks/Month	Trains/wk	Total Trains/Month
September	83.33	2499.9	0.5	2
October	204.74	6346.94	3.38	13.52
November	138.89	4166.7	2.75	11
December	55.56	1722.36	1.88	7.52
January	37.04	1148.24	1.13	4.52
February	3.7	103.6	0.06	0.24
March	3.7	114.7	0	
April	3.7	111	0	
May	3.7	114.7	0	
June	3.7	111	0	
July	0		0	
August	0		0	

Train Idle time (hr/yr)	trains/yr	Truck Idle time (hr/yr)*	trucks/yr
24971.52	38.8	16439.14	16439.14

Train Pollutant Emissions at Idle(lbs/yr)	Truck Pollutant Emissions at Idle (lbs/yr)	Construction Emissions (lbs/yr)	Total emissions (lbs/yr)	tons/yr	
VOC	2008.29	47.69	809.05	2865.04	1.43
NOx	54391.23	1372.89	6501.90	62266.02	31.13
PM	1338.86	28.96	417.26	1785.18	0.89
SOx	711.27	N/A	551.59	1262.86	0.63
CO	5355.44	187.37	3414.77	8957.58	4.48

Estimated Pollutant Emission levels & NAAQS Limits				
	ug/m ³ **	ppb***	NAAQS Limit	sample time period
VOC	2.02	1.68	NA	
NOx	43.92	36.60	53 ppb	annual sample
PM	1.26	1.05	150 ug/m ³	24 hr sample
SOx	0.89	0.74	500 ppb	3 hr sample
CO	6.32	5.27	9000 ppb	8 hr sample

** : Needs the entire volume of air over the site in a given year

*** : includes ** and also assumes a cubic meter of air weighs 1.2 kg using ideal gas law

Calculation Factors and Assumptions

Average Emission Factors for Single unit Diesel Trucks in 2010 (gram/mile)

VOC	CO	NOx	PM10
0.28	1.1	8.06	0.17

Exhaust Emission Standards - (source: ECS Tosco Ethanol Unloading Rack Calculations)

VOC (g/hp	NOx (g/hp-hr)	PM (g/hp-hr)	CO (g/hp-hr)	SOx (g/hp-hr)
0.48	13	0.32	1.28	0.17

Conversion Factor - Switching Locomotives (hp-hr/gal) - (source:EPA-420-F-09-025)

15.2

Train Fuel Consumption at Idle (gal/hr) - (source:EMB Locomotive Idle Fuel Consumption Table, hotstart.com)

5

Truck Fuel Consumption at Idle(gal/hr) - (source: "Estimation of Fuel use by Idling Commercial

0.749

Average MPG for Class 8 Diesel Trucks - (source: same as truck fuel consumption)
6.275 miles/gallon

Conversion Factor(hp-hr/mile) - Heavy Duty Diesel Vehicles -

2.613054

* Truck non-idle time on site assumed negligible relative to idle time

Annual averages for pollutants do not exceed the limits posted by NAAQS. However, the limits are predicated on certain test methods that have time limits at 1,3,8,and 24 hour levels. An annual average is a poor estimate of whether or not a limit of a 1 hour test will be exceeded. There simply was no data of this type available. I could go through the calculations for each month to see if the emissions averaged over a given month even get close to exceeding the limits, but I do not feel that that will be necessary. Since the levels emitted are already so low. Further more it would still be too imprecise a measurement to compare the numbers realistically.

Background Pollutant Level Calculations for West Memphis

	Monthly Averages			
	NOx	SOx	CO	PM*
February	17.65	3.18	360	20.7
March	9.55	3.12	400	20.3
April	10.21	3.11	310	18.4
May	11.3	3.33	280	
June	10.12	3.04	290	
July	8.31	3.01	270	
August	9.34	3.03	280	
September	9.51	3.03	330	
October	13.6	3.02	350	
November	21.02	3	430	
December	17.46	3.02	370	
January	NA	3.01	NA	
	12.55181818	3.075	333.6364	19.8

all ug/m³ 19.8

* PM was given as ug/m³ yearly averages

Data sources:

NOx: Talbert, Miriam <MIRIAM@adeq.state.ar.us>

PM,SOx,CO: Fritchie, Denis <Denis.Fritchie@shelbycountyttn.gov>

1.2 kg/m³ air

ug/m ³	lbs/yr	
4.00364E-07	1.94077E-09	nox
3.69E-09	1.78873E-11	sox
1.50622E-08	7.30141E-11	co
19.8	0.095980736	PM10

average wind speed for West Memphis Arkansas
 12.85 mph averaged value
 5.744464 m/s
 0.174081 s/m

(source:arkansasenergy.org/media/256714/arkansas_final_report_mesomap.pdf)

so, given a meter square plane. every 0.174081 seconds a meter of air will pass through it giving a cubic meter of air. Therefore if we multiply by a years time we can get an estimation of the flow rate of air at the site. which will allow us to relate our background levels with our emissions levels and determine if we are infact under the limit.

2,195,922.89 m/yr

NAAQS Background Limit levels

CO	8-hour	9	ppm
	1-hour	35	ppm
NO2	1-hour	100	ppb
	annual	53	ppb
PM10	24-hour	150	ug/m ³
SO2	1-hour	75	ppb
	3-hour	500	ppb

Site area was estimated under supervision of Jim Orr

1 mi wide
 2.4375 mi long
 2.634654864 mi diagonal
 air volume trough widest side/yr
 9.31086E+11 cubic meters/yr
 air volume through the shortest side/yr
 3.534E+11 cubic meters/yr
 average air volume
 6.42243E+11 cubic meters/yr

In order to be able to convert the lbs/yr of emissions at the site an estimate was needed of the volume of air the site experiences in a year. I decided to use an average of the longest and shortest sides of a rectangle drawn around the site area by a supervisor. The longest side being the diagonal of the rectangle. The estimation also assumed a 100 meter tall air column that "air on the site" will pass through. I assumed that ground level emissions would not affect the air column higher than this level.

APPENDIX B

Noise and Vibration Discipline Report

Appendix B. Noise and Vibration Criteria and Analyses

The noise and vibration limits chosen for construction and operation of the **Proposed Action Alternative** satisfy the federal guidelines of the FTA¹ for train and rail facility operations. Although this project is being supported by the FRA and FRA has its own noise and vibration assessment guidelines², those guidelines are relevant only to high-speed trains (defined as traveling at speeds greater than 90 miles per hour). While the trains in this project travel at speeds averaging 10 miles per hour, the FRA guidelines state that the FTA guidelines should be used for the analysis of conventional train operations traveling at speeds less than 90 miles per hour.

B.1 Methods for Evaluation of Impacts

The analysis of noise and vibration impacts used design information for the proposed alignment of the **Proposed Action Alternative** and regional rail and traffic data. The FTA Guidance Manual provides guidelines for establishing the extent of the study area to be used for the noise and vibration impact analyses. It also provides guidance for identifying noise- and vibration-sensitive locations where increased annoyance can occur from train pass-bys. The methodology followed by the noise and vibration analysts is described below.

Noise and Vibration Sensitive Receptors

The noise- and vibration-sensitive receptors for the analysis of all alternatives considered within this environmental assessment, including the **No Action Alternative** and the **Proposed Action Alternative**, include relevant receptors that are defined by FTA criteria. The number of receptors potentially impacted have been determined using FTA's general assessment guidelines, including comparing existing with future noise levels and rating impacts. The vibration impact assessment uses the FTA general assessment procedure of determining if absolute vibration limits will exceed specified thresholds at vibration-sensitive receptors.

Operations Noise

The descriptors and criteria for assessing noise impacts vary according to land use categories adjacent to the track. For land uses where people live and sleep (e.g., residential neighborhoods, hospitals, and hotels), L_{dn} is the assessment parameter. L_{dn} is the day-night average level, which is the energy-averaged sound level for a continuous 24-hour period with 10 dBA added to all levels occurring between 10 PM and 7 AM (to account for the added sensitivity to sounds during normal sleeping hours). For other land-use types where there are noise sensitive uses (e.g., outdoor concert areas, schools, and libraries), the equivalent (energy-averaged) noise level for an hour of noise sensitivity ($L_{eq[h]}$) that coincides with train activity is the assessment parameter. Table B-1 summarizes the three land use categories.

The noise impact criteria used by the FTA are ambient-based; the increase in future noise (future noise levels with the **Proposed Action Alternative** added to existing noise levels) is assessed rather than the noise caused by each passing train. The criteria specify a consideration of future project noise with

¹ FTA. *Transit Noise and Vibration Impact Assessment*. USDOT Report Number FTA-VA-90-1003-06, May 2006.

² FRA. *High-Speed Ground Transportation Noise and Vibration Impact Assessment*. USDOT Report Number DOT/FRA/ORD-12/15, September 2012.

existing levels because this analysis with an existing condition considers annoyance due to the change in the noise environment caused by the **Proposed Action Alternative**. Figure B-1 shows the FTA noise impact criteria for human annoyance. Depending on the magnitude of the cumulative noise increases, FTA categorizes impacts as (1) no impact; (2) moderate impact; or (3) severe impact. Severe impact is where a significant percentage of people would be highly annoyed by the project’s noise. Moderate impact is where the change in cumulative noise level would be noticeable to most people, but may not be sufficient to generate strong, adverse reactions.

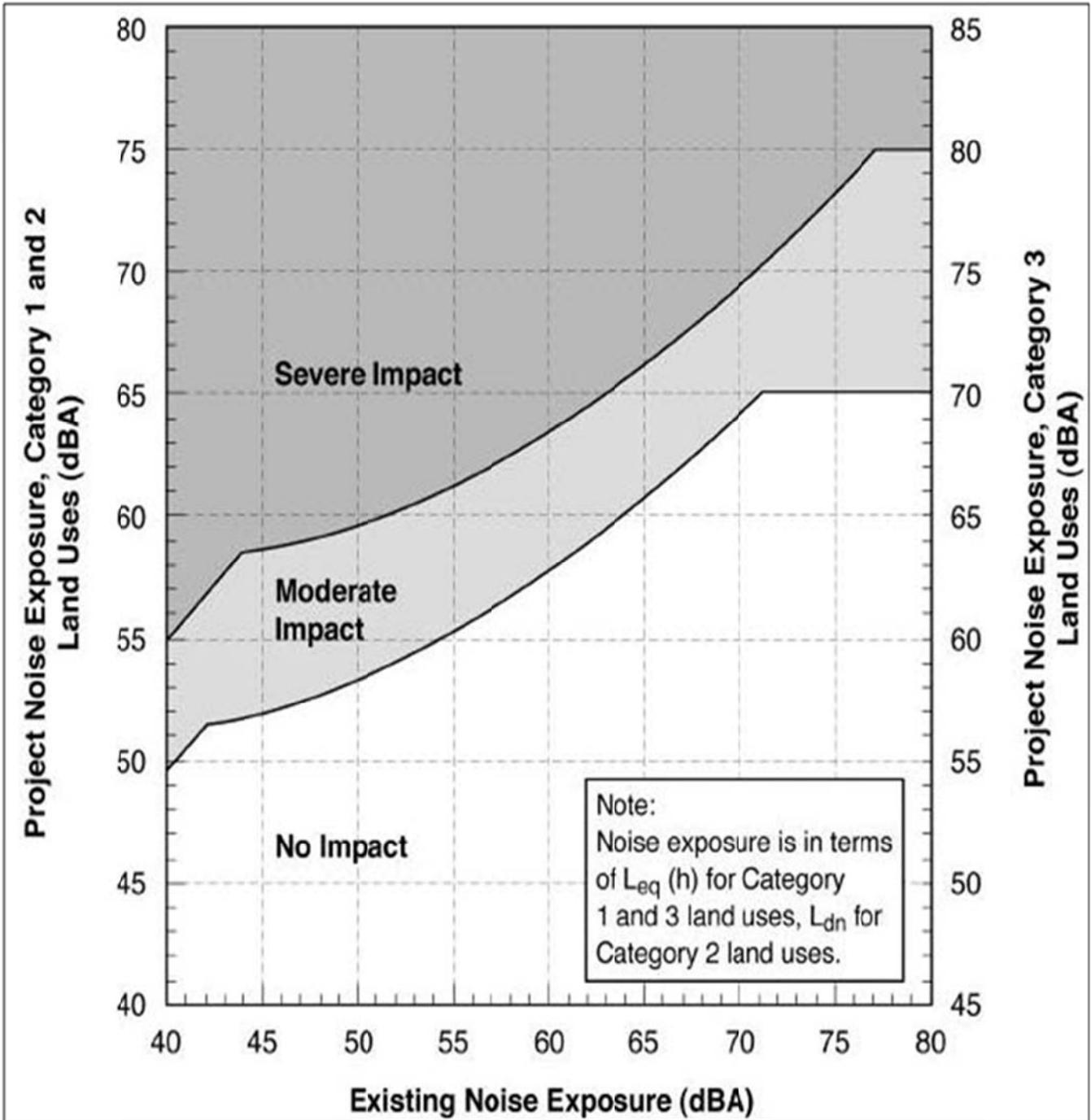
**Table B-1
FTA Noise-Sensitive Land Uses**

Land Use Category	Noise Metric, dBA	Land Use Category
1	Outdoor $L_{eq[h]}$ ^(a)	Tracts of land where quiet is an essential element in their intended purpose. This category includes lands set aside for serenity and quiet, such as outdoor amphitheaters, concert pavilions, and national historic landmarks with significant outdoor use.
2	Outdoor L_{dn}	Residences and buildings where people normally sleep. This category includes homes and hospitals, where nighttime sensitivity to noise is of utmost importance.
3	Outdoor $L_{eq[h]}$ ^(a)	Institutional land uses with primarily daytime and evening use. This category includes schools, libraries, and churches, where it is important to avoid interference with such activities as speech, meditation, and concentration. Buildings with interior spaces where quiet is important, such as medical offices, conference rooms, recording studios, and concert halls fall into this category, as well as places for meditation or study associated with cemeteries, monuments, and museums. Certain historical sites, parks, and recreational facilities are also included.

Source: FTA 2006

(a) L_{eq} for the noisiest hour of train-related activity during hours of noise sensitivity.

Figure B-1
FTA Noise Impact Criteria



Source: FTA 2006

The following assumptions and methodologies were used to establish existing train noise levels at the alignment of the **Proposed Action Alternative** for consideration of all alternatives, including the **No Action Alternative**:

- **Freight Train Noise** – Calculations based on the FTA Guidance Manual for train operations including warning horns, and the following assumptions, with the freight operation condition based on current year (2013) operations:
 - Operations – 1 through-freight train per day, occurring during daytime hours.
 - Speeds – 10 mph average.
 - Length – 1 locomotive per train; length of each locomotive at 89 feet; length of each freight car at 79 feet; total of 10 cars per train.
 - Horns – 220 feet from each crossing affected by warning horns.
- **Freight Train Crossing Signal Noise** – The crossing signal noise would be more than 10 dBA less than the warning horn noise at the same receiver. According to the FTA guidelines, horns generate sound exposure levels of 110 dBA at 50 feet while a 2-minute crossing signal generates a sound exposure level of 94 dBA at 50 feet. However, the crossing signal noise was considered and included in the existing noise calculation.

In addition to the foregoing, the following assumptions were used for the operational noise assessment for the new future freight train service, based on the design characteristics of the **Proposed Action Alternative**:

- **New Freight Train Noise** – Calculations based on the FTA Guidance Manual for train operations including warning horns, and the following assumptions:
 - Operations – 1 through freight train per day, occurring day or night (assumed at night for worst case noise scenario).
 - Speeds – 10 mph average.
 - Length – 3 locomotives per train; length of each locomotive at 75 feet; length of each freight car at 50 feet; total of 110 cars per train.
 - Horns – 220 feet from each grade-crossing affected by warning horns.
- **Crossing Signal Noise** – For the reasons referenced above, the crossing signal noise would be significantly less than warning horn noise, but it was still included the noise calculations.

Further, it was assumed that the rail track will be a combination of ballast and slab track with continuous welded rail, consistent with the assumptions in the FTA Guidance Manual and that there will be no change to the location of any of the existing at-grade crossings and, therefore, no change to locations where the freight trains will sound their horns.

Operations Vibration

Ground-borne vibration impacts from new rail operations inside vibration-sensitive buildings are defined by the vibration velocity level, expressed in terms of VdB, and the number of vibration events per day of the same kind of source. Table B-2 summarizes vibration sensitivity in terms of the three FTA land use categories and the criteria for acceptable ground-borne vibrations and acceptable ground-borne noise. Ground-borne noise is a low-frequency rumbling sound inside buildings, caused by vibrations of floors, walls, and ceilings. Ground-borne noise is generally not a problem for buildings near railroad tracks at- or above-grade, because the airborne noise from trains typically overshadows the effects of ground-

borne noise. Ground-borne noise becomes an issue in cases where airborne noise cannot be heard, such as for buildings near tunnels.

The FTA provides guidelines to assess the human response to different levels of ground-borne vibration, as shown in Table B-2. These levels represent the maximum vibration level of an individual train passby. A vibration event occurs each time a train passes the building or property and causes discernible vibration. “Frequent Events” are more than 70 vibration events per day, and “Infrequent Events” are fewer than 70 vibration events per day.

Table B-2 includes separate FTA criteria for ground-borne noise (the "rumble" that radiates from the motion of room surfaces in buildings from ground-borne vibration). Although the criteria are expressed in dBA, which emphasizes the more audible middle and high frequencies, the criteria are significantly lower than airborne noise criteria to account for the annoying low-frequency character of ground-borne noise.

Table B-2
FTA Ground-Borne Vibration and Ground-Borne Noise Operations Impact Criteria

Land Use Category	Ground-Borne Vibration Impact Criteria (VdB relative to 1 micro inch/second)		Ground-Borne Noise Impact Criteria (dB re 20 microPascals)	
	Frequent Events (a)	Infrequent Events (b)	Frequent Events (a)	Infrequent Events (b)
Category 1: Buildings where vibration would interfere with interior operations	65 VdB(c)	65 VdB(c)	NA(d)	NA(d)
Category 2: Residences and buildings where people normally sleep	72 VdB	80 VdB	35 dBA	43 dBA
Category 3: Institutional land uses with primarily daytime use	75 VdB	83 VdB	40 dBA	48 dBA

Source: FTA 2006

(a) Frequent Events is defined as more than 70 vibration events per day.

(b) Infrequent Events is defined as fewer than 70 vibration events per day.

(c) This criterion limit is based on levels that are acceptable for most moderately sensitive equipment, such as optical microscopes. Vibration-sensitive manufacturing or research will require detailed evaluation to define the acceptable vibration levels. Ensuring lower vibration levels in a building often requires special design of the heating, ventilating and air conditioning systems, and stiffened floors.

(d) Vibration-sensitive equipment is not sensitive to ground-borne noise.

NA = Not Applicable

VdB = vibration velocity level

Because airborne noise often masks ground-borne noise for above ground (i.e., at-grade or viaduct) trains, ground-borne noise criteria apply primarily to operations in a tunnel, where airborne noise is not a factor. The **Proposed Action Alternative** passing residential communities is planned to be at-grade only. As a result, ground-borne noise criteria are not expected to be issues for this **Proposed Action Alternative**. Further, for this **Proposed Action Alternative**, the impact criteria are based on “Infrequent Events” since they would not exceed 70 train events per day.

Analysts tabulated projected noise and existing ambient noise exposures at the identified receptors or clusters of receptors. The analysts determined the levels of impact (no impact, moderate impact, or

severe impact) by comparing the existing and projected noise exposure based on the impact criteria shown in Figure B-1.

Traffic Noise

The **Proposed Action Alternative** will involve traffic increases to local roads but none of this will occur within 1,000 feet of residential properties. Therefore, traffic noise analyses were not performed for this project as no related impacts are expected.

Construction Noise

Table B-3 shows the FTA general assessment criteria for construction noise. The general assessment criteria for construction noise prescribe different levels for daytime and nighttime construction. Daytime is defined as 7 AM to 10 PM and nighttime is defined as 10 PM to 7 AM. For the purpose of this analysis, construction noise impacts and distances to the 90 dBA and 80 dBA 1-hour Leq noise contours were calculated for construction activities to upgrade the rail line near residential communities. The construction noise limits are normally assessed at the noise-sensitive receiver property line.

Table B-3
General Assessment Criteria for Construction Noise

Land Use	One-Hour L_{eq} (dBA)	
	Daytime	Nighttime
Residential	90	80
Commercial	100	100
Industrial	100	100

Source: FTA 2006
Leq equivalent sound level

The construction noise impact assessment used the general assessment methodology described in the FTA Guidance Manual. For this analysis, construction activities for the rail corridor are based on general assumptions for railroad construction. The construction noise methodology includes the following:

- Noise emissions from equipment expected to be used by contractors for corridor construction.
- Typical railroad construction equipment expected to be used by contractors.
- Two noisiest pieces of construction equipment per construction phase for corridor construction.
- Relationship of the construction operations to nearby noise-sensitive receptors.

Table B-3 above lists FTA criteria for the maximum acceptable 1-hour noise levels (L_{eq}) for daytime and nighttime.

Construction Vibration

The FTA Guidance Manual provides the basis for the construction vibration assessment. FTA provides construction vibration criteria designed primarily to prevent building damage, and to assess whether vibration might interfere with vibration-sensitive building activities or temporarily annoy building occupants during the construction period. The FTA criteria include two ways to express vibration levels – (1) root-mean-square (RMS) VdB for annoyance and activity interference; and (2) peak particle velocity (PPV), which is the maximum instantaneous peak of a vibration signal used for assessments of damage potential.

Table B-4 shows the FTA building damage criteria for construction activity; the table lists PPV limits for four building categories. These limits are used to estimate potential problems that should be addressed during final design.

Table B-4
Construction Vibration Damage Criteria

Building Category	PPV (inch/sec)	Approximate Lv (VdB)
I. Reinforced concrete, steel, or timber (no plaster)	0.5	102
II. Engineered concrete and masonry (no plaster)	0.3	98
III. Non-engineered timber and masonry buildings	0.2	94
IV. Buildings extremely susceptible to vibration damage	0.12	90

Source: FTA 2006

The FTA Guidance Manual provides the methodology for the assessment of construction vibration impact. Typical construction equipment included in the FTA Guidance Manual was used to conduct a quantitative construction vibration assessment where vibration-sensitive receptors were within the study area. Criteria for annoyance (see Table B-3) and damage (see Table B-4) were applied to determine construction vibration impacts.

B.2 Affected Environment

The affected environment follows the **Proposed Action Alternative** IRPLP area west of the Mississippi River through the City of West Memphis. This region is mostly industrial, but there are two residential areas within 500 feet of the rail line in the northernmost section of the project. These areas are generally lightly populated and considered to be industrial/suburban.

Existing Noise Levels

The entire corridor for the **Proposed Action Alternative** can be considered to be a industrial with isolated residential, as well as the existence of a freight rail line within the corridor. Because there is an existing freight rail line along the entire corridor within which the **Proposed Action Alternative** would be located and trains pass the residential areas very infrequently, the existing noise levels were calculated based on the methods in the FTA Guidance Manual for the train noise in addition to measuring existing noise levels for non-train activities along the proposed alignment of the **Proposed Action Alternative**. This approach is more practical than monitoring noise levels alone at a limited number of locations because of the infrequent nature of existing rail activities. The freight train noise with warning horns calculation was based on reference values in the FTA Guidance Manual with the train operational assumptions above.

In general, freight trains would generate 57 dBA L_{dn} at 50 feet from the rail tracks without horns. The noise level would drop off at a rate of 4.5 dBA per doubling of distance, per the FTA Guidance Manual. The warning horn noise level would be 62 dBA L_{dn} at 50 feet from the rail centerline within 220 feet of each grade crossing.

Warning horns would be the dominant noise sources when receptors are near grade crossings. When receptors are not near grade crossings, the dominant noise sources would be passing freight trains or vehicular traffic.

URS monitored background noise levels on May 20, 2013 at two representative locations near the project site and near the closest residential properties – one near the northeast project site boundary and one near the northwest project site boundary – to document the background sound levels in the area. Each of these locations provides background sound levels representative of the closest residential communities to the north of the project site. There are no other noise-sensitive locations within 1000 feet of the project.

The weather conditions during the entire monitoring period were favorable for the sound level measurements, with no precipitation, light winds (less than 10 miles per hour), and temperatures in the mid-70s to mid-80s in degrees Fahrenheit. The sound monitor was a Larson Davis Model 820 Type 1 (re ANSI S1.4-1983) sound level meter (serial number 1655), field-calibrated before and after the session with a Larson Davis Model CAL200 calibrator (serial number 3704). All instruments had been factory-calibrated within 12 months of their use. All measurement procedures were in accordance with standard industry-accepted practices.

Sound level monitoring was conducted at locations M-1 and M-2, shown in Figure 1 in the environmental assessment. The measurements were used for this analysis to represent background conditions at the closest residential receptors to the project, on the north side of the project area. Noise sources at M-1 included automobile traffic in the forms of motorcycles, automobiles, medium and heavy trucks. The City of West Memphis maintains a firing range southwest of M-1. The firing range was observed to be in use during visits to the site. Dabbs Avenue becomes Port Road directly east of M-1 and crosses the railroad at-grade, where there is a rail grade crossing. Port Road serves the industrial area south of M-1 and maintains a steady traffic flow of medium and heavy trucks and lighter automobiles.

Noise sources at M-2 included current rail activity occurring at this and neighboring locations and heavy truck traffic occurring at other parts of the Staplecoth grounds. The site is somewhat isolated from the surrounding community and was observed to be relatively quiet when rail activities were not occurring.

Measurements were taken in 25- to 30-minute intervals during the daytime and evening hours. L_{eq} values averaged 58.5 dBA at M-1 and 54.5 dBA at M-2.

Existing Vibration Levels

Unlike the FTA noise impact assessment method, train-related vibration impact thresholds are not dependent upon existing ground-borne vibration levels, so the documentation of existing ground-borne vibration levels is not an issue as it is for noise levels.

As a reference, the existing freight train would generate 60 VdB at 50 feet when it is operated at 10 mph. This reference is based on the methodology described in the FTA Guidance Manual.

B.3 Environmental Consequences

Operations Noise Impacts

Noise impacts would not result from the **No-Action Alternative** since there will be no change to current rail activities expected without the proposed project.

For the **Proposed Action Alternative**, analysts assessed noise impacts for noise sensitive land uses based on a consideration of existing (2013) noise levels as calculated (for trains) per the FTA Guidance Manual combined with measured ambient levels without trains. The FTA Manual requires that impacts are considered based on the cumulative analysis of existing noise levels together with the future project-generated levels resulting from the implementation of the **Proposed Action Alternative**, as shown in Figure B-1.

The FRA's horn rule, 49 CFR Part 222, requires trains to sound their horns at least 15 seconds prior to passing a grade crossing. Since the existing and future trains travel at average speeds of 10 miles per hour, 15 seconds corresponds with 220 feet from the grade crossing. Combining measured current sound levels with current and future train operations results in severe noise impacts predicted for the two closest houses to the Port Road grade crossing. Although only one new train operation is being added with the project, assuming that operation occurs at night generates the impacts.

Operations Vibration Impacts

A vibration impact general assessment was conducted based on information in the FTA Guidance Manual. The factors considered in a general assessment include train speed, train-set, track system/support, track structure, propagation characteristics, coupling-to-building foundation, and type of building/receiver location in a building.

For the existing conditions and operation of the **Proposed Action Alternative**, none of the residential buildings in the study area would experience levels exceeding the FTA limits of 80 VdB for ground borne vibration and 43 dBA for ground borne noise (see Table B-2). Therefore, none of the alternatives considered within this EA, including the **No Action Alternative** and **Proposed Action Alternative**, would be expected to result in operational vibration impacts.

Construction Noise Impacts

Based on the construction noise impact criteria described in Table B-3, the threshold noise levels would be 90 dBA L_{eq} for daytime hours (7 AM to 10 PM) and 80 dBA L_{eq} for nighttime hours (10 PM to 7 AM). Noise sensitive receptors within 40 feet of construction activities would be potentially impacted during daytime hours and those within 126 feet would be potentially impacted during nighttime hours. This is based on the FTA Manual assumption of the two loudest pieces of equipment operating full time and simultaneously. These pieces of equipment (a tie inserter and dozer) each generate 85 dBA at 50 feet according to the FTA Manual, and their combination would result in 88 dBA at 50 feet.

Since construction activities would only occur during daytime hours and no houses are closer than 40 feet to the rail line, no construction noise impacts are expected with the **Proposed Action Alternative**.

Construction Vibration Impacts

Construction-related vibration impacts would only be considered if pile driving or blasting were planned near the residential communities. Since this is not the case, no construction-related vibration impacts are expected for this project.

B.4 Mitigation Measures

FTA guidance requires the consideration of mitigation measures for certain severe impacts. The following mitigation measures will be followed to address impacts that cannot be minimized or avoided by other means.

Operations Noise Mitigation Measures. Nighttime warning horns on the trains have been calculated to generate impacts resulting from the ***Proposed Action Alternative***. The following mitigation measures, individually, would eliminate these impacts:

- Institute a quiet zone (in accordance with 49 CFR Part 222) to prohibit the sounding of horns with respect to the grade crossing at Port Road
- Limit new train operations to only daytime hours
- Provide noise barriers between the rail line and impacted residences
- Provide sound insulation (in the form of upgraded windows and doors) for the impacted residences

Of these measures, noise barriers would most likely not be a practical mitigation option because their noise reduction effectiveness would be compromised by the required opening at the Port Road grade crossing for vehicle access.

B.5 Summary of Potential Project Impacts

Operations Noise Impacts

With the ***Proposed Action Alternative***, 2 severe noise impacts are identified in this EA pursuant to the FTA guidelines because of the proposed nighttime horn soundings near the Port Road grade crossing.

With the institution of either a quiet zone for the Port Road grade crossing, limiting train operations near Port Road to daytime hours, or providing sound insulation upgrades to the impacted residences, there would be no noise severe impacts resulting from the operations of the ***Proposed Action Alternative***.

Operations Vibration Impacts

No vibration-related impacts are anticipated with the ***Proposed Action Alternative***.

Construction Noise Impacts

No noise impacts will result from construction of the ***Proposed Action Alternative***.

Construction Vibration Impacts

Since no pile driving or blasting will be occurring for the construction of the ***Proposed Action Alternative***, there are no significant vibration impacts expected from construction of the ***Proposed Action Alternative***.

APPENDIX C

Ecological Discipline Report

West Memphis, Arkansas

PROJECT: International Rail Port and Logistics Park (IRPLP)

ECOLOGY REPORT



Prepared By: (James R. Orr and Peter Zervas, URS Corporation)
October 2013

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Figure 6.	Delineated Features – Northern Portion Map
Figure 7.	Delineated Features – Southern Portion Map
Figure 8.	National Wetlands Inventory Map
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APPENDICES

Appendix A.	Coordination Response Letters
Appendix B.	Photographic Log
Appendix C.	Field Data Forms
Appendix D.	Wetland Mitigation Plan – Ensafé Inc.

1. INTRODUCTION

Studies to determine the impacts of the proposed IRPLP on the local ecology were conducted by a team of biologists from URS Corporation during May - August, 2013. Studies included historical literature reviews, database inquiries and site surveys. Particular attention was given to locating streams, wetlands and specialized habitats such as forests, shoreline and springs which could harbor protected species or influence water quality. According to coordination letters with the AGFC and USFWS, mussel and bird species, primarily associated with the Mississippi River, were of particular interest in the area of the project.

2. PROJECT DESCRIPTION

The project concept is proposed to extend the Union Pacific Railroad spur from the West Memphis Industrial Park south to a new proposed transload facility located south of Wyanoke (Figure 1). The improvements in this Project include the upgrade of existing track in the International Rail Port Logistics Park (IRPLP) in West Memphis, Arkansas, to support the handling of heavier rail carloads of manifest and unit trains to the Port and the construction of a new rail lead to the base of the St. Francis levee. These improvements will facilitate the connection to the proposed construction of a new transload facility on private lands on the west side of the St. Francis Levee, west of the Port of West Memphis, through an agreement with the City of West Memphis and a private developer; these improvements will add the capability for the handling of bulk commodities from truck and rail to the Mississippi River navigational transportation system.

3. PROJECT SETTING

The proposed project is located in central Crittendon County, Arkansas. It is shown on the West Memphis USGS 7.5 minute topographic quadrangle (Figure 2). This portion of the county is within the Mississippi Valley physiographic unit. The regional geology of the surrounding land consists of a wide, flat historic floodplain of the Mississippi River Soils in the project area consist of several types. However, two primary soil types are dominant as described on the USDA General Soil Map for Crittendon County, 2007: 1) Tunica clay 0 – 1 percent slopes, and 2) Sharkey silt clay, 0 – 1 percent slopes (Figures 3 and 4). The project lies exclusively within the Mississippi River watershed. Land use in the project area consists primarily of agricultural with commercial, residential and industrial property located on the south side of West Memphis and within the Industrial Park. Residential and commercial land is found to the north of the project, with industrial property within the project area. Agricultural property occupies the land use to the south and to the west.

4. TERRESTRIAL ECOLOGY

Most of the land in the project area has been previously disturbed, primarily for agricultural use and in some areas by industrial, commercial and residential development. Most of the land is currently in agricultural use with some of the land forested, in vegetated drainages or in shrub/scrub thickets. There are also wetland areas located adjacent to and on the south and west sides of the project area. Fletcher Lake located to the south of the project area consists of a large body of open water, emergent wetlands and forested wetlands (W-5). The project will include building in this wetland area and culverting over Ditch 19 which flows into Fletcher Lake. A forested wetland area is also located to the west of the existing railway, south of the Riverbend Cotton Facility and borders the existing rail infrastructure (W-1). The proposed rail extension is planned to bisect this small forested wetland. Wetland 2 (W-2) is an isolated wetland located adjacent to Port Road. This area appears to be a borrow area. The depression left from borrow practice now holds water periodically and wetland vegetation (black willow trees; *Salix nigra*). Smaller wetlands are located south of the project area adjacent to the toe to the levee. In addition, excavated ditches historically used to drain land for agricultural use direct stormwater runoff to the south and west. A limited number of small ponds, some formed from weep water through the levee during high flow in the Mississippi River are located south of the project and adjacent to the levee (Figure 5).

4.1 Existing Rail Area

This existing rail area is a mix of residential and commercial property. The existing rail travels west past the West Memphis wastewater treatment plant, oil storage terminal and the West Memphis stormwater lagoon before turning south to provide rail service to three facilities in the Industrial Park. The rail extends south to Stateside Steel and Wire, LLC, and Tetra Technologies Inc. The rail is bordered by agricultural fields planted in wheat on the east and a forested area (part wetland and part upland; W-1) and agricultural fields on the west. The vegetation in the area includes agricultural crops, primarily wheat and corn, and the forested area. Tree species include willow oak (*Quercus phellos*), pin oak (*Q. palustris*), black walnut (*Juglans nigra*), sweet gum (*Liquidambar styraciflua*), southern red oak (*Q. falcata*), cottonwood (*Populus deltoids*), hackberry (*Celtis occidentalis*), American elm (*Ulmus americana*), red maple (*Acer rubrum*) and pecan (*Carya illinoensis*). Shrubs and smaller trees included rough-leaf dogwood (*Corunus drummondii*), black willow (*S. nigra*), box elder (*Acer negundo*), elderberry (*Sambucus canadensis*), pawpaw (*Asimina triloba*) and smooth sumac (*Rhus glabra*). The ecology of the area was limited primarily to bird species, with red-winged black bird and meadow lark most common. In addition, dickcissel, barn swallow, crow, starling, mourning dove, cardinal and loggerhead shrike were observed. Within the forested wetlands a number of mammal tracks were observed including deer, opossum, rabbit, raccoon, with reptiles and amphibians common particularly in wet areas.

4.2 Proposed Rail Extension and Transload Area

This section is primarily agricultural and includes two farmsteads. This includes the levee south of Wyanoke which is used as pasture for cattle. The area is either pasture land or agricultural fields. A great deal of rain had fallen preceding the May field efforts and standing water was observed in the fields. In addition, the Mississippi River was markedly high (elevation 217.6 ft msl) and water levels were higher than the land elevation on the west side of the levee (210 ft msl). Between the agricultural fields and pastures were some fence rows and an access road. Trees in the fence rows were generally limited to hackberry, pecan, cottonwood and persimmon (*Diospyros virginiana*). To the west of the agricultural fields is Fletcher Lake (Wetland 5). Fletcher Lake lies in the southwest portion of the Project area, and will be crossed along the north end by a rail loop in support of the transload facility. In addition to the agricultural fields and pasture land, five wetland areas and as well as a number of ponds and weeps/seeps were delineated, (Figures 5, 6 and 7). In addition, one forested wetland, indicated on the US Fish and Wildlife Service's National Wetlands Inventory (NWI) map is depicted on Figure 8 south and west of Fletcher Lake. All weeps appeared to be hydrologically connected to the Mississippi River through the levee during high water events. Two of the weeps were small (approximately ¼ acre) and were also in use as livestock watering ponds. Both were constructed at the toe of the levee with berms on the west and side walls on the north and south. Total water depth was approximately three feet. Both were inundated at the time of the May, 2013 field survey.

The third weep (Wetland 3; W-3) was relatively larger, approximately six acres, and was not constructed at the toe of the levee; it was located in an agricultural field just west of the toe of the levee (Figures 5 and 7). Wetland 3 was reported by locals to be a depression in the agricultural fields where weep water could accumulate during higher water events in the Mississippi River. The area is depicted as a depression in the USGS topographic map (Figure 2). Local farming practice included tree clearing and stacking around the boundary of the area, resulting in additional berm. Substrate in the seep included native soil, but an abundance of river gravel indicated that this area was an historic over-flow channel of the Mississippi River prior to construction of the levee. The seep area drained to the northwest via an excavated ditch. Flow from the ditch was directed overland toward Fletcher Lake. The ditch included standing water at the time of inspection, but no outlet flow. Vegetation in the Wetland 3 included a border of woody vegetation with hackberry, pecan and cottonwood on the east and south, and roughleaf dogwood on the north and west. Within the roughleaf dogwood, which also formed a fringe inside the trees on the east and south, was an abundance of poison ivy (*Toxicodendron radicans*), trumper creeper (*Campsis radicans*) and blackberry (*Rubus* spp.). The center of Wetland 3 was open and included a few isolated trees – hackberry and persimmon. The majority of the area was vegetated with herbaceous growth including oats grass (*Bouteloua* spp.), buttercups (*Ranunculus* spp.), golden rod (*Solidago* spp.), crimson clover (*Trifolium incarnatum*) and bermuda grass (*Cynodon dactylon*). Wetland 4 (W-4) is a small depression potentially formed from another levee weep (Figures 5 and 7). Wetland 4 is less than ¼ acre and is south of the project impact area.

The ecology of this area was similar to the existing rail area; however, a greater diversity of birds were observed. Waterfowl – mallard ducks, Canada geese and other species were observed using the flooded agricultural fields and ditches. Wading birds were also present, with great

egrets, sandpipers and great blue herons common. Other bird species observed included those mentioned above, but also included black vulture, turkey vulture, marsh hawk, mocking bird, song sparrow and indigo bunting. This type of area provides habitat for a more diverse assemblage of wildlife, including small and medium mammals, reptiles, amphibians and the predatory animals that feed on them, such as hawks, owls, coyote and foxes.

5. TERRESTRIAL IMPACTS

Direct impacts: The loss of approximately 15.0 acres of land for new rail (13,000 ft x 50 ft) and 5.0 acre of land for the transload facility is one of the impacts of the project. In addition, the City of West Memphis proposes to develop a 20-acre tract along Port Road adjacent to current industrial users. All of this land is currently agricultural land – either crop land or pasture. There will be direct, long-term adverse impacts when agricultural areas are converted to railway and industrial facility. However, this impact will be limited as this habitat has limited value for wildlife and is adjacent to existing commercial and industrial land use. Other agricultural land in the area is abundant and the land that will be lost does not have substantial connectivity to other habitat. Mortality of individual wildlife may occur both during construction and operation. Roadway mortality is generally not believed to significantly affect animal populations under normal conditions, particularly with the slow train speed (approximately 10 mph). If the population is experiencing other sources of stress, habitat degradation or elimination, then traffic-related mortality can contribute to the demise of the population. Both rail and truck traffic will generally be slow in the Project area, and wildlife will be able to avoid impact far more effectively compared to highway or open rail traffic. Highway noise can affect the utilization of habitats by wildlife. Since this is an urban and agricultural project and is located adjacent to existing railway, roadway and commercial activity, noise is already a factor within existing habitats. After project construction, areas that remain undisturbed within rail and road rights of way, will, over time, provide some degree of refuge for local wildlife as the surrounding areas continue to urbanize and habitats are destroyed. The railway is currently proposed to be bridged over Ditch 19, 17 and other tributaries as needed. The substantial elevation of the bridges over the water will allow wildlife to pass relatively undisturbed under the bridge along these ditches as was observed with waterfowl and reptiles during the May, 2013 survey.

6. WETLANDS and AQUATIC ECOLOGY

Wetlands delineations were conducted by URS in June 2013 and Ensafe July 2013. Two wetlands will be impacted by the project, W-1 and W-5. The project has been located, and the chosen alternative will be designed, to avoid major impacts to waters of the state to the extent practicable. Permanent and temporary impacts to wetlands are anticipated.

The total acreage of wetlands that will be impacted by the project include:

	Permanent Acres	Temporary Acres	Total Acres
Forestland	3.27	7.97	11.24
Agricultural Land	3.21	6.22	9.43
Total	6.48	14.19	20.67

Temporary impacts include a 50 foot “buffer” on each side of the project location for construction access, which will be allowed to revert to preexisting conditions once construction is completed for the project.

Efforts to further minimize impacts will continue throughout the design, permitting and construction processes. Unavoidable impacts will be mitigated as required by applicable laws and regulations. Mitigation is discussed further in the Permit Sections applying to streams and wetlands. In an effort to minimize sedimentation impacts, erosion and sediment control plans will be included in the project construction plans. Erosion and sediment control standards for use during construction will be implemented. The State of Arkansas sets water quality criteria for waters of the state; these standards must be met during the construction of the railway, road and transload facility.

Ditch 19, 17 and their tributaries are the only flowing water bodies affected by this project (Figures 5, 6 and 7). All aquatic impacts identified as project development continues will be avoided, minimized or mitigated to the extent possible, and incorporated into the permitting.

7. 100-YEAR FLOODPLAIN

The alignment crosses the 100-year floodplain within Ditch 17 (Figure 9). The 100 year floodplain elevation is 208 amsl. The low point in the agricultural fields is approximately 210 amsl. The floodplain is a forested bank habitat dominated by silver maple (*Acer saccharinum*), black willow and box elder in the overstory; bush roughleaf dogwood, poison ivy and trumpet creeper dominating the shrub layer; and annual weeds and grasses as ground cover. Agricultural crops are grown up to the banks of Ditch 17. The ecological impacts to the floodplain would be minimal as this area is primarily an engineered ditch and maintained by farming practices. No further fragmentation of habitat would occur, and it is unlikely that there would be a substantial increase in mortality associated with vehicular traffic. The bridge crossings will be designed to avoid impacts to flow with the ditch up to the 100 yr floodstage.

8. ENDANGERED AND THREATENED SPECIES

Information from several sources, as well as prior experience with habitats in the area, was used to prepare for field surveys to locate protected species or special habitats. These sources included database information provided by the Arkansas Game and Fish Commission, the US Fish and Wildlife Service and books or databases of the region. The USFWS, AGFC and

USACE were contacted for information from their files by letter, on April 29, 2013. All three agencies responded and indicated that no species of concern were likely to be impacted.

Results of the US Fish and Wildlife Service coordination indicated that there are five species known within the region: interior least tern, piping plover, pallid sturgeon (*Scaphyrinchus albus*), pondberry (*Lindera melissifolia*), scaleshell (*Leptodea leptodon*) and fat pocketbook (*Potamilis capax*). In addition, they indicated bald eagles are known to occur in the region. The AGFC indicated that they no longer conduct reviews of Federally funded projects. The USACE indicated that they were unaware of threatened or endangered species in the Project area.

Interior least tern is a federally endangered species known to nest and forage on the shoreline of large rivers such as the Mississippi. This habitat will not be affected by the project. No interior least terns were observed during the site visit of May 14-15, 2013.

Piping plover is a federally endangered species due to loss of nesting habitat on sand beaches through recreational use. Piping plover may migrate through Arkansas, but nesting habitat is in Canada and winter habitat is on the Gulf Coast. Plovers were not observed during the site visit.

Pallid sturgeon may occur in the Mississippi River. The project will not affect the Mississippi River.

Pondberry is a federally endangered species and for the most part, is associated with wetland habitats, such as bottomland and hardwoods in the interior areas, and the margins of sinks, ponds and other depressions in the more coastal sites. The plants generally grow in shaded areas but may also be found in full sun. Pondberry was not observed in wetlands in or near the project area.

Scaleshell (*Leptodea leptodon*) and fat pocketbook (*Potamilis capax*) are federally endangered mussel species found in medium or large rivers. Scaleshell prefer swift clear water and may be extirpated from Crittendon County. The fat pocketbook prefers slower water and may be found in irrigation canals (Parmalee and Bogan 1998), but FWS confirmed that the Ditch 17 and 19 habitat were not suitable habitat for fat pocketbook.

Direct Impacts. No protected species records were shown within the likely direct impact zone of the project.

Information received from the USFWS is periodically reviewed and updated. If any protected species or their habitats are identified as project development continues, they will be addressed in accordance with applicable laws and regulations.

9. REQUIRED PERMITS

Stream and miscellaneous water quality permits: Alterations to streams or other aquatic sites designated as waters of the State or waters of the United States require 401 water quality certification from the State of Arkansas, individual or Nationwide 404 USACE permits.

Construction projects disturbing one or more acres of land require storm water control permits issued by the State of Arkansas pursuant to the National Pollutant Discharge Elimination System. For any project that affects water flowing into an open sinkhole or cave, or for any impact that may affect the ground water via a sinkhole, a Class V Injection Well permit may be required. This process involves obtaining a permit before the project is let if open sinkholes are known to exist. These or any other permit requirements identified in the project development process will be complied with. A Section 404 general and individual permit from the Corps of Engineers and 401 water quality certification from ADEQ are anticipated for this project.

10. SUMMARY OF FINDINGS

Much of the land area adjacent to the Project area has been previously disturbed by construction of residential, industrial, and commercial areas, as well as agricultural use. Due to this, suitable habitat for many wildlife species is limited to small woodlots and tree lines separating properties and the narrow riparian zone along the ditches and tributaries. Construction of the proposed project will result in the loss of some habitat, but there will likely remain a sufficient amount of habitat in the adjacent areas to accommodate any displaced species. There will not likely be an increase of direct mortality due to road-kill; this is due to the fact that there are existing railways and roads in the area that are already heavily traveled and new rail and road traffic will be slow (10 MPH). This project is not likely to further fragment the habitat or serve as a barrier to the movement of wildlife species for the above reason as well, and there is little habitat east of the project area for connectivity due the height of the levee.

Two streams, Ditch 17 and 19 (Figures 5, 6 and 7) were identified within the limits of the proposed project that will be crossed by new construction as well as other minor tributaries. Construction activities will not likely result in the loss of open channel length and canopy disturbance as a bridge currently exists. Sedimentation from storm runoff could also impact the stream to varying degrees. However, implementation and maintenance of effective erosion and sediment control measures throughout the construction process should keep the overall impacts to these aquatic resources to a minimum.

Construction will result in minor short-term and long-term impacts to both terrestrial and aquatic habitats within the project limits. Disturbance of only the area within ROW needed for construction of the proposed project and implementation and maintenance of effective erosion and sediment control measures throughout the duration of the project will serve to minimize most of these impacts. The remaining impacts may be mitigated somewhat over time once project construction is complete. Wetland losses will be mitigated on-site.

Figures



Legend

- Existing Rail
- LD Proposed Rail
- Rehab Existing Rail
- WM Tiger Rail
- Port Road Extension
- Transload Facility
- 20 Acre Site

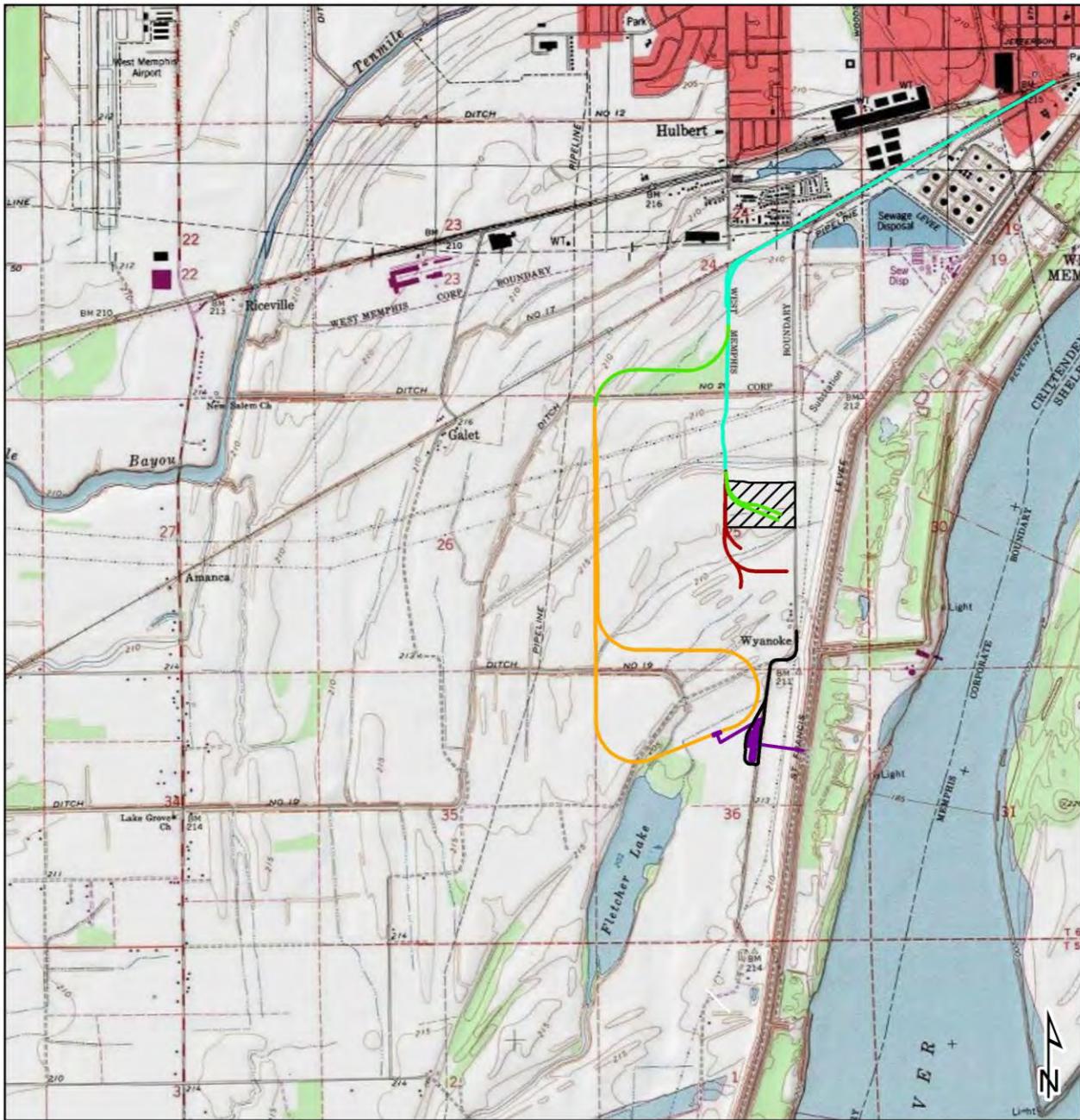
Notes:
 1. Imagery Source: ESRI World Imagery
 2. Map Projection: NAD 1983 State Plane Arkansas North Feet



**City of West Memphis
 Site Location Map
 West Memphis, Arkansas
 Natural Resources Survey**

Drawn By: PZ	Date: 3/27/2014
Checked By: JO	Figure No. 1

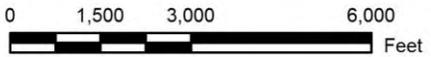




Legend

- Port Road Extension
- Transload Facility
- Existing Rail
- LD Proposed Rail
- Rehab Existing Rail
- WM Tiger Rail
- 20 Acre Site

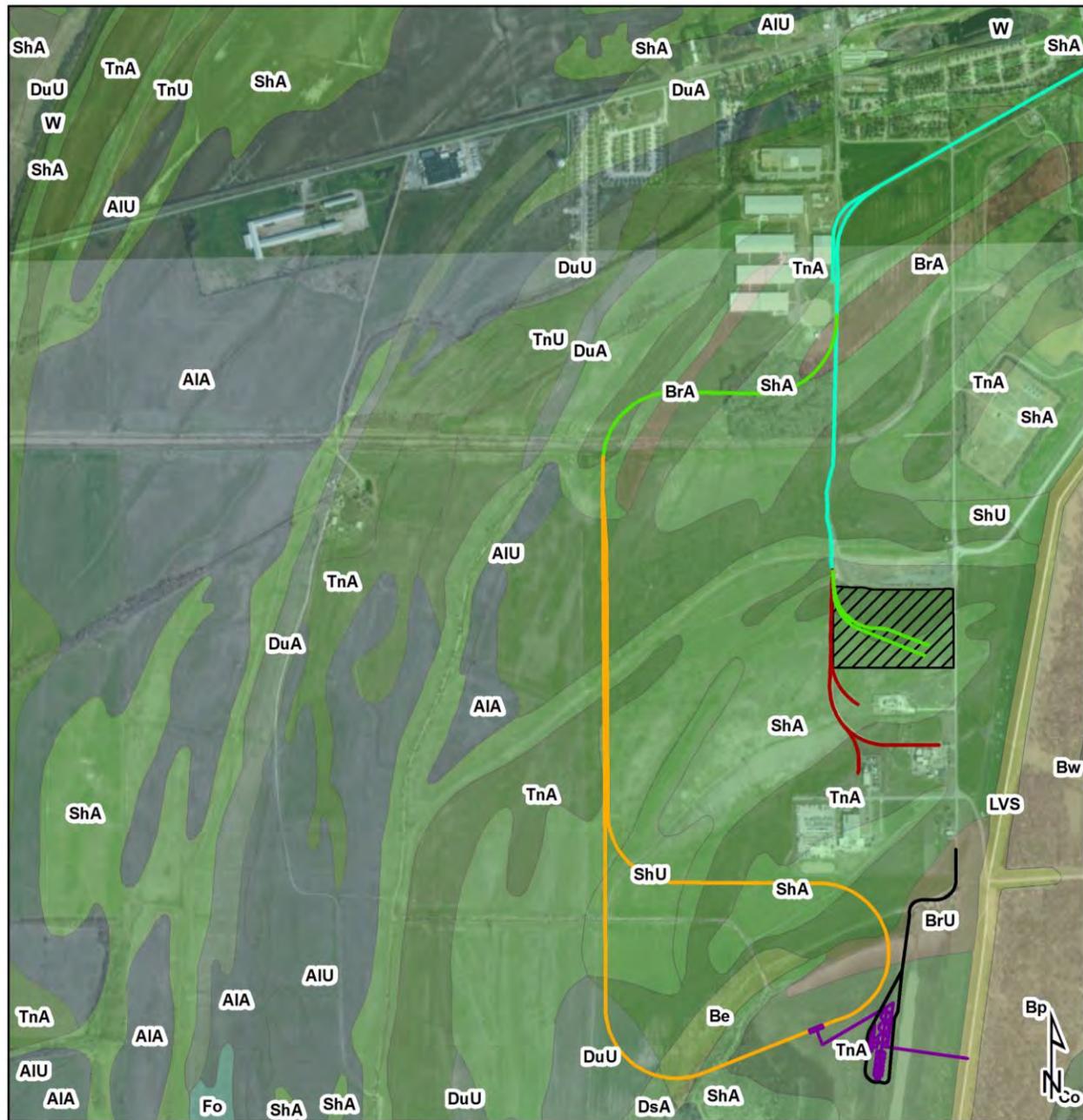
Notes:
 1. Imagery Source: USGS
 2. Map Projection: NAD 1983 State Plane Arkansas North Feet



**City of West Memphis
 Proposed Project Concept Map
 West Memphis, Arkansas
 Natural Resources Survey**

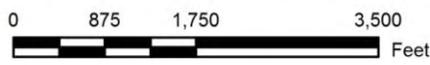
Drawn By: PZ	Date: 3/27/2014
Checked By: JO	Figure No. 2





- Legend**
- Alligator Silty Clay (AIA, AIU)
 - Beulah (Be)
 - Borrow Pit (Bp)
 - Bowdre Silty Clay (Bw, BrU, BrA)
 - Commerce Silt Loam (Co, Cm)
 - Crevasse Fine Sand (Cr, Cu)
 - Dubbs Silt Loam (DsA, DsU)
 - Dundee Silt Loam (DuA, DuU)
 - Forestdale Silty Clay Loam (Fo)
 - Levee (LVS)
 - No Data (NOTCO)
 - Robinsonville Silt Loam (Rn)
 - Sharkey Silty Clay (Sk, ShA, ShU)
 - Tunica Clay (Tu, TnA, TnU)
 - Water (W)
 - Port Road Extension
 - Transload Facility
 - Existing Rail
 - LD Proposed Rail
 - Rehab Existing Rail
 - WM Tiger Rail
 - 20 Acre Site

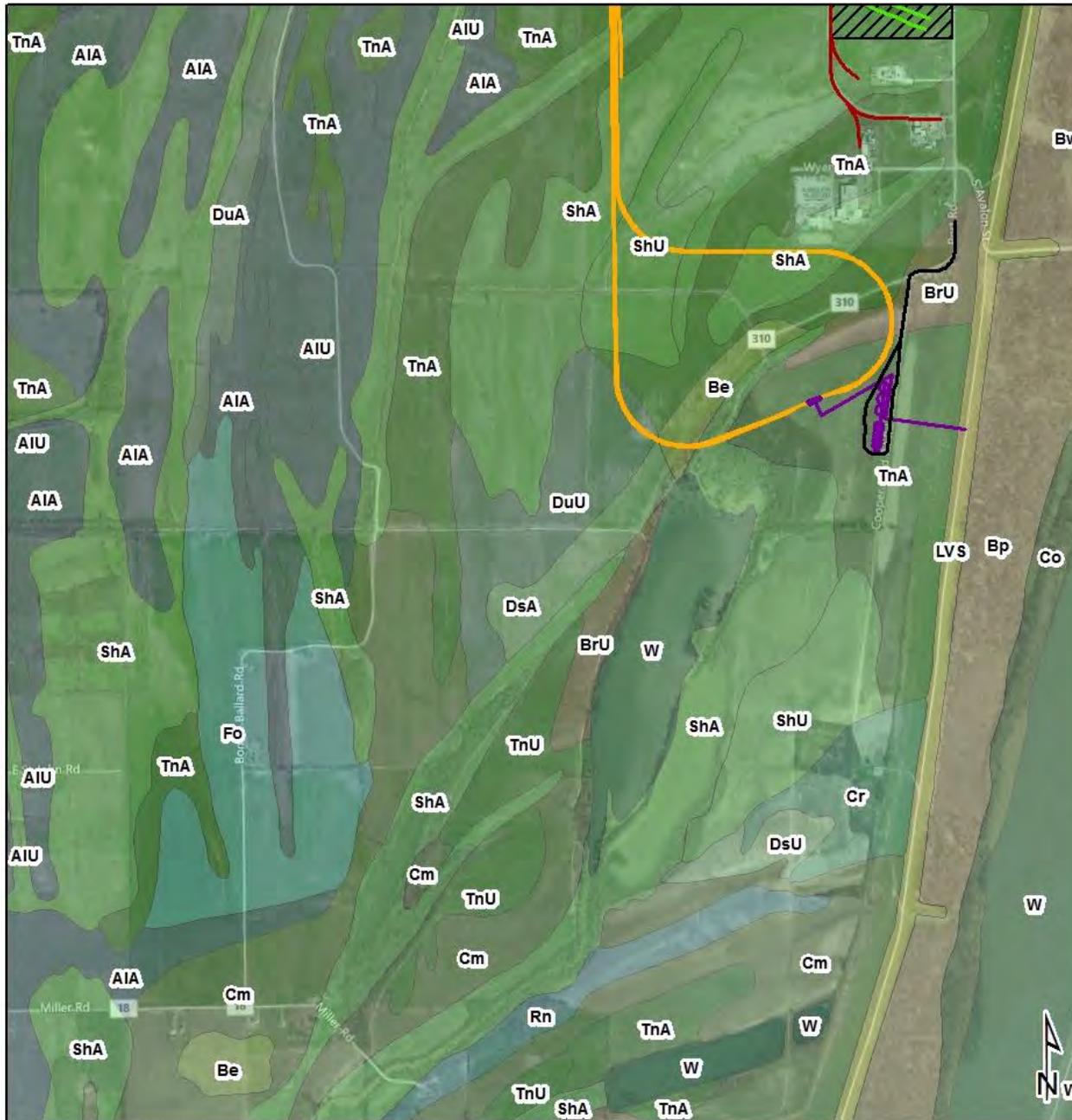
Notes:
 1. Soil Survey Data: SSURGO, U.S. Department of Agriculture, Natural Resources Conservation Service
 2. Imagery Source: ESRI World Imagery
 3. Map Projection: NAD 1983 State Plane Arkansas North Feet



**City of West Memphis
 NRCS Soils Map - Northern Portion
 West Memphis, Arkansas
 Natural Resources Survey**

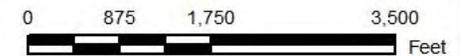
Drawn By: PZ	Date: 3/27/2014
Checked By: JO	Figure No. 3





- Legend**
- Alligator Silty Clay (AIA, AIU)
 - Beulah (Be)
 - Borrow Pit (Bp)
 - Bowdre Silty Clay (Bw, BrU, BrA)
 - Commerce Silt Loam (Co, Cm)
 - Crevasse Fine Sand (Cr, Cu)
 - Dubbs Silt Loam (DsA, DsU)
 - Dundee Silt Loam (DuA, DuU)
 - Forestdale Silty Clay Loam (Fo)
 - Levee (LVS)
 - No Data (NOTCO)
 - Robinsonville Silt Loam (Rn)
 - Sharkey Silty Clay (Sk, ShA, ShU)
 - Tunica Clay (Tu, TnA, TnU)
 - Water (W)
 - Port Road Extension
 - Transload Facility
 - Existing Rail
 - LD Proposed Rail
 - Rehab Existing Rail
 - WM Tiger Rail
 - 20 Acre Site

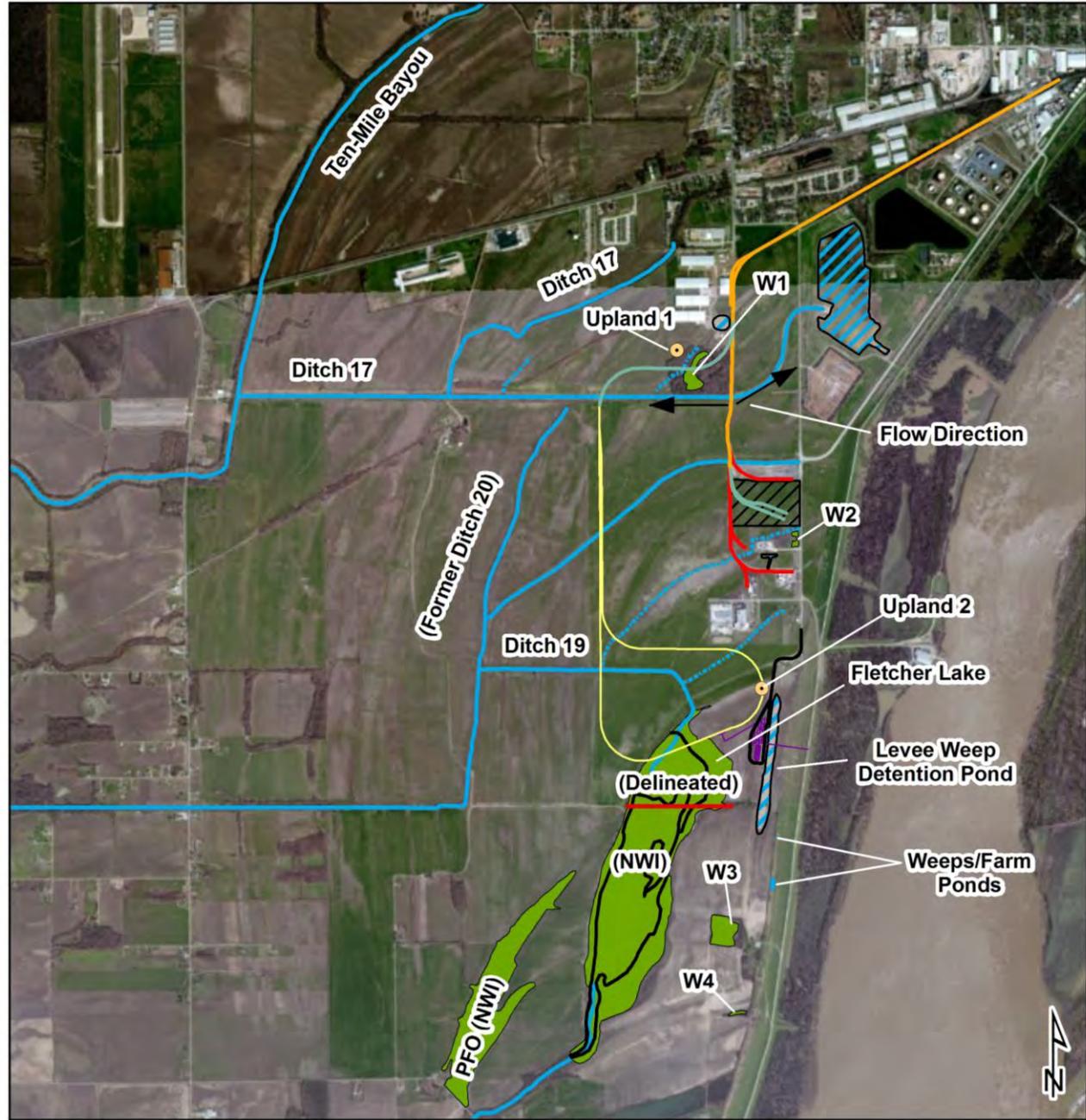
Notes:
 1. Soil Survey Data: SSURGO, U.S. Department of Agriculture, Natural Resources Conservation Service
 2. Imagery Source: ESRI World Imagery
 3. Map Projection: NAD 1983 State Plane Arkansas North Feet



