Maumelle Champs Site

Certified November 2019

Maumelle
Arkansas

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General Information

Site Name:	Maumelle Champs Site
Site Address:	Intersection of Champs Blvd. and Jackie Burnett Dr.
Owner Contact Name:	Bryan Austin, HEA Properties, LLC
Economic Development Organization Contact Information:	Judy Keller, City of Maumelle 500 Edgewood Drive, Suite 590 Maumelle, AR 72113 Office: 501-851-2500 Mobile: 501-240-9888 Email: judy@maumelle.org
Site Size:	121 acres
Site Control Document:	Site is owned by HEA Properties, LLC and optioned to the City of Maumelle; expiration December 31, 2024.
Aerial Site Location Map	**See attachment G-1 for detail.**

Entergy BUSINESS DEVELOPMENT ARKANSAS

Maumelle Champs Site

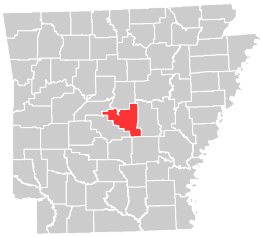
Aerial

425 West Capitol Ave, Suite 2700
Little Rock, AR 72201

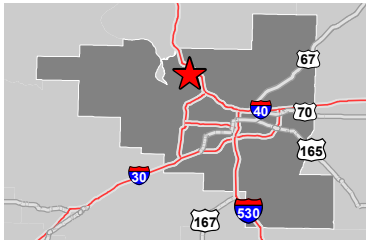
Phone: 1-888-301-5861

goentergy.com/ar

PULASKI COUNTY



VICINITY MAP



Site Boundary

Railroad

NOTE

These drawings are provided merely to assist in economic development efforts. The Entergy Companies make no representations or warranties whatsoever regarding the accuracy or completeness of any information contained herein nor the condition or suitability of any properties. Users should direct inquiries about any property to the listing broker for that property.

SOURCE

Survey: Dimensions rounded from Survey of 121.482 acres in T3N R13W City fo Maumelle, Pulaski County, Arkansas by The Holloway Firm, Inc. , Dated 4/22/2005

Created by: RPG
Date: 01/2019

0 500 1,000 Feet

0 120 240 Meters

N

Site Characteristics

Acreage:	121 acres **See proposed building layouts behind tab S-1**.
Dimensions:	2170’ x 2888’ x 1729’ x 2387’
Previous Use:	Wooded
Fire Rating:	ISO 2
Distance to Fire Station:	1.4 miles
Distance to Nearest Interstate:	2.5 miles to Interstate 40
Distance to Nearest 4-lane Hwy:	1.4 miles to U.S. Hwy 100
Access Points to Hwy/Interstate:	Exit 12 on Interstate 430 and Exit 142 on Interstate 40
Road Frontage, Type and Weight Capacities:	Champs Blvd. (city street, 33’ wide with drainage) 68,000 lb. weight restriction
Distance to Nearest Rail:	0.3 miles to the Union Pacific rail spur
Distance to Nearest Commercial Airport:	20.4 miles to Clinton National Airport
Distance to Nearest Port Facility:	23.1 miles to the Little Rock Port Authority
Distance from Retail or Central Business District:	2 miles to Maumelle Central Business District
Site Type:	Industrial site
Site Survey:	**See attached survey behind tab S-1**. The site is tract 6.

-N-

GRAPHIC SCALE 1"=200'

0 200 400

BASIS OF BEARING
STATE PLANE COORDINATES
ARKANSAS NORTH ZONE NAD-83

SURVEY OF 121.482 ACRES IN T-3-N, R-13-W

MAUMELLE, PULASKI COUNTY, ARKANSAS
APRIL 25, 2005

LEGAL DESCRIPTION

Legal description for the lands lying in the North 1/2 Section 27, Township 3 North, Range 13 West, City of Maumelle, Pulaski County, Arkansas more particularly described as follows:

Commencing at the Southwest Corner of said Section 27, thence along the West line of said Section 27 North 01 degree 00 minutes 15 seconds East 3126.26 feet; thence leaving said West line South 88 degrees 59 minutes 45 seconds East 200.00 feet to the point of beginning said point being on the proposed center line of the extension of Champs Roadway; thence North 01 degree 00 minutes 15 seconds East 40.00 feet to what would be the proposed North right-of-way line of said proposed roadway; thence along said North right-of-way line South 88 degrees 59 minutes 45 seconds East 1299.73 feet to a point which is the Southeast corner of Warmack Addition; thence along the East line of Warmack Addition North 01 degree 00 minutes 15 seconds East 2170.94 feet to a point on the North line of said Section 27; thence along said North line South 88 degrees 41 minutes 00 seconds East 2888.42 feet to a point on the South & West right-of-way line of the Union Pacific Railroad; thence along said right-of-way line South 50 degrees 47 minutes 35 seconds East 328.27 feet to a point on the buffer of the White Oak Bayou Wetland Conservatory; thence along said buffer line according to the following bearings and distances:

South 02 degrees 01 minute 46 seconds West 306.43 feet; thence South 33 degrees 15 minutes 22 seconds West 78.57 feet; thence South 02 degrees 52 minutes 03 seconds West 333.46 feet; thence South 29 degrees 47 minutes 45 seconds East 75.00 feet; thence South 04 degrees 10 minutes 44 seconds West 212.69 feet; thence South 26 degrees 11 minutes 18 seconds West 192.46 feet; thence South 05 degrees 25 minutes 41 seconds West 184.26 feet; thence South 31 degrees 01 minute 24 seconds West 21.77 feet;

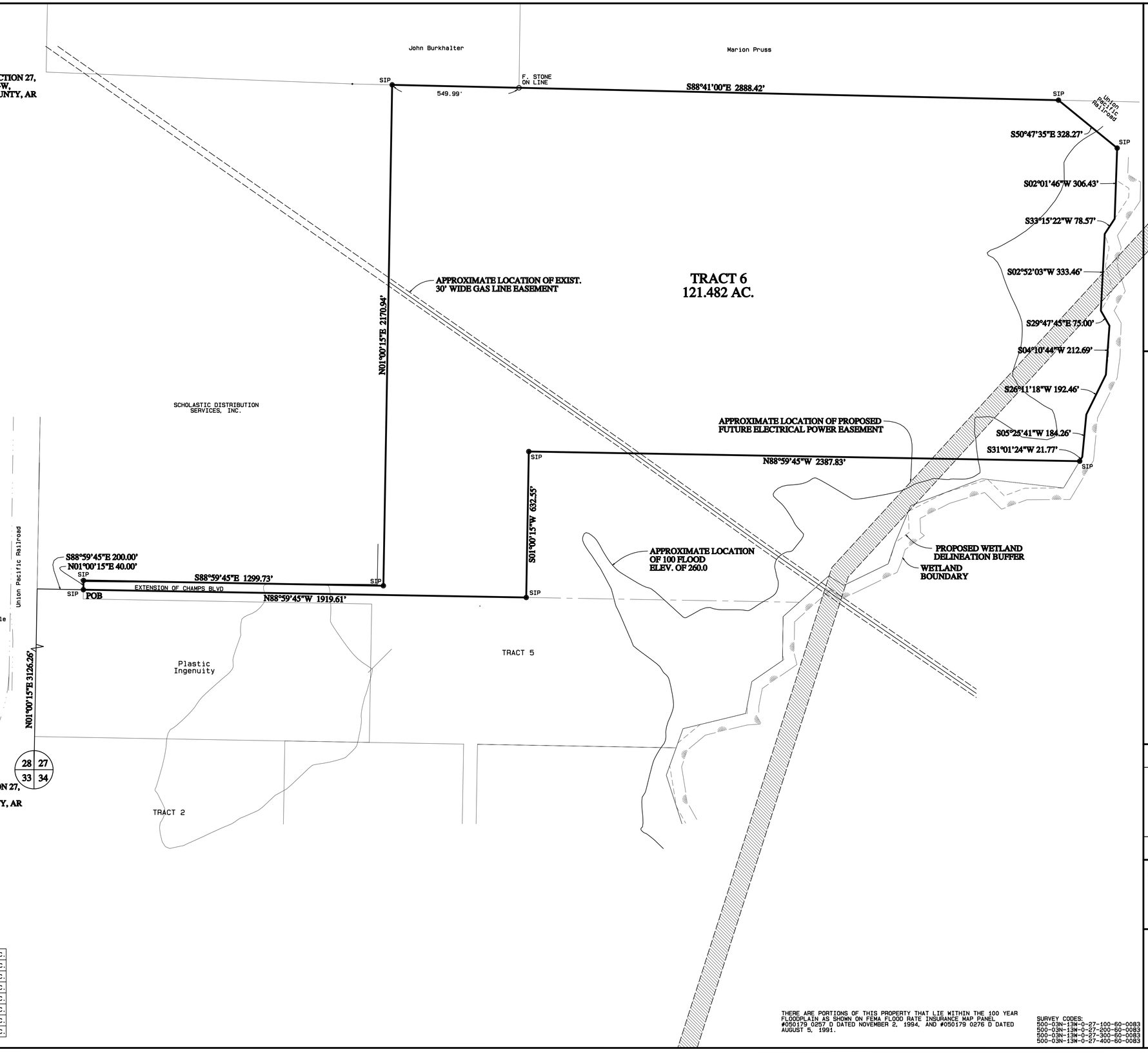
thence leaving said buffer of White Oak Bayou Wetland Conservation Area North 88 degrees 59 minutes 45 seconds West 2387.83 feet; thence South 01 degree 00 minutes 15 seconds West 632.55 feet; thence North 88 degrees 59 minutes 45 seconds West 1919.61 feet to the point of beginning containing 121.482 acres more or less.

CERTIFICATE OF SURVEYING ACCURACY

The undersigned hereby certifies to the parties below that this survey (i) was made on the ground as per the field notes shown hereon and correctly shows the boundary lines and dimensions and area of the land indicated hereon and each individual parcel thereof indicated hereon, (ii) correctly shows the location of all buildings, structures, other improvements and visible items on the subject Property, (iii) correctly shows the location and dimensions of all alleys, streets, road, rights-of-way, easements, building lines, and other matters of record of which the undersigned has been advised affecting the subject property according to the legal description in such easements and other matters (with instrument, book, and page number indicated); and, except as shown, there are no visible easements, building lines, rights-of-way, party walls, or conflicts; and there are no visible encroachments on adjoining premises, streets, or alleys by any of said buildings, structures or other improvements, and there are no visible encroachments on the subject Property by buildings, structures, or other improvements situated on adjoining premises; and the existence from the nearest intersecting street and road is as shown hereon, and (iv) no part of the Property is located within an area known as a "special flood hazard area" as defined in the Flood Disaster Protection Act of 1973, as amended, except that portions of the Property shown hereon lie within Special Flood Hazard Area Zone A4 as shown on the Nation Flood Insurance Rate Map 0501790257D, Revised 11/02/1994.

FOR THE USE AND BENEFIT OF: BancorpSouth Bank, First American Title Insurance Company, and Maumelle Land Development, LLC

Robert D. Holloway
Registered Professional Land Surveyor,
State of Arkansas
No.83



LEGEND	
FOUND IRON PIN	FIP
SET IRON PIN - 1/2"REBAR WITH CAP	SIP
CONCRETE MONUMENT	CM
CENTERLINE OF ROAD	
RIGHT OF WAY	
DELINEATION LINES	
FENCE LINES	
WETLAND BUFFER	
WETLAND BOUNDARY	

ACREAGE PER 40

SW 1/4, NW 1/4, SEC.27, T-3-N, R-13-W	1.028 AC.
NE 1/4, NW 1/4, SEC.27, T-3-N, R-13-W	35.095 AC.
SE 1/4, NW 1/4, SEC.27, T-3-N, R-13-W	15.531 AC.
NW 1/4, NE 1/4, SEC.27, T-3-N, R-13-W	40.726 AC.
SW 1/4, NE 1/4, SEC.27, T-3-N, R-13-W	6.924 AC.
NW 1/4, NE 1/4, SEC.27, T-3-N, R-13-W	19.394 AC.
SW 1/4, NE 1/4, SEC.27, T-3-N, R-13-W	2.783 AC.
TOTAL	121.482 AC.

THERE ARE PORTIONS OF THIS PROPERTY THAT LIE WITHIN THE 100 YEAR FLOODPLAIN AS SHOWN ON FEMA FLOOD RATE INSURANCE MAP PANEL #050179 0257 D DATED NOVEMBER 2, 1994, AND #050179 0276 D DATED AUGUST 5, 1991.

SURVEY CODES:
500-03N-13W-0-27-100-60-0083
500-03N-13W-0-27-200-60-0083
500-03N-13W-0-27-300-60-0083
500-03N-13W-0-27-400-60-0083

The Holloway Firm, Inc.
ENVIRONMENTAL AND CIVIL DESIGN
200 Casey Drive
Maumelle, Arkansas 72113
(501) 851-8806

Survey of 121.482 acres in
Township 3 North, Range 13 West, City of Maumelle,
Pulaski County, Arkansas
For: Marc Yelenich

date	revisions	int.
6/3/05	REVISED LEGAL DESCRIP.	BJM

DWG# Survey #1.pro

dwg by: MDR
checked: RDH
date: 4/22/05
scale: noted

Entergy BUSINESS DEVELOPMENT ARKANSAS

Maumelle Champs Site

Proposed Building Layout 1

425 West Capitol Ave, Suite 2700
Little Rock, AR 72201

Phone: 1-888-301-5861

goentergy.com/ar

PULASKI COUNTY

VICINITY MAP

LEGEND

- Site Boundary
- Archaelogical Site
- Wetlands
- Wetlands (under mitigation)
- Streams (under mitigation)

NOTE

These drawings are provided merely to assist in economic development efforts. The Entergy Companies make no representations or warranties whatsoever regarding the accuracy or completeness of any information contained herein nor the condition or suitability of any properties. Users should direct inquiries about any property to the listing broker for that property.

SOURCE

Cultural Resources: Panamerican Consultants, Inc, Report date April 23, 2019.
Jurisdictional Determination: GBM and Associates, Report date April 25, 2019.

Created by: RPG
Date: 05/2019

0 500 1,000 Feet

0 120 240 Meters

N

Entergy BUSINESS DEVELOPMENT ARKANSAS

Maumelle Champs Site

Proposed Building Layout 2

425 West Capitol Ave, Suite 2700
Little Rock, AR 72201

Phone: 1-888-301-5861

PULASKI COUNTY

VICINITY MAP

LEGEND

- Site Boundary
- Archaelogical Site
- Wetlands
- Wetlands (under mitigation)
- Streams (under mitigation)

NOTE

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Created by: RPG
Date: 05/2019

0 500 1,000 Feet

0 120 240 Meters

N

Cost Estimates and Timing

Cost per Acre:	$20,000 / acre
Special Timing Considerations:	Special timing and considerations should be given for gas line movement, cultural survey and wetland mitigation. Site preparation for development will vary based on building and layout.
Clearing Cost:	**See estimate from ETC behind tab C-1.**
Grading Cost:	**See estimate from ETC behind tab C-1.**
Cut/Fill Cost:	**See estimate from ETC behind tab C-1.**
Utility Extension or Upgrade Costs:	**See email from CenterPoint behind tab C-1** for details regarding estimates and proposed relocation plan for gas line.

ETC Construction, Inc.

A DIVISION OF ENVIRONMENTAL TECHNICAL CONSULTANTS, INC.

DESIGN BUILD ▪ CONSTRUCTION MANAGERS ▪ CONTRACTORS

▪ 1510 SOUTH BROADWAY, LITTLE ROCK, AR 72202 ▪ PHONE 501-375-1786 ▪ FAX 501-375-1277 ▪

November 7, 2018

Ms. Judy Keller
Director of Community & Economic Development
City of Maumelle
550 Edgewood Drive
Maumelle, AR 72113

Re: Site Development Probable Cost
Maumelle Champs Site

Dear Judy,

At your request, I offer the following estimated site development cost for the 121 acres located at Champs Blvd in Maumelle, Arkansas.

Site Clearing and Grubbing: $180,000.00 assuming 20 acres would need to be cleared.

Earthwork (Cut, Fill & Grading): The cost of cutting soils in this geographic region is generally $6.50 per cubic yard and assumes no major rock excavation. The cost of fill in the region is generally $8.50 per cubic yard. The cost of undercutting and backfilling weak soils in the region is generally $16.00 per cubic yard.

Utility Extensions or Upgrade Cost: $322,000 for drainage and detention, water main and distribution, and sewer collection.

Any cost related to project specific electric power, gas, or internet service is not included in this estimate.

Disclaimer: This estimate should be used for demonstration purposes only and not a guarantee of future pricing.

Sincerely,

Mizan Rahman, P.E.
Principal Engineer

White, Tandee M

From: Judy Keller <Judy@maumelle.org>
Sent: Tuesday, May 14, 2019 3:05 PM
To: Murphy, Christopher
Subject: FW: Maumelle Site Request-moving of gas lines
Attachments: SKETCH_Scholastic_Property_Maumelle.pdf

Importance: High

EXTERNAL SENDER. DO NOT click links, or open attachments, if sender is unknown, or the message seems suspicious in any way. DO NOT provide your user ID or password.

FYI,

Please see the attached sketch for the private relocation request for our 4" plastic main (located in an easement) in Maumelle. Our plastic main is going through the middle of the properties, see the sketch for a breakdown. Below are the high level estimates, excluding the costs outlined in the assumption section.

Cost Breakdown:

- Lot 44.24 $25K
- Lot 120 $50K
- Both $70K

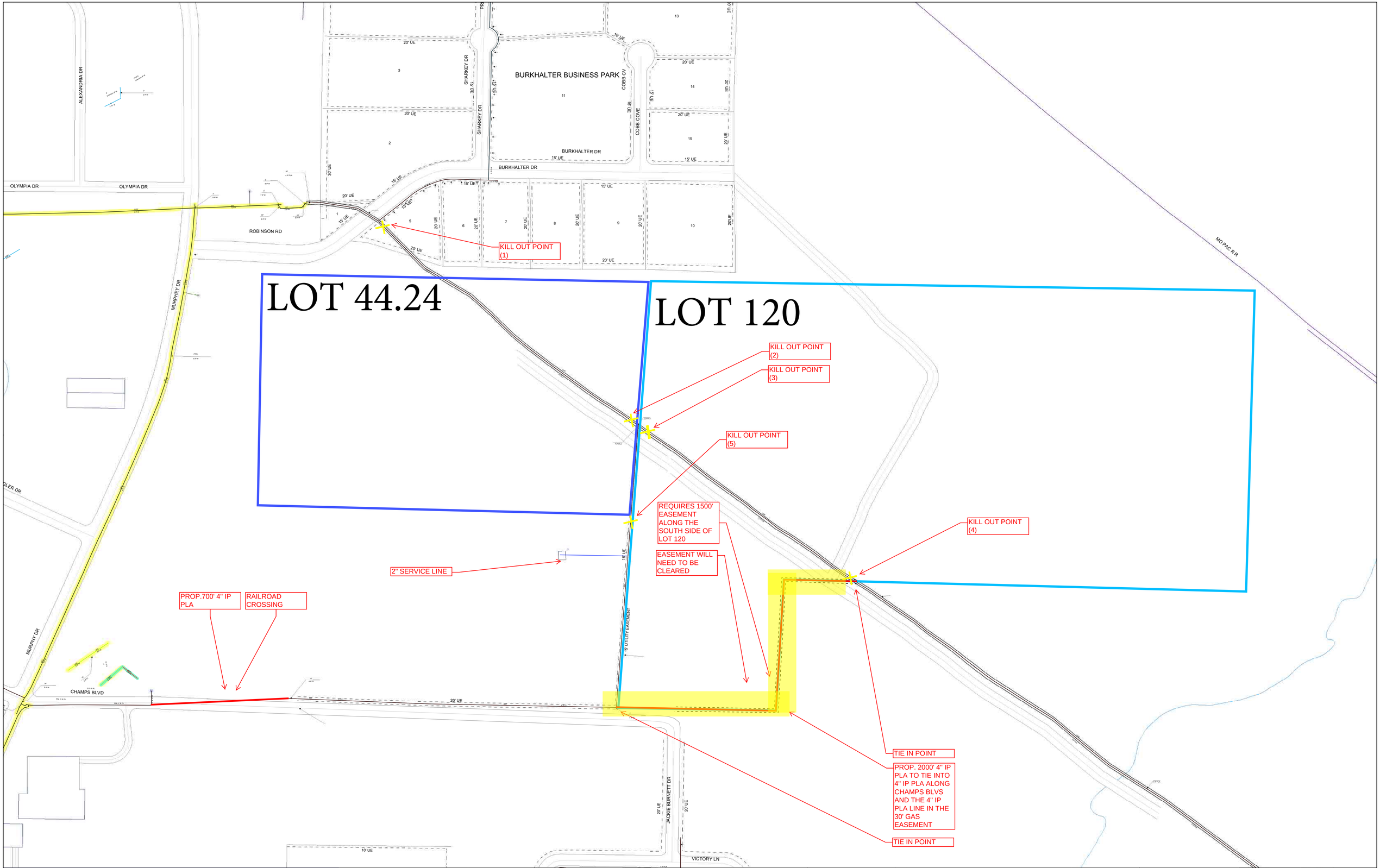
Major Assumptions – Estimate Excludes:

- Obtaining an easement in the indicated area
- Clearing the ROW/ easement
- Getting railroad permit
- Environmental permitting

Thanks,

Ben Thomson, EI
Engineer I

Southern Gas Operations | Arkansas/Oklahoma Region
401 W. Capitol Ave, Suite 600 | Little Rock, AR 72201
Direct: 501-377-4738 | Mobile: 501-519-5560
benjamin.thomson@centerpointenergy.com



THIS MAP SHOWS GAS FACILITIES IN APPROXIMATE LOCATIONS. CONTRACTORS AND ENGINEERS SHALL DETERMINE EXACT LOCATIONS BEFORE EXCAVATING. CONTRACTORS AND ENGINEERS ARE FULLY RESPONSIBLE FOR ANY DAMAGES TO GAS FACILITIES RESULTING FROM THEIR EXCAVATIONS.

STATE:	COUNTY:	CITY:	SCALE TEXT:	SCALE BAR:	FACET:	INVENTORY MAP #:	NORTH	DATE:	PRINTED BY:
Arkansas	Pulaski	Maumelle	1" : 198 '	0 0.01 0.02 0.03 0.04 Miles	F11972114	5319D		5/10/2018	i229280

CenterPoint Energy

Environmental

Wetlands Screening: GBMc completed a Waters of the U.S. (WOUS) screening on November 20, 2018. Following the desktop analysis and site visit, GBMc identified two streams and three areas in the central part of the property that exhibited wetland diagnostic characteristics.

GBMc conducted a jurisdictional determination (JD) site visit on April 12th to further identify and delineate all possible Waters of the U.S. (WOUS) within this property boundary. The letter and full report dated April 25, 2019 is included within the application for Section 404 Preconstruction Notice, which was filed on August 30, 2019.

See E-1 for desktop review, USACE Section 404 Preconstruction Notice and jurisdictional determination.

Floodplain Delineation: The site is located in FEMA Zone X. The southeast corner of the property is adjacent to White Oak Bayou.

See attachment E-2 for detail.

Historical and Cultural Review: The Arkansas Historical Preservation Program (AHPP) provided a report of web-based cultural resource data and soils and determined that there are 5 known cultural resources located within or near the property. Panamerican Consultants, an archeological group based in Memphis, Tennessee, conducted a phase 2 survey and narrowed the areas of concern within the buildable acreage to one homestead (3PU727) and one cemetery (3PU692). Each area has been flagged and mapped in GIS shape files with a 30 ft. perimeter buffer. Each area should be avoided in order to not trigger a federal nexus or further mitigation.

See attachment E-3 for detail and mapping. See also the Building Layout maps behind S-1 or Maps tabs.

Endangered Species: Endangered species for the site and surrounding area was accessed by the United States Fish and Wildlife Service on September 21, 2018. A total of eight species were identified as potentially being in the surrounding but their habitat has not been observed at or near the site.

See attachment E-4 for detail.

Environmental Phase I (and Phase II if required): Anderson Engineering Consultants conducted a Phase I Environmental Site Assessment of the 121-acre site in October 2018.

Based on the scope of the assessment, there were no recognized environmental conditions (RECs), no controlled recognized environmental conditions (CRECs), and no historical environmental conditions (HRECs) identified.

See attachment E-5 for detail.

Stormwater Retention Plan: **See attachment E-6 for detail regarding city codes pertaining to stormwater.**

219 Brown Lane Bryant, AR 72022 (501) 847-7077 (501) 847-7943 fax

November 20, 2018

Bryan Austin
HEA Properties, LLC
3201 Club Manor Drive, Suite A
Maumelle, AR 72113

Re: Waters of the U.S. Screen – Champs Boulevard Property
GBMc No. 3028-18-301

Dear Mr. Austin,

At your request GBM^c & Associates completed a Waters of the U.S. (WOUS) screen of a property located near Champs Boulevard in Maumelle, AR (see attached map). The property consists of approximately 120 acres and is predominately forested. The evaluation was completed to determine if the property contained waters (wetlands, streams, or ponds) that may likely be considered jurisdictional (regulated) waters by the United Sates Army Corps of Engineers (USACE).

Prior to a site visit, the project site was assessed from the desktop using aerial photographs, soil survey maps, topographic maps, White Oak Bayou maps, and National Wetlands Inventory (NWI) Maps for the area. The desktop evaluation was used to determine areas potentially containing WOUS as an aid to the site visit for the verification of such waters. Desktop indicators of WOUS primarily include color characteristics of wetlands on aerial photographs, mapped hydric soils on the Natural Resources Conservation Service (NRCS) Web Soil Survey, areas identified as wetlands on NWI maps, streams marked on topographic maps, and topographic features indicating drainage pathways.

A site visit to the property was completed on November 9, 2018. The desktop assessment and site visit identified two streams on the property that would likely be considered jurisdictional by the USACE (see attached map). Both streams were assessed in multiple locations in the field and exhibited ordinary high water marks (OHWM) throughout. Four other streams/drainages were identified on the property during the site visit. These areas did not exhibit continuous OHWMs where they were assessed and would likely not be considered jurisdictional by the USACE.

The desktop assessment did not indicate a strong likelihood of wetlands on the property. The southeastern corner of the property is adjacent to the White Oak Bayou wetland complex but does not appear to include any of the wetlands. A total of five areas were noted on the property during the site visit that exhibited multiple wetland diagnostic characteristics (hydrophytic vegetation, hydrology, or hydric soils) outlined in the USACE Wetland Delineation Manual (1987 Corps Manual) and the Regional Supplement to the USACE Wetland Delineation Manual: Eastern Mountain and Piedmont. These areas all had surface water and/or soil saturation to the surface during the site visit (hydrology indicators) and exhibited likely dominant hydrophytic vegetation. All of the five areas appeared to be relatively small in size. Boundaries of these areas are approximate, they were not delineated, and could extend out in any direction from the area marked on the attached map. Two of the areas were along the boundaries of the property and

three were in the central area of the property (see attached map). The three areas in the central portion of the property have potential for regulation under Section 404 of the Clean Water Act due to their proximity and potential connectivity to the stream in the area.

This WOUS Screen does not qualify as a Jurisdictional Determination (JD) according to guidelines in the 1987 Corps Manual. In order to identify and delineate all potential WOUS areas on the property, a detailed JD field evaluation would have to be completed. Should you have any questions regarding this letter or about conditions of the property during the site visit, please do not hesitate to contact me or Travis Gasnier at (501) 847-7077.

Respectfully submitted,
GBM^{c} & ASSOCIATES

Greg Phillips
Principal/Senior Scientist

Enclosures

300
FEET

Note:

Wetland boundaries on map denote general location and do not represent actual wetland boundaries.

Property Boundary
Potential Wetland Areas
Likely Jurisdictional Streams

NO	DATE	REVISION	BY	CK.	APPR.

DESIGNED BY	TLG
CHECKED BY	TLG
APPR. BY	TLG
DRAWN BY	ALB

GBMc
Strategic Environmental Services
219 Brown Lane
Bryant, Arkansas 72022

SHEET TITLE
WOUS SCREEN
AERIAL MAP

JOB NAME
WOUS SCREEN
CHAMPS BOULEVARD PROPERTY
HEA PROPERTIES, LLC.
PULASKI COUNTY ARKANSAS

PROJECT NO.	3028-18-301
DATE	11/20/2018
SCALE	SHOWN
REV. NO	
DWG. NO.	S1

Champs Site– Maumelle, AR
USACE Section 404
Pre-construction Notice

Revised October 1, 2019

August 30, 2019

GBMc & ASSOCIATES
STRATEGIC ENVIRONMENTAL CONSULTING

Champs Site – Maumelle, AR
USACE Section 404 Pre-construction Notice

Prepared for:

HEA Properties, LLC
3201 Club Manor Drive, Suite A
Maumelle, AR 72113

Prepared by:

GBM^{c} & Associates
219 Brown Lane
Bryant, AR 72022

Revised - October 1, 2019
August 30, 2019

Champs Site – Maumelle, AR
USACE Section 404 Pre-construction Notice

Prepared for:

HEA Properties, LLC
3201 Club Manor Drive, Suite A
Maumelle, AR 72113

Prepared by:

GBM^{c} & Associates
219 Brown Lane
Bryant, AR 72022

Revised - October 1, 2019
August 30, 2019

U.S. ARMY CORPS OF ENGINEERS

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT

33 CFR 325. The proponent agency is CECW-CO-R.

Form Approved - OMB No. 0710-0003 Expires: 30-SEPTEMBER-2015

Public reporting for this collection of information is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of the collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters, Executive Services and Communications Directorate, Information Management Division and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and/or instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME	8. AUTHORIZED AGENT'S NAME AND TITLE (agent is not required)
First – Bryan Middle - A Last – Austin	First - Greg Middle - L Last – Phillips
Company – HEA Properties, LLC	Company – GBMc & Associates
E-mail Address – bbgaustin@aol.com	E-mail Address – gphillips@gbmcassoc.com
6. APPLICANT'S ADDRESS:	9. AGENT'S ADDRESS:
Address- 3201 Club Manor Drive, Suite A	Address- 219 Brown Lane
City – Maumelle State - AR Zip - 72113 Country – United States	City - Bryant State - AR Zip -72022 Country - USA
7. APPLICANT'S PHONE NOs. w/AREA CODE	10. AGENTS PHONE NOs. w/AREA CODE
a. Residence- b. Business c. Fax	a. Residence b. Business 501-847-7077 c. Fax

STATEMENT OF AUTHORIZATION

11. I hereby authorize, GBMc & Associates to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

SIGNATURE OF APPLICANT 9-9-19 DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)
Champs Site

13. NAME OF WATERBODY, IF KNOWN (if applicable)	14. PROJECT STREET ADDRESS (if applicable)
Five unnamed tributaries to White Oak Bayou and three wetlands (in White Oak Bayou HUC)	Address: n/a
15. LOCATION OF PROJECT Latitude: °N 34.870340° Longitude: °W -92.380727°	City – Maumelle State- AR Zip- 72113

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)

State Tax Parcel ID

Section – 27 Township – 3N Range – 13W

17. DIRECTIONS TO THE SITE

From Little Rock, take Exit 12 on I-430 North towards Fort Smith, turn left onto Maumelle Blvd toward Maumelle, drive 5 miles and then turn right onto Carnahan Dr, in 0.5 miles turn left onto Murphy Dr, and then in 0.6 miles turn right onto Champs Blvd.

18. Nature of Activity (Description of project, include all features)

The project work will involve grading and filling the site in association with commercial development in Maumelle, Arkansas. The site will encompass approximately 121 acres that has previously been maintained as forest. Mechanized land clearing and grading will take place using suitable equipment (excavators, dump trucks, bulldozers, etc.). A total of 0.49 acres of stream and wetland impacts will be impacted by fill from grading activities. These impacts include approximately 3,438 ft of ephemeral stream (0.20 acres) and 0.29 acres of wetlands. Implementation of erosion and sediment controls at the site will minimize or eliminate impacts, other than the planned fill to the receiving stream, and will protect water quality in downstream waters. The proposed work will be completed on land owned by the HEA Properties LLC. Please refer to the site map in Appendix A for existing tributary routes, wetland locations and proposed impacted areas. Mitigation Bank credits for stream impacts were acquired under previous USACE Permit No. 18754 in 2005, when a larger planned development was permitted but never constructed. Impacts to the three small wetlands will be mitigated as permittee responsible mitigation.

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

The purpose of the project is to construct a commercial development site in Maumelle, Arkansas.

USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

Construction of the site will impact five ephemeral streams and three wetlands. Fill material (mostly soil) will be placed in these waterbodies to accommodate the plans for the commercial development. A construction site storm water pollution prevention plan will be implemented to prevent and minimize transport to downstream waters not receiving fill materials.

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:

Type – Clean Fill	Concrete Culvert
80.1 CY	

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)
Acres Wetland Impacts – A total of 0.29 acres will be filled
or

Linear Feet Stream Impacts – A total of 3,438 feet of ephemeral stream (0.20 acres) to be filled

23. Description of Avoidance, Minimization, and Compensation (see instructions)

Mitigation Bank credits for stream impacts were purchased under previous USACE Permit No. 18754 in 2005, when a larger planned development was permitted but never constructed. That permit authorized and mitigated 8,905 feet of stream. This new application is for approximately 3,438 feet of ephemeral stream impact. The credits from Permit No. 18754 are more than sufficient. Impacts were minimized during the planning phase in order to be authorized under a Nationwide Permit (likely NWP 39). The site will be laid out in such a way to avoid impacts to two wetlands (W-4 and W-5) along the eastern portion of the property. Compensation for impacts to wetlands W-1, W-2 and W-3 will be mitigated from both on-site and off-site (nearby) in-kind locations. Refer to the project Mitigation Plan in Appendix D for additional impact site and mitigation information.

24. Is Any Portion of the Work Already Complete? ☐ Yes ☒ No IF YES, DESCRIBE THE COMPLETED WORK

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).

a. Address- Rush Hal Development LLC; PO Box 10482

City – Conway State – AR Zip - 72034

b. Address- Glen Una Holdings, LLC 104 Champs Blvd

City – Maumelle State – AR Zip - 72113

c. Address- Scholastic Distribution Services Inc; 100 Plaza Dr

City – Secaucus State - NJ Zip- 07094

d. Address-

City – State – Zip -

e. Address-

City - State - Zip -

26. List of Other Certificates or Approvals/Denials received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED
USFWS	T&E Species List	04ER10-219SLI-048	2019-08-21	N/A	

27. Application is hereby made for permit or permits to authorize the work described in this application. I certify that this information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

9-9-19 9/10/19

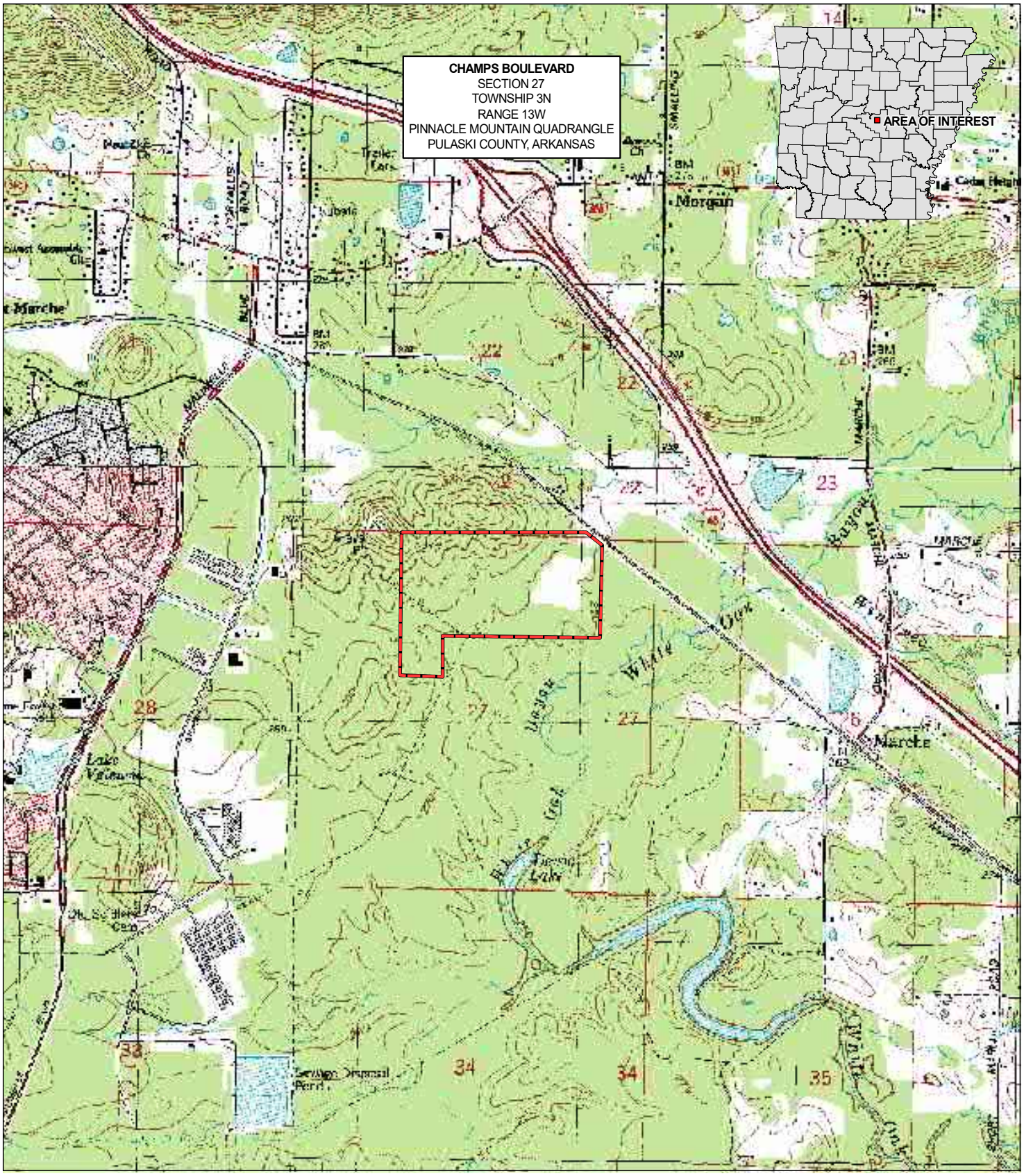
SIGNATURE OF APPLICANT DATE SIGNATURE OF AGENT DATE

The Application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

Appendix A

Figures



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PROPERTY BOUNDARY

3028.000.G1

FIGURE 1:
TOPOGRAPHIC LOCATION MAP

CITY OF MAUMELLE
PULASKI, ARKANSAS

Approved by:	WHG	GBMc STRATEGIC ENVIRONMENTAL SERVICES 219 Brown Lane Bryant, Arkansas 72022	Project No.:	3028-18-301
Checked by:	WHG		Date:	04/23/2019
Drawn by:	IT		Scale:	SHOWN

300
FEET

Wetlands Preserved (0.94 ac.)

Wetlands: Avoided (0.33 ac.)

Wetlands: Impacted - Fill (0.29 ac.)

Streams Impacted: Fill (3438 ft.) or 0.20 acres

Property Boundary

NO	DATE	REVISION	BY	CK.	APPR.

DESIGNED BY	WHG
CHECKED BY	WHG
APPR. BY	JJF
DRAWN BY	ALB

GBMc
Strategic Environmental Services
219 Brown Lane
Bryant, Arkansas 72022

SHEET TITLE
FIGURE 2:
WOUS IMPACTS MAP

JOB NAME
CHAMPS SITE PROPERTY
SECTION 404 PERMIT APPLICATION
HEA PROPERTIES, LLC.
PULASKI COUNTY, ARKANSAS

PROJECT NO.	3028-18-301
DATE	10/01/2019
SCALE	SHOWN
REV. NO	
DWG. NO.	

Appendix B

JD Report

219 Brown Lane Bryant, AR 72022 (501) 847-7077 (501) 847-7943 fax

April 25, 2019

Bryan Austin
HEA Properties, LLC
3201 Club Manor Drive, Suite A
Maumelle, AR 72113

Re: Jurisdictional Determination
Champs Boulevard Property
GBM^c No. 3028-18-301

Dear Mr. Austin:

GBM^c & Associates (GBM^c) was tasked with conducting a jurisdictional determination (JD) for an approximately 120 acre property located in Maumelle in Pulaski County, Arkansas. The JD includes identifying and delineating any possible Waters of the U.S. (WOUS) within the property boundaries (Attachment 1). GBM^c & Associates performed a desktop survey for the project site and then conducted a field investigation on April 12, 2019. Weather conditions on the 12th were sunny and warm. Prior to the site visit the region received approximately 0.31 inches of rain over a five-day period ending on April 12, 2019, based on data from Weather Underground weather history[1]. In addition, the region has received greater than normal amounts of rainfall over the last few months.