**City of West Memphis
 NRCS Soils Map - Southern Portion
 West Memphis, Arkansas
 Natural Resources Survey**

Drawn By: PZ	Date: 10/1/2013
Checked By: JO	Figure No. 4

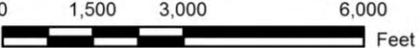




Legend

- Weep
- Wetland
- Upland
- Ditch
- WWC
- Detention Pond
- 20 Acre Site
- West Memphis Tiger Rail
- LD Proposed Rail
- Rehab Existing Rail
- Port Road Extension
- Transload Facility
- Existing Rail (no improvements)

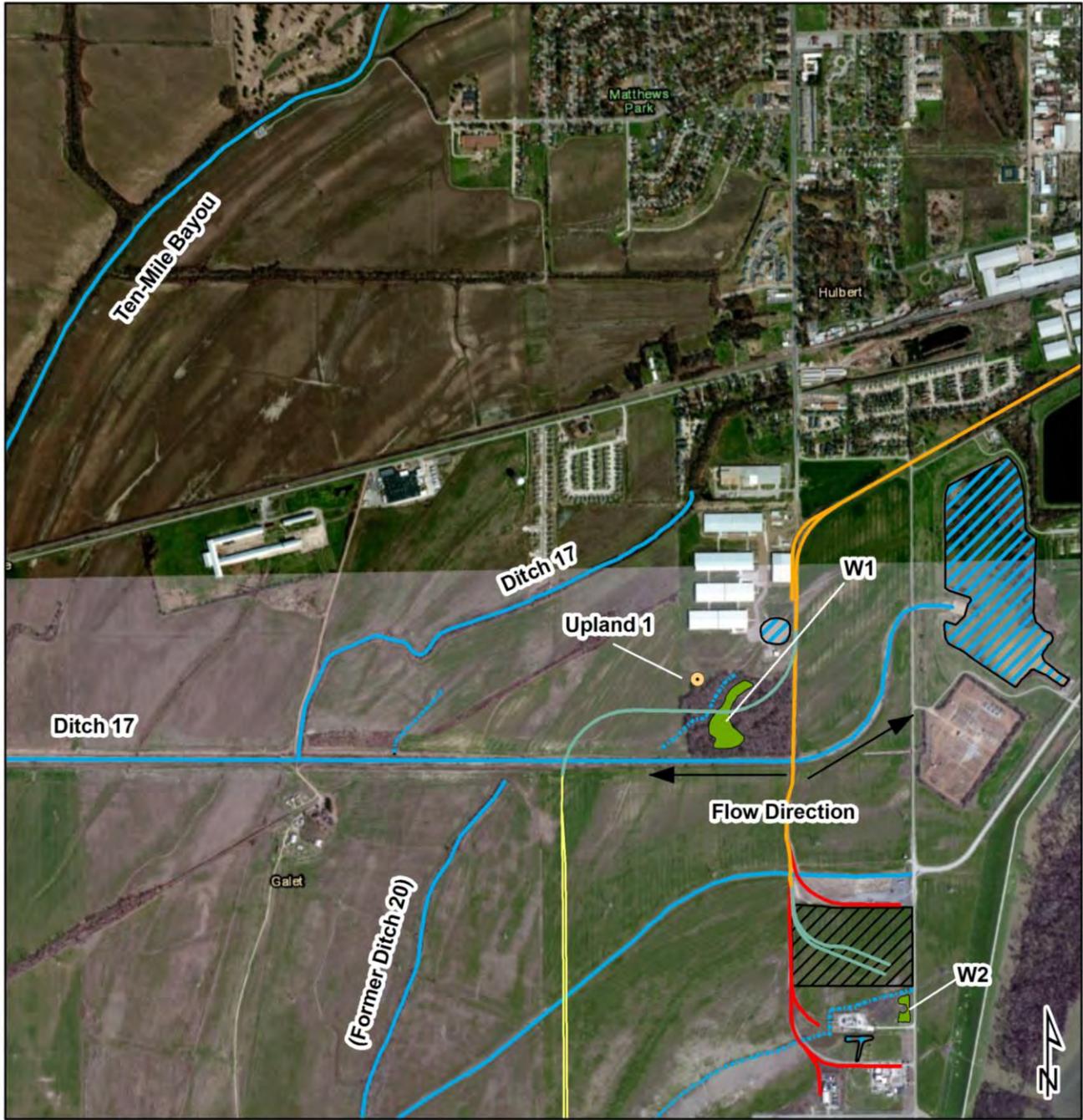
Notes:
 1. Imagery Source: ESRI World Imagery
 2. Map Projection: NAD 1983 State Plane Arkansas North Feet



**City of West Memphis
 Delineated Features - Site Overview Map
 West Memphis, Arkansas
 Natural Resources Survey**

Drawn By: PZ	Date: 3/27/2014
Checked By: JO	Figure No. 5

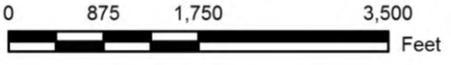




Legend

- Weep
- Wetland
- Upland
- Ditch
- WWC
- Detention Pond
- 20 Acre Site
- West Memphis Tiger Rail
- LD Proposed Rail
- Rehab Existing Rail
- Port Road Extension
- Transload Facility
- Existing Rail (no improvements)

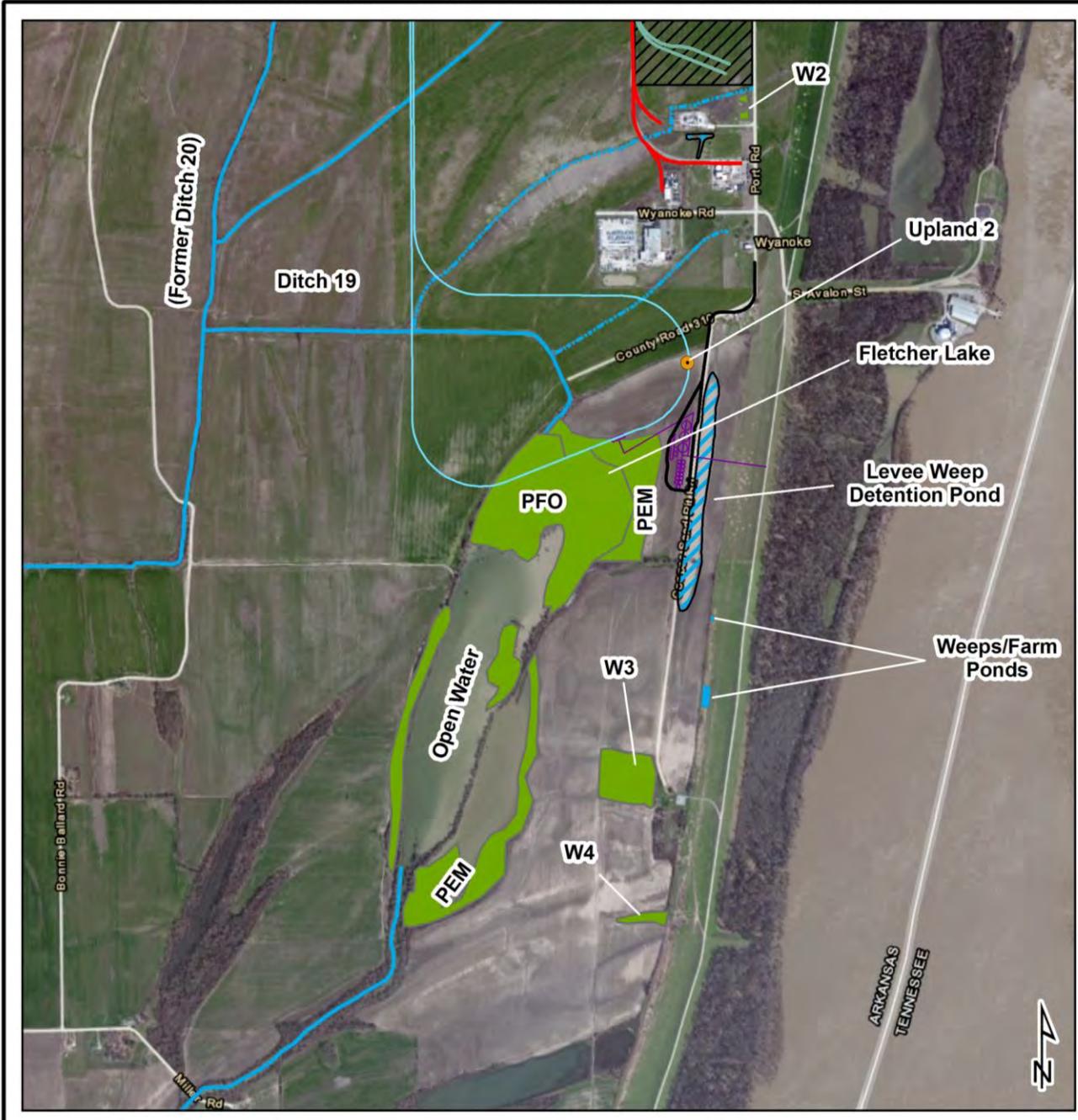
Notes:
 1. Imagery Source: ESRI World Imagery
 2. Map Projection: NAD 1983 State Plane Arkansas North Feet



**City of West Memphis
 Delineated Features - Northern Portion
 West Memphis, Arkansas
 Natural Resources Survey**

Drawn By: PZ	Date: 3/27/2014
Checked By: JO	Figure No. 6





Legend

- Weep
- Wetland
- Upland
- Ditch
- WWC
- Detention Pond
- 20 Acre Site
- West Memphis Tiger Rail
- LD Proposed Rail
- Rehab Existing Rail
- Port Road Extension
- Transload Facility
- Existing Rail (no improvements)

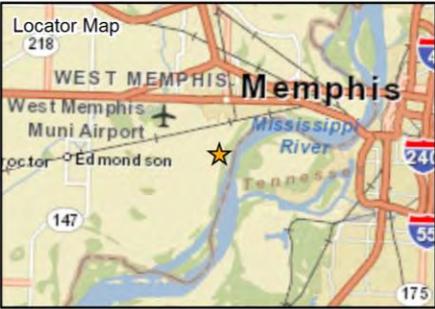
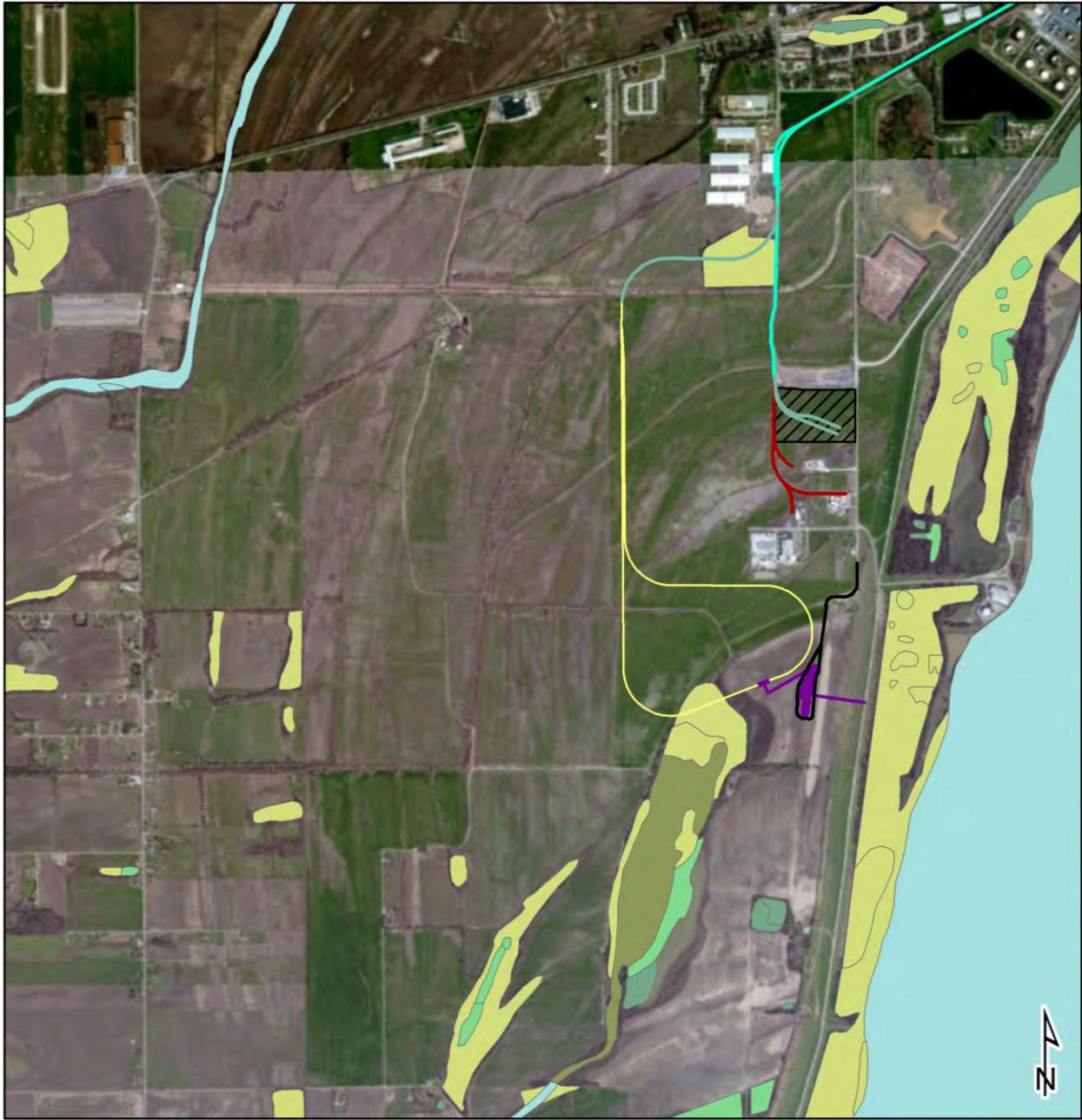
Notes:
 1. Imagery Source: ESRI World Imagery
 2. Map Projection: NAD 1983 State Plane Arkansas North Feet

0 875 1,750 3,500
 Feet

**City of West Memphis
 Delineated Features - Southern Portion
 West Memphis, Arkansas
 Natural Resources Survey**

Drawn By: PZ	Date: 3/27/2014
Checked By: JO	Figure No. 7

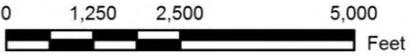




Legend

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine
- Port Road Extension
- Transload Facility
- Existing Rail
- LD Proposed Rail
- Rehab Existing Rail
- WM Tiger Rail
- 20 Acre Site

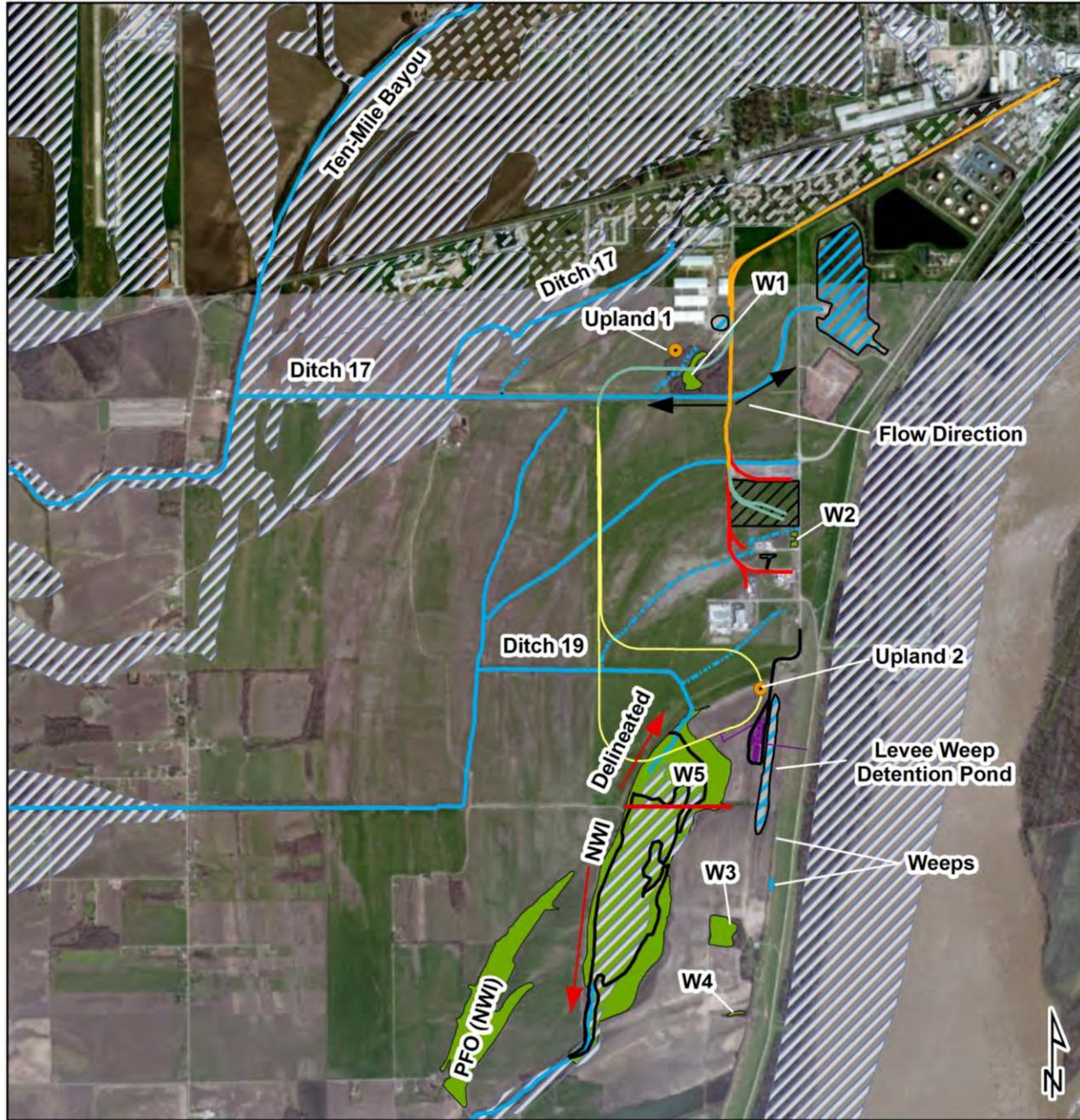
Notes:
 1. Wetlands Data Source: National Wetlands Inventory, U.S. Fish and Wildlife Service
 2. Imagery Source: ESRI World Imagery
 3. Map Projection: NAD 1983 State Plane Arkansas North Feet



**City of West Memphis
 National Wetlands Inventory Map
 West Memphis, Arkansas
 Natural Resources Survey**

Drawn By: PZ	Date: 3/27/2014
Checked By: JO	Figure No. 8





Legend

- Weep
- Wetland
- Upland
- Ditch
- WWC
- Detention Pond
- 100-yr Floodplain
- 500-yr Floodplain
- 20 Acre Site
- West Memphis Tiger Rail
- LD Proposed Rail
- Rehab Existing Rail
- Port Road Extension
- Transload Facility
- Existing Rail (no improvements)

Notes:

1. Floodplain data gathered from www.geostor.arkansas.gov
2. Imagery Source: ESRI World Imagery
3. Map Projection: NAD 1983 State Plane Arkansas North Feet

0 1,500 3,000 6,000 Feet

**City of West Memphis
100-Year Floodplain Map
West Memphis, Arkansas
Natural Resources Survey**

Drawn By: WH	Date: 3/27/2014
Checked By: JO	Figure No. 9



Appendix A
Coordination Response Letters



IN REPLY REFER TO:

United States Department of the Interior

FISH AND WILDLIFE SERVICE

110 S. Amity Road, Suite 300

Conway, Arkansas 72032

Tel.: 501/513-4470 Fax: 501/513-4480



May 20, 2013

Reference: TA0538

James R. Orr
URS Corporation
1000 Corporate Centre Drive
One Corporate Centre, Suite 250
Franklin, TN 37067

Dear Mr. Orr:

The U.S. Fish and Wildlife Service (Service) has reviewed the information supplied in your letter dated May 7, 2013, regarding the proposed railway upgrades and extension in the City of West Memphis, Crittenden County, Arkansas. Our comments are submitted in accordance with the Endangered Species Act (87 Stat. 884, as amended 16 U.S.C. 1531 et seq.).

The following federally listed threatened and endangered species are known to occur in this region: interior least tern (*Sterna antillarum athalassos*), piping plover (*Charadrius melodus*), pallid sturgeon (*Scaphirhynchus albus*), pondberry (*Lindera melissifolia*), scaleshell (*Leptodea leptodon*), and fat pocketbook (*Potamilus capax*). In addition, the federally protected Bald Eagle (*Haliaeetus leucocephalus*) also occurs in this region.

Sediment and/or nutrient transport from the proposed project location may have direct, indirect, and/or cumulative effects to mussels, fish hosts, and/or their habitat(s). The effects of sedimentation and nutrients (e.g., ammonia, etc.) on mussels, fish, and their habitats are well documented in the scientific literature. Adverse effects associated with sedimentation and eutrophication from all phases of construction activities may be minimized and/or alleviated through proper implementation and maintenance of erosion control best management practices and maintaining vegetative buffers. Buffer width is dependent upon slope, vegetation type, and soil types. The Service can provide additional technical assistance on appropriate vegetative buffer widths upon request.

The comments herein are for the sole purpose of providing technical assistance to the action agency or for individual pre-project planning assistance. These comments and opinions should not be misconstrued as an "effect determination" or considered as concurrence with any proceeding determination(s) by the action agency in accordance with Section 7 of the ESA. These comments do not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, a finding concurrence letter, etc.) from the Service, both lethal and nonlethal "take" of protected species are in violation of the ESA.

We appreciate your interest in the conservation of endangered species. If you have any questions, please contact the Arkansas Ecological Services Staff at (501) 513-4487.

Sincerely,

A handwritten signature in black ink, appearing to read "J. Boggs", with a long, sweeping horizontal line extending to the right.

 Jim Boggs
Project Leader



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
MEMPHIS DISTRICT CORPS OF ENGINEERS
167 NORTH MAIN STREET B-202
MEMPHIS, TENNESSEE 38103-1894

June 6, 2013

Operations Division
Regulatory Branch

Mr. James R. Orr
Senior Consulting Scientist
URS Corporation
1000 Corporate Centre Drive
One Corporate Centre, Suite 250
Franklin, Tennessee 37067

Dear Mr. Orr:

This is in regard to your letter dated May 7, 2013, requesting our comments concerning possible impact on endangered species, wetlands and other potentially sensitive natural resources on a project for the City of West Memphis, Arkansas. The project consists of an upgrade to several miles of railway from 110 pound to 138 pound rail; extend the railway 13,000 feet on the south of town to the City's industrial users location (west of the levee) and relocate a segment of road to the top of the levee for access to the Port of West Memphis. Additionally, Louis Dreyfuss proposes to connect the rail extension with additional rail, a transload facility and a rail extension. The project is located in the Fletcher Lake and West Memphis Quadrangle area of Crittenden County, Arkansas (Sections 18 & 19, T-6N, R-8E) as shown on the enclosed topographic map.

Based on a review of recent maps of the project area including topographic maps, aerial photography, soils data, the information provided in your letter and a telephone conversation between you and a member of our staff on June 4, 2013, it appears that jurisdictional waters (streams/ditches) of the U.S. may be present. Therefore, the project may be subject to Section 404 of the Clean Water Act. As such, any deposition of fill material including structures placed below the ordinary high water mark of streams or ditches will require a Department of the Army permit. This determination covers only the area designated as the project site marked in the attached topographic map. For any additional work that may need to be done outside of the marked area, you should contact our offices for additional determinations.

With regard to endangered species, we are unaware of any potential threatened or endangered species within the project area. However, there is the possibility of Bald Eagle nests in the wooded sites east of the levee. Bald Eagles are not on the threatened or endangered species list but they are still protected under the Bald and Golden Eagle Protection Act. We recommend you conduct surveys in these areas to look for Bald Eagle nests that may be within the vicinity of the project area. You should also contact the U.S. Fish and Wildlife Service for more specific guidance regarding Bald Eagle nests and comprehensive analysis of listed threatened or endangered species.

With regard to archeological or historical sites, preliminary research reveals there may be sites near the project area. We recommend that you coordinate this project with the Arkansas State Historic Preservation Officer. It may be necessary for you to conduct a literature and records review of the project area followed by a more intensive survey within the project area. Results of your research should be provided to this office.

During the telephone conversation on June 4, you indicated that you would provide us with detailed drawings and plans of how you intend to cross any streams/ditches. Based on your plans, this activity may or may not require a permit. You also indicated that there exists the possibility of making adjustments to the original plan such as relocating the transload station. Because of this, we will place on hold further evaluation of your project pending receipt of the stream/ditch crossing details and the revised plans. We will hold your project in abeyance for 45 days from the date of this letter. If we have not received the requested information, we will consider that you have decided to withdraw your project from further consideration. However, you may provide us with the requested information at anytime in the future to resume the evaluation process.

Please be aware that because your project is in the vicinity of the Mississippi River levee in Crittenden County, Arkansas, you should contact two other entities for authorization. The St. Francis Levee District (870-735-1062) should be contacted to inform them of your project so they may provide you with the proper authorization for work on their levee. You should also contact the U. S. Army Corps of Engineers, Memphis District Levee Safety Program Manager, Ms. Melissa Mullen, P.E. (901-544-0716). She will need to consider your project for a possible Section 408 permit. We will need signed copies of letters from those two entities authorizing your work in order for us to finalize any potential permits you may require from the Corps of Engineers.

This preliminary jurisdiction determination (PJD) is valid for a period of no more than 5 years from the date of this letter unless new information warrants revision of the determination before the expiration date or the District Engineer identifies, after public notice and comment, that specific geographic areas with rapidly changing environmental conditions merit reverification on a more frequent basis. It is incumbent upon the applicant to remain informed of changes in the Department of the Army regulations.

A PJD cannot be appealed. If you object to this PJD, please contact us for information about receiving an approved jurisdictional determination and the administrative appeals process. The PJD is included for your concurrence. If you agree with this PJD please sign the form and return it to the address listed above. If the PJD is not returned within 30 days of the date of this letter we will assume your concurrence.

The Memphis District Regulatory Branch is committed to providing quality and timely service to our customers. In an effort to improve customer service, please take a moment to go to our Customer Service Survey found on our web site at <http://per2.nwp.usace.army.mil/survey.html>. Your comments, positive or negative, will not affect any current or future dealing with the Corps of Engineers.

If you have any questions, please contact Reginald C. Wuornos at (901) 544-0731 and refer to File No. MVM-2013-222 (RCW).

Sincerely,



for

Timothy Davis
Western Section Chief
Regulatory Branch

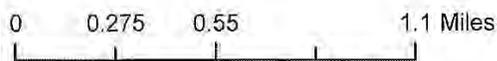
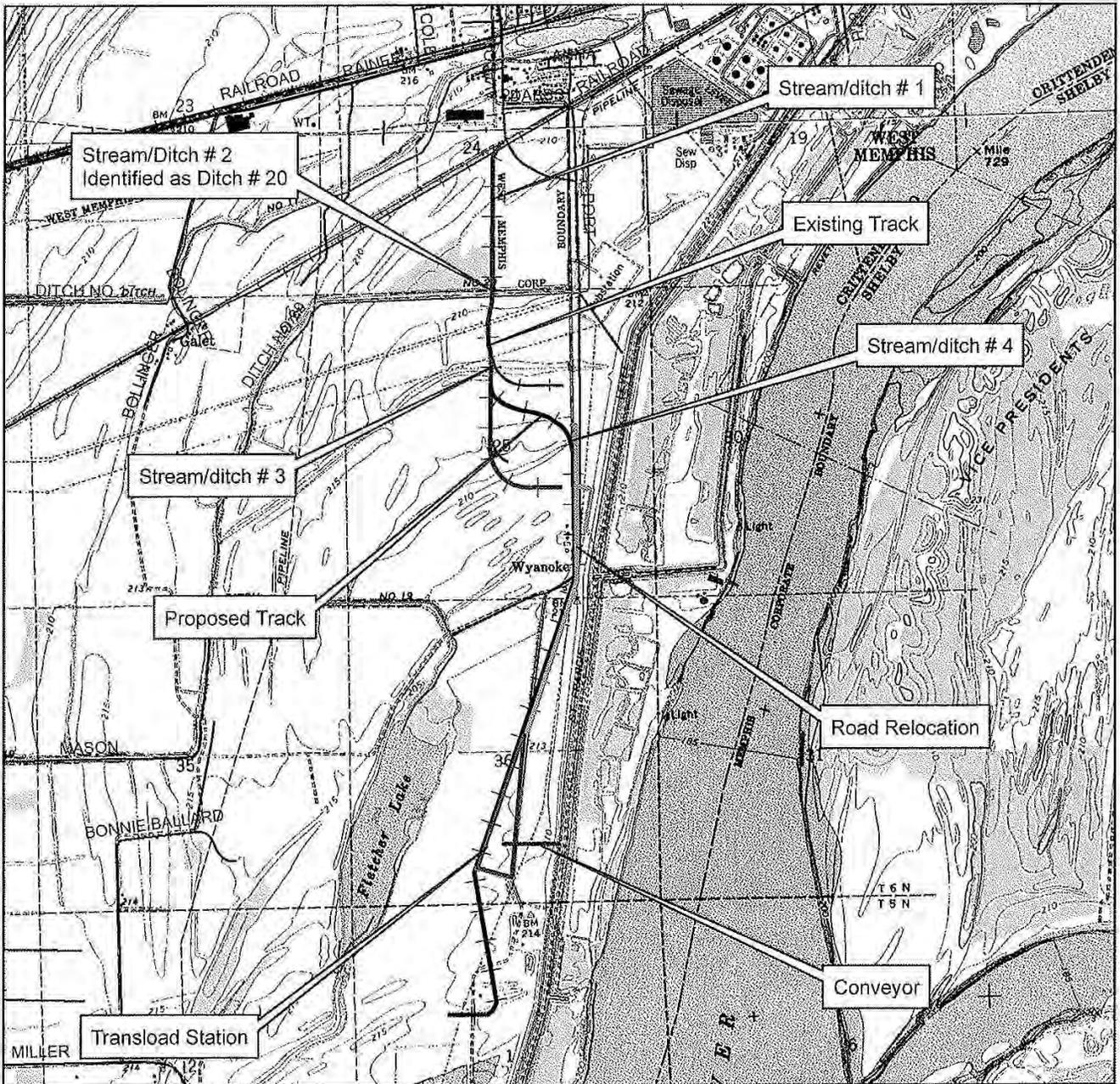
Enclosures

MVM-2013-222, West Memphis, AR Railway Upgrade

Project Plan, Fletcher Lake & West Memphis, AR Quad
 Zone 15
 Sections: 18, 19, T-6N, R-9E
 Sections: 24, 25 & 36, T-6N, R-8E
 Section: 1, T-5N, R-8E
 Lat/Lon: 35.111142° N/-90.194607° W

Legend

-  Dist_Rivers&Creeks
-  Dist_Major_Roads
-  Dist_Secondary_Road



PRELIMINARY JURISDICTIONAL DETERMINATION FORM

This preliminary JD finds that there "may be" waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

District Office	Memphis District	File/ORM #	MVM-2013-222	PJD Date:	Jun 4, 2013
State	AR	City/County	Crittenden County	Name/Address of Person Requesting PJD	Mr. James R. Orr Senior Consulting Scientist URS Corporation 1000 Corporate Centre Drive One Corporate Centre, Suite 250 Franklin, Tennessee 37067
Nearest Waterbody:	Mississippi River				
Location: TRS, Lat/Long or UTM:	35.117147° N/-90.193884° W				
Identify (Estimate) Amount of Waters in the Review Area:			Name of Any Water Bodies on the Site Identified as Section 10 Waters:		
Non-Wetland Waters: <input type="checkbox"/> 400 linear ft <input type="checkbox"/> 20 width <input type="checkbox"/> acres <input type="checkbox"/> Stream Flow: Per. (seasonal)			Tidal: <input type="checkbox"/> NA Non-Tidal: <input type="checkbox"/> NA		
Wetlands: <input type="checkbox"/> acre(s) Cowardin Class: <input type="checkbox"/> N/A			<input checked="" type="checkbox"/> Office (Desk) Determination <input type="checkbox"/> Field Determination: Date of Field Trip: _____		

SUPPORTING DATA: Data reviewed for preliminary JD (check all that apply - checked items should be included in case file and, where checked and requested, appropriately reference sources below):

- Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: _____
- Data sheets prepared/submitted by or on behalf of the applicant/consultant.
 - Office concurs with data sheets/delineation report.
 - Office does not concur with data sheets/delineation report.
- Data sheets prepared by the Corps
- Corps navigable waters' study: _____
- U.S. Geological Survey Hydrologic Atlas:
 - USGS NHD data.
 - USGS 8 and 12 digit HUC maps.
- U.S. Geological Survey map(s). Cite quad name: Fletcher Lake & West Memphis Quads, Arkansas
- USDA Natural Resources Conservation Service Soil Survey. Citation: GIS, Crittenden County, AR
- National wetlands inventory map(s). Cite name: _____
- State/Local wetland inventory map(s): _____
- FEMA/FIRM maps: _____
- 100-year Floodplain Elevation is: _____
- Photographs:
 - Aerial (Name & Date): NAIP, Crittenden County, AR 2010
 - Other (Name & Date): DOQQ, Crittenden County, AR 2008
- Previous determination(s). File no. and date of response letter: _____
- Other information (please specify): _____

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

Reginald Williams 6/4/2013
 Signature and Date of Regulatory Project Manager
 (REQUIRED)

 Signature and Date of Person Requesting Preliminary JD
 (REQUIRED, unless obtaining the signature is impracticable)

EXPLANATION OF PRELIMINARY AND APPROVED JURISDICTIONAL DETERMINATIONS:

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "preconstruction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable.

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

This preliminary JD finds that there "may be" waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

Appendix A - Sites

District Office	Memphis District	File/ORM #	MVM-2013-222	PJD Date:	Jun 4, 2013
State	AR	City/County	Crittenden County	Person Requesting PJD	Mr. James R. Orr

Site Number	Latitude	Longitude	Cowardin Class	Est. Amount of Aquatic Resource in Review Area	Class of Aquatic Resource
1	35.121695° N	-90.193884° W	Riverine	100 feet	
2	35.117147° N	-90.193971° W	Riverine	100 feet	
3	35.113725° N	-90.194199° W	Riverine	100 feet	
4	35.110106° N	-90.18978° W	Riverine	100 feet	

Notes:

Sites 1- 4 are streams or ditches indicated on the USGS Topographic map for Fletcher Lake and West Memphis, Arkansas.



Keeping the Natural State natural.

Arkansas Game and Fish Commission

Mike Armstrong
Deputy Director

Mike Knoedl
Director

Ricky Chastain
Deputy Director

May 31, 2013

James Orr
URS
1000 Corporate Center Dr., Suite 250
Franklin, TN 37067

Re: Environmental Analysis: West Memphis Rail Upgrades and Extension West of the Mississippi River Levee,
West Memphis, AR.

Dear Mr. Orr,

The Arkansas Game and Fish Commission (AGFC) has for a number of years reviewed proposed federally funded projects for the potential presence of threatened or endangered species covered by the Endangered Species Act (ESA). However, the U.S. Fish and Wildlife Service (USFWS) is in actuality the ultimate legal authority for providing review and clearance for these projects and for the administration of the ESA and the National Environmental Policy Act. Because the State of Arkansas has no analogous statutory counterpart to the ESA, the review that AGFC has provided in the past has therefore been nonbinding and redundant, as USFWS has also been required to conduct this process. In light of this, AGFC will no longer be conducting these reviews. Thus, all inquiries regarding threatened and endangered species reviews and clearance for projects in Arkansas requiring such should be directed to:

U.S. Fish & Wildlife Service
110 South Amity Road, Suite 300
Conway, AR 72032

AGFC does not have any Wildlife Management Areas, public lakes or public access points in the vicinity of the study area.

If our agency can be of further assistance, please feel free to contact us.

Sincerely,

Jennifer Elise Sheehan
Federal Regulatory Program Specialist

2 Natural Resources Drive • Little Rock, AR 72205 • www.agfc.com
Phone (800) 364-4263 • (501) 223-6300 • Fax (501) 223-6448

The mission of the Arkansas Game and Fish Commission is to wisely manage all the fish and wildlife resources of Arkansas while providing maximum enjoyment for the people.

Appendix B
Photographic Log

International Rail Port and Logistics Park
West Memphis, AR



Photo 1. Wetland 1, Facing southeast (8/14/2013)



Photo 2. Wetland 1, Facing northeast (8/14/2013)



Photo 3. Wetland 1, Facing north (8/14/2013)



Photo 4. Wetland 1, Facing south (8/14/2013)

International Rail Port and Logistics Park
West Memphis, AR



Photo 5. Wetland 2, Facing southwest (5/15/2013)



Photo 6. Wetland 2, Facing northwest (5/15/2013)



Photo 7. Wetland 3, Facing west (5/15/2013)



Photo 8. Wetland 3, Facing south (5/15/2013)

International Rail Port and Logistics Park
West Memphis, AR



Photo 9. Wetland 3, Facing southwest (5/15/2013)



Photo 10. Wetland 3, Facing southeast (5/15/2013)



Photo 11. Wetland 4, Facing west (5/15/2013)



Photo 12. Wetland 4, Facing south (5/15/2013)

International Rail Port and Logistics Park
West Memphis, AR



Photo 13. Wetland 4, Facing south (5/15/2013)



Photo 14. Wetland 4, Facing west (5/15/2013)



Photo 15. Wetland 5, Facing south (8/14/2013)



Photo 16. Wetland 5, Facing southwest (8/14/2013)

International Rail Port and Logistics Park
West Memphis, AR



Photo 17. Wetland 5, facing northwest (8/14/2013)



Photo 18. Wetland 5. Facing southwest (8/14/2013)



Photo 19. Wetland 5, Facing south (8/14/2013)



Photo 20. Wetland 5, Facing southwest (8/14/2013)

International Rail Port and Logistics Park
West Memphis, AR



Photo 21. Ditch 17, Facing east (8/14/2013)



Photo 22. Ditch 17, Facing west (8/14/2013)



Photo 23. Ditch 19, Facing northwest (8/14/2013)



Photo 24. Ditch 19, Facing north (8/14/2013)

International Rail Port and Logistics Park
West Memphis, AR



Photo 25. Levee Detention Pond, Facing southwest (5/15/2013)



Photo 26. Levee Detention Pond, Facing west (5/15/2013)



Photo 27. Levee Detention Pond, Facing southeast (8/15/2013)



Photo 28. Levee Detention Pond, Facing north (8/15/2013)

International Rail Port and Logistics Park
West Memphis, AR



Photo 29. Levee Wetlands, Facing north (5/15/2013)



Photo 30. Levee Wetlands, Facing north (5/15/2013)



Photo 31. Levee Wetlands, Facing north (5/15/2013)



Photo 32. Levee Wetlands, Facing northeast (5/15/2013)

International Rail Port and Logistics Park
West Memphis, AR



Photo 33. Agricultural field north of the Miller property, Facing northeast (5/15/2013)



Photo 34. Agricultural field north of Wetland 3, Facing south (5/15/2013)



Photo 35. Grazing land adjacent to levee and east of Fletcher Lake, Facing south (5/15/2013)



Photo 36. Agricultural field northeast of Fletcher Lake, Facing northeast (5/15/2013)

International Rail Port and Logistics Park
West Memphis, AR



Photo 37. Culvert outlet from retention pond on the Riverbend Cotton facility into Wetland 1, Facing north (5/15/2013)



Photo 38. Ditch 17 adjacent to the south of Wetland 1, Facing west (5/15/2013)



Photo 39. Intermittent trib to Ditch 19, FSLD facility to the left and power line ROW to the right, facing west (5/15/2013)



Photo 40. Intermittent trib to Ditch 19, Cox property (20 acres) to left and Tandem Leasing to right, facing east (5/15/2013)

International Rail Port and Logistics Park
West Memphis, AR



Photo 41. Detention pond south of Tetra Tech facility, facing south (5/15/2013)



Photo 42. Southern most levee weep/farm pond, Facing north (5/15/2013)

Appendix C
Field Data Forms

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Rail Loop City/County: Crittenden Co. Sampling Date: 8/15/13
 Applicant/Owner: City of West Memphis State: AR Sampling Point: W1
 Investigator(s): JO, PZ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Flat Slope (%) < 1
 Subregion (LRR or MLRA): O / 131A Lat: 35.1185° Long: -90.1965° Datum: _____
 Soil Map Unit Name: Dubbs Silt Loam NWI classification: Freshwater Forested/Shrub Wetland
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Remarks:	

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Water Marks (B1) <input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input checked="" type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<p><u>Secondary Indicators (minimum of two required)</u></p> <input checked="" type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
<p>Field Observations:</p> Surface Water Present? Yes <u>✓</u> No _____ Depth (inches): <u>< 1</u> Water Table Present? Yes _____ No <u>✓</u> Depth (inches): _____ Saturation Present? Yes <u>✓</u> No _____ Depth (inches): <u>surface</u>	Wetland Hydrology Present? Yes <u>X</u> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: W1

Tree Stratum (Plot size: _____)				Absolute % Cover	Dominant Species?	Indicator Status
1.	<i>Quercus falcata</i>	5	N	FACU		
2.	<i>Quercus nigra</i>	5	N	FAC		
3.	<i>Juglans nigra</i>	5	N	UPL		
4.	<i>Celtis laevigata</i>	5	N	FACW		
5.	<i>Acer Pulchrum</i>	5	N	FAC		
6.	<i>Acer saccharinum</i>	20	Y	FAC		
7.	<i>Populus deltoides</i>	10	Y	FAC		
8.	<i>Quercus phellos</i>	10	Y	FACW		
		65	= Total Cover			
50% of total cover: _____		20% of total cover: _____				
Sapling/Shrub Stratum (Plot size: _____)				Absolute % Cover	Dominant Species?	Indicator Status
1.	<i>Viburnum nudum</i>	10	N	FACW		
2.	<i>Sambucus nigra</i>	5	N	FACW		
3.	<i>Asimina triloba</i>	30	Y	FAC		
4.	<i>Acer negundo</i>	15	Y	FAC		
5.						
6.						
7.						
8.						
		60	= Total Cover			
50% of total cover: _____		20% of total cover: _____				
Herb Stratum (Plot size: _____)				Absolute % Cover	Dominant Species?	Indicator Status
1.	<i>Ranunculus hispidus</i>	10	N	FAC		
2.	<i>Ambrosia trifida</i>	2	N	FAC		
3.	<i>Galium obtusum</i>	5	N	FACW		
4.	<i>Rumex crispus</i>	5	N	FAC		
5.	<i>Vicia minutiflora</i>	2	N	FAC		
6.	<i>Impatiens capensis</i>	20	Y	FACW		
7.	<i>Parthenocissus quinquefolia</i>	20	Y	FACU		
8.						
9.						
10.						
11.						
12.						
		64	= Total Cover			
50% of total cover: _____		20% of total cover: _____				
Woody Vine Stratum (Plot size: _____)				Absolute % Cover	Dominant Species?	Indicator Status
1.	<i>Rubus bughii</i>	10	Y	FACW		
2.	<i>Campsis radicans</i>	10	Y	FAC		
3.	<i>Saralix rotundifolia</i>	5	N	FAC		
4.	<i>Vitis riparia</i>	10	Y	FACW		
5.	<i>Toxicodendron radicans</i>	20	Y	FAC		
		55	= Total Cover			
50% of total cover: _____		20% of total cover: _____				

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 10 (A)

Total Number of Dominant Species Across All Strata: 11 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 91 (A/B)

Prevalence Index worksheet:

Total % Cover of: _____ Multiply by: _____

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column Totals: _____ (A) _____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is >50%

3 - Prevalence Index is ≤3.0¹

Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Rail loop City/County: Crittenden Co. Sampling Date: 5/14/13
 Applicant/Owner: City of West Memphis State: AR Sampling Point: W2
 Investigator(s): SO, PE Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): 51
 Subregion (LRR or MLRA): 0/131A Lat: 35.1096° Long: -90.1901 Datum: _____
 Soil Map Unit Name: Shackey Silt Clay NWI classification: PEM/POW
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Remarks:	

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <input checked="" type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input checked="" type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<p><u>Secondary Indicators (minimum of two required)</u></p> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
<p>Field Observations:</p> Surface Water Present? Yes <u>✓</u> No _____ Depth (inches): <u>60</u> Water Table Present? Yes <u>✓</u> No _____ Depth (inches): <u>Surface</u> Saturation Present? Yes <u>✓</u> No _____ Depth (inches): <u>Surface</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: <div style="font-size: 2em; text-align: center;">Ducks</div>	

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: WZ

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status		
1. <u>Populus deltoides</u>	<u>5</u>	<u>Y</u>	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>9</u> (A) Total Number of Dominant Species Across All Strata: <u>9</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)	
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
50% of total cover: _____		20% of total cover: _____		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____	
<u>5</u> = Total Cover					
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status		
1. <u>Celtis laevigata</u>	<u>5</u>	<u>N</u>	<u>FACW</u>		Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
2. <u>Salix nigra</u>	<u>10</u>	<u>Y</u>	<u>OBL</u>		
3. <u>Cornus Drummondii</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>		
4. <u>Toxicodendron radicans</u>	<u>5</u>	<u>N</u>	<u>FAC</u>		
5. <u>Campsis radicans</u>	<u>5</u>	<u>N</u>	<u>FAC</u>		
6. _____					
7. _____					
8. _____					
50% of total cover: _____		20% of total cover: _____		Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.	
<u>35</u> = Total Cover					
Herb Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status		
1. <u>Geranium maculatum</u>	<u>5</u>	<u>N</u>	<u>FACU</u>		Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
2. <u>Rumex crispus</u>	<u>20</u>	<u>Y</u>	<u>FAC</u>		
3. <u>Solidago patula</u>	<u>10</u>	<u>Y</u>	<u>OBL</u>		
4. <u>Evelynus sericeus</u>	<u>10</u>	<u>Y</u>	<u>FACW</u>		
5. <u>Ranunculus hispidus</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>		
6. <u>Vicia minutiflora</u>	<u>15</u>	<u>Y</u>	<u>FAC</u>		
7. <u>Sorghum halepense</u>	<u>5</u>	<u>N</u>	<u>FACU</u>		
8. <u>Echinochloa mucicata</u>	<u>5</u>	<u>N</u>	<u>FACW</u>		
9. _____					
10. _____					
11. _____					
12. _____					
50% of total cover: _____		20% of total cover: _____			
<u>80</u> = Total Cover					
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status		
1. <u>Bignonia capreolata</u>	<u>15</u>	<u>Y</u>	<u>FAC</u>	Remarks: (If observed, list morphological adaptations below).	
2. <u>Campsis radicans</u>	<u>10</u>	<u>N</u>	<u>FAC</u>		
3. _____					
4. _____					
5. _____					
50% of total cover: _____		20% of total cover: _____			
<u>25</u> = Total Cover					

SOIL

Sampling Point: WZ

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10 YR 5/1	90	5 YR 5/8	10			Silty Clay	

- ¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.
- Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**
- | | | |
|--|---|---|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) | <input type="checkbox"/> 1 cm Muck (A9) (LRR O) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) | <input type="checkbox"/> 2 cm Muck (A10) (LRR S) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) | <input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B) |
| <input checked="" type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T) |
| <input type="checkbox"/> Stratified Layers (A5) | <input type="checkbox"/> Depleted Matrix (F3) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 153B) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) | <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) | <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) | |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) | ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) | |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) | |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) | |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) | |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) | |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | | |

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Rail loop City/County: Crittenden Co. Sampling Date: 5/15/13
 Applicant/Owner: City of West Memphis State: AR Sampling Point: W3
 Investigator(s): SO, PE Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): <1
 Subregion (LRR or MLRA): O / 131A Lat: 35.0689° Long: -90.1953° Datum: _____
 Soil Map Unit Name: Sharkey Silty Clay / Crevasse Fine Sand NWI classification: PEM/PFO
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation Y, Soil Y, or Hydrology Y significantly disturbed? Are "Normal Circumstances" present? Yes _____ No X
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Remarks:	

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<p><u>Secondary Indicators (minimum of two required)</u></p> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
<p>Field Observations:</p> Surface Water Present? Yes <u>✓</u> No _____ Depth (inches): <u>0-12</u> Water Table Present? Yes <u>✓</u> No _____ Depth (inches): <u>Surface</u> Saturation Present? Yes <u>✓</u> No _____ Depth (inches): <u>Surface</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: <p style="font-size: 1.2em;">Seep area from high water. Evidence of historic quarry activity and trash dumping site. Most soils were fill material, gravel and trash. In some areas, water was too deep to take a soil sample.</p>	

VEGETATION (Four Strata) – Use scientific names of plants

Sampling Point: W3

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status		
1. <u>Populus deltoides</u>	<u>5</u>	<u>Y</u>	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>10</u> (A) Total Number of Dominant Species Across All Strata: <u>11</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>91</u> (A/B)	
2. <u>Celtis laevigata</u>	<u>5</u>	<u>Y</u>	<u>FACW</u>		
3. <u>Diospyros virginiana</u>	<u>3</u>	<u>Y</u>	<u>FAC</u>		
4. <u>Carya illinoensis</u>	<u>3</u>	<u>Y</u>	<u>FACU</u>		
5. _____	_____	_____	_____	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____	
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
<u>11</u> = Total Cover 50% of total cover: _____ 20% of total cover: _____				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)	
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status		
1. <u>Cornus drummondii</u>	<u>30</u>	<u>Y</u>	<u>FAC</u>		Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
<u>30</u> = Total Cover 50% of total cover: _____ 20% of total cover: _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Hydrophytic Vegetation Present? Yes <u>X</u> No _____	
Herb Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status		
1. <u>Geranium maculatum</u>	<u>5</u>	<u>N</u>	<u>FACU</u>		Remarks: (If observed, list morphological adaptations below).
2. <u>Vicia minutiflora</u>	<u>10</u>	<u>N</u>	<u>FAC</u>		
3. <u>Ranunculus hispidus</u>	<u>15</u>	<u>Y</u>	<u>FAC</u>		
4. <u>Triblium pratense</u>	<u>5</u>	<u>N</u>	<u>FACU</u>		
5. <u>Solidago patula</u>	<u>15</u>	<u>Y</u>	<u>CYBL</u>		
6. <u>Chasmodon latifolium</u>	<u>10</u>	<u>N</u>	<u>FAC</u>		
7. <u>Triticum aestivum</u>	<u>5</u>	<u>N</u>	<u>NR</u>		
8. <u>Ludwigia repens</u>	<u>20</u>	<u>Y</u>	<u>OBL</u>		
9. <u>Galium obtusum</u>	<u>15</u>	<u>Y</u>	<u>FACW</u>		
10. <u>Apocynum ambrosaeifolium</u>	<u>5</u>	<u>N</u>	<u>UPL</u>		
11. <u>Cynodon dactylon</u>	<u>5</u>	<u>N</u>	<u>FACU</u>		
12. <u>Festuca paradoxa</u>	<u>10</u>	<u>N</u>	<u>FAC</u>		
<u>120</u> = Total Cover 50% of total cover: _____ 20% of total cover: _____					
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status		
1. <u>Campsis radicans</u>	<u>20</u>	<u>Y</u>	<u>FAC</u>	Hydrophytic Vegetation Present? Yes <u>X</u> No _____	
2. <u>Toxicodendron radicans</u>	<u>20</u>	<u>Y</u>	<u>FAC</u>		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
<u>40</u> = Total Cover 50% of total cover: _____ 20% of total cover: _____					

SOIL

Sampling Point: W3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
North side 0-4	10YR 3/3	100						Topsoil/Organic
4-8	10YR 3/3	100						Gravel
South side 0-2								Black organic
2-4	10YR 3/2							Sandy clay
4-12	10YR 5/2							Silty clay

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- | | | |
|---|---|---|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U) | <input type="checkbox"/> 1 cm Muck (A9) (LRR O) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U) | <input type="checkbox"/> 2 cm Muck (A10) (LRR S) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O) | <input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T) |
| <input type="checkbox"/> Stratified Layers (A5) | <input type="checkbox"/> Depleted Matrix (F3) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 153B) |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U) | <input type="checkbox"/> Redox Dark Surface (F6) | <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U) | <input type="checkbox"/> Depleted Dark Surface (F7) | <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Muck Presence (A8) (LRR U) | <input type="checkbox"/> Redox Depressions (F8) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T) | <input type="checkbox"/> Marl (F10) (LRR U) | |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151) | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T) | ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A) | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U) | |
| <input checked="" type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S) | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151) | |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B) | |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A) | |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) | |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U) | | |

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

Gravel layer prevents coring deeper than 5-8" on north side.

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Rail loop City/County: Crittenden Co. Sampling Date: 5/15/13
 Applicant/Owner: City of West Memphis State: AR Sampling Point: WH
 Investigator(s): So, PE Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 1-2
 Subregion (LRR or MLRA): 0 / 131A Lat: 35.0846° Long: -90.1944° Datum: _____
 Soil Map Unit Name: Commerce Silt loam NWI classification: PFO
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Remarks: <p align="center" style="font-size: 1.2em;"><i>Drainage depression bermed on both sides by farm fields</i></p>	

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <table style="width:100%;"> <tr> <td><input checked="" type="checkbox"/> Surface Water (A1)</td> <td><input checked="" type="checkbox"/> Aquatic Fauna (B13)</td> </tr> <tr> <td><input checked="" type="checkbox"/> High Water Table (A2)</td> <td><input type="checkbox"/> Marl Deposits (B15) (LRR U)</td> </tr> <tr> <td><input checked="" type="checkbox"/> Saturation (A3)</td> <td><input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)</td> </tr> <tr> <td><input checked="" type="checkbox"/> Water Marks (B1)</td> <td><input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)</td> </tr> <tr> <td><input type="checkbox"/> Sediment Deposits (B2)</td> <td><input type="checkbox"/> Presence of Reduced Iron (C4)</td> </tr> <tr> <td><input type="checkbox"/> Drift Deposits (B3)</td> <td><input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)</td> </tr> <tr> <td><input type="checkbox"/> Algal Mat or Crust (B4)</td> <td><input type="checkbox"/> Thin Muck Surface (C7)</td> </tr> <tr> <td><input type="checkbox"/> Iron Deposits (B5)</td> <td><input type="checkbox"/> Other (Explain in Remarks)</td> </tr> <tr> <td><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Water-Stained Leaves (B9)</td> <td></td> </tr> </table>	<input checked="" type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input checked="" type="checkbox"/> Saturation (A3)	<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input checked="" type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Water-Stained Leaves (B9)		<p><u>Secondary Indicators (minimum of two required)</u></p> <table style="width:100%;"> <tr><td><input type="checkbox"/> Surface Soil Cracks (B6)</td></tr> <tr><td><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</td></tr> <tr><td><input type="checkbox"/> Drainage Patterns (B10)</td></tr> <tr><td><input type="checkbox"/> Moss Trim Lines (B16)</td></tr> <tr><td><input type="checkbox"/> Dry-Season Water Table (C2)</td></tr> <tr><td><input type="checkbox"/> Crayfish Burrows (C8)</td></tr> <tr><td><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)</td></tr> <tr><td><input type="checkbox"/> Geomorphic Position (D2)</td></tr> <tr><td><input type="checkbox"/> Shallow Aquitard (D3)</td></tr> <tr><td><input type="checkbox"/> FAC-Neutral Test (D5)</td></tr> <tr><td><input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)</td></tr> </table>	<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)	<input type="checkbox"/> Moss Trim Lines (B16)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Crayfish Burrows (C8)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	<input type="checkbox"/> Geomorphic Position (D2)	<input type="checkbox"/> Shallow Aquitard (D3)	<input type="checkbox"/> FAC-Neutral Test (D5)	<input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
<input checked="" type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Aquatic Fauna (B13)																															
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<p>Field Observations:</p> Surface Water Present? Yes <u>✓</u> No _____ Depth (inches): <u>1-60</u> Water Table Present? Yes <u>✓</u> No _____ Depth (inches): <u>Surface</u> Saturation Present? Yes <u>✓</u> No _____ Depth (inches): <u>Surface</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____																															
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:																																
Remarks:																																

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: W4

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Carya illinoensis</i>	20	Y	FACU
2. <i>Celtis laevigata</i>	20	Y	FACW
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____

40 = Total Cover
 50% of total cover: _____ 20% of total cover: _____

Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Quercus nigra</i>	1	N	FAC
2. <i>Viburnum nudum</i>	50	Y	FACW
3. <i>Sambucus nigra</i>	2	N	FACW
4. <i>Rubus bushii</i>	50	Y	FACW
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____

103 = Total Cover
 50% of total cover: _____ 20% of total cover: _____

Herb Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Rumex crispus</i>	15	Y	FAC
2. <i>Phytolacca americana</i>	5	N	FACU
3. <i>Ambrosia trifida</i>	5	N	FAC
4. <i>Juncus effusus</i>	15	Y	OBL
5. <i>Geranium maculatum</i>	5	N	FACU
6. <i>Carex spp.</i>	20	Y	FACW
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

65 = Total Cover
 50% of total cover: _____ 20% of total cover: _____

Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Campsis radicans</i>	20	Y	FAC
2. <i>Vitis riparia</i>	50	Y	FACW
3. <i>Toxicodendron radicans</i>	10	N	FAC
4. _____	_____	_____	_____
5. _____	_____	_____	_____

80 = Total Cover
 50% of total cover: _____ 20% of total cover: _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 8 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 88 (A/B)

Prevalence Index worksheet:

Total % Cover of: _____ Multiply by: _____

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column Totals: _____ (A) _____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is >50%

3 - Prevalence Index is $\leq 3.0^1$

Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes No

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: W4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10 YR 5/1	70	5 YR 5/6	30				Silty Clay

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U)	<input type="checkbox"/> 1 cm Muck (A9) (LRR O)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)	<input type="checkbox"/> 2 cm Muck (A10) (LRR S)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)	<input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B)	
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T)	
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 153B)	
<input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Muck Presence (A8) (LRR U)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)	<input type="checkbox"/> Marl (F10) (LRR U)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)		
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)	<input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)		
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S)	<input type="checkbox"/> Delta Ochric (F17) (MLRA 151)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)		
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)		
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)		
<input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U)			

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Rail Loop City/County: Crittenden Co. Sampling Date: 8/15/13
 Applicant/Owner: City of West Memphis State: _____ Sampling Point: W5
 Investigator(s): SO, PE Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): flat Slope (%): <1
 Subregion (LRR or MLRA): O / 131A Lat: 36.0922° Long: -90.2001° Datum: _____
 Soil Map Unit Name: Sharkey Silty Clay/Tunica Clay / Water NWI classification: PFO/PEM
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Remarks: <u>North side of Fletcher Lake</u>	

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input checked="" type="checkbox"/> Water Marks (B1) <input checked="" type="checkbox"/> Sediment Deposits (B2) <input checked="" type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input checked="" type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks) 	<p><u>Secondary Indicators (minimum of two required)</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Surface Soil Cracks (B6) <input checked="" type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)
<p>Field Observations:</p> Surface Water Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>1-10</u> Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>Surface</u> Saturation Present? (includes capillary fringe) Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>Surface</u>	Wetland Hydrology Present? Yes <u>X</u> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: W5

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Taxodium distichum</u>	<u>10</u>	<u>Y</u>	<u>OBL</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>12</u> (A) Total Number of Dominant Species Across All Strata: <u>12</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. <u>Fraxinus pennsylvanica</u>	<u>20</u>	<u>Y</u>	<u>FACW</u>	
3. <u>Salix nigra</u>	<u>10</u>	<u>Y</u>	<u>OBL</u>	
4. <u>Acer saccharinum</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>	
5. <u>Diospyros virginiana</u>	<u>5</u>	<u>N</u>	<u>FAC</u>	
6. <u>Ulmus americana</u>	<u>5</u>	<u>N</u>	<u>FAC</u>	
7. _____				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
8. _____				
	<u>60</u> = Total Cover			
50% of total cover: _____		20% of total cover: _____		
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Forestiera acuminata</u>	<u>30</u>	<u>Y</u>	<u>OBL</u>	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
2. _____				
3. _____				
4. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
5. _____				
6. _____				
7. _____				Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.
8. _____				
	<u>30</u> = Total Cover			
50% of total cover: _____		20% of total cover: _____		
Herb Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Nymphaea odorata</u>	<u>5</u>	<u>N</u>	<u>OBL</u>	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
2. <u>Cephalanthus occidentalis</u>	<u>10</u>	<u>N</u>	<u>OBL</u>	
3. <u>Commelina virginica</u>	<u>10</u>	<u>N</u>	<u>FACW</u>	
4. <u>Saururus cernuus</u>	<u>8</u>	<u>N</u>	<u>OBL</u>	
5. <u>Sagittaria latifolia</u>	<u>15</u>	<u>Y</u>	<u>OBL</u>	
6. <u>Sagittaria graminea</u>	<u>15</u>	<u>Y</u>	<u>OBL</u>	
7. <u>Rubus crispus</u>	<u>5</u>	<u>N</u>	<u>FAC</u>	
8. <u>Ludwigia repens</u>	<u>20</u>	<u>Y</u>	<u>OBL</u>	
9. <u>Persicaria bicornis</u>	<u>15</u>	<u>Y</u>	<u>FACW</u>	
10. <u>Hibiscus moscheutos</u>	<u>5</u>	<u>N</u>	<u>OBL</u>	
11. <u>Amaranthus tuberculatus</u>	<u>15</u>	<u>Y</u>	<u>FACW</u>	
12. _____				
	<u>123</u> = Total Cover			
50% of total cover: _____		20% of total cover: _____		
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Vitis riparia</u>	<u>30</u>	<u>Y</u>	<u>FACW</u>	Remarks: (If observed, list morphological adaptations below).
2. <u>Lonicera japonica</u>	<u>5</u>	<u>N</u>	<u>FAC</u>	
3. <u>Campsis radicans</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>	
4. _____				
5. _____				
	<u>45</u> = Total Cover			
50% of total cover: _____		20% of total cover: _____		

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Rail Loop City/County: Crittenden Co. Sampling Date: 8/16/13
 Applicant/Owner: City of West Memphis State: AR Sampling Point: Up1
 Investigator(s): JO, PE Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Flat Slope (%): < 1
 Subregion (LRR or MLRA): O / 131A Lat: 35.1197° Long: -90.1975° Datum: _____
 Soil Map Unit Name: Tunica Clay NWI classification: None
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required, check all that apply)</u> ___ Surface Water (A1) ___ Aquatic Fauna (B13) ___ High Water Table (A2) ___ Marl Deposits (B15) (LRR U) ___ Saturation (A3) ___ Hydrogen Sulfide Odor (C1) ___ Water Marks (B1) ___ Oxidized Rhizospheres along Living Roots (C3) ___ Sediment Deposits (B2) ___ Presence of Reduced Iron (C4) ___ Drift Deposits (B3) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Algal Mat or Crust (B4) ___ Thin Muck Surface (C7) ___ Iron Deposits (B5) ___ Other (Explain in Remarks) ___ Inundation Visible on Aerial Imagery (B7) ___ Water-Stained Leaves (B9)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Sparsely Vegetated Concave Surface (B8) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ FAC-Neutral Test (D5) ___ Sphagnum moss (D8) (LRR T, U)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: Up 1

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>Carya illinoensis</u>	<u>50</u>	<u>Y</u>	<u>FACU</u>	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)
2. <u>Quercus similis</u>	<u>20</u>	<u>Y</u>	<u>FACW</u>	Total Number of Dominant Species Across All Strata: <u>9</u> (B)
3. <u>Quercus alba</u>	<u>5</u>	<u>N</u>	<u>FACU</u>	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>22</u> (A/B)
4. <u>Quercus nigra</u>	<u>5</u>	<u>N</u>	<u>FAC</u>	
5. <u>Fraxinus pennsylvanica</u>	<u>5</u>	<u>N</u>	<u>FACW</u>	
6. <u>Ulmus americana</u>	<u>5</u>	<u>N</u>	<u>FAC</u>	
7. <u>Celtis laevigata</u>	<u>5</u>	<u>N</u>	<u>FACW</u>	
8. _____				
	<u>95</u> = Total Cover			
	50% of total cover: _____	20% of total cover: _____		
Sapling/Shrub Stratum (Plot size: _____)				
1. <u>Asimina parviflora</u>	<u>30</u>	<u>Y</u>	<u>FACU</u>	
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	<u>30</u> = Total Cover			
	50% of total cover: _____	20% of total cover: _____		
Herb Stratum (Plot size: _____)				
1. <u>Ambrosia trifida</u>	<u>5</u>	<u>N</u>	<u>FAC</u>	
2. <u>Desmodium illinoense</u>	<u>2</u>	<u>N</u>	<u>FAC</u>	
3. <u>Trifolium repens</u>	<u>10</u>	<u>Y</u>	<u>FACU</u>	
4. <u>Alopecurus pratensis</u>	<u>5</u>	<u>N</u>	<u>FAC</u>	
5. <u>Sorghum halepense</u>	<u>10</u>	<u>Y</u>	<u>FACU</u>	
6. <u>Urtica chamaedryoides</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>42</u> = Total Cover			
	50% of total cover: _____	20% of total cover: _____		
Woody Vine Stratum (Plot size: _____)				
1. <u>Campsis radicans</u>	<u>5</u>	<u>N</u>	<u>FAC</u>	
2. <u>Toxicodendron pubescens</u>	<u>20</u>	<u>Y</u>	<u>FACU</u>	
3. <u>Toxicodendron radicans</u>	<u>20</u>	<u>Y</u>	<u>FAC</u>	
4. <u>Parthenocissus quinquefolia</u>	<u>15</u>	<u>Y</u>	<u>FACU</u>	
5. <u>Bignonia capreolata</u>	<u>5</u>	<u>N</u>	<u>FAC</u>	
	<u>65</u> = Total Cover			
	50% of total cover: _____	20% of total cover: _____		
Remarks: (If observed, list morphological adaptations below).				

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 22 (A/B)

Prevalence Index worksheet:

Total % Cover of: _____ Multiply by: _____

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column Totals: _____ (A) _____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is >50%

3 - Prevalence Index is ≤ 3.0 ¹

Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No X

SOIL

Sampling Point: UP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0-12	2.5 YR 4/1	70	7.5 YR 5/6	30		Silty Clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U)	<input type="checkbox"/> 1 cm Muck (A9) (LRR O)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)	<input type="checkbox"/> 2 cm Muck (A10) (LRR S)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)	<input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T)
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 153B)
<input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Muck Presence (A8) (LRR U)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)	<input type="checkbox"/> Marl (F10) (LRR U)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)	³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)	<input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)	
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S)	<input type="checkbox"/> Delta Ochric (F17) (MLRA 151)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)	
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)	
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)	
<input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U)		

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Rail loop City/County: Crittenden Co. Sampling Date: 5/15/13
 Applicant/Owner: City of West Memphis State: _____ Sampling Point: Up 2
 Investigator(s): SO, PB Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): 1-2
 Subregion (LRR or MLRA): 0 / 131A Lat: 35.1018° Long: -90.1924° Datum: _____
 Soil Map Unit Name: Bowdre Silty Clay NWI classification: None
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No <u>X</u>	Is the Sampled Area within a Wetland?	Yes _____	No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>			
Wetland Hydrology Present?	Yes _____	No <u>X</u>			
Remarks:					

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>	
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		_____ Surface Soil Cracks (B6)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Sphagnum moss (D8) (LRR T, U)	
Field Observations:		Wetland Hydrology Present? Yes _____ No <u>X</u>	
Surface Water Present?	Yes _____ No _____ Depth (inches): _____		
Water Table Present?	Yes _____ No _____ Depth (inches): _____		
Saturation Present?	Yes _____ No _____ Depth (inches): _____	(includes capillary fringe)	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: Op 2

Tree Stratum (Plot size: _____)				Absolute % Cover	Dominant Species?	Indicator Status
1.	<i>Celtis laevigata</i>	30	Y	FACW		
2.	<i>Populus deltoides</i>	10	Y	FAC		
3.	<i>Carya illinoensis</i>	10	Y	FACU		
4.	<i>Diospyros virginiana</i>	5	N	FAC		
5.	<i>Ulmus americana</i>	1	N	FAC		
6.						
7.						
8.						
		56 = Total Cover				
50% of total cover: _____		20% of total cover: _____				
Sapling/Shrub Stratum (Plot size: _____)				Absolute % Cover	Dominant Species?	Indicator Status
1.	<i>Ulmus americana</i>	60	Y	FAC		
2.						
3.						
4.						
5.						
6.						
7.						
8.						
		60 = Total Cover				
50% of total cover: _____		20% of total cover: _____				
Herb Stratum (Plot size: _____)				Absolute % Cover	Dominant Species?	Indicator Status
1.	<i>Geranium maculatum</i>	5	N	FACU		
2.	<i>Melilotus officinalis</i>	10	N	FACU		
3.	<i>Trifolium pratense</i>	5	N	FACU		
4.	<i>Festuca proserpina</i>	25	Y	FAC		
5.	<i>Galium obtusum</i>	5	N	FACU		
6.	<i>Chasmodon latifolium</i>	10	N	FAC		
7.	<i>Ambrosia artemisiifolia</i>	10	N	FACU		
8.	<i>Cynodon dactylon</i>	15	Y	FACU		
9.	<i>Daucus carota</i>	20	Y	UPL		
10.	<i>Bidens aristosa</i>	10	N	FACW		
11.	<i>Senna occidentalis</i>	5	N	FAC		
12.	<i>Alopecurus pratensis</i>	5	N	FAC		
		115 = Total Cover				
50% of total cover: _____		20% of total cover: _____				
Woody Vine Stratum (Plot size: _____)				Absolute % Cover	Dominant Species?	Indicator Status
1.	<i>Campsis radicans</i>	15	Y	FAC		
2.	<i>Rubus bushii</i>	10	N	FACW		
3.	<i>Vitis riparia</i>	10	N	FACW		
4.	<i>Toxicodendron radicans</i>	10	N	FAC		
5.	<i>Parthenocissus quinquefolia</i>	20	Y	FACU		
		65 = Total Cover				
50% of total cover: _____		20% of total cover: _____				

Dominance Test worksheet:	
Number of Dominant Species That Are OBL, FACW, or FAC:	<u>4</u> (A)
Total Number of Dominant Species Across All Strata:	<u>9</u> (B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>44%</u> (A/B)

Prevalence Index worksheet:	
Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____	(A) _____ (B) _____
Prevalence Index = B/A = _____	

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- 2 - Dominance Test is >50%
- 3 - Prevalence Index is $\leq 3.0^1$
- Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No X

SOIL

Sampling Point: Up2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10 YR 3/3						Silty Clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U)	<input type="checkbox"/> 1 cm Muck (A9) (LRR O)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)	<input type="checkbox"/> 2 cm Muck (A10) (LRR S)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)	<input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20)	
<input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> (MLRA 153B)	
<input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Muck Presence (A8) (LRR U)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)	<input type="checkbox"/> Marl (F10) (LRR U)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)		³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)	<input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)		
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S)	<input type="checkbox"/> Delta Ochric (F17) (MLRA 151)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)		
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)		
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)		
<input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U)			

Restrictive Layer (if observed):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No

Remarks:

Appendix D

Wetland Mitigation Plan

EnSafe Inc, December 2013

Truck/Rail to Barge Terminal, Louis Dreyfus Commodities, Inc.

West Memphis, Arkansas

Proposed Wetland Mitigation Plan, USACE 404 Permit

Prepared by Ensafe

December 2013

There are four jurisdictional wetlands that will be impacted by the proposed project. Two of these are forested (PF01A and PSS1A); the remaining two are located in agricultural fields. The U.S. Natural Resources Conservation Service has not conducted a wetland determination at this site for the purpose of implementing the Food Securities Act; therefore, these are not considered “prior converted croplands”. The total acreage of wetlands that will be impacted by the project include:

	Permanent Acres	Temporary Acres	Total Acres
Forestland	3.27	7.97	11.24
Agricultural Land	3.21	6.22	9.43
Total	6.48	14.19	20.67

Temporary impacts include a 50 foot “buffer” on each side of the project location for construction access, which will be allowed to revert to preexisting conditions once construction is completed for the project.

The Charleston U.S. Army Corps of Engineers (USACE) District Standard Operating Procedure for determining required compensatory mitigation (Charleston Method, September 19, 2002 and Addendum) will be used during the Section 404 permitting process with the USACE Memphis District to determine the wetland impacts and to develop the required mitigation that will be required to offset the impacts that will occur during the project construction. This method is used in Arkansas to provide a basic framework that provides predictable and consistent evaluation of wetland impacts and the type and quantity of mitigation that will be required to offset those impacts.

There are no available mitigation banks or credits available in the West Memphis area; therefore, mitigation for the project will be implemented onsite. The mitigation will involve enhancing or restoring farmed wetlands that have been modified due to ditching by re-establishing hydric forest species, and plugging agricultural drainage systems, if necessary.

APPENDIX D

ESA Section 7 Letters of Concurrence and USACE Wetland Coordination



IN REPLY REFER TO:

United States Department of the Interior



FISH AND WILDLIFE SERVICE
110 S. Amity Road, Suite 300
Conway, Arkansas 72032
Tel.: 501/513-4470 Fax: 501/513-4480

January 24, 2014

James R. Orr
URS Corporation
1000 Corporate Centre Drive
Suite 250
Franklin, TN 37067

Dear Mr. Orr:

The Fish and Wildlife Service (Service) has reviewed your letter dated January 15, 2013, concerning the proposed industrial park near the City of West Memphis, Crittenden County, Arkansas. Our comments are submitted in accordance with the Fish and Wildlife Coordination Act (FWCA; 16 U.S.C. 661-667e), Endangered Species Act of 1973 (87 Stat. 884, as amended 16 U.S.C. 1531 et seq.) and Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d).

The Service concurs with your determination that the proposed project would have no effect on the Interior Least Tern (*Sterna antillarum athalassos*), Piping Plover (*Charadrius melodus*), Pallid Sturgeon (*Scaphirhynchus albus*), Fat Pocketbook (*Potamilus capax*), or Bald Eagle (*Haliaeetus leucocephalus*), and would not have any significantly adverse impacts on any non-listed species.

We appreciate your interest in the conservation of endangered species. If you have any questions, please contact the Arkansas Ecological Services Staff at (501) 513-4487.

Sincerely,

Jim Boggs
Project Leader



Keeping the Natural State natural.

Arkansas Game and Fish Commission

Mike Armstrong
Deputy Director

Mike Knoedl
Director

Ricky Chastain
Deputy Director

May 31, 2013

James Orr
URS
1000 Corporate Center Dr., Suite 250
Franklin, TN 37067

Re: Environmental Analysis: West Memphis Rail Upgrades and Extension West of the Mississippi River Levee,
West Memphis, AR.

Dear Mr. Orr,

The Arkansas Game and Fish Commission (AGFC) has for a number of years reviewed proposed federally funded projects for the potential presence of threatened or endangered species covered by the Endangered Species Act (ESA). However, the U.S. Fish and Wildlife Service (USFWS) is in actuality the ultimate legal authority for providing review and clearance for these projects and for the administration of the ESA and the National Environmental Policy Act. Because the State of Arkansas has no analogous statutory counterpart to the ESA, the review that AGFC has provided in the past has therefore been nonbinding and redundant, as USFWS has also been required to conduct this process. In light of this, AGFC will no longer be conducting these reviews. Thus, all inquiries regarding threatened and endangered species reviews and clearance for projects in Arkansas requiring such should be directed to:

U.S. Fish & Wildlife Service
110 South Amity Road, Suite 300
Conway, AR 72032

AGFC does not have any Wildlife Management Areas, public lakes or public access points in the vicinity of the study area.

If our agency can be of further assistance, please feel free to contact us.

Sincerely,

Jennifer Elise Sheehan
Federal Regulatory Program Specialist

2 Natural Resources Drive • Little Rock, AR 72205 • www.agfc.com
Phone (800) 364-4263 • (501) 223-6300 • Fax (501) 223-6448

The mission of the Arkansas Game and Fish Commission is to wisely manage all the fish and wildlife resources of Arkansas while providing maximum enjoyment for the people.

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Crittenden

Name	Status		Rank	
	Federal	State	Global	State
Animals - Invertebrates				
Cicindela cursitans (ant-like tiger beetle)	-	INV	G4	S2S3
Cicindela hirticollis (beach-dune tiger beetle)	-	INV	G5	S2S3
Cyprogenia aberti (western fanshell)	-	INV	G2G3Q	S2
Obovaria olivaria (hickorynut)	-	INV	G4	S3
Pleurobema cordatum (Ohio pigtoe)	-	INV	G4	S1
Pleurobema rubrum (pyramid pigtoe)	-	INV	G2G3	S2
Potamilus alatus (pink heelsplitter)	-	INV	G5	S1
Potamilus capax (fat pocketbook)	LE	INV	G2	S1
Quadrula metanevra (monkeyface)	-	INV	G4	S3S4
Toxolasma lividus (purple lilliput)	-	INV	G3	S2
Uniomerus tetralasmus (pondhorn)	-	INV	G5	S2
Animals - Vertebrates				
Ambystoma talpoideum (mole salamander)	-	INV	G5	S3
Chrysemys dorsalis (southern painted turtle)	-	INV	G5	S3
Corynorhinus rafinesquii (Rafinesque's big-eared bat)	-	INV	G3G4	S3
Etheostoma fusiforme (swamp darter)	-	INV	G5	S2?
Haliaeetus leucocephalus (Bald Eagle)	-	INV	G5	S2B,S4N
Lasiurus seminolus (Seminole bat)	-	INV	G5	S3
Notropis maculatus (taillight shiner)	-	INV	G5	S3
Scaphirhynchus albus (pallid sturgeon)	LE	INV	G2	S1
Sterna antillarum athalassos (Interior Least Tern)	LE	INV	G4T2Q	S2B
Special Elements - Natural Communities				
Lower Mississippi River Bottomland Depression	-	INV	GNR	SNR
Special Elements - Other				
Colonial nesting site, water birds	-	INV	GNR	SNR



Home Hunting Fishing and Boating Species and Habitats Education Youth Resources

Species and Habitats

- Watchable Wildlife
- Wildlife by Species
- Endangered Species
- Captive Wildlife
- Nuisance Wildlife
- Wildlife Rehabilitation
- Conservation Programs
- Wildlife Action Plan
- Conservation Partners

Home > Species and Habitats

Endangered Species



Species: **American Alligator**
 Status: Recovered
 More: [Details](#)



Species: **Ozark Big-Eared Bat**
 Status: Unknown
 More: [Details](#)



Species: **American Burying Beetle**
 Status: Declining
 More: [Details](#)



Species: **Cave Crayfish**
 Status: Stable
 More: [Details](#)



Species: **Arkansas Fatmucket**
 Status: Declining
 More: [Details](#)



Species: **Pink Mucket Pearlmussel**
 Status: Stable
 More: [Details](#)



Species: **Ouachita Rock Pocketbook**
 Status: Declining
 More: [Details](#)



Species: **Magazine Mountain Shagreen**
 Status: Stable
 More: [Details](#)



Species: **Interior Least Tern**
 Status: Improving
 More: [Details](#)



Species: **Indiana Bat**
 Status: Declining
 More: [Details](#)



Species: **Gray Bat**
 Status: Declining
 More: [Details](#)



Species: **Ozark Cavefish**
 Status: Improving
 More: [Details](#)



Species: **Curtis Pearlmussel**
 Status: Extirpated
 More: [Details](#)



Species: **Fat Pocketbook**
 Status: Stable
 More: [Details](#)



Species: **Speckled Pocketbook**
 Status: Declining
 More: [Details](#)



Species: **Pallid Sturgeon**
 Status: Declining
 More: [Details](#)



Species: **Red-Cockaded Woodpecker**
 Status: Declining
 More: [Details](#)



Species: **Louisiana Pearshell**
 Status: Unknown
 More: [Details](#)



Species: **Winged Mapleleaf**
 Status: Stable
 More: [Details](#)



Species: **Scateshell**
 Status: Declining
 More: [Details](#)



Species: **Turgid Blossomshell**
 Status: Extirpated
 More: [Details](#)

**BOARD OF DIRECTORS
ST. FRANCIS LEVEE DISTRICT**

P.O. BOX 399 PHONE (870) 735-1062 FAX (870) 735-1075
WEST MEMPHIS, ARKANSAS 72303
ESTABLISHED 1893

October 31, 2011

Mr. William Johnson
Mayor, West Memphis
205 S. Redding
West Memphis, Arkansas, 72301

Dear Mayor Johnson;

The St. Francis Levee District of Arkansas is pleased to partner with the City of West Memphis in its project to extend rail service to the base of the Levee through a TIGER III grant.

I have met with Ward Wimbish, your Director of Economic Development, and the engineering company doing the rail layout and design for him. I understand that the project would like to run at least one rail line, and possibly more in the future, along the Levee ROW from a point south of Port Road. The rail could extend for a mile or further south along our ROW. The City has asked for our permission to build the rail on Levee District property.

The St. Francis Levee District of Arkansas fully supports the TIGER III grant project. We see the project as a valuable project that would benefit not only West Memphis but much of eastern Arkansas and we commend the City on undertaking this work that will greatly improve the logistical network and access to the Port of West Memphis. The regional economic development that will develop from this project is sorely needed in this part of the Arkansas Delta.

We have a history of partnering with logistics and transportation projects. As you know, Union Pacific's mainline westbound runs for several miles on our ROW. And we have partnered with the City before on a transportation project; much of the South Loop Truck Route the City built to connect the Port area to Interstates 40 & 55 was constructed on our ROW.

Just as with the projects mentioned above, the St Francis Levee District of Arkansas must approve the final design and construction procedures before work can begin.

Please accept this letter as our commitment to the project and to allowing the project, subject to our approval, to be built on our ROW at no land cost to the City.

I look forward to working with you and Ward on this project.

Sincerely,



Rob Rash, P.E., PLS
CEO/Chief Engineer



DEPARTMENT OF THE ARMY
MEMPHIS DISTRICT CORPS OF ENGINEERS
167 NORTH MAIN STREET B-202
MEMPHIS, TENNESSEE 38103-1894

REPLY TO
ATTENTION OF

June 6, 2013

Operations Division
Regulatory Branch

Mr. James R. Orr
Senior Consulting Scientist
URS Corporation
1000 Corporate Centre Drive
One Corporate Centre, Suite 250
Franklin, Tennessee 37067

Dear Mr. Orr:

This is in regard to your letter dated May 7, 2013, requesting our comments concerning possible impact on endangered species, wetlands and other potentially sensitive natural resources on a project for the City of West Memphis, Arkansas. The project consists of an upgrade to several miles of railway from 110 pound to 138 pound rail; extend the railway 13,000 feet on the south of town to the City's industrial users location (west of the levee) and relocate a segment of road to the top of the levee for access to the Port of West Memphis. Additionally, Louis Dreyfuss proposes to connect the rail extension with additional rail, a transload facility and a rail extension. The project is located in the Fletcher Lake and West Memphis Quadrangle area of Crittenden County, Arkansas (Sections 18 & 19, T-6N, R-8E) as shown on the enclosed topographic map.

Based on a review of recent maps of the project area including topographic maps, aerial photography, soils data, the information provided in your letter and a telephone conversation between you and a member of our staff on June 4, 2013, it appears that jurisdictional waters (streams/ditches) of the U.S. may be present. Therefore, the project may be subject to Section 404 of the Clean Water Act. As such, any deposition of fill material including structures placed below the ordinary high water mark of streams or ditches will require a Department of the Army permit. This determination covers only the area designated as the project site marked in the attached topographic map. For any additional work that may need to be done outside of the marked area, you should contact our offices for additional determinations.

With regard to endangered species, we are unaware of any potential threatened or endangered species within the project area. However, there is the possibility of Bald Eagle nests in the wooded sites east of the levee. Bald Eagles are not on the threatened or endangered species list but they are still protected under the Bald and Golden Eagle Protection Act. We recommend you conduct surveys in these areas to look for Bald Eagle nests that may be within the vicinity of the project area. You should also contact the U.S. Fish and Wildlife Service for more specific guidance regarding Bald Eagle nests and comprehensive analysis of listed threatened or endangered species.

With regard to archeological or historical sites, preliminary research reveals there may be sites near the project area. We recommend that you coordinate this project with the Arkansas State Historic Preservation Officer. It may be necessary for you to conduct a literature and records review of the project area followed by a more intensive survey within the project area. Results of your research should be provided to this office.

During the telephone conversation on June 4, you indicated that you would provide us with detailed drawings and plans of how you intend to cross any streams/ditches. Based on your plans, this activity may or may not require a permit. You also indicated that there exists the possibility of making adjustments to the original plan such as relocating the transload station. Because of this, we will place on hold further evaluation of your project pending receipt of the stream/ditch crossing details and the revised plans. We will hold your project in abeyance for 45 days from the date of this letter. If we have not received the requested information, we will consider that you have decided to withdraw your project from further consideration. However, you may provide us with the requested information at anytime in the future to resume the evaluation process.

Please be aware that because your project is in the vicinity of the Mississippi River levee in Crittenden County, Arkansas, you should contact two other entities for authorization. The St. Francis Levee District (870-735-1062) should be contacted to inform them of your project so they may provide you with the proper authorization for work on their levee. You should also contact the U. S. Army Corps of Engineers, Memphis District Levee Safety Program Manager, Ms. Melissa Mullen, P.E. (901-544-0716). She will need to consider your project for a possible Section 408 permit. We will need signed copies of letters from those two entities authorizing your work in order for us to finalize any potential permits you may require from the Corps of Engineers.

This preliminary jurisdiction determination (PJD) is valid for a period of no more than 5 years from the date of this letter unless new information warrants revision of the determination before the expiration date or the District Engineer identifies, after public notice and comment, that specific geographic areas with rapidly changing environmental conditions merit reverification on a more frequent basis. It is incumbent upon the applicant to remain informed of changes in the Department of the Army regulations.

A PJD cannot be appealed. If you object to this PJD, please contact us for information about receiving an approved jurisdictional determination and the administrative appeals process. The PJD is included for your concurrence. If you agree with this PJD please sign the form and return it to the address listed above. If the PJD is not returned within 30 days of the date of this letter we will assume your concurrence.

The Memphis District Regulatory Branch is committed to providing quality and timely service to our customers. In an effort to improve customer service, please take a moment to go to our Customer Service Survey found on our web site at <http://per2.nwp.usace.army.mil/survey.html>. Your comments, positive or negative, will not affect any current or future dealing with the Corps of Engineers.

If you have any questions, please contact Reginald C. Wuornos at (901) 544-0731 and refer to File No. MVM-2013-222 (RCW).

Sincerely,

Handwritten signature of Roger Allen in cursive script.

for

Timothy Davis
Western Section Chief
Regulatory Branch

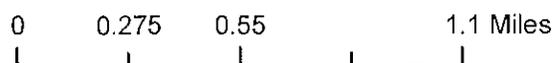
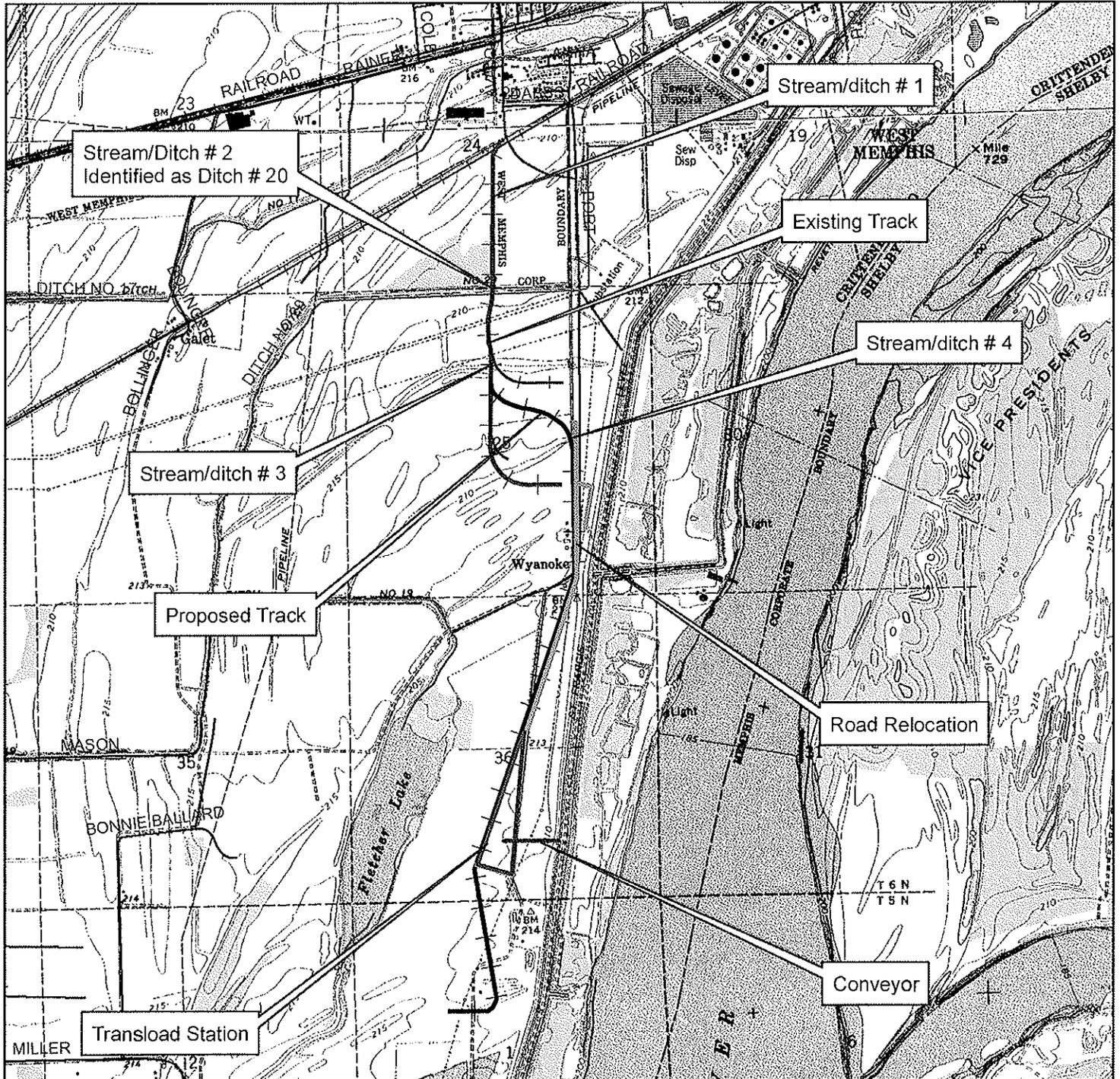
Enclosures

MVM-2013-222, West Memphis, AR Railway Upgrade

Project Plan, Fletcher Lake & West Memphis, AR Quad
 Zone 15
 Sections: 18, 19, T-6N, R-9E
 Sections: 24, 25 & 36, T-6N, R-8E
 Section: 1, T-5N, R-8E
 Lat/Lon: 35.11142° N/-90.194607° W

Legend

-  Dist_Rivers&Creeks
-  Dist_Major_Roads
-  Dist_Secondary_Road



PRELIMINARY JURISDICTIONAL DETERMINATION FORM

This preliminary JD finds that there "may be" waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

District Office	Memphis District	File/ORM #	MVM-2013-222	PJD Date:	Jun 4, 2013
State	AR	City/County	Crittenden County	Name/Address of Person Requesting PJD	Mr. James R. Orr Senior Consulting Scientist URS Corporation 1000 Corporate Centre Drive One Corporate Centre, Suite 250 Franklin, Tennessee 37067
Nearest Waterbody:	Mississippi River				
Location: TRS, Lat/Long or UTM:	35.117147° N/-90.193884° W				

Identify (Estimate) Amount of Waters in the Review Area:	Name of Any Water Bodies on the Site Identified as Section 10 Waters:
Non-Wetland Waters: _____ Stream Flow: _____ _____ linear ft _____ width _____ acres _____ Per. (seasonal)	Tidal: <input type="checkbox"/> NA Non-Tidal: <input type="checkbox"/> NA
Wetlands: _____ acre(s) Cowardin Class: N/A	<input checked="" type="checkbox"/> Office (Desk) Determination <input type="checkbox"/> Field Determination: _____ Date of Field Trip: _____

SUPPORTING DATA: Data reviewed for preliminary JD (check all that apply - checked items should be included in case file and, where checked and requested, appropriately reference sources below):

- Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: _____
- Data sheets prepared/submitted by or on behalf of the applicant/consultant.
 - Office concurs with data sheets/delineation report.
 - Office does not concur with data sheets/delineation report.
- Data sheets prepared by the Corps _____
- Corps navigable waters' study: _____
- U.S. Geological Survey Hydrologic Atlas:
 - USGS NHD data.
 - USGS 8 and 12 digit HUC maps.
- U.S. Geological Survey map(s). Cite quad name: Fletcher Lake & West Memphis Quads, Arkansas
- USDA Natural Resources Conservation Service Soil Survey. Citation: GIS, Crittenden County, AR
- National wetlands inventory map(s). Cite name: _____
- State/Local wetland inventory map(s): _____
- FEMA/FIRM maps: _____
- 100-year Floodplain Elevation is: _____
- Photographs:
 - Aerial (Name & Date): NAIP, Crittenden County, AR 2010
 - Other (Name & Date): DOQQ, Crittenden County, AR 2006
- Previous determination(s). File no. and date of response letter: _____
- Other information (please specify): _____

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

Reginald Williams 6/4/2013
 Signature and Date of Regulatory Project Manager
 (REQUIRED)

 Signature and Date of Person Requesting Preliminary JD
 (REQUIRED, unless obtaining the signature is impracticable)

EXPLANATION OF PRELIMINARY AND APPROVED JURISDICTIONAL DETERMINATIONS:

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "preconstruction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable.

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

This preliminary JD finds that there "may be" waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

Appendix A - Sites

District Office File/ORM # PJD Date:
 State City/County Person Requesting PJD

Site Number	Latitude	Longitude	Cowardin Class	Est. Amount of Aquatic Resource in Review Area	Class of Aquatic Resource
1	35.121695° N	-90.193884° W	Riverine	100 feet	
2	35.117147° N	-90.193971° W	Riverine	100 feet	
3	35.113725° N	-90.194199° W	Riverine	100 feet	
4	35.110106° N	-90.18978° W	Riverine	100 feet	

Notes:

Sites 1- 4 are streams or ditches indicated on the USGS Topographic map for Fletcher Lake and West Memphis, Arkansas.



IN REPLY REFER TO:

United States Department of the Interior

FISH AND WILDLIFE SERVICE
110 S. Amity Road, Suite 300
Conway, Arkansas 72032
Tel.: 501/513-4470 Fax: 501/513-4480



May 20, 2013

Reference: TA0538

James R. Orr
URS Corporation
1000 Corporate Centre Drive
One Corporate Centre, Suite 250
Franklin, TN 37067

Dear Mr. Orr:

The U.S. Fish and Wildlife Service (Service) has reviewed the information supplied in your letter dated May 7, 2013, regarding the proposed railway upgrades and extension in the City of West Memphis, Crittenden County, Arkansas. Our comments are submitted in accordance with the Endangered Species Act (87 Stat. 884, as amended 16 U.S.C. 1531 et seq.).

The following federally listed threatened and endangered species are known to occur in this region: interior least tern (*Sterna antillarum athalassos*), piping plover (*Charadrius melodus*), pallid sturgeon (*Scaphirhynchus albus*), pondberry (*Lindera melissifolia*), scaleshell (*Leptodea leptodon*), and fat pocketbook (*Potamilus capax*). In addition, the federally protected Bald Eagle (*Haliaeetus leucocephalus*) also occurs in this region.

Sediment and/or nutrient transport from the proposed project location may have direct, indirect, and/or cumulative effects to mussels, fish hosts, and/or their habitat(s). The effects of sedimentation and nutrients (e.g., ammonia, etc.) on mussels, fish, and their habitats are well documented in the scientific literature. Adverse effects associated with sedimentation and nitrification from all phases of construction activities may be minimized and/or alleviated through proper implementation and maintenance of erosion control best management practices and maintaining vegetative buffers. Buffer width is dependent upon slope, vegetation type, and soil types. The Service can provide additional technical assistance on appropriate vegetative buffer widths upon request.

The comments herein are for the sole purpose of providing technical assistance to the action agency or for individual pre-project planning assistance. These comments and opinions should not be misconstrued as an "effect determination" or considered as concurrence with any proceeding determination(s) by the action agency in accordance with Section 7 of the ESA. These comments do not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, a finding concurrence letter, etc.) from the Service, both lethal and nonlethal "take" of protected species are in violation of the ESA.

We appreciate your interest in the conservation of endangered species. If you have any questions, please contact the Arkansas Ecological Services Staff at (501) 513-4487.

Sincerely,

A handwritten signature in black ink, appearing to read "Jim Boggs", with a long, sweeping horizontal flourish extending to the right.

 Jim Boggs
Project Leader



IN REPLY REFER TO:

United States Department of the Interior



FISH AND WILDLIFE SERVICE

110 S. Amity Road, Suite 300

Conway, Arkansas 72032

Tel.: 501/513-4470 Fax: 501/513-4480

October 28, 2013

Reference: TA0033

James R. Orr
URS Corporation
1000 Corporate Centre Drive
One Corporate Centre, Suite 250
Franklin, TN 37067

Dear Mr. Orr:

The U.S. Fish and Wildlife Service (Service) has reviewed the information supplied in your letter dated September 25, 2013, regarding the proposed railway upgrades and land development in the City of West Memphis, Crittenden County, Arkansas. Our comments are submitted in accordance with the Endangered Species Act (87 Stat. 884, as amended 16 U.S.C. 1531 et seq.).

The following federally listed threatened and endangered species are known to occur in this region: Interior Least Tern (*Sterna antillarum athalassos*), Piping Plover (*Charadrius melodus*), Pallid Sturgeon (*Scaphirhynchus albus*), Pondberry (*Lindera melissifolia*), and Fat Pocketbook (*Potamilus capax*). In addition, the federally protected Bald Eagle (*Haliaeetus leucocephalus*) also occurs in this region.

Sediment and/or nutrient transport from the proposed project location may have direct, indirect, and/or cumulative effects to mussels, fish hosts, and/or their habitat(s). The effects of sedimentation and nutrients (e.g., ammonia, etc.) on mussels, fish, and their habitats are well documented in the scientific literature. Adverse effects associated with sedimentation and nutrification from all phases of construction activities may be minimized and/or alleviated through proper implementation and maintenance of erosion control best management practices and maintaining vegetative buffers. Buffer width is dependent upon slope, vegetation type, and soil types. The Service can provide additional technical assistance on appropriate vegetative buffer widths upon request.

Project plans should include context sensitive designs, in addition to standard best management practices required to control erosion, that minimize adverse effects to streams and wetlands from road and bridge/culvert construction, where feasible. Examples include maintaining hydrologic functions of streams/wetlands through proper bridge and culvert sizing and placement. Bridges should completely span streams and avoid pier placement below ordinary high water marks if possible. Floodplain encroachment should be avoided to the greatest extent possible by matching or exceeding current floodplain widths during bridge design. Longitudinal encroachment of the proposed roadway on stream riparian areas and wetland buffers should be avoided to the extent practicable, allowing a minimum 100 foot vegetated buffer where possible. Streams should be crossed at perpendicular angles whenever possible, and the use of bottomless culverts or placement of traditional culverts slightly below grade to prevent outlet drop scour and maintain a natural stream bottom is recommended. Only non-erodible materials should be used for work pads or to stabilize

work areas within and adjacent to water bodies to avoid siltation. Unavoidable adverse effects to streams and wetlands should be mitigated appropriately at an approved mitigation bank.

Borrow and waste areas should be located at commercially available sites or should be restricted from sensitive environmental areas such as floodplains, stream riparian corridors, and wetland buffer areas. Stormwater management during and post-construction should include best management practices, such as vegetated swales or other detention structures capable of capturing the first one inch of a climatic event from the drainage surface of the roadway. This will ensure contaminant laden stormwater runoff is remediated prior to entering receiving waters.

Additionally, numerous species of migratory birds protected under the Migratory Bird Treaty Act are located in the area and may be nesting on existing bridges or other structures adjacent to the project area. Surveys should be conducted prior to initiation of project construction and special consideration given to the times and dates of construction to avoid disturbance to these species which typically nest in Arkansas from March through September.

From the information provided, we see there are stream crossings and waterways included in the proposed project. We recommend that standard Best Management Practices be incorporated into the construction occurring in riparian zones. These streams may be considered Waters of the United States and may have adjacent wetlands that would require a Clean Water Act Section 404 permits prior to being altered. Therefore, we recommend you contact the U.S. Army Corps of Engineers Little Rock District office for additional information. They can be contacted at (501) 324-5295.

The comments herein are for the sole purpose of providing technical assistance to the action agency or for individual pre-project planning assistance. These comments and opinions should not be misconstrued as an "effect determination" or considered as concurrence with any proceeding determination(s) by the action agency in accordance with Section 7 of the ESA. These comments do not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, a finding concurrence letter, etc.) from the Service, both lethal and nonlethal "take" of protected species are in violation of the ESA.

We appreciate your interest in the conservation of endangered species. If you have any questions, please contact the Arkansas Ecological Services Staff at (501) 513-4487.

Sincerely,



Jim Boggs
Project Leader



The Department of
**Arkansas
Heritage**

Mike Beebe
Governor

Martha Miller
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

323 Center Street, Suite 1500

Little Rock, AR 72201

(501) 324-9880

fax: (501) 324-9184

tdd: (501) 324-9811

e-mail:

info@arkansaspreservation.org

website:

www.arkansaspreservation.org

An Equal Opportunity Employer



October 3, 2013

Mr. James R. Orr
Senior Consulting Scientist
URS Corporation
1000 Corporate Centre Drive, Suite 250
Franklin, Tennessee 37067-6209

Re: Crittenden County – West Memphis
Section 106 Review – FRA
Proposed International Rail Port Logistics Park
AHPP Tracking Number 87717

Dear Mr. Orr:

This letter is in regards to your inquiry regarding properties of archeological, architectural, or historic significance in the area of the above-referenced proposed undertaking. The staff of the Arkansas Historic Preservation Program has reviewed records pertaining to the area in question. They report that the Josiah Earle House Site, property CT17, is located adjacent to the proposed project area. The area also has a high probability of containing additional unrecorded archeological sites, particularly twentieth-century tenant farms. Therefore, we recommend that a cultural resources survey be conducted for proposed locations of the 13,000 feet of new rail and the transload facility prior to commencement of construction activities. The existing railroad upgrade and the relocation of the railroad segment to the top of the levee **do not** require a cultural resources survey.

Thank you for the opportunity to review this undertaking. Please refer to the AHPP Tracking Number listed above in all correspondence. If you have any questions, please call Eric Gilliland of my staff at 501-324-9270.

Sincerely,

Frances McSwain
Deputy State Historic Preservation Officer

cc: Dr. Ann Early, Arkansas Archeological Survey
Ms. Jean Ann Lambert, Quapaw Tribe of Oklahoma



September 3, 2013

AHPP
SEP 04 2013

FRA
87717
RS/RAI

Mr. Greg Phillips
Arkansas Historic Preservation Program
323 Center Street, Suite 1500
Little Rock, AR 72201

Subject: Section 106 Review: International Rail Port Logistics Park, City of West
Memphis, Arkansas.

Dear Mr. Phillips:

URS Corporation requests your agency's comments regarding possible impact on cultural and historical resources, of the above referenced project as you think may be pertinent. The project sponsor is the City of West Memphis through a Tiger Grant from the Federal Railroad Administration (FRA).

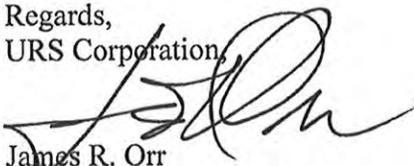
The City of West Memphis (City) proposes to upgrade a railway at their logistics park south of the City of West Memphis, Figure 1. The project involves the upgrade of 13,000 feet of railway from 110 pound rail to 138 pound rail, and to relocate a segment of road to the top of the levee for access to the Port of West Memphis, Figure 2. In addition, Louis Dreyfus Company (LD) proposes to connect to the rail extension with an additional 13,000 feet of rail, and a transload facility. All new construction will be on the west side of the levee. Please note that proposed future roads, depicted in purple are not a part of the proposed project. Only the teal (rehabilitated track), green (new rail for the City of West Memphis), and orange (new rail for LD) are included in the proposed project.

The construction of new rail, road and transload facility will be on currently agricultural ground and along existing roadbeds. Excavation depth is anticipated to be minimal (less than two feet) as the area is low and will require stable fill material for construction. The width of the new rail footprint will be approximately 25 feet.

We greatly appreciate your assistance with Section 106 Review and assessment of important cultural and historical resources in the area. Also please advise us of Tribal interests in this area and coordination requirements.

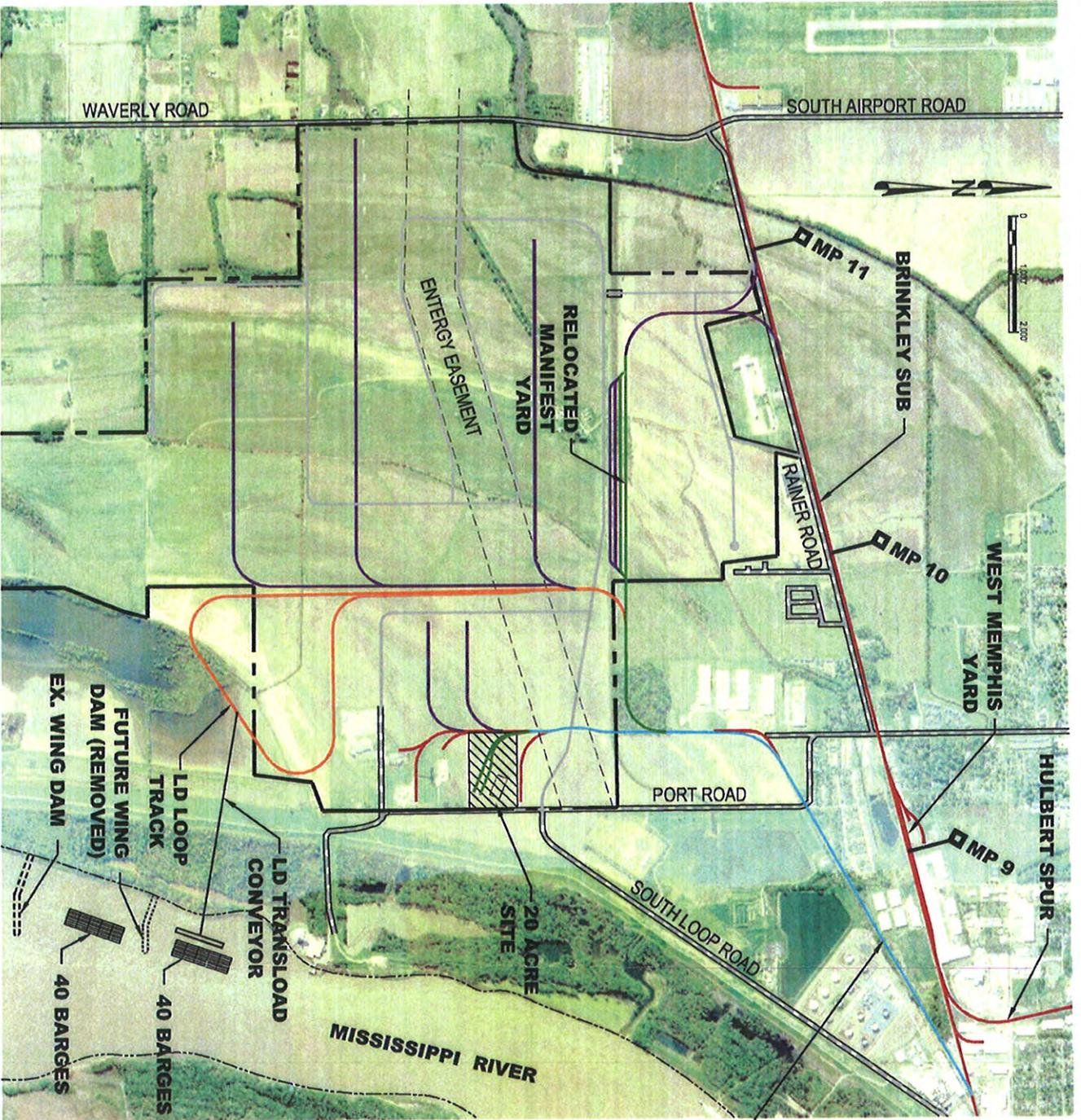
Thank you for your assistance with this project and your comments.

Regards,
URS Corporation,



James R. Orr
Sr. Consulting Scientist

URS Corporation
1000 Corporate Centre Drive, Suite 250
Franklin, TN 37067-6209
Tel: 615.771.2480
Fax: 615.771.2459
www.urscorp.com



TENARK
IND. LEAD

LEGEND

- EX. RAIL
- REHAB EX. RAIL
- WM TIGER RAIL
- LD PROP. RAIL
- FUTURE RAIL
- EX. ROAD
- FUTURE ROAD
- EASEMENT

CALDWELL
RICHARDS
SORENSEN
ANSWERS TO INFRASTRUCTURE





November 6, 2013

Ms. Jean Ann Lambert
Quapaw Tribe of Oklahoma
P.O. Box 765
Quapaw, OK 74363-0765
Phone: 918-641-4724 Ex. 252

Subject: Section 106 Review: International Rail Port Logistics Park, City of West Memphis, Arkansas.

Dear Ms. Lambert:

URS Corporation requests your agency's comments regarding possible impact on cultural and historical resources, of the above referenced project as you think may be pertinent. You were copied by letter regarding this project from Francis McSwain of The Department of Arkansas Heritage, October 3, 2013. The Project sponsor is the City of West Memphis through a TIGER Grant administered by the Federal Railroad Administration (FRA). Should formal communication be required, as the lead Federal agency, FRA will contact you to initiate Government-to-Government consultation regarding this undertaking in accordance with 36 CFR § 800.2(c)(2)(ii).

The City of West Memphis (City) proposes to upgrade a railway at their logistics park south of the City of West Memphis, (Figure 1). The project involves the upgrade of 13,500 feet of existing railway from 110 pound rail to 138 pound rail; extend the new railway 13,500 feet on the south of town to the Cities industrial users location (west of the levee); develop 20 acres of farm land for an industrial site, and develop approximately 10 acres of farmland for a transload facility. All new construction will be on the west side of the levee on agricultural land. Please note that proposed future roads, depicted in purple, are not a part of the proposed project. Only the teal (rehabilitated track), green (new rail for the City of West Memphis), and orange (new rail for LD) are included in the proposed project.

The construction of new rail, road and transload facility will be on existing agricultural land and along existing roadbeds. Excavation depth is anticipated to be minimal (less than two feet) as the area is low and will require stable fill material for construction. The width of the new rail footprint will be approximately 25 to 50 feet.

The National Historic Preservation Act (NHPA) recognizes that federally funded undertakings, like the subject project, can affect historic properties to which your tribe attaches religious, cultural, and historic significance. In accordance with 36 CFR 800 regulations implementing compliance with Section 106 of the NHPA, I would like to know if you have information you could share with me about tribal concerns in the



project area and if you wish to be a consulting party on the project. Early awareness of your concerns can serve to protect historic properties valued by your tribe.

If you act as a consulting party you will receive archaeological assessment reports and related documentation, be invited to attend project meetings with FRA, the City of West Memphis, and the Department of Arkansas Heritage, if any are held, and be asked to provide input throughout the process. If you choose to not act as a consulting party at this time, you can do so at a later date simply by notifying me.

URS has conducted a Phase I Cultural Resources survey which identified one farm site which will not be impacted. This report can be provided at your request. We would greatly appreciate your comments on the action or attached report within 30 days of this letter. Please be advised that sometime in the near future, we will be releasing the proposed EA for comment, and will send it to any of the tribes that respond as wanting to be part of the comment process.

Thank you for your assistance with this project and your comments.

Regards,

URS Corporation

James R. Orr
Sr. Consulting Scientist

WBH

Enclosure

cc: Mr. Robert Yargee, Alabama-Quassarte Tribal Town
Dr. Richard Allen, Cherokee Nation of Oklahoma
Ms. Ladonna Brown, Chickasaw Nation
Dr. Ian Thompson, Choctaw Nation of Oklahoma
Ms. Dana Masters, Jena Band of the Choctaw Indians
Mr. Jeremiah Hobia, Mekko (Town King), Kialegee Tribal Town
Mr. Kenneth H. Carleton, Mississippi Band of Choctaw Indians
Mr. Emman Spain, Muscogee (Creek) Nation of Oklahoma
Dr. Andrea A. Hunter, Osage Nation
Ms. Barbara Welborn, Thlopthlocco Tribal Town
Ms. Lisa LaRue-Baker, United Keetoowah Band of Cherokee Indians

From: [Lisa LaRue-Baker - UKB THPO](#)
To: [Hager, Will](#)
Cc: [verna](#); eberry@unitedkeetoowahband.org
Subject: Re: Section 106 Review: International Rail Port Logistics Park, West Memphis Arkansas
Date: Friday, November 15, 2013 11:41:52 AM
Attachments: [image001.gif](#)

The United Keetoowah Band of Cherokee Indians in Oklahoma has reviewed your project under Section 106 of the NHPA, and at this time, has no comments or objections. However, if any human remains are inadvertently discovered, please cease all work and contact us immediately.

Thank you,

Lisa C. Baker

Acting THPO
United Keetoowah Band of Cherokee Indians in Oklahoma
PO Box 746
Tahlequah, OK 74465

c 918.822.1952
ukbthpo-larue@yahoo.com

[Please FOLLOW our historic preservation page and LIKE us on FACEBOOK](#)



From: "Hager, Will" <will.hager@urs.com>
To: "jlambert@quapawtribe.com" <jlambert@quapawtribe.com>
Cc: "aqttculture@yahoo.com" <aqttculture@yahoo.com>; "Richard-Allen@cherokee.org" <Richard-Allen@cherokee.org>; "ladonna.brown@chickasaw.net" <ladonna.brown@chickasaw.net>; "ithompson@chowntawnation.com" <ithompson@chowntawnation.com>; "danammasters@aol.com" <danammasters@aol.com>; "jeremiah.hobia@kialegeetribes.net" <jeremiah.hobia@kialegeetribes.net>; "KCarleton@choctaw.org" <KCarleton@choctaw.org>; "tisham@muscogeenation-nsn.gov" <tisham@muscogeenation-nsn.gov>; "ahunter@osagetribes.org" <ahunter@osagetribes.org>; "bcwelborn@sbcglobal.net" <bcwelborn@sbcglobal.net>; "UKBTHPO-larue@yahoo.com" <UKBTHPO-larue@yahoo.com>; "Orr, Jim" <jim.orr@urs.com>
Sent: Monday, November 11, 2013 1:24 PM
Subject: Section 106 Review: International Rail Port Logistics Park, West Memphis Arkansas

URS Corporation requests your agency's comments regarding possible impact on cultural and historical resources, of the above referenced project as you think may be pertinent. The Project sponsor is the City of West Memphis through a TIGER Grant administered by the Federal Railroad Administration (FRA).

Please find the attached coordination letter and preliminary site plan regarding the proposed improvements. Thank you for your assistance and please let us know if you have any questions.

Thank you,

Will Hager, AICP, LEED Green Associate
Project Planner
URS Corporation
1000 Corporate Centre Drive
One Corporate Centre, Suite 250
Franklin, TN 37067
(office) 615.771.2480
(direct) 615.224.2138
(mobile) 615.330.3563
(fax) 615.771.2459

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West Memphis International Rail Port Logistics Park PHONE CONVERSATION

Date: October 24, 2013
Participants: Will Hager (URS) and Mike Jansky (EPA)
Subject: EPA Coordination

Summary/Pertinent Points

- EPA will review Draft EA when ready.
- Emphasized proper coordination with other agencies (SHPO, Fish and Game, etc.)
- EPA looks forward to receiving the Draft EA and will provide additional comments at that time.
- Mr. Jansky has had good experiences working with URS in the past and suggested contacting URS staff in Austin if we have any questions regarding the development of EAs for EPA Region 6.

Summary prepared by: WH

United States Department of Agriculture



Natural Resources Conservation Service
3407 S. Caraway Rd.
Jonesboro, AR 72404

October 21, 2013

Pete Zervas
Biologist
URS
1000 Corporate Centre Dr. Suite 250
Franklin, TN 37067

Re: West Memphis Rail Loop Project

Dear: Mr. Zervas

Enclosed is a completed CPA-106 Farmland conversion Impact Rating for the above mentioned projects. I have found that 44 acres of prime farmland would be impacted with this project.

If you have any additional questions, please contact me at 870-972-4671 ext. 141

Sincerely,

A handwritten signature in black ink, appearing to read "David Hargis", written in a cursive style.

David Hargis
Resource Soil Scientist

**FARMLAND CONVERSION IMPACT RATING
FOR CORRIDOR TYPE PROJECTS**

PART I (To be completed by Federal Agency)		3. Date of Land Evaluation Request 9/24/13	4. Sheet 1 of _____
1. Name of Project City of West Memphis Rail Loop and Industri	5. Federal Agency Involved Federal Railway Administration		
2. Type of Project Rail Loop and Industrial Park	6. County and State Crittenden, AR		
PART II (To be completed by NRCS)		1. Date Request Received by NRCS 9/24/13	2. Person Completing Form David Hargis
3. Does the corridor contain prime, unique statewide or local important farmland? (if no, the FPPA does not apply - Do not complete additional parts of this form). YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>		4. Acres Irrigated 136,844	Average Farm Size 1,284
5. Major Crop(s) Soybeans	6. Farmable Land in Government Jurisdiction Acres: 375,870 % 92		7. Amount of Farmland As Defined in FPPA Acres: 344,680 % 85
8. Name Of Land Evaluation System Used LESA	9. Name of Local Site Assessment System		10. Date Land Evaluation Returned by NRCS 10/21/13

PART III (To be completed by Federal Agency)	Alternative Corridor For Segment _____			
	Corridor A	Corridor B	Corridor C	Corridor D
A. Total Acres To Be Converted Directly	44.0			
B. Total Acres To Be Converted Indirectly, Or To Receive Services				
C. Total Acres In Corridor	44.0	0	0	0

PART IV (To be completed by NRCS) Land Evaluation Information	
A. Total Acres Prime And Unique Farmland	44.00
B. Total Acres Statewide And Local Important Farmland	
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted	0.0100
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value	71
PART V (To be completed by NRCS) Land Evaluation Information Criterion Relative value of Farmland to Be Serviced or Converted (Scale of 0 - 100 Points)	88

PART VI (To be completed by Federal Agency) Corridor Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))	Maximum Points			
1. Area in Nonurban Use	15			
2. Perimeter in Nonurban Use	10			
3. Percent Of Corridor Being Farmed	20			
4. Protection Provided By State And Local Government	20			
5. Size of Present Farm Unit Compared To Average	10	0		
6. Creation Of Nonfarmable Farmland	25			
7. Availability Of Farm Support Services	5			
8. On-Farm Investments	20			
9. Effects Of Conversion On Farm Support Services	25			
10. Compatibility With Existing Agricultural Use	10			
TOTAL CORRIDOR ASSESSMENT POINTS	160			

PART VII (To be completed by Federal Agency)				
Relative Value Of Farmland (From Part V)	100	88		
Total Corridor Assessment (From Part VI above or a local site assessment)	160			
TOTAL POINTS (Total of above 2 lines)	260			

1. Corridor Selected:	2. Total Acres of Farmlands to be Converted by Project:	3. Date Of Selection:	4. Was A Local Site Assessment Used? YES <input type="checkbox"/> NO <input type="checkbox"/>
-----------------------	---	-----------------------	--

5. Reason For Selection:

Signature of Person Completing this Part: _____ DATE _____

NOTE: Complete a form for each segment with more than one Alternate Corridor

CORRIDOR - TYPE SITE ASSESSMENT CRITERIA

The following criteria are to be used for projects that have a linear or corridor - type site configuration connecting two distant points, and crossing several different tracts of land. These include utility lines, highways, railroads, stream improvements, and flood control systems. Federal agencies are to assess the suitability of each corridor - type site or design alternative for protection as farmland along with the land evaluation information.

(1) How much land is in nonurban use within a radius of 1.0 mile from where the project is intended?

More than 90 percent - 15 points
90 to 20 percent - 14 to 1 point(s)
Less than 20 percent - 0 points

(2) How much of the perimeter of the site borders on land in nonurban use?

More than 90 percent - 10 points
90 to 20 percent - 9 to 1 point(s)
Less than 20 percent - 0 points

(3) How much of the site has been farmed (managed for a scheduled harvest or timber activity) more than five of the last 10 years?

More than 90 percent - 20 points
90 to 20 percent - 19 to 1 point(s)
Less than 20 percent - 0 points

(4) Is the site subject to state or unit of local government policies or programs to protect farmland or covered by private programs to protect farmland?

Site is protected - 20 points
Site is not protected - 0 points

(5) Is the farm unit(s) containing the site (before the project) as large as the average - size farming unit in the County ?

(Average farm sizes in each county are available from the NRCS field offices in each state. Data are from the latest available Census of Agriculture, Acreage or Farm Units in Operation with \$1,000 or more in sales.)
As large or larger - 10 points
Below average - deduct 1 point for each 5 percent below the average, down to 0 points if 50 percent or more below average - 9 to 0 points

(6) If the site is chosen for the project, how much of the remaining land on the farm will become non-farmable because of interference with land patterns?

Acreage equal to more than 25 percent of acres directly converted by the project - 25 points
Acreage equal to between 25 and 5 percent of the acres directly converted by the project - 1 to 24 point(s)
Acreage equal to less than 5 percent of the acres directly converted by the project - 0 points

(7) Does the site have available adequate supply of farm support services and markets, i.e., farm suppliers, equipment dealers, processing and storage facilities and farmer's markets?

All required services are available - 5 points
Some required services are available - 4 to 1 point(s)
No required services are available - 0 points

(8) Does the site have substantial and well-maintained on-farm investments such as barns, other storage building, fruit trees and vines, field terraces, drainage, irrigation, waterways, or other soil and water conservation measures?

High amount of on-farm investment - 20 points
Moderate amount of on-farm investment - 19 to 1 point(s)
No on-farm investment - 0 points

(9) Would the project at this site, by converting farmland to nonagricultural use, reduce the demand for farm support services so as to jeopardize the continued existence of these support services and thus, the viability of the farms remaining in the area?

Substantial reduction in demand for support services if the site is converted - 25 points
Some reduction in demand for support services if the site is converted - 1 to 24 point(s)
No significant reduction in demand for support services if the site is converted - 0 points

(10) Is the kind and intensity of the proposed use of the site sufficiently incompatible with agriculture that it is likely to contribute to the eventual conversion of surrounding farmland to nonagricultural use?

Proposed project is incompatible to existing agricultural use of surrounding farmland - 10 points
Proposed project is tolerable to existing agricultural use of surrounding farmland - 9 to 1 point(s)
Proposed project is fully compatible with existing agricultural use of surrounding farmland - 0 points



The Department of
**Arkansas
Heritage**

Mike Beebe
Governor

Martha Miller
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

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tdd: (501) 324-9811

e-mail:

info@arkansaspreservation.org

website:

www.arkansaspreservation.org

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November 8, 2013

Mr. James R. Orr
Senior Consulting Scientist
URS Corporation
1000 Corporate Centre Drive, Suite 250
Franklin, Tennessee 37067

Re: Crittenden County – West Memphis
Section 106 Review – FRA
Report Titled *Phase I Cultural Resources Investigations for the West
Memphis Rail Loop Project, Crittenden County, Arkansas*
TRC Project Number 204465
AHPP Tracking Number 87717

Dear Mr Orr:

The staff of the Arkansas Historic Preservation Program has reviewed the above-referenced cultural resources report. This report documents fieldwork completed for a proposed rail expansion and is acceptable. My staff reports that the report is well-written and thorough. Based on the information presented in the report, we concur that no historic properties will be affected by the proposed undertaking.

Thank you for the opportunity to review this undertaking. Please refer to the AHPP Tracking Number listed above in all correspondence. If you have any questions, please call Eric Gilliland of my staff at 501-324-9270.

Sincerely,

Frances McSwain
Deputy State Historic Preservation Officer

cc: Dr. Ann Early, Arkansas Archeological Survey
Ms. Jean Ann Lambert, Quapaw Tribe of Oklahoma



AHPP
OCT 10 2013

87717
FRA
NE

October 7, 2013

The Department of Arkansas Heritage
ATTN: Frances McSwain
Deputy State Historic Preservation Officer
323 Center Street, Suite 1500
Little Rock, AR 72201

Reference: Crittenden County – West Memphis
Section 106 Review – FRA
Proposed International Rail Port Logistics Park
AHPP Tracking Number 87717

Dear Mr. McSwain:

Thank your review of the above referenced project. As a part of this assessment and simultaneous with your review, our subcontractor TRC conducted a Phase I cultural resources investigation for the project area. Please see attached Phase I Cultural Resources Investigation for the West Memphis Rail Loop Project, Crittenden County, Arkansas, Draft Report for your review.

We look forward to any comments or concerns that you may have.

Sincerely,

Peter Zervas
Biologist

Signing for:

James R. Orr
Sr. Consulting Scientist



**PHASE I CULTURAL RESOURCES INVESTIGATIONS FOR THE WEST
MEMPHIS RAIL LOOP PROJECT, CRITTENDEN COUNTY, ARKANSAS**

DRAFT REPORT

September 2013



**PHASE I CULTURAL RESOURCES INVESTIGATIONS FOR THE
WEST MEMPHIS RAIL LOOP PROJECT, CRITTENDEN COUNTY,
ARKANSAS**

DRAFT REPORT

LEAD FEDERAL AGENCY: FEDERAL RAILROAD ADMINISTRATION

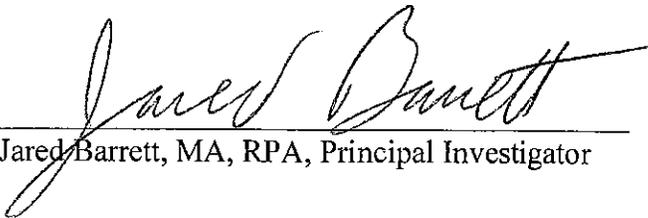
Submitted to:

URS Corporation
1000 Corporate Center Drive, Suite 250
Franklin, TN 37067

Submitted by:

TRC Environmental Corporation
1865 Air Lane Drive, Suite 9
Nashville, Tennessee 37210
Phone: (615) 884-4430
Fax: (615) 884-4431
Email: jbarrett@trcsolutions.com

TRC Project #204465



Jared Barrett, MA, RPA, Principal Investigator

Authored by Jared Barrett and Jessica Burr

September 2013

ABSTRACT

The City of West Memphis proposes to upgrade a railway at their logistics park south of the city in Crittenden County, Arkansas. The project involves constructing new rail lines and a 20 acre site for unloading train cars. From August 19–22 and 29, 2013, TRC Environmental Corporation (TRC) conducted a Phase I cultural resources survey designed to document and assess cultural resources located within the Area of Potential Effects (APE) of the planned project. This project was conducted under contract to URS Corporation (URS) and performed in compliance with Section 106 of the National Historic Preservation Act (as amended) and its implementing regulations at 36 CFR 800. The proposed logistics park upgrades consist of a 20 acre site and approximately 3.76 miles of new railroad tracks measuring approximately 25 feet wide. Archaeologically, the APE of the current project consists of the 20 acre site plus the 3.76 mile long, 25 feet wide, new railroad track. A total of approximately 42 acres were subject to archaeological survey coverage. The APE for architectural studies included a 0.5-mile (0.8-km) area surrounding the 20 acre site and the 3.76 miles of new railroad tracks as well as any areas where the project will alter existing topography or vegetation in view of a historic resource. The APE to and from the project area was terminated where topography, vegetation, and/or modern development obstructed lines of sight.