The property is situated northeast of Champs Boulevard in Maumelle, Arkansas (Attachment 1). The geographic coordinates for the center of the property are Latitude 34.870200° and Longitude -92.380790°. Most of the property is forested. Water from the site generally flows in a southeast direction eventually leading into White Oak Bayou.

Methodology

The property was initially assessed from the desktop using aerial photographs[2], soil survey maps[3], topographic maps, and National Wetlands Inventory (NWI) Maps[4]. The desktop evaluation was used to determine areas potentially containing WOUS as an aid to the site visit for the verification and delineation of such waters. Desktop indicators of WOUS primarily include color characteristic of wetlands on aerial photographs, mapped hydric soils on the Natural Resources Conservation Service (NRCS) Web Soil Survey, areas identified as wetlands on NWI maps, streams marked on topographic maps, and topographic features indicating drainage pathways. The information obtained during the desktop evaluation was then used to aide in the field investigation.

The potential for jurisdictional waters was determined based on the definition of "Waters of the U.S." as stated in the Clean Water Act. This definition covers waterbodies that are currently, have in the past, or are susceptible for use in interstate or foreign commerce; all interstate

[1] https://www.wunderground.com
[2] Google Earth Dates: 2/1994 to 10/2018
[3] http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm
[4] http://www.fws.gov/wetlands/

waters; all other waters whose use, destruction, or degradation could affect interstate or foreign commerce; all impoundments of waters otherwise defined as WOUS; any tributaries of WOUS; territorial seas; and wetlands adjacent to WOUS. Stream and wetland characteristics are typically recorded during the site investigation to provide the information necessary to make a decision on the jurisdictional status and, should some be classified as jurisdictional, to facilitate the permitting process.

Wetland determination is typically based on the three diagnostic characteristics (wetland hydrology, hydrophytic vegetation, and hydric soils) outlined in the United States Army Corps of Engineers (USACE) Wetlands Delineation Manual (1987 Corps Manual) and the Regional Supplement to the USACE Wetland Delineation Manual: Eastern Mountains and Piedmont Region[5]. For an area to be considered a wetland, it is required, under most circumstances, to meet each of the three diagnostic criteria. During the site investigation, wetland determinations were completed at areas that exhibit wetland field indicators. Data is recorded on wetland determination field forms provided in the USACE wetland delineation manual regional supplement. The data documents the presence or absence of field wetland indicators that predict the presence or absence of wetlands in an area. Wetland determinations are usually completed at representative wetland and upland sites within an area to create a contrast for comparison of field conditions. Wetland boundaries are determined by changes in one or more of the three wetland indicators.

Desktop Assessment

The desktop assessment indicated the potential for streams and wetlands within the property. A review of aerial images indicated the site has been historically maintained as forestland (based on aerial photographs dating back to February 1994).

The NCRS soil survey map shows the site to be made up of primarily soil map units Leadvale silt loam, 3 to 8 percent slope association (hydric rating of 6), a small section of Linker gravelly fine sandy loam, 3 to 8 percent slopes (hydric rating of 0) in the north, and a small area of Guthrie-Leadvale complex, 0 to 3 percent slopes (hydric rating of 70) in the southeast corner. The hydric rating indicates the percentage of map units that meet the criteria for hydric soils. A hydric rating of 0 indicates the soils are made up of almost entirely nonhydric soils with a very low (less than 1%) potential for minor hydric components in the lower positions on the landform. Hydric ratings of 100 indicate the soils are made up of almost entirely hydric components.

Field Survey

The field survey was completed on April 12, 2019 using technical guidance and field methods set forth in the U.S. Army Corps of Engineers documents mentioned above. Five ephemeral streams, and five wetland areas were identified within the property boundary (Attachment 1, Figure 2). Other observations included the presence of ATV trails and utility right-of-ways (ROWs) within the property boundary. Several of the trail areas are showing signs of heavy erosion and rutting with some rutted areas noticeable from aerial imagery.

---

[5] Wetlands Research Program. Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1. January 1997. Environmental Laboratory.
Wetlands Regulatory Assistance Program. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0). U.S. Army Corps of Engineers, April 2012.

Streams

Five non-relatively permanent ephemeral streams (S-1-5) totaling 3,438 linear feet were identified within the property (Attachment 1, Figure 2). Additional details of each ephemeral waterbody are provided below. Photographs of the streams are included in Attachment 2.

S-1 is an unnamed, 456 ft, ephemeral tributary that carries mostly precipitation and flows northeast into S-2 and eventually into White Oak Bayou. This stream can be further characterized as lacking continuous channel bed/bank features and appearing to flow for only short periods time following rain events.

S-2 is an unnamed, 803 ft, ephemeral stream that carries mostly precipitation and parking lot runoff through a culvert then flowing southeast into White Oak Bayou. This stream exhibits bank and channel features throughout most of its reach.

S-3 is an unnamed, 269 ft, ephemeral stream that carries precipitation including some parking lot runoff through a culvert to the east, through Wetland-1, and into S-2. This stream lacks prominent channel features and appears to flow for only short periods time following rain events.

S-4 is an unnamed, 705 ft, ephemeral stream that carries mostly precipitation and flows south into S-2. This stream also lacks continuous channel features through most of its reach, particularly in the upper sections. Flow is for only short periods time following rain events.

S-5 is an unnamed, 1205 ft, ephemeral stream that carries mostly precipitation and flows south, through Wetland 3, eventually into White Oak Bayou. This stream exhibits bank and channel features throughout most of its reach.

Each stream was assigned an identification name and number (Table 1). Stream dimensions and stream type were characterized to aid in the determination of its jurisdictional status. Ordinary high-water widths and depths (OHWW and OHWD, respectively), latitude/longitude coordinates, and stream type are tabularized in Table 1. Multiple measurements of OHWW and OHWD were collected to provide a representative value for the entire stream reach within the project boundary. Those measurements were then averaged to represent the values summarized in Table 1.

Table 1. Summary of Stream Measurements – April 12, 2019.

Map ID	Latitude	Longitude	OHWW (ft)	OHWD (ft)	Length on Property (ft)	Stream Type	Likely Jurisdictional (Y/N)
S-1	34.866776°	-92.384145°	2.0	0.2	456	Ephemeral	Yes
S-2	34.867891°	-92.383600°	3.0	0.3	803	Ephemeral	Yes
S-3	34.868529°	-92.385299°	2.0	0.1	269	Ephemeral	Yes
S-4	34.868918°	-92.384968°	2.0	0.1	705	Ephemeral	Yes
S-5	34.869317°	-92.380799°	3.0	0.3	1205	Ephemeral	Yes

Given that the present streams eventually flow into tributaries of White Oak Bayou or directly into White Oak Bayou, it is likely that connectivity (a nexus) exists and the streams may be considered jurisdictional WOUS if the nexus is deemed significant by the USACE[6].

Wetlands

A total of 1.56 acres of wetlands were identified within the property boundaries. Wetland determination points were performed in the areas that displayed potential wetland characteristics. Additionally, data was collected in an upland area to provide a contrast in upland and wetland characteristics to facilitate the delineation of the wetland boundary. Maps showing the locations of each of the wetland determination points and the boundaries of the wetlands are provided in Attachment 1. Jurisdictional check points were also performed in several locations on the property. All three data criteria were not always collected at each check point location if the check point had obviously failed any one criterion. (i.e. if hydrology was clearly not present, the other two criteria may not be thoroughly investigated). The data forms and representative photographs of the mapped wetland determination points are provided in Attachments 2 and 3, respectively. Following are descriptions for each of the wetland areas identified during the field survey.

Wetland W-1 (Wpt 478) is an approximately 0.44 acre forested wetland located on the western boundary of the property. Obvious source water supporting this wetland is from parking lot runoff and culvert(s) from the adjacent property to the west. Hydrology indicators included water stained leaves, drainage patterns, and crayfish burrows in close proximity to the sample point. Dominant vegetation for this area included willow oak (*Quercus phellos),* sweetgum *(Liquidambar styraciflua)* and sensitive fern (*Onoclea sensibilis).* The field investigation revealed soils to meet the hydric soil indicator of a depleted matrix with distinct redox concentrations.

Wetland W-2 (Wpt 485) is an approximately 0.07 acre herbaceous wetland located near the center of the property. Hydrology indicators included surface water, a high water table saturation, geomorphic position, saturation visible on aerial imagery, a positive FAC-neutral test, and areas of surface water in close proximity to the sample point. Dominant vegetation for this area included soft rush (*Juncus effusus)* and salt bush (*Baccharis angustifolia*)*.* The field investigation revealed soils to meet the hydric soil indicator of a depleted matrix with distinct redox concentrations.

Wetland W-3 (Wpt 487) is an approximately 0.11 acre forested wetland located near the center of the property. Hydrology indicators included a high water table and areas of surface water in close proximity to the sample point. Dominant vegetation for this area included willow oak (*Quercus phellos)* and greenbrier (*Smilax rotundifolia*). The field investigation revealed soils to meet the hydric soil indicator of a depleted matrix with distinct redox concentrations.

Wetland W-4 (Wpt 315) is an approximately 0.65 acre forested wetland located near the eastern boundary of the property. Hydrology indicators included a high water table, soil saturation, geomorphic position, areas of surface water, and a FAC-neutral test in close proximity to the sample point. Dominant vegetation for this area included sweet gum (*Liquidambar styraciflua)* and common greenbrier (*Smilax rotundifolia*)*.* The field investigation

[6] Rapanos v. United States, 2006.

revealed soils to meet the hydric soil indicator of a depleted matrix with distinct redox concentrations.

Wetland W-5 (Wpt 490) is an approximately 0.29 acre herbaceous wetland located on the southeastern side of the property. The majority of this wetland lies within an existing electrical transmission line right-of-way and is impacted by ATV/truck traffic (rutting) and vegetation control (mowing/herbicide treatment). Hydrology indicators included a high water table, geomorphic position, and areas of surface water in close proximity to the sample point. Dominant vegetation for this area included water oak (*Quercus nigra*) and soft rush (*Juncus effusus*). The field investigation revealed soils to meet the hydric soil indicator of a depleted matrix with distinct redox concentrations.

Table 3. Summary of Wetland Determination Points – April 12, 2019.

Map ID*	Wetland Hydrology	Hydric Soils	Hydrophytic Vegetation	Wetland Status (Y/N)	Notes
478	Yes	Yes	Yes	Yes	Wetland 1 (W-1)
656	No	No	No	No	Upland reference area
485	Yes	Yes	Yes	Yes	Wetland 2 (W-2)
486	No	No	No	No	Upland reference area
487	Yes	Yes	Yes	Yes	Wetland 3 (W-3)
315	Yes	Yes	Yes	Yes	Wetland 4 (W-4)
489	No	No	Yes	No	Upland reference area
490	Yes	Yes	Yes	Yes	Wetland 5 (W-5)
491	No	No	No	No	Upland reference area

*Map ID is referencing the exact waypoint the field team collected. Waypoints out of order do not indicate missing data due to the stream data points and waypoints taken to coordinate with photographs and potentially taken by different field scientists with their own GPS.

The areas represented by waypoints 478, 485, 487, 315, and 490 meet the requirements to be classified as wetlands. Waypoints 656, 486, 489, and 491 represent upland areas that provided contrasting characteristics to the nearby wetland areas. The boundaries of the wetlands were delineated based on hydrology and shifts in vegetation from upland to wetland. Wetlands W-2 (0.07 acres) and W-5 (0.29 acres) are completely herbaceous and would be classified as palustrine emergent (PEM). Wetlands W-1 (0.44 acres), W-3 (0.11 acres) and W-4 (0.65 acres) contain trees and some herbaceous vegetation and can be generally characterized as palustrine forested (PFO). The wetlands are depicted on the WOUS map in Attachment 1, Figure 2.

Summary of Jurisdictional Determination

The desktop and field investigation revealed that the property contains five ephemeral streams (totaling approximately 3,438 feet) and five wetlands (totaling approximately 1.56 acres). Given the proximity of wetlands W-1, W-2, and W-3 to streams S-2 and S-5, and the fact that all streams ultimately flows into a perennial jurisdictional water (White Oak Bayou), it is likely that connectivity (a nexus) exists and all five streams and W-1, W-2, and W-3 wetlands may be considered jurisdictional WOUS, if the nexus is deemed significant by the USACE. Wetlands

W-4 and W-5 are believed to be isolated (lack a significant nexus) and may not be considered jurisdictional.

The USACE will make the final decisions on the jurisdictional status of all water bodies (including wetlands) identified and the permitting requirements for each of the waters identified in this letter report. They will utilize this report, verbal communication, and/or potential site visit to make their decisions. Disturbance to these areas, if determined to be jurisdictional WOUS, may be subject to the requirements of Section 404 permitting and USACE approval.

We appreciate the opportunity to provide you with this jurisdictional determination. Should you have any questions please do not hesitate to contact me or Greg Phillips at (501) 847-7077.

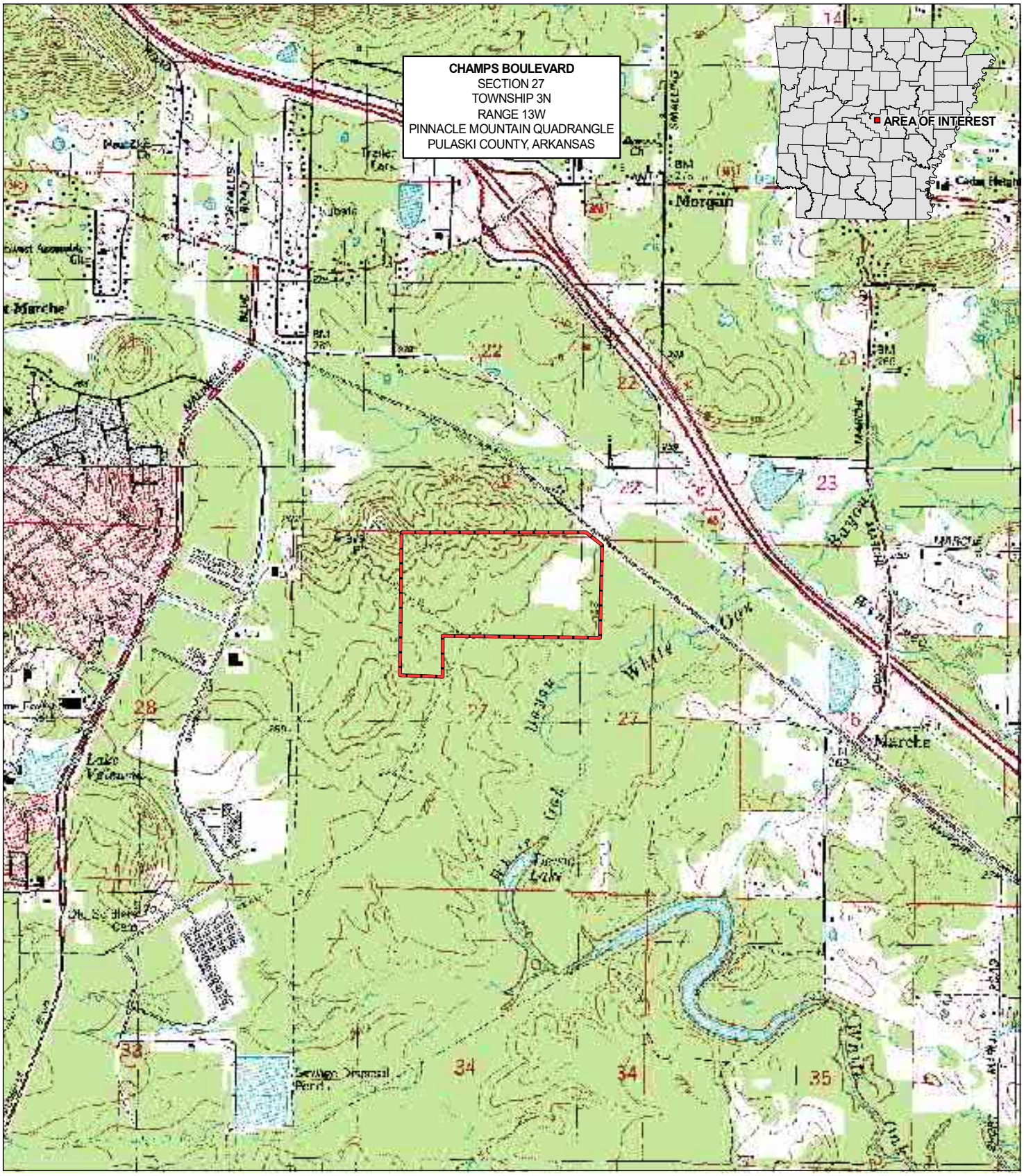
Respectfully submitted,
GBM^{c} & ASSOCIATES

Josh Fluger
Project Manager/Environmental Scientist

Enclosures

Attachment 1

Figures



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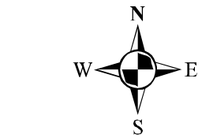
PROPERTY BOUNDARY

3028.000.G1

FIGURE 1:
TOPOGRAPHIC LOCATION MAP

CITY OF MAUMELLE
PULASKI, ARKANSAS

Approved by:	WHG	GBMc STRATEGIC ENVIRONMENTAL SERVICES 219 Brown Lane Bryant, Arkansas 72022	Project No.:	3028-18-301
Checked by:	WHG		Date:	04/23/2019
Drawn by:	IT		Scale:	SHOWN



250
FEET

- Data Collection Points
- Streams
- Wetlands
- Property Boundary

Name	Length (feet)	Type
S-1	456	Ephemeral
S-2	803	Ephemeral
S-3	269	Ephemeral
S-4	705	Ephemeral
S-5	1205	Ephemeral

NO	DATE	REVISION	BY	CK.	APPR.

DESIGNED BY WHG
CHECKED BY JJF
APPR. BY JJF
DRAWN BY ALB

GBMc
Strategic Environmental Services
219 Brown Lane
Bryant, Arkansas 72022

SHEET TITLE
FIGURE 2:
AERIAL DETAIL MAP

JOB NAME
JURISDICTIONAL DETERMINATION
CHAMPS BOULEVARD PROPERTY
HEA PROPERTIES, LLC.
PULASKI COUNTY, ARKANSAS

PROJECT NO. 3028-18-301
DATE 04/25/2019
SCALE SHOWN
REV. NO
DWG. NO. S1

Attachment 2

Photo Log

S-1 mid-reach, facing downstream

S-2 upstream near W-1

S-2 downstream pool

S-3 facing downstream

S-4 just upstream of W-1, facing downstream

S-5 near south boundary, facing upstream

Wetland W-1 at wpt 478

W-1 facing south from wpt 478

Wetland W-2

Wetland W-3

Wetland W-4

Wetland W-5

Attachment 3

Wetforms

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Champs Blvd **City/County:** Maumelle/Pulaski **Sampling Date:** 12-Apr-19

Applicant/Owner: City of Maumelle **State:** AR **Sampling Point:** 315

Investigator(s): JJF/WHG **Section, Township, Range:** S 27 T 3N R 13W

Landform (hillslope, terrace, etc.): Lowland **Local relief (concave, convex, none):** concave **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): LRR N **Lat.:** 34.87017000 **Long.:** -92.37631900 **Datum:** WGS 84

Soil Map Unit Name: Leadvale silt loam, 3 to 8 percent slopes **NWI classification:** None

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **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 ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks:
Up 3-5" in rainfall for 2019

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☑ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ 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)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ◉ No ○	Depth (inches): 2	
Water Table Present?	Yes ◉ No ○	Depth (inches): 7	**Wetland Hydrology Present?** Yes ◉ No ○
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches): 3	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Sample location near edge of inundation. Approximately 1-2 inches of surface water present in interior wetland.

VEGETATION (Five/Four Strata)- Use scientific names of plants.

Sampling Point: 315

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Liquidambar styraciflua	80	☑	44.4%	FAC
2. Acer rubrum	45	☑	25.0%	FAC
3. Quercus phellos	40	☑	22.2%	FAC
4. Ulmus alata	15	☐	8.3%	FACU
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
	180	= Total Cover		

Sapling-Sapling/Shrub Stratum (Plot size:)				
1. Liquidambar styraciflua	55	☑	61.1%	FAC
2. Quercus phellos	35	☑	38.9%	FAC
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
	90	= Total Cover		

Shrub Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	0	= Total Cover		

Herb Stratum (Plot size:)				
1. Juncus effusus	15	☑	21.4%	FACW
2. Scirpus cyperinus	5	☐	7.1%	FACW
3. Andropogon virginicus	5	☐	7.1%	FACU
4. Rubus argutus	10	☐	14.3%	FACU
5. Smilax rotundifolia	35	☑	50.0%	FAC
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	70	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

	Total % Cover of:		Multiply by:
OBL species	0	x 1 =	0
FACW species	20	x 2 =	40
FAC species	290	x 3 =	870
FACU species	30	x 4 =	120
UPL species	0	x 5 =	0
Column Totals:	340	(A)	1030 (B)

Prevalence Index = B/A = 3.029

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

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

Definition of Vegetation Strata:

Four Vegetation Strata:

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

Sapling/shrub stratum – Consists of woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

Woody vines – Consists of all woody vines greater than 3.28 ft in height.