Prior to conducting fieldwork, TRC conducted a preliminary records search at the Arkansas Archaeological Survey in Fayetteville, Arkansas and the Arkansas Historic Preservation Program (AHPP) in Little Rock, Arkansas. The purpose of the records search was to identify previously recorded archaeological sites and architectural properties listed on, or eligible for inclusion in the National Register of Historic Places (NRHP). The search indicated no previously recorded archaeological sites are located within the project APE. Three archaeological sites are located within a 0.5-mile radius of the project area. In addition, a review of AHPP survey records revealed one previously recorded architectural resource located within the 0.5-mile APE (CT-0017) recorded in 1971 by an organization listed as “HPP” on the AHPP inventory form.

From August 19–22, 2013, a TRC crew conducted the archaeological survey of the archaeological APE. The archaeological APE consisted of the 3.76 miles of new railroad track and the 20 acre site. Land use within the APE consisted of soy bean fields, secondary growth forest, swamp, and industrial improvements. The archaeological survey included field inspections of the proposed APE via systematic shovel testing at 20-m (66 feet) intervals and visual examination of exposed ground surfaces. No new archaeological sites were recorded as a result of these investigations. It is the recommendation of TRC that no archaeological sites are present within the APE of the proposed project and no additional archaeological investigations are recommended in respect to this undertaking.

TRC conducted a historic architectural survey of the project APE on August 29, 2013, which resulted in the identification of no previously unrecorded architectural resources located within the APE of the proposed project. The historic architectural survey also revisited the one previously recorded architectural resource (CT-0017). This resource is no longer extant. No additional investigation of above ground resources is recommended for the proposed undertaking.

APPENDIX E

Section 106 Consultation and Phase I Cultural Resource Report



The Department of Arkansas Heritage

Mike Beebe
Governor

Martha Miller
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

323 Center Street, Suite 1500

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website:

www.arkansaspreservation.org

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May 16, 2014

Mr. David Valenstein
Environment & Systems Planning Division Chief
U.S. Department of Transportation, Federal Railroad Administration
1200 New Jersey Avenue, SE
Washington, DC 20590

Re: Crittenden County – West Memphis
Section 106 Review – FRA
Review of *Phase I Cultural Resources Investigations For the West
Memphis Rail Loop Project, Crittenden County, Arkansas. Addendum
A: Results of 2014 Archeological Assessment*
Panamerican Report No. 34040
AHPP Tracking Number 87717.1

Dear Mr. Valenstein:

The staff of the Arkansas Historic Preservation Program has reviewed the above-referenced cultural resources survey report. They offer up the following comments and recommendations.

We think the document is thorough and address the issues at hand in a highly professional manner. The use of tildes (~) in mathematics is not consistent so both tildes and double tildes can mean ‘approximately equal’ or ‘asymptotically equal’. Since these are not used in equations in your report, the use of these mathematic symbols is inappropriate. We note that your Nota bene would have been more appropriate closer to the front of the document. As per 36 CFR 800.4 (a), the area of potential effect (APE) cannot be decided without consultation with this office, which has not occurred.

We concur with Panamerican Consultants that no historical properties will be affected by this proposed undertaking. Due to the relatively minor nature of our comments, there is no need for any revisions to the document referenced above.

Thank you for the opportunity to review this undertaking. Please refer to the AHPP Tracking Number listed above in all correspondence. If you have any questions, please call Wm. Lane Shields of my staff at 501-324-9784.

Sincerely,

Frances McSwain
Deputy State Historic Preservation Officer



The Department of
**Arkansas
Heritage**

Mike Beebe
Governor

Martha Miller
Director

Arkansas Arts Council

Arkansas Natural Heritage
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Arkansas Historic
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October 3, 2013

Mr. James R. Orr
Senior Consulting Scientist
URS Corporation
1000 Corporate Centre Drive, Suite 250
Franklin, Tennessee 37067-6209

Re: Crittenden County – West Memphis
Section 106 Review – FRA
Proposed International Rail Port Logistics Park
AHPP Tracking Number 87717

Dear Mr. Orr:

This letter is in regards to your inquiry regarding properties of archeological, architectural, or historic significance in the area of the above-referenced proposed undertaking. The staff of the Arkansas Historic Preservation Program has reviewed records pertaining to the area in question. They report that the Josiah Earle House Site, property CT17, is located adjacent to the proposed project area. The area also has a high probability of containing additional unrecorded archeological sites, particularly twentieth-century tenant farms. Therefore, we recommend that a cultural resources survey be conducted for proposed locations of the 13,000 feet of new rail and the transload facility prior to commencement of construction activities. The existing railroad upgrade and the relocation of the railroad segment to the top of the levee **do not** require a cultural resources survey.

Thank you for the opportunity to review this undertaking. Please refer to the AHPP Tracking Number listed above in all correspondence. If you have any questions, please call Eric Gilliland of my staff at 501-324-9270.

Sincerely,

Frances McSwain
Deputy State Historic Preservation Officer

cc: Dr. Ann Early, Arkansas Archeological Survey
Ms. Jean Ann Lambert, Quapaw Tribe of Oklahoma



September 3, 2013

AHPP
SEP 04 2013

FRA
87717
RS/RAI

Mr. Greg Phillips
Arkansas Historic Preservation Program
323 Center Street, Suite 1500
Little Rock, AR 72201

Subject: Section 106 Review: International Rail Port Logistics Park, City of West
Memphis, Arkansas.

Dear Mr. Phillips:

URS Corporation requests your agency's comments regarding possible impact on cultural and historical resources, of the above referenced project as you think may be pertinent. The project sponsor is the City of West Memphis through a Tiger Grant from the Federal Railroad Administration (FRA).

The City of West Memphis (City) proposes to upgrade a railway at their logistics park south of the City of West Memphis, Figure 1. The project involves the upgrade of 13,000 feet of railway from 110 pound rail to 138 pound rail, and to relocate a segment of road to the top of the levee for access to the Port of West Memphis, Figure 2. In addition, Louis Dreyfus Company (LD) proposes to connect to the rail extension with an additional 13,000 feet of rail, and a transload facility. All new construction will be on the west side of the levee. Please note that proposed future roads, depicted in purple are not a part of the proposed project. Only the teal (rehabilitated track), green (new rail for the City of West Memphis), and orange (new rail for LD) are included in the proposed project.

The construction of new rail, road and transload facility will be on currently agricultural ground and along existing roadbeds. Excavation depth is anticipated to be minimal (less than two feet) as the area is low and will require stable fill material for construction. The width of the new rail footprint will be approximately 25 feet.

We greatly appreciate your assistance with Section 106 Review and assessment of important cultural and historical resources in the area. Also please advise us of Tribal interests in this area and coordination requirements.

Thank you for your assistance with this project and your comments.

Regards,
URS Corporation,

James R. Orr
Sr. Consulting Scientist



Structure
 CTL7
 (Josiah Earle House Site)

Ac

 Franklin, Tennessee		PROJECT NO
		20500650 00001
DRAWN BY: WH DATE: 5/10/2013 CHECKED BY: JO DATE: 5/10/2013		FIGURE NO
WEST MEMPHIS RAIL PORT LOGISTICS PARK DRAFT SITE LOCATION		1

Fletcher Lake X
 + West Memphis X



November 1, 2013

Ms. Jean Ann Lambert
Quapaw Tribe of Oklahoma
P.O. Box 765
Quapaw, OK 74363-0765
E-mail: jlambert@quapawtribe.com
Phone: 918-641-4724 Ex. 252

Subject: Section 106 Review: International Rail Port Logistics Park, City of West Memphis, Arkansas.

Dear Ms. Lambert:

URS Corporation requests your agency's comments regarding possible impact on cultural and historical resources, of the above referenced project as you think may be pertinent. You were copied by letter from Francis McSwaim of The Department of Arkansas Heritage, October 3, 2013. The project sponsor is the City of West Memphis through a Tiger Grant from the Federal Railroad Administration (FRA).

The City of West Memphis (City) proposes to upgrade a railway at their logistics park south of the City of West Memphis, Figure 1. The project involves the upgrade of 13,500 ft of existing railway from 110 pound rail to 138 pound rail; extend the new railway 13,500 feet on the south of town to the Cities industrial users location (west of the levee); develop 20 acres of farm land for an industrial site, and develop approximately 10 acres of farmland for a transload facility. All new construction will be on the west side of the levee on agricultural land. Please note that proposed future roads, depicted in purple are not a part of the proposed project. Only the teal (rehabilitated track), green (new rail for the City of West Memphis), and orange (new rail for LD) are included in the proposed project.

The construction of new rail, road and transload facility will be on currently agricultural ground and along existing roadbeds. Excavation depth is anticipated to be minimal (less than two feet) as the area is low and will require stable fill material for construction. The width of the new rail footprint will be approximately 25 to 50 feet.

The National Historic Preservation Act (NHPA) recognizes that federally funded undertakings, like the subject project, can affect historic properties to which your tribe attaches religious, cultural, and historic significance. In accordance with 36 CFR 800 regulations implementing compliance with Section 106 of the NHPA, I would like to know if you have information you could share with me about tribal concerns in the project area and if you wish to be a consulting party on the project? Early awareness of your concerns can serve to protect historic properties valued by your tribe.

URS has conducted a Phase I Cultural Resources survey which identified one farm site which will not be impacted (attached). We would greatly appreciate your comments on the action or attached report within 30 days of this letter. Please be advised that sometime in the near future, we will be releasing the proposed EA for comment, and will send it to any of the tribes that respond as wanting to be part of the comment process.



Thank you for your assistance with this project and your comments.

Regards,
URS Corporation,

A handwritten signature in black ink, appearing to read 'J. Orr', written in a cursive style.

James R. Orr
Sr. Consulting Scientist

enclosure



The Department of
**Arkansas
Heritage**

Mike Beebe
Governor

Martha Miller
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

323 Center Street, Suite 1500

Little Rock, AR 72201

(501) 324-9880

fax: (501) 324-9184

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e-mail:

info@arkansaspreservation.org

website:

www.arkansaspreservation.org

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November 8, 2013

Mr. James R. Orr
Senior Consulting Scientist
URS Corporation
1000 Corporate Centre Drive, Suite 250
Franklin, Tennessee 37067

Re: Crittenden County – West Memphis
Section 106 Review – FRA
Report Titled *Phase I Cultural Resources Investigations for the West
Memphis Rail Loop Project, Crittenden County, Arkansas*
TRC Project Number 204465
AHPP Tracking Number 87717

Dear Mr Orr:

The staff of the Arkansas Historic Preservation Program has reviewed the above-referenced cultural resources report. This report documents fieldwork completed for a proposed rail expansion and is acceptable. My staff reports that the report is well-written and thorough. Based on the information presented in the report, we concur that no historic properties will be affected by the proposed undertaking.

Thank you for the opportunity to review this undertaking. Please refer to the AHPP Tracking Number listed above in all correspondence. If you have any questions, please call Eric Gilliland of my staff at 501-324-9270.

Sincerely,

Frances McSwain
Deputy State Historic Preservation Officer

cc: Dr. Ann Early, Arkansas Archeological Survey
Ms. Jean Ann Lambert, Quapaw Tribe of Oklahoma



AHPP
OCT 10 2013

87717

FRA
NE

October 7, 2013

The Department of Arkansas Heritage
ATTN: Frances McSwain
Deputy State Historic Preservation Officer
323 Center Street, Suite 1500
Little Rock, AR 72201

Reference: Crittenden County – West Memphis
Section 106 Review – FRA
Proposed International Rail Port Logistics Park
AHPP Tracking Number 87717

Dear Mr. McSwain:

Thank your review of the above referenced project. As a part of this assessment and simultaneous with your review, our subcontractor TRC conducted a Phase I cultural resources investigation for the project area. Please see attached Phase I Cultural Resources Investigation for the West Memphis Rail Loop Project, Crittenden County, Arkansas, Draft Report for your review.

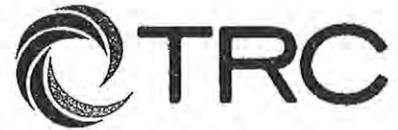
We look forward to any comments or concerns that you may have.

Sincerely,

Peter Zervas
Biologist

Signing for:

James R. Orr
Sr. Consulting Scientist



**PHASE I CULTURAL RESOURCES INVESTIGATIONS FOR THE WEST
MEMPHIS RAIL LOOP PROJECT, CRITTENDEN COUNTY, ARKANSAS**

DRAFT REPORT

September 2013



**PHASE I CULTURAL RESOURCES INVESTIGATIONS FOR THE
WEST MEMPHIS RAIL LOOP PROJECT, CRITTENDEN COUNTY,
ARKANSAS**

DRAFT REPORT

LEAD FEDERAL AGENCY: FEDERAL RAILROAD ADMINISTRATION

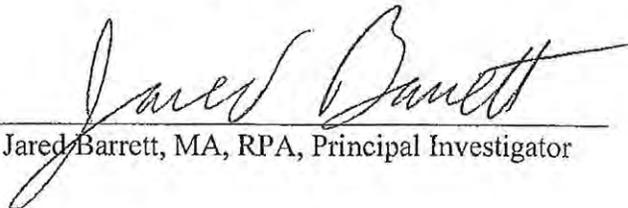
Submitted to:

URS Corporation
1000 Corporate Center Drive, Suite 250
Franklin, TN 37067

Submitted by:

TRC Environmental Corporation
1865 Air Lane Drive, Suite 9
Nashville, Tennessee 37210
Phone: (615) 884-4430
Fax: (615) 884-4431
Email: jbarrett@trcsolutions.com

TRC Project #204465


Jared Barrett, MA, RPA, Principal Investigator

Authored by Jared Barrett and Jessica Burr

September 2013

ABSTRACT

The City of West Memphis proposes to upgrade a railway at their logistics park south of the city in Crittenden County, Arkansas. The project involves constructing new rail lines and a 20 acre site for unloading train cars. From August 19–22 and 29, 2013, TRC Environmental Corporation (TRC) conducted a Phase I cultural resources survey designed to document and assess cultural resources located within the Area of Potential Effects (APE) of the planned project. This project was conducted under contract to URS Corporation (URS) and performed in compliance with Section 106 of the National Historic Preservation Act (as amended) and its implementing regulations at 36 CFR 800. The proposed logistics park upgrades consist of a 20 acre site and approximately 3.76 miles of new railroad tracks measuring approximately 25 feet wide. Archaeologically, the APE of the current project consists of the 20 acre site plus the 3.76 mile long, 25 feet wide, new railroad track. A total of approximately 42 acres were subject to archaeological survey coverage. The APE for architectural studies included a 0.5-mile (0.8-km) area surrounding the 20 acre site and the 3.76 miles of new railroad tracks as well as any areas where the project will alter existing topography or vegetation in view of a historic resource. The APE to and from the project area was terminated where topography, vegetation, and/or modern development obstructed lines of sight.

Prior to conducting fieldwork, TRC conducted a preliminary records search at the Arkansas Archaeological Survey in Fayetteville, Arkansas and the Arkansas Historic Preservation Program (AHPP) in Little Rock, Arkansas. The purpose of the records search was to identify previously recorded archaeological sites and architectural properties listed on, or eligible for inclusion in the National Register of Historic Places (NRHP). The search indicated no previously recorded archaeological sites are located within the project APE. Three archaeological sites are located within a 0.5-mile radius of the project area. In addition, a review of AHPP survey records revealed one previously recorded architectural resource located within the 0.5-mile APE (CT-0017) recorded in 1971 by an organization listed as “HPP” on the AHPP inventory form.

From August 19–22, 2013, a TRC crew conducted the archaeological survey of the archaeological APE. The archaeological APE consisted of the 3.76 miles of new railroad track and the 20 acre site. Land use within the APE consisted of soy bean fields, secondary growth forest, swamp, and industrial improvements. The archaeological survey included field inspections of the proposed APE via systematic shovel testing at 20-m (66 feet) intervals and visual examination of exposed ground surfaces. No new archaeological sites were recorded as a result of these investigations. It is the recommendation of TRC that no archaeological sites are present within the APE of the proposed project and no additional archaeological investigations are recommended in respect to this undertaking.

TRC conducted a historic architectural survey of the project APE on August 29, 2013, which resulted in the identification of no previously unrecorded architectural resources located within the APE of the proposed project. The historic architectural survey also revisited the one previously recorded architectural resource (CT-0017). This resource is no longer extant. No additional investigation of above ground resources is recommended for the proposed undertaking.

From: [Lisa LaRue-Baker - UKB THPO](#)
To: [Hager, Will](#)
Cc: [verna](#); eberry@unitedkeetoowahband.org
Subject: Re: Section 106 Review: International Rail Port Logistics Park, West Memphis Arkansas
Date: Friday, November 15, 2013 11:41:52 AM
Attachments: [image001.gif](#)

The United Keetoowah Band of Cherokee Indians in Oklahoma has reviewed your project under Section 106 of the NHPA, and at this time, has no comments or objections. However, if any human remains are inadvertently discovered, please cease all work and contact us immediately.

Thank you,

Lisa C. Baker

Acting THPO
United Keetoowah Band of Cherokee Indians in Oklahoma
PO Box 746
Tahlequah, OK 74465

c 918.822.1952
ukbthpo-larue@yahoo.com

Please FOLLOW our historic preservation page and LIKE us on FACEBOOK



From: "Hager, Will" <will.hager@urs.com>
To: "jlambert@quapawtribe.com" <jlambert@quapawtribe.com>
Cc: "aqttculture@yahoo.com" <aqttculture@yahoo.com>; "Richard-Allen@cherokee.org" <Richard-Allen@cherokee.org>; "ladonna.brown@chickasaw.net" <ladonna.brown@chickasaw.net>; "ithompson@chowtawnation.com" <ithompson@chowtawnation.com>; "danammasters@aol.com" <danammasters@aol.com>; "jeremiah.hobia@kialegetribe.net" <jeremiah.hobia@kialegetribe.net>; "KCarleton@choctaw.org" <KCarleton@choctaw.org>; "tisham@muscogeenation-nsn.gov" <tisham@muscogeenation-nsn.gov>; "ahunter@osagetribe.org" <ahunter@osagetribe.org>; "bcwelborn@sbcglobal.net" <bcwelborn@sbcglobal.net>; "UKBTHPO-larue@yahoo.com" <UKBTHPO-larue@yahoo.com>; "Orr, Jim" <jim.orr@urs.com>
Sent: Monday, November 11, 2013 1:24 PM
Subject: Section 106 Review: International Rail Port Logistics Park, West Memphis Arkansas

URS Corporation requests your agency's comments regarding possible impact on cultural and historical resources, of the above referenced project as you think may be pertinent. The Project sponsor is the City of West Memphis through a TIGER Grant administered by the Federal Railroad Administration (FRA).

Please find the attached coordination letter and preliminary site plan regarding the proposed improvements. Thank you for your assistance and please let us know if you have any questions.

Thank you,

Will Hager, AICP, LEED Green Associate
Project Planner
URS Corporation
1000 Corporate Centre Drive
One Corporate Centre, Suite 250
Franklin, TN 37067
(office) 615.771.2480
(direct) 615.224.2138
(mobile) 615.330.3563
(fax) 615.771.2459

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QUAPAW TRIBE OF OKLAHOMA

P.O. Box 765
Quapaw, OK 74363-0765

(918) 542-1853
FAX (918) 542-4694

December 19, 2013

James R. Orr
Sr. Consulting Scientist
URS Corporation
1000 Corporate Centre Drive, Suite 250
Franklin, TN 37067-6209

Re: **International Rail Port Logistics Park, City of West Memphis, AR**

Dear **Mr. Orr**,

The Quapaw Tribe Historic Preservation Office has received notification of the proposed project listed as **International Rail Port Logistics Park, City of West Memphis, AR**.

In accordance with the National Historic Preservation Act, (NHPA) [16 U.S.C. 470 §§ 470-470w-6] 1966, undertakings subject to the review process are referred to in S101 (d)(6)(A), which clarifies that historic properties may have religious and cultural significance to Indian tribes. Additionally, Section 106 of NHPA requires Federal agencies to consider the effects of their actions on historic properties (36 CFR Part 800) as does the National Environmental Policy Act (43 U.S.C. 4321 and 4331-35 and 40 CFR 1501.7(a) of 1969).

The Quapaw Tribe has a vital interest in protecting its historic and ancestral cultural resources. The Quapaw Tribe requests the archeological report, any SHPO letters received, and cultural resources survey for the project listed as **International Rail Port Logistics Park in the City of West Memphis, AR**.

QUAPAW TRIBE OF OKLAHOMA

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FAX (918) 542-4694

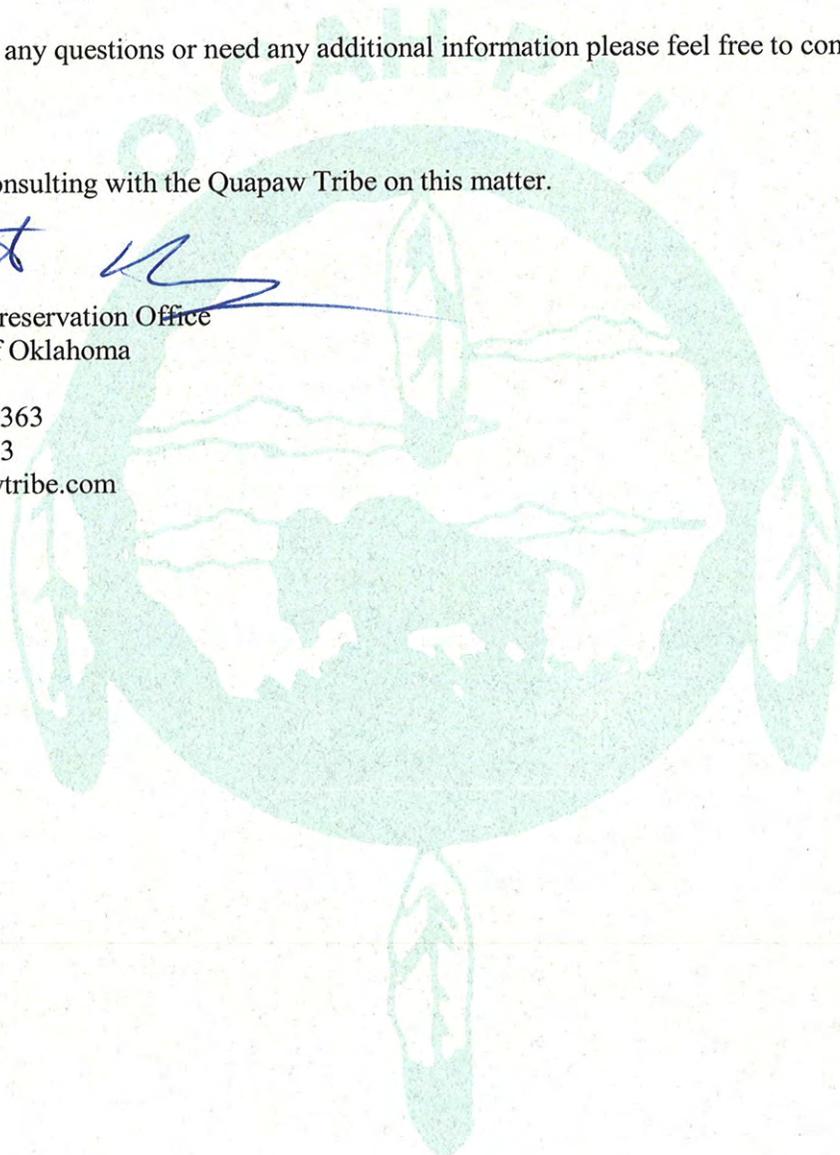
The Quapaw Tribe looks forward to receiving and reviewing the cultural resource survey report for the proposed project. The Quapaw Tribe requires that cultural resource survey personnel and reports follow the Secretary of Interior's standards and guidelines.

Should you have any questions or need any additional information please feel free to contact me.

Thank you for consulting with the Quapaw Tribe on this matter.



Tribal Historic Preservation Office
Quapaw Tribe of Oklahoma
P.O. Box 765
Quapaw, OK 74363
(w) 918-542-1853
ebandy@quapawtribe.com



QUAPAW TRIBE OF OKLAHOMA

P.O. Box 765
Quapaw, OK 74363-0765

(918) 542-1853
FAX (918) 542-4694

October 1, 2013

To Whom It May Concern:

I am pleased to announce that the Quapaw Tribe of Oklahoma (O-Gah-Pah) has, since our initial approval by the National Park Service, assumed and maintained certain State Historic Preservation Officer duties on tribal lands. In particular, the Quapaw Tribe has official responsibility for review of federal undertakings pursuant to Section 106 of the National Historic Preservation Act, and all of the other SHPO functions set out in the Act with the exceptions of assisting in the certification of local governments and assisting in the evaluation of Investment Tax Credit rehabilitation projects. The functions assumed by the Quapaw Tribe will now be administered by our new Tribal Historic Preservation Officer, Everett Bandy.

Please update your records to ensure that all future correspondence to the Quapaw Tribe relating to Section 106 and to other historical and cultural matters involving the Tribe is addressed to Mr. Bandy's office. His contact information is as follows:

Everett Bandy, Tribal Historic Preservation Officer

Quapaw Tribe of Oklahoma (O-Gah-Pah)

P.O. Box 765

Quapaw, Oklahoma 74363-0765

Telephone: (888) 642-4724

Fax: (918) 542-4694

ebandy@quapawtribe.com

If Everett or I can answer any questions about this transition, please do not hesitate to contact us. We look forward to working with you on historic and cultural matters.

Sincerely



John L. Berrey, Chairman

Quapaw Tribal Business Committee

Orr, Jim

From: Everett Bandy <EBandy@quapawtribe.com>
Sent: Tuesday, January 14, 2014 4:06 PM
To: Orr, Jim
Subject: WEST MEMPHIS RAIL LOOP PROJECT CRITTENDEN COUNTY, ARKANSAS

Based on the information you have provided for WEST MEMPHIS RAIL LOOP PROJECT CRITTENDEN COUNTY, ARKANSAS the Quapaw Tribe of Oklahoma has no immediate concerns or issues regarding this project at this time. Please keep me informed if the nature of the project should change or if historic properties are discovered. Since the site is located in an area of historical interest to the Tribe, it is requested that in the event that any human remains and/or funerary objects are discovered that you cease work and contact us immediately.

Thank you for your efforts to consult with the Quapaw Tribe.

-Everett Bandy

THPO

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The Department of
**Arkansas
Heritage**

Mike Beebe
Governor

Martha Miller
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October 3, 2013

Mr. James R. Orr
Senior Consulting Scientist
URS Corporation
1000 Corporate Centre Drive, Suite 250
Franklin, Tennessee 37067-6209

Re: Crittenden County – West Memphis
Section 106 Review – FRA
Proposed International Rail Port Logistics Park
AHPP Tracking Number 87717

Dear Mr. Orr:

This letter is in regards to your inquiry regarding properties of archeological, architectural, or historic significance in the area of the above-referenced proposed undertaking. The staff of the Arkansas Historic Preservation Program has reviewed records pertaining to the area in question. They report that the Josiah Earle House Site, property CT17, is located adjacent to the proposed project area. The area also has a high probability of containing additional unrecorded archeological sites, particularly twentieth-century tenant farms. Therefore, we recommend that a cultural resources survey be conducted for proposed locations of the 13,000 feet of new rail and the transload facility prior to commencement of construction activities. The existing railroad upgrade and the relocation of the railroad segment to the top of the levee **do not** require a cultural resources survey.

Thank you for the opportunity to review this undertaking. Please refer to the AHPP Tracking Number listed above in all correspondence. If you have any questions, please call Eric Gilliland of my staff at 501-324-9270.

Sincerely,

Frances McSwain
Deputy State Historic Preservation Officer

cc: Dr. Ann Early, Arkansas Archeological Survey
Ms. Jean Ann Lambert, Quapaw Tribe of Oklahoma



September 3, 2013

AHPP
SEP 04 2013

FRA
87717
RS/RAI

Mr. Greg Phillips
Arkansas Historic Preservation Program
323 Center Street, Suite 1500
Little Rock, AR 72201

Subject: Section 106 Review: International Rail Port Logistics Park, City of West
Memphis, Arkansas.

Dear Mr. Phillips:

URS Corporation requests your agency's comments regarding possible impact on cultural and historical resources, of the above referenced project as you think may be pertinent. The project sponsor is the City of West Memphis through a Tiger Grant from the Federal Railroad Administration (FRA).

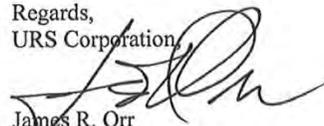
The City of West Memphis (City) proposes to upgrade a railway at their logistics park south of the City of West Memphis, Figure 1. The project involves the upgrade of 13,000 feet of railway from 110 pound rail to 138 pound rail, and to relocate a segment of road to the top of the levee for access to the Port of West Memphis, Figure 2. In addition, Louis Dreyfus Company (LD) proposes to connect to the rail extension with an additional 13,000 feet of rail, and a transload facility. All new construction will be on the west side of the levee. Please note that proposed future roads, depicted in purple are not a part of the proposed project. Only the teal (rehabilitated track), green (new rail for the City of West Memphis), and orange (new rail for LD) are included in the proposed project.

The construction of new rail, road and transload facility will be on currently agricultural ground and along existing roadbeds. Excavation depth is anticipated to be minimal (less than two feet) as the area is low and will require stable fill material for construction. The width of the new rail footprint will be approximately 25 feet.

We greatly appreciate your assistance with Section 106 Review and assessment of important cultural and historical resources in the area. Also please advise us of Tribal interests in this area and coordination requirements.

Thank you for your assistance with this project and your comments.

Regards,
URS Corporation



James R. Orr
Sr. Consulting Scientist

URS Corporation
1000 Corporate Centre Drive, Suite 250
Franklin, TN 37067-6209
Tel: 615.771.2480
Fax: 615.771.2459
www.urscorp.com



November 1, 2013

Ms. Jean Ann Lambert
Quapaw Tribe of Oklahoma
P.O. Box 765
Quapaw, OK 74363-0765
E-mail: jlambert@quapawtribe.com
Phone: 918-641-4724 Ex. 252

Subject: Section 106 Review: International Rail Port Logistics Park, City of West Memphis,
Arkansas.

Dear Ms. Lambert:

URS Corporation requests your agency's comments regarding possible impact on cultural and historical resources, of the above referenced project as you think may be pertinent. You were copied by letter from Francis McSwain of The Department of Arkansas Heritage, October 3, 2013. The project sponsor is the City of West Memphis through a Tiger Grant from the Federal Railroad Administration (FRA).

The City of West Memphis (City) proposes to upgrade a railway at their logistics park south of the City of West Memphis, Figure 1. The project involves the upgrade of 13,500 ft of existing railway from 110 pound rail to 138 pound rail; extend the new railway 13,500 feet on the south of town to the Cities industrial users location (west of the levee); develop 20 acres of farm land for an industrial site, and develop approximately 10 acres of farmland for a transload facility. All new construction will be on the west side of the levee on agricultural land. Please note that proposed future roads, depicted in purple are not a part of the proposed project. Only the teal (rehabilitated track), green (new rail for the City of West Memphis), and orange (new rail for LD) are included in the proposed project.

The construction of new rail, road and transload facility will be on currently agricultural ground and along existing roadbeds. Excavation depth is anticipated to be minimal (less than two feet) as the area is low and will require stable fill material for construction. The width of the new rail footprint will be approximately 25 to 50 feet.

The National Historic Preservation Act (NHPA) recognizes that federally funded undertakings, like the subject project, can affect historic properties to which your tribe attaches religious, cultural, and historic significance. In accordance with 36 CFR 800 regulations implementing compliance with Section 106 of the NHPA, I would like to know if you have information you could share with me about tribal concerns in the project area and if you wish to be a consulting party on the project? Early awareness of your concerns can serve to protect historic properties valued by your tribe.

URS has conducted a Phase I Cultural Resources survey which identified one farm site which will not be impacted (attached). We would greatly appreciate your comments on the action or attached report within 30 days of this letter. Please be advised that sometime in the near future, we will be releasing the proposed EA for comment, and will send it to any of the tribes that respond as wanting to be part of the comment process.

URS Corporation
1000 Corporate Centre Drive, Suite 250
Franklin, TN 37067-6209
Tel: 615.771.2480
Fax: 615.771.2459
www.urscorp.com



Thank you for your assistance with this project and your comments.

Regards,
URS Corporation,

A handwritten signature in black ink, appearing to read 'J. Orr', is written over the typed name.

James R. Orr
Sr. Consulting Scientist

enclosure



The Department of
**Arkansas
Heritage**

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Governor

Martha Miller
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November 8, 2013

Mr. James R. Orr
Senior Consulting Scientist
URS Corporation
1000 Corporate Centre Drive, Suite 250
Franklin, Tennessee 37067

Re: Crittenden County – West Memphis
Section 106 Review – FRA
Report Titled *Phase I Cultural Resources Investigations for the West
Memphis Rail Loop Project, Crittenden County, Arkansas*
TRC Project Number 204465
AHPP Tracking Number 87717

Dear Mr Orr:

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Thank you for the opportunity to review this undertaking. Please refer to the AHPP Tracking Number listed above in all correspondence. If you have any questions, please call Eric Gilliland of my staff at 501-324-9270.

Sincerely,

Frances McSwain
Deputy State Historic Preservation Officer

cc: Dr. Ann Early, Arkansas Archeological Survey
Ms. Jean Ann Lambert, Quapaw Tribe of Oklahoma

URS

October 7, 2013

AHPP
OCT 10 2013

87717

FRA
NE

The Department of Arkansas Heritage
ATTN: Frances McSwain
Deputy State Historic Preservation Officer
323 Center Street, Suite 1500
Little Rock, AR 72201

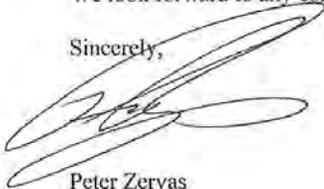
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We look forward to any comments or concerns that you may have.

Sincerely,



Peter Zervas
Biologist

Signing for:

James R. Orr
Sr. Consulting Scientist

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**PHASE I CULTURAL RESOURCES INVESTIGATIONS FOR THE WEST
MEMPHIS RAIL LOOP PROJECT, CRITTENDEN COUNTY, ARKANSAS**

DRAFT REPORT

September 2013



**PHASE I CULTURAL RESOURCES INVESTIGATIONS FOR THE
WEST MEMPHIS RAIL LOOP PROJECT, CRITTENDEN COUNTY,
ARKANSAS**

DRAFT REPORT

LEAD FEDERAL AGENCY: FEDERAL RAILROAD ADMINISTRATION

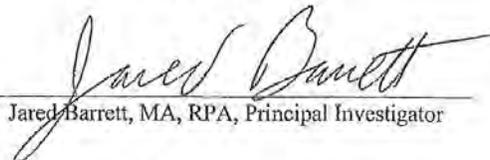
Submitted to:

URS Corporation
1000 Corporate Center Drive, Suite 250
Franklin, TN 37067

Submitted by:

TRC Environmental Corporation
1865 Air Lane Drive, Suite 9
Nashville, Tennessee 37210
Phone: (615) 884-4430
Fax: (615) 884-4431
Email: jbarrett@trcsolutions.com

TRC Project #204465


Jared Barrett, MA, RPA, Principal Investigator

Authored by Jared Barrett and Jessica Burr

September 2013

ABSTRACT

The City of West Memphis proposes to upgrade a railway at their logistics park south of the city in Crittenden County, Arkansas. The project involves constructing new rail lines and a 20 acre site for unloading train cars. From August 19–22 and 29, 2013, TRC Environmental Corporation (TRC) conducted a Phase I cultural resources survey designed to document and assess cultural resources located within the Area of Potential Effects (APE) of the planned project. This project was conducted under contract to URS Corporation (URS) and performed in compliance with Section 106 of the National Historic Preservation Act (as amended) and its implementing regulations at 36 CFR 800. The proposed logistics park upgrades consist of a 20 acre site and approximately 3.76 miles of new railroad tracks measuring approximately 25 feet wide. Archaeologically, the APE of the current project consists of the 20 acre site plus the 3.76 mile long, 25 feet wide, new railroad track. A total of approximately 42 acres were subject to archaeological survey coverage. The APE for architectural studies included a 0.5-mile (0.8-km) area surrounding the 20 acre site and the 3.76 miles of new railroad tracks as well as any areas where the project will alter existing topography or vegetation in view of a historic resource. The APE to and from the project area was terminated where topography, vegetation, and/or modern development obstructed lines of sight.

Prior to conducting fieldwork, TRC conducted a preliminary records search at the Arkansas Archaeological Survey in Fayetteville, Arkansas and the Arkansas Historic Preservation Program (AHPP) in Little Rock, Arkansas. The purpose of the records search was to identify previously recorded archaeological sites and architectural properties listed on, or eligible for inclusion in the National Register of Historic Places (NRHP). The search indicated no previously recorded archaeological sites are located within the project APE. Three archaeological sites are located within a 0.5-mile radius of the project area. In addition, a review of AHPP survey records revealed one previously recorded architectural resource located within the 0.5-mile APE (CT-0017) recorded in 1971 by an organization listed as "HPP" on the AHPP inventory form.

From August 19–22, 2013, a TRC crew conducted the archaeological survey of the archaeological APE. The archaeological APE consisted of the 3.76 miles of new railroad track and the 20 acre site. Land use within the APE consisted of soy bean fields, secondary growth forest, swamp, and industrial improvements. The archaeological survey included field inspections of the proposed APE via systematic shovel testing at 20-m (66 feet) intervals and visual examination of exposed ground surfaces. No new archaeological sites were recorded as a result of these investigations. It is the recommendation of TRC that no archaeological sites are present within the APE of the proposed project and no additional archaeological investigations are recommended in respect to this undertaking.

TRC conducted a historic architectural survey of the project APE on August 29, 2013, which resulted in the identification of no previously unrecorded architectural resources located within the APE of the proposed project. The historic architectural survey also revisited the one previously recorded architectural resource (CT-0017). This resource is no longer extant. No additional investigation of above ground resources is recommended for the proposed undertaking.

From: [Lisa LaRue-Baker - UKB THPO](#)
To: [Hager, Will](#)
Cc: [verna; eberrv@unitedkeetoowahband.org](#)
Subject: Re: Section 106 Review: International Rail Port Logistics Park, West Memphis Arkansas
Date: Friday, November 15, 2013 11:41:52 AM
Attachments: [image001.gif](#)

The United Keetoowah Band of Cherokee Indians in Oklahoma has reviewed your project under Section 106 of the NHPA, and at this time, has no comments or objections. However, if any human remains are inadvertently discovered, please cease all work and contact us immediately.

Thank you,

Lisa C. Baker
Acting THPO
United Keetoowah Band of Cherokee Indians in Oklahoma
PO Box 746
Tahlequah, OK 74465

c 918.822.1952
ukbthpo-larue@yahoo.com

[Please FOLLOW our historic preservation page and LIKE us on FACEBOOK](#)



From: "Hager, Will" <will.hager@urs.com>
To: "jlambert@quapawtribe.com" <jlambert@quapawtribe.com>
Cc: "aqttculture@yahoo.com" <aqttculture@yahoo.com>; "Richard-Allen@cherokee.org" <Richard-Allen@cherokee.org>; "ladonna.brown@chickasaw.net" <ladonna.brown@chickasaw.net>; "ithompson@chowtawnation.com" <ithompson@chowtawnation.com>; "danammasters@aol.com" <danammasters@aol.com>; "jeremiah.hobia@kialegetribe.net" <jeremiah.hobia@kialegetribe.net>; "KCarleton@choctaw.org" <KCarleton@choctaw.org>; "tisham@muscogeenation-nsn.gov" <tisham@muscogeenation-nsn.gov>; "ahunter@osagetribe.org" <ahunter@osagetribe.org>; "bcwelborn@sbcglobal.net" <bcwelborn@sbcglobal.net>; "UKBTHPO-larue@yahoo.com" <UKBTHPO-larue@yahoo.com>; "Orr, Jim" <jim.orr@urs.com>
Sent: Monday, November 11, 2013 1:24 PM
Subject: Section 106 Review: International Rail Port Logistics Park, West Memphis Arkansas

URS Corporation requests your agency's comments regarding possible impact on cultural and historical resources, of the above referenced project as you think may be pertinent. The Project sponsor is the City of West Memphis through a TIGER Grant administered by the Federal Railroad Administration (FRA).

Please find the attached coordination letter and preliminary site plan regarding the proposed improvements. Thank you for your assistance and please let us know if you have any questions.

Thank you,

Will Hager, AICP, LEED Green Associate
Project Planner
URS Corporation
1000 Corporate Centre Drive
One Corporate Centre, Suite 250
Franklin, TN 37067
(office) 615.771.2480
(direct) 615.224.2138
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(fax) 615.771.2459

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QUAPAW TRIBE OF OKLAHOMA

P.O. Box 765
Quapaw, OK 74363-0765

(918) 542-1853
FAX (918) 542-4694

December 19, 2013

James R. Orr
Sr. Consulting Scientist
URS Corporation
1000 Corporate Centre Drive, Suite 250
Franklin, TN 37067-6209

Re: **International Rail Port Logistics Park, City of West Memphis, AR**

Dear **Mr. Orr**,

The Quapaw Tribe Historic Preservation Office has received notification of the proposed project listed as **International Rail Port Logistics Park, City of West Memphis, AR**.

In accordance with the National Historic Preservation Act, (NHPA) [16 U.S.C. 470 §§ 470-470w-6] 1966, undertakings subject to the review process are referred to in S101 (d)(6)(A), which clarifies that historic properties may have religious and cultural significance to Indian tribes. Additionally, Section 106 of NHPA requires Federal agencies to consider the effects of their actions on historic properties (36 CFR Part 800) as does the National Environmental Policy Act (43 U.S.C. 4321 and 4331-35 and 40 CFR 1501.7(a) of 1969).

The Quapaw Tribe has a vital interest in protecting its historic and ancestral cultural resources. The Quapaw Tribe requests the archeological report, any SHPO letters received, and cultural resources survey for the project listed as **International Rail Port Logistics Park in the City of West Memphis, AR**.

QUAPAW TRIBE OF OKLAHOMA

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Quapaw, OK 74363-0765

(918) 542-1853
FAX (918) 542-4694

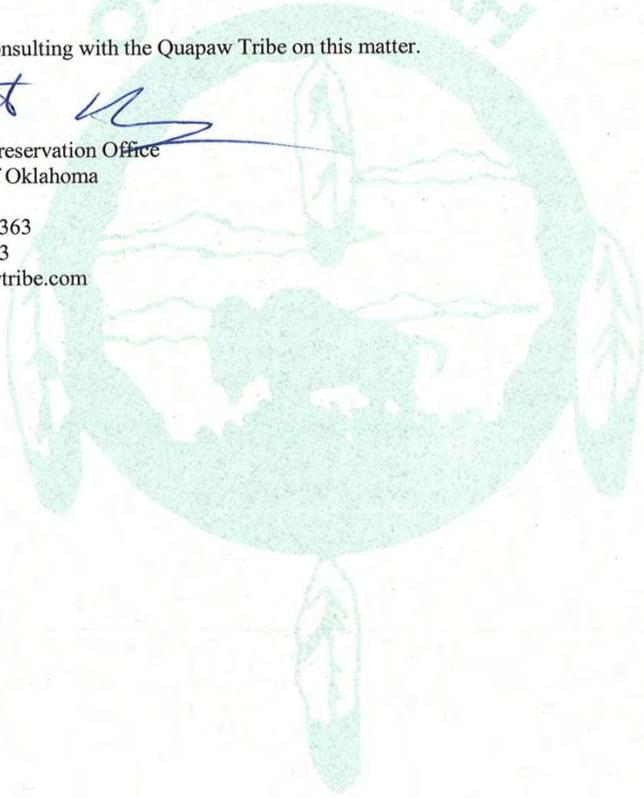
The Quapaw Tribe looks forward to receiving and reviewing the cultural resource survey report for the proposed project. The Quapaw Tribe requires that cultural resource survey personnel and reports follow the Secretary of Interior's standards and guidelines.

Should you have any questions or need any additional information please feel free to contact me.

Thank you for consulting with the Quapaw Tribe on this matter.



Tribal Historic Preservation Office
Quapaw Tribe of Oklahoma
P.O. Box 765
Quapaw, OK 74363
(w) 918-542-1853
ebandy@quapawtribe.com



QUAPAW TRIBE OF OKLAHOMA

P.O. Box 765
Quapaw, OK 74363-0765

(918) 542-1853
FAX (918) 542-4694

October 1, 2013

To Whom It May Concern:

I am pleased to announce that the Quapaw Tribe of Oklahoma (O-Gah-Pah) has, since our initial approval by the National Park Service, assumed and maintained certain State Historic Preservation Officer duties on tribal lands. In particular, the Quapaw Tribe has official responsibility for review of federal undertakings pursuant to Section 106 of the National Historic Preservation Act, and all of the other SHPO functions set out in the Act with the exceptions of assisting in the certification of local governments and assisting in the evaluation of Investment Tax Credit rehabilitation projects. The functions assumed by the Quapaw Tribe will now be administered by our new Tribal Historic Preservation Officer, Everett Bandy.

Please update your records to ensure that all future correspondence to the Quapaw Tribe relating to Section 106 and to other historical and cultural matters involving the Tribe is addressed to Mr. Bandy's office. His contact information is as follows:

Everett Bandy, Tribal Historic Preservation Officer

Quapaw Tribe of Oklahoma (O-Gah-Pah)

P.O. Box 765

Quapaw, Oklahoma 74363-0765

Telephone: (888) 642-4724

Fax: (918) 542-4694

ebandy@quapawtribe.com

If Everett or I can answer any questions about this transition, please do not hesitate to contact us. We look forward to working with you on historic and cultural matters.

Sincerely



John L. Berrey, Chairman

Quapaw Tribal Business Committee

Orr, Jim

From: Everett Bandy <EBandy@quapawtribe.com>
Sent: Tuesday, January 14, 2014 4:06 PM
To: Orr, Jim
Subject: WEST MEMPHIS RAIL LOOP PROJECT CRITTENDEN COUNTY, ARKANSAS

Based on the information you have provided for WEST MEMPHIS RAIL LOOP PROJECT CRITTENDEN COUNTY, ARKANSAS the Quapaw Tribe of Oklahoma has no immediate concerns or issues regarding this project at this time. Please keep me informed if the nature of the project should change or if historic properties are discovered. Since the site is located in an area of historical interest to the Tribe, it is requested that in the event that any human remains and/or funerary objects are discovered that you cease work and contact us immediately.

Thank you for your efforts to consult with the Quapaw Tribe.

-Everett Bandy

THPO

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**PHASE I CULTURAL RESOURCE INVESTIGATIONS FOR THE WEST MEMPHIS
RAIL LOOP PROJECT CRITTENDEN COUNTY, ARKANSAS**

DRAFT REPORT

September 2013



**PHASE I CULTURAL RESOURCE INVESTIGATIONS FOR THE WEST MEMPHIS
RAIL LOOP PROJECT CRITTENDEN COUNTY, ARKANSAS**

DRAFT REPORT

Lead Agency: Federal Railroad Administration

Submitted to:
URS Corporation
1000 Corporate Center Drive, Suite 250
Franklin, TN 37067

Submitted by:
TRC Environmental Corporation
1865 Air Lane Drive, Suite 9
Nashville, Tennessee 37210
Phone: 615-884-4430 Ext 14
Fax: 615-884-4431
Email: jbarrett@trcsolutions.com

TRC Project # 204465

A handwritten signature in dark ink that reads "Jared Barrett". The signature is written in a cursive, flowing style.

Jared Barrett, MA, RPA, Principal Investigator

Authored by:
Jared Barrett and Jessica Burr

September 17, 2013



ABSTRACT

The City of West Memphis proposes to upgrade a railway at their logistics park south of the city in Crittenden County, Arkansas. The project involves constructing new rail lines and a 20 acre site for unloading train cars. From August 19–22 and 29, 2013, TRC Environmental Corporation (TRC) conducted a Phase I cultural resources survey designed to document and assess cultural resources located within the Area of Potential Effects (APE) of the planned project. This project was conducted under contract to URS Corporation (URS) and performed in compliance with Section 106 of the National Historic Preservation Act (as amended) and its implementing regulations at 36 CFR 800. The proposed logistics park upgrades consist of a 20 acre site and approximately 3.76 miles of new railroad tracks measuring approximately 25 feet wide. Archaeologically, the APE of the current project consists of the 20 acre site plus the 3.76 mile long, 25 feet wide, new railroad track. A total of approximately 42 acres were subject to archaeological survey coverage. The APE for architectural studies included a 0.5-mile (0.8-km) area surrounding the 20 acre site and the 3.76 miles of new railroad tracks as well as any areas where the project will alter existing topography or vegetation in view of a historic resource. The APE to and from the project area was terminated where topography, vegetation, and/or modern development obstructed lines of sight.

Prior to conducting fieldwork, TRC conducted a preliminary records search at the Arkansas Archaeological Survey in Fayetteville, Arkansas and the Arkansas Historic Preservation Program (AHPP) in Little Rock, Arkansas. The purpose of the records search was to identify previously recorded archaeological sites and architectural properties listed on, or eligible for inclusion in the National Register of Historic Places (NRHP). The search indicated no previously recorded archaeological sites are located within the project APE. Three archaeological sites are located within a 0.5-mile radius of the project area. In addition, a review of AHPP survey records revealed one previously recorded architectural resource located within the 0.5-mile APE (CT-0017) recorded in 1971 by an organization listed as “HPP” on the AHPP inventory form.

From August 19–22, 2013, a TRC crew conducted the archaeological survey of the archaeological APE. The archaeological APE consisted of the 3.76 miles of new railroad track and the 20 acre site. Land use within the APE consisted of soy bean fields, secondary growth forest, swamp, and industrial improvements. The archaeological survey included field inspections of the proposed APE via systematic shovel testing at 20-m (66 feet) intervals and visual examination of exposed ground surfaces. No new archaeological sites were recorded as a result of these investigations. It is the recommendation of TRC that no archaeological sites are present within the APE of the proposed project and no additional archaeological investigations are recommended in respect to this undertaking.

TRC conducted a historic architectural survey of the project APE on August 29, 2013, which resulted in the identification of no previously unrecorded architectural resources located within the APE of the proposed project. The historic architectural survey also revisited the one previously recorded architectural resource (CT-0017). This resource is no longer extant. No additional investigation of above ground resources is recommended for the proposed undertaking.

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ACKNOWLEDGMENTS

A number of people provided critical assistance to this project. Jim Orr at URS Corporation assisted in providing project details and maps. We would also like to thank the staffs at both the Arkansas Archaeological Survey in Fayetteville and the Arkansas Historic Preservation Program in Little Rock for their assistance with acquiring background information regarding this project.

At TRC, Jared Barrett served as Principal Investigator for the project. As such, Mr. Barrett coordinated all aspects of the project, directed archaeological fieldwork, and co-authored this report. Lab Manager Amanda Garvin and field technicians Matthew Spice and Katie Sutton conducted the archaeological survey under the direction of Mr. Barrett. Architectural Historian Jessica Burr carried out the historic properties survey and co-authored this report with Barrett. Larry McKee, Program Manager in the TRC Nashville office, conducted a technical edit of the draft report.

I. INTRODUCTION

The City of West Memphis proposes to upgrade a railway at their logistics park south of the city in Crittenden County, Arkansas. The project involves constructing new rail lines and a 20 acre site for unloading train cars. From August 19–22 and 29, 2013, TRC Environmental Corporation (TRC) conducted a Phase I cultural resources survey designed to document and assess cultural resources located within the Area of Potential Effects (APE) of the planned project. This project was conducted under contract to URS Corporation (URS) and performed in compliance with Section 106 of the National Historic Preservation Act (as amended) and its implementing regulations at 36 CFR 800. The proposed logistics park upgrades consist of a 20 acre site and approximately 3.76 miles of new railroad tracks measuring approximately 25 feet wide. Archaeologically, the APE of the current project consists of the 20 acre site plus the 3.76 mile long, 25 feet wide, new railroad track. A total of approximately 42 acres were subject to archaeological survey coverage. The APE for architectural studies included a 0.5-mile (0.8-km) area surrounding the 20 acre site and the 3.76 miles of new railroad tracks as well as any areas where the project will alter existing topography or vegetation in view of a historic resource. The APE to and from the project area was terminated where topography, vegetation, and/or modern development obstructed lines of sight.

Prior to conducting fieldwork, TRC conducted a preliminary records search at the Arkansas Archaeological Survey (AAS) in Fayetteville, Arkansas and the Arkansas Historic Preservation Program (AHPP) in Little Rock, Arkansas. The purpose of the records search was to identify previously recorded archaeological sites and architectural properties listed on, or eligible for inclusion in the National Register of Historic Places (NRHP). The search indicated no previously recorded archaeological sites are located within the project APE. Three archaeological sites are located within a 0.5-mile radius of the project area. In addition, a review of AHPP survey records revealed one previously recorded architectural resource located within the 0.5-mile APE (CT-0017) recorded in 1971 by an organization listed as “HPP” on the AHPP inventory form.

From August 19–22, 2013, a TRC crew of four people conducted the archaeological survey of the project area. The archaeological APE consisted of the 3.76 miles of new railroad track and the 20 acre site. Land use within the APE consisted of soy bean fields, secondary growth forest, swamp, and industrial improvements. The archaeological survey included field inspections of the proposed APE via systematic shovel testing at 20-m (66 feet) intervals and visual examination of exposed ground surfaces. No new archaeological sites were recorded as a result of these investigations. It is the recommendation of TRC that no archaeological sites are present within the APE of the proposed project and no additional archaeological investigations are recommended in respect to this undertaking.

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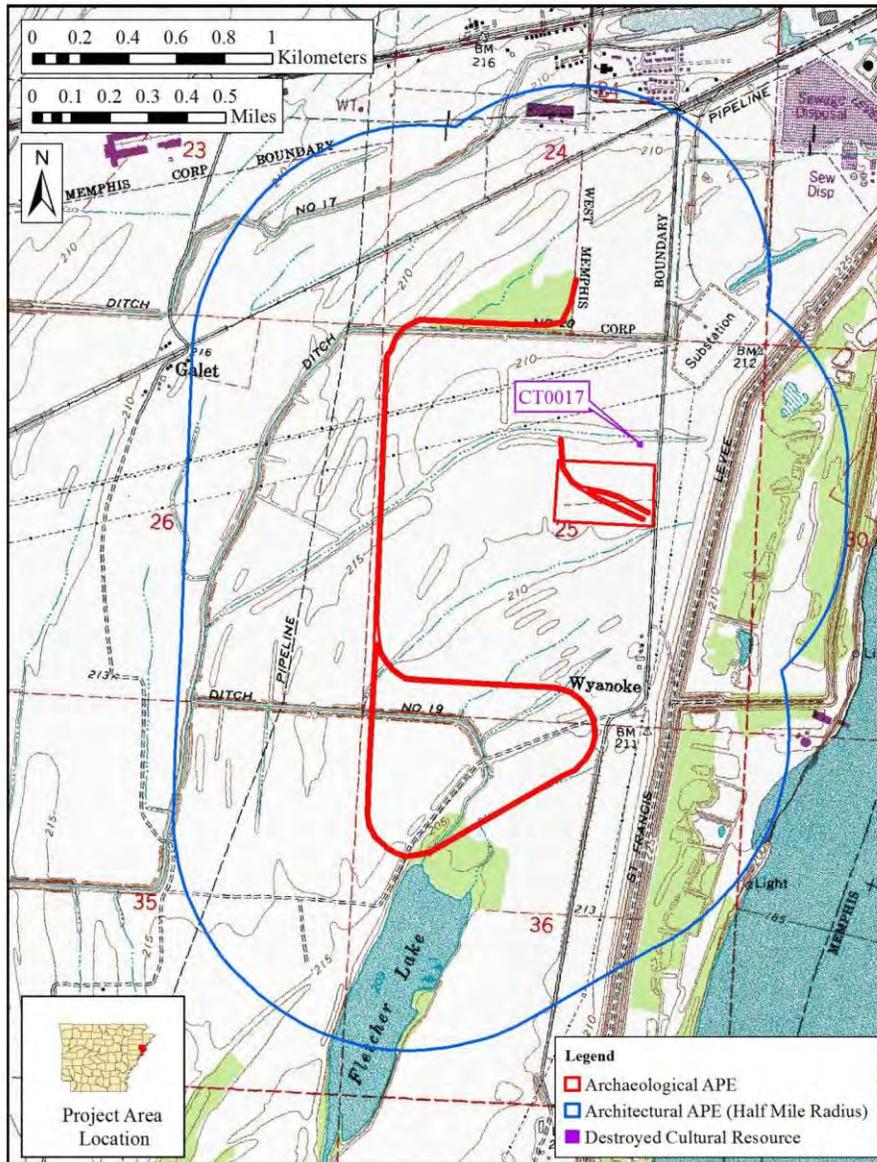


Figure 1. View of project area showing the layout of the West Memphis rail loop on excerpts of the West Memphis (404NW) and Lake Fletcher (404SW), AR USGS topographic maps.

II. ENVIRONMENTAL SETTING

The general area of the project lies to the west of the Mississippi River and south of the city of West Memphis, in Crittenden County, Arkansas (see Figure 1). The entire project area has seen extensive cultivation since the 1930s when the St. Francis Levee was built along the Mississippi River. The specific survey area includes 3.76 miles of a proposed railroad loop and an associated 20 acre site (Figures 2–5). In general, the majority of the survey area is under cultivation of soy beans (Figure 6). Terrain in general across the area is level with some areas of swamp land near Fletcher Lake (Figure 7).

PHYSIOGRAPHY, GEOLOGY, AND GEOMORPHOLOGY

Physiographically, the study area is located in the Mississippi Alluvial Plain province. According to Woods et al. (2004), the area extends along the Mississippi River from the confluence of the Ohio and Mississippi rivers southward to the Gulf of Mexico. It is veneered by Quaternary alluvium, losses, glacial outwash, and lacustrine deposits. The area does contain river terraces, swales, and levees but overall the Mississippi Alluvial Plain is flatter than neighboring ecoregions. Soils within the province are nearly flat, clayey, and poorly drained. Soil deposits within the province consists of both Pleistocene and recent deposits of clay, silt, sand, and gravel that were laid down by the Mississippi River as it meandered across this broad floodplain. The surface alluvium exceeds 100 feet in depth on average throughout the area. Streams and rivers have very low gradients and fine grained substrates.

The project area lies upon Holocene-aged deposits within the Mississippi Embayment geologic section of the state of Arkansas. Situated on the western bank of the Mississippi River and bordered on the west by Crowley's Ridge and Commerce Hills, the southern portion of the St. Francis Basin consists of reworked portions of the St. Francis meander belt probably less than 4000 years old (Saucier 1994). Saucier (1994) notes that the meandering of the Mississippi River between Cairo and Memphis first began about 10,000 years ago and since then it has developed major crevasses and formed numerous distributaries along its western bank. These small, well-developed meander belts have natural levees and occasional abandoned channels affirming the fact they carried a considerable amount of the flow (five to ten percent, potentially suspending sediment for hundreds of years (Saucier 1994)). Meander belt systems are dynamic and contain a variety of landforms as a result of shifting channel morphology including natural levees, crevasse splays, distributaries, point bars, abandoned channels, and backswamps (Saucier 1994) several of which occur in the general study area. The St. Francis Basin is generally a constant width of about 40 miles throughout its entire 190-mile length (extending from the vicinities of Cairo in the north to Helena in the south), with sharply narrowing just south of Memphis, Tennessee (Saucier 1994). The northwestern two-thirds of the basin are characterized by Wisconsin-age glacial outwash; the southeastern one-third (the portion within the current project area) is characterized by Holocene Mississippi River meander belts (Saucier 1994). The St. Francis River, the principal stream of the basin, flows through a gap in Crowley's Ridge and discharges into the Mississippi River at Helena.



Figure 2. View of 20 acre site in soy bean field, facing northwest.



Figure 3. Start of rail loop where it ties into the existing railroad tracks, facing south.



Figure 4. View of rail loop crossing Ditch No. 20, facing south.



Figure 5. View of south end of the rail loop, facing southwest.



Figure 6. Typical view of soy bean field encountered during survey, facing west.



Figure 7. Typical view of wetland area encountered near Fletcher Lake during survey, facing west.

Examination of Saucier's (1994) geomorphic maps covering the Lower Mississippi Valley reveals that the project area is located within the most recent Holocene meander scroll of the Mississippi River. This scroll dates from ca. 1000 B.C. to the present (Saucier 1994)

SOILS

Soils within the project area fall within the Sharkey-Tunica Soil association. These soils are poorly drained, level and gently undulating, clayey soils on slack-water flats (Gray and Ferguson 1974). Two predominant soil types are mapped in the study area: Sharkey silty clay and Tunica silty clay (Gray and Ferguson 1974). Sharkey Soil Series consist of poorly drained, level and gently undulating soils in slack-water areas. These soils are formed in thick beds of clayey sediment. Tunica Soil Series consist of poorly drained, level and gently undulating soils in broad slack-water areas. These soils formed in thin beds of clayey sediments over coarser textured sediments.

CLIMATE

The study area receives an average of approximately 50 inches of rain per year, and is generally evenly distributed throughout the year. Fall is generally driest season with winter the wettest. The average winter snowfall for the area is 6 to 7 inches (Gray and Ferguson 1974).

The project area features mild winters and warm summers. The average winter high temperature is 51°F, while the average daily low temperature is 32°F. The average summer low temperature is 70°F, while the average daily summer high temperature is 91°F (Gray and Ferguson 1974). The average last day of freezing weather is March 21, while the first day of freezing temperatures is November 6. There are 230 frost-free days on average (Gray and Ferguson 1974).

HYDROLOGY

The study area is drained by two ditches (Ditch 20 and 19) and an unnamed stream that feeds into Fletcher Bayou. Fletcher Bayou feeds into Decker Bayou south of the current APE. Both Decker Bayou and Ditches 19 and 20 feed into Tenmile Bayou west of the current project area. Tenmile Bayou feeds into Fifteenmile Bayou west of the current project area. Fifteenmile Bayou feeds into St. Francis River southwest of the current project area. The St. Francis River feeds into the Mississippi River south of the current APE. The Mississippi River flows south and empties into the Gulf of Mexico.

FLORA AND FAUNA

When settlers first arrived in Crittenden County, the land was covered with dense hardwood forests. The rich alluvial soils supported some of the best hardwoods in the South. The principle species include sweetgum (*Liquidambar styraciflua*), cottonwood (*Populus deltoids*), hackberry (*Celtis occidentalis*), pecan (*Carya Illinoensis*), baldcypress (*Taxodium distichum*), ash (*Fraxinus americana*), sycamore (*Platanus occidentalis*), oaks (*Quercus* spp.), and black willow

(*Salix nigra*) (Morse and Morse 1983). In recent years, much of the acreage has been cleared for agriculture, and the original forest cover has been reduced to about 10 percent or less of the land area (Gray and Ferguson 1974).

The dense hardwood forest supported a wide variety of wildlife. Native mammals included bison (*Bison* spp.), white tailed deer (*Odocoileus virginianus*), black bear (*Ursus americanus*) rarely hunted prehistorically), wolf (*Canis* spp.), bobcat (*Lynx rufus*), raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), red fox (*Vulpes vulpes*), grey fox (*Urocyon cinereoargenteus*), beaver (*Castor canadensis*), and squirrels (*Sciurus* spp.). The area also supported a diverse number of reptiles and amphibians. Turkey (*Meleagris gallopavo*) were an important source of food for the early inhabitants of the area, as were migratory mallard ducks (*Anas platyrhynchos*) and canadian geese (*Branta canadensis*). Fish from the larger streams, oxbow lakes and beaver ponds, such as the flathead catfish, alligator gar, drum buffalo, largemouth bass, walleye, channel catfish, bowfin, gar, suckers, and many smaller fish were also an important food source for prehistoric and historic occupants (Morse and Morse 1983).

PALEOENVIRONMENT

One of the most detailed discussions of the climate change during the past 12,000 years from the general area comes from a study of Hood Lake on the L'Anguille River in Poinsett County, Arkansas, north of the current project area. The L'Anguille River basin is located immediately west of Crowley's Ridge and within the Western Lowlands. An archaeological survey was undertaken of the L'Anguille River basin by Garrow and Associates (precursor to TRC) in 1987 that included recovering and analyzing soil cores from Hood Lake to reconstruct the paleoenvironment of the area. That study (Anderson et al. 1989) produced an uninterrupted view of climate in the midcontinent from 11,250 years ago to the present.

The forests of the Western Lowlands included boreal conifers, as reflected by spruce and fir pollen, between 11,250 and 9,500 years ago. Hood Lake was a deep, permanent lake during that period with seasonal water overflow. Upland xeric forests contained a dominant overstory of oak and hickory, while sugar maple, beech, hornbeam, and walnut dominated on mesic slopes (Anderson et al. 1989).