Five Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling stratum – Consists of woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub stratum – Consists of woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb stratum – Consists of all herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody species, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vines – Consists of all woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: 315

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

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox %	Type [1]	Loc[2]	Texture	Remarks
0-3	10YR	5/2	95	10YR	3/6	5	C	M	Silty Clay Loam	
3-12	10YR	5/3	70	10R	4/6	30	C	M	Silty Clay Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) (LRR N)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1) (LRR N, MLRA 147, 148)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) (MLRA 147,148)
- ☐ Thin Dark Surface (S9) (MLRA 147, 148)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) (LRR N, MLRA 136)
- ☐ Umbric Surface (F13) (MLRA 136, 122)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 148)
- ☐ Red Parent Material (F21) (MLRA 127, 147)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10) (MLRA 147)
- ☐ Coast Prairie Redox (A16) (MLRA 147,148)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 136, 147)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators 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 - Eastern Mountains and Piedmont Region

Project/Site: Champs Blvd **City/County:** Maumelle/Pulaski **Sampling Date:** 12-Apr-19

Applicant/Owner: City of Maumelle **State:** AR **Sampling Point:** 478

Investigator(s): JJF/WHG **Section, Township, Range:** S 27 T 3N R 13W

Landform (hillslope, terrace, etc.): Lowland **Local relief (concave, convex, none):** concave **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): LRR N **Lat.:** 34.868660 **Long.:** -92.385093 **Datum:** WGS 84

Soil Map Unit Name: Leadvale silt loam, 3 to 8 percent slopes **NWI classification:** None

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **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 ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks:
Up 3-5" in rainfall for 2019

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ 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)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ◉ No ○	Depth (inches):	3
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches):	10

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata)- Use scientific names of plants.

Sampling Point: 478

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Acer rubrum	20	☑	28.6%	FAC
2. Quercus phellos	50	☑	71.4%	FAC
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
	70	= Total Cover		

Sapling-Sapling/Shrub Stratum (Plot size:)				
1. Acer rubrum	15	☐	14.3%	FAC
2. Liquidambar styraciflua	50	☑	47.6%	FAC
3. Ulmus alata	30	☑	28.6%	FACU
4. Pinus taeda	10	☐	9.5%	FAC
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
	105	= Total Cover		

Shrub Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	0	= Total Cover		

Herb Stratum (Plot size:)				
1. Scirpus cyperinus	30	☑	20.7%	FACW
2. Adiantum pedatum	35	☑	24.1%	FAC
3. Juncus effusus	25	☐	17.2%	FACW
4. Smilax rotundifolia	35	☑	24.1%	FAC
5. Toxicodendron radicans	10	☐	6.9%	FAC
6. Vitis rotundifolia	10	☐	6.9%	FAC
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	145	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 85.7% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	55	x 2 =	110	
FAC species	235	x 3 =	705	
FACU species	30	x 4 =	120	
UPL species	0	x 5 =	0	
Column Totals:	320	(A)	935	(B)

Prevalence Index = B/A = 2.922

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

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

Definition of Vegetation Strata:

Four Vegetation Strata:

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

Sapling/shrub stratum – Consists of woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

Woody vines – Consists of all woody vines greater than 3.28 ft in height.

Five Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling stratum – Consists of woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub stratum – Consists of woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb stratum – Consists of all herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody species, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vines – Consists of all woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: 478

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

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox %	Type [1]	Loc[2]	Texture	Remarks
0-3	10YR	4/1	90	7.5YR	5/8	10	C	M	Silty Clay Loam	
3-12	10YR	5/3	70	10YR	5/8	30	C	M	Silty Clay Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) (LRR N)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1) (LRR N, MLRA 147, 148)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) (MLRA 147,148)
- ☐ Thin Dark Surface (S9) (MLRA 147, 148)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) (LRR N, MLRA 136)
- ☐ Umbric Surface (F13) (MLRA 136, 122)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 148)
- ☐ Red Parent Material (F21) (MLRA 127, 147)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10) (MLRA 147)
- ☐ Coast Prairie Redox (A16) (MLRA 147,148)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 136, 147)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators 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 - Eastern Mountains and Piedmont Region

Project/Site: Champs Blvd **City/County:** Maumelle/Pulaski **Sampling Date:** 12-Apr-19

Applicant/Owner: City of Maumelle **State:** AR **Sampling Point:** 485

Investigator(s): JJF/WHG **Section, Township, Range:** S 27 T 3N R 13W

Landform (hillslope, terrace, etc.): Lowland **Local relief (concave, convex, none):** concave **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): LRR N **Lat.:** 34.869615 **Long.:** -92.380949 **Datum:** WGS 84

Soil Map Unit Name: Leadvale silt loam, 3 to 8 percent slopes **NWI classification:** None

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **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 ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks:
Up 3-5" in rainfall for 2019

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☑ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ 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)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ◉ No ○	Depth (inches): 1	
Water Table Present?	Yes ◉ No ○	Depth (inches): 2	**Wetland Hydrology Present?** Yes ◉ No ○
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata)- Use scientific names of plants.

Sampling Point: 485

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
	0		= Total Cover	

Sapling-Sapling/Shrub Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Liquidambar styraciflua	30	☑	37.5%	FAC
2. Baccharis angustifolia	50	☑	62.5%	FACW
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
	80		= Total Cover	

Shrub Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	0		= Total Cover	

Herb Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Andropogon virginicus	20	☑	28.6%	FACU
2. Juncus effusus	30	☑	42.9%	FACW
3. Scirpus cyperinus	20	☑	28.6%	FACW
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	70		= Total Cover	

Woody Vine Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
	0		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 80.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	100	x 2 =	200	
FAC species	30	x 3 =	90	
FACU species	20	x 4 =	80	
UPL species	0	x 5 =	0	
Column Totals:	150	(A)	370	(B)

Prevalence Index = B/A = 2.467

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

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

Definition of Vegetation Strata:

Four Vegetation Strata:

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

Sapling/shrub stratum – Consists of woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

Woody vines – Consists of all woody vines greater than 3.28 ft in height.

Five Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling stratum – Consists of woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub stratum – Consists of woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb stratum – Consists of all herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody species, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vines – Consists of all woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: 485

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

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox %	Type [1]	Loc[2]	Texture	Remarks
0-12	10YR	4/2	80	10YR	5/6	20	C	M	Silty Clay Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) (LRR N)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1) (LRR N, MLRA 147, 148)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) (MLRA 147,148)
- ☐ Thin Dark Surface (S9) (MLRA 147, 148)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) (LRR N, MLRA 136)
- ☐ Umbric Surface (F13) (MLRA 136, 122)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 148)
- ☐ Red Parent Material (F21) (MLRA 127, 147)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10) (MLRA 147)
- ☐ Coast Prairie Redox (A16) (MLRA 147,148)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 136, 147)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators 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 - Eastern Mountains and Piedmont Region

Project/Site: Champs Blvd **City/County:** Maumelle/Pulaski **Sampling Date:** 12-Apr-19

Applicant/Owner: City of Maumelle **State:** AR **Sampling Point:** 486

Investigator(s): JJF/WHG **Section, Township, Range:** S 27 T 3N R 13W

Landform (hillslope, terrace, etc.): Mound **Local relief (concave, convex, none):** convex **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): LRR N **Lat.:** 34.868405 **Long.:** -92.380750 **Datum:** WGS 84

Soil Map Unit Name: Leadvale silt loam, 3 to 8 percent slopes **NWI classification:** None

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **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 ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉	
Wetland Hydrology Present?	Yes ○ No ◉	

Remarks:
Up 3-5" in rainfall for 2019

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ 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)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):
Water Table Present?	Yes ○	No ◉	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata)- Use scientific names of plants.

Sampling Point: 486

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
	0	= Total Cover		

Sapling-Sapling/Shrub Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
	0	= Total Cover		

Shrub Stratum (Plot size:)				
1. Baccharis angustifolia	80	☑	100.0%	FACW
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	80	= Total Cover		

Herb Stratum (Plot size:)				
1. Cynodon dactylon	70	☑	82.4%	FACU
2. Andropogon virginicus	10	☐	11.8%	FACU
3. Juncus effusus	5	☐	5.9%	FACW
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	85	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	50.0%	(A/B)

Prevalence Index worksheet:

	Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0	
FACW species	85	x 2 =	170	
FAC species	0	x 3 =	0	
FACU species	80	x 4 =	320	
UPL species	0	x 5 =	0	
Column Totals:	165	(A)	490	(B)

Prevalence Index = B/A = 2.970

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

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

Definition of Vegetation Strata:

Four Vegetation Strata:

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

Sapling/shrub stratum – Consists of woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

Woody vines – Consists of all woody vines greater than 3.28 ft in height.

Five Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling stratum – Consists of woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub stratum – Consists of woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb stratum – Consists of all herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody species, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vines – Consists of all woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: 486

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type [1]	Loc[2]	Texture	Remarks
0-12	10YR 3/3	100					Silty Clay Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) (LRR N)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1) (LRR N, MLRA 147, 148)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) (MLRA 147,148)
- ☐ Thin Dark Surface (S9) (MLRA 147, 148)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) (LRR N, MLRA 136)
- ☐ Umbric Surface (F13) (MLRA 136, 122)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 148)
- ☐ Red Parent Material (F21) (MLRA 127, 147)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10) (MLRA 147)
- ☐ Coast Prairie Redox (A16) (MLRA 147,148)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 136, 147)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators 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 - Eastern Mountains and Piedmont Region

Project/Site: Champs Blvd **City/County:** Maumelle/Pulaski **Sampling Date:** 12-Apr-19

Applicant/Owner: City of Maumelle **State:** AR **Sampling Point:** **487**

Investigator(s): JJF/WHG **Section, Township, Range:** **S** 27 **T** 3N **R** 13W

Landform (hillslope, terrace, etc.): Lowland **Local relief (concave, convex, none):** concave **Slope:** 0.0 **%** / 0.0 **°**

Subregion (LRR or MLRA): LRR N **Lat.:** 34.870336 **Long.:** -92.381364 **Datum:** WGS 84

Soil Map Unit Name: Leadvale silt loam, 3 to 8 percent slopes **NWI classification:** None

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **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 ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks:
Up 3-5" in rainfall for 2019

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☑ Surface Water (A1)
- ☑ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ 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)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ◉ No ○	Depth (inches): 1	
Water Table Present?	Yes ◉ No ○	Depth (inches): 4	**Wetland Hydrology Present?** Yes ◉ No ○
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata)- Use scientific names of plants.

Sampling Point: 487

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Quercus phellos	75	☑	75.0%	FAC
2. Ulmus alata	15	☐	15.0%	FACU
3. Pinus taeda	10	☐	10.0%	FAC
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
	100	= Total Cover		

Sapling-Sapling/Shrub Stratum (Plot size:)				
1. Quercus phellos	70	☑	82.4%	FAC
2. Ligustrum sinense	15	☐	17.6%	FACU
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
	85	= Total Cover		

Shrub Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	0	= Total Cover		

Herb Stratum (Plot size:)				
1. Smilax rotundifolia	20	☑	100.0%	FAC
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	20	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

	Total % Cover of:		Multiply by:
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	175	x 3 =	525
FACU species	30	x 4 =	120
UPL species	0	x 5 =	0
Column Totals:	205 (A)		645 (B)

Prevalence Index = B/A = 3.146

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

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

Definition of Vegetation Strata:

Four Vegetation Strata:

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

Sapling/shrub stratum – Consists of woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

Woody vines – Consists of all woody vines greater than 3.28 ft in height.

Five Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling stratum – Consists of woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub stratum – Consists of woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb stratum – Consists of all herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody species, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vines – Consists of all woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: 487

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

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox %	Type [1]	Loc[2]	Texture	Remarks
0-2	10YR	5/2	95	10YR	3/6	5	C	M	Silty Clay Loam	
2-12	10YR	5/3	70	10YR	4/6	28	C	M	Silty Clay Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) (LRR N)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1) (LRR N, MLRA 147, 148)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) (MLRA 147,148)
- ☐ Thin Dark Surface (S9) (MLRA 147, 148)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) (LRR N, MLRA 136)
- ☐ Umbric Surface (F13) (MLRA 136, 122)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 148)
- ☐ Red Parent Material (F21) (MLRA 127, 147)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10) (MLRA 147)
- ☐ Coast Prairie Redox (A16) (MLRA 147,148)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 136, 147)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators 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 - Eastern Mountains and Piedmont Region

Project/Site: Champs Blvd **City/County:** Maumelle/Pulaski **Sampling Date:** 12-Apr-19

Applicant/Owner: City of Maumelle **State:** AR **Sampling Point:** 491

Investigator(s): JJF/WHG **Section, Township, Range:** S 27 T 3N R 13W

Landform (hillslope, terrace, etc.): Flat **Local relief (concave, convex, none):** convex **Slope:** 0.0 % / 0.0 °

Subregion (LRR or MLRA): LRR N **Lat.:** 34.868036 **Long.:** -92.377146 **Datum:** WGS 84

Soil Map Unit Name: Leadvale silt loam, 3 to 8 percent slopes **NWI classification:** None

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **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 ○	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉	
Wetland Hydrology Present?	Yes ○ No ◉	

Remarks:
Up 3-5" in rainfall for 2019

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ 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)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata)- Use scientific names of plants.

Sampling Point: 491

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Quercus nigra	50	☑	58.8%	FAC
2. Liquidambar styraciflua	20	☑	23.5%	FAC
3. Juniperus virginiana	15	☐	17.6%	FACU
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
	85	= Total Cover		

Sapling-Sapling/Shrub Stratum (Plot size:)				
1. Cornus florida	5	☑	33.3%	FACU
2. Liquidambar styraciflua	5	☑	33.3%	FAC
3. Acer rubrum	5	☑	33.3%	FAC
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
	15	= Total Cover		

Shrub Stratum (Plot size:)				
1. Andropogon virginicus	50	☑	83.3%	FACU
2. Baccharis angustifolia	10	☐	16.7%	FACW
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	60	= Total Cover		

Herb Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	0	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	10	x 2 =	20	
FAC species	80	x 3 =	240	
FACU species	70	x 4 =	280	
UPL species	0	x 5 =	0	
Column Totals:	160	(A)	540	(B)

Prevalence Index = B/A = 3.375

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

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

Definition of Vegetation Strata:

Four Vegetation Strata:

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

Sapling/shrub stratum – Consists of woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

Woody vines – Consists of all woody vines greater than 3.28 ft in height.

Five Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling stratum – Consists of woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub stratum – Consists of woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb stratum – Consists of all herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody species, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vines – Consists of all woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: 491

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type [1]	Loc[2]	Texture	Remarks
0-2	10YR 3/3	100					Silty Clay Loam	
2-10	10YR 4/4	100					Silty Clay Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) (LRR N)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1) (LRR N, MLRA 147, 148)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) (MLRA 147,148)
- ☐ Thin Dark Surface (S9) (MLRA 147, 148)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) (LRR N, MLRA 136)
- ☐ Umbric Surface (F13) (MLRA 136, 122)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 148)
- ☐ Red Parent Material (F21) (MLRA 127, 147)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10) (MLRA 147)
- ☐ Coast Prairie Redox (A16) (MLRA 147,148)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 136, 147)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators 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 - Eastern Mountains and Piedmont Region

Project/Site: Champs Blvd **City/County:** Maumelle/Pulaski **Sampling Date:** 12-Apr-19

Applicant/Owner: Enter Applicant Owner **State:** AR **Sampling Point:** **490**

Investigator(s): JJF/WHG **Section, Township, Range:** **S** 27 **T** 3N **R** 13W

Landform (hillslope, terrace, etc.): Swale **Local relief (concave, convex, none):** concave **Slope:** 0.0 **%** / 0.0 **°**

Subregion (LRR or MLRA): LRR N **Lat.:** 34.868405 **Long.:** -92.376971 **Datum:** WGS 84

Soil Map Unit Name: Leadvale silt loam, 3 to 8 percent slopes **NWI classification:** None

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **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 ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks:
Up 3-5" in rainfall for 2019

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☑ Surface Water (A1)
- ☑ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ 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)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ◉ No ○	Depth (inches):	1
Water Table Present?	Yes ◉ No ○	Depth (inches):	3
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five/Four Strata)- Use scientific names of plants.

Sampling Point: 490

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Quercus nigra	35	☑	70.0%	FAC
2. Liquidambar styraciflua	15	☑	30.0%	FAC
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
	50	= Total Cover		

Sapling-Sapling/Shrub Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
	0	= Total Cover		

Shrub Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
	0	= Total Cover		

Herb Stratum (Plot size:)				
1. Rubus argutus	25	☑	33.3%	FACU
2. Juncus effusus	50	☑	66.7%	FACW
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
11.	0	☐	0.0%	
12.	0	☐	0.0%	
	75	= Total Cover		

Woody Vine Stratum (Plot size:)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	75.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	50	x 2 =	100	
FAC species	50	x 3 =	150	
FACU species	25	x 4 =	100	
UPL species	0	x 5 =	0	
Column Totals:	125	(A)	350	(B)

Prevalence Index = B/A = 2.800

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

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

Definition of Vegetation Strata:

Four Vegetation Strata:

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

Sapling/shrub stratum – Consists of woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

Woody vines – Consists of all woody vines greater than 3.28 ft in height.

Five Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling stratum – Consists of woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub stratum – Consists of woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb stratum – Consists of all herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody species, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vines – Consists of all woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: 490

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

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox %	Type [1]	Loc[2]	Texture	Remarks
0-3	10YR	5/2	95	10YR	3/6	5	C	M	Silty Clay Loam	
3-12	10YR	5/3	70	10YR	4/6	30	C	M	Silty Clay Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) (LRR N)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1) (LRR N, MLRA 147, 148)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) (MLRA 147,148)
- ☐ Thin Dark Surface (S9) (MLRA 147, 148)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) (LRR N, MLRA 136)
- ☐ Umbric Surface (F13) (MLRA 136, 122)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 148)
- ☐ Red Parent Material (F21) (MLRA 127, 147)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10) (MLRA 147)
- ☐ Coast Prairie Redox (A16) (MLRA 147,148)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 136, 147)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators 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:

Appendix C

Agency Correspondence

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Arkansas Ecological Services Field Office
110 South Amity Suite 300
Conway, AR 72032-8975
Phone: (501) 513-4470 Fax: (501) 513-4480
http://www.fws.gov/arkansas-es

In Reply Refer To: August 12, 2019
Consultation Code: 04ER1000-2019-SLI-1345
Event Code: 04ER1000-2019-E-02727
Project Name: Champs Boulevard Development

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies endangered, threatened, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). **This letter only provides an official species list and technical assistance; if you determine that listed species and/or designated critical habitat may be affected in any way by the proposed project, even if the effect is wholly beneficial, consultation with the Service will be necessary.**

If you determine that this project will have no effect on listed species and their habitat in any way, then you have completed Section 7 consultation with the Service and may use this letter in your project file or application.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found on our website.

Please visit our website at http://www.fws.gov/arkansas-es/IPaC/home.html for species-specific guidance to avoid and minimize adverse effects to federally endangered,

threatened, proposed, and candidate species. Our web site also contains additional information on species life history and habitat requirements that may be useful in project planning.

If your project involves in-stream construction activities, oil and natural gas infrastructure, road construction, transmission lines, or communication towers, please review our project specific guidance at http://www.fws.gov/arkansas-es/IPaC/ProjSpec.html.

The karst region of Arkansas is a unique region that covers the **northern third of Arkansas** and we have specific guidance to conserve sensitive cave-obligate and bat species. **Please visit http://www.fws.gov/arkansas-es/IPaC/Karst.html to determine if your project occurs in the karst region and to view karst specific-guidance.** Proper implementation and maintenance of best management practices specified in these guidance documents is necessary to avoid adverse effects to federally protected species and often avoids the more lengthy formal consultation process.