The depth of Hood Lake decreased while seasonal stream flow through the lake increased by 9,500 years ago. The lake decreased in size, while the alluvial marsh habitats increased. That change is believed to be linked to increased seasonality of precipitation and temperature, which culminated by 9,000 years ago. The sediments of Hood Lake changed in character around 7,300 years ago from mineral-rich sands and silts to peaty clays. That change followed a regional climatic and vegetation change around 7,750 years ago as the water table began to drop. The water table reached a low point between 7,750 and 3,500 years ago, which coincided with the maximum expansion of the oak-hickory forest. The changes at Hood Lake are compared by Anderson et al. (1989:30-31) with changes elsewhere:

In the Upper Midwest region of Minnesota and Wisconsin, the classic time interval for the eastward expansion of the prairie/forest border, and consequently, for interpretation of a warm, dry middle Holocene 'Hypsithermal Interval', is about 8500 to 4500 yr B.P. (Wright 1968). On the Ozark Plateau of southeastern Missouri, closed forest was replaced by open oak savannah

between 9000 and 4000 yr B.P. (Delcourt et al. 1986). Along the Ozark Border in the northeast sector of the Western Lowlands in southeastern Missouri, the pollen sequence from Powers Fort Swale (Royall 1988) documented increased percentages of oak, grass, goosefoot, and ragweed between 9500 and 4500 yr B.P. In the Advance Lowlands east of Crowley's Ridge, the Old Field site (King and Allen 1977) records development of an extensive marsh vegetation dominated by grass during the middle Holocene interval. At Big Lake and Pemiscot Bayou in the St. Francis Basin in northeastern Arkansas, increased pollen percentages of sweetgum and oak and microspores of quillwort indicate vegetation response to a lowering water table and expansion of bottomland forests between 6500 and 3500 yr B.P. (Scott and Aasen 1987). In the Western Lowlands of eastern Arkansas, at Hood Lake, middle Holocene warming and drying was reflected in the change from lake and marsh to extensive bottomland forest. The diversity of vegetational responses to middle Holocene climatic change and regionally lowered water tables reflects the differences of paleoecological sites with respect to topographic setting along the regional environmental gradient from Ozark uplands to the Mississippi Alluvial Valley.

The warmer and drier climate of the Hypsithermal Interval may have had implications for settlement in Crittenden County during that time. The lowered water table, and the presumed loss or lowered volumes of the rivers and streams through the area, probably had the effect of concentrating base camps and even temporary hunting and/or gathering stations along larger permanent streams.

Precipitation increased in the area by 3,500 years ago, and water tables rose throughout the area. The pollen core from Hood Lake indicates that that change occurred around 3,200 years ago, or 300 years later than that in surrounding areas. The climate and vegetation of the area remained basically stable until approximately 100 years ago at Hood Lake, when clay and algal mud began to accumulate at an accelerated rate. The latest changes at Hood Lake were the results of human-induced changes that derived from the clearing associated with agriculture and logging since historic settlement (Anderson et al. 1989).

III. CULTURAL CONTEXT

PREHISTORIC CONTEXT

This summary of the prehistory of eastern Arkansas highlights the broad patterns of cultural developments through the prehistoric period. The discussion focuses on developments across eastern Arkansas.

Paleoindian (ca. 11,500–8,000 B.C.)

The Paleoindian period (beginning around 11,500 B.C.) in the southeastern United States has long been considered important by North American archaeologists, as it represents the earliest known settlement in the continent (Smith 1986). Research at a stratified site on the Sac River in southwestern Missouri has offered tantalizing evidence for possible pre-Paleoindian occupation (Lopinot et al. 1998, 2000); however, more research is needed to firmly establish such a presence. Paleoindian settlement of northeast Arkansas was concentrated along the St. Francis and the Cache and Black Rivers on either side of Crowley's Ridge (Morse and Morse 1996) to the north and west of the project area. No Paleoindian sites have been recorded in the West Memphis area. Landforms in this portion of the Eastern Lowlands are not of sufficient age to have existed during the Paleoindian period (Saucier 1994).

Paleoindian sites are recognized primarily by distinctive projectile point forms. In Arkansas, most known Paleoindian projectile points are fluted, but styles evolved through the period. Earlier fluted types include Clovis, Folsom, Sedgwick, and Gainey. Intermediate-age point types include Coldwater, Quad, and Pelican. The late Paleoindian period (beginning circa 10,500–10,000 B.C.) is marked by the Dalton point, as well as types more common to the west such as San Patrice and Agate Basin (Morrow 1996; Morrow and Morrow 1999). Paleoindian points tend to be made of high-quality lithic raw materials, such as Burlington chert (from the Ozarks, central or eastern Missouri or west-central Illinois), Arkansas novaculite, and Edwards chert from Texas, obtained through a mobile settlement pattern. This is not surprising, given the paucity of suitable local raw materials in the Coastal Plain (Gagliano and Gregory 1965; Morrow 2005; Neuman 1984).

The Paleoindian period began at the end of the last ice age at a time when many species of now extinct, Pleistocene megafauna roamed the mid-continent (Meltzer and Mead 1983; Morse and Morse 1983). Species such as mastodon, mammoth, horse, tapir, ground sloth, and giant bison were among the animals hunted by Paleoindian groups. The fossilized remains of many of these animals have been found in Arkansas, although not yet in association with Clovis artifacts. To the north in eastern Missouri, the Kimmswick site has produced Clovis points and lithic debitage in direct association with mastodon. But in addition to the mastodon bone, archaeologist recovered a variety of other species, including white-tailed deer, various small mammals, amphibians, and turtles, reflecting the broad subsistence base that characterized Paleoindian economy (Graham et al. 1981).

Paleoindian settlement patterns involved migration from one hunting ground to the next. In the Eastern Woodlands, the majority of Paleoindian sites consist largely of diffuse lithic scatters at open locations, with more intensive occupations in rockshelter or cave settings. One such Paleoindian habitation site in Missouri is Rodgers Shelter in the Lower Pomme de Terre valley (Kay 1982; Wood and McMillan 1976). No Paleoindian living sites have yet been investigated in Arkansas, but information from the surrounding region provides some evidence for lifeways during this time. The ephemeral nature of most Paleoindian sites suggests that these mobile hunters did not live in permanent settlements. The distribution of exotic cherts made into Paleoindian artifacts and deposited hundreds of miles from the lithic source areas reveals the geographic range of mobile groups and/or their involvement in long-distance trade (Gillam 1996, 1999).

In the latter portion of the Paleoindian period, beginning around 8500 B.C., fluted projectile point forms (like Clovis) were modified, with multiple flakes removed to create flutes, as opposed to a single channel flake. The new point types, such as Dalton and San Patrice, have a pentagonal outline and concave, fluted base. Sites with these point types are more numerous than earlier Clovis sites, and local raw materials were more often employed, suggesting population increase and concomitant decreased mobility (Gibson 2001; Gillam 1999).

An important Dalton period site in the Cache River Basin in Greene County, Arkansas is the Sloan site, a Dalton-period cemetery that contained around 30 individuals (Morse 1997). Other significant Dalton sites include the Brand site in Poinsett County, a hunting and hide-processing camp that yielded a diverse lithic tool assemblage (Goodyear 1974). The Lace site, located in the center of the L'Anquille River basin in Poinsett County, may have been a large Dalton base camp, but limited information was recovered from the site because of past agricultural impacts (Redfield and Moselage 1970).

The Dalton period took place during the Pleistocene-Holocene transition and seems to reflect technological adaptations to the evolving environment. Analysis of use wear on Dalton points suggests that they were not only used as projectiles, but also performed cutting tasks on a variety of materials (Yerkes and Gaertner 1997). Most lithic artifacts in the Dalton toolkit are similar to those known from earlier times, for example, spear points/knives and flake tools such as end scrapers, side scrapers, and graters. Examples of tools that first appeared during the Dalton period include the diagnostic Dalton adze, chipped stone drills/awls, shaft abraders, and edge-abraded cobbles (Morse and Goodyear 1973). Microwear analysis paired with experimental archaeology using Dalton adze replicas has demonstrated that Sloan site adzes were used to chop and cut charred wood, possibly in the manufacture of dugout canoes (Yerkes and Gaertner 1997). Dalton points themselves were generally lanceolate in shape with concave bases displaying thinning (as opposed to fluting) to help with hafting; serration along the blade margins is common. As Dalton points were resharpened, the edges became beveled. Not only were these tools maintained to extend their use-life, they were also often recycled into other tools such as burins, end scrapers, and perforators/drills (Bradley 1997). At the Sloan site cemetery, the majority of grave goods were Dalton points and adzes; other artifacts recovered from the site include implements for scraping, engraving or incising, hammering, pecking, polishing and cutting, as well as red ochre and iron oxide pigments that likely had ritual use (Morse 1997).

Although no Dalton sites have been excavated in Arkansas with preserved food remains, deer, nuts, waterfowl, fish, turkey, small mammals (rabbits, squirrels, and raccoon), nuts, berries, and fruits were likely important subsistence resources during the period, based on information from sites in surrounding areas. For example, deposits from the Big Eddy site in southwest Missouri and Dust Cave in northwest Alabama included remains of carbonized nuts, fruit, and possibly even some seeds (Lopinot et al. 2000; Walker et al. 2001).

Early Archaic (8000–6000 B.C.)

As with the Paleoindian period, Early Archaic sites are recognized almost exclusively on the basis of diagnostic projectile points. Points associated with the Early Archaic in surrounding regions include Big Sandy, Cache River, Kirk, Palmer, Greenbrier, Damron, Hidden Valley contracting stemmed, Hardin barbed, Alberta, Scotsbluff/Eden, Rice Lobed, Rice Lanceolate, Thebes, Graham Cave, Cache River, St. Charles, Lost Lake, and Stillwell (Chapman 1975; Connaway 1977; McGahey 1992; O'Brien and Wood 1998). The diversity of point types suggests the greater regionalization that was taking place as population increased and groups became restricted to smaller territories and interacted with a more narrow group of neighbors (Gibson 2001; Neuman 1984). Concerning the Early Archaic Period, McNutt (1996a) notes that "we can see several projectile points coming into the Valley from the west and north, probably in conjunction with the prairie expansion and dry exxoniches during the Hypsithermal." Morse and Morse (1983) postulated and McNutt (1996b) improved a series of potential horizon markers for the Early Archaic in northeastern Arkansas: early corner-notched (7500-7000 B.C.) and Hardin and early stemmed (7000-6000 B.C.). Temporally diagnostic Early Archaic artifacts include Cache River, St. Charles, and San Patrice projectile points.

Middle Archaic Period (6000–3000 B.C.)

The Middle Archaic period was marked by a shift in subsistence modes. This was possibly due to environmental changes caused by a climatic episode called the Altihermal Optimum, or Hypsithermal, which is dated 7000-3000 B.C. (McNutt 1996a) or 8000-4000 B.C. (Morse and Morse 1983). This change resulted in restricted deciduous forest occurrence, limiting the availability of certain floral and faunal resources. The cultural impact of this warming trend appears to have been most strongly felt from 5500-3500 B.C. Several settlement models regarding human adaptation during the climatic optimum have been posited. Morse and Morse (1983) propose that the western lowlands of northeastern and east-central Arkansas were largely abandoned for the uplands (Ozark Plateau and its escarpment). However, elsewhere in the southeast such as in the lower Tennessee/Cumberland region, populations appear to have congregated at a limited number of floodplain locations, producing deep middens (Nance 1987). Higgins (1990) proposed the drying of the uplands forced people into the floodplain (American Bottom).

Morse and Morse (1983) postulated and McNutt (1996b) improved a series of potential horizon markers for the Middle Archaic in northeastern Arkansas: Rice (6000-5000 B.C.), and side notched (4000-3000 B.C.). Diagnostic Middle Archaic artifacts include basal-notched, Hardin, Hickory Ridge, and Rice lobed points. Information on these periods comes from work at a few sites (e.g., Modoc Rockshelter in Illinois, Graham Cave in Missouri) and from surface

collections (McNutt 1996b). Archaic tool kits include flaked stone tools such as projectile points and end scrapers, ground stone tools such as manos and mutate, and probably bone and wood tools.

Late Archaic Period (3000–500 B.C.)

The Late Archaic began at the end of the Altithermal climatic episode (ca. 3000 B.C.) and the establishment of the modern climatic regime. The Mississippi River was by then a well-entrenched meander belt-type fluvial system, and adapting to this type of environment was critical for human occupation. There is evidence for more sedentary lifeways, and possibly limited horticulture was being employed, as sunflower, squash, and other cultivated native starchy seed annuals appear in the archaeobotanical record at this time in the other areas of the southeast. Late Archaic settlement models typically have a seasonal round aspect, and there is evidence that the substantial “winter” villages, typically located on major streams, were actually occupied year round. Both earthen and shell mounds appear in the archaeological record in the southeast at this time.

The Late Archaic is characterized throughout the southeast by a substantial increase in the number of sites, cultural elaboration, and widespread trade. Projectile points produced during this period include wide variation in both notched and stemmed forms. In northeast Arkansas, the Late Archaic period is generally assumed to have similar characteristics as those observed in the surrounding states (Morse and Morse 1996). In northeastern Arkansas, the Late Archaic period is manifested by the Frierson phase, temporally diagnostic artifacts include Big Creek, Burkett, and Weems points, steatite sherds, atlatl weights, stone beads, truncated cobble pestles, and grooved axes (Morse and Morse 1996).

In the Late Archaic period, the climate became wetter and cooler, and the Mississippi River stabilized in a single channel (Gibson 2001). The Lower Mississippi Valley was probably less dangerous and difficult to cross at this time, and evidence of substantial interaction with groups to the east emerges for the first time. Exchange of goods becomes common, and ideas expressed in material culture styles are shared among groups in neighboring regions. This shared cultural complex is known as Poverty Point Culture.

The Poverty Point cultural complex reflects a societal shift from Archaic-period bands to a possibly ranked organization described by some as a big-man society and by others as a chiefdom (Gibson 2001; Webb 1977). Material manifestations of Poverty Point culture include: (1) a settlement hierarchy involving regional centers, villages, seasonal activity camps, and single-family occupations; (2) exotic goods, such as copper, slate, steatite, cherts, figurines, gorgets, and beads, which were circulated in extensive exchange networks; and (3) baked clay/loess objects (Poverty Point objects) used for indirect cooking (Broyles and Webb 1970; Gibson 2001; Neuman 1984; Smith et al. 1983). Other diagnostic artifacts sometimes associated with Late Archaic Poverty Point culture sites include steatite vessels, microlithic technology, and Late Archaic projectile point types such as Gary, Kent, Delhi, Ellis, Ensor, Marcos, Morhiss, Motley, and Pontchartrain (Anderson et al. 1988, 1997; Gibson 2001).

Characteristic utilitarian material culture from Poverty Point includes Poverty Point objects (used for cooking in earth ovens); vessels made of soapstone, sandstone, and some ceramics; grinding

stones, side- and corner-notched projectile points; Jaketown perforators (microlithic drills for stone working); various food grinding tools; celts and adzes; atlatl weights; and stone hoes for digging tubers and (probably) mound construction. Material evidence of ritual activity at the site includes clay or stone pipes and cones, clay figurines of seated or kneeling women (many of which appear pregnant and have their heads snapped off), iconography engraved on utilitarian objects, and features containing ritual offerings in soapstone vessels (Gibson 2001).

There also is evidence that residents of Poverty Point participated in extensive trade networks extending across the Southeast. Large amounts of exotic materials, such as chert, soapstone, sandstone, schist, hematite, magnetite, fluorite, copper, mica, and quartz crystals, have been found at the site—some in the form of beads and gorgets. The nearest sources of lithic raw materials (Citronelle gravel) lie at least 40 miles south or west of the site, so all stone had to be imported to the site. When considering the amount of lithic material imported for use in utilitarian stone tools, exchange was apparently a major part of the Poverty Point economy (Gibson 2001). At least one artifact type was known to have been produced at Poverty Point for exchange: jasper owl pendants. These objects do not appear to have been restricted to a set of elites; instead, they have been recovered from a wide range of sites and contexts, and were more likely fetishes than prestige goods (Gibson 1994, 1996, 2001; Neuman 1984; Smith 1991).

Poverty point objects as well as a number of presumably ceremonial or status related, non-utilitarian objects have been recovered from sites in northeast Arkansas (McNutt 1996a). Poverty Point sites in northeast Arkansas, however lack evidence of many of the traits generally associated with this period and found further south including microlithics, fiber-tempered pottery, human clay figurines, plummets, effigy beads, and other groundstone objects (Morse and Morse 1983). Two sites considered representative of the Poverty Point culture in northeast Arkansas are Little Turkey Hill and Frierson (McNutt 1996a).

Early Woodland Period (500–100 B.C.)

The Early Woodland period in the Eastern Woodlands traditionally has been defined as the time when ceramic technology was adopted, the first evidence of horticulture appears, and mound ceremonialism is present in some regions (Anderson and Mainfort 2002; McNutt 1996b). However, in the case of ceramic use, the Early Woodland is the period in which this technology gained widespread acceptance. Although some fiber-tempered, grog-tempered, and temperless ceramic sherds have been found in Poverty Point culture contexts, ceramics do not become common in material assemblages until the Early Woodland period (Morse and Morse 1983; Neuman 1984).

The Early Woodland or Tchula period is not presently well defined within northeast Arkansas. The Tchula period in northeastern Arkansas is primarily represented by the McCarty Site (3PO467), a small site located near Marked Tree, Arkansas (Morse and Morse 1996). The McCarty site is noted as having yielded the first “good” Tchula assemblage in northeast Arkansas (Morse 1986). This site had a high frequency of cord-marked sherds and a very low occurrence of Cormorant Cord Impressed, considered a reliable horizon marker for the period, notably rare outside of north Mississippi (McNutt 1996a). The Mound City site complex – that includes sites 3CT4, 3CT5, and 3CT6 located along the abandoned meander known as Marion

Lake – has been tentatively suggested to have a Tchula component that appears related to the Turkey Ridge phase of northwest Mississippi (Morse and Morse 1983).

During the Woodland period, sedentism, population, and organizational complexity dramatically increased. Early Woodland occupations are recognized based on the consistent occurrence of distinctive ceramic types. Most Woodland pottery throughout Arkansas displays plain surfaces and poorly fired paste. The Early Woodland diagnostic ceramics in eastern Arkansas are related to the Tchula period. Tchula-period sites overlap in time with the Tchefuncte-period sites further south in the Lower Mississippi Valley. Stemmed or notched projectile points forms common during the Late Archaic continued into the Woodland period along with a variety of other lithic tools, such as perforators, denticulates, notches, endscrapers, and celts (Mainfort 2011; Morse and Morse 1983). For example, Rolingson (1994) points out that Gary Stemmed projectile points/knives are found on Tchula sites in the southeastern lowlands, and that low, conical mounds also are present.

Little Early Woodland subsistence data has been recovered in Arkansas, but information from elsewhere in the Midsouth suggests that hickory nuts, acorns, and white-tailed deer were probably dietary staples throughout much of Arkansas (Mainfort 2011; Schambach 2002). Because native starchy and oily seed plants such as lambs quarters, squash/gourds, marsh elder, sunflowers, and maygrass are known to have been cultivated and/or domesticated in some regions as early as the Late Archaic (Fritz 1990), it is likely that Woodland groups in Arkansas were involved in horticulture to varying degrees, but with increasing intensity over time.

Middle Woodland Period (100 B.C. – A.D. 400)

The Middle Woodland period in the Lower Mississippi Valley, dating between approximately 100 B.C. and A.D. 400, represents a general continuation of lifeways from the Early Woodland. For example, people continued to live in small communities of several circular or oval structures. Sites of this period are found on natural levees, at least along the Arkansas River, where small burial mounds have been recorded as well (Rolingson 1994). However, one new cultural pattern that emerges at this time is the widespread, although not numerous, construction of small conical burial mounds. Long-distance exchange of highly valued goods—such as copper from the Great Lakes area, mica from the southern Appalachians, and shells from the Gulf coast—also has been observed across much of eastern North America in the Middle Woodland period, and may have involved groups in Arkansas as well (Mainfort 2011).

One Middle Woodland cultural complex centered to the south of the Project region was involved in long-distance exchange connected to the greater Hopewellian phenomenon. Marksville (100 B.C.–A.D. 400) sites are usually recognized on the basis of Marksville-related ceramics, but at sites with burials, a variety of exotic prestige goods have been found, some bearing motifs associated with the central Hopewell complex of the Ohio Valley (Neuman 1984; Phillips 1970). Hopewellian artifacts have been found in mortuary contexts at the Marksville-period Helena Crossing mound group in northeastern Arkansas, including cut mica, copper earspools, copper covered panpipes, blades, and Marksville Plain and Red Filmed ceramics (Anderson et al. 1989; House 1996; Toth 1979). Other Marksville ceramic types include Withers Fabric Marked, Indian Bay Stamped, Marksville Stamped, and Marksville Incised (House 1996; Toth 1988). Marksville Incised and Marksville Stamped are the dominant ceramic types, and small, narrow Gary

Stemmed projectile points are common (Rolingson 1994). Grog-tempered pottery appears in Arkansas for the first time in the Marksville period, and continued to be produced for over a thousand years, until shell tempering was adopted in the Mississippian period (Nassaney 2001:169). Marksville ceramics display a range of vessel forms, including hemispherical pots with constricted necks and everted rims and beakers with straight or slightly convex sides. Bases are flat or convex, and may feature podal supports. While some vessels were plain, others were decorated with dentate, rocker-stamped, incised or trailed lines, notches, punctuations, or cord impressions (Neuman 1984:154).

The Marksville period is also associated with the construction of various earthworks. Large and complex Middle Woodland earthworks are found at Marksville sites throughout the Lower Mississippi Valley and surrounding regions. Some mounds contain post molds from structures on early mound stages. Conical burial mounds are common at Marksville sites, housing interments that often contain large amounts of exotic grave goods (Neuman 1984:142–168). Most burials, however, occur in shell middens. Artifacts that have been found in Marksville burials include ceramics, bone tools, stone tools, and ornaments of shell, pearl, and copper, galena and other pigment concentrations, asphaltum, cordage, basketry, and matting (Neuman 1984; Toth 1979).

Late Woodland Period (A.D. 400–700)

The Late Woodland Baytown period followed the Marksville period in southeastern Arkansas, and extended from about A.D. 400 to 700. The Baytown period is distinguished from Marksville on the basis of ceramics displaying a greater percentage of Larto Red Filmed and Mulberry Creek Cord Marked, and the presence of Alligator Incised, Salmon Brushed, and Indian Bay Stamped. Small, slender varieties of Gary Stemmed projectile points/knives and the associated Means Stemmed point are diagnostic lithic tools. A variety of site types occur during the Baytown period, including sites with conical or dome-shaped mounds. A larger, more stable population is inferred for Baytown over Marksville based on comparative village sizes and deeper midden deposits for Baytown. A major Baytown occupation is present in the lower levels of the Toltec Mounds site (Rolingson 1994). The Baytown type site (3MO1) is located along the lower White River, and includes two large mounds and seven smaller ones of Late Woodland age, but little is known about the site (Holmes 1884). Most Late Woodland people in Arkansas probably lived in smaller, non-mound communities of no more than several hundred individuals (Mainfort 2011).

In northeastern Arkansas, the Baytown phase exists but because of a lack of research cannot be distinguished from early Marksville and later Coles Creek occupations. Near the project area, several sites possess Late Woodland Baytown components, including the Banks village site (3CT13) and associated mounds (3CT14 and 3CT15), 3MO33, and 3MO36.

The long-distance exchange networks that thrived during the Middle Woodland period seemed to have collapsed in the Late Woodland period. At the same time, there is evidence for population growth and larger settlements (Nassaney and Cobb 1991). A major technological advance, that probably had implications for hunting efficiency and warfare, was the bow and arrow, which appeared around A.D. 700, as reflected by the widespread appearance of small triangular and notched arrow points (Nassaney and Pyle 1999). At Toltec Mounds, a variety of small arrow

point types are found; Rockwell, Homan, Agee, Alba, and Scallorn types, all of which are small stemmed types, small enough to have been used to tip an arrow (Hoffman 1998).

Few Baytown sites have been excavated in Arkansas, so little is known about subsistence in the state during this period. In neighboring regions, maygrass, lambs quarters, knotweed, sunflowers, and marsh elder were cultivated during Late Woodland times; these were probably grown in at least some parts of Arkansas. Nuts and deer, and probably fish in the delta lands, continued to be important subsistence items. Maize had been introduced into the Lower Mississippi Valley as early as A.D. 400, but it does not appear that the cultigen had become a substantial portion of the diet until the end of the Coles Creek period, around A.D. 1100 (Kidder 1992; Neuman 1984). By that time, maize occurs in ethnobotanical samples from Toltec; although it had not yet achieved the importance in the local diet that it was to reach during later Mississippian times, it was becoming an important element of subsistence activities. In addition to maize, other domesticated plant species found at Toltec included little barley, maygrass, lambs quarters, and amaranth (Nassaney 2001; Smith 1996). As in the preceding Woodland periods, subsistence focused on a range of plant and animal species, although deer was the most important source of animal protein in their diet (Kelley 1992; Neuman 1984).

Late Woodland ceramics are technologically superior to those of earlier times; they are stronger and can withstand higher temperatures for longer periods of time. Improvements in ceramic technology were probably driven by a greater emphasis on direct cooking methods. Throughout Arkansas, the exterior surfaces of most Late Woodland ceramic vessels were either smoothed or roughened with a cord-wrapped paddle. Distinctive vessel forms were characteristic of different parts of the state, representing different cultural affiliations. For example, the bases of Late Woodland cooking jars from northeast Arkansas tend to be essentially conical, while comparable pots from the Ozarks and southwest Arkansas typically have flat bases (Mainfort 2011).

Mississippian Period (A.D. 700–1541)

Hallmarks of the Mississippian period include population increase, intensive floodplain settlement, greater emphasis on agricultural activity, earthwork construction on celestial alignments, inter-regional exchange of exotic items, shell-tempered ceramics, and possibly bow warfare. These factors and the development of a distinctive elite iconography are associated with the rise of conscripted, complex sociopolitical systems, which we now refer to as chiefdoms. A complex mosaic of competing chiefdoms documented by the Spanish explorers at the close of the Mississippian period, which is the final zenith of Native American cultural development.

Early Mississippian (A.D. 700-1100) cultures initiated a shift toward production of sparse shell-tempered ceramic vessels, construction of rectilinear domestic structures, and a heavy dependence upon maize-based agriculture for subsistence. The Middle Mississippian period (A.D. 1100-1400) is characterized by the appearance of palisade-fortified villages, geographically expressed across the landscape in relation to an increasing adaptation to maize agriculture. Population density, house and storage pit size, vessel forms, and tool types visible in the archaeological assemblage further reflect an adaptation to and concentration upon agrarian subsistence (McNutt 1996b). The Late Mississippian period (A.D. 1400-1541) represents the final prehistoric cultural climax in the southeastern United States and is predominately characterized by a wide variety of elaborately decorated ceramic vessel types.

Early Mississippian cultures are not well defined in south Crittenden County. The Big Lake Phase, dated to A.D. 800/850-1050, is largely defined based on the Zebree Site data to the north of the project area (Morse and Morse 1983; McNutt 1996b). The Shelby Forest Site, across the river in Tennessee, is the best known local example of an Early Mississippi period site (McNutt 1988). Coles Creek related Plum Bayou culture, best known by the Toltec site located near Little Rock, peaked to the south and west of the project area during this period (Rolingson 1982).

The Middle Mississippian Period is generally understood to represent the change from simple to complex chiefdoms. Early Middle Mississippian cultures referred to as Cherry Valley phase sites are located predominately on the western side of Crowley's Ridge with some sites possibly extending into the Eastern Lowlands (McNutt 1996a). Cherry Valley Phase sites tend to include burial mounds atop circular charnel houses, bundle burials, shell-tempered jars with single loop handles, bottles, beakers, beaker-shaped bowls, and plates (McNutt 1996a). Late Middle Mississippian components have been identified east of Crowley's Ridge at Zebree, Langdom, Old Town Ridge, and Lawhorn (Morse and Morse 1983). One of the most significant recent Late-Middle Mississippian excavations were conducted at the Moon site (Benn 1992, 1998), where an entire village was exposed. The 33 structures at the Moon village were arranged around a plaza and enclosed by a palisade. In general, McNutt (1996a) notes that Middle Mississippian phases are difficult to define in northeast Arkansas.

The Late Mississippian Period in northeast Arkansas is represented by nucleated sites primarily adjacent to the Mississippi River. Four major phases are recognized in northeast Arkansas for the Late Mississippian Period: the Nodena phase, extending from just north of West Memphis to the bootheel of Missouri along the Mississippi River; the Parkin phase, concentrated inland along the St. Francis and its tributary Tyronza; the Horseshoe Lake or Belle Meade phase, extending from the West Memphis area south to the southern tip of the Eastern Lowlands along the western bank of the Mississippi River; and the Kent phase, located south of Parkin and Horseshoe Lake phases and extending almost to the southern end of Crowley's Ridge (McNutt 1996a; Morse and Morse 1983). Many of the phases defined for northeast Arkansas continue into the following historic period.

Late Mississippian sites in the West Memphis area were originally part of the Walls phase (Phillips 1970), but are now considered by B. D. Smith's (1990) as Horseshoe Lake phase and the Morse's (1996) as the Bells Meade phase. The Horseshoe Lake phase ceramic assemblage is noted by McNutt (1996a) to be similar enough to the Walls phase ceramic assemblage to imply a relationship between the two phases. Ceramics within these two phases include varying amounts of fine and coarse shell tempered wares with decorations including: Kent, Barton, Old Town Red, and some Ranch and Rhodes motifs. The Horseshoe Lake phase includes a number of multi-mound sites with three sites typically identified including Mound Place, Beck, and Belle Meade.

HISTORIC CONTEXT

European Colonization and Early White Settlement, 1541–1803

The Spanish are credited as the first Europeans to enter the region of the United States that would later become the state of Arkansas. In 1541, Hernando De Soto reached the Mississippi River south of Memphis with the fragmented remains of his command, after crossing through most of the Deep South and being attacked by the Chickasaw near the Tombigbee River in Mississippi. After traveling to several population centers in northeastern and central Arkansas on the St. Francis, White, and Arkansas rivers, De Soto died, probably near the mouth of the Arkansas River. His “second in command,” Luis de Moscoso de Alvarado, determined to travel overland to Spanish settlements in Mexico, relying on Native American stores for food. He led the remaining 300 soldiers up the Arkansas River to the Pine Bluff vicinity, and then turned southwest to follow the base of the Ouachita range. In southwest Arkansas, they were nearly defeated by a coalition of Caddoan tribes that organized a concerted attack on the Spaniards. The expedition continued into present-day Texas, before deciding to return to the Mississippi River in 1542 by the way that they had come. They were then able to float down the river to the Gulf, albeit with considerable losses to sickness, starvation, and Native American attacks (Carter 2012; Mitchem 2002; Wayne et al. 2002; Wilds et al. 1996). Most scholars consider northeast Arkansas to have been depopulated after the De Soto expedition trek west of the Mississippi (1541-1543) and before Marquette and Joliet’s 1673 canoe trip brought them to the Quapaw villages at the mouth of the Arkansas.

In northeast Arkansas, Marquette’s 1673 map reveals a Michigamea village in close proximity to what would become the Missouri/Arkansas line. Morse (1992) considers this village to be the Grigsby site (3AR262) located near Pocahontas. This site is located halfway between Kaskaskia and the 1673-1690 location for the Kappa site, and is on the Natchitoches Trace, a major trading path which follows the Ozark escarpment. The Michigamea are thought to have operated as trading middlemen between the Illinois French and the lower Arkansas Quapaw, until in 1686 the establishment of Arkansas Post near the Quapaw village Osotouy provided direct access to trades good for the Quapaw.

During the seventeenth century, French expeditions played an important role in the exploration and future settlement in what is now Arkansas. The Jesuit Missionary Father Jacques Marquette and fur trader Louis Joliet were the first of a number of French explorers to visit east Arkansas. They encountered the Arkansa at the mouth of the Arkansas River in the summer of 1673 and then turned back for Canada. The next French explorer in Arkansas was La Salle, who in 1682 arrived at the mouth of the Arkansas and subsequently explored thirty miles upstream of the latter river. Along the Arkansas, La Salle and his party contacted the Indian villages of Tongiua, Tourima, and Ostuoy. Henri de Tonti established the Arkansas Post in 1686 (Hanson and Moneyhon 1989).

The French colony of Louisiana experienced a number of difficulties during the mid eighteenth century, including inept government, Native American unrest, inadequate immigration from France, and low revenues. Settlement was confined to the major river systems, with the rest of the colony remaining the province of hunters and traders. With the heavy losses incurred by

France during the Seven Years War, France decided to relinquish control of Louisiana (including Arkansas) to Spain in 1762 under the Treaty of Fountainebleau (Hansen 1971; Key 2012).

Although Spain adapted its own language and laws for Louisiana, the region's residents retained their French customs and associations, especially in the remote regions of the colony. French posts on the Arkansas, Red, and Ouachita rivers were garrisoned primarily by French nationals, who maintained the frontier trading posts much as they had been under French rule. The Spanish allowed the posts to operate at their discretion, recognizing the need to maintain alliances and economic patterns (Hansen 1971; Key 2012).

Under the new Spanish rule, the Louisiana Territory thrived in terms of population growth and economy. By the 1780s, Spain controlled Baton Rouge, Natchez, Mobile and Pensacola, which meant that it also controlled much of the Mississippi River. Problems began to escalate in relation to trade with the Ohio Valley when the United States and Britain adopted free trade along the Mississippi River, but excluded Spain from the agreement. As a result, Spain seized cargoes and refused to trade with either the United States or England. Residents from Tennessee and Kentucky, who relied on the river to export cotton and tobacco, threatened to secede from the United States and to join Spain. As a result, the Treaty of San Lorenzo was signed in 1795 which eased tensions by allowing free navigation along the Mississippi River as far south as New Orleans. In 1800, France regained the Territory of New Orleans under the Treaty of Ildefonso, spurring the United States to step up negotiations to permanently secure the Mississippi River and the port of New Orleans (Hansen 1971; Whyne et al. 2002; Wilds et al. 1996).

Under the Spanish rule from 1762 until 1800, Spanish land grants began to influence the future of Arkansas following the Revolutionary War as Spain attempted to quell American expansion into its Louisiana Territory. The Spanish governor made sixteen concessions in Crittenden County during the 1790s. Four additional Spanish land grants can be found to the southeast at Hopefield Point. One of the better known local settlers was Benjamin Fooy who settled on a Spanish concession at what is now "Hopefield" in 1795 or 1797 (Hale 1962; Woolfolk 1991). Fooy, a native of Holland, was the Indian agent of the Spanish governor and moved from the Spanish Fort San Fernando de les Barrancas in Memphis to Camp de l'Esperanza (Hale 1962). The Spanish was translated as Camp Hope and later became Hopefield.

United States' Acquisition and Influence, 1803–1836

In 1803, the United States gained the Louisiana territory from France. The acquisition, known as the Louisiana Purchase, included more than one million square miles that in 1804 were divided into two sections: the Territory of New Orleans, and the District of Louisiana, which included what is now Arkansas (Hansen 1971; Whyne et al. 2002). The Louisiana Purchase hastened the displacement of Indians in the territory, as the United States failed to honor its promise to recognize treaties with the Indians made by the Spanish and French. Americans declined to acknowledge the land rights of the Indians who had few settlements within the territory. As a result, whites were encouraged to settle throughout the Louisiana Purchase. The Quapaw, who had inhabited northeastern Arkansas during the colonial period, were relocated to the old Caddo territory in southwest Arkansas in 1818, but just seven years later were forced to move yet again.

this time into northern Louisiana with the Caddo (Bolton 2013; Carter 2012; Webb and Gregory 1978).

In 1813, what is now Arkansas became Arkansas County in the Missouri Territory. When Missouri became a state a few years later, its southern boundary became the northern boundary of the Arkansas Territory, which was officially created in 1819. In 1821, the territorial capital was moved from Arkansas Post to the more centrally located site of Little Rock (Bolton 2013; Hansen 1971).

Settlement of the Arkansas Territory was slow, moving primarily from northeast Arkansas to the southwest along the Southwest Trail that led from Cape Girardeau, Missouri to the Red River. The first census of the Arkansas Territory in 1820 recorded 14,273 inhabitants. By 1830, that figure had more than doubled, to over 33,000, but these individuals were scattered over a wide area. More significant growth would follow the expulsion of the last Native American claims in the 1830s and the arrival of floods of European immigrants in the 1840s and 1850s. The 1840 census reported nearly 100,000 residents of Arkansas, a figure that would double in each of the next two decades to 435,000 on the eve of the Civil War (Bolton 2013).

History of Crittenden County

Arkansas was admitted to the Union in 1836 along with Michigan under the terms of the Missouri Compromise that required a free and slave state to be admitted together. The project is located in Crittenden County. Crittenden County was created by an act of the Arkansas Territorial Legislature on October 22, 1825 (Goodspeed 1890). It was named for Robert Crittenden, the first secretary of Arkansas Territory. Originally the county was larger, and encompassed land that is now part of Cross, Lee, and St. Francis counties. In 1826, ferry service between Memphis and Hopefield was opened. Steamboats from the Mississippi often docked at Marion during times of high water (Woolfolk 1982). It was also during this period that the Military Road from Memphis to Little Rock was being surveyed. Completed in 1829, the construction of the Military Road greatly facilitated immigration to Arkansas (Chowning 1954). The government used this route to move Choctaw and Chickasaw Indians from Mississippi to Oklahoma in the 1830s, and it was dubbed the Trail of Tears (Woolfolk 1982). Cherokee who were already living in Arkansas also ceded their lands and moved to Indian Territory. The Quapaw had given up much of their territory as early as 1818, and ceded the final two million acres in 1824. The Native American population was essentially eliminated from Arkansas by 1840.

In 1836, the year Arkansas became a state, Marion was selected as the county seat of Crittenden County. Railroad surveys began in 1850-1851 (Woolfolk 1967). The railroads were important because the swamps of eastern Arkansas made the 133 miles from Hopefield to Little Rock almost intraversable. Early railroads were frequently washed out by floods, but in 1858 the line was completed from Hopefield to Little Rock. During the period from the 1840s up the Civil War, Crittenden County enjoyed prosperity based on the plantation system. Cotton was the main crop.

The earliest map of the study area is the General Land Office (GLO) plat map for Township 6 North Range 8 East, dated May 5, 1824 (USDIBLM 2013). There are a number of natural

features noted on the map including bayous, swamps, ponds, and lakes (Figure 8). On February 1, 1843, both sections 25 and 36 for Township 6 North Range 8 East were bought for cash. Section 25 was bought James Hall, Carey Harris, and James Walker and Section 36 was bought by Peter Fletcher (USDIBLM 2013).

Arkansas's position in the Civil War was complex as a result of being a slave border state. Unionist sentiment was highest in the northwest, while the southern and eastern counties, where cotton was produced with slave labor, favored secession. In the initial vote for secession during March 1861, delegates split, and Crittenden County is notable for being the only Mississippi River county in the state not in favor of secession (Hanson and Moneyhon 1989). However, after the war began in April, the convention reconvened and Arkansas voted for secession on May 20, 1861.

Early in the war, on June 5, 1862, Federal troops landed at Mound City, four miles east of Marion, and captured Hopefield (Hale 1962). During the Battle of Memphis on the following day, two Confederate rams were sunk in shoals of the Mississippi River out from Hopefield. On February 13, 1863, Hopefield was burned by Federal troops in retaliation for a raid by Confederate guerrillas in which a steamboat and seven barges of coal were sunk. The town never fully recovered.

Period documentation from Reconstruction suggests that the white inhabitants of Crittenden County harbored much resentment against African American office holders and "carpetbaggers." The late nineteenth century was a period of violent racial strife in Marion, and at times the state militia was called in (Woolfolk 1982). The reconstruction period ended in 1874 with the adoption of a new state constitution.

Crittenden County witnessed devastating damage in the major floods of 1882, 1883, 1897, and 1912. Little was done to improve the railroads until 1868. Prosperity was enhanced however, when in May 1892, the Frisco Railroad bridge over the Mississippi River was opened. It was the first bridge over the Mississippi at Memphis and, at the time, was the third largest bridge in the world (Woolfolk 1967). The Memphis 15-min. quadrangle 1916 edition shows the project and the surrounding area. At the time the 1916 map, the project area is shown as an area of swamps and wetlands with the small community of Wyanoke lying to the east along the Mississippi River (Figure 9).

Crittenden County has been primarily rural and experienced little growth or population increase prior to the late 1970s. The majority of land annexations in Crittenden County since the early 1900s have occurred in the last thirty years as a result of subdivision developments (Woolfolk 1982) associated with the growth of Memphis and West Memphis.

An agricultural depression after World War I and the nationwide depression of the 1930s severely affected the agricultural economy of Arkansas (Harrison 1954). Grain prices declined and property taxes could not be paid. Delinquency resulted in the foreclosure on millions of acres in rural Arkansas, which became state property. Individuals could settle this land making a small clearing and building a home. They could then gain title to the land by making a nominal investment. Many small households surrounded by 20 to 40 acre plots date to this time period.

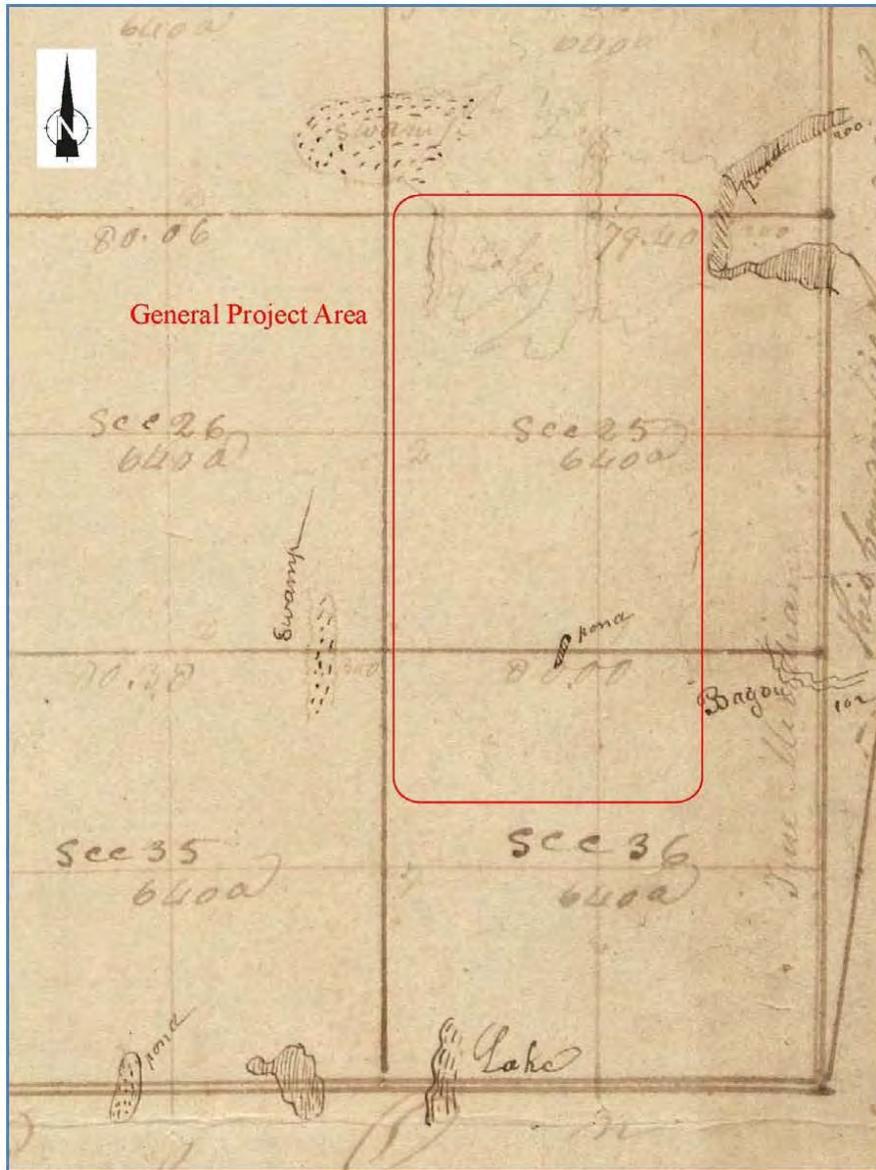


Figure 8. The 1824 GLO plat map for Township 6 North Range 8 East with the project area highlighted.

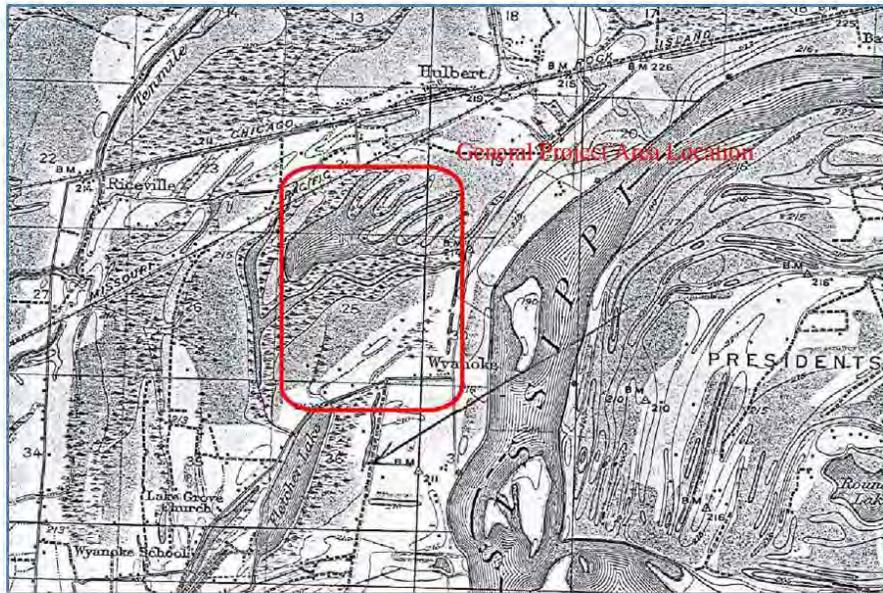


Figure 9. Project area shown on the Memphis, TN 15-min. quadrangle 1916 edition.

Since 1933, when the first allotment was placed on cotton, the importance of it to the local economy has declined (Gray and Ferguson 1974). Cotton production involved a considerable quantity of laborers, especially in the days when the crop was planted and picked by hand. Even after the introduction of mechanized cotton pickers, weeding was done with hand hoes. The increased use agricultural chemicals put much of the rural population out of work. Today, a more diversified cropping system includes soybeans, milo, wheat, rice, alfalfa, sorghum and pasture characterizes most farms in the county. Machinery began to replace livestock as the major source of farm power, and the acreage of corn needed to feed livestock in the county decreased. Farms in Crittenden have been decreasing in number and increasing in size since 1959.

In the modern era, West Memphis has become the largest city in the county and 77 percent of the county's population now resides in municipalities (Crittenden County Historical Society n.d.). Service industries have replaced farming in number of people employed.

IV. METHODS

ARCHAEOLOGICAL SURVEY METHODS

Background Research

Prior to beginning fieldwork, a literature and records search was conducted at the Arkansas Archeological Survey office in Fayetteville. Copies were made of the forms for sites within a one-mile radius of the APE and sent to TRC's Nashville office. In addition to identifying known resources that might be affected by the proposed undertaking, another objective was to obtain a perspective on the types of archaeological resources that were likely to be encountered during field work.

Field Methods

This survey followed the Arkansas guidelines for archaeological fieldwork and report writing (AAS 2010). Standard archaeological survey methods were used during the field study; they included a combination of surface inspection and shovel testing. The ground was inspected for the presence of archaeological material in areas with greater than 25 percent surface visibility. Places that were not inundated were systematically shovel tested. All shovel tests were a minimum of 30 cm in diameter, and excavated until subsoil was reached. The soil was screened through 0.64-cm (¼-inch) mesh hardware cloth.

During the survey, all shovel testing was conducted at 20-m intervals along transects placed 20 m apart. Shovel tests were not excavated in obviously disturbed settings, such as along crowned and ditched access roads, and in low-lying hydric areas unlikely to have supported human habitation. Figure 10 consists of a comprehensive survey coverage map depicting each shovel test location.

The terrain where the project area is located is characterized by flat farmland, floodplains, wetlands, and stream channels.

HISTORIC STRUCTURES SURVEY METHODS

The historic resource survey was conducted in accordance with guidelines contained in National Register Bulletin 24, *Guidelines for Local Surveys: A Basis for Preservation Planning* (Derry et al. 1985).

Federal regulations define the APE as “the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist.” In regard to the proposed project, the architectural APE was defined by viewsheds to and from landscape changes associated with the proposed project corridor and associated facilities, terminated where vegetation, intervening modern construction, and/or topography obstruct lines of sight.



Figure 10. Aerial view of project area showing the location of all shovel test locations

NRHP ELIGIBILITY CRITERIA

According to 36 CFR 60.4, cultural resources eligible for listing on the NRHP are defined as buildings, structures, objects, sites, and districts that have “integrity,” and that meet one or more of the criteria outlined below.

- Criterion A (Event). Association with one or more events that have made a significant contribution to the broad patterns of national, state, or local history.
- Criterion B (Person). Association with the lives of persons significant in the past.
- Criterion C (Design/Construction). Embodiment of distinctive characteristics of a type, period, or method of construction; or representation of the work of a master; or possession of high artistic values; or representation of a significant and distinguishable entity whose components may lack individual distinction.
- Criterion D (Information Potential). Properties that yield, or are likely to yield, information important in prehistory or history. Criterion D is most often (but not exclusively) associated with archaeological resources. To be considered eligible under Criterion D, sites must be associated with specific or general patterns in the development of the region. Therefore, sites become significant when they are seen within the larger framework of local or regional development.

“Integrity” is perhaps the paramount qualification of NRHP eligibility, and can be related to any or all of the following:

- Location: the place where the historic property (or properties) was/were constructed or where the historic event(s) occurred;
- Design: the combination of elements that create the form, plan, space, structure, and style of a property (or properties);
- Setting: the physical environment of the historic property (or properties);
- Materials: the physical elements that were combined to create the property (or properties) during the associated period of significance;
- Workmanship: the physical evidence of the crafts of a particular culture or people during any given period in history or prehistory;
- Feeling: the property’s (or properties’) expression of the aesthetic or historic sense of the period of significance; and
- Association: the direct link between the important historic event(s) or person(s) and the historic property (or properties).

Ordinarily cemeteries, birthplaces, or graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, properties primarily commemorative in nature, and properties that have achieved significance within the past fifty years shall not be considered eligible for the National Register. However, such properties will qualify if they are integral parts of districts that do meet the criteria or if they fall within the following categories:

- Consideration A: A religious property deriving primary significance from architectural or artistic distinction or historical importance; or

- Consideration B: A building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or
- Consideration C: A birthplace or grave of a historical figure of outstanding importance if there is no appropriate site or building directly associated with his or her productive life; or
- Consideration D: A cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, from association with historic events; or
- Consideration E: A reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived; or
- Consideration F: A property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own exceptional significance; or,
- Consideration G: A property achieving significance within the past 50 years if it is of exceptional importance.

V. RESULTS

ARCHAEOLOGICAL SURVEY RESULTS

Principal Investigator Jared Barrett conducted a literature and records search at the AAS facility in Fayetteville on May 29 and 30, 2013. A standard site files check was performed and prior archaeological work in the study area was researched. Background research at the AAS prior to the fieldwork indicated that no archaeological sites have been recorded within the APE of the current project area. In addition, three archaeological sites have been recorded within a half-mile radius of the project area (Table 1). All three sites lie outside the current project area.

Background research discovered that several archaeological surveys have been carried out directly within the current project area. A section of the southern portion of the current project area had been previously surveyed in 1981 by AAS (Waddell 1981). AAS identified five historic sites (3CT206–210) and a single historic isolated find. All the historic sites recorded during the AAS survey dated to the early or middle 1900s and lie outside the current APE.

Another survey that covers portions of the current APE along Ditch 20 was carried out by David Dye in 1992 (Dye 1992a). His survey covered Ditches 17 and 20 as well as a storm storage area near the north end of the current project area. Dye did not uncover any cultural resources during that survey. Another survey carried out by David Dye in 1992 examined a railroad track located within the current APE (Dye 1992b). Dye did not uncover any cultural resources during that survey.

Several other archaeological surveys have been carried out near the current project area for various projects. These include a study of archaeological, architectural, and historic resources within the city of West Memphis located north of the current APE (Kern 1981), a cultural resources survey of the Bauxippi-Wyanoke revetment construction area located east of the current APE (McNeil 1981), a cultural resources survey of 21 Mississippi River levee berm items in Crittenden and Desha Counties, Arkansas located east of the current APE (Nixon 1982), and a cultural resource investigation of a sanitary sewer extension located west of the current APE (Morrow 2003).

Table 1. Previously recorded sites within 0.5 miles of the project area.

Site	Component/Description	NRHP Eligibility	Reporter/Date
3CT206	Historic Scatter	Not Eligible	Waddell/6-11-81
3CT207	Historic Scatter	Not Eligible	Waddell/6-11-81
3CT208	Historic Scatter	Not Eligible	Waddell/6-11-81

TRC personnel conducted the archaeological survey from August 19–22, 2013 with a team of four, utilizing shovel testing to prospect for archaeological remains. Shovel testing within the APE did not uncover any cultural material. A total of 477 shovel tests were excavated. A total of 16 were not excavated due to standing water, swamp land, or they were located in areas of prior soil disturbance such as a drainage ditch (see Figure 10). According to the soil survey of Crittenden County, the water table in the project area varies from zero to 24 inches bgs (USDA NRCS 2013). According to studies carried out by Saucier (1994) of the Mississippi River, the

current project lies within the modern meander belt (Stage 1) of the Mississippi River which dates to 2000 years before present. Given the recent age of the alluvial deposits in the project area, the likelihood of intact prehistoric deposits is low. Also, prior to the construction of the levees along the Mississippi River, the area saw frequent major flooding (1882, 1883, 1897 and 1912) throughout the historic period (Woolfolk 1967). Soils within the project area were compact and consist of a 10YR 4/2 dark grayish brown silty clay plowzone (0-30 cmbgs (below ground surface)) underlain by a 10YR 4/1 dark gray clay subsoil (Figure 11). One shovel test within the 20 acre site was augured down to a depth of 1 m with the mineralized compact clay subsoil extending down 1 m.

No archaeological materials were recovered during the survey within the APE. No previously unrecorded archaeological resources were identified during the Phase I survey. TRC recommends no additional archaeological investigations based on the currently proposed project design.



Figure 11. Typical shovel tests soil profile within project area, facing northeast.

HISTORIC STRUCTURES SURVEY RESULTS

Prior to conducting the field study, research was conducted at the Arkansas Historic Preservation Program to determine if any previously recorded historic structures occur within the project APE. One resource was identified within one mile of the proposed project (CT-0017). TRC conducted an architectural survey of the project area on August 29, 2013. TRC revisited this resource during the current survey and found that it is no longer extant. An aerial view of the project area shows the location CT-0017 within the boundary of a railroad car unloading facility (Figure 12). Furthermore, no newly identified historic structures were recorded during the current study. Based on these results, we recommend that clearance to construct within the survey area be granted in the case of historic structures.



Figure 12. Aerial view of project area showing location of CT0017.

VI. SUMMARY AND RECOMMENDATIONS

The City of West Memphis proposes to upgrade a railway at their logistics park south of the city in Crittenden County, Arkansas. The project involves constructing new rail lines and a 20 acre site for unloading train cars. From August 19-22 and 29, 2013, TRC conducted a Phase I cultural resources survey designed to document and assess cultural resources located within the APE of the planned project. This project was conducted under contract to URS and performed in compliance with Section 106 of the National Historic Preservation Act (as amended) and its implementing regulations at 36 CFR 800. The proposed logistics park upgrades consist of a 20 acre site and approximately 3.76 miles of new railroad tracks measuring approximately 25 feet wide. Archaeologically, the APE of the current project consists of the 20 acre site plus the 3.76 mile long, 25 feet wide, new railroad track. A total of approximately 42 acres were subject to archaeological survey coverage. The APE for architectural studies included a 0.5-mile (0.8-km) area surrounding the 20 acre site and the 3.76 miles of new railroad tracks as well as any areas where the project will alter existing topography or vegetation in view of a historic resource. The APE to and from the project area was terminated where topography, vegetation, and/or modern development obstructed lines of sight.

From August 19-22, 2013, a TRC crew conducted the archaeological survey of the archaeological APE. The archaeological APE consisted of the 3.76 miles of new railroad track and the 20 acre site. Land use within the APE consisted of soy bean fields, secondary growth forest, swamp, and industrial improvements. The archaeological survey included field inspections of the proposed APE via systematic shovel testing at 20-m (66 feet) intervals and visual examination of exposed ground surfaces. No new archaeological sites were recorded as a result of these investigations. It is the recommendation of TRC that no archaeological sites are present within the APE of the proposed project and no additional archaeological investigations are recommended in respect to this undertaking.

TRC conducted a historic architectural survey of the project APE on August 29, 2013, which resulted in the identification of no previously unrecorded architectural resources located within the APE of the proposed project. The historic architectural survey also revisited the one previously recorded architectural resource (CT-0017). This resource is no longer extant. No additional investigation of above ground resources is recommended for the proposed undertaking.

REFERENCES CITED

- Anderson, David G., Hazel R. Delcourt, Paul A. Delcourt, John E. Foss, and Phyllis A. Morse
1989 *Cultural Resource Investigations in the L'Anguille River Basin, Lee, St. Francis, Cross, and Poinsett Counties, Arkansas*. Garrow & Associates, Inc., Atlanta. Submitted to the Memphis District, Corps of Engineers, Memphis.
- Anderson, David G., Joe W. Joseph, and Mary Beth Reed
1988 *Technical Synthesis of Cultural Resource Investigations, Fort Polk, Louisiana*. Contract CX5000-7-0007. Garrow and Associates, Inc. Submitted to the Interagency Archaeological Services Division, National Park Service, Atlanta, Georgia.
- Anderson, David G., Joe W. Joseph, Mary Beth Reed, and Steven D. Smith
1997 *Fort Polk Historic Preservation Plan Prehistory and History in Western Louisiana: A Technical Syntheses of Cultural Resource Investigations at Fort Polk*. Draft Report. Southeast Archaeological Center, National Park Service, Tallahassee, Florida.
- Anderson, David G., and Robert C. Mainfort, Jr. (editors)
2002 *The Woodland Southeast*. University of Alabama Press, Tuscaloosa.
- Arkansas Archeological Survey (AAS)
2010 *Appendix B of the Arkansas State Plan: Guidelines for Cultural Resources Fieldwork and Report Writing in Arkansas* [Online WWW]. Available URL: <http://www.uark.edu/campus-resources/archinfo/StatePlanGuidelinesJan2010.pdf> Site accessed September 16, 2013.
- Benn, David W.
1998 Moon: A Fortified Mississippian-Period Village in Pointsett County, Arkansas. In *Changing Perspectives on the Archaeology of the Central Mississippi Valley*, edited by M.J. O'Brien and R.C. Dunnell, pp. 225-257. University of Alabama Press, Tuscaloosa.
- Benn, David W. (editor)
1992 *Excavations at the Moon Site (3PO488) A Middle Mississippian Village in Northeastern Arkansas*. Two volumes. Center for Archaeological Research, Southwest Missouri State University, Springfield. Submitted to the Arkansas Highway and Transportation Department.
- Bolton, S. Charles
2013 Louisiana Purchase through Early Statehood, 1803 through 1860. *The Encyclopedia of Arkansas History and Culture*. Central Arkansas Library System. Online document, <http://www.encyclopediaofarkansas.net/encyclopedia/entry-detail.aspx?entryID=398>. Site accessed June 11, 2013.
- Bradley, Bruce A.
1997 Sloan Site Biface and Projectile Point Technology. In *Sloan: A Paleoindian Dalton Cemetery in Arkansas*, edited by Dan F. Morse, pp. 53-57. Smithsonian Institution Press, Washington, D.C.

- Broyles, Bettye J., and Clarence H. Webb (editors)
 1970 *The Poverty Point Culture*. Southeastern Archaeological Conference Bulletin 12.
- Carter, Cecile Elkins
 2012 Caddo Nation. *The Encyclopedia of Arkansas History and Culture*. Central Arkansas Library System. Online document,
<http://www.encyclopediaofarkansas.net/encyclopedia/entry-detail.aspx?entryID=549>. Site accessed June 11, 2013.
- Chapman, Carl H.
 1975 *The Archaeology of Missouri I*. University of Missouri Press, Columbia.
- Chowning, R.
 1954 *History of St. Francis County, Arkansas*. Times-Herald Publishing, Forrest City, Arkansas.
- Connaway, John M.
 1977 *The Denton Site: A Middle Archaic Occupation in the Northern Yazoo Basin, Mississippi*. Archaeological Report No. 6, Mississippi Department of Archives and History, Jackson.
- Crittenden County Historical Society (C.C.H.S.)
 n.d. *Historical Record and Survey of Crittenden County, Arkansas*. Ms. On file.
 Crittenden County Library, Arkansas History Room, Marion, Arkansas.
- Delcourt, Hazel R., Paul A. Delcourt, G. R. Wilkins, and E. N. Smith
 1986 Vegetational History of the Cedar Glades Regions of Tennessee, Kentucky, and Missouri During the Past 30,000 Years. *Association of Southeastern Biologists Bulletin* 33:128-137.
- Derry, Anne, H. Ward Jandl, Carol D. Schull, and Jan Thorman
 1985 *Guidelines for Local Surveys: A Basis for Preservation Planning*. Revised by Patricia L. Parker. National Register Bulletin No. 24, U.S. Department of the Interior, National Park Service, Washington, D.C. Originally published in 1977.
- Dye, David H.
 1992a *A Cultural Resources Survey of a Portion of Ten Mile Bayou, Ditches 17 and 20, Two New Ditches, and Storm Storage Area and Pump Station, Crittenden County, Arkansas*. Prepared for City of West Memphis.
 1992b *A Cultural Resources Survey of the Crittenden County Rail Spur, Crittenden County, Arkansas*. Prepared for City of West Memphis.
- Fritz, Gayle J.
 1990 Multiple Pathways to Farming in Precontact Eastern North America. *Journal of World Prehistory* 4:387-435.

- Gagliano, Sherwood M., and Hiram F. Gregory
 1965 A Preliminary Survey of PaleoIndian Points from Louisiana. *Louisiana Studies* 4(1):63-77.
- Gibson, Jon L.
 1994 Before Their Time? Early Mounds in the Lower Mississippi Valley. *Southeastern Archaeology* 13:162-181.
 1996 *Poverty Point: A Terminal Archaic Culture of the Lower Mississippi Valley (Second Edition)*. Anthropological Study Series No. 7, Department of Culture, Recreation and Tourism, Louisiana Archaeological Survey and Antiquities Commission.
 2001 *The Ancient Mounds of Poverty Point: Place of Rings*. University Press of Florida, Gainesville.
- Gillam, J. Christopher
 1996 Early and Middle Paleoindian Sites in the Northeastern Arkansas Region. In *The Paleoindian and Early Archaic Southeast*, edited by David G. Anderson and Kenneth E. Sassaman, pp. 404-412. University of Alabama Press, Tuscaloosa.
 1999 Paleoindian Settlement in Northeastern Arkansas. In *Papers in Honor of Dan and Phyllis Morse*, edited by Robert C. Mainfort, Jr. University of Arkansas Press, Fayetteville.
- Goodspeed Publishing Company
 1890 *Biographical and Historical Memoirs of Eastern Arkansas*. The Goodspeed Publishing Company, Chicago.
- Goodyear, Albert C., III
 1974 *The Brand Site: A Techno-functional Study of a Dalton Site in Northeast Arkansas*. Research Series 7. Fayetteville: Arkansas Archaeological Survey.
- Graham, Russell W., C. Vance Haynes, Donald L. Johnson, and Marvin Kay
 1981 Kimmswick: A Clovis-Mastodon Association in Eastern Missouri. *Science* 213:1115-1117.
- Gray, J.L., and D.V. Ferguson
 1974 *Soil Survey of Crittenden County, Arkansas*. United States Department of Agriculture, Soil Conservation Service.
- Hale, Jim, Jr.
 1962 *Ghost Towns of Crittenden County*. Ms. on file. Crittenden County Library, Arkansas History Room, Marion, Arkansas.
- Hansen, Harry (editor)
 1971 *Louisiana A Guide to the State*. [Originally published 1941 by the Federal Writers' Program of the Works Progress Administration of the State of Louisiana]. Hastings House, New York.

- Hanson, Gerald T., and Carl H. Moneyhon (editors)
 1989 *Historical Atlas of Arkansas*. University of Oklahoma Press, Norman.
- Harrison, Robert
 1954 Clearing Land in the Mississippi Alluvial Valley. *Arkansas Historical Quarterly* 13:352-371.
- Higgins, M.J.
 1990 *The Nocta Site: The Early, Middle and Late Archaic Occupations*. FAI-270 Site Reports No. 21. American Bottom Archaeology, Urbana, Illinois.
- Hoffman, Teresa
 1998 The Lithic Assemblage. In *Toltec Mounds and Plum Bayou Culture: Mound D Excavations*, by Martha Ann Rolingson, pp. 54-79 Arkansas Archeological Survey Research Series 52.
- Holmes, William H.
 1884 *Illustrated Catalogue of a Portion of the Ethnologic and Archaeologic Collections Made by the Bureau of American Ethnology During the Year 1881*. Bureau of American Ethnology, Third Annual Report for 1881-1882, pp. 433-506, Washington, D.C.
- House, John H.
 1996 East-Central Arkansas. In *Prehistory of the Central Mississippi Valley*, edited by Charles H. McNutt, pp. 137-154. University of Alabama Press, Tuscaloosa.
- Kay, Marvin (editor)
 1982 *Holocene Adaptations Within the Lower Pomme de Terre River Valley, Missouri*. Vols. I-III. Illinois State Museum Society, Springfield.
- Kelley, David B.
 1992 Coles Creek Period Faunal Exploitation in the Ouachita River Valley of Southern Arkansas. *Midcontinental Journal of Archaeology* 17:227-264.
- Kern, John R.
 1981 *Study of Archaeological, Architectural and Historic Resources Within the Memphis Metropolitan Area: Tennessee, Arkansas, and Mississippi - West Memphis Area*. Report submitted to Department of Army Memphis District Corps of Engineers.
- Key, Joseph Patrick
 2012 European Exploration and Settlement, 1541 through 1802. *The Encyclopedia of Arkansas History and Culture*. Central Arkansas Library System. Online document, <http://www.encyclopediaofarkansas.net/encyclopedia/entry-detail.aspx?entryID=2916>. Site accessed June 11, 2013.
- Kidder, Tristram R.
 1992 Coles Creek Period Social Organization and Evolution in Northeast Louisiana. In *Lords of the Southeast: Social Inequality and the Native Elites of Southeastern North*

America, edited by Alex W. Barker and Timothy R. Pauketat. Archeological Papers of the American Anthropological Association Number 3.

King, J. E., and W. H. Allen, Jr.

1977 A Holocene Vegetational Record from the Mississippi River Valley, Southeastern Missouri. *Quaternary Research* 8:307-323.

Lopinot, Neal H., Jack H. Ray, and Michael D. Conner

1998 *The 1997 Excavations at the Big Eddy Site (23CE426) in Southwest Missouri*. Center for Archaeological Research, Southeast Missouri State University, Special Publication No. 2, Springfield.

2000 *The 1999 Excavations at the Big Eddy Site (23CE426)*. Center for Archaeological Research, Southwest Missouri State University, Special Publication No. 3, Springfield.

McGahey, Samuel O.

1992 *Paleoindian and Early Archaic Period Research in the Lower Southeast: A South Carolina Perspective*, edited by David G. Anderson, Kenneth E. Sassaman, and Christopher Judge, pp. 295-321. Council of South Carolina Professional Archaeologists in conjunction with Savannah River Archaeological Research Program, South Carolina Institute of Archaeology and Anthropology, University of South Carolina, Columbia.

McNeil, Jimmy D.

1981 *A Cultural Resources Survey of Bauxippi-Wyanoke Revetment Construction Area, Crittenden County, Arkansas*. Report prepared for the U.S. Army Corps of Engineers Memphis District.

McNutt, C.H. (editor)

1988 *The Shelby Forest Site (40SY489)*. Paper presented at the 45th Southeastern Archaeological Conference, New Orleans, Louisiana.

1996a *Prehistory of the Central Mississippi Valley*. University of Alabama Press, Tuscaloosa.

1996b *The Central Mississippi Valley: A Summary*. In *Prehistory of the Central Mississippi Valley*, edited by Charles H. McNutt, pp. 187-257. University of Alabama Press, Tuscaloosa.

Mainfort, Robert C.

2011 Woodland Period. In *The Encyclopedia of Arkansas History and Culture*. <http://encyclopediaofarkansas.net/encyclopedia/entry-detail.aspx?entryID=543>. Site accessed June 11, 2013.

Meltzer, David J., and James I. Mead

1983 The Timing of Late Pleistocene Mammalian Extinctions in North America. *Quaternary Research* 19:130-35.

- Mitchem, Jeffrey M.
 2002 The Expedition of Hernando de Soto in Sixteenth Century Arkansas. In *Arkansas Indians*, Arkansas Archeological Survey, Fayetteville, Arkansas.
- Morrow, Juliet E.
 1996 The Organization of Early Paleoindian Lithic Technology in the Confluence Region of the Illinois, Mississippi, and Missouri Rivers. Ph.D. Dissertation, Department of Anthropology, Washington University, St. Louis. University Microfilms International, Ann Arbor, Michigan.
 2005 *Fluted Points of Arkansas*. Arkansas Archeological Survey.
<http://www.clt.astate.edu/jmorrow/ArkansasFlutedPoints.htm>. Site accessed June 11, 2013.
- Morrow, Juliet E., and Toby A. Morrow
 1999 Geographic Variation in Fluted Projectile Points: A Hemispheric Perspective. *American Antiquity* 64:215–230.
- Morrow, Toby
 2003 *Phase I Cultural Resource Investigation of Proposed Sanitary Sewer Extensions, Crittenden County, Arkansas*. Report prepared for the East Arkansas Planning and Development District, Jonesboro.
- Morse, Dan F. (editor)
 1997 *Sloan: A Paleoindian Dalton Cemetery in Arkansas*. Smithsonian Institution Press, Washington, D.C.
- Morse, Dan F.
 1986 McCarty (3-Po-347): A Tchula period site near Marked Tree, Arkansas. In *The Tchula Period in the Mid-South and Lower Mississippi Valley*, pp. 70-92, edited by D.H. Dye and R. C. Brister. Mississippi Department of Archives and History Archaeological Report No. 17.
 1992 The Seventeenth-Century Michigamea Village Location in Arkansas. In *Calumet and Fleur-de-lys: Archaeology of Indian and French Contact in the Midcontinent*, pp. 55-76. John A. Walthall and Thomas E. Emerson, eds. Smithsonian Institution Press, Washington D.C.
- Morse, Dan F., and Albert, C. Goodyear, III
 1973 The Significance of the Dalton Adze in Northeast Arkansas. *Plains Anthropologist* 18:316–22.
- Morse, Dan F., and Phyllis A. Morse
 1983 *The Archaeology of the Central Mississippi Valley*. Academic Press, New York.
 1996 Northeast Arkansas. In *Prehistory of the Central Mississippi Valley*, edited by C.H. McNutt, pp. 119-136. University of Alabama Press, Tuscaloosa.

- Nance, J.
1987 Research into the Prehistory of the Lower Tennessee-Cumberland-Ohio Region. *Southeastern Archaeology* 6.
- Nassaney, Michael S.
2001 The Historical-Processual Development of Late Woodland Societies. In *The Archaeology of Traditions: Agency and History Before and After Columbus*, edited by Timothy R. Pauketat, pp. 157–173. University Press of Florida, Gainesville.
- Nassaney, Michael S., and Charles R. Cobb (editors)
1991 *Stability, Transformation, and Variation: The Late Woodland Southeast*. Plenum Press, New York.
- Nassaney, Michael S., and Kendra Pyle
1999 The Adoption of the Bow and Arrow in Eastern North America: A View from Central Arkansas. *American Antiquity* 64:243–263.
- Neuman, Robert W.
1984 *An Introduction to Louisiana Archaeology*. Louisiana State University Press, Baton Rouge.
- Nixon, Joseph
1982 *An Archaeological, Architectural, and Historical resources Survey of 21 Mississippi River Levee Berm Items Crittenden and Desha Counties, Arkansas: Component 6*. Report prepared for the U.S. Army Corps of Engineers Memphis District.
- O'Brien, Michael J. and W. Raymond Wood
1998 *The Prehistory of Missouri*. University of Missouri Press, Columbia.
- Phillips, Philip
1970 *Archaeological Survey in the Lower Yazoo Basin, Mississippi, 1949–1955*. Papers of the Peabody Museum of Archaeology and Ethnology 60.
- Redfield, Alden, and John H. Moselage
1970 The Lace Place: A Dalton Project Site in the Western Lowland in Eastern Arkansas. *Arkansas Archaeologist* 11:21–44.
- Rolinson, Martha Ann
1994 SE Study Unit 5: Baytown Period. In *A State Plan for the Conservation of Archaeological Resources in Arkansas*, edited by Hester A. Davis, pp. SE17-SE19. Arkansas Archeological Survey Research Series 21.
- Rolinson, Martha Ann (editor)
1982 *Emerging Patterns of Plum Bayou Culture*. Arkansas Archeological Survey Research Series No. 18.

- Royall, P. D.
 1988 *Late-Quaternary Paleocology and Environments of the Western Lowlands, Missouri*. Unpublished M.S. Thesis, Department of Geological Sciences, University of Tennessee, Knoxville.
- Saucier, R.T.
 1994 *Geomorphology and Quaternary Geologic History of the Lower Mississippi Valley*. Volumes I and II. U.S. Army Corps of Engineers, Mississippi River Commission, Vicksburg.
- Schambach, Frank F.
 2002 Fourche Maline: A Woodland Period Culture of the Trans-Mississippi South. In *The Woodland Southeast*, edited by David G. Anderson and Robert C. Mainfort, pp. 91–112. University of Alabama Press, Tuscaloosa.
- Scott, L. J., and D. K. Aasen
 1987 Interpretation of Holocene Vegetation in Northeastern Arkansas. In *A Cultural Resources Survey: Testing and Geomorphic Examination of Ditches 10, 12, and 29, Mississippi County, Arkansas*, by R. H. Lafferty, III, M. J. Guccione, L. J. Scott, D. K. Aasen, B. J. Watkins, M. C. Sierzchula, and P. F. Baumann, pp. 133-150. Midcontinental Research Associates Report No. 86-5, U.S. Army Corps of Engineers, Memphis.
- Smith, B.D. (editor)
 1990 *The Mississippian Emergence*. Smithsonian Institution Press, Washington D.C.
- Smith, Brent W.
 1991 The Late Archaic-Poverty Point Trade Network. In *The Poverty Point Culture: Local Manifestations, Subsistence Practices, and Trade Networks*, edited by Kathleen M. Byrd. *Geoscience and Man* 29:173–180.
- Smith, Bruce D.
 1986 The Archaeology of the Southeastern United States: From Dalton to de Soto, 10,500–500 B.P. In *Advances in World Archaeology*, vol. 5, edited by Fred Wendorf and A. E. Close, pp. 1–92. Academic Press, Orlando.
- Smith, C.
 1996 Analysis of Plant Remains from Mound S at the Toltec Mounds Site. *Arkansas Archeologist* 35:51–76.
- Smith, Steven D., Philip G. Rivet, Kathleen Byrd, and Nancy Hawkins
 1983 *Louisiana's Comprehensive Archaeological Plan*. Department of Culture, Recreation, and Tourism, Division of Cultural Development, Division of Archaeology, Baton Rouge.
- Toth, Alan
 1979 The Marksville Connection. In *Hopewell Archaeology: The Chillicothe Conference*, edited by David S. Brose and N'omi Greber, pp. 188–199. Kent State University Press, Kent, Ohio.

- 1988 *Early Marksville Phases in the Lower Mississippi Valley: A Study of Culture Contact Dynamics*. Mississippi Department of Archives and History Archaeological Report 21, Jackson.
- U.S. Department of Agriculture, Natural Resources Conservation Service (USDA NRCS)
 2013 *Official Soil Series Descriptions*.
<http://soils.usda.gov/technical/classification/osd/index.html>. Site accessed September 16, 2013.
- United States Department of Interior Bureau of Land Management (USDIBLM)
 2013 *General Land Office Records*. Available at <http://www.glorerecords.blm.gov>. Site accessed September 16, 2013.
- Waddell, David B.
 1981 *An Archaeological Survey of the Proposed Sewer Improvement Project Area for the City of West Memphis, Crittenden County, Arkansas*. Report prepared by Arkansas Archaeological Survey. Report submitted to Bond Consulting Engineers.
- Walker, Renee B., Kandance R. Detwiler, Scott C. Meeks, and Boyce N. Driskell
 2001 Berries, Bones, and Blades: Reconstructing Late Paleoindian Subsistence Economy at Dust Cave, Alabama. *Midcontinental Journal of Archeology* 26: 169–197.
- Webb, Clarence H.
 1977 The Poverty Point Culture. *Geoscience and Man* 17.
- Webb, Clarence H., and Hiram F. Gregory
 1978 *The Caddo Indians of Louisiana*. Louisiana Archaeological Survey and Antiquities Commission Anthropological Study No. 2.
- Wayne, Jeannie, Thomas A. Deblack, George Sabo III, Morris S. Arnold
 2002 *Arkansas: A Narrative History*. The University of Arkansas Press, Fayetteville.
- Wilds, John, Charles L. Dufour, and Walter G. Cowan
 1996 *Louisiana Yesterday and Today A Historical Guide to the State*. Louisiana State University Press, Baton Rouge.
- Wood, W. Raymond, and R. Bruce McMillan (editors)
 1976 *Prehistoric Man and His Environments: A Case Study from the Ozark Highlands*. Academic Press, New York.
- Woods, Alan J., Thomas L. Foti, Shannen S. Chapman, James M. Omernik, James A. Wise, Elizabeth O. Murray, William L. Prior, Joe B. Pagan, Jeffrey A. Comstock, and Michael Radford
 2004 *Ecoregions of Arkansas*. Color poster with map, descriptive text, summary tables, and photographs, published by the U.S. Geological Survey, Reston, Virginia.
- Woolfolk, Margaret Elizabeth
 1967 *Railroads Serving Crittenden County, Arkansas*. Ms. on file, Crittenden County Library, Arkansas History Room, Marion, Arkansas.

1982 *A History of Marion*. Ms. on file Crittenden County Library, Arkansas History Room, Marion, Arkansas.

1991 *A History of Crittenden County, Arkansas*. M.E. Woolfolk, Marion, Arkansas.

Wright, H. E., Jr.

1968 History of the Prairie Peninsula. In *The Quaternary of Illinois*, Special Report 14, edited by R. E. Bergstrom, pp. 78-88. College of Agriculture, University of Illinois, Urbana.

Yerkes, Richard, and Linda M. Gaertner

1997 Microwear Analysis of Dalton Artifacts. In *Sloan: A Paleoindian Dalton Cemetery in Arkansas*, edited by Dan F. Morse, pp. 58-71. Smithsonian Institution Press, Washington, D.C.



PANAMERICAN REPORT NO. 34040

PANAMERICAN CONSULTANTS, INC.

**PHASE I CULTURAL RESOURCES INVESTIGATIONS
FOR THE WEST MEMPHIS RAIL LOOP PROJECT,
CRITTENDEN COUNTY, ARKANSAS**

**ADDENDUM A:
RESULTS OF 2014 ARCHAEOLOGICAL ASSESSMENT**

ENSAFE

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**DRAFT ADDENDUM REPORT
MARCH 2014**

DRAFT ADDENDUM REPORT

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**ADDENDUM A:
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ABSTRACT

Under contract with EnSafe, the Memphis office of Panamerican Consultants, Inc., conducted a Phase I cultural resources investigation of portions of the West Memphis Rail Loop Project in Crittenden County, Arkansas. The purpose of this study was to identify all archaeological resources within the proposed Area of Potential Effect and to provide appropriate management recommendations for any such resources encountered. The investigation resulted in negative findings. Thus, it has demonstrated that no National Register of Historic Places eligible or potentially eligible archaeological sites and/or deposits are located within the Area of Potential Effect for the proposed undertaking.

ACKNOWLEDGEMENTS

Panamerican Consultants, Inc. appreciates the opportunity to have provided EnSafe with these archaeological services. Mr. Danny Adams was our point of contact, and provided technical support throughout the study.

Panamerican Consultants, Inc. personnel who contributed to the project include the following. Andrew Saatkamp served as the Field Director. Bill Mansfield served as an Archaeological Technician. Anna Hinnenkamp-Faulk edited the addendum report. Kate Gilow provided administrative support during all phases of the project.

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I. INTRODUCTION

Under contract with EnSafe, the Memphis office of Panamerican Consultants, Inc. (Panamerican), conducted a Phase I cultural resources investigation of portions of the West Memphis Rail Loop Project in Crittenden County, Arkansas. The purpose of this study was to identify all known and unrecorded cultural resources present within the designated Area of Potential Effect (APE) and to provide appropriate management recommendations for any such properties identified.

PROJECT LOCATION

The study area is located in extreme eastern Arkansas along the banks of the Mississippi River. The study area can be found a short distance south of the small community of Wyanoke near West Memphis in Crittenden County. Its exact location can be viewed on the 1993 [photorevised] U.S. Geological Survey (USGS) Fletcher Lake, AR-TN 7.5-minute quadrangle sheet (Figure 1-01).

PROJECT BACKGROUND

In August 2013, archaeologists with TRC Environmental Corporation (TRC) conducted a cultural resources survey of 3.76 mi. of proposed new railroad track and a nearby 20-ac. tract slated for associated development. For the purpose of the archaeological survey, the APE along the new railroad track was 25 ft. In total, ≈ 42 ac. were surveyed during the 2013 TRC study (Barrett and Burr 2013). Portions of the surveyed area for the new railroad track lie immediately adjacent to the present study area. As part of the cultural resources survey, TRC also conducted an architectural study of historic properties lying within a 0.5-mi. radius of the proposed railroad track and 20-ac. associated tract (Barrett and Burr 2013). This radius encompasses all of the present study area.

The TRC archaeological survey resulted in negative findings. No previously unrecorded architectural resources were located within 0.5 mi. of the APE. The location of one previously recorded architectural resource (CT-0017) within the APE radius was revisited, but was found to be no longer extant (Barrett and Burr 2013).

Staff of The Department of Arkansas Heritage, Arkansas Historic Preservation Program (AHPP) reviewed the TRC cultural resources report and concurred that “no historic properties will be affected by the proposed undertaking” in written correspondence dated 8 November 2013.

Subsequently, in review of a Clean Water Act permit application (dated 14 January 2014), U.S. Army Corps of Engineers (USACE) archaeologists noted in correspondence on 19 February 2014 that additional areas associated with the planned undertaking would require archaeological assessment. These additional areas were the subject of the cultural resources investigation reported herein and are described in detail in the section immediately following.

PROJECT AREA DESCRIPTION

The present study area encompasses a planned grain storage facility, conveyor, adjacent access road, and parking area (see Figure 1-01). Proposed construction plans locate the grain storage facility on the landside of the St. Francis levee immediately east of the proposed railroad track previously surveyed by TRC. The conveyor system originates at the grain storage facility, crosses the levee to the east, and continues eastward for ≈ 740 m before terminating at the bank of the Mississippi River. The proposed access road also originates at the grain storage facility, crosses the levee to the east, and parallels the proposed conveyor system. Combined, the APE

for the conveyor system and access road measures only ≈100 ft. (30 m) wide. A proposed parking area lies immediately south of the proposed conveyor system and access road APE on the riverside of the levee near the Mississippi River bank. In total, the present study area covers ≈21.6 ac.

Portions of the study area to the west (i.e., inside or landside) of the St. Francis levee were encompassed by a large, harvested agricultural field at the time of survey. Portions of the study area to the east (i.e., outside or riverside) of the levee were largely covered in bottomland hardwoods between the levee toe and the banks of the Mississippi River. A narrow, harvested agricultural field crossed the study area near the Mississippi River bank in the eastern portion of the study area as well.

NOTA BENE

This technical report is designed to serve as an addendum to a previous report published in 2013 entitled *Phase I Cultural Resources Investigations for the West Memphis Rail Loop Project, Crittenden County, Arkansas* (Barrett and Burr 2013) by TRC Environmental Corporation of Nashville, Tennessee. Readers are encouraged to consult the latter report for more detailed information, particularly regarding the natural setting and cultural history of the project area and its vicinity.

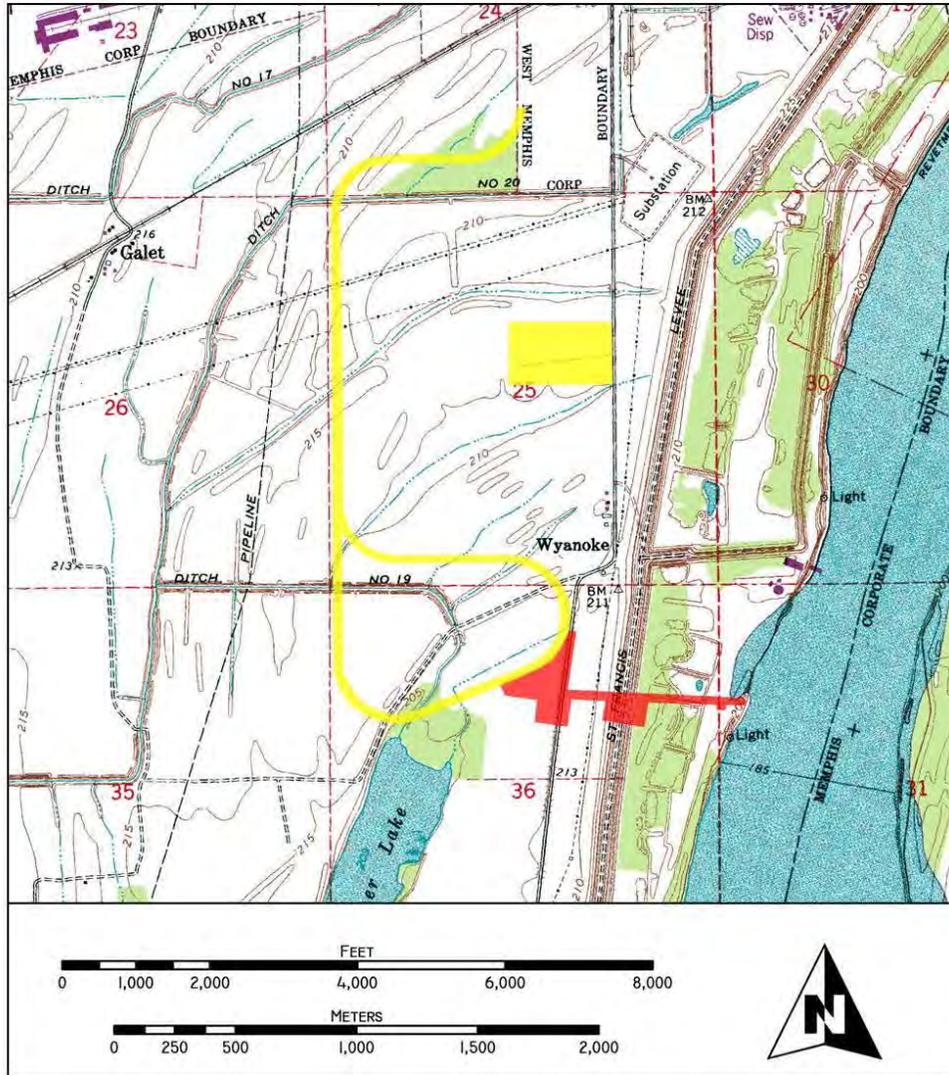


Figure 1-01. Project locator map; present study APE shaded in red, previously surveyed area(s) shaded in yellow (base map: 1993 [photorevised] Fletcher Lake AR-TN USGS 7.5-minute quadrangle sheet).

II. METHODS

LITERATURE AND RECORDS SEARCH METHODS

A standard literature and records search was conducted in advance of the original cultural resources investigation of the West Memphis Rail Loop project area by TRC. Barrett and Burr (2013) reported the results of this previous search in detail. The radius (1 mi.) for the original search encompassed the present study area. Panamerican conducted another review of archaeological records at the Arkansas Archeological Survey's (AAS's) Fayetteville facility in advance of the present study. The second records check confirmed that no new archaeological sites had been identified within 1 mi. of the present study area in the interim between the present and 2013 archaeological studies for this proposed undertaking.

FIELD METHODS

All methodologies employed during the completion of this study were in accordance with Appendix B of the Arkansas State Plan: *Guidelines for Archeological Fieldwork and Report Writing in Arkansas* (Revised Version in effect as of 1 January 2010). Site detection methods employed during fieldwork for this archaeological assessment included a combination of systematic shovel testing and pedestrian surface survey.

Shovel testing was employed as the means of site detection in vegetated portions of the study area. Such areas were limited to the largely wooded tract east of the St. Francis levee. Shovel testing was conducted at 20-m intervals. Given the narrow APE (100 ft. [30 m]) only a single shovel test transect was required to cover the APE east of the levee. However, a series of lateral shovel tests, excavated 20 m perpendicular to the main transect, were required to cover the small proposed parking area near the Mississippi River and the proposed ramp location for the access road immediately east of the St. Francis levee toe.

Shovel tests consisted of holes approximately 30 cm in diameter. Shovel test were excavated to sterile subsoil or the maximum effective depth of excavation (i.e., 50–75 cm below surface [cmbs]) was reached. All fill from shovel tests was passed through 0.25-in. hardware cloth to ensure consistent artifact recovery. Shovel test profiles were recorded on standardized forms. Profile descriptions included on the latter forms utilized Munsell Soil Color Chart references and standard Natural Resources Conservation Service (NRCS) terminology to describe textural classes. Additional information recorded for each shovel test included the maximum depth of excavation, presence or absence of cultural material, and the nature of any recovered artifacts. All areas disturbed by excavations were restored (i.e., backfilled) as closely as possible to their original condition.

Shovel testing was not conducted in water-covered, steeply sloped, and/or obviously disturbed portions of the study area. Additionally, shovel testing was not conducted atop, or on the toe of, the St. Francis levee. Any omission of potential shovel test locations was documented on the standardized forms noted above.

Portions of the study area affording good surface visibility (50–75 percent at the time of assessment) were examined for potential archaeological sites via pedestrian surface survey. Pedestrian surface survey was employed only in the agricultural field west of the St. Francis levee. Surface survey was conducted via crewmembers walking along parallel pedestrian transects spaced at ≈10–15 m apart while continually examining the exposed ground surface for the presence of artifacts.

Note that as the survey resulted in negative findings, a discussion of site delineation methods, etc. is not warranted here.

Ancillary documentation of Phase I fieldwork included daily field notes kept by the Principal Investigator and/or Field Director. Digital photographs recording the nature of the APE were taken regularly throughout fieldwork.

LABORATORY ANALYSIS AND CURATION

As the present study resulted in negative findings, a discussion of laboratory methods is not warranted here. However, all attendant data (photos, recording forms, etc.) will be prepared for curation following the standards set forth in Federal Regulations 36CFR79—Curation of Federal-Owned and Administered Archaeological Collections and will be compliant with requirements of the University of Arkansas Collections Facility at the AAS in Fayetteville.

III. RESULTS

Phase I cultural resources investigation of the present study area occurred over two days, 6 and 14 March 2014. The interruption in fieldwork was attributable to a substantial winter weather event that affected the project vicinity on 2 and 3 March 2014. The event left the project area covered in snow and ice for approximately the next week. Despite the frozen precipitation, all portions of the study area east of the St. Francis levee were archaeologically surveyed on 6 March 2014. This portion of the study area was largely vegetated and required shovel testing as the only means of site detection. The narrow agricultural field east of the levee was also shovel tested during the initial field effort. All available surface visibility in the agricultural field west of the levee remained obscured by snow and ice on 6 March 2014. As a result, crews were delayed in the completion of the latter portion of the study area until the following week. Crews returned to the study area on 14 March 2014 and surveyed the field west of the levee utilizing pedestrian surface survey methods.

A total of 31 shovel test positions were recorded along three transects (Nos. 1-3) in the eastern portion of the study area (Table 3-01). Transect No. 1 was excavated along the proposed conveyor and access road APE (Figure 3-01). Transect Nos. 2 and 3 were excavated perpendicular to Transect No. 1 immediately east of the St. Francis levee toe in the area proposed as a levee-crossing ramp for the access road. Of the 31 total shovel tests, 28 were excavated. Shovel tests at three potential locations were not excavated. Two potential test locations fell on a berm surrounding a large borrow pit and the third fell on riprap at the bank of the Mississippi River. All of the excavated shovel tests were sterile.

Table 3-01. Shovel Test Inventory.

Transect No.	ST No.	Status	Max Depth (cmbs)	Comments
1	1	○	50	
1	2	○	50	
1	3	○	50	
1	4	○	50	
1	5	○	50	
1	6	○	50	
1	7	○	40	
1	8	○	40	
1	9	○	40	
1	10	⊗	0	berm around borrow pit
1	11	○	40	
1	12	○	40	
1	13	○	40	
1	14	○	40	
1	15	⊗	0	berm around borrow pit
1	16	○	40	
1	17	○	50	
1	18	○	50	
1	19	○	50	
1	20	○	50	
1	21	⊗	0	slope, rock (riprap) along MS River
2	1	○	40	

Transect No.	ST No.	Status	Max Depth (cmbs)	Comments
2	2	○	40	
2	3	○	40	
2	4	○	40	
2	5	○	40	
3	1	○	40	
3	2	○	40	
3	3	○	40	
3	4	○	40	
3	5	○	40	

Key: Positive=●; Negative=○; and No Test=⊖

Once clear of frozen precipitation, the agricultural field west of the St. Francis levee exhibited good to excellent surface visibility (50–75 percent). The surface of the latter portion of the study area was closely inspected by crews working along pedestrian transects spaced ≈10–15 m apart. Crewmembers continually examined the exposed ground surface along each transect for the presence of artifacts. Surface survey of the western portion of the study area also resulted in negative findings.

Investigations of portions of the proposed West Memphis Rail Loop Project APE reported herein resulted in negative findings. Thus it has been demonstrated that no National Register of Historic Places (NRHP) eligible or potentially eligible archaeological sites and/or deposits are located within the proposed APE.



Figure 3-01. Photograph along Transect No. 1 in the eastern portion of the APE; view east (IMG_1476.jpg).



Figure 3-02. Photograph of pedestrian surface survey area in the western portion of the APE; view west (DSCN1514.jpg).

IV. SUMMARY AND RECOMMENDATIONS

SUMMARY

Under contract with EnSafe, Panamerican conducted a Phase I cultural resources investigation of portions of the proposed West Memphis Rail Loop Project in Crittenden County, Arkansas. The purpose of this study was to identify all known and unrecorded cultural resources present within the designated APE and to provide appropriate management recommendations for any such properties identified.

Archaeological work for the West Memphis Rail Loop Project began with a cultural resources survey conducted by TRC in 2013. During the previous survey, TRC investigated 3.76 mi. of proposed new railroad track and a nearby 20-ac. tract slated for associated development. The 2013 survey resulted in negative findings. AHPP reviewed the resulting report of findings (Barrett and Burr 2013) and concurred with TRC's recommendations that "no historic properties will be affected by the proposed undertaking" in a letter dated 8 November 2013. Subsequently, in review of a Clean Water Act permit application associated with the proposed undertaking, USACE archaeologists noted that additional areas encompassed by the planned undertaking would require archaeological assessment.

These "additional areas" designated by the USACE were the subject of the cultural resources investigation reported herein. As such, this document is designed to serve as an addendum to a previous report published by TRC in 2013 entitled *Phase I Cultural Resources Investigations for the West Memphis Rail Loop Project, Crittenden County, Arkansas* (Barrett and Burr 2013).

The present study area encompasses a planned grain storage facility, conveyor, adjacent access road, and parking area (see Figure 1-01). Proposed construction plans locate the grain storage facility on the landside (or inside) of the St. Francis levee immediately east of the proposed railroad track previously surveyed by TRC. The conveyor system originates at the grain storage facility, crosses the levee to the east, and continues eastward for ≈740 m before terminating at the bank of the Mississippi River. The proposed access road also originates at the grain storage facility, crosses the levee to the east, and parallels the proposed conveyor system. Combined, the APE for the conveyor system and access road measures only ≈100 ft. (30 m) wide. A proposed parking area lies immediately south of the proposed conveyor system and access road APE on the riverside of the levee near the Mississippi River bank. In total, the present study area covers ≈21.6 ac.

Archaeological survey of the present study area was conducted over two days, 6 and 14 March 2014. Site detection strategies employed included a combination of systematic 20-m interval shovel testing and pedestrian surface survey. Shovel testing was employed exclusively on the heavily vegetated eastern (riverside or outside) of the St. Francis levee. Pedestrian surface survey was employed on the western (landside or inside) of the St. Francis levee where the APE occupied an agricultural field affording good to excellent (50–75 percent) surface visibility at the time of the assessment.

A total of 31 shovel test positions were investigated during the present study. Excavation was not possible at three of these positions due to disturbance (borrow pit berm) and/or obstruction (riprap). Excavation of the other 28 shovel tests yielded negative findings. Pedestrian surface survey in the western portion of the APE resulted in negative findings as well.

RECOMMENDATIONS

Cultural resources investigation of portions of the proposed West Memphis Rail Loop Project APE reported herein resulted in negative findings. Thus, it has been demonstrated that no NRHP eligible or potentially eligible archaeological sites and/or deposits are located within the proposed APE.

V. REFERENCES CITED

- Barrett, J., and J. Burr
2013 *Phase I Cultural Resources Investigations for the West Memphis Rail Loop Project, Crittenden County, Arkansas*. TRC Environmental Corporation, Nashville, Tennessee. Draft report submitted to URS Corporation, Franklin, Tennessee.



PANAMERICAN CONSULTANTS, INC.

**PHASE I CULTURAL RESOURCES INVESTIGATIONS
FOR THE WEST MEMPHIS RAIL LOOP PROJECT,
CRITTENDEN COUNTY, ARKANSAS**

**ADDENDUM A:
RESULTS OF 2014 ARCHAEOLOGICAL ASSESSMENT**



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**DRAFT ADDENDUM REPORT
MARCH 2014**

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MARCH 2014

ABSTRACT

Under contract with EnSafe, the Memphis office of Panamerican Consultants, Inc., conducted a Phase I cultural resources investigation of portions of the West Memphis Rail Loop Project in Crittenden County, Arkansas. The purpose of this study was to identify all archaeological resources within the proposed Area of Potential Effect and to provide appropriate management recommendations for any such resources encountered. The investigation resulted in negative findings. Thus, it has demonstrated that no National Register of Historic Places eligible or potentially eligible archaeological sites and/or deposits are located within the Area of Potential Effect for the proposed undertaking.

ACKNOWLEDGEMENTS

Panamerican Consultants, Inc. appreciates the opportunity to have provided EnSafe with these archaeological services. Mr. Danny Adams was our point of contact, and provided technical support throughout the study.

Panamerican Consultants, Inc. personnel who contributed to the project include the following. Andrew Saatkamp served as the Field Director. Bill Mansfield served as an Archaeological Technician. Anna Hinnenkamp-Faulk edited the addendum report. Kate Gilow provided administrative support during all phases of the project.

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I. INTRODUCTION

Under contract with EnSafe, the Memphis office of Panamerican Consultants, Inc. (Panamerican), conducted a Phase I cultural resources investigation of portions of the West Memphis Rail Loop Project in Crittenden County, Arkansas. The purpose of this study was to identify all known and unrecorded cultural resources present within the designated Area of Potential Effect (APE) and to provide appropriate management recommendations for any such properties identified.

PROJECT LOCATION

The study area is located in extreme eastern Arkansas along the banks of the Mississippi River. The study area can be found a short distance south of the small community of Wyanoke near West Memphis in Crittenden County. Its exact location can be viewed on the 1993 [photorevised] U.S. Geological Survey (USGS) Fletcher Lake, AR-TN 7.5-minute quadrangle sheet (Figure 1-01).

PROJECT BACKGROUND

In August 2013, archaeologists with TRC Environmental Corporation (TRC) conducted a cultural resources survey of 3.76 mi. of proposed new railroad track and a nearby 20-ac. tract slated for associated development. For the purpose of the archaeological survey, the APE along the new railroad track was 25 ft. In total, \approx 42 ac. were surveyed during the 2013 TRC study (Barrett and Burr 2013). Portions of the surveyed area for the new railroad track lie immediately adjacent to the present study area. As part of the cultural resources survey, TRC also conducted an architectural study of historic properties lying within a 0.5-mi. radius of the proposed railroad track and 20-ac. associated tract (Barrett and Burr 2013). This radius encompasses all of the present study area.

The TRC archaeological survey resulted in negative findings. No previously unrecorded architectural resources were located within 0.5 mi. of the APE. The location of one previously recorded architectural resource (CT-0017) within the APE radius was revisited, but was found to be no longer extant (Barrett and Burr 2013).

Staff of The Department of Arkansas Heritage, Arkansas Historic Preservation Program (AHPP) reviewed the TRC cultural resources report and concurred that “no historic properties will be affected by the proposed undertaking” in written correspondence dated 8 November 2013.

Subsequently, in review of a Clean Water Act permit application (dated 14 January 2014), U.S. Army Corps of Engineers (USACE) archaeologists noted in correspondence on 19 February 2014 that additional areas associated with the planned undertaking would require archaeological assessment. These additional areas were the subject of the cultural resources investigation reported herein and are described in detail in the section immediately following.

PROJECT AREA DESCRIPTION

The present study area encompasses a planned grain storage facility, conveyor, adjacent access road, and parking area (see Figure 1-01). Proposed construction plans locate the grain storage facility on the landside of the St. Francis levee immediately east of the proposed railroad track previously surveyed by TRC. The conveyor system originates at the grain storage facility, crosses the levee to the east, and continues eastward for \approx 740 m before terminating at the bank of the Mississippi River. The proposed access road also originates at the grain storage facility, crosses the levee to the east, and parallels the proposed conveyor system. Combined, the APE

for the conveyor system and access road measures only \approx 100 ft. (30 m) wide. A proposed parking area lies immediately south of the proposed conveyor system and access road APE on the riverside of the levee near the Mississippi River bank. In total, the present study area covers \approx 21.6 ac.

Portions of the study area to the west (i.e., inside or landside) of the St. Francis levee were encompassed by a large, harvested agricultural field at the time of survey. Portions of the study area to the east (i.e., outside or riverside) of the levee were largely covered in bottomland hardwoods between the levee toe and the banks of the Mississippi River. A narrow, harvested agricultural field crossed the study area near the Mississippi River bank in the eastern portion of the study area as well.

NOTA BENE

This technical report is designed to serve as an addendum to a previous report published in 2013 entitled *Phase I Cultural Resources Investigations for the West Memphis Rail Loop Project, Crittenden County, Arkansas* (Barrett and Burr 2013) by TRC Environmental Corporation of Nashville, Tennessee. Readers are encouraged to consult the latter report for more detailed information, particularly regarding the natural setting and cultural history of the project area and its vicinity.

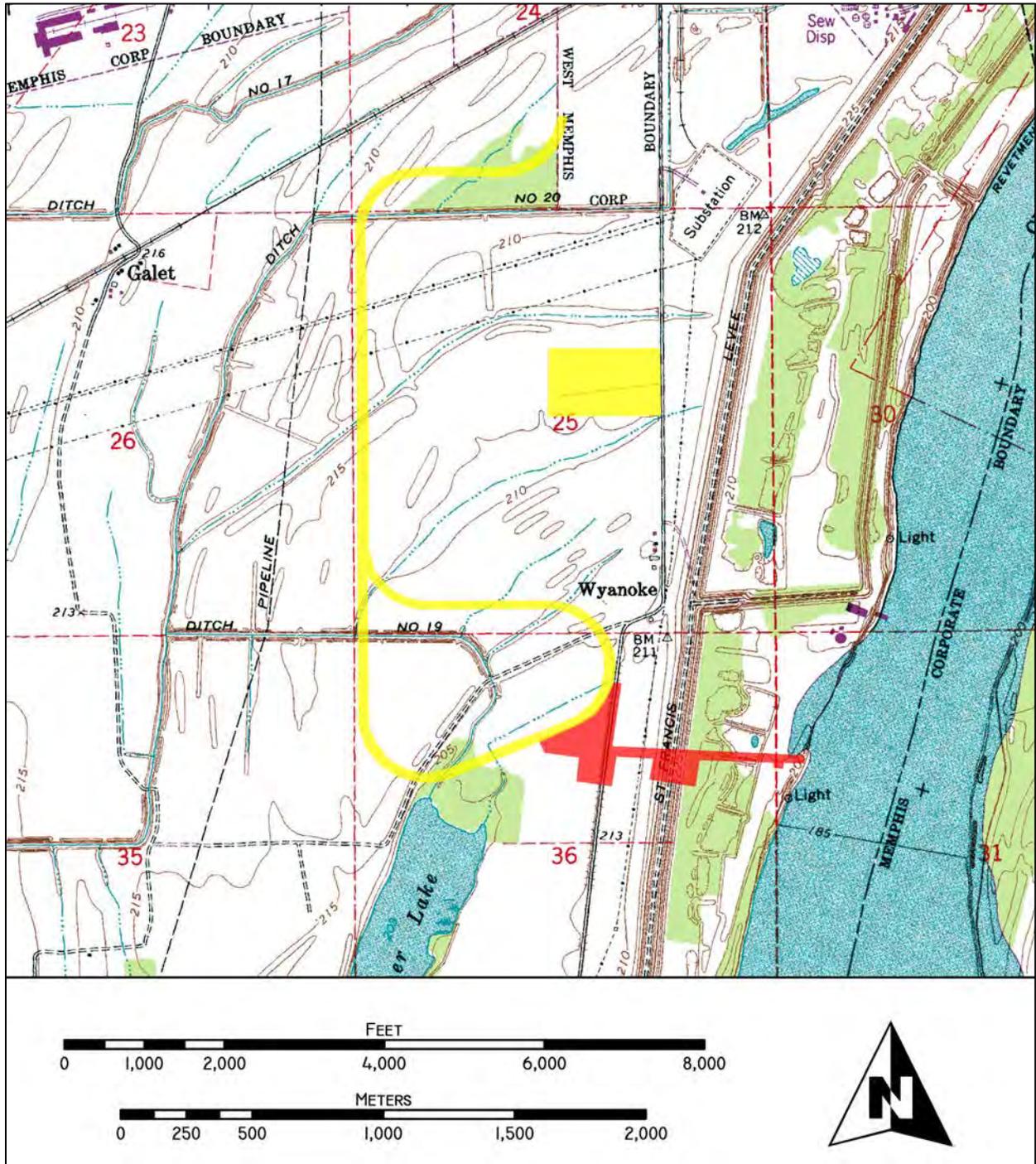


Figure 1-01. Project locator map; present study APE shaded in red, previously surveyed area(s) shaded in yellow (base map: 1993 [photorevised] Fletcher Lake AR-TN USGS 7.5-minute quadrangle sheet).

II. METHODS

LITERATURE AND RECORDS SEARCH METHODS

A standard literature and records search was conducted in advance of the original cultural resources investigation of the West Memphis Rail Loop project area by TRC. Barrett and Burr (2013) reported the results of this previous search in detail. The radius (1 mi.) for the original search encompassed the present study area. Panamerican conducted another review of archaeological records at the Arkansas Archeological Survey's (AAS's) Fayetteville facility in advance of the present study. The second records check confirmed that no new archaeological sites had been identified within 1 mi. of the present study area in the interim between the present and 2013 archaeological studies for this proposed undertaking.

FIELD METHODS

All methodologies employed during the completion of this study were in accordance with Appendix B of the Arkansas State Plan: *Guidelines for Archeological Fieldwork and Report Writing in Arkansas* (Revised Version in effect as of 1 January 2010). Site detection methods employed during fieldwork for this archaeological assessment included a combination of systematic shovel testing and pedestrian surface survey.

Shovel testing was employed as the means of site detection in vegetated portions of the study area. Such areas were limited to the largely wooded tract east of the St. Francis levee. Shovel testing was conducted at 20-m intervals. Given the narrow APE (100 ft. [30 m]) only a single shovel test transect was required to cover the APE east of the levee. However, a series of lateral shovel tests, excavated 20 m perpendicular to the main transect, were required to cover the small proposed parking area near the Mississippi River and the proposed ramp location for the access road immediately east of the St. Francis levee toe.

Shovel tests consisted of holes approximately 30 cm in diameter. Shovel test were excavated to sterile subsoil or the maximum effective depth of excavation (i.e., 50–75 cm below surface [cmbs]) was reached. All fill from shovel tests was passed through 0.25-in. hardware cloth to ensure consistent artifact recovery. Shovel test profiles were recorded on standardized forms. Profile descriptions included on the latter forms utilized Munsell Soil Color Chart references and standard Natural Resources Conservation Service (NRCS) terminology to describe textural classes. Additional information recorded for each shovel test included the maximum depth of excavation, presence or absence of cultural material, and the nature of any recovered artifacts. All areas disturbed by excavations were restored (i.e., backfilled) as closely as possible to their original condition.

Shovel testing was not conducted in water-covered, steeply sloped, and/or obviously disturbed portions of the study area. Additionally, shovel testing was not conducted atop, or on the toe of, the St. Francis levee. Any omission of potential shovel test locations was documented on the standardized forms noted above.

Portions of the study area affording good surface visibility (50–75 percent at the time of assessment) were examined for potential archaeological sites via pedestrian surface survey. Pedestrian surface survey was employed only in the agricultural field west of the St. Francis levee. Surface survey was conducted via crewmembers walking along parallel pedestrian transects spaced at ≈10–15 m apart while continually examining the exposed ground surface for the presence of artifacts.

Note that as the survey resulted in negative findings, a discussion of site delineation methods, etc. is not warranted here.

Ancillary documentation of Phase I fieldwork included daily field notes kept by the Principal Investigator and/or Field Director. Digital photographs recording the nature of the APE were taken regularly throughout fieldwork.

LABORATORY ANALYSIS AND CURATION

As the present study resulted in negative findings, a discussion of laboratory methods is not warranted here. However, all attendant data (photos, recording forms, etc.) will be prepared for curation following the standards set forth in Federal Regulations 36CFR79–Curation of Federal-Owned and Administered Archaeological Collections and will be compliant with requirements of the University of Arkansas Collections Facility at the AAS in Fayetteville.

III. RESULTS

Phase I cultural resources investigation of the present study area occurred over two days, 6 and 14 March 2014. The interruption in fieldwork was attributable to a substantial winter weather event that affected the project vicinity on 2 and 3 March 2014. The event left the project area covered in snow and ice for approximately the next week. Despite the frozen precipitation, all portions of the study area east of the St. Francis levee were archaeologically surveyed on 6 March 2014. This portion of the study area was largely vegetated and required shovel testing as the only means of site detection. The narrow agricultural field east of the levee was also shovel tested during the initial field effort. All available surface visibility in the agricultural field west of the levee remained obscured by snow and ice on 6 March 2014. As a result, crews were delayed in the completion of the latter portion of the study area until the following week. Crews returned to the study area on 14 March 2014 and surveyed the field west of the levee utilizing pedestrian surface survey methods.

A total of 31 shovel test positions were recorded along three transects (Nos. 1–3) in the eastern portion of the study area (Table 3-01). Transect No. 1 was excavated along the proposed conveyor and access road APE (Figure 3-01). Transect Nos. 2 and 3 were excavated perpendicular to Transect No. 1 immediately east of the St. Francis levee toe in the area proposed as a levee-crossing ramp for the access road. Of the 31 total shovel tests, 28 were excavated. Shovel tests at three potential locations were not excavated. Two potential test locations fell on a berm surrounding a large borrow pit and the third fell on riprap at the bank of the Mississippi River. All of the excavated shovel tests were sterile.

Table 3-01. Shovel Test Inventory.

Transect No.	ST No.	Status	Max Depth (cmbs)	Comments
1	1	○	50	
1	2	○	50	
1	3	○	50	
1	4	○	50	
1	5	○	50	
1	6	○	50	
1	7	○	40	
1	8	○	40	
1	9	○	40	
1	10	⊙	0	berm around borrow pit
1	11	○	40	
1	12	○	40	
1	13	○	40	
1	14	○	40	
1	15	⊙	0	berm around borrow pit
1	16	○	40	
1	17	○	50	
1	18	○	50	
1	19	○	50	
1	20	○	50	
1	21	⊙	0	slope, rock (riprap) along MS River
2	1	○	40	

Transect No.	ST No.	Status	Max Depth (cmbs)	Comments
2	2	○	40	
2	3	○	40	
2	4	○	40	
2	5	○	40	
3	1	○	40	
3	2	○	40	
3	3	○	40	
3	4	○	40	
3	5	○	40	

Key: Positive=●; Negative=○; and No Test=⊙.

Once clear of frozen precipitation, the agricultural field west of the St. Francis levee exhibited good to excellent surface visibility (50–75 percent). The surface of the latter portion of the study area was closely inspected by crews working along pedestrian transects spaced ≈10–15 m apart. Crewmembers continually examined the exposed ground surface along each transect for the presence of artifacts. Surface survey of the western portion of the study area also resulted in negative findings.

Investigations of portions of the proposed West Memphis Rail Loop Project APE reported herein resulted in negative findings. Thus it has been demonstrated that no National Register of Historic Places (NRHP) eligible or potentially eligible archaeological sites and/or deposits are located within the proposed APE.



Figure 3-01. Photograph along Transect No. 1 in the eastern portion of the APE; view east (IMG_1476.jpg).



Figure 3-02. Photograph of pedestrian surface survey area in the western portion of the APE; view west (DSCN1514.jpg).

IV. SUMMARY AND RECOMMENDATIONS

SUMMARY

Under contract with EnSafe, Panamerican conducted a Phase I cultural resources investigation of portions of the proposed West Memphis Rail Loop Project in Crittenden County, Arkansas. The purpose of this study was to identify all known and unrecorded cultural resources present within the designated APE and to provide appropriate management recommendations for any such properties identified.

Archaeological work for the West Memphis Rail Loop Project began with a cultural resources survey conducted by TRC in 2013. During the previous survey, TRC investigated 3.76 mi. of proposed new railroad track and a nearby 20-ac. tract slated for associated development. The 2013 survey resulted in negative findings. AHPP reviewed the resulting report of findings (Barrett and Burr 2013) and concurred with TRC's recommendations that "no historic properties will be affected by the proposed undertaking" in a letter dated 8 November 2013. Subsequently, in review of a Clean Water Act permit application associated with the proposed undertaking, USACE archaeologists noted that additional areas encompassed by the planned undertaking would require archaeological assessment.

These "additional areas" designated by the USACE were the subject of the cultural resources investigation reported herein. As such, this document is designed to serve as an addendum to a previous report published by TRC in 2013 entitled *Phase I Cultural Resources Investigations for the West Memphis Rail Loop Project, Crittenden County, Arkansas* (Barrett and Burr 2013).

The present study area encompasses a planned grain storage facility, conveyor, adjacent access road, and parking area (see Figure 1-01). Proposed construction plans locate the grain storage facility on the landside (or inside) of the St. Francis levee immediately east of the proposed railroad track previously surveyed by TRC. The conveyor system originates at the grain storage facility, crosses the levee to the east, and continues eastward for ≈ 740 m before terminating at the bank of the Mississippi River. The proposed access road also originates at the grain storage facility, crosses the levee to the east, and parallels the proposed conveyor system. Combined, the APE for the conveyor system and access road measures only ≈ 100 ft. (30 m) wide. A proposed parking area lies immediately south of the proposed conveyor system and access road APE on the riverside of the levee near the Mississippi River bank. In total, the present study area covers ≈ 21.6 ac.

Archaeological survey of the present study area was conducted over two days, 6 and 14 March 2014. Site detection strategies employed included a combination of systematic 20-m interval shovel testing and pedestrian surface survey. Shovel testing was employed exclusively on the heavily vegetated eastern (riverside or outside) of the St. Francis levee. Pedestrian surface survey was employed on the western (landside or inside) of the St. Francis levee where the APE occupied an agricultural field affording good to excellent (50–75 percent) surface visibility at the time of the assessment.

A total of 31 shovel test positions were investigated during the present study. Excavation was not possible at three of these positions due to disturbance (borrow pit berm) and/or obstruction (riprap). Excavation of the other 28 shovel tests yielded negative findings. Pedestrian surface survey in the western portion of the APE resulted in negative findings as well.

RECOMMENDATIONS

Cultural resources investigation of portions of the proposed West Memphis Rail Loop Project APE reported herein resulted in negative findings. Thus, it has been demonstrated that no NRHP eligible or potentially eligible archaeological sites and/or deposits are located within the proposed APE.

V. REFERENCES CITED

Barrett, J., and J. Burr

2013 *Phase I Cultural Resources Investigations for the West Memphis Rail Loop Project, Crittenden County, Arkansas.* TRC Environmental Corporation, Nashville, Tennessee. Draft report submitted to URS Corporation, Franklin, Tennessee.

APPENDIX F

Social Effects and Environmental Justice Discipline Report

DRAFT

International Rail Port Logistics Park

City of West Memphis Arkansas

October 2013

Appendix F: Socio-economic and Environmental Justice Assessment

Submitted pursuant to the National Environmental Policy Act
(42 U.S.C. 4332(2)(c))

Prepared for:
U.S. Department of Transportation
Federal Railroad Administration

Prepared by: URS Corporation
Franklin TN, USA

October 2013

EXECUTIVE SUMMARY

This report presents the results of a socio-economic assessment conducted for the proposed International Rail Port Logistics Park (IRPLP) in West Memphis, Crittenden County, Arkansas. The report includes a screening for environmental justice populations, an investigation of the existing social and economic conditions, and an evaluation of project-related socio-economic impacts.

The project area is located south of the City of West Memphis which has a minority population of 66.7 percent. Many of the city's top employers are located within the Study Area. American Community Survey (ACS) 5-year summary data from 2007-2011 was used to identify current demographic characteristics and protected populations. Employment projections were provided by the City of West Memphis Office of Economic Development.

The proposed IRPLP as currently designed would extend rail access to industrial and undeveloped property that is currently zoned for industrial use. The IRPLP also provides a transfer point for rail bound freight to maritime shipping operations on the Mississippi River.

The proposed IRPLP would expand rail infrastructure to underdeveloped areas of the City of West Memphis that are planned for industrial development. Residents of West Memphis and existing industry could benefit from the 147 short and long term employment opportunities projected for the project. The proposed IRPLP would not create adverse impacts for community cohesion or protected populations. No adverse socio-economic impacts are expected as a result of the proposed IRPLP proposal.

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1.0 STUDY AREA AND METHODOLOGY

The IRPLP project includes improvements to the industrial rail spur that extends to the southwest from the BNSF rail line. Additional rail is proposed to extend west of the existing rail spur and then south before looping and returning north near Fletcher Lake. This new rail loop will accommodate unit trains consisting of 100 cars for the purpose of transferring shipments from rail to maritime carriers operating on the Mississippi River. The IRPLP includes construction of a transload facility that would allow for the transfer of freight from the rail loop to nearby barges. The transload facility would be accessed by a proposed extension of Port Road, which is also part of this project. An additional rail spur is proposed to service a property zoned for industrial activity east of the existing spur line. These improvements are shown on Figure 1.

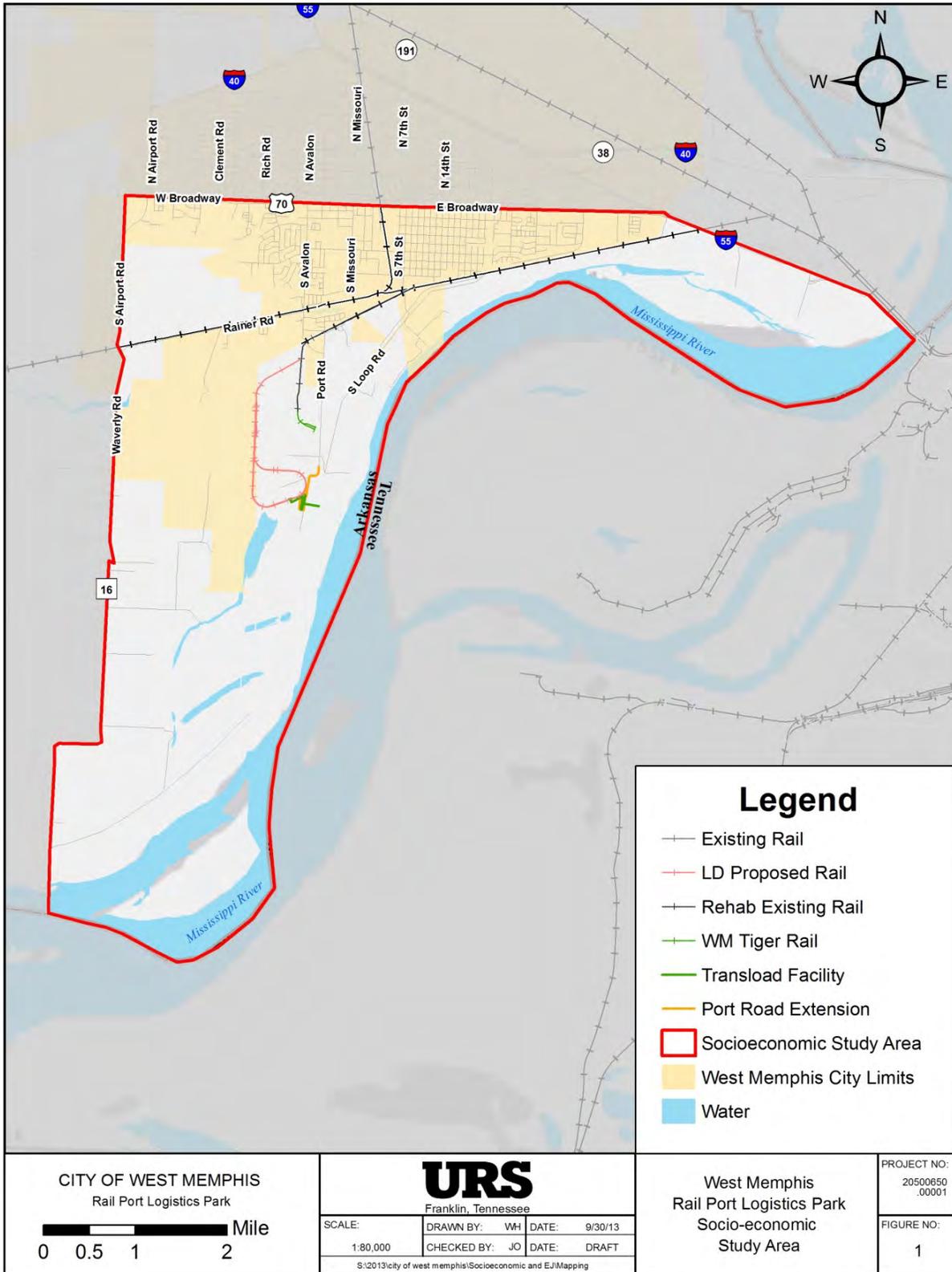
1.1 STUDY AREA

The Study Area for analyzing socio-economic and environmental justice effects is roughly bounded by the Mississippi River on the south and east, U.S. Highway 70 to the north, and Waverly Road to the west. The Study Area is larger than the immediate IRPLP project area because the potential social effects of the proposed project could extend into the local community beyond the physical footprint of the proposed activities in the project area. For consistency and clarity with demographic research conducted for the project, the Study Area coincides with and includes the full geographic limits of census tracts 303.01 (block groups 1 and 2), 303.02 (block group 1), 305.01 (block group 1), 305.02 (block group 1), 306.00 (block groups 1 and 3), and 312.00 (block groups 1 and 2). Figure 1 illustrates the extents of the Study Area.

1.2 METHODOLOGY

Socioeconomic resources and environmental justice concerns in the Study Area were evaluated by conducting a visual survey and interviewing key port outreach staff to research how people, both residents and employees, within and adjacent to the Study Area would be affected by the changes that would occur with the proposed project. The research conducted was used to establish baseline conditions to attempt to quantify and qualify anticipated social and environmental justice effects of constructing and operating the proposed project.

Figure 1: Socio-Economic Study Area



1.3 SOURCES CONSULTED

Demographic data and employment information was used to evaluate the socioeconomic conditions in the Study Area. This baseline data, as well as the projections, will be used to evaluate and access likely impacts to the identified socioeconomic groups and how they may be impacted from changes to land form and land use.

Multiple public data sources were used to gather demographic data on the Study Area for this technical report. The U.S. Census Bureau publishes American Community Survey (ACS) Survey data at a block group geography which was used to describe race/ethnicity and economic conditions within the project Study Area. Other employment and income data was provided from other sources, as indicated. A complete list of sources is provided in Section 7.0 of this technical report.

2.0 POPULATION AND EMPLOYMENT

2.1 CURRENT AND FORECAST POPULATION

The University of Arkansas’ Center for Business and Economic Research calculated population projections indicating that between 2010 and 2025 the number of people residing within Crittenden County will increase by 15.3 percent to 59,113. This population projection also includes 95 percent prediction interval with a “Lower Bound” of 57,280 and an “Upper Bound” of 61,004. This prediction interval states the population of Crittenden County will fall within this interval with 95 percent confidence. The population projections for Crittenden County are illustrated in Table 1. Independent population projections for the City of West Memphis were not available at this time.

Table 1: Population Growth

Year	Baseline			Lower Bound			Upper Bound		
	Estimate	Absolute Change from 2002	Percent Change from 2002	Estimate	Absolute Change from 2002	Percent Change from 2002	Estimate	Absolute Change from 2002	Percent Change from 2002
2005	52,402	1,111	2.2%	51,896	605	1.2%	52,918	1,627	3.2%
2010	54,009	2,718	5.3%	53,221	1930	3.8%	54,803	3,512	6.8%
2015	55,659	4,368	8.5%	54,551	3260	6.4%	56,789	5,498	10.7%
2020	57,360	6,069	11.8%	55,882	4591	9.0%	58,853	7,562	14.7%
2025	59,113	7,822	15.3%	57,280	5989	11.7%	61,004	9,713	18.9%

Source: *Arkansas Population Projections: 2003 – 2025*. University of Arkansas Center for Business and Economic Research.

2.2 PROJECTED EMPLOYMENT

According to estimates provided by the City of West Memphis Office of Economic Development, the IRPLP will create 147 jobs. This number represents the construction phase and long term operations of the IRPLP.

The construction phase of the project is estimated to last approximately two years and includes design and engineering; environmental; management and inspection; railroad, roadway and utility construction. The construction phase will employ a total of 87 individuals.

The long term operations phase will create employment opportunities at the grain processing facility (13 employees); green re-processing of petro chemicals (35 employees); transload facility/Rail-Barge Terminal (12 employees). Seven of the 12 positions at the transload facility will be in management.

2.3 ENVIRONMENTAL CONSEQUENCES

Given anticipated population and employment growth, providing additional opportunities for industrial development would increase access to employment opportunities within the region. The initial investment in design and construction could potentially have direct, indirect, and cumulative impacts through the creation of infrastructure improvements and employment opportunities. Presence of the IRPLP would diversify intermodal freight opportunities within the Memphis region by connecting seasonal grain shipments on western rail freight lines to maritime carriers operating on the Mississippi River.

2.3.1 NO-BUILD ALTERNATIVE

The No-Build Alternative would have no measurable impact on existing employment centers or population numbers. However, without the proposed port improvements and transload facility, the Study Area may not realize additional employment and industrial development opportunities that would be induced by the construction and operation of the proposed IRPLP.

2.3.2 THE BUILD ALTERNATIVE

The IRPLP could increase the employment opportunities in the Study Area by facilitating new industrial development. Existing industrial facilities may expand current operations by taking advantage of expanded port services and capabilities.

Underdeveloped properties that are zoned for industrial and container storage uses may be developed to those purposes as necessary rail infrastructure is provided by the IRPLP project.

Freight traffic is expected to increase as a result of the Build Alternative. The increase in freight traffic could impact roadway operations throughout the Study Area because of the number of at-grade rail crossings. However, the increase in rail freight could divert a significant portion of continental eastbound shipments that currently cross the Mississippi River via rail and roadway to maritime shipping methods.

3.0 PROTECTED POPULATIONS

This section provides an assessment of protected populations in order to determine whether the project will have disproportionately high and adverse impacts to low-income, minority, or other

populations protected by Title VI of the 1964 Civil Rights Act (Title VI) and described as protected populations in this document. A dual purpose is to determine whether protected populations will receive equitable distribution of benefits. The fact that the IRPLP project is located in an area designated for industrial development away from established residential areas means that protected populations will not be adversely impacted by the IRPLP project. At the same time, the IRPLP has the potential to provide a variety of future employment opportunities for protected populations within the Study Area.

3.1 LEGAL AND REGULATORY FRAMEWORK

Title VI and related statutes provide that no person shall, on the grounds of race, color, age, religion, sex, national origin, or handicap/disability, be excluded from participation in, or be denied the benefits of, or be otherwise subject to discrimination under any program of the federal, state, or local government.

On February 11, 1994, President Clinton signed Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations [59 Federal Register (FR) 7629]. EO 12898 was designed to supplement Title VI, EO 12250 and the resulting promulgated regulations for the United States Department of Transportation (USDOT) [49 Code of Federal Regulations (CFR) Part 21], all of which prohibit discriminatory practices in programs receiving Federal financial support. The thrust of EO 12898 is to identify and address, as appropriate, disproportionately high adverse human health or environmental effects of each agency's programs, policies, and activities on minority populations and low-income populations.