If your species list includes any mussels, Northern Long-eared Bat, Indiana Bat, Yellowcheek Darter, Red-cockaded Woodpecker, or American Burying Beetle, your project may require a presence/absence and/or habitat survey prior to commencing project activities. Please check the appropriate species-specific guidance on our website to determine if your project requires a survey. We strongly recommend that you contact the appropriate staff species lead biologist (see office directory or species page) prior to conducting presence/absence surveys to ensure the appropriate level of effort and methodology.

Under the ESA, it is the responsibility of the Federal action agency or its designated representative to determine if a proposed action "may affect" endangered, threatened, or proposed species, or designated critical habitat, and if so, to consult with the Service further. Similarly, it is the responsibility of the Federal action agency or project proponent, not the Service, to make “no effect” determinations. If you determine that your proposed action will have “no effect” on threatened or endangered species or their respective critical habitat, you do not need to seek concurrence with the Service. Nevertheless, it is a violation of Federal law to harm or harass any federally-listed threatened or endangered fish or wildlife species without the appropriate permit.

Through the consultation process, we will analyze information contained in a biological assessment that you provide. If your proposed action is associated with Federal funding or permitting, consultation will occur with the Federal agency under section 7(a)(2) of the ESA. Otherwise, an incidental take permit pursuant to section 10(a)(1)(B) of the ESA (also known as a habitat conservation plan) is necessary to harm or harass federally listed threatened or endangered fish or wildlife species. In either case, there is no mechanism for authorizing incidental take “after-the-fact.” For more information regarding formal consultation and HCPs, please see the Service's Consultation Handbook and Habitat Conservation Plans at www.fws.gov/endangered/esa-library/index.html#consultations.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to

federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, **the accuracy of this species list should be verified after 90 days.** This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. **Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.**

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Arkansas Ecological Services Field Office
110 South Amity Suite 300
Conway, AR 72032-8975
(501) 513-4470

Project Summary

Consultation Code: 04ER1000-2019-SLI-1345

Event Code: 04ER1000-2019-E-02727

Project Name: Champs Boulevard Development

Project Type: DEVELOPMENT

Project Description: The city of Maumelle is working to have a 121 acres site classified as "site certified." Plans for the site are commercial and light industrial development.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/34.86948938230205N92.3804832863225W

Counties: Pulaski, AR

Endangered Species Act Species

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Birds

NAME	STATUS
Piping Plover *Charadrius melodus* Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered. There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6039	Threatened

Insects

NAME	STATUS
Rattlesnake-master Borer Moth *Papaipema eryngii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7863	Candidate

Flowering Plants

NAME	STATUS
Running Buffalo Clover *Trifolium stoloniferum* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2529	Endangered

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Appendix D

Mitigation Plan

Champs Site – Maumelle, AR
Mitigation Plan

Prepared for:

HEA Properties, LLC
3201 Club Manor Drive, Suite A
Maumelle, AR 72113

Prepared by:

GBM[c] & Associates
219 Brown Lane
Bryant, AR 72022

Revised October 1, 2019
August 30, 2019

CONTENTS

APPENDICES

1.0 MITIGATION PLAN GOALS AND OBJECTIVES

1.1 Goals and Objectives

The goal of this Mitigation Plan is to compensate for impacts to 3,438 feet of ephemeral stream (0.20 acres) and 0.29 acres of forested wetlands resulting from commercial development activities in Maumelle, Arkansas. The project that will impact waters of the United States involves grading and filling land on an approximately 121-acre site owned by HEA Properties, LLC. Mitigation credits for stream impacts were acquired under previous USACE Permit No. 18754 in 2005, when a larger planned development was permitted but never constructed. The stream mitigation for that project was purchased from the 635-acre Joint Venture Site in Maumelle, which is now owned and managed by the City of Maumelle and remains protected by dead restriction today. The combined total of 0.49 acres of wetland and stream impacts will be mitigated through permittee-responsible mitigation on property nearby to the impacted area, and in the White Oak Bayou (WOB) watershed.

2.0 SITE SELCTION

2.1 Site Selection

The factors considered during the mitigation site selection process were to keep the hydrologic conditions, soil characteristics, and other physical and chemical characteristics similar. Impacts to wetlands within the White Oak Bayou watershed have to be mitigated within the White Oak Bayou watershed. Therefore, a mitigation project within the watershed was the major site selection consideration. The other primary issues considered were Wetland Priority Classification, based on the White Oak Bayou Wetland Management Plan[1] and the number of credits that a site could generate.

[1] http://www.whiteoakbayou.com/resources/guidancedocs/

3.0 SITE PROTECTION

3.1 Site Protection Instrument

The wetland site used for mitigation will be placed in a protective deed restriction to ensure their long-term protection. The boundary of the mitigation area will be marked with signage posting it as a protected wetland mitigation area. The long-term protection of the mitigation site and the responsibility for managing the mitigation project will be that of HEA Properties, LLC.

4.0 BASELINE INFORMATION

Impact Site

The impact site is located in Maumelle, Pulaski County, Arkansas in the White Oak Bayou Watershed. The centroid coordinates of the impact site are latitude 34.870200°and longitude -92.380790° with current direct access from Champs Boulevard only. The property is currently forested with both commercial and some undeveloped properties surrounding. Deed restricted land (protected wetlands) also abuts east and southeast portions of the property. This site consists mostly of well drained to moderately well drained forested uplands with five relatively small palustrine forested and/or herbaceous wetlands and five ephemeral streams. Drainage from the site flows in a general southeast direction into White Oak Bayou. The NCRS soil survey shows the site to be made up of primarily soil map units Leadvale silt loam, 3 to 8 percent slope association, a small section of Linker gravelly fine sandy loam 3 to 8 percent slopes in the north, and a small area of Guthrie-Leadvale complex, 0 to 3 percent slopes in the southeast corner.

The property includes wetland areas based on field investigations accumulating approximately 1.56 acres of forested wetlands. Of the 1.56 acres of wetland on-site, 0.29 will be impacted. All of wetland 2 (W-2) and wetland 3 (W-3) will be filled, along with 0.11 acres of wetland 1 (W-1). The remaining 1.27 wetland acres, which includes

all of wetland 4 (W-4) and wetland 5 (W-5), and portion of W-1 will be preserved or avoided. The dominant vegetation within the wetlands include willow oak (*Quercus phellos*), water oak (*Quercus nigra*), sweetgum (*Liquidambar styraciflua*), and soft rush (*Juncus effusus*).

Five ephemeral streams carrying mostly precipitation total approximately 3,438 feet exist on the property. All 3,438 of stream channel (0.20 acres) will be impacted by fill. Maps are located in Appendix A and additional maps are provided with the Jurisdictional Determination Report in Appendix B.

Mitigation Site

Both on-site and off-site mitigation will be implemented to compensate for wetland impacts. Wetlands W-4 and W-5 totaling 0.94 acres will be preserved by deed restriction to achieve a portion of the required credits. Remaining credits needed will be acquired from an offsite, but nearby location in the WOB watershed. This site has not been positively identified at this time. When it is identified an updated Mitigation Plan will be submitted to the USACE.

5.0 DETERMINATION OF CREDITS

5.1 Credit Determination

The number of credits was calculated using the U.S Army Corps of Engineers (USACE) Charleston District Guidelines (September 2002) for wetlands. The adverse impacts to the wetland areas results in 3.3 mitigation credits required for the 0.29 acres of wetlands affected. A total of 1.5 preservation credits will be generated on the impact site, therefore it's anticipated that a **total of 1.8 mitigation credits** will be required from off-site mitigation for the project. Impacts to W-1, W-2, and W-3 are the result of fill from grading activities. W-1, W-2, and W-3 is categorized as a forested depression which is a lost type B (2.0 points), according to the Addendum of the Charleston Compensatory Mitigation Method. The priority category refers to designated areas of aquatic systems that provide functions of recognized importance because of their inherent functions, their position in the landscape, or their rarity. W-1, W-2, and W-3 is in a primary priority

area (2.0 points), due to its presence in White Oak Bayou watershed. The existing condition tells the degree of disturbance and the ability of the site to perform its physical, chemical and biological functions. W-1 and W-3 wetlands are considered fully functional (2.5 points) and W-2 is considered slightly impaired (2.0 points). The primary functions the each of these relatively small wetlands is to provide high water attenuation, nutrient assimilation and some limited aquatic and wildlife habitat. The duration that the adverse impacts to 0.29 acres of wetlands are expected to last is permanent (2.0 points) and the dominant impact for this area is fill material (3.0 points). The cumulative impact is 0.02 (0 points).

Approximately 1.2 acres of forested **wetland preservation** will be required to generate the projected 1.8 total wetland credits. Refer to Appendix B of this Plan for wetland mitigation tables.

The number of stream credits was calculated using the U.S Army Corps of Engineers (USACE) Little Rock District Stream Method (November 2011). The adverse impacts to the 3,438 linear feet of ephemeral stream results in 15,821 mitigation credits required. Priority area scoring (0.4 points) was considered for all five streams due to proximity to the adjacent protected site. Existing conditions were considered functionally impaired (0.1 points) for streams S-3 and S-4 to moderately functional (0.8 points) at S-1, S-2, and S-5. These ephemeral streams in general do not offer many functions other than transferring mostly precipitation. The activity will be fill material (2.5 points) and expected to last permanently (0.3 points). As mentioned previously, Permit No. 18754 authorized and mitigated 8,905 feet of stream and the credits purchased (over 46,000 credits) are more than enough to cover the required stream credits for the proposed Champs Site project. Stream impact mitigation tables for both the Champs Site and the 635-acre Joint Venture Site are included in Appendix B.

6.0 MITIGATION WORK PLAN

6.1 Mitigation Work Plan

Wetland preservation is considered a viable mitigation alternative in WOB. Mitigation for the project will generate credits by preserving a total of 0.94 acres of on-site and 1.2 acres of off-site like wetlands in the WOB watershed. Preservation will be completed concurrent to the impacts. These activities will generate a total of 3.3 wetland credits. Mitigation credits for stream impacts were acquired under previous USACE Permit No. 18754.

7.0 MAINTENANCE PLAN

7.1 Goals and Objectives

The mitigation plan is for the preservation of 2.14 (0.94 acres onsite + 1.2 acres off-site) total acres of wetland. It is anticipated that the site is self-maintaining, and little maintenance will be necessary.

8.0 PERFORMANCE STANDARDS

8.1 Performance Standards

These performance standards will verify that the mitigation site is meeting the interim success criteria and the objectives have been attained. The following are the performance standards for the preserved mitigation areas:

1) Mitigation area remains in a natural condition. Natural community succession is allowed.
2) The mitigation site will be marked with signs at a frequency and language approved by the USACE.

9.0 MONITORING REQUIREMENTS

9.1 Monitoring Requirements

HEA Properties, LLC is responsible for all phases of this project including marking appropriate boundaries, preparation and filing the deed restriction, monitoring, reporting, and performing any remedial action or other requirement not listed above. Monitoring Level 1 will be used for the project. HEA Properties, LLC will assure that the site is monitored near the end of the growing season in years one, three and five. Monitoring reports will be submitted to the Corps by the end of each respective monitoring year. A total of four permanent monitoring stations will be established for collection of monitoring data. One station will be established at the off-site location and three stations (one/wetland) will be established on-site. These stations will be established in representative portions of the wetland. Data collected will primarily include visual observation and photographs taken at each monitoring station throughout the monitoring period to demonstrate natural condition and health. Site photographs will be included in the monitoring report.

10.0 LONG-TERM MANAGEMENT PLAN

10.1 Long-Term Management Plan

HEA Properties, LLC will be responsible to ensure the project is monitored in years one, three and five. Monitoring reports will be submitted to the Corps by the end of each respective calendar year. The deed restricted area will be well marked with required signage. Remedial action if needed will be identified in the monitoring reports and implemented as soon as practicable.

11.0 ADAPTIVE MANAGEMENT PLAN

11.1 Adaptive Management

HEA Properties, LLC is committed to the success of the mitigation areas. Any future *force majeure* will be coordinated with the LRD Corps and dealt with appropriately.

12.0 FINANCIAL ASSURANCES

12.1 Financial Assurances

HEA Properties, LLC is responsible for financing all aspects of the mitigation plan.

Appendix A

Map

300
FEET

Wetlands Preserved (0.94 ac.)

Wetlands: Avoided (0.33 ac.)

Wetlands: Impacted - Fill (0.29 ac.)

Streams Impacted: Fill (3438 ft.) or 0.20 acres

Property Boundary

NO	DATE	REVISION	BY	CK.	APPR.

DESIGNED BY	WHG
CHECKED BY	WHG
APPR. BY	JJF
DRAWN BY	ALB

GBMc
Strategic Environmental Services
219 Brown Lane
Bryant, Arkansas 72022

SHEET TITLE
FIGURE 2:
WOUS IMPACTS MAP

JOB NAME
CHAMPS SITE PROPERTY
SECTION 404 PERMIT APPLICATION
HEA PROPERTIES, LLC.
PULASKI COUNTY, ARKANSAS

PROJECT NO.	3028-18-301
DATE	10/01/2019
SCALE	SHOWN
REV. NO	
DWG. NO.	

Appendix B

Wetland Table

Lost Type	Type A	Type B	Type C			
	3	2	0.2			
Priority Category	Tertiary	Secondary	Primary			
	0.5	1.5	2			
Existing Condition	Very Impaired	Impaired	Slightly Impaired	Fully Functional		
	0.1	1	2	2.5		
Duration	Seasonal	0 to 1 year	1 to 3 years	3 to 5 years	5 to 10 years	Over 10 years
	0.1	0.2	0.5	1	1.5	2
Dominant Impact	Shade	Clear	Drain	Dredge	Impound/Flood	Fill
	0.2	1	2	1.5	2.5	3
Cumulative Impact	0.05 x Sum AA					

Factor	Required Mitigation Credits Table					
	W-1	W-2	W-3			
Lost Type	2	2	2			
Priority Category	2	2	2			
Existing Conditioin	2.5	2	2.5			
Duration	2	2	2			
Dominant Impact	3	3	3			
*Cumulative Impact	0	0	0			
Sum of Factors ®	11.5	11	11.5			sum
Impacted Area (AA)	0.11	0.07	0.11			0.29
(R) X (AA)	1.3	0.8	1.3			
Required Wetland Mitigation Credits					3.3	

Priority Category	Tertiary	Secondary	Primary		
	0.1	0.2	0.4		
Existing Condition	Impaired	Slightly Impaired	Fully Functinoal		
	-0.1	0	0.1		
Degree of Threat	Low	Moderate	High		
	-0.1	0.1	0.2		
Control	Covenant Private	Covenant POA	Conservation Easement	Transfer Fee Title Conservancy	
	0	0.1	0.2	0.4	
Kind	Category 5	Category 4	Category 3	Category 2	Category 1
	-0.1	0	0.2	0.3	0.4
Location	Zone 5	Zone 4	Zone 3	Zone 2	Zone 1
	-0.1	0	0.2	0.3	0.4

	Preservation Mitigation Table			
Factor	**W-4**	**W-5**		**Off-site amount needed**
Priority Category	0.4	0.4		0.4
Existing Condition	0.1	0		0.1
Degree of Threat	0.1	0.1		0.1
Control	0.2	0.2		0.2
Kind	0.4	0.4		0.4
Location	0.4	0.4		0.4
Sum of m Factors ®	1.6	1.5		1.6
Mitigation Area (A)	0.65	0.29		**1.2**
(M) X (A)	1.04	0.435		1.92
Total Preservation Credits			**1.5**	1.92
				3.395

635-acre Joint Venture Site

Factor Table

Stream Type Impacted	Ephemeral	Intermittent	Perennial						
	0.1	0.4	0.8						
Priority Area	Tertiary	Secondary	Primary						
	0.1	0.4	0.8						
Existing Condition	Functionally Impaired	Moderately Functional	Fully Functional						
	0.1	0.8	1.6						
Duration	Temporary	Recurrent	Permanent						
	0.05	0.1	0.3						
Activity	Clearing	Utility Crossing / Bridge Footing	Below Grade Culvert	Armor	Detention	Morph. Change	Impound	Pipe >100'	Fill
	0.05	0.15	0.3	0.5	0.75	1.5	2	2.2	2.5
Linear Impact	<100'	100-200'	201-500'	501-1000'	>1000'	if >1000' total length			
	0	0.05	0.1	0.2	1.8	8905			

Adverse Impact Calculation

Factor	Dominant Impact Type							
	s1							
Stream Type Impacted	0.1							
Priority Area	0.4							
Existing Conditioin	0.1							
Duration	0.3							
Activity	2.5							
Cumulative Linear Impact	1.8							
Sum of Factors (M)	5.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Linear Feet of Stream Impacted in Reach (LF)	8905							
(M) X (LF)	46306.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Mitigation Credits Required								**46306**

The 46,306 stream credits have already been paid for under Permit No. 18754

Champs Site

Factor Table

Stream Type Impacted	Ephemeral	Intermittent	Perennial						
	0.1	0.4	0.8						
Priority Area	Tertiary	Secondary	Primary						
	0.1	0.4	0.8						
Existing Condition	Functionally Impaired	Moderately Functional	Fully Functional						
	0.1	0.8	1.6						
Duration	Temporary	Recurrent	Permanent						
	0.05	0.1	0.3						
Activity	Clearing	Utility Crossing / Bridge Footing	Below Grade Culvert	Armor	Detention	Morph. Change	Impound	Pipe >100'	Fill
	0.05	0.15	0.3	0.5	0.75	1.5	2	2.2	2.5
Linear Impact	<100'	100-200'	201-500'	501-1000'	>1000'	if >1000' total length			
	0	0.05	0.1	0.2	0.7	3438			

Adverse Impact Calculation

	Dominant Impact Type							
Factor	**S-1**	**S-2**	**S-3**	**S-4**	**S-5**			
Stream Type Impacted	0.1	0.1	0.1	0.1	0.1			
Priority Area	0.4	0.4	0.4	0.4	0.4			
Existing Conditioin	0.8	0.8	0.1	0.1	0.8			
Duration	0.3	0.3	0.3	0.3	0.3			
Activity	2.5	2.5	2.5	2.5	2.5			
Cumulative Linear Impact	0.7	0.7	0.7	0.7	0.7			
Sum of Factors (M)	4.8	4.8	4.1	4.1	4.8	0.0	0.0	0.0
Linear Feet of Stream Impacted in Reach (LF)	456	803	269	705	1205			
(M) X (LF)	2188.8	3854.4	1102.9	2890.5	5784.0	0.0	0.0	0.0
Total Mitigation Credits Required								**15821**

Entergy BUSINESS DEVELOPMENT ARKANSAS

Maumelle Champs Site

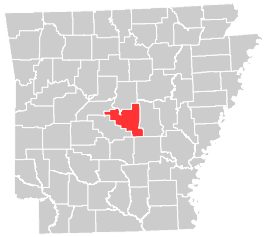
FEMA Flood Hazard

425 West Capitol Ave, Suite 2700
Little Rock, AR 72201

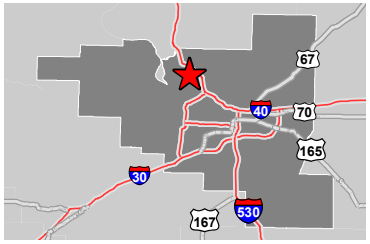
Phone: 1-888-301-5861

goentergy.com/ar

PULASKI COUNTY



VICINITY MAP



LEGEND

- Site Boundary
- Base Flood Elev

Flood Hazard

- AE,
- AE, FLOODWAY
- X, 0.2 PCT ANNUAL CHANCE FLOOD HAZARD
- X, AREA OF MINIMAL FLOOD HAZARD

NOTE

These drawings are provided merely to assist in economic development efforts. The Entergy Companies make no representations or warranties whatsoever regarding the accuracy or completeness of any information contained herein nor the condition or suitability of any properties. Users should direct inquiries about any property to the listing broker for that property.

SOURCE

FEMA, DFirm 05119C_LOMC, LOMR 18-06-0091, Publication Date 4/20/2018

Created by: RPG
Date: 01/2019

0 1,000 2,000 Feet

0 240 480 Meters

N

THE DEPARTMENT OF ARKANSAS
HERITAGE

Asa Hutchinson
Governor

Stacy Hurst
Director

Arkansas Arts Council

Arkansas Historic Preservation Program

Arkansas Natural Heritage Commission

Arkansas State Archives

Delta Cultural Center

Historic Arkansas Museum

Mosaic Templars Cultural Center

Old State House Museum

ARKANSAS HISTORIC PRESERVATION PROGRAM

1100 North Street
Little Rock, AR 72201

(501) 324-9880
fax: (501) 324-9184

info@arkansaspreservation.org
www.arkansaspreservation.com

An Equal Opportunity Employer

February 6, 2019

Ms. Judy Keller
Director of Community Economic Development
City of Maumelle
550 Edgewood Drive, Suite 590
Maumelle, AR 72113

RE: Pulaski County - Maumelle
The Proposed +/- 121 Acre Maumelle Property
AHPP Tracking Number: 102486.01

Dear Ms. Keller:

Based on the information discussed regarding this parcel of land and the five known cultural resources located within or near the area of potential effect (APE), the AHPP recommends the following options before any ground disturbing activities begin:

Site 3PU0692-Heywood Cemetery. Establish a 30-meter buffer around the known boundaries of the cemetery or last clearly visible headstone or depression.
Site 3PU0727. This historic site is potentially associated with the Heywood Cemetery (3PU0692). There are two options for this resource.

1) it should also be surrounded by a 30-meter buffer or
2) a Phase II archeological survey should be undertaken to determine the National Register of Historic Places (NRHP) extent and status of the site.

3PU0725. It has been destroyed and therefore, is not eligible for listing in the NRHP.
3PU0721 and 3PU0723. We understand that these two sites are outside the boundary of the parcel of land up for sale. However, it is possible that further archeological/ historic research and mitigation may need to be conducted prior to any ground disturbing activities in the future.

Should a federal nexus occur, the proposed project would be subject to Section 106 of the National Historic Preservation Act (NHPA).

In addition to the federal laws and regulations, the AHPP also recommends that the state archaeological and burial laws be consulted throughout the proposed planning process. The state laws are located at http://archeology.uark.edu/statearcheologist/laws/.

Thank you for the opportunity to comment on this request. Please refer to the ARPP Tracking Number listed above in all correspondence. If you have any questions, please call me at 501-324-9785.

Sincerely,

Scott Kaufman
Director, AHPP

cc: Dr. Ann Early, Arkansas Archeological Survey

Panamerican Consultants, Inc.

Cultural Resource Management
Terrestrial Archaeology
Maritime Archaeology
Architectural History
Geographic Information Systems

16 May 2019

Judy Keller
Director of Community and Economic Development
City of Maumelle
501-240-9888 cell
501-851-2500 office

RE: Archaeological sites marking

Dear Ms. Keller:

3PU727

Initially we relocated the Historic farmstead (3PU727) with two loci (A and B). Various surface features, principally rock wall lines and rock piles matching the description and sketch maps of Gannon (2005:Figures 14 and 15) were identified. First we flagged the loci boundaries with orange and black striped flagging tape to use as a visual reference while marking the buffer. Next we staked off a 30 m buffer zone around the site boundary using 3 ft. tall wooden grade stakes that were then painted fluorescent orange. These stakes were placed at 5 m, 10 m and 15 m intervals depending on the thickness of the vegetation, which at this site was variable. Finally, the position of each of these stakes was recorded using a sub-meter accurate (± 20-30 cm) Trimble Geoexplorer GPS unit. This allowed for the post-field production of Figures 1 and 2 that illustrate the buffers zones around the site. The area enclosed by the buffer zone stakes at 3PU727 is 12,699 m^2, or 3.1379 ac.

3PU723

The Prehistoric site 3PU723 was identified in a relatively open forest on a point of land that juts out into the White Oak Bayou floodplain (which was water covered). The most prominent feature at this site is the natural prairie mound, or pimple mound. Using the same method as at 3PU727, the site boundary was flagged with orange and black striped flagging tape, and then a 30 m buffer zone around the site was marked with 3 ft. tall wooden grade stakes that were then painted fluorescent orange. These stakes were placed at roughly 15 m intervals as the area was relative open.

Again identical to 3PU727, the position of each of the buffer zone stakes at 3PU723 was then recorded using a sub-meter accurate Trimble Geoexplorer GPS unit. This allowed for the post-field production of Figures 1 and 2 that illustrate the buffers zones around the site. The area enclosed by the buffer zone stakes at 3PU723 is 5,639 m^2, or 1.3943 ac.

3PU692

The Historic cemetery (3PU692) proved to be difficult to locate for several reasons: (1) The UTM coordinates given on the Arkansas Archaeological Survey (AAS) Site form were in error; (2) the two headstones at the cemetery are laying on the ground in relatively a densely vegetated

area; and (3) the only significant landmark near the cemetery is an old access trail for a pipeline located west of the cemetery. Fortunately after some effort, the cemetery was re-discovered, and the correct mid-point UTM coordinates for it are as follows:

UTM Zone 15 NAD27
Easting 556 582
Northing 3858 429

UTM Zone 15 NAD83
Easting 556 565
Northing 3858 638

Following the procedures used at 3PU723 and 3PU727 the boundary of the cemetery was marked using orange and black striped flagging tape, and then a 30 m buffer was staked out around it using 3 ft. grade stakes that were then painted fluorescent orange. Due to our difficulty in locating the cemetery we opted to mark the buffer zone around the cemetery at 5 m intervals, (Figures 3 and 4). Additionally the two toppled monuments were also marked with stakes painted orange (Figures 5 and 6). The area enclosed by the buffer zone stakes at 3PU692 is 1,780 m^2, or 0.4398 ac.

As discussed on the phone the morning of Wednesday, April 17, 2019, the planned GPR survey at the cemetery was not conducted because the vegetation was too dense, and as a result we felt the resulting data would be of too poor quality to be useful. To get good GPR data it would be necessary to clear the vegetation and smaller trees from the cemetery and its near environs.

Visual inspection of the cemetery and surrounding area leads us to believe that Ganon's (2005) plan view map of the cemetery is accurate, showing it as roughly 15-x-15 m with 9 to 10 grave depression and two monuments. In our opinion a 30 m buffer around this small (15-x-15 m) family cemetery provides adequate protection. The fees associated with the planned GPR survey will be deleted from our forthcoming invoice.

GIS SHAPE FILES

Attached are GIS shape files for the buffer zones around the three sites. These are expressed in the Zone 15 WGS84 projection, and were, as noted above, collected in the field using a sub-meter accurate GPS data collector.

Respectfully submitted,

C Andrew Buchner

PANAMERICAN CONSULTANTS, INC.
C. Andrew Buchner, RPA
Vice-president and Memphis Branch Manager

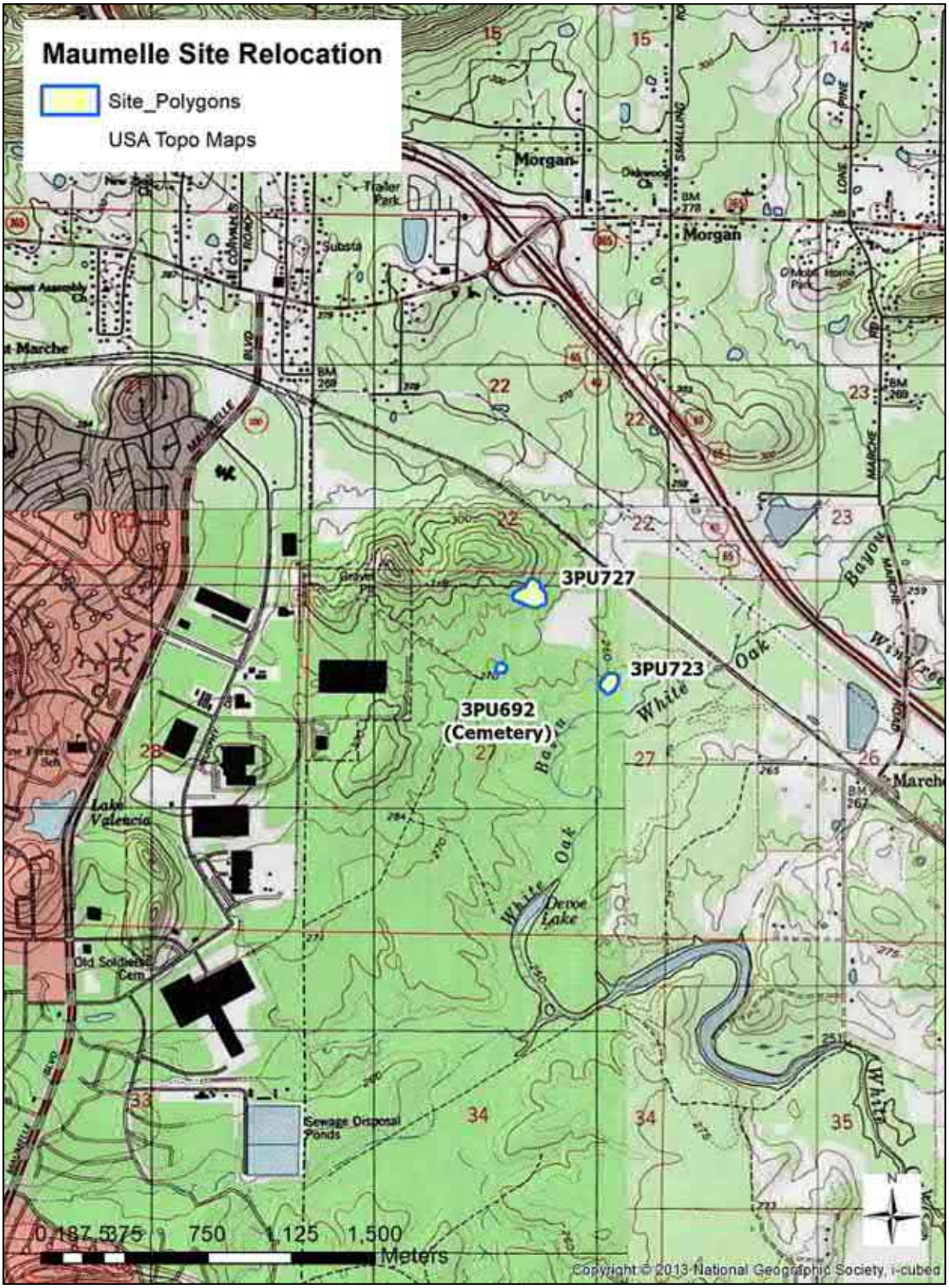


Figure 1. GIS generated map showing 30 m buffer zones around the sites (1:24,000).

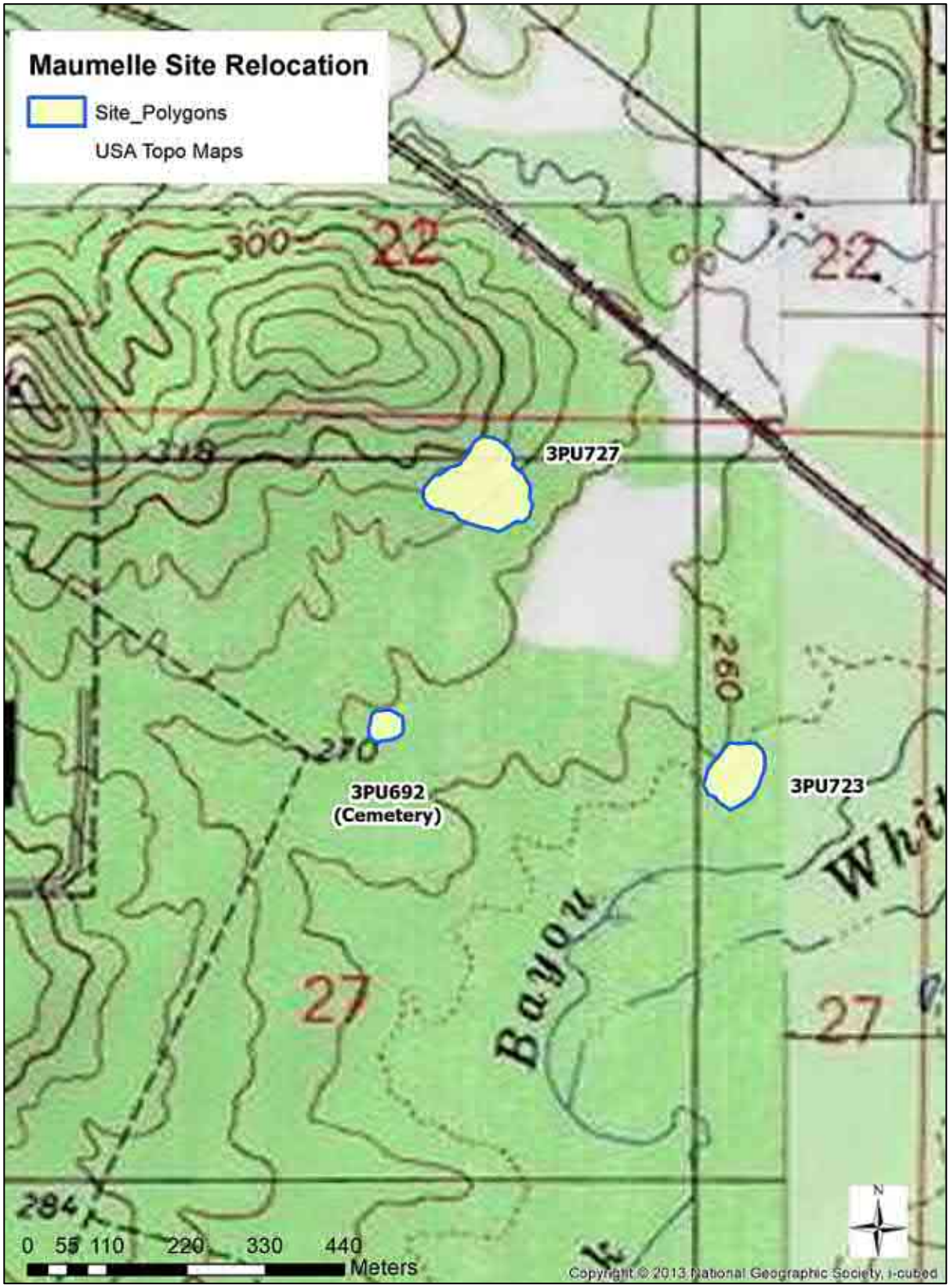


Figure 2. GIS generated map showing 30 m buffer zones around the sites (zoomed in).

Figure 3. Buffer zone stakes on old access trail at the cemetery (3PU692) (DSCN1694).

Figure 4. Buffer zone stakes at the cemetery (3PU692) (DSCN1695).

Figure 5. Toppled 1913 monument and slotted monument base (DSCN1701).

Figure 6. Toppled 1911 Ben Heywood monument at base of cedar tree (3PU692) (DSCN1702).

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Arkansas Ecological Services Field Office
110 South Amity Suite 300
Conway, AR 72032-8975
Phone: (501) 513-4470 Fax: (501) 513-4480
http://www.fws.gov/arkansas-es

In Reply Refer To: August 12, 2019
Consultation Code: 04ER1000-2019-SLI-1345
Event Code: 04ER1000-2019-E-02727
Project Name: Champs Boulevard Development

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies endangered, threatened, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). **This letter only provides an official species list and technical assistance; if you determine that listed species and/or designated critical habitat may be affected in any way by the proposed project, even if the effect is wholly beneficial, consultation with the Service will be necessary.**

If you determine that this project will have no effect on listed species and their habitat in any way, then you have completed Section 7 consultation with the Service and may use this letter in your project file or application.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found on our website.

Please visit our website at http://www.fws.gov/arkansas-es/IPaC/home.html for species-specific guidance to avoid and minimize adverse effects to federally endangered,

threatened, proposed, and candidate species. Our web site also contains additional information on species life history and habitat requirements that may be useful in project planning.

If your project involves in-stream construction activities, oil and natural gas infrastructure, road construction, transmission lines, or communication towers, please review our project specific guidance at http://www.fws.gov/arkansas-es/IPaC/ProjSpec.html.

The karst region of Arkansas is a unique region that covers the **northern third of Arkansas** and we have specific guidance to conserve sensitive cave-obligate and bat species. **Please visit http://www.fws.gov/arkansas-es/IPaC/Karst.html to determine if your project occurs in the karst region and to view karst specific-guidance.** Proper implementation and maintenance of best management practices specified in these guidance documents is necessary to avoid adverse effects to federally protected species and often avoids the more lengthy formal consultation process.

If your species list includes any mussels, Northern Long-eared Bat, Indiana Bat, Yellowcheek Darter, Red-cockaded Woodpecker, or American Burying Beetle, your project may require a presence/absence and/or habitat survey prior to commencing project activities. Please check the appropriate species-specific guidance on our website to determine if your project requires a survey. We strongly recommend that you contact the appropriate staff species lead biologist (see office directory or species page) prior to conducting presence/absence surveys to ensure the appropriate level of effort and methodology.

Under the ESA, it is the responsibility of the Federal action agency or its designated representative to determine if a proposed action "may affect" endangered, threatened, or proposed species, or designated critical habitat, and if so, to consult with the Service further. Similarly, it is the responsibility of the Federal action agency or project proponent, not the Service, to make “no effect” determinations. If you determine that your proposed action will have “no effect” on threatened or endangered species or their respective critical habitat, you do not need to seek concurrence with the Service. Nevertheless, it is a violation of Federal law to harm or harass any federally-listed threatened or endangered fish or wildlife species without the appropriate permit.

Through the consultation process, we will analyze information contained in a biological assessment that you provide. If your proposed action is associated with Federal funding or permitting, consultation will occur with the Federal agency under section 7(a)(2) of the ESA. Otherwise, an incidental take permit pursuant to section 10(a)(1)(B) of the ESA (also known as a habitat conservation plan) is necessary to harm or harass federally listed threatened or endangered fish or wildlife species. In either case, there is no mechanism for authorizing incidental take “after-the-fact.” For more information regarding formal consultation and HCPs, please see the Service's Consultation Handbook and Habitat Conservation Plans at www.fws.gov/endangered/esa-library/index.html#consultations.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to

federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, **the accuracy of this species list should be verified after 90 days.** This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. **Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.**

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Arkansas Ecological Services Field Office
110 South Amity Suite 300
Conway, AR 72032-8975
(501) 513-4470

Project Summary

Consultation Code: 04ER1000-2019-SLI-1345

Event Code: 04ER1000-2019-E-02727

Project Name: Champs Boulevard Development

Project Type: DEVELOPMENT

Project Description: The city of Maumelle is working to have a 121 acres site classified as "site certified." Plans for the site are commercial and light industrial development.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/34.86948938230205N92.3804832863225W

Counties: Pulaski, AR

Endangered Species Act Species

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Birds

NAME	STATUS
Piping Plover *Charadrius melodus* Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered. There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6039	Threatened

Insects

NAME	STATUS
Rattlesnake-master Borer Moth *Papaipema eryngii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7863	Candidate

Flowering Plants

NAME	STATUS
Running Buffalo Clover *Trifolium stoloniferum* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2529	Endangered

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

PHASE I ENVIRONMENTAL SITE ASSESSMENT

FOR

EXISTING HEA PROPERTIES, LLC SITE

CHAMPS BOULEVARD

MAUMELLE, ARKANSAS

* * * * *

HEA PROPERTIES, LLC

OWNERS

3201 CLUB MANOR, SUITE A

MAUMELLE, ARKANSAS 72113

* * * * *

OCTOBER 8, 2018

JOB NO. 15956

ANDERSON ENGINEERING CONSULTANTS, INC.

10205 W ROCKWOOD ROAD
LITTLE ROCK, AR 72204
(501) 455-4545

3217 NEIL CIRCLE
JONESBORO, AR 72401
(870) 932-3700

620 E 3RD STREET
HOPE, AR 71801
(501) 515-4654

ANDERSON ENGINEERING CONSULTANTS, INC.

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JONESBORO, AR 72401
(870) 932-3700

620 E 3RD STREET
HOPE, AR 71801
(501) 515-4654

October 8, 2018

Job No. 15956

Mr. Bryan Austin
HEA Properties, LLC
3201 Club Manor, Suite A
Maumelle, Arkansas 72113

Re: Phase I Environmental Site Assessment
Existing HEA Properties, LLC Site
Maumelle, Arkansas

Dear Mr. Austin:

Anderson Engineering Consultants, Inc. (AECI) is pleased to submit this report pertaining to the environmental conditions of the above referenced site. This Phase I Environmental Site Assessment consisted of the following: a physical site reconnaissance, a review of historical documents associated with the site, and a review of both state and federal records conducted under the Freedom of Information Act. A detailed scope of services is provided in a latter section of this report. This Phase I Environmental Site Assessment was conducted in general accordance with ASTM E1527-13.

Potential "Recognized Environmental Conditions" (REC) as defined by ASTM E 1527-13 were not discovered during the investigation. It has been a pleasure to have provided these environmental services to you, and we are always available should questions or concerns arise regarding this project.