Specifically, EO 12898 mandates that all federal agencies provide a strategy to implement the EO, which charges each federal agency with responsibility of:

conduct[ing] its programs, policies, and activities that substantially affect human health or the environment, in a manner that ensures that such programs, policies, and activities do not have the effect of excluding persons (including populations) from participation in, denying persons (including populations) the benefits of, or subjecting persons (including populations) to discrimination under, such programs, policies, and activities, because of their race, color, or national origin. (59 FR 7629, Section 2-2)

This order also requires that each agency:

whenever practicable and appropriate, collect, maintain and analyze information on the race, national origin, income level, and other readily accessible and appropriate information for areas surrounding facilities or sites expected to have a substantial environmental, human health, or economic effect on the surrounding populations, when such facilities or sites become the subject of a substantial Federal environmental administrative or judicial action. Such information shall be made available to the public, unless prohibited by law; and (c) Each Federal agency, whenever practicable and appropriate, shall collect, maintain, and analyze information on the race, national origin, income level, and other readily accessible and appropriate information for areas surrounding Federal facilities that are... (2) expected to have a substantial environmental, human health, or economic effect on surrounding populations. Such information shall be made available to the public, unless prohibited by law. (59 FR 7629, Section 2-3[b])

In response to the mandates of EO 12898, USDOT developed a Final Environmental Justice Strategy (60 FR 125: 33896) and a proposed USDOT Order titled, Actions to Address

Environmental Justice in Minority Populations and Low-Income Populations. The analysis contained in this technical memorandum is consistent with that outlined in the USDOT Final Strategy and proposed Order.

3.2 METHODOLOGY

3.2.1 STUDY AREA DELINEATION

For purposes of this assessment, the Study Area was delineated by including all U.S. Census block groups located within the City of West Memphis and Crittenden County intersecting an area bound by the Mississippi River to the south and east, Highway 70 (Broadway) to the north, and Waverly Road to the west. The block groups were identified using a GIS mapping tool and data from the U.S. Census Bureau and the American Community Survey (ACS). Figure 1 illustrates the Study Area for this report.

Residential populations are not present in the immediate IRPLP project area. No residential uses are located south of the Dabbs Avenue and the Tenn-Ark Rail Spur located at the northern-most extent of the IRPLP project.

3.2.2 DATA COLLECTION

Data were collected from the 2007-2011 ACS data released by the U.S. Census for each block group composing the Study Area. Data were collected for 9 block groups.

Figure 2: U.S. Census Block Groups



3.2.3 ENVIRONMENTAL JUSTICE POPULATIONS

Identification Parameters

In order to assess potential impacts to populations protected by EO 12898 and Title VI, low-income and minority populations in the Study Area were identified.

According to the USDOT Order on Environmental Justice (62 FR 18377), an individual is considered to have a low income if their median household income is at or below the poverty guidelines, as set by the Department of Health and Human Services (DHHS). The DHHS poverty guidelines are available online at <http://aspe.hhs.gov/poverty/figures-fed-reg.shtml>. In 2011 the poverty guideline for a four-person family was \$22,350. According to DHHS, "The best approximation for the number of people below the HHS poverty guidelines in a particular area would be the number of persons below the Census Bureau poverty thresholds in that area." For this reason the U.S. Census poverty threshold was used to calculate low-income individuals. Poverty levels used by the U.S. Census Bureau are available online at <http://www.census.gov/hhes/www/poverty/methods/definitions.html>. In 2011 the weighted average threshold for a four-person household was \$23,021.

In *FHWA Actions to Address Environmental Justice in Minority and Low-income Populations* (Order 6640.23) USDOT provides clear definitions of the four minority groups addressed by EO 12898. These groups are:

- Black – a person having origins in any of the black racial groups of Africa;
- Hispanic – a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race;
- Asian American – a person having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands; and
- American Indian and Alaskan Native – a person having origins in any of the original people of North America and who maintains cultural identification through tribal affiliation or community recognition.

Process

Geographic block group data from the U.S. Census Bureau was used for the environmental justice analysis. Demographic data sets were downloaded from the 2007-2011 American Community Survey (ACS) for race and income (Table B02001, "Race" and Table C17002, "Ratio of Income to Poverty Level in the Past 12 Months").

For poverty status, the County average for persons below the poverty line was determined to be 35.9percent according to ACS data. The County average was used as a threshold for determining which block groups in the Study Area had higher concentrations of residents below the poverty line.

The county-wide average for minority populations in Crittenden County is 53.4 percent. The threshold for accessing Environmental Justice populations based on minority status is 10 percent higher than the county wide average or when the minority population exceeds 50 percent. In the case of Crittenden County, the minority status threshold would thus be 50 percent. Minority residents included in the total minority count for each block group were Black

or African American alone, American Indian and Alaska Native alone, Asian alone, Native Hawaiian and Other Pacific Islander alone, some other race alone, and two or more races.

Analysis

The percentage for populations living below poverty in the City of West Memphis is 35.9 percent. For Crittenden County the percentage of the population living below the poverty line is 27.9 percent. The county percentage is used as the threshold for Environmental Justice populations living below poverty. Table 1 provides a breakdown of the percentage of populations living below poverty by Census block groups located within the Study Area. These areas are generally located east of S. Avalon Street within the Study Area.

All nine block groups that comprise the Study Area contain a percentage of minorities greater than 50 percent. Within the Study Area, the percent of minority populations in block groups range from 58.8 percent to 100 percent. The areas of highest minority concentration are in established residential neighborhoods located south of Highway 70 (Broadway) and north of the existing rail line. Table 1 provides a breakdown of the percentage of minority populations by Census block groups located within the Study Area. Figure 2 illustrates identified low-income populations within the Study Area.

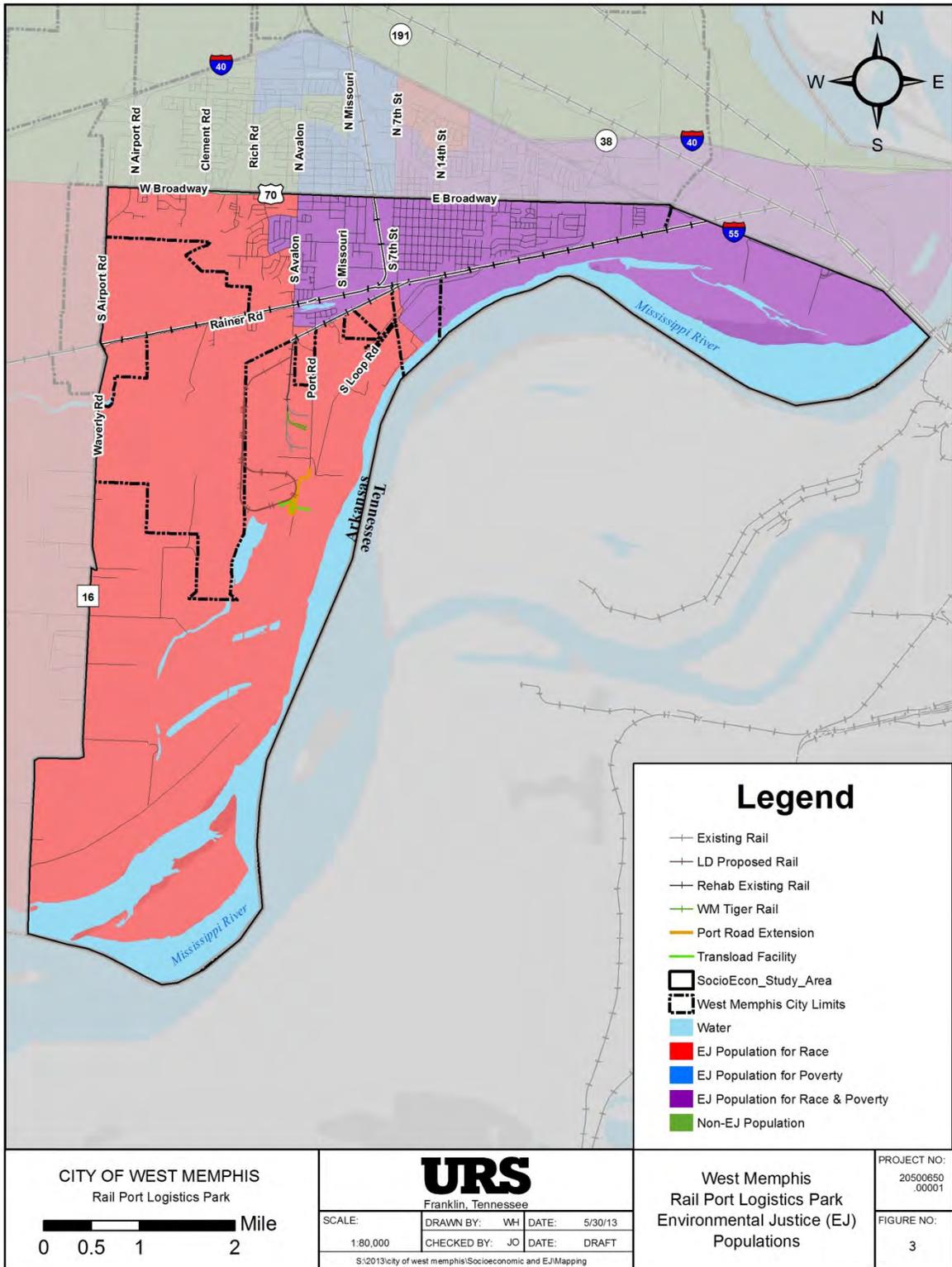
Figure 2 illustrates the block groups within the Study Area that surpass the Environmental Justice thresholds for minority populations and populations living below poverty. The project is located in an existing industrial area south of the more populated residential neighborhoods. The lack of residences is further illustrated in Figure 3.

Table 2: Environmental Justice Populations

Census Tract	Block Group	Total Population	Percent Below Poverty	Percent Minority
303.01	1	889	35.66	84.04
303.01	2	1907	22.71	60.15
303.02	1	2493	54.07	77.80
305.01	1	1006	28.43	95.73
305.02	1	1084	53.97	100.00
306.00	1	1670	58.62	87.31
306.00	3	1203	26.43	58.77
312.00	1	775	64.90	100.00
312.00	2	1034	47.20	99.24

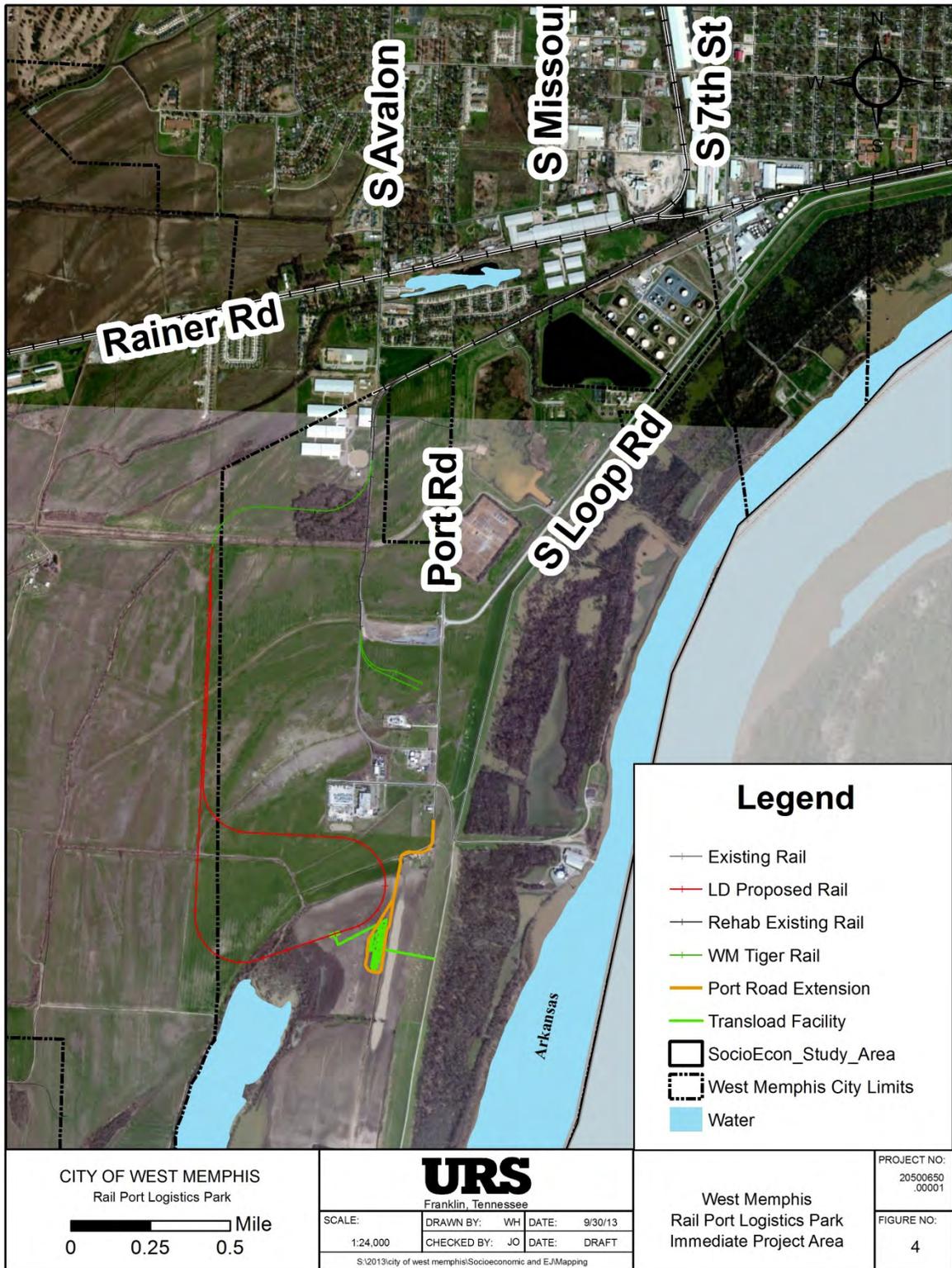
Source: American Community Survey 2007-2011 5-year Summary.

Figure 3: Environmental Justice Populations



Source: 2007-2011 American Community Survey

Figure 4: Immediate Project Area



3.3 ENVIRONMENTAL CONSEQUENCES

3.3.1 NO-BUILD ALTERNATIVE

The No-Build Alternative would not measurably affect protected populations within the Study Area. However, this alternative does not meet the purpose and need of the proposed IRPLP project. Under the No-Build Alternative the anticipated industrial development and job creation that is expected to follow the IRPLP project would not be realized.

3.3.2 BUILD ALTERNATIVE

The Build Alternative provides additional employment opportunities for protected populations. The project will increase rail and maritime freight access in the industrial area of West Memphis. The areas adjacent to the proposed improvement are industrial and undeveloped properties. The IRPLP project would not have disproportionate impacts to protected populations because minority or low-income households would not be relocated due to the Build Alternative. Additionally, no minority owned businesses would be relocated or disrupted under the Build Alternative.

4.0 LIMITED ENGLISH PROFICIENCY

Executive Order 13166 “Improving Access to Services for Persons with Limited English Proficiency” requires agencies to examine the services they provide, identify any need for services to those with LEP, and develop and implement a system to provide those services so that LEP persons can have meaningful access to them. This section provides an identification of populations with a Limited English Proficiency (LEP) in the Study Area to determine if specific outreach to these populations is required.

The US Department of Justice (USDOJ) Safe Harbor Threshold requires specific outreach when the total number of persons in a particular language group that speaks English less than very well exceeds 1,000 persons or 5 percent of the total population in the project Study Area.

The 2007-2011 ACS data published by the U.S. Census Bureau does not indicate that a LEP population meeting the USDOJ Safe Harbor threshold, but the data does indicate populations of non-English speakers in the community. Specifically, the ACS data identified 51 persons in the Study Area five years or older who identify themselves as speaking English less than “very well”.

To ensure a fair and equal opportunity to participate in the public process, all public notices will be published in English and Spanish to ensure that non-English speakers in the area will have access to project information. Additionally, notices will indicate that Spanish-translation services for all public meeting would be available upon request. Efforts should be made to reach out to LEP populations and to be in compliance with EO 13166.

5.0 COMMUNITY COHESION

The proposed IRPLP improvements are located in the southern portion of West Memphis in an area characterized by industrial and agricultural development. Residential areas are located north of the project area beyond Dabbs Avenue and the existing Tenn-Ark rail spur. The more extensive improvements such as the transload station are located on port property, which is not accessible to the public.

The City of West Memphis displays a high degree of community cohesion centered on numerous neighborhood parks, healthcare, schools and worship facilities that serve well defined neighborhoods. However, these neighborhoods are not located in the project area and community cohesion will not be adversely impacted by the project.

5.1 COMMUNITY EVENTS

One community event was identified as being located within the project area. The “Runnin’ on the Levee” barrel racing series is hosted by the Crittenden County Saddle Club (www.crittendencountysaddleclub.org) and held every July, August and October at the West Memphis Fairgrounds. The fairgrounds are located on city-owned property northeast of the Port Road and South Loop Road intersection. The IRPLP project would not use any portion of the fairground property and access to and from the fairgrounds would not change as a result of the project.

5.2 NEIGHBORHOODS/RESIDENTIAL

5.2.1 NEIGHBORHOODS

The proposed project does not involve the use of properties within established residential areas of West Memphis. The residential portion of the Study Area is primarily located north of the Dabbs Avenue and away from the proposed improvements. These residential properties are located near the existing Tenn-Ark rail spur and BNSF rail line and would not be impacted by the new rail or transload facility that is included in the IRPLP project. A relatively small area of residential uses are located south of Rainer Road west of the Riverbend Distribution Center on South Avalon Road. This neighborhood is approximately 0.5 mile from the IRPLP alignment and would not be impacted by the proposed Build Alternative.

5.2.2 AFFORDABLE & PUBLIC HOUSING

The Arkansas Development Finance Authority (ADFA) provides affordable housing options for Arkansas residents. These communities serve elderly, disabled, as well as, low-income residents. The eight ADFA housing developments located within the Study Area are listed in Table 9.

Table 3: Affordable Housing within the Study Area

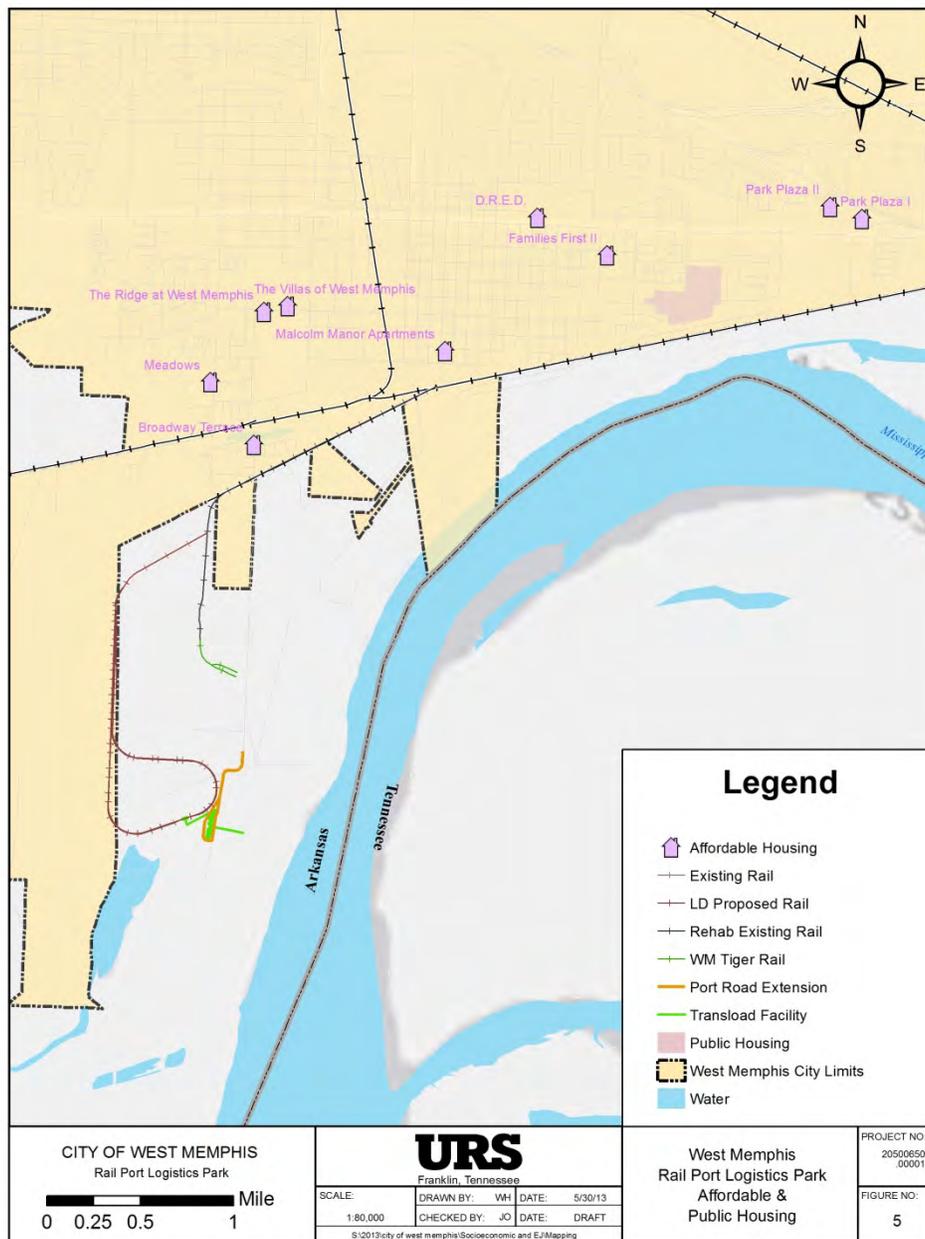
Name	Location	Type
Broadway Terrace	189 Elizabeth Lane	Family
D.R.E.D.	1750 E Broadway	Family
Families First II	2211 Jackson Heights	Family
Malcolm Manor Apartments	800 South 10 th Street	Family
Meadows	1101 S Avalon Street	Family
Park Plaza I	3952 E Service Road	Family
Park Plaza II	4000 E Service Road	Family
Rainer Village	1400 Village Drive	Family

Name	Location	Type
Ridge at West Memphis	210 West Jackson Avenue	Family
Villas of West Memphis	141 West Jackson Avenue	Elderly

Source: http://www.arkansas.gov/adfa/Apartment%20Finder/crittenden_county.htm

Public housing managed by the West Memphis Housing Authority is also located within the Study Area. The West Memphis Public Housing Authority is concentrated in an area northeast of the IRPLP project area along South Walker Avenue.

Figure 5: Low Income & Public Housing.



5.3 ENVIRONMENTAL CONSEQUENCES

5.3.1 NO-BUILD ALTERNATIVE

The No-Build Alternative would have no measurable impact on community cohesion. However, if rail freight traffic increases due to the expanded port capabilities, the at-grade crossings within the study area may affect traffic operations on streets within the Study Area.

5.3.2 BUILD ALTERNATIVE

The Build Alternative would provide residents within the Study Area with additional employment opportunities. The IRPLP project could also encourage persons employed by the project to relocate and take up residence in the City of West Memphis. These factors could work to stabilize neighborhoods by allowing current residents to stay in their homes while attracting new residents to the Study Area.

No affordable or public housing developments would be used by the IRPLP project. No adverse impacts to affordable or public housing developments are anticipated as a result of this project.

6.0 EXISTING ECONOMIC CONDITIONS

6.1 EMPLOYMENT NUMBERS IN STUDY AREA

The Bureau of Labor Statistics reports an annual average labor force of 20,872 persons for Crittenden County, Arkansas, including the City of West Memphis. In April of 2013, Crittenden County reported an unemployment rate of 9.6 percent compared to a rate of 11.8 percent for the same month the previous year. Crittenden County is also included in the Memphis, TN-MS-AR Metropolitan Statistical Area which reported an increase in the unemployment rate from 8.5 in April of 2012 to 9.0 for April, 2013.

The City of West Memphis Office of Economic Development estimates a total of 147 jobs would be created by the IRPLP project. Eighty-seven of these jobs would be focused on the design and construction of the railroad, roadway and associated utilities. Sixty additional jobs would be created by the long term operation of the IRPLP.

6.2 BUSINESSES

The Study Area contains the Port of West Memphis, established industrial operations and unimproved properties that are zoned for future industrial development. These areas have the potential to benefit from the expanded rail access and maritime port connection.

6.2.1 NO BUILD ALTERNATIVE

The No-Build Alternative would have no impact on businesses within the Study Area. However without the proposed IRPLP, existing businesses may not be able to utilize diversified intermodal freight opportunities within the Memphis region provided by the expanded port capabilities.

6.2.2 BUILD ALTERNATIVE

The Build Alternative will directly impact employment opportunities in the Study Area through the addition of jobs located at the Port of West Memphis that will be needed to accommodate

the expansion in port operations. Additionally, other businesses in the Study Area may look to expand their operations in order to take full advantage of the more efficient and convenient shipping opportunities provided by the IRPLP. The increase in economic activity would increase local and federal tax revenues which could then be reinvested in the community.

The construction phase of the project is estimated to last approximately two years and includes design and engineering; environmental; management and inspection; railroad, roadway and utility construction. The construction phase will employ a total of 87 individuals.

The long term operations phase will create employment opportunities at the grain processing facility (13 employees); green re-processing of petro chemicals (35 employees); transload facility/Rail-Barge Terminal (12 employees). Seven of the 12 positions at the transload facility will be in management.

6.3 DEVELOPING OR REDEVELOPING AREAS

Six large tracts are currently being marketed for industrial development within the Study Area. Table 10 lists undeveloped properties that are available for industrial development within the Study Area.

Table 4: Potential Industrial Development in the Study Area

Name	Location	Zoning	Acreage
AEP Property	End of Port Rd.	I2CE	1000+
Bollinger Property	Between Port Rd. & Airport Rd.	I-2	1200+
Cox Acreage	Port Rd. & Wyanoke Rd.	I-1 & I-2	410
Ferguson South Site	Rainer Rd.	I-2-C	354
Ferguson West Site	Airport Rd.	I-2-C	63
Goldsby South Site	Airport Rd.	I-2-C	288

Source: www.westmemphis.com

These properties represent potential employment opportunities for citizens of West Memphis and the surrounding region.

6.4 RELOCATIONS & DISPLACEMENTS

No-Build Alternative

The No-Build Alternative will not displace and businesses or non-profit uses along the corridor. However, this alternative will not address the purpose and need of the proposed IRPLP project.

Build Alternative

The Build Alternative will not displace current businesses or non-profit uses within the Study Area. No relocations or displacement of existing operations would be required by the IRPLP project. The proposed improvements detailed by the Build Alternative will service existing industrial occupants and provide necessary infrastructure allowing future industrial users to establish operations on undeveloped properties zoned for industrial uses.

7.0 LITERATURE/SOURCES CITED

"Industrial Sites." *West Memphis Economic Development*. Web.
<www.westmemphis.com>.

"Runnin' on the Levee". *Crittenden County Saddle Club*. Web.
<www.crittendencountysaddleclub.com>

United States. *Census Bureau. American Community Survey*. Web.
<<http://www.census.gov/acs/www/>>.

USDOT 1998. Federal Highway Administration. *FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*. Washington, D.C.: 1998.
http://www.fhwa.dot.gov/legregs/directives/orders/6640_23.htm (31 August 2004).

APPENDIX G

Land Use Discipline Report

International Rail Port Logistics Park

City of West Memphis Arkansas

October 2013

Appendix G: Land Use, Zoning and Recreation Assessment

Submitted pursuant to the National Environmental Policy Act
(42 U.S.C. 4332(2)(c))

Prepared for:
U.S. Department of Transportation
Federal Railroad Administration

Prepared by: URS Corporation
Franklin TN, USA

October 2013

EXECUTIVE SUMMARY

This report presents the results of a land use, zoning and recreation assessment for the proposed International Rail Port Logistics Park (IRPLP) in West Memphis, Arkansas. The report includes an assessment of the existing land use, current zoning, recreation facilities and an evaluation of project-related impacts.

The study area is located south of the City of West Memphis in an existing industrial area that includes the Port of West Memphis. The City of West Memphis Zoning Ordinance was reviewed along with field observations to identify current and potential future land uses.

The proposed IRPLP as currently designed would extend rail access to industrial and undeveloped property that is currently zoned for industrial use. The IRPLP also provides a transfer point for rail bound freight to maritime shipping operations on the Mississippi River.

The proposed IRPLP would expand rail infrastructure to underdeveloped industrial areas of the City of West Memphis and provide a connection to maritime freight handlers operating from the Port of West Memphis. No adverse impacts are to current or future land use or existing recreation facilities are expected as a result of the proposed IRPLP proposal.

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1.0 STUDY AREA AND METHODOLOGY

1.1 BACKGROUND, LOCATION AND LANDSCAPE

The IRPLP project is located in Crittenden County, south of the City of West Memphis, Arkansas. The project is strategically located near the Port of West Memphis, located on the Mississippi River, and existing rail infrastructure that serves nearby cotton warehouses and distribution centers. The surrounding landscape includes the Mississippi River and St. Francis Levee to the east, level agricultural property, undeveloped industrial properties and developed industries along Port Road, Wyanoke Road and South Loop Road.

1.2 STUDY AREA

The study area for the Proposed Action Alternative is the same as the IRPLP Project area (Figure 1) and is generally defined by the horizontal and vertical extent of the proposed rail alignment and associated improvements. Based on this horizontal and vertical extent, an additional 75-foot buffer measured from the edge of the footprint was applied. Potential mitigation sites were also included within the area studied. The vertical extent of disturbance includes the depths needed to excavate and grade in preparation for rail construction and construction of mitigation sites. For the most part, this is anticipated to be minor (a few feet).

The study area includes all properties that would be bisected by the proposed rail alignment and any property that would be acquired to accommodate the proposed rail alignment, the proposed transload facility and proposed extension to Port Road.

2.0 SOURCES CONSULTED

Land use and zoning data were provided by the City of West Memphis, Office of Economic Development. The City of West Memphis Zoning Ordinance was downloaded from the City of West Memphis' website (www.ci.west-memphis.ar.us). Recreational resources were documented through internet searches and confirmed during field visits. A complete list of sources is provided in Section 4.0 of this technical report.

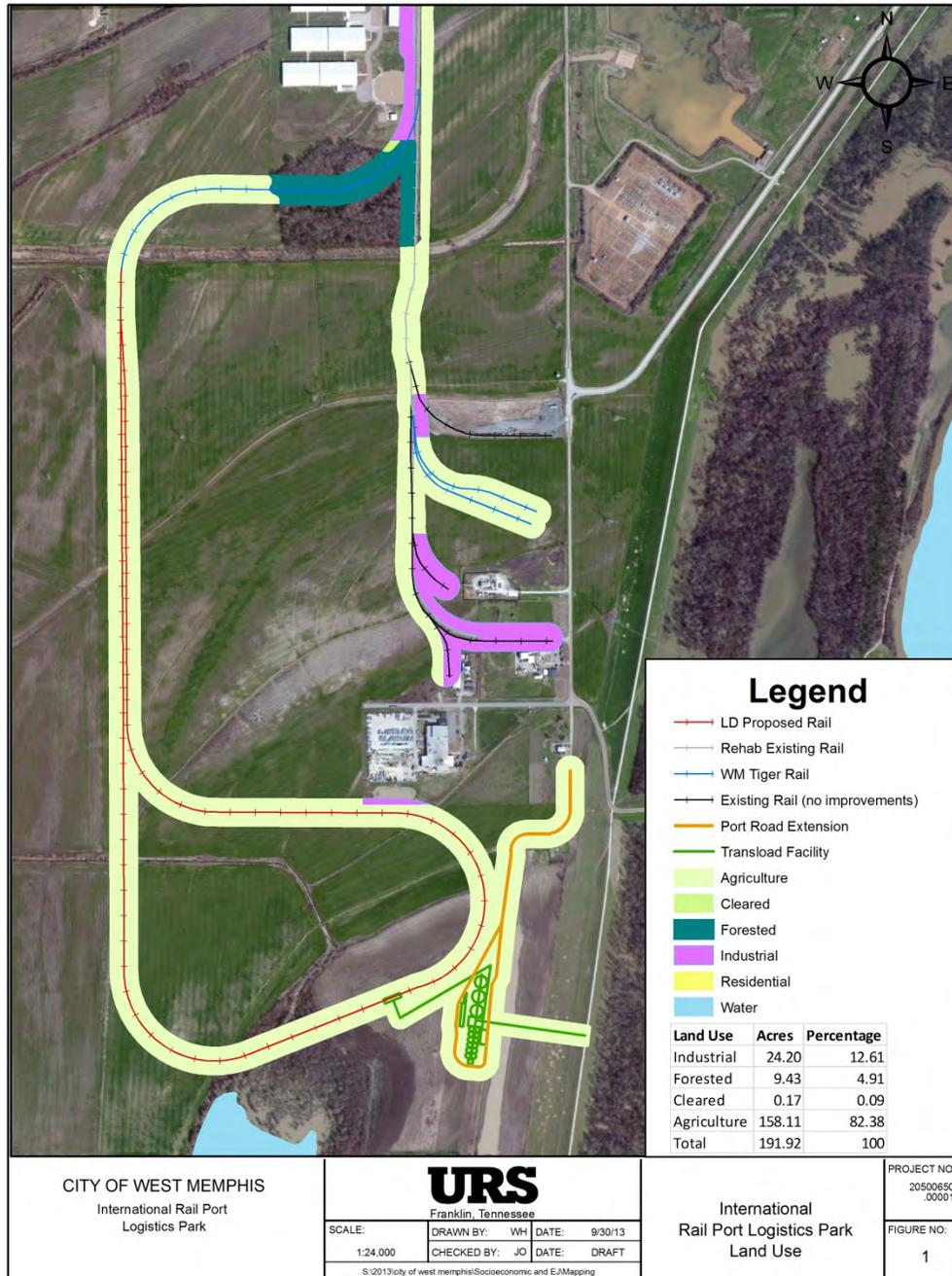
3.0 ZONING AND LAND USE

3.1 CURRENT ZONING AND EXISTING LAND USE

The City of West Memphis maintains zoning authority over properties located within the study area that are within the city and has extraterritorial zoning authority over specific tracts of land located outside of the current city limits. Extraterritorial zoning is identified by the presence of an "E" at the end of the zoning designation. The study area contains properties that are zoned I-2-C-E (General Industrial - Intermodal Container Storage Yard). However, many of these industrially zoned properties are currently used for agriculture or undeveloped open space.

Approximately 83 percent of the Study Area consists of agricultural properties or cleared open space that is zoned I-2-C-E. Industrial property makes up the next largest category of land uses in the study area at 12.61 percent and forested lands make up approximately 4.91 percent as depicted in Figure 1.

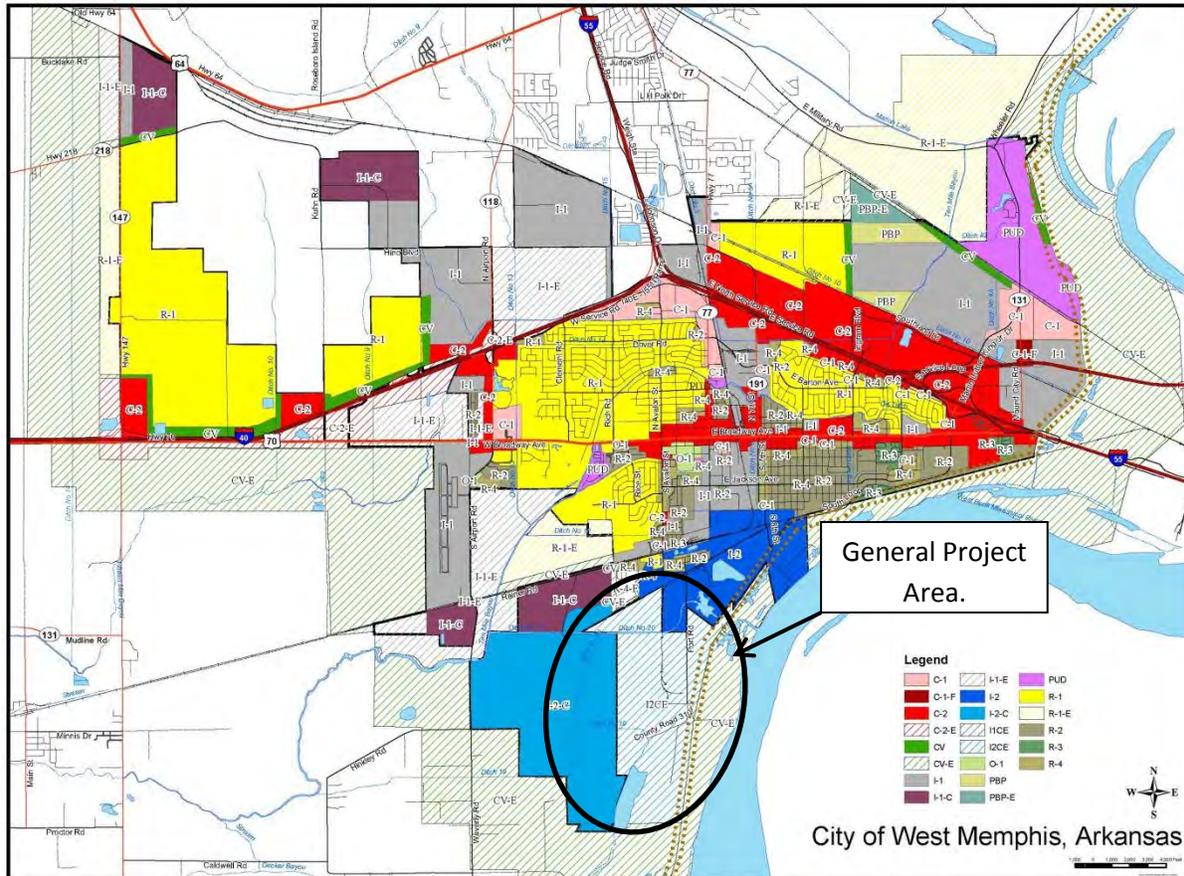
Figure 1: Land Uses within the Study Area



The nearest residential area is located 1770-feet north of the proposed improvements beyond the intersection of Dabbs Avenue and Port Road. This residential neighborhood

is a mix of single- and multi-family residences that are zoned R-2 (Low Density Residential) and R-4 (Medium Density Residential).

Figure 2: City of West Memphis Zoning Map



Source: City of West Memphis Zoning Map, May 2013

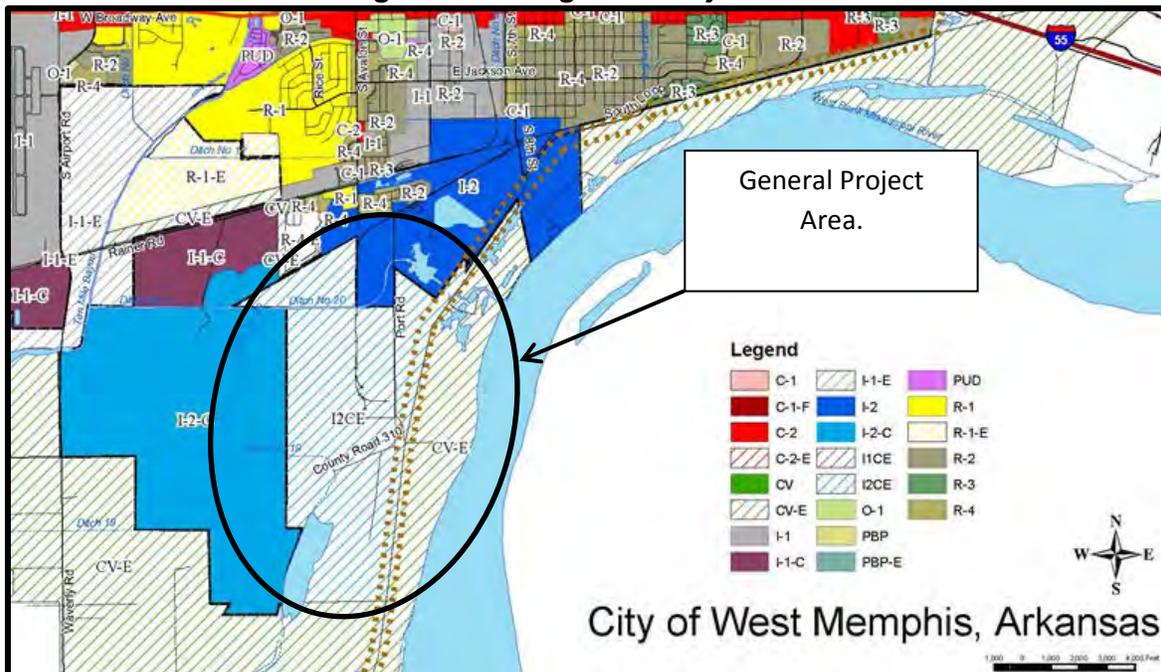
Properties south of Dabbs Avenue along Avalon Street and Port Road are generally industrial in nature and zoned I-2 (General Industrial). The I-2 zoning district allows for heavier or more intense industrial uses. Regulations for the I-2 district are the minimum required for mutual protection of industrial users and for the safety and general welfare of the citizens of West Memphis and surrounding districts. This area also contains large undeveloped and agricultural tracts that are zoned I-2-C (General Industrial – Intermodal Container Storage Yard). The I-2-C district permits all uses allowed in the I-2 district and is created for the purpose of allowing the storage of shipping containers that have the capability of being stacked. These undeveloped properties are anticipated to be developed as industrial properties by future developers. A listing of current land uses and associated zoning is included in Table 1. The current zoning map and adopted plans for the City of West Memphis support the proposed location of the IRPLP.

Table 1: Current Land Uses and Zoning for properties in the Project Area

Facility	Parcel Number	Land Use	Zoning
Riverbend Distribution Center	376722000000	Warehouse/Distribution	I2CE
West Memphis School District	104058050000	Unimproved/Forested	I2CE
Cox Properties	1014118000000, 104124500000, & 395069000000,	Unimproved/Agricultural	I2 & I2CE
FSLD, LLC	201000000800	Rail Spur/Container Transfer Station	I2CE
Tandem Leasing Corporation	104125300000	Industrial	I2CE
TETRA® Technologies, Inc.	104125200000	Industrial Oil & Gas Services	I2CE
Diaz Intermediates Corporation	104125250000	Chemical Supplier	I2CE
J.M.C. West Memphis, LLC (Stateside Wire)	104125400000 & 104124500100	Chain Link Fence Fabrication	I2CE
Franklin Real Estate (American Electric Power)	104285000000 & 104126000000	Undeveloped/Agricultural	I2CE

Sources: *Property Ownership Map City of West Memphis – TIGER Project Crittenden County, Arkansas (Aug., 2013).*
 Prepared by: Sorrell Consulting Engineers
 City of West Memphis Zoning Map, May 2013

Figure 3: Zoning Near Project Area



Source: City of West Memphis Zoning Map, May 2013

3.2 RECREATION

3.2.1 PUBLIC PARKS

The City of West Memphis manages a robust park system that includes small neighborhood parks, expansive athletic complexes and a greenway. City-managed recreational resources are located outside of the study area, north of the project in closer proximity to established residential areas. Crittenden County does not own or operate any parks within the study area.

Table 2: Recreation Resources

Park Name	Location	Amenities	Used by Project? (Y/N)	Within Study Area? (Y/N)
Tilden Rodgers Park	825 N. Airport Rd.	Sports complex	N	N
Matthews Park	Vanderbilt Ave. at Rice St.	Lighted baseball field, picnic shelters, tennis courts, play area	N	N
Hicks Park	W. Oliver St. at N. Avalon St.	Play area and basketball court next to public library	N	N
Grimsley Park	Balfour Rd. between Bellehaven Dr. & Belvedere Dr.	Play area, tennis court, picnic shelter and backstop	N	N
Worthington Park	S. Worthington Dr. at Missouri St.	Picnic tables with grills, play area and volleyball net	N	N
Tenth Street Mini-Park	10th St. at E. Polk Ave.	Basketball court	N	N
Rowe Park	N. 11th St.	Picnic shelter, play area and basketball court	N	N
Horton Park	Scottwood St. at Rosemary Ln.	Picnic Shelter, tennis court and play area	N	N
Franklin Park	S. 25th St. at S.L. Henry St.	Lighted softball field, basketball courts and play area	N	N
Hightower Park	S. 14th St. between E. Broadway & E. Polk Ave.	Picnic Shelter, basketball court and play area	N	N
Martin Luther King Jr. Park	W. Service Rd. at N. Avalon St.	MATA park-and-ride, memorial fountain and pond	N	N
West Memphis Fairgrounds	Port Rd.	Crittenden County Saddle Club	N	N

Figure 4: Public Parks



3.2.2 WEST MEMPHIS FAIRGROUNDS

The West Memphis Fairgrounds are located east of Port Road and can be accessed from either Port Road or South Loop Road. This property is owned by the City of West Memphis and managed by the Crittenden County Saddle Club (CCSC) and hosts multiple horse shows and competitions throughout the year. The CCSC directs visitors to access the fairgrounds by taking Dr. Martin Luther King Jr. Boulevard/South Loop Road from Interstate 40 to Port Road where the fairgrounds can be accessed at the main gate.



West Memphis Fairgrounds Entrance from Port Road.



West Memphis Fairgrounds as seen from South Loop Rd.

3.2.3 MISSISSIPPI RIVER TRAIL

The Mississippi River Trail (MRT) is a 3,000-mile bike trail that runs from the headwaters of the Mississippi River in Itasca, Minnesota to the Gulf of Mexico (www.mississippirivertrail.org). Arkansas hosts 85 miles of the MRT from West Memphis to downtown Helena-West Helena. The MRT travels along Highway 70 (Broadway) to the north of the study area before turning south on South Airport/Waverly Road which is located west of the study area. The proposed IRPLP project would not use any portion of the Mississippi River Trail or change its use and does not represent a 4(f) impact. The portion of the MRT that is nearest the IRPLP is shown on Figure 4.

3.3 ENVIRONMENTAL CONSEQUENCES

Based on current zoning and land use within the study area, the IRPLP project would complement existing industrial uses and zoning. Presence of the IRPLP would expand intermodal freight opportunities within the region by connecting western freight lines to maritime carriers operating along the Mississippi River.

Access to the West Memphis Fairgrounds will need to be maintained from Port Road in order not to interfere with freight traffic traveling along South Loop Road. However, no temporary or permanent access restrictions are anticipated to be caused by the IRPLP project.

3.3.1 NO-BUILD ALTERNATIVE

The No-Build Alternative would have no measurable impact on existing land use, zoning or recreation resources within the study area. However, without the proposed rail improvements and transload facility, the study area may not realize additional industrial development opportunities that would be induced by the construction and operation of the proposed IRPLP.

3.3.2 THE BUILD ALTERNATIVE

The IRPLP could spur industrial development in the study area by providing rail infrastructure to tracts of land that have been designated for industrial development by the City of West Memphis. Existing industrial facilities may expand current operations by taking advantage of improved rail and port services and capabilities.

4.0 LITERATURE/SOURCES CITED

City of West Memphis, Arkansas. N.p., 09 May 2013. Web. 26 Sep 2013. <www.ci.west-memphis.ar.us>.

Crittenden County Saddle Club. N.p., 26 Sep 2013. Web. 26 Sep 2013. <www.crittendencountysaddleclub.org>.

Mississippi River Trail. Mississippi River Trail, Inc., 26 Sep 2013. Web. 26 Sep 2013. <www.mississippirivertrail.org>.

West Memphis Zoning Ordinance. West Memphis, Arkansas: 2001. Print.

APPENDIX H

Hazardous Materials Discipline Report

**PHASE I ENVIRONMENTAL SITE ASSESSMENT
DISCIPLINE REPORT
IRPLP
West Memphis Arkansas**

December 2013

Prepared by
URS Corporation

URS Project No. 20500650

PHASE I ENVIRONMENTAL SITE
ASSESSMENT SURVEY REPORT
IRPLP
WEST MEMPHIS ARKANSAS

December 2013



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URS Project No. 20500650

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- Appendix I Regulatory Database Search Report
- Appendix II Site Photographs
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EXECUTIVE SUMMARY

URS Corporation (URS) was retained by the City of West Memphis and Louis Dreyfus Corporation (LD) to conduct a Phase I Environmental Site Assessment (ESA) of the IRPLP area located south of the City of West Memphis, Arkansas (subject property or site). The purpose of this Phase I ESA was to evaluate whether current or historical activities on or near the subject site may have resulted in significant impacts by hazardous substances or petroleum products, also known as recognized environmental conditions (RECs).

This Phase I ESA was performed in conformance with ASTM *Standard Practice for Environmental Site Assessments* (Standard E 1527-05) approved November 18, 2005. The Phase I ESA was completed for the City and LD as a part of the reporting requirement for the EA for this project. The scope of work did not include the collection and analysis of any samples including water, soil, paint, air or asbestos containing building materials.

The subject property primarily consists of agricultural land along the proposed railway, a 20 acre tract on Port Road and the proposed six acre Transload Facility location at the south end of Port Road (Figure 1). The subject property is open agricultural land and includes one active farm operation (buildings, equipment, fuel storage). A total of three active and two non-active light industrial facilities adjoin the subject property.

This assessment has revealed no potential RECs in connection with the subject site. However, the following low-level environmental concerns were identified in connection with the subject site:

Two 250 gallon above ground fuel storage tanks at the active farm used for gasoline and diesel fuel storage. The tanks do not have secondary containment and small areas of petroleum stained soil is present. It is URS' opinion that the tanks do not represent a significant potential REC to the subject property; however, minor soil clean-up is warranted.

Hazardous substances observed on-site, in the vicinity of the western, wooded portion of the subject property included: small quantities of paint-waste, paint thinner, several rusted paint cans, used appliances, a waste-tire, and other debris. No unusual odors or visible evidence of staining were associated with these waste materials during URS' site reconnaissance. However, a small amount of paint was observed on bare soil in the same vicinity of the above-listed waste materials. URS recommends that the above solid waste materials be disposed of properly. URS further recommends the non-waste materials (rusted paint cans and paint thinner) that were observed on the ground be placed over concrete, under cover, in a manner consistent with good housekeeping practices. It is URS' opinion that the amount of paint waste observed in the vicinity of the hazardous materials stored onsite is "de minimis" in nature and not an environmental concern.

1.0 INTRODUCTION

1.1 PURPOSE

URS Corporation (URS) was retained by the City and LD to conduct a Phase I Environmental Site Assessment (ESA) of the rail alignment (approximately 50 acres), 20 acre parcel on Port Road, proposed Transload facility site area and adjoining property (subject property or site). The purpose of this Phase I ESA was to evaluate the potential current presence of recognized environmental conditions (RECs) at the subject site, including potential impacts from known problems in the surrounding area. The term “recognized environmental conditions,” as defined by ASTM Designation E 1527-05, means:

“The presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures of the property or into the ground, ground water, or surface water of the property. The term includes hazardous substances or petroleum products even under conditions in compliance with laws. The term is not intended to include *de minimis* conditions that generally do not present a material risk of harm to public health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. Conditions determined to be *de minimis* are not recognized environmental conditions.”

This Phase I ESA was performed in conformance with the *ASTM Standard Practice for Environmental Site Assessments* (Standard E 1527-05) approved November 18, 2005. For the purpose of this report, hazardous substances and petroleum products are jointly referred to as “hazardous materials.”

1.2 DETAILED SCOPE-OF-SERVICES

The general scope of work for this Phase I ESA is outlined below. The Phase I ESA was completed for the City and LD in general accordance with the proposal to the City dated February 28, 2013. URS performed the following work:

- URS will conduct an on-line data search with a national database (Environmental Data Resources – EDR) to evaluate that potential for contamination at the site.
- URS will also conduct a site walkover of the property to confirm any findings and make site observations related to waste disposal, underground storage tanks (USTs), and potential site contamination.
- URS will interview stakeholders regarding the potential use or handling of hazardous materials.

1.3 SIGNIFICANT ASSUMPTIONS

No significant assumptions other than those described below in the following section apply to this Phase I ESA.

1.4 LIMITATIONS AND EXCEPTIONS

This report and the associated work have been provided in accordance with the principles and practices generally employed by the local environmental consulting profession. This is in lieu of all warranties, expressed or implied.

This Phase I ESA is not a regulatory compliance audit or an evaluation of the efficiency of the use of any hazardous materials at the subject site. No evaluation for the presence of urea-formaldehyde foam insulation or other hazardous building materials; methane; radon gas; lead in drinking water; cultural and historic resources; industrial hygiene and health and safety; ecological resources and endangered species; indoor air quality; or high voltage power lines is included in our Phase I ESA.

URS' findings are based on information available from public sources on specific dates (historical photographs, maps and regulatory agency files, lists, and databases); this information is changing continually and is frequently incomplete. Unless URS has actual knowledge to the contrary, information obtained from interviews or provided to URS by the City has been assumed to be correct and complete. URS does not assume any liability for information that has been misrepresented to us or for items not visible, accessible, or present on the subject site during the time of the site reconnaissance. URS assumes no obligation or responsibility for providing information that may become available after the completion of this report.

URS cannot warrant or guarantee that not finding indicators of hazardous materials means that hazardous materials do not exist on the subject site. There is no investigation thorough enough to preclude the presence of materials on the subject site, which presently, or in the future, may be considered hazardous. Because regulatory evaluation criteria are constantly changing, concentrations of contaminants present and considered to be acceptable may, in the future, become subject to different regulatory standards and require remediation.

Where records indicate that prior remedial work or tank removals have occurred there is the possibility that the work may not have been performed correctly or completely. In these cases, if the regulatory agency has approved the closure of the tank or other action, we have assumed that the work was done correctly and completely. Opinions and judgments expressed herein are based on URS' understanding and interpretation of current regulatory standards, and should not be construed as legal opinions.

1.7 VALIDITY

This report was prepared in conformance with the ASTM Standard E 1527-05. The following components of this report must be updated after one hundred eighty (180) days of the date of this report if the property has not been acquired within that period of time:

1. Interviews with owners, operator and occupants;
2. Reviews of federal, state, and local government records;
3. Visual inspection of the property and of adjoining properties; and
5. The declaration of the environmental professional responsible for the assessment or update.

1.8 DATA GAPS

Historic aerial photographs or topographic maps were not reviewed for the subject property long term historic use. Interviews with owners and operators, and visual inspection indicated that historic site use has been primarily for agricultural purposes. Because the site has been owned and operated primarily for agricultural use for decades, this data gap does not appear to be significant.

2.0 SITE DESCRIPTION

2.1 LOCATION AND LEGAL DESCRIPTION

The proposed logistics park upgrades consist of a 20 acre site on Port Road, approximately 3.76 miles of new railroad tracks measuring approximately 50 feet wide (approximately 50 acres) and approximately 10 acres in the area of the proposed Transload facility. The subject property is located south of the City of West Memphis Arkansas in the Cities Industrial Park, Figure 1, Site Location. The site has been recently designated as the International Rail and Port Logistics Park (IRPLP).

2.2 SITE AND VICINITY GENERAL CHARACTERISTICS

The subject property consists of agricultural land south of Dabbs Road, west of 8th Street and Port Road, east of Ditch 19 and north of the northern end of Fletcher Lake. The surrounding area is a mix of agricultural and light industrial uses. The adjoining properties immediately to the north are residential and industrial and included in the City of West Memphis. To the west and south is agricultural land, with Fletcher Lake occupying much of the southern boundary. Immediately to the east is primarily agricultural land and municipal owned property with a large stormwater pond for the City on the northeast side. Further east the property is ultimately bordered by the St. Francis Levee and the Mississippi River. A Union Pacific (UP) railroad line services the current industrial park users. A farm property is located on the south end of the project area near where the proposed transload facility will be sighted. The farm is occupied by a caretaker during farming season.

2.3 CURRENT SITE USE

The active farm operation on the south end of the subject property utilizes aboveground storage tanks (ASTs) for diesel and gasoline storage for fueling farm equipment. Two tanks were observed with a capacity of 250 gallons each. In addition to fuel storage, oil, lubricants, herbicides and some pesticides have been stored at the farm. The 20 acre tract on Port Road was planted in row crops at the time of the May, 2013 site inspection. The 3.67 miles of proposed railroad line is all currently in agricultural use, woodlot or wetland. Two channelized ditches (streams) and three small drainages (wet weather conveyances) will be crossed by the proposed railway.

2.4 DESCRIPTIONS OF STRUCTURES, ROADS AND OTHER IMPROVEMENTS

The subject property consists of agricultural land, woodlot, pasture, a farm operation and wetland. The project includes several miles of new railway, 13,500 feet of upgraded railway, a 20 acre parcel on Port Road and a six acre property designated for the new transload facility. A UP railroad line is located on the north end of the subject property and extends into the West Memphis Industrial Park to serve a number of light industrial properties. No structures are present on the proposed ROW of the new railway, in the 20 acre tract or transload facility. A short road extension to Port Road will be constructed to access the Transload facility and a conveyor will extend from the Transload facility to the top of the St. Francis Levee.

The site was not connected to potable water or sanitary sewer services at the time of the site inspection. Electric service is provided by Okefenoke Rural Electric Membership Corporation (OREMC).

2.5 CURRENT ADJOINING PROPERTY USES

North

The subject property is bound by residential properties, warehousing and agricultural fields. North of the immediately adjoining property is primarily residential property on the south side of West Memphis.

South

The subject property is bound on the south by agricultural property and Fletcher Lake. The 20 acre tract is bordered on the south by an inactive industrial site.

West

The subject property is bound to the west by agricultural land, with the exception of the northeast corner. The northwest corner is occupied by cotton warehouses – River Bend Cotton. This is a relatively new facility.

East

There are a number of properties located to the east of the subject site. Starting to the north of the east side these include:

- Warren Unilube Inc. Propane Storage;
- The Valero fuel storage terminal;
- The City of West Memphis wastewater treatment plant;
- West Memphis Rodeo Fairgrounds;
- The West Memphis Detention Pond;
- A Entergy Substation;
- South Loop Road (which connects truck traffic to Interstates 40 and 51);
- Agricultural land (both row crops and pasture);
- Industrial properties and the Port of West Memphis; and,
- Additional agricultural property.

URS did not identify other adjoining or surrounding properties within 1/8-mile known to pose significant environmental concerns to the subject site.

3.0 USER-PROVIDED INFORMATION

As required by ASTM-E 1527-05, additional inquiries are required to be conducted by the User. These inquiries include:

1. Identification of environmental cleanup liens against the subject property;
2. Specialized knowledge or experience regarding the subject property;
3. Commonly known or reasonably ascertainable information regarding the subject property; and
4. Degree of obviousness of the presence or likely presence of contamination at the subject property.

3.1 ENVIRONMENTAL LIENS OR ACTIVITY AND USE LIMITATIONS

Mr. Ward Wimbish, City of West Memphis Planning Director stated that he has no knowledge of environmental liens associated with the subject site or any use limitations affecting the subject site.

3.2 SPECIALIZED KNOWLEDGE

The City has not provided URS with any specialized knowledge associated with the subject property for inclusion into this report.

3.3 COMMONLY KNOWN INFORMATION

The City has not provided URS with any commonly known or reasonably ascertainable information about the property that would help the environmental professional to identify conditions indicative of releases or threatened releases.

3.4 OBVIOUS INDICATORS

The City has not provided URS with any knowledge and experience that they may have related to the property that there are any obvious indicators that point to the presence or likely presence of contamination at the property.

4.0 ENVIRONMENTAL RECORD REVIEW

4.1 STANDARD ENVIRONMENTAL RECORDS

Environmental Data Resources, Inc. (EDR) prepared a regulatory database search report on May 18, 2013 in accordance with the ASTM recommended guidelines. The EDR Radius Map with GeoCheck® Report includes a complete list of databases reviewed by EDR and is presented in **Appendix A**. The EDR report presents the results of a search of databases compiled by federal, state, and local governmental agencies, along with a description of each database, that list addresses of sites of known USTs; landfills; hazardous waste generation, treatment, storage and disposal facilities; and known subsurface contamination in the surrounding area up to and within the ASTM designated search radii of the subject site.

The following facilities are identified in the EDR site review:

- 1) Delisted NPL:1 – The South 8th Street landfill covers 30 acres in a mixed industrial/agricultural/residential area of West Memphis, Crittenden County, Arkansas. The privately owned site was an uncontrolled dump from the mid-1950s until it closed in 1979. The pits reportedly received wastes such as oil and grease sludge, sewage sludge, construction debris, chemical paint waste, and general house hold wastes. No records were kept of the amount or type of waste disposed on-site. This site is located west of the St. Francis Levee and is not likely to impact the subject property.
- 2) CERCLIS: 3 –
 - a) The Colonels Factory Outlet of Arkansas Inc. located at 804 S.Wood St. West Memphis Arkansas. This site was not deemed an NPL site and no further action was determined necessary. This site preforms copper, nickel and chrome plating on recycled vehicle bumpers.
 - b) South 8th St. landfill site was evaluated as a superfund site in 1992. In 1995 a remedial investigation was conducted upon by the EPA. Remedial action was taken in 1998 and as of September 2004 this site is no longer a listed national priority. This site is currently monitored by the EPA.
 - c) The Diaz Intermediates Corp. located at 301 Wyanoke Rd. West Memphis, Arkansas was investigated as a potential responsible party and was referred for removal. No further action has been taken by the EPA towards Dias Intermediates Corp.
- 3) CERC-NFRAP: 1 – The Tenark Oil Corporation is located at 410 E. Jefferson St. West Memphis, Arkansas. This site was investigated in 1989 and in 1990 deemed NOT an NPL site and of low priority for futher investigation.
- 4) CORRACTS: 1
 - a) The Colonels Factory Outlet located at 804 S. Wood St. West Memphis Arkansas underwent the following actions under CORRACTS. Contaminated soil areas have been identified and groundwater migration has been verify UNDER CONTROL.

5) RCRA-CESQG: 2

- a) Warren Unilube Inc. located at 915 Jefferson St. West Memphis, Arkansas received the designation of small quantity generator in 2008 where they were previously a large quantity generator. The hazardous waste code that correspond to generation at Warren Unilube Inc. are D001, D018, F003 & F005. This facility has been in violation only once in 1996. The conditions of the violation have been rectified.
- b) Tetra Technologies Inc. located at 2201 Port Rd. West Memphis, Arkansas received the designation of verified non-generator in 1995, 2000, and 2008. These were the only dates with data available. However, this site does contain hazardous wastes in small quantities these include waste code D001, D002 & D005.

6) Additional Federal records and their number of listings include RCRA NonGen/ NLR: (8), US ENG CONTROLS: (1), ERNS: (11), HMIRS: (1), ROD: (1), TRIS: (2), TSCA: (2), SSTS: (2), ICIS: (2), FINDS: (10), RMP: (2), 2020 COR ACTION: (2)

7) State and local records and their numbers of listing are as follows: AR LTANKS: (2), AR SPILLS: (5), AR AIRS: (2), AR PERMITS: (4), EDR US HIST AUTO STAT: (2)

8) AR UST:2

- a) There are underground storage tanks listed at Choctaw Inc. located at 501 E. Jefferson St. Fort Smith Arkansas. This site contains four retired diesel storage tanks. They were declared permanently out of service in 1991. The tanks were (1) a steel fabricated tank that held 4000 gallons in a single compartment, (2) a steel fabricated tank that held 6000 gallons in a single compartment, (3) a steel fabricated tank that held 1000 gallons in a single compartment, and (4) a tank of unknown material that claims a capacity of 99,999,999 gallons.
- b) There are underground storage tanks listed at Forbes Steel & Wire Corporation located at 981 South 8th St. West Memphis Arkansas. This site contains 2 gasoline and 1 diesel storage tanks. The tanks are single compartment steel construction tanks of capacities 1000, 4000, and 10000 gallons. These tanks are all listed as out of service as of 1992.

9) AR AST:3

- a) There are 88 above ground storage tanks at Warren Unilube Inc. located at 915 E. Jefferson St. West Memphis, Arkansas. Of the 88 petroleum storage tanks on site only 39 are in use leaving 49 unused tanks. The total capacity of the tanks currently in use is 374,265 gallons.
- b) There are 33 above ground storage tanks at the Warren Unilube Inc. facility located at 1200 S. 8th St. West Memphis, Arkansas. Of the 33 petroleum tanks 23 are still in use leaving 10 unused tanks. The total capacity currently in use is 462,902 gallons.

4.2 PHYSICAL SETTING SOURCES

The subject site is located on the *Fletcher Lake, Tenn.-Ark. Quadrangle* 7.5-minute topographic map (U.S. Geological Survey, 1993). Elevation of the subject site is approximately 210 feet above mean sea level based on National Geodetic Vertical Datum (NGVD). The subject property is very flat and the site

vicinity slopes gently towards the west-southwest. Site specific drainage appeared to be to the west-southwest toward the man-made ditches and the Fletcher Lake area.