CERTIFICATE OF AUTHORIZATION
ANDERSON ENGINEERING CONSULTANTS, INC.
No. 73
ARKANSAS - ENGINEER

Very truly yours,

ANDERSON ENGINEERING CONSULTANTS, INC.

Stuart M. Scheiderer, R.E.P., P.E.
Environmental Engineer

Scott W. Anderson, R.E.P., P.E.
Principal Engineer

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No.11424
STUART M. SCHEIDERER
10/8/18

SMS/SWA/msk
15956.env

PHASE I ENVIRONMENTAL SITE ASSESSMENT

FOR

EXISTING HEA PROPERTIES, LLC SITE

CHAMPS BOULEVARD

MAUMELLE, ARKANSAS

* * * * *

HEA PROPERTIES, LLC

OWNERS

3201 CLUB MANOR, SUITE A

MAUMELLE, ARKANSAS 72113

* * * * *

BY:

ANDERSON ENGINEERING CONSULTANTS, INC.

GEOENVIRONMENTAL CONSULTANTS

10205 ROCKWOOD ROAD

LITTLE ROCK, ARKANSAS 72204

OCTOBER 8, 2018 JOB NO. 15956

EXECUTIVE SUMMARY

The purpose of this investigation was to identify any potential sources of environmental concern and "Recognized Environmental Conditions", for the Existing HEA Properties, LLC Site located on the northeast side of Champs Boulevard in Maumelle, Arkansas. The physical site reconnaissance consisted of examining the site for evidence of environmental contaminants, a drive by evaluation of adjacent properties and a historical and regulatory records review. A more detailed description of the scope of services performed is contained in the Scope section of this report.

In October of 2018, ANDERSON ENGINEERING CONSULTANTS, INC. performed a Phase I Environmental Site Assessment of the above mentioned site in Maumelle, Arkansas. At the time of the site reconnaissance, the subject property was undeveloped and consisted primarily of vegetation and sparse trees. Some rough dirt/gravel roads were present in addition to a small area of excavation. No evidence of previous development was observed.

As a result of this investigation, no potential "Recognized Environmental Conditions" (RECs) were identified, as set forth in ASTM E 1527-13 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process and 40 CFR Part 312 Standards and Practices for All Appropriate Inquires (AAI). Similarly, no Historical Recognized Environmental Conditions (HRECs) or Controlled Recognized Environmental Conditions (CRECs) were discovered.

We have prepared this executive summary solely to provide a general overview. Do not rely on this executive summary for any purpose except that for which it was prepared. Rely only on the full report for information about findings, recommendations and other concerns.

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INTRODUCTION

The following sections contain the purpose, scope, significant assumptions, limitations and exceptions, any special terms and conditions and the user reliance information in regards to the Phase I Environmental Site Assessment (ESA) for the site of the Existing HEA Properties, LLC Site located on the northeast side of Champs Boulevard in Maumelle, Arkansas.

Purpose

The purpose of this Phase I Environmental Site Assessment (ESA) was to identify, to the extent feasible and in accordance with the process described herein, Recognized Environmental Conditions as defined by ASTM Standard E-1527-13 for the referenced property in Maumelle, Arkansas. AECI understands that the findings of this study will be used by the client and his assignees to evaluate the proposed site for a pending financial transaction.

Scope

The following is a brief discussion in regard to the scope of work performed by AECI as part of this ASTM outlined assessment:

1. A site description was developed using documents supplied by the client, a physical walk through, visual observations, and a vehicular reconnaissance of the surrounding areas including those mapped by the search database.
2. A review of obtainable federal, state and local records of sites or facilities where there have been, and are likely to be, releases of hazardous substances, including reports and environmental records concerning landfills, underground storage tanks, and activities which are likely to cause or contribute to the release of hazardous substances. The databases reviewed the following regulatory programs: Federal National Priorities List (NPL), Federal Delisted NPL, Federal Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) list, Federal CERCLIS No Further Remedial Action Planned (NFRAP) list, Federal Resources Conservation and Recovery Act (RCRA) CORRACTS list, RCRA Non-CORRACTS TSD list, Federal RCRA Generators list, Federal Emergency Response Notification System (ERNS) list, State CERCLIS-Equivalent List, Solid Waste/Landfill Facilities (SWLF) list, Arkansas Department of Environmental Quality (ADEQ) Leaking Tanks (LTANKS) list, ADEQ Registered Storage Tank (RST) list, Historic Gas Stations and Historical Dry Cleaners.

3. A review of other data including the United States Geologic Survey (USGS) maps, Arkansas Geologic Commission Maps, "Soil Survey Data" – Natural Resources Conservation Service (NRCS), Arkansas Natural Resources Commission (ANRC) Water Well Construction Reports, "Flood Zone Maps" by the Federal Emergency Management Agency (FEMA), and U.S. Department of Interior Wetlands Inventory were used to establish the site physical setting, which includes the following: radon hazard potential, topography, drainage of the site and surrounding area, the geology of the site and the surrounding area, and a review of climatological data. These reviews are based on visual observations made at the time of the site reconnaissance and/or a review of obtainable records.
4. A review of historical sources including selected aerial photography from 1937 to 2017, Sanborn Fire Insurance Maps, City Directories and interviews with persons having direct knowledge of past usage or knowledge of regulatory driven actions that may have occurred at the site in the past.
5. A physical site reconnaissance was performed on October 5, 2018, which included taking photographs of the site and vicinity and specifically pertinent features that may impact the overall condition of the site from an environmental perspective.
6. While on site a review of general information in regard to the property/facility was made and included the following items: Waste Stream, Solid/Liquid Waste Disposal, Surface Water Drainage, Landfills, Pits, Ponds, Lagoons, Sumps and Catch Basins.
7. From the fieldwork, records reviews, and other gathered information, the findings, conclusions and recommendations are provided along with a list of references and resumes of the persons providing this documentation as per the requirements of ASTM E 1527-13.

Significant Assumptions

There is the possibility that even with the proper application of these methodologies, conditions may exist on the site that could not be identified within the scope of the assessment or which were not reasonably identifiable from the available information. AECI has made no significant assumptions concerning the proposed site that would affect the findings of this report.

Limitations and Exceptions

The observations, findings and conclusions described in this Phase I Environmental Assessment contain all the limitations inherent in these methodologies that are referred to in ASTM E-1527-13. AECI has not performed any observations, investigation, study, or testing that is not specifically listed in the scope of services. Anderson Engineering Consultants, Inc. shall not be liable for failing to discover any condition whose discovery required the performance of services not listed in the scope of services.

Special Terms and Conditions

This Phase I Environmental Site Assessment was authorized by Mr. Bryan Austin of HEA Properties, LLC, the prospective owner's representative, by signed acceptance of AECI Proposal No. 18383 on September 17, 2018.

This study was conducted to evaluate the potential for environmental liability. It is based on the physical property observed at the time of the site reconnaissance and on additional information obtained during the review of obtainable historical and environmental records. Variations, while not likely, may exist and if found will require re-evaluation of our findings. Anderson Engineering Consultants, Inc. does not warrant, certify, or guarantee the suitability of the subject property for acquisition and/or development, either expressed or implied.

User Reliance

This Phase I Environmental Site Assessment is intended for sole use and benefit of the client or other persons otherwise engaged by the client. HEA Properties, LLC and their affiliates may rely on this report to be true and factual based on observations and findings as part of the scope of work for this project.

SITE DESCRIPTION

The following sections describe the general site conditions as set forth in ASTM E 1527-13. This section contains the location and legal description, site and vicinity general characteristics, current use of the property and of the surrounding area.

Location and Legal Description

The subject property is located northeast of a cul-de-sac on Champs Boulevard in Maumelle, Arkansas, as illustrated on the Vicinity Map, Plate 1. The site reportedly encompasses approximately 120 acres. Based on information provided, the site boundaries were identified on a GoogleEarth image that is provided as Plate 2. A legal description or survey were not provided.

Site and Vicinity General Characteristics

The subject property is located in an area known as the Maumelle Industrial Park. Much of the areas east of the subject property are undeveloped. A school is located to the south with light industrial and commercial developments along Murphy Drive west of the site.

Climate

The proposed site and Pulaski County are located in a semi-humid region characterized by long hot and humid summers, and relatively short mild winters. The average daily high temperature in July and August is 93° Fahrenheit and 52° Fahrenheit in December and January. Precipitation is fairly well distributed throughout the year with an average exceeding 5.0 inches in November and April while August is typically the driest month averaging less than 3.0 inches. Average annual precipitation is approximately 50.0 inches with minimal snowfall being recorded in an average year. Thunderstorms occur on about 60 days each year and are occasionally accompanied by large hail, damaging winds, and tornadoes.

Current Use of the Property

The site is currently undeveloped. Some rough clearing and dirt roads traverse the property, as illustrated on Plate 2. Much of the property is occupied with what appears to be natural trees and vegetation. Rough dirt/gravel roads exist across the property.

Current Uses of Adjoining Property

The properties to the northeast, east and southeast are primarily undeveloped. A large warehouse facility, which appears to be occupied by Pepsi and Leisure Arts is located along the southern portion of the western boundary of the site. Maumelle High School is located south. Warehouse type developments are located to the northwest.

USER PROVIDED INFORMATION

As stated in ASTM E 1527-13, AECI requested the following information from the client in order to help and identify any potential Recognized Environmental Conditions associated with the site; a site plan/survey of the site, a Legal Description, all available title documents, any specialized knowledge of the site or surrounding area and any prior environmental reports specific to the site. A Business Development packet for the site prepared by Entergy was provided for review and was used to identify the boundaries illustrated on Plate 2.

RECORDS REVIEW

Information from standard Federal and State environmental record sources was provided through Environmental Data Resources (EDR) or identify other agency list provider. Data from governmental agency lists are updated and integrated into one database, which is updated as these data are released. This integrated database also contains postal service data in order to enhance address matching. Records from one government source are compared to records from another to clarify and address ambiguities. The demographic and geographic information available provides assistance in identifying and managing risk. The accuracy of the geocode locations is approximately ±300 feet.

In some cases, location information supplied by the regulatory agencies is insufficient to allow the database companies to geocode facility locations. These facilities are listed under the unmappables section within the provider report. The database search indicates four unmappable listings exist within the ASTM minimum search distance from the property and will be discussed in the appropriate section.

Standard Environmental Record Sources

Regulatory information from the following database sources regarding possible recognized environmental conditions, within the ASTM minimum search distance from the property, was reviewed. Specific facilities are discussed below if determined likely that a potential recognized environmental condition has resulted at the site from the listed facilities. A Locator Map is provided as Plate 3 depicting any facilities within the ASTM search distances. Please refer to Appendix B for a complete listing.

Federal NPL – The National Priorities List (NPL) is the Environmental Protection Agency (EPA) database of uncontrolled or abandoned hazardous waste sites identified for priority remedial actions under the Superfund Program. The subject property is not listed as a NPL facility. No NPL sites are located within 1.0 mile of the subject property.

Federal 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. Sites may be deleted from the NPL where no further response is appropriate. The subject property is not listed as Federal Delisted NPL nor is any site within a 1.0 mile radius.

Federal CERCLIS – The Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) list is a compilation of sites that the EPA has investigated or is currently investigating for a release or threatened release of hazardous substances. The subject property is not listed as a CERCLIS facility. No CERCLIS sites are listed within 0.5 mile of the subject property.

Federal CERCLIS NFRAP – The CERCLIS No Further Remedial Action Planned (NFRAP) List is a compilation of sites that the EPA has investigated, and has determined that the facility does not pose a threat to human health or the environment, under the CERCLA framework. The subject property is not listed as a CERCLIS-NFRAP facility. One CERCLIS-NFRAP site is listed on or within 0.5 mile of the subject property.

Ozark Chemical Co at 1500 Murphy Drive is listed in the Superfund Enterprise Management System Archive (SEMS-ARCHIVE). These sites have been removed from the SEMS inventory, and are not judged to be a potential NPL site. Completed assessments did not result in additional steps by the EPA to include the site in the NPL inventory. It should be noted that inclusion in this database does not necessarily mean there is no hazard associated with the site.

Federal Resources Conservation and Recovery Act (RCRA) CORRACTS – The EPA Resource Conservation and Recovery Act (RCRA) Program identifies and tracks hazardous waste from point of generation to the point of disposal. The RCRA Treatment, Storage and Disposal (TSD)

database is compilation by the EPA of reporting facilities that treat, store or dispose of hazardous waste. The CORRACTS database is the EPA's list of treatment storage or disposal facilities subject to corrective action under RCRA. The subject property is not listed as a RCRA CORRACTS TSD facility. There are no RCRA CORRACTS TSD facilities listed within 1.0 mile of the subject property.

Federal Resource Conservation and Recovery Act (RCRA) Non-CORRACTS TSD – The RCRA TSD database is a compilation by the EPA of reporting facilities that treat, store or dispose of hazardous waste. The subject property is not listed as a RCRA Non-CORRACTS - TSD facility. No RCRA Non-CORRACTS TSD sites are listed within 0.5 mile of the subject property.

Federal RCRA Generator– The RCRA program identifies and tracks hazardous waste from the point of generation to the point of disposal. The RCRA Generators database is a compilation by the EPA of reporting facilities that generate hazardous waste. The subject property is not listed as a RCRA facility. No RCRA generator facilities were listed within 0.25 miles of the subject property.

Federal Emergency Response Notification System (ERNS) – The Emergency Response Notification System (ERNS) is a national database used to collect information or reported release of oil or hazardous substances. No ERNS sites were listed on the subject property or on the adjacent properties.

State Hazardous Waste Site (State NPL-Equivalent (SCL)) – The Arkansas Department of Environment Quality maintains a State NPL-equivalent list of sites under investigation that could be actually or potentially contaminated and presenting a possible threat to human health and environment. The subject property is not listed as a State NPL-equivalent facility. No such sites are listed within 1.0 mile of the subject property.

Solid Waste/Landfill Facilities (SWLF) – A database of SWLF is prepared by the Arkansas Department of Environmental Quality (ADEQ). The subject property is not listed as a SWLF

facility nor is any within 0.50 mile. A list of solid waste illegal dumps (SWID) is also maintained by ADEQ though none are listed within 0.50 mile of the subject property.

State Leaking Tank (LTANKS) – The Arkansas Department of Environmental Quality (ADEQ) compiles lists of all leaks of hazardous substances from underground and above ground storage tanks. The subject property is not listed as a LTANKS facility.

Four listings were included in the 'orphan' database, which are listings that do not have adequate or sufficient information to be mapped. All of the listings were for the LTANKS database, with three of the listings being Love's Country Store. Further review of the location of the facility is Galloway, which is approximately fifteen miles away. The other facility, a former 7-Eleven #12335, has a reported address of 4700 Camp Robinson and 47th Street, which is over eight miles away. No other facilities are listed.

State Registered Storage Tank (RST) – The Arkansas Department of Environmental Quality (ADEQ) compiles a list of RST locations. The subject property is not listed as a RST facility. No RST facilities are listed within 0.25 mile of the subject property.

EDR US Historic Gas Stations **–** EDR has collected a list of potential gas stations, filling stations and service station sites through review of national collections and business directories. The listed facilities are either past sites or operations that have the potential of creating environmental concern though may not be listed in current government databases. No facilities are listed within 0.25 mile of the subject property.

EDR US Historic Dry Cleaners **–** EDR has searched collections of national business directories and compiled a list of facilities that potentially operated as dry cleaners in the past. The categories searched included dry cleaners, cleaners, laundry, laundromat, wash/dry, etc. No facilities are listed in the database within 0.25 mile of the subject property.

Other Ascertainable Records – Numerous other databases are compiled by various government agencies for facilities that could have environmental impacts. The Formerly Used Defense Sites (FUDS) list is maintained by the United States Corps of Engineers. The Unexploded Ordnance

Sites (UXO) lists is compiled and maintained by the Department of Defense. The Maumelle Ordnance Works is listed in both databases. Some research indicates this facility was spread over 7000 acres. After production of picric acid, used in making explosives from 1942 to 1945, the facility stopped production in August of 1945 and was decontaminated and shut down by November of that year. The plant was kept on stand-by status and ultimately sold to the city of North Little Rock, then to Jess P. Odom in 1967 for development of the city of Maumelle. Several bunkers were constructed to house explosives before shipment. Of the twenty-one built, remnants of only three remain in the City's Lake Willastein Park, which is over two miles away. Though the facility is mapped within the limits of the subject property, there is no evidence to suggest activity or remains of the facility on the subject property.

Physical Setting Sources

The physical setting of the site was determined by reviewing available topographic maps, published geologic maps and literature on the soils and groundwater conditions for the site and surrounding area.

Topography **–** Visual observations indicate some topographic changes are evident within the boundaries of the subject property. Information from the USGS 7.5' Topographic map contained in the EDR database indicates the site exists near elevation ±275.0 msl. The subject property gently slopes down to the south and east. A small peak exists to the north as the elevations decrease through the subject property toward White Oak Bayou. Significant differences in contours were not identified in review of the maps provided. Topographic maps from 1953/1954, 1986/1987 and 2014 were obtained and briefly described below.

2014 Topographic Map – The most recent topographic map provided was from 2014, which is provided for reference on Plate 4. It can be seen that the topography within the limits of the subject property slope down toward White Oak Bayou to the southeast.

1986/1987 Topographic Map – The map provided from 1986/1987 is provided on Plate 5 and indicates a Gravel Pit is located close to, or within the boundaries of the subject property. No significant changes in elevation are evident within the site boundaries.

1953/1954 Topographic Map – Plate 6 shows the topographic map from 1953/1954, which is the only one provided with any indication of development as a military facility. The words 'Military Reservation', 'Acid', and 'Works' are shown on this map, which are likely related to the Maumelle Ordnance Works. No signs of structures or development, other than the underground pipeline, exist within the boundaries of the subject property.

Soils/Geology – The site and the Maumelle area exist within the Arkansas River Valley Physiographic Province of central Arkansas. More specifically, the area lies on the banks of the Arkansas River. The alluvial deposits typically consist of gravels, sands, silts, clays and mixtures of these materials. Additional information obtained from the United States Department of Agriculture's (USDA) Soil Conservation Service (SCS) identifies the soil components as Leadvale series, which consist of silt loams. These soils are described as moderately well drained with slow infiltration rates and a moderate potential for corrosion of uncoated steel.

Hydrology **–** Shallow groundwater is typically seasonal in nature and sporadic. Previous experience in the area indicates water levels at depths greater than 20.0 feet and closely coincide with the level of the Arkansas River. The gradient is expected to follow the general topographic trend. One well is shown in the vicinity of the subject property as shown on the Well Locator Map provided on Plate 7. No water level information was provided.

Radon Hazard Potential **–** Radon is a colorless, odorless, radioactive gas that forms from the radioactive decay of uranium in all soils. High levels of indoor radon have been linked to higher risk of lung cancer. AECI researched the radon potential for the subject property using documents published by the United States Environmental Protection Agency (USEPA), and the United States geologic Survey (USGS). According to the USGS Open File report 93-292-F, the federal EPA Radon Potential Zone for Pulaski County is 3. The average 2-7 day charcoal canister measurement from 2 homes tested in Pulaski County was 0.8 picocuries per liter (pCi/L). The state database from 127 sites reports a mean level of 0.9 pCi/L. One picocurie is equal to 2.2 disintegrations of radon atoms per minute. The average concentration of radon in structures across the United States is between 1 and 2 pCi/L. Based upon the review of available documents it is assumed the radon hazard for the subject property is low.

Flood Zone Information – A review of the Flood Insurance Rate Maps, published by the Federal Emergency Management Agency (FEMA), was performed. The subject property and surrounding area are located within Map Panel 05119C0310G. A portion of the FEMA Flood Insurance Map depicting the site location in relation to the flood plains in the area is provided as Plate 8. The area of the subject property is mapped within flood zones of White Oak Bayou. Definitions of the FEMA flood zones are provided on Plate 9.

Wetlands - The U.S. Army Corp of Engineers (USCOE) regulates the discharge of dredged or filled materials into waters of the United States, including wetlands, as outlined in Section 404 of the Clean Water Act (CWA). Wetlands are identified as those areas which are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support under normal circumstances the majority of vegetation typically adapted for life in saturated soil conditions. Also, Executive Order 11990 - Protection of Wetlands, requires federal agencies to avoid, to the extent possible, adverse impacts to wetlands.