If shallow groundwater flow mimics surface topography, it appears that the general direction of shallow groundwater flow at the site will vary.

URS reviewed wetlands information provided by the U.S. Fish & Wildlife Service's National Wetlands Inventory (NWI) on the EDR Radius Map Report. State and Federal mapped wetlands are located near the southwestern portions of the subject property. The project may impact wetlands associated with Fletcher Lake. The only way to determine if any portion of the subject site is located within a federal or state (jurisdictional) wetland is to have an additional wetland delineation (assessment) performed.

4.3 HISTORICAL USE INFORMATION ON THE SUBJECT SITE AND ADJOINING PROPERTY

4.3.1 Historical Aerial Photographs

Historic aerial photographs were not obtained due to the determination that the area had been cropland or wilderness since before 1940. This is based on discussions with the site residents and City officials.

4.3.3 Historic Topographic Maps

URS determined that it was not necessary to obtain historical topographical maps because the site has not undergone notable geological change since the St. Francis Levee was built in 1895.

No potential RECs were identified during the topographic map review.

4.3.5 Previous Investigations

No previous investigations have been conducted at the subject property and the City did not provide any other previous environmental assessments (investigations) for URS' review.

5.0 SITE RECONNAISSANCE

5.1 METHODOLOGY AND LIMITING CONDITIONS

URS conducted the site reconnaissance on August 14, 2013. No property owner accompanied URS representatives, Craig Bernhoft and Hayden Orr during the site reconnaissance. URS did meet with the local farm manager, Mr. Joe Miller. Mr. Miller was interviewed about the project area. Weather conditions at the time were sunny with a temperature of approximately 85° Fahrenheit. Photographs taken during the site reconnaissance are presented in **Appendix B**.

URS conducted the site reconnaissance by visually observing the land proposed for the subject property, farm buildings in the area of the transload facility and adjoining facilities. Surrounding properties were viewed from adjacent public right-of-ways.

5.2 GENERAL SITE SETTING

The subject property consists of agricultural on the south and western side; the St. Francis Levee and Mississippi River to the east, and the City of West Memphis AR to the north. The site consists of mostly agricultural land, but immediately adjacent to the site is a facility that assembles and treats chain linked fencing. The agricultural sections of the property seemed to be planted in wheat or soy beans. Ditch 17 ran through the middle of the property from east to west. South of the subject property was a wooded wetland area (Fletcher Lake) that frequently floods. Further to the west were additional crop fields and farm houses. North of the property there is the City of West Memphis and a Coca cola bottling facility. Also on the site is a small farm house and equipment shop. There is evidence of common farm activities including fertilizing, vehicle maintenance, and pest/weed control.

5.3 INTERIOR AND EXTERIOR OBSERVATIONS

The small farming operation that is currently on site stored diesel fuel in above ground containers. There was an area next to one of the barns where old containers strewn about. The containers held the remnants of fertilizers, motor oils, and herbicides. There were also several large above ground water tanks on the small farm site. The remainder of the site property occupied crop land, woodlot or wetland.

5.3.1 Hazardous Substances and Petroleum Products

URS did not observe large aboveground storage tanks (ASTs) used for storage of large volumes of petroleum or chemicals during the site inspection.

It is URS' opinion that management of hazardous substances, specifically fuel storage tanks, at the subject property is not a REC.

5.3.2 Storage Tanks

Visible evidence of underground storage tanks (USTs) (i.e. vent pipes or fill-ports) was not observed during URS' site reconnaissance. It is URS' opinion that USTs do not represent a potential REC to the subject property.

The only ASTs observed at the subject property were the water and diesel fuel tanks previously-discussed above in Section 5.3.1. No other ASTs were observed or reported at the subject property.

5.3.3 Odors

No hazardous waste or petroleum odors were detected during site inspection.

It is URS' opinion that odors do not represent a potential REC to the subject property.

5.3.4 Pools of Liquid

No pools of liquid were observed on the subject site.

It is URS' opinion that pools of liquid do not represent a potential REC to the subject property.

5.3.5 Drums and Containers

In the area next to the road before the small commercial farm house there were several smaller 2-3 gallon containers and 9-55 gallon drums. These 55-gallon steel drums were observed to be empty, unlabeled, and in poor condition (rusted and punctured). It was located on the western portion of the subject property in a vegetated (wooded) area. No distressed vegetation or stained soils were observed in the vicinity of these unidentified containers. The area where the farm vehicles were maintained housed a used oil container (~200 gal) and diesel fuel tanks (~200 gal). No other containers were observed during the site reconnaissance.

It is URS' opinion drums and containers do not represent a potential REC to the subject property.

5.3.6 Unidentified Substance Containers

The only unidentified substance container observed during the site reconnaissance was previously-discussed above in Section 5.3.5.

It is URS' opinion that the unidentified substance container does not represent a potential REC to the subject property.

5.3.7 PCB-Containing Equipment

No pad or pole-mounted transformers were observed at the subject property.

No additional potential PCB-containing equipment was observed during the site visit.

It is URS' opinion that PCB-containing equipment does not represent a potential REC to the subject property.

5.3.8 Emergency Generators

The site does not maintain emergency generators.

It is URS' opinion that emergency generators do not represent a potential REC to the subject property.

5.3.9 Pits, Ponds, and Lagoons

There is a wetland area south of the site. Also, a large drainage ditch runs west to east through the site. There are many smaller drainages and low lying areas that collect standing water. There are also stormwater detention ponds from the fence assembly plant and from a cotton facility in West Memphis. The proposed project would not impact man-made pits, ponds or lagoons. Impacts to wetlands are discussed in the Ecological Survey Report.

It is URS' opinion that pits, ponds, and lagoons do not represent a potential REC to the subject property.

5.3.10 Stained Soil or Pavement

In the area of the small farm where the farm vehicles were maintained there was evidence of lubricating oil and hydraulic fluid leaks in the soil.

It is URS' opinion that stained soil or gravel represents a potential REC to the subject property. It is assumed that a minor amount of soil removal may be required.

5.3.11 Stressed Vegetation

Visible evidence of stressed vegetation was not observed on the subject site.

It is URS' opinion that stressed vegetation does not represent a potential REC to the subject property.

5.3.12 Solid Waste

Solid waste was not being generated at the subject property during the site reconnaissance, other than minor farm related garbage. Other evidence of solid waste disposal was limited to small quantities of herbicide, pesticide, several rusted paint cans,, a waste-tire, and other debris observed in the vicinity of the western portion of the subject property. There was evidence of waste burn piles on the small farm site. The burn areas discolored the soil in a manner associated with a small fire pit. URS recommends that the above solid wastes be disposed of properly.

It is URS' opinion that solid waste does not represent a potential REC to the subject property.

5.3.13 Wastewater and Stormwater

Waste water was being generated by the industries adjacent to the site (Steel and Chemical). Both were producing enough water to generate flow in the discharge ditches. Storm water on the site would be handled by the network of ditches around the crop fields. Also, storm water would flow to the wetland area south of the property if it was not captured and directed to the main drainage ditch. It is URS' opinion that wastewater and stormwater do not represent potential RECs to the subject property.

5.3.14 Wells

Visible indications of monitoring wells and/or potable or production water supply wells were observed and reported on the subject site (see EDR Well Map and Report, **Appendix C**). A total of eight private wells and no public wells are located within one mile of the subject property according to the record search. Most of these wells are south and west of the proposed railway. Two of the eight are located north of the project in residential area. The site is connected to potable water service at the time of the site inspection and utilized by the local industrial users.

It is URS' opinion that wells do not represent a potential REC to the subject property.

5.3.15 Septic Systems

At the small commercial farm house the septic system was minimally covered by plywood sheets. It did not appear that it had been used in some time, as this is not a permanent residence.. Other farmhouses on or near the site had properly operated septic systems, or were part of the City of West Memphis sewer system.

It is URS' opinion that septic systems do not represent a potential REC to the subject property.

5.3.16 Heating or Cooling

The small farm house had an old window unit air conditioner. The adjacent industries had large central heating and cooling units.

It is URS' opinion that heating and cooling do not represent a potential REC to the subject property.

5.3.17 Stains or Corrosion

Visible evidence of soil stains was observed during URS' site reconnaissance. As noted above, these stains were directly related to the vehicle maintenance performed in the area of the small farm house. These stains are believed to be motor oil and are in small quantities. There were no signs of corrosion observed during site reconnaissance. Dense vegetation in the farm fields, cultivated soil, roads and other areas inspected over the 3.6 mile area of the proposed railway did not have notable stains or corrosion.

It is URS' opinion that stains and corrosion do not represent a potential REC to the subject property.

5.3.18 Drains and Sumps

Visible evidence of drains or sumps was not observed during URS' site reconnaissance.

It is URS' opinion that drains and sumps do not represent a potential REC to the subject property.

5.3.19 Presumed Asbestos-Containing Materials

The old farm house did not appear to have asbestos containing insulation or materials (ACMs). There is an older industrial building adjacent to the site on the north side that may contain asbestos containing materials. None of these industrial buildings were considered to be directly affected by the proposed site development. Therefore, no presumed asbestos-containing materials (PACM) were observed during URS' site reconnaissance. In the event buildings will be demolished for the project, they will be inspected for ACMs and properly disposed of.

It is URS' opinion that presumed asbestos containing materials do not represent a potential environmental concern to the subject property.

5.3.20 Lead Based Paint

Similar to ACMs, lead based paint may be part of buildings that would be demolished as part of this project. In the event buildings will be demolished for the project, they will be inspected for lead based paint and properly disposed of. It is URS' opinion that presumed lead based paint do not represent a potential environmental concern to the subject property.

5.4 ADJACENT FACILITY OBSERVATIONS.

The facilities that are adjacent to the future rail loop construction area that are of interest include the wire manufacturing company, and the companies that handle petroleum products Warren Unilube and Valero Oil Company. All observations of the adjacent properties were made from beyond the property lines so all of the detail needed could not be obtained. This section uses combined reconnaissance and EDR data to discuss adjacent properties.

i. Hazardous Substances and Petroleum Products

As noted above the main concern for hazardous or petroleum products at adjacent properties are with Warren Unilube's propane storage tank yard and with the Valero Oil Co. facility. According to the EDR Warren Unilube has a combined 121 ASTs at its two sites in West Memphis. A little over half of the tanks are still in use and those tanks have a combine capacity of over 500,000 gallons.

ii. Storage Tanks

Warren Unilube maintains 121 ASTs, and there are USTs adjacent to the project area but all of them are no longer in use. The companies that have retired USTs are Choctaw Inc. and Forbes Steel & Wire Corp.

iii. Odors

There is a notable odor downwind of the Forbes Steel & Wire Corp. facility but its source was unidentifiable from beyond the boundary fence. No other odors were noted during the site walk through.

iv. Pools of Liquid

There were no pools of liquid noted during the site walk through.

v. Drums and Containers

There were no drums or containers noted at adjacent properties during the site walk through. These items are typically kept inside or at the very least in a covered area.

vi. Unidentified Substance Containers

There were no unidentified substance containers noted during the site walk through.

vii. PCB Containing Equipment

Pole mounted transformers were noted at adjacent sites to the project area, however, as they are adjacent to the site area they are not considered an impedance to project activities at this time.

viii. Emergency Generators

There were no emergency generators noted at adjacent properties during the site walk through.

ix. Pits, Ponds, and Lagoons

Settling ponds or lagoons were noted at the Forbes Steel & Wire Corp. facility and at the cotton warehouses.

x. Stained Soil or Pavement

There were no stains noted on soil or pavement of adjacent properties during the site walk through.

xi. Stressed Vegetation

There were no signs of stressed vegetation noted during the site walk through.

xii. Solid Waste

There were no signs of solid waste accumulation on adjacent properties during the site walk through.

xiii. Waste Water and Storm Water

Waste water and storm water streams flowed out from the Forbes Steel & Wire Corp. and from the cotton warehousing area into the path of the projected rail line expansion. A evidenced from the healthy looking vegetation and wildlife in these streams URS does not suspect there are any hazardous materials in these streams.

xiv. Wells

There were no wells noted on adjacent sites during the site walk through.

xv. Septic Systems

There were no signs of exposed septic systems or drain fields at adjacent sites during the site walk through.

xvi. Heating and Cooling

All adjacent industry facilities maintained central heating and cooling units.

xvii. Stains and Corrosion

All adjacent facilities seemed to be in good repair where they could be observed.

xviii. Drains and Sumps

Drain and sump configurations of adjacent facilities could not be studied in detail during the site walk through.

5.4.19 Presumed Asbestos-Containing Materials

All adjacent facilities were presumed to not contain asbestos containing materials.

5.4.20 Lead Based Paint

The presence of lead based paint at adjacent facilities was not evident during site walk through.

6.0 CONCLUSIONS

URS has developed and performed a Phase I ESA in conformance with the scope and limitations of ASTM Practice E1527-05 for the proposed railway, a 20 acre tract on Port Road and the proposed Transload Facility area. Any exceptions to, or deletions from, this practice are described in the limitations sections of this report.

6.1 FINDINGS

This assessment has revealed no potential RECs in connection with the subject site. However, the following low-level environmental concerns were identified in connection with the subject site:

The farm operation area managed by Mr. Miller includes a number of low-level environmental concerns. These areas include:

1. Aboveground diesel fuel storage tanks (2-250 gallon);
2. Stained soils in the area of vehicle and equipment lubrication and maintenance;
3. Scattered 5-gallon and smaller containers (generally empty) of lubricants, herbicides, pesticides and oils.

Large volume herbicide and pesticide storage use was not observed at the farm. Large volume application is performed by air-application in the area (Miller, personnel communication).

Areas of the proposed rail were walked for evidence of environmental contamination. No stained areas, chemical odors, containers or other signs of contamination were observed.

Adjoining properties include a metal fabricator and chemical company. Stormwater runoff, cooling water and other drainage from these properties flows into the drainage ditches and south to Fletcher Lake. No obvious signs of staining, sheen, or odors were observed at the time of the site inspection.

Past and current use of the adjoining properties as industrial users, stained soils and fuel containers at the Miller Farm warrant limited Phase II investigation to determine what level of clean-up may be needed, if any, prior to construction on the subject property.

6.2 DEVIATIONS

No deviations occurred from the Scope of Services for the Phase I ESA.

7.0 REFERENCES

ASTM, 2005. American Society for Testing and Materials (ASTM). Standard E Section, "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process," November 2005.

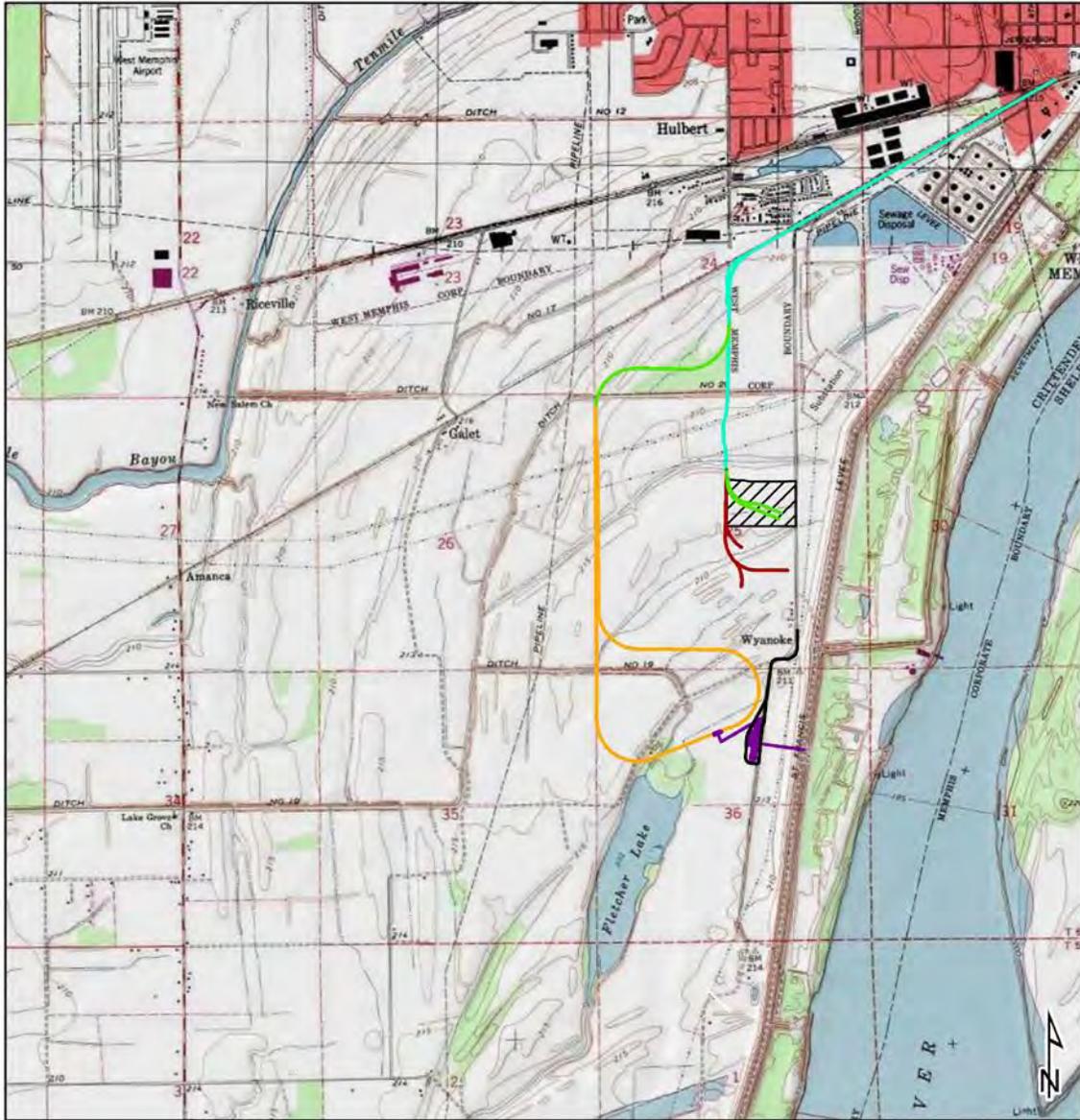
USEPA, 2005. United States Environmental Protection Agency (USEPA). 40 CFR Part 312 "Standards and Practices for All Appropriate Inquiries," November 1, 2005.

City of West Memphis, 1995, Environmental Assessment South Loop.

8.0 NOMENCLATURE LIST

ACBM	Asbestos Containing Building Material
ASTM	American Society For Testing and Materials
AUL	Activity and Use Limitation
BCA	Brantley County Assessor
BRS	RCRA Biennial Reporting System
CERCLIS	Comprehensive Environmental Response, and Liability Information System
CORRACTS	Corrective Action Report
EDR	Environmental Data Resources
ESA	Environmental Site Assessment
ERNS	Emergency Response Notification System
GDNR	Georgia Department of Natural Resources
LUST	Leaking Underground Storage Tank
LQG	Large Quantity Generator
NFRAP	No Further Remedial Action Planned
NRCS	Natural Resources Conservation Service
NPL	National Priorities List
OPRA	Open Public Records Act
PCB	Polychlorinated Biphenyls
PCS	Permit Compliance System
REC	Recognized Environmental Condition
RCRA	Resource Conservation and Recovery Act
RCRIS	Resource Conservation and Recovery Information System
SHWS	State Hazardous Substance Remedial Action Trust Fund Priority List
SPL	Spill List
SQG	Small Quantity Generator
SWF/LF	Solid Waste Facility Permit Database
SWRCY	Solid Waste Recycling Directory
TRI	Toxicity Chemical Release Inventory
UST	Underground Storage Tank
USDA	United States Department of Agriculture
US EPA	United States Environmental Protection Agency
USGS	United States Geological Survey
WWTP	Wastewater Treatment Plant

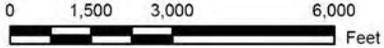
FIGURES



Legend

- Port Road Extension
- Transload Facility
- Existing Rail
- LD Proposed Rail
- Rehab Existing Rail
- WM Tiger Rail
- ▨ 20 Acre Site

- Notes:
1. Imagery Source: USGS
 2. Map Projection: NAD 1983 State Plane Arkansas North Feet



**City of West Memphis
Proposed Project Concept Map
West Memphis, Arkansas
Natural Resources Survey**

Drawn By: PZ	Date: 3/27/2014
Checked By: JO	Figure No. 1



APPENDIX I

Regulatory Database Search Report

**Executive Summary Only
Complete report 400 pages**

International Rail Port Logistics Park
West Memphis, AR 72301

Inquiry Number: 3600478.1s
May 08, 2013

EDR DataMap™ Corridor Study

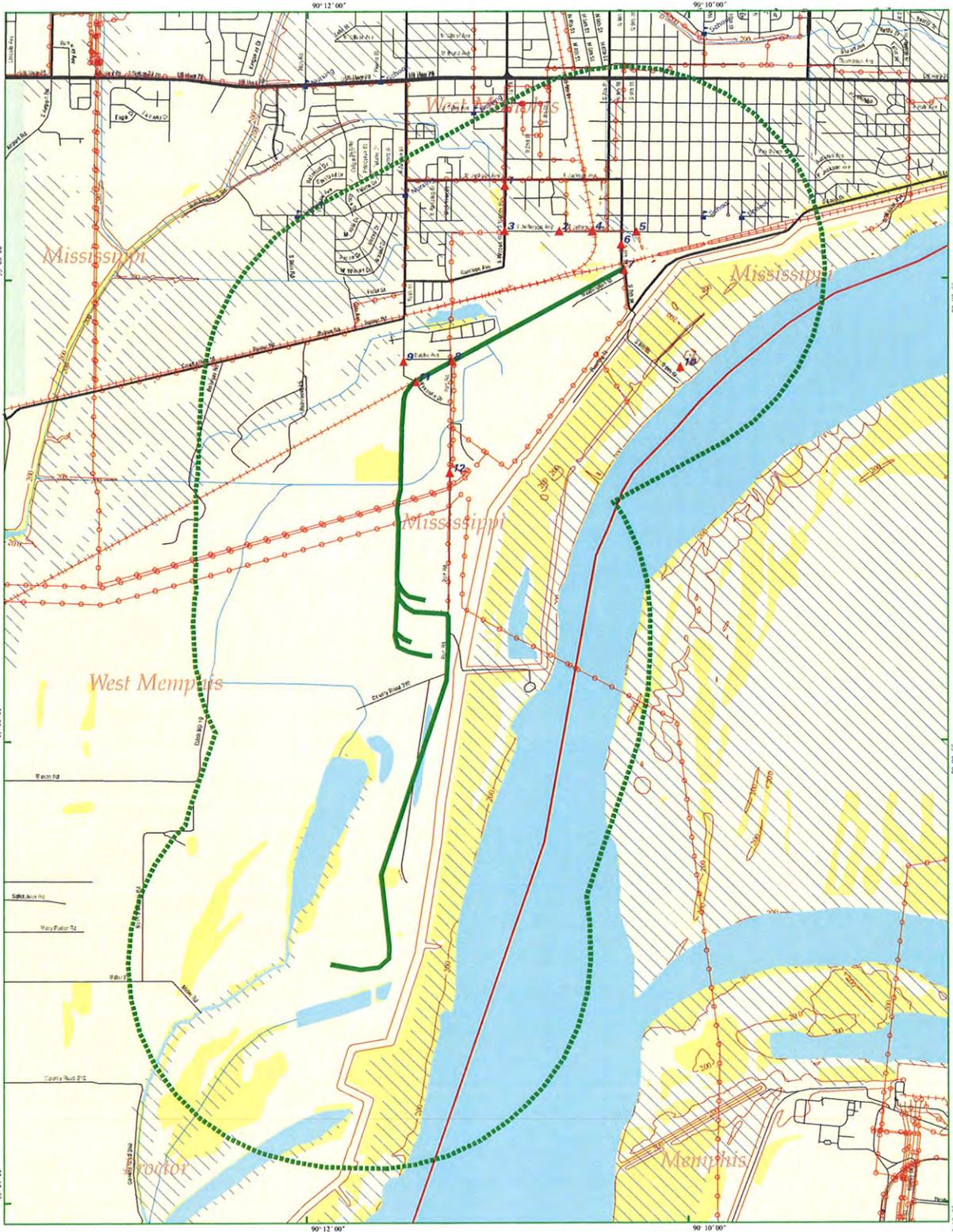
Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EDR DataMap® - Corridor Study

International Rail Port Logistics Park



West Memphis, AR

- | | | | | |
|--|---------------|-------------|-------------------------|----------------------------|
| Listed Sites | Major Roads | Pipelines | Superfund Sites | National Wetland Inventory |
| Earthquake Epicenters (Richter 5 or greater) | Waterways | Powerlines | Federal DOD Sites | |
| Search Boundary | Railroads | Fault Lines | Indian Reservations BIA | |
| Roads | Contour Lines | Water | 100-Yr Flood Zones | |



EXECUTIVE SUMMARY

TARGET PROPERTY INFORMATION

ADDRESS

WEST MEMPHIS, AR 72301
WEST MEMPHIS, AR 72301

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records within the requested search area for the following databases:

FEDERAL RECORDS

NPL.....	National Priority List
Proposed NPL.....	Proposed National Priority List Sites
NPL LIENS.....	Federal Superfund Liens
LIENS 2.....	CERCLA Lien Information
RCRA-TSDF.....	RCRA - Treatment, Storage and Disposal
RCRA-LQG.....	RCRA - Large Quantity Generators
RCRA-SQG.....	RCRA - Small Quantity Generators
US INST CONTROL.....	Sites with Institutional Controls
DOT OPS.....	Incident and Accident Data
US CDL.....	Clandestine Drug Labs
US BROWNFIELDS.....	A Listing of Brownfields Sites
DOD.....	Department of Defense Sites
FUDS.....	Formerly Used Defense Sites
LUCIS.....	Land Use Control Information System
CONSENT.....	Superfund (CERCLA) Consent Decrees
UMTRA.....	Uranium Mill Tailings Sites
DEBRIS REGION 9.....	Torres Martinez Reservation Illegal Dump Site Locations
ODI.....	Open Dump Inventory
US MINES.....	Mines Master Index File
FTTS.....	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
HIST FTTS.....	FIFRA/TSCA Tracking System Administrative Case Listing
PADS.....	PCB Activity Database System
MLTS.....	Material Licensing Tracking System
RADINFO.....	Radiation Information Database
RAATS.....	RCRA Administrative Action Tracking System
COAL ASH EPA.....	Coal Combustion Residues Surface Impoundments List
SCRD DRYCLEANERS.....	State Coalition for Remediation of Drycleaners Listing
US HIST CDL.....	National Clandestine Laboratory Register
PCB TRANSFORMER.....	PCB Transformer Registration Database
FEDERAL FACILITY.....	Federal Facility Site Information listing
US FIN ASSUR.....	Financial Assurance Information
EPA WATCH LIST.....	EPA WATCH LIST
COAL ASH DOE.....	Steam-Electric Plant Operation Data
FEMA UST.....	Underground Storage Tank Listing

EXECUTIVE SUMMARY

STATE AND LOCAL RECORDS

AR SHWS.....	Hazardous Substance Remedial Action Trust Fund Priority List
TN SHWS.....	List of Inactive Hazardous Substance Sites
AR SWF/LF.....	Solid Waste Facility Permit Database
TN SWF/LF.....	Solid Waste Disposal Facilities
AR UIC.....	Underground Injection Wells Database Listing
AR SWID.....	Solid Waste Illegal Dumps Database
AR SWRCY.....	Recycling Directory
TN SWRCY.....	Recycling Facilities Listing
TN LUST.....	Leaking Underground Storage Tank Database Listing
TN LUST TRUST.....	LUST TRUST Fund Database
TN LUST_JO.....	Leaking Underground Storage Tanks Sites
TN HIST_LUST CO.....	Leaking Underground Storage Tanks Sites
TN UST.....	Facility and Tank Report
TN HIST UST.....	Underground Storage Tank Database
TN DEL SHWS.....	Deleted State Hazardous Waste Sites
TN LIENS.....	Liens Information
TN AST.....	Aboveground Storage Tanks
TN SPILLS.....	State Spills
AR ENG CONTROLS.....	Engineering Controls Sites Listing
TN ENG CONTROLS.....	Engineering Control Sites
AR INST CONTROL.....	Institutional Control/Land Use Restriction Sites
TN INST CONTROL.....	Institutional Control Sites
AR VCP.....	Voluntary Cleanup Program Sites
TN SRP.....	State Remediation Program List
TN VCP.....	Voluntary Cleanup, Oversight and Assistance Program Sites
TN PRIORITYCLEANERS.....	DCERP Remediation Sites Listing
TN DRYCLEANERS.....	Registered Facilities List
AR BROWNFIELDS.....	Brownfields Projects
TN BROWNFIELDS.....	Superfund VOAP Listing
AR ENF.....	Consent Administrative Order, Notice of Violation Information Database
AR CDL.....	Methamphetamine Contaminated Properties Listing
TN CDL.....	Registry of Contaminated Properties
AR Sludge.....	Poultry Sludge Permit Sites
TN NPDES.....	Permitted Facility Listing
TN AIRS.....	Listing of Permitted Sources
AR ASBESTOS.....	Asbestos Notification of Intent Database
AR COAL ASH.....	Coal Ash Disposal Site Listing

TRIBAL RECORDS

INDIAN RESERV.....	Indian Reservations
INDIAN ODI.....	Report on the Status of Open Dumps on Indian Lands
INDIAN LUST.....	Leaking Underground Storage Tanks on Indian Land
INDIAN UST.....	Underground Storage Tanks on Indian Land
INDIAN VCP.....	Voluntary Cleanup Priority Listing

EDR PROPRIETARY RECORDS

EDR MGP.....	EDR Proprietary Manufactured Gas Plants
EDR US Hist Cleaners.....	EDR Exclusive Historic Dry Cleaners

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified.

EXECUTIVE SUMMARY

Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

FEDERAL RECORDS

Delisted NPL: The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

A review of the Delisted NPL list, as provided by EDR, and dated 02/01/2013 has revealed that there is 1 Delisted NPL site within the searched area.

<u>Site</u>	<u>Address</u>	<u>Map ID</u>	<u>Page</u>
<i>SOUTH 8TH STREET LANDFILL</i>	<i>SOUTH EIGHTH STREET</i>	<i>10</i>	<i>278</i>

CERCLIS: The Comprehensive Environmental Response, Compensation and Liability Information System contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

A review of the CERCLIS list, as provided by EDR, and dated 02/04/2013 has revealed that there are 4 CERCLIS sites within the searched area.

<u>Site</u>	<u>Address</u>	<u>Map ID</u>	<u>Page</u>
<i>THE COLONELS FACTORY OUTLET OF</i>	<i>804 S WOODS ST</i>	<i>1</i>	<i>4</i>
<i>THE COLONEL FACTORY OUTLET</i>	<i>720 S. WOODS</i>	<i>3</i>	<i>40</i>
<i>SOUTH 8TH STREET LANDFILL</i>	<i>SOUTH EIGHTH STREET</i>	<i>10</i>	<i>278</i>
<i>DIAZ INTERMEDIATES CORP</i>	<i>301 WYANOKE RD.</i>	<i>11</i>	<i>306</i>

CERC-NFRAP: Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

A review of the CERC-NFRAP list, as provided by EDR, and dated 02/05/2013 has revealed that there is 1 CERC-NFRAP site within the searched area.

<u>Site</u>	<u>Address</u>	<u>Map ID</u>	<u>Page</u>
TENARK OIL CORPORATION	410 E. JEFFERSON STREET	2	39

EXECUTIVE SUMMARY

CORRACTS: CORRACTS is a list of handlers with RCRA Corrective Action Activity. This report shows which nationally-defined corrective action core events have occurred for every handler that has had corrective action activity.

A review of the CORRACTS list, as provided by EDR, and dated 02/12/2013 has revealed that there are 2 CORRACTS sites within the searched area.

<u>Site</u>	<u>Address</u>	<u>Map ID</u>	<u>Page</u>
<i>THE COLONELS FACTORY OUTLET OF</i>	<i>804 S WOODS ST</i>	<i>1</i>	<i>4</i>
<i>THE COLONEL FACTORY OUTLET</i>	<i>720 S. WOODS</i>	<i>3</i>	<i>40</i>

RCRA-CESQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

A review of the RCRA-CESQG list, as provided by EDR, and dated 02/12/2013 has revealed that there are 2 RCRA-CESQG sites within the searched area.

<u>Site</u>	<u>Address</u>	<u>Map ID</u>	<u>Page</u>
<i>WARREN UNILUBE, INC.</i>	<i>915 JEFFERSON ST</i>	<i>7</i>	<i>136</i>
<i>TETRA TECHNOLOGIES, INC.</i>	<i>2201 PORT RD</i>	<i>12</i>	<i>346</i>

RCRA NonGen / NLR: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

A review of the RCRA NonGen / NLR list, as provided by EDR, and dated 02/12/2013 has revealed that there are 8 RCRA NonGen / NLR sites within the searched area.

<u>Site</u>	<u>Address</u>	<u>Map ID</u>	<u>Page</u>
<i>THE COLONELS FACTORY OUTLET OF</i>	<i>804 S WOODS ST</i>	<i>1</i>	<i>4</i>
<i>THE COLONEL FACTORY OUTLET</i>	<i>720 S. WOODS</i>	<i>3</i>	<i>40</i>
<i>INDUSTRIAL OIL SERVICE</i>	<i>610 JEFFERSON</i>	<i>4</i>	<i>63</i>
<i>COASTAL UNILUBE CORP</i>	<i>915 EAST JEFFERSON</i>	<i>5</i>	<i>99</i>
<i>ALLIED UNIVERSAL CORP</i>	<i>2100 PORT RD</i>	<i>8</i>	<i>213</i>
<i>SUPERIOR INDUSTRIES INTL INC</i>	<i>1515 S AVALON ST</i>	<i>9</i>	<i>276</i>
<i>STATESIDE STEEL & WIRE</i>	<i>304 WYANOKE ROAD</i>	<i>11</i>	<i>302</i>
<i>DIAZ INTERMEDIATES CORP</i>	<i>301 WYANOKE RD.</i>	<i>11</i>	<i>306</i>

EXECUTIVE SUMMARY

US ENG CONTROLS: A listing of sites with engineering controls in place.

A review of the US ENG CONTROLS list, as provided by EDR, and dated 12/19/2012 has revealed that there is 1 US ENG CONTROLS site within the searched area.

<u>Site</u>	<u>Address</u>	<u>Map ID</u>	<u>Page</u>
<i>SOUTH 8TH STREET LANDFILL</i>	<i>SOUTH EIGHTH STREET</i>	<i>10</i>	<i>278</i>

ERNS: The Emergency Response Notification System records and stores information on reported releases of oil and hazardous substances. The source of this database is the U.S. EPA.

A review of the ERNS list, as provided by EDR, and dated 12/31/2012 has revealed that there are 11 ERNS sites within the searched area.

<u>Site</u>	<u>Address</u>	<u>Map ID</u>	<u>Page</u>
Not reported	1200 SOUTH EIGHTH STREE	7	116
Not reported	1200 SOUTH EIGHTH STREE	7	117
Not reported	1200 SOUTH EIGHTH STREE	7	117
Not reported	1200 SOUTH EIGHTH STREE	7	118
Not reported	1200 SOUTH EIGHTH STREE	7	118
Not reported	1200 SOUTH 8TH ST.	7	118
Not reported	1200 SOUTH 8TH ST.	7	135
Not reported	1200 S. 8TH ST.	7	143
Not reported	2100 PORT ROAD	8	226
Not reported	2100 PORT ROAD	8	275
Not reported	2100 PORT ROAD	8	275

HMIRS: The Hazardous Materials Incident Report System contains hazardous material spill incidents reported to the Department of Transportation. The source of this database is the U.S. EPA.

A review of the HMIRS list, as provided by EDR, and dated 12/31/2012 has revealed that there is 1 HMIRS site within the searched area.

<u>Site</u>	<u>Address</u>	<u>Map ID</u>	<u>Page</u>
Not reported	304 WYANOKE ROAD	11	305

ROD: Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid the cleanup.

A review of the ROD list, as provided by EDR, and dated 12/18/2012 has revealed that there is 1 ROD site within the searched area.

<u>Site</u>	<u>Address</u>	<u>Map ID</u>	<u>Page</u>
<i>SOUTH 8TH STREET LANDFILL</i>	<i>SOUTH EIGHTH STREET</i>	<i>10</i>	<i>278</i>

EXECUTIVE SUMMARY

TRIS: The Toxic Chemical Release Inventory System identifies facilities that release toxic chemicals to the air, water, and land in reportable quantities under SARA Title III, Section 313. The source of this database is the U.S. EPA.

A review of the TRIS list, as provided by EDR, and dated 12/31/2009 has revealed that there are 2 TRIS sites within the searched area.

<u>Site</u>	<u>Address</u>	<u>Map ID</u>	<u>Page</u>
<i>WARREN UNILUBE, INC.</i>	<i>915 JEFFERSON ST</i>	<i>7</i>	<i>136</i>
<i>TETRA TECHNOLOGIES, INC.</i>	<i>2201 PORT RD</i>	<i>12</i>	<i>346</i>

TSCA: The Toxic Substances Control Act identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site. The United States Environmental Protection Agency has no current plan to update and/or re-issue this database.

A review of the TSCA list, as provided by EDR, and dated 12/31/2006 has revealed that there are 2 TSCA sites within the searched area.

<u>Site</u>	<u>Address</u>	<u>Map ID</u>	<u>Page</u>
DIAZ INTERMEDIATES CORP	301 WYANOKE ROAD	11	346
DIAZ INTERMEDIATES	301 WYANOKE RD.	11	346

SSTS: Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

A review of the SSTS list, as provided by EDR, and dated 12/31/2009 has revealed that there are 2 SSTS sites within the searched area.

<u>Site</u>	<u>Address</u>	<u>Map ID</u>	<u>Page</u>
ALLIED UNIVERSAL CORP	2100 PORT RD	8	215
ALLIED UNIVERSAL CORP	2100 PRT RD	8	226

ICIS: The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

A review of the ICIS list, as provided by EDR, and dated 07/20/2011 has revealed that there are 2 ICIS sites within the searched area.

<u>Site</u>	<u>Address</u>	<u>Map ID</u>	<u>Page</u>
COASTAL UNILUBE INC.	1200 SOUTH 8TH STREET	7	159
ALLIED UNIVERSAL CORP	2100 PORT ROAD WEST	8	208

EXECUTIVE SUMMARY

FINDS: The Facility Index System contains both facility information and "pointers" to other sources of information that contain more detail. These include: RCRIS; Permit Compliance System (PCS); Aerometric Information Retrieval System (AIRS); FATES (FIFRA [Federal Insecticide Fungicide Rodenticide Act] and TSCA Enforcement System, FTTS [FIFRA/TSCA Tracking System]; CERCLIS; DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes); Federal Underground Injection Control (FURS); Federal Reporting Data System (FRDS); Surface Impoundments (SIA); TSCA Chemicals in Commerce Information System (CICS); PADS; RCRA-J (medical waste transporters/disposers); TRIS; and TSCA. The source of this database is the U.S. EPA/NTIS.

A review of the FINDS list, as provided by EDR, and dated 10/23/2011 has revealed that there are 10 FINDS sites within the searched area.

<u>Site</u>	<u>Address</u>	<u>Map ID</u>	<u>Page</u>
<i>THE COLONEL FACTORY OUTLET</i>	<i>720 S. WOODS</i>	<i>3</i>	<i>40</i>
<i>INDUSTRIAL OIL SERVICE</i>	<i>610 JEFFERSON</i>	<i>4</i>	<i>63</i>
<i>COASTAL UNILUBE CORP</i>	<i>915 EAST JEFFERSON</i>	<i>5</i>	<i>99</i>
<i>WARREN UNILUBE, INC.</i>	<i>915 JEFFERSON ST</i>	<i>7</i>	<i>136</i>
<i>ALLIED UNIVERSAL CORP</i>	<i>2100 PORT RD</i>	<i>8</i>	<i>213</i>
<i>SUPERIOR INDUSTRIES INTL INC</i>	<i>1515 S AVALON ST</i>	<i>9</i>	<i>276</i>
<i>SOUTH 8TH STREET LANDFILL</i>	<i>SOUTH EIGHTH STREET</i>	<i>10</i>	<i>278</i>
<i>STATESIDE STEEL & WIRE</i>	<i>304 WYANOKE ROAD</i>	<i>11</i>	<i>302</i>
<i>DIAZ INTERMEDIATES CORP</i>	<i>301 WYANOKE RD.</i>	<i>11</i>	<i>306</i>
<i>TETRA TECHNOLOGIES, INC.</i>	<i>2201 PORT RD</i>	<i>12</i>	<i>346</i>

RMP: When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

A review of the RMP list, as provided by EDR, and dated 05/08/2012 has revealed that there are 2 RMP sites within the searched area.

<u>Site</u>	<u>Address</u>	<u>Map ID</u>	<u>Page</u>
ALLIED UNIVERSAL CORPORATION	2100 PORT ROAD	8	228
DIAZ INTERMEDIATES CORPORATION	301 WYANOKE ROAD	11	331

2020 COR ACTION: The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

A review of the 2020 COR ACTION list, as provided by EDR, and dated 11/11/2011 has revealed that there are 2 2020 COR ACTION sites within the searched area.

EXECUTIVE SUMMARY

<u>Site</u>	<u>Address</u>	<u>Map ID</u>	<u>Page</u>
<i>THE COLONELS FACTORY OUTLET OF</i>	<i>804 S WOODS ST</i>	<i>1</i>	<i>4</i>
<i>THE COLONEL FACTORY OUTLET</i>	<i>720 S. WOODS</i>	<i>3</i>	<i>40</i>

STATE AND LOCAL RECORDS

AR LTANKS: Leaking Storage Tank Locations

A review of the AR LTANKS list, as provided by EDR, and dated 03/25/2013 has revealed that there are 2 AR LTANKS sites within the searched area.

<u>Site</u>	<u>Address</u>	<u>Map ID</u>	<u>Page</u>
<i>CHOCTAW INC.</i>	<i>501 EAST JEFFERSON</i>	<i>2</i>	<i>35</i>
<i>FLASH OIL CO OF ARKANSAS INC</i>	<i>1101 1/2 SOUTH 8TH ST</i>	<i>6</i>	<i>109</i>
<i>NFA Issued: 2011-09-07 00:00:00</i>			

AR UST: RST Owner & Facilities.

A review of the AR UST list, as provided by EDR, and dated 03/25/2013 has revealed that there are 2 AR UST sites within the searched area.

<u>Site</u>	<u>Address</u>	<u>Map ID</u>	<u>Page</u>
<i>CHOCTAW INC.</i>	<i>501 EAST JEFFERSON</i>	<i>2</i>	<i>35</i>
<i>FORBES STEEL & WIRE CORPORATIO</i>	<i>981 SOUTH 8TH STREET</i>	<i>6</i>	<i>113</i>

AR AST: Aboveground Tank Database

A review of the AR AST list, as provided by EDR, and dated 03/25/2013 has revealed that there are 3 AR AST sites within the searched area.

<u>Site</u>	<u>Address</u>	<u>Map ID</u>	<u>Page</u>
<i>WARREN UNILUBE INC</i>	<i>915 E JEFFERSON ST</i>	<i>5</i>	<i>65</i>
<i>WARREN UNILUBE INC</i>	<i>1200 S 8TH ST - N SIDE</i>	<i>7</i>	<i>143</i>
<i>WARREN UNILUBE INC</i>	<i>1200 S 8TH ST SIDE</i>	<i>7</i>	<i>162</i>

AR SPILLS: Emergency Response Incidents database.

A review of the AR SPILLS list, as provided by EDR, and dated 03/14/2013 has revealed that there are 5 AR SPILLS sites within the searched area.

<u>Site</u>	<u>Address</u>	<u>Map ID</u>	<u>Page</u>
<i>Not reported</i>	<i>1200 SOUTH EIGHTH ST.</i>	<i>7</i>	<i>116</i>
<i>Not reported</i>	<i>1200 SOUTH 8TH ST</i>	<i>7</i>	<i>118</i>
<i>Not reported</i>	<i>1200 S. 8TH ST.</i>	<i>7</i>	<i>135</i>

EXECUTIVE SUMMARY

<u>Site</u>	<u>Address</u>	<u>Map ID</u>	<u>Page</u>
Not reported	1200 S. EIGHTH ST.	7	156
Not reported	1200 S 8TH ST	7	203

AR AIRS: Permitted facility emissions and stack data for the state.

A review of the AR AIRS list, as provided by EDR, and dated 03/31/2013 has revealed that there are 2 AR AIRS sites within the searched area.

<u>Site</u>	<u>Address</u>	<u>Map ID</u>	<u>Page</u>
<i>Not reported</i>	<i>1200 SOUTH 8TH ST</i>	<i>7</i>	<i>118</i>
<i>DIAZ INTERMEDIATES CORP</i>	<i>301 WYANOKE RD</i>	<i>11</i>	<i>313</i>

AR PERMITS: A list of sites permitted by the Department of Environmental Quality, including Air, Mining, Solid Waste and Water.

A review of the AR PERMITS list, as provided by EDR, and dated 03/18/2013 has revealed that there are 4 AR PERMITS sites within the searched area.

<u>Site</u>	<u>Address</u>	<u>Map ID</u>	<u>Page</u>
<i>COASTAL UNILUBE CORP</i>	<i>915 EAST JEFFERSON</i>	<i>5</i>	<i>99</i>
<i>FLASH OIL CO OF ARKANSAS INC</i>	<i>1101 1/2 SOUTH 8TH ST</i>	<i>6</i>	<i>109</i>
<i>ALLIED UNIVERSAL CORP.</i>	<i>2100 PORT RD</i>	<i>8</i>	<i>205</i>
<i>DIAZ INTERMEDIATES CORP</i>	<i>301 WYANOKE RD</i>	<i>11</i>	<i>313</i>

EDR PROPRIETARY RECORDS

EDR US Hist Auto Stat: EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

A review of the EDR US Hist Auto Stat list, as provided by EDR, has revealed that there are 2 EDR US Hist Auto Stat sites within the searched area.

<u>Site</u>	<u>Address</u>	<u>Map ID</u>	<u>Page</u>
Not reported	1000 S 8TH ST	6	113
Not reported	1515 S AVALON ST	9	275

EXECUTIVE SUMMARY

Please refer to the end of the findings report for unmapped orphan sites due to poor or inadequate address information.

MAP FINDINGS SUMMARY

<u>Database</u>	<u>Total Plotted</u>
<u>FEDERAL RECORDS</u>	
NPL	0
Proposed NPL	0
Delisted NPL	1
NPL LIENS	0
CERCLIS	4
CERC-NFRAP	1
LIENS 2	0
CORRACTS	2
RCRA-TSDF	0
RCRA-LQG	0
RCRA-SQG	0
RCRA-CESQG	2
RCRA NonGen / NLR	8
US ENG CONTROLS	1
US INST CONTROL	0
ERNS	11
HMIRS	1
DOT OPS	0
US CDL	0
US BROWNFIELDS	0
DOD	0
FUDS	0
LUCIS	0
CONSENT	0
ROD	1
UMTRA	0
DEBRIS REGION 9	0
ODI	0
US MINES	0
TRIS	2
TSCA	2
FTTS	0
HIST FTTS	0
SSTS	2
ICIS	2
PADS	0
MLTS	0
RADINFO	0
FINDS	10
RAATS	0
RMP	2
COAL ASH EPA	0
SCRD DRYCLEANERS	0
US HIST CDL	0
PCB TRANSFORMER	0
FEDERAL FACILITY	0
US FIN ASSUR	0
EPA WATCH LIST	0

MAP FINDINGS SUMMARY

<u>Database</u>	<u>Total Plotted</u>
2020 COR ACTION	2
COAL ASH DOE	0
FEMA UST	0
 <u>STATE AND LOCAL RECORDS</u>	
AR SHWS	0
TN SHWS	0
AR SWF/LF	0
TN SWF/LF	0
AR UIC	0
AR SWID	0
AR SWRCY	0
TN SWRCY	0
AR LTANKS	2
TN LUST	0
TN LUST TRUST	0
TN LUST_JO	0
TN HIST_LUST CO	0
AR UST	2
TN UST	0
TN HIST UST	0
AR AST	3
TN DEL SHWS	0
TN LIENS	0
TN AST	0
AR SPILLS	5
TN SPILLS	0
AR ENG CONTROLS	0
TN ENG CONTROLS	0
AR INST CONTROL	0
TN INST CONTROL	0
AR VCP	0
TN SRP	0
TN VCP	0
TN PRIORITYCLEANERS	0
TN DRYCLEANERS	0
AR BROWNFIELDS	0
TN BROWNFIELDS	0
AR ENF	0
AR CDL	0
TN CDL	0
AR Sludge	0
TN NPDES	0
AR AIRS	2
AR PERMITS	4
TN AIRS	0
AR ASBESTOS	0
AR COAL ASH	0
 <u>TRIBAL RECORDS</u>	
INDIAN RESERV	0

MAP FINDINGS SUMMARY

<u>Database</u>	<u>Total Plotted</u>
INDIAN ODI	0
INDIAN LUST	0
INDIAN UST	0
INDIAN VCP	0
<u>EDR PROPRIETARY RECORDS</u>	
EDR MGP	0
EDR US Hist Auto Stat	2
EDR US Hist Cleaners	0

NOTES:

Sites may be listed in more than one database

APPENDIX II

Photolog

Client Name: City of West Memphis

Site Location:

Project No.

20500648.00001

Photo No.
1

Date:
8/2013

Description:

Sump at Dabbs Road and RR crossing



Photo No.
2

Date:
08/13

Description:

RR crossing at Dabbs Ave. and Port Road facing east.



Photo No. 3	Date: 08/13	
Description: RR crossing at Dabbs Ave. Port Rd. facing south down Port Rd.		

Photo No. 4	Date: 08/13	
Description: Stormwater Drain south side of River Bend Cotton facing NE.		







Photo No. 11	Date: 08/13
Description: Northeast side of building in Photo 10 on Stateside Wire Property.	



Photo No. 12	Date: 08/13
Description: TETRA Technologies off Port Road.	



Photo No. 13	Date: 08/13
Description: Allied Universal Corp sign on Port Road facing NW, south of 20 acre Cox Property.	



Photo No. 14	Date: 08/13
Description: Allied Universal property.	



Photo No.
15

Date:
08/13

Description:

Ditch 17, facing west from RR Bridge.



Photo No.
16

Date:
08/13

Description:

Valero Terminal Storage Tanks and Warren Unilube Inc. off South Loop Road.







Photo No.
21

Date:
08/13

Description:

1000 gallon diesel
fuel storage at
Farm on AEP
property.



Photo No.
22

Date:
08/13

Description:

Equipment
maintenance area
at Farm on AEP
property.



Photo No. 23	Date: 08/13	
Description: Farm located south of proposed Transload Facility		

Photo No. 24	Date: 08/13	
Description: AST cradle – background steel tower foreground on Stateside Steel, near Port Road.		

Photo No.
25

Date:
08/13

Description:

AST cradle
Stateside property
near Port Rd.



Photo No.
26

Date:
08/13

Description:

Stateside Steel
boneyard.



Photo No.
27

Date:
08/13

Description:

Stateside steel
warehouse near
Port Rd.



Photo No.
28

Date:
08/13

Description:

Stateside Steel
warehouse.



Photo No.
29

Date:
08/13

Description:

Material in open
near Stateside
Steel warehouse.



Photo No.
30

Date:
08/13

Description:

Storage tank at
Stateside Steel
warehouse.





Photo No. 33	Date: 08/13
Description: Spray equipment at Farm on AEP.	



Photo No. 34	Date: 08/13
Description: Interior of the farm house on AEP property. Maintenance equipment with chemicals and shop equipment scattered about.	



Photo No.
35

Date:
08/13

Description:

Oil stained gravel at Farm on AEP.



Photo No.
36

Date:
08/13

Description:

Oil stained parking area at Farm at AEP.



Photo No.
37

Date:
08/13

Description:

~200 gal diesel fuel tank at Farm on AEP.



Photo No.
38

Date:
08/13

Description:

Tractor with a chemical sprayer attached.



Photo No.
39

Date:
08/13

Description:

Chemical sprayer
attached at farm on
AEP.



APPENDIX III

EDR Well Survey

International Rail Port Logistics Park
West Memphis, AR 72301

Inquiry Number: 3600478.1w
May 08, 2013

EDR DataMap™ Well Search Report

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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GEOCHECK VERSION 2.1 SUMMARY

FEDERAL DATABASE WELL INFORMATION

MAP ID	WELL ID
1	USGS40000121503
2	USGS40000121494
3	USGS40000121189
4	USGS40000090740
5	USGS40000090701
5	USGS40000090702
6	USGS40000090518
6	USGS40000090519
7	USGS40000090449
8	USGS40000090342

STATE WATER WELL INFORMATION

MAP ID	WELL ID
NO WELLS FOUND	

PUBLIC WATER SUPPLY SYSTEM INFORMATION

NO WELLS FOUND

USGS TOPOGRAPHIC MAP(S)

35090-A2 FLETCHER LAKE, AR TN
35090-B2 WEST MEMPHIS, AR TN

AREA RADON INFORMATION

Federal Area Radon Information for Zip Code: 72301

Number of sites tested: 10

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.570 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	0.100 pCi/L	100%	0%	0%

State Database: AR Radon

Radon Test Results

Total Meas	Mean	Geom mean	Median	Std Dev	Max	% Sites>4 pCi/L	% Sites>20 pCi/L
_____	_____	_____	_____	_____	_____	_____	_____

GEOCHECK VERSION 2.1 SUMMARY

AREA RADON INFORMATION

18 0.5 0.4 0.4 0.4 1.5 0 0

Federal EPA Radon Zone for CRITTENDEN County: 3

Note: Zone 1 indoor average level > 4 pCi/L.
 : Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
 : Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for CRITTENDEN COUNTY, AR

Number of sites tested: 14

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.564 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	0.100 pCi/L	100%	0%	0%

State Database: TN Radon

Radon Test Results

County	Total Sites	Avg	Max	<4 pCi/L	4-10 pCi/L	10-20 pCi/L	20-50 pCi/L	50-100 pCi/L	>100 pCi/L
SHELBY	31	1.1	2.5	31	0	0	0	0	0

Federal EPA Radon Zone for SHELBY County: 3

Note: Zone 1 indoor average level > 4 pCi/L.
 : Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
 : Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for SHELBY COUNTY, TN

Number of sites tested: 117

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	1.025 pCi/L	99%	1%	0%
Living Area - 2nd Floor	0.000 pCi/L	100%	0%	0%
Basement	1.356 pCi/L	100%	0%	0%

GEOCHECK VERSION 2.1

STATE DATABASE WELL INFORMATION

Water Well Information:

Map ID: 1
 Org. Identifier: USGS-AR
 Formal name: USGS Arkansas Water Science Center
 Monloc Identifier: USGS-350843090105901
 Monloc name: 06N09E18BBB1
 Monloc type: Well
 Monloc desc: Not Reported
 Huc code: 08020203 Drainagearea value: Not Reported
 Drainagearea Units: Not Reported Contrib drainagearea: Not Reported
 Contrib drainagearea units: Not Reported Latitude: 35.1453686
 Longitude: -90.1831499 Sourcemap scale: 24000
 Horiz Acc measure: 5 Horiz Acc measure units: seconds
 Horiz Collection method: Interpolated from map
 Horiz coord refsys: NAD83 Vert measure val: 210.00
 Vert measure units: feet Vertacc measure val: 2.5
 Vert accmeasure units: feet
 Vertcollection method: Interpolated from topographic map
 Vert coord refsys: NGVD29 Countrycode: US
 Aquifername: Mississippi embayment aquifer system
 Formation type: Wilcox Group
 Aquifer type: Not Reported
 Construction date: 19300101 Welldepth: 1504
 Welldepth units: ft Wellholeddepth: Not Reported
 Wellholeddepth units: Not Reported

Ground-water levels, Number of Measurements: 12

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1982-03-16	49.56		1981-04-08	56.95	
1980-03-27	58.53		1979-08-17	57.14	
1979-03-13	60.75		1978-03-30	54.55	
1977-03-25	35.95		1976-03-18	31.85	
1975-04-08	31.75		1974-03-26	33.64	
1973-03-13	33.93		1942	-3.00	

Map ID: 2
 Org. Identifier: USGS-AR
 Formal name: USGS Arkansas Water Science Center
 Monloc Identifier: USGS-350835090104801
 Monloc name: 06N09E18BAC1
 Monloc type: Well
 Monloc desc: Not Reported
 Huc code: 08010100 Drainagearea value: Not Reported
 Drainagearea Units: Not Reported Contrib drainagearea: Not Reported
 Contrib drainagearea units: Not Reported Latitude: 35.1431464
 Longitude: -90.1800943 Sourcemap scale: 24000

GEOCHECK VERSION 2.1
STATE DATABASE WELL INFORMATION

Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	210.00
Vert measure units:	feet	Vertacc measure val:	2.5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	Mississippi embayment aquifer system		
Formation type:	500-foot Sand (Memphis Aquifer)		
Aquifer type:	Not Reported		
Construction date:	19220101	Welldepth:	445
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

Map ID:	3		
Org. Identifier:	USGS-AR		
Formal name:	USGS Arkansas Water Science Center		
Monloc Identifier:	USGS-350605090103801		
Monloc name:	06N08E26CDA1		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	08020203	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	35.1014807
Longitude:	-90.1773165	Sourcemap scale:	126720
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	215.00
Vert measure units:	feet	Vertacc measure val:	2.5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	Mississippi River Valley alluvial aquifer		
Formation type:	Quaternary Alluvium		
Aquifer type:	Not Reported		
Construction date:	18991231	Welldepth:	37.9
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel

1957-09-30	13.54	

Map ID: 4

GEOCHECK VERSION 2.1
STATE DATABASE WELL INFORMATION

Org. Identifier:	USGS-AR		
Formal name:	USGS Arkansas Water Science Center		
Monloc Identifier:	AR008-350604090121001		
Monloc name:	05N08E03DB1		
Monloc type:	Well		
Monloc desc:	57379		
Huc code:	08020203	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	35.1012031
Longitude:	-90.2028726	Sourcemap scale:	24000
Horiz Acc measure:	10	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	Not Reported
Vert measure units:	Not Reported	Vertacc measure val:	Not Reported
Vert accmeasure units:	Not Reported		
Vertcollection method:	Not Reported		
Vert coord refsys:	Not Reported	Countrycode:	US
Aquifername:	Mississippi River Valley alluvial aquifer		
Formation type:	Quaternary Alluvium		
Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	75
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

Map ID:	5		
Org. Identifier:	USGS-AR		
Formal name:	USGS Arkansas Water Science Center		
Monloc Identifier:	AR008-350558090122501		
Monloc name:	06N08E35AA1		
Monloc type:	Well		
Monloc desc:	56548		
Huc code:	08020203	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	35.0995365
Longitude:	-90.2070393	Sourcemap scale:	24000
Horiz Acc measure:	10	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	Not Reported
Vert measure units:	Not Reported	Vertacc measure val:	Not Reported
Vert accmeasure units:	Not Reported		
Vertcollection method:	Not Reported		
Vert coord refsys:	Not Reported	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	125
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

GEOCHECK VERSION 2.1
STATE DATABASE WELL INFORMATION

Map ID:	5		
Org. Identifier:	USGS-AR		
Formal name:	USGS Arkansas Water Science Center		
Monloc Identifier:	AR008-350558090122502		
Monloc name:	06N08E35AA2		
Monloc type:	Well		
Monloc desc:	13759 BOLLINGER BROS		
Huc code:	08020203	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	35.0995365
Longitude:	-90.2070393	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	Not Reported
Vert measure units:	Not Reported	Vertacc measure val:	Not Reported
Vert accmeasure units:	Not Reported		
Vertcollection method:	Not Reported		
Vert coord refsys:	Not Reported	Countrycode:	US
Aquifername:	Mississippi River Valley alluvial aquifer		
Formation type:	Quaternary Alluvium		
Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	125
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

Map ID:	6		
Org. Identifier:	USGS-AR		
Formal name:	USGS Arkansas Water Science Center		
Monloc Identifier:	AR008-350532090122801		
Monloc name:	06N08E35DA1		
Monloc type:	Well		
Monloc desc:	56549		
Huc code:	08020203	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	35.0923145
Longitude:	-90.2078727	Sourcemap scale:	24000
Horiz Acc measure:	10	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	Not Reported
Vert measure units:	Not Reported	Vertacc measure val:	Not Reported
Vert accmeasure units:	Not Reported		
Vertcollection method:	Not Reported		
Vert coord refsys:	Not Reported	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	125
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

GEOCHECK VERSION 2.1
STATE DATABASE WELL INFORMATION

Map ID: 6
 Org. Identifier: USGS-AR
 Formal name: USGS Arkansas Water Science Center
 Monloc Identifier: AR008-350532090122802
 Monloc name: 06N08E35DA2
 Monloc type: Well
 Monloc desc: 13759 BOLLINGER BROS
 Huc code: 08020203
 Drainagearea Units: Not Reported
 Contrib drainagearea units: Not Reported
 Longitude: -90.2078727
 Horiz Acc measure: 1
 Horiz Collection method: Interpolated from map
 Horiz coord refsys: NAD83
 Vert measure units: Not Reported
 Vert accmeasure units: Not Reported
 Vertcollection method: Not Reported
 Vert coord refsys: Not Reported
 Aquifername: Mississippi River Valley alluvial aquifer
 Formation type: Quaternary Alluvium
 Aquifer type: Not Reported
 Construction date: Not Reported
 Welldepth units: ft
 Wellholedepth units: Not Reported

Drainagearea value: Not Reported
 Contrib drainagearea: Not Reported
 Latitude: 35.0923145
 Sourcemap scale: 24000
 Horiz Acc measure units: seconds
 Vert measure val: Not Reported
 Vertacc measure val: Not Reported
 Countrycode: US
 Welldepth: 125
 Wellholedepth: Not Reported

Ground-water levels, Number of Measurements: 0

Map ID: 7
 Org. Identifier: USGS-AR
 Formal name: USGS Arkansas Water Science Center
 Monloc Identifier: AR008-350519090122701
 Monloc name: 05N08E10AD1
 Monloc type: Well
 Monloc desc: 9834 MILLER FARMS
 Huc code: 08020203
 Drainagearea Units: Not Reported
 Contrib drainagearea units: Not Reported
 Longitude: -90.2075949
 Horiz Acc measure: 1
 Horiz Collection method: Interpolated from map
 Horiz coord refsys: NAD83
 Vert measure units: Not Reported
 Vert accmeasure units: Not Reported
 Vertcollection method: Not Reported
 Vert coord refsys: Not Reported
 Aquifername: Mississippi River Valley alluvial aquifer
 Formation type: Quaternary Alluvium
 Aquifer type: Not Reported
 Construction date: Not Reported
 Welldepth units: ft
 Wellholedepth units: Not Reported

Drainagearea value: Not Reported
 Contrib drainagearea: Not Reported
 Latitude: 35.0887035
 Sourcemap scale: 24000
 Horiz Acc measure units: seconds
 Vert measure val: Not Reported
 Vertacc measure val: Not Reported
 Countrycode: US
 Welldepth: 110
 Wellholedepth: Not Reported

Ground-water levels, Number of Measurements: 0

GEOCHECK VERSION 2.1
STATE DATABASE WELL INFORMATION

Map ID:	8		
Org. Identifier:	USGS-AR		
Formal name:	USGS Arkansas Water Science Center		
Monloc Identifier:	AR008-350457090130001		
Monloc name:	05N08E02BD1		
Monloc type:	Well		
Monloc desc:	9834 MILLER FARMS		
Huc code:	08020203	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	35.0825926
Longitude:	-90.2167618	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	Not Reported
Vert measure units:	Not Reported	Vertacc measure val:	Not Reported
Vert accmeasure units:	Not Reported		
Vertcollection method:	Not Reported		
Vert coord refsys:	Not Reported	Countrycode:	US
Aquifername:	Mississippi River Valley alluvial aquifer		
Formation type:	Quaternary Alluvium		
Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	100
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

ARKANSAS GOVERNMENT WELL RECORDS SEARCHED

PWS: Public Water Systems

Source: EPA/Office of Drinking Water

Telephone: 202-564-3750

Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data

Source: EPA/Office of Drinking Water

Telephone: 202-564-3750

Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

State Database: AR Radon

Source: Department of Health

Telephone: 501-661-2301

Radon Test Results

Area Radon Information

Source: USGS

Telephone: 703-356-4020

The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones

Source: EPA

Telephone: 703-356-4020

Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

USGS Water Wells: USGS National Water Inventory System (NWIS)

This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

State Wetlands Data: Wetlands, Swamps, or Marshes

Source: Center for Advanced Spatial Technologies, University of Arkansas

Telephone: 605-594-6933

Arkansas Community Public Water Systems

Source: Health Department

Telephone: 501-661-2623

Oil and Gas Well Database

Source: Arkansas Geographic Information Office

Telephone: 501-682-2929

Oil and gas well locations.

STREET AND ADDRESS INFORMATION

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