A review of the U.S. Department of the Interior's Wetland's Inventory of the area was conducted in order to identify the potential for wetlands. This review indicated that there are mapped wetlands close to or within the boundaries of the subject property along White Oak Bayou. Several small freshwater emergents and ponds are located in the surrounding areas. A copy of the wetlands inventory map obtained from the National Wetlands Inventory Mapper is provided as Plate 10, with the accompanying classification charts provided as Plate 11.

Oil and Gas Exploration – AECI's review of the USGS topographic maps of the subject property area and on-site reconnaissance indicated that there are no oil or natural gas wells on the subject property or shown within the database search area. Additionally, the Well Locator map provided on Plate 9 show no oil or gas wells.

Historical Use Information

The history and activities associated with the site and surrounding area were determined by reviewing Sanborn Fire Insurance maps, reviewing City Directories for the site and a review of available aerial photography.

Aerial Photograph Review – A review of thirteen aerial photographs of the site and surrounding area for the period of 1937 through 2015 was conducted to provide information pertaining to the prior uses of the subject property and the surrounding area. A copy of the 2017, 2000, 1983, and 1949 photographs are provided as Plates 14 through 18**.**

2017 Photograph – The most recent aerial photograph contained in the database is from 2017, which is provided on Plate 12. The conditions shown are similar to those depicted on Plate 2 and observed during the site reconnaissance.

2000 Photograph – Plate 13 illustrates the conditions of the subject property and surrounding areas as they appeared in 2000. The development to the northeast had not been constructed at that time. The powerlines near the southeast corner of the site shown in the later photograph were constructed between 2006 and 2010.

1983 Photograph – The conditions of the subject property and surrounding areas from 1989 is illustrated on Plate 14. No development is readily visible.

1949 Photograph – The conditions that existed in 1949 are illustrated on Plate 15. A small structure is evident as is clearing to the east.

Title Records – No title records were provided to AECI for this review.

Sanborn Fire Insurance Maps – A search of Sanborn Fire Insurance maps pertaining to the proposed site and surrounding area was conducted by Environmental Data Resources, Inc. (EDR). EDR searched the Library of Congress, University Publications of America and the EDR Private Collection. EDR informed AECI that the site was an UNMAPPED PROPERTY.

City Directory Review – A search of City Directory files was conducted by EDR and provided for seven years from 1987 to 2014. The only street that borders the subject property is Champs Boulevard. The site is undeveloped and does not have an address. The only addresses listed for Champs Boulevard are for various businesses that were found during the site reconnaissance.

SITE RECONNAISSANCE

The property was inspected by Mr. Stuart M. Scheiderer, R.E.P., P.E. on October 5, 2018. The methodology used during the site reconnaissance, based on the size of the site and existing groundcover, consisted of observing the boundaries and traversing the site at select intervals.

General Site Setting

Photograph 1, Plate 16, shows one of the gravel/dirt roads into the subject property from near the northwest corner of the site. Photograph 2 shows evidence of some excavations that were performed on the northern boundary of the site. Visual observations indicate these excavations are not recent. Photograph 3, Plate 17, shows an additional road extending to the southeast from a clearing on the northern portion of the site. Photograph 4 shows a road from the same vantage point as the previous picture extending to the southwest. Photograph 5, Plate 18, shows a relatively large hole that appeared to be approximately 5.0 feet in diameter near this clearing. Photograph 6 shows another dirt road and the general conditions observed across the site.

Photograph 7, Plate 19, shows the conditions along the powerline that crosses the subject property looking to the southwest. Photograph 8 shows conditions along the powerlines looking to the northeast toward the railroad tracks. Photograph 9, Plate 20, illustrates conditions along a portion of the southern boundary adjacent to Champs Boulevard. Photograph 10 depicts the conditions observed along a portion of the western boundary adjacent to the Pepsi/Leisure Arts warehouse facility.

Interviews

As part of this Phase I ESA, attempts were made to interview persons with direct knowledge of the site and its historical activities. Mr. Bryan Austin, the representative of the current owner stated his company has owned the property for nearly 20 years. Mr. Austin was not aware of any environmental conditions on the subject property or historically that would adversely impact the quality of the site. Ms. Rheannon Hart, a resident of Maumelle was also interviewed and stated that she was unaware of any historical activity in the vicinity with adverse environmental impacts.

Solid Waste Disposal

The City of Maumelle provides residential trash and recycling to areas that include the subject property.

Surface Water Drainage

The natural topography of the site directs surface water runoff to the south and east. Based on topographic information, surface water will drain to the south and east towards White Oak Bayou.

Wells and Cistern

No wells or cisterns were discovered on the subject property.

Wastewater

Central Arkansas Water provides sanitary sewer to areas that include the subject property. However, no sanitary sewer facilities were observed on the property during the site reconnaissance.

Polychlorinated Biphenyls (PCBs)

Older high voltage electrical transformers and other electrical equipment contain polychlorinated biphenyls (PCBs) at a level that subjects them to regulation by the U.S. EPA. PCBs in electrical equipment are controlled by the U.S. EPA regulations 40 CFR 761. No pole-mounted electrical transformers were observed on the subject property.

Landfills

No evidence that any land-filling has occurred on the site or the in the surrounding area was observed.

Pits, Ponds, Lagoons, Sumps, and Catch Basins

No evidence of any pits, lagoons, sumps or catch basins were observed during the site reconnaissance.

Asbestos Containing Materials (ACMs) and Lead Based Paint

No structures are located on the subject property.

ENVIRONMENTAL CONDITIONS

The site reconnaissance, interviews and review of the databases provided are performed to determine the presence, or potential, for environmental conditions. ASTM E1527-13 classifies potential environmental conditions into the following categories with a brief summary definition of each.

Recognized Environmental Conditions (RECs) – RECs are defined as the presence, or likely presence, of any hazardous substances or petroleum products on the subject property. These conditions can exist due to a release, be indicative of a release, or others that pose a material threat of a future release to the environment. No RECs were identified for the subject property.

Historical Recognized Environmental Conditions (HRECs) – HRECs are defined as a past REC that has been addressed to the satisfaction of the applicable regulatory agency with no restrictions. No HRECs were discovered for the subject property.

Controlled Recognized Environmental Conditions (CRECs) – CRECs are RECs that have been addressed to the satisfaction of the applicable regulatory agency. The hazardous substances or petroleum products are allowed to remain in place with required controls. Controls can include property use restrictions, activity and use limitations (AULs), institutional or engineering controls. No CRECs were identified for the subject property.

FINDINGS

The following findings in regard to site environmental quality are provided for consideration:

1. The field reconnaissance provided evidence that the overall environmental quality of the site is good, as no potential Recognized Environmental Conditions were discovered during the site reconnaissance.

2. The site historical review of the subject property indicated minimal previous development (Plate 15) in the vicinity of the subject property consisting of residential dwellings and/or mobile homes.
3. The aerial photograph review revealed no areas of suspect environmental conditions on the property. These photographs also did not indicate any visible environmentally unsafe activities being practiced at facilities in the surrounding area.
4. A review of CERCLIS, RCRIS, RST, LRST, NPL, ERNS and state superfund databases were performed under the freedom of information act to determine if the site or adjacent properties were listed in any of these databases. This review provided evidence that the site or adjacent properties were not listed other than instances previously discussed.
5. A visual inspection of adjacent businesses and properties was conducted to determine if unsafe environmental activities were occurring in such a manner that the environmental quality of the site might be jeopardized. No such conditions were identified.

OPINION

Based on review of the databases, no documented evidence of adverse environmental conditions was discovered. With the scope of services performed, the environmental risk for the subject property is considered low.

CONCLUSIONS

AECI has performed this Phase I Environmental Assessment in conformance with the scope and limitations of ASTM Standard E 1527-13 on the property located on the east side of Champs Boulevard in Maumelle, Arkansas. Recognized Environmental Conditions (RECs) were not discovered through the site reconnaissance as discussed above. As stated previously the Maumelle Ordnance Works is mapped within the boundaries of the subject property. Based on the scope of services outlined herein, no evidence of development or remnants of structures were observed. One aerial photograph from 1949 has an indication of a small structure, as indicated on Plate 15. However, no indications of a plant, storage bunkers or associated features that would be consistent with a munitions manufacturing facility were discovered or observed during the site reconnaissance.

RECOMMENDATIONS

Any development that occurs on the subject property should consider the location and presence of wetlands and floodplains, as both exist within the boundaries of the site.

DEVIATIONS

This Phase I Environmental Site assessment substantially complies with the scope of services and ASTM E 1527-13 and ASTM E 2600-10 except for and/or limiting conditions discussed in the scope section of this report.

REFERENCES

Numerous sources were used to prepare this report. A list of these references is provided as Plate 21.

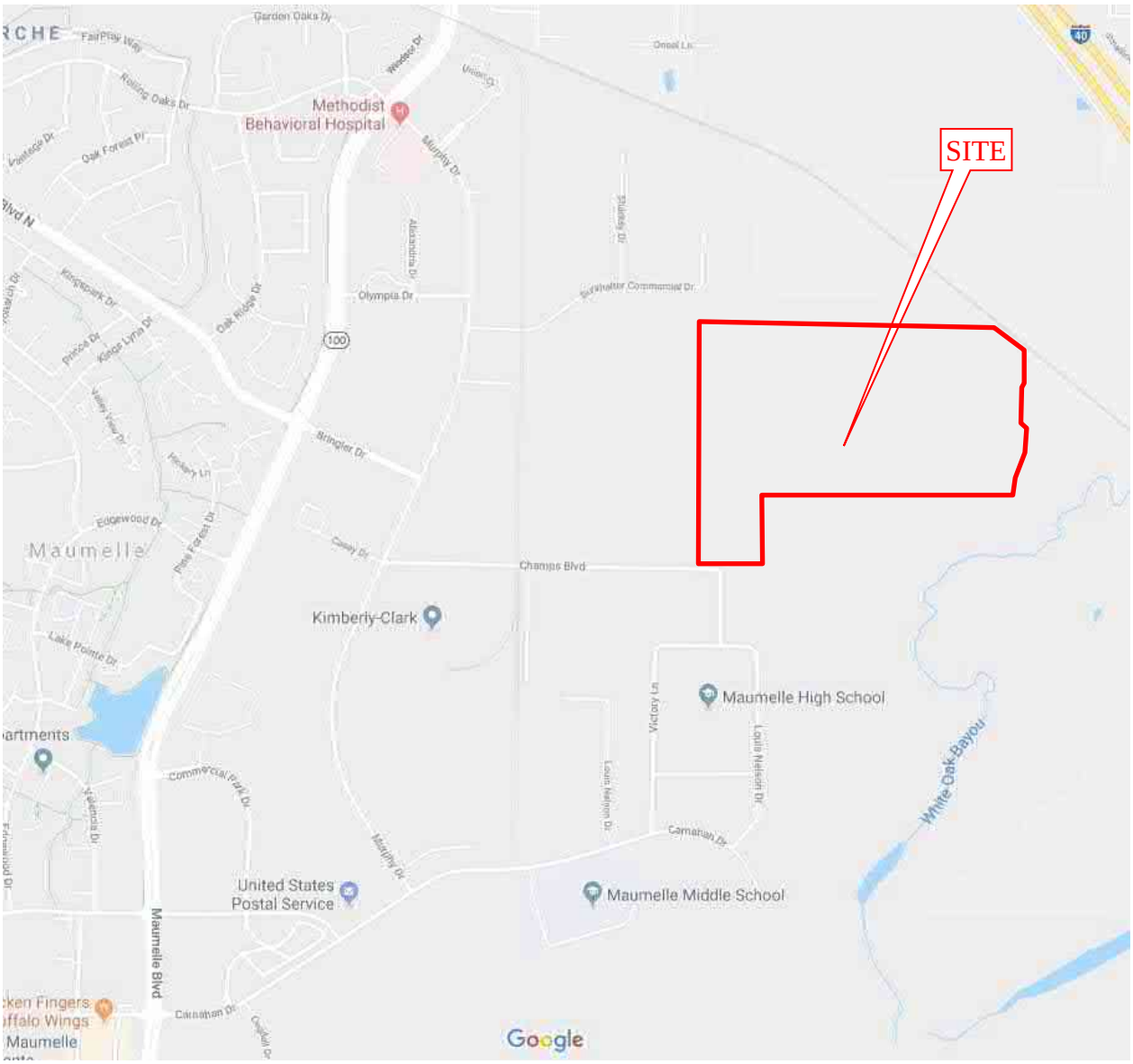
PROFESSIONAL RESUMES

The professional resumes of the individuals performing this Phase I Environmental Assessment are listed as Appendix C.

*** * * * ***

APPENDIX A

PLATES



JOB NO. 15956

VICINITY MAP

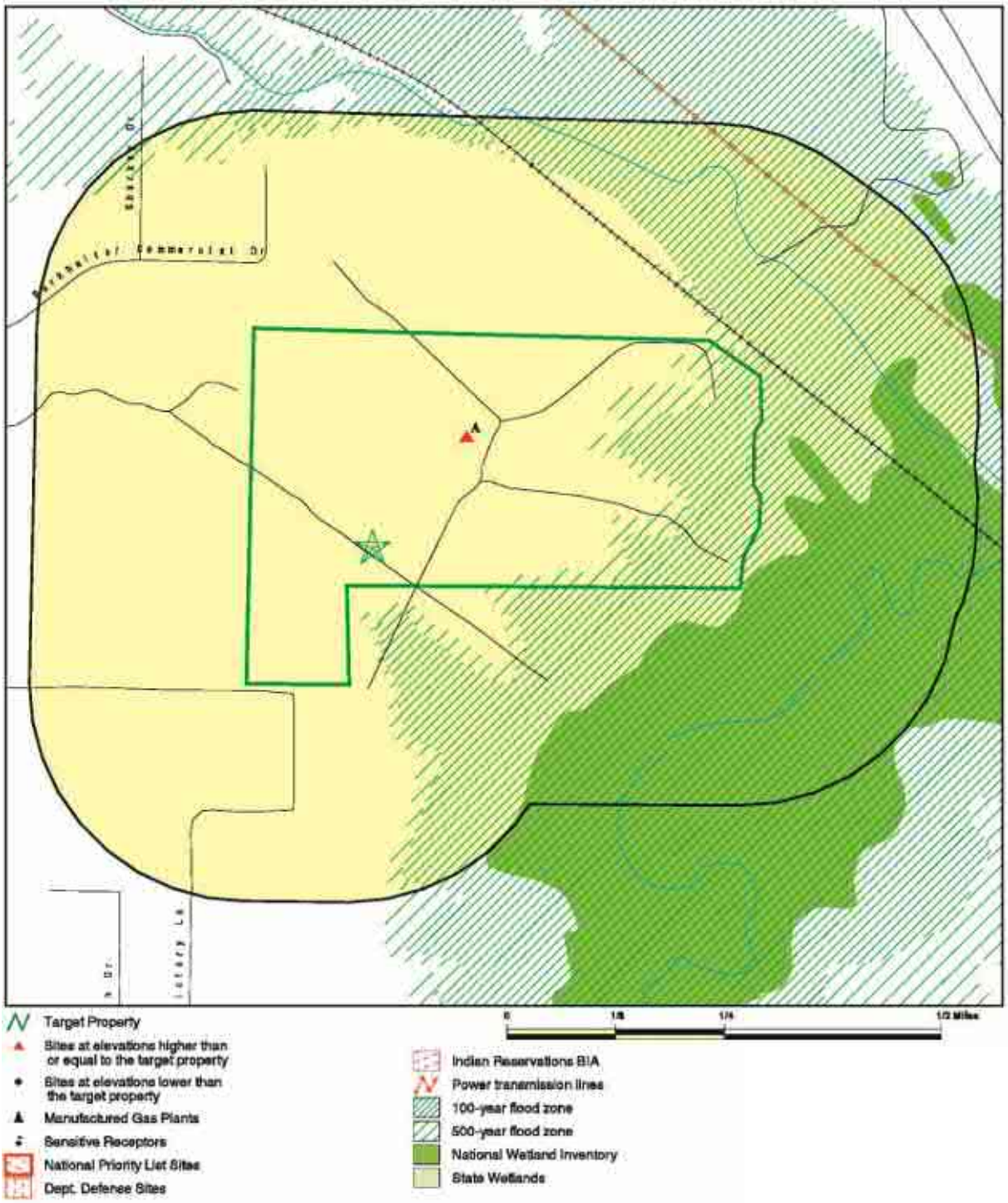
HEA PROPERTIES, LLC SITE
CHAMPS BOULEVARD
MAUMELLE, ARKANSAS

GOOGLEEARTH

JOB NO. 15956

SITE BOUNDARIES

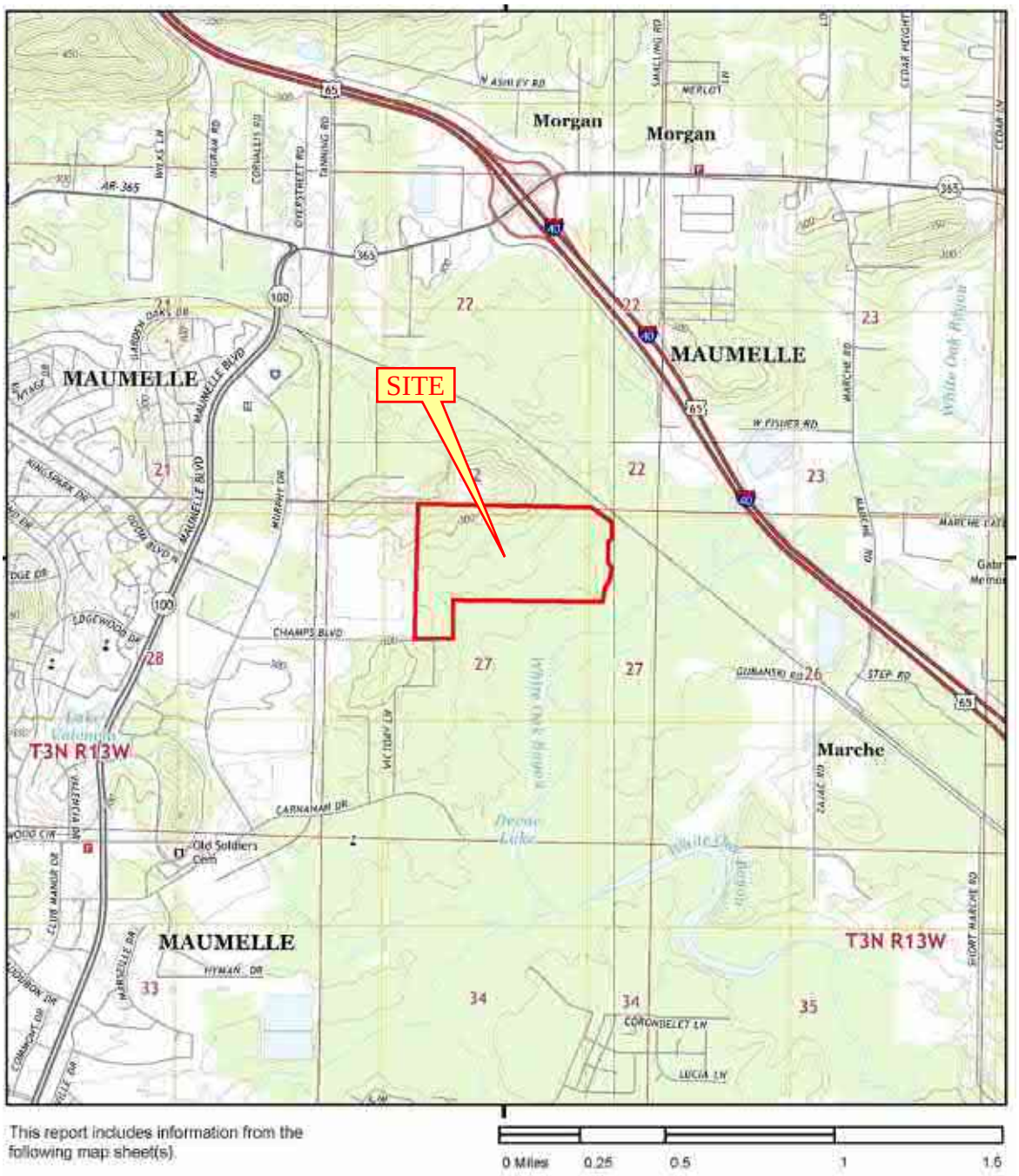
HEA PROPERTIES, LLC SITE
CHAMPS BOULEVARD
MAUMELLE, ARKANSAS



JOB NO. 15956

LOCATOR MAP

HEA PROPERTIES, LLC SITE
CHAMPS BOULEVARD
MAUMELLE, ARKANSAS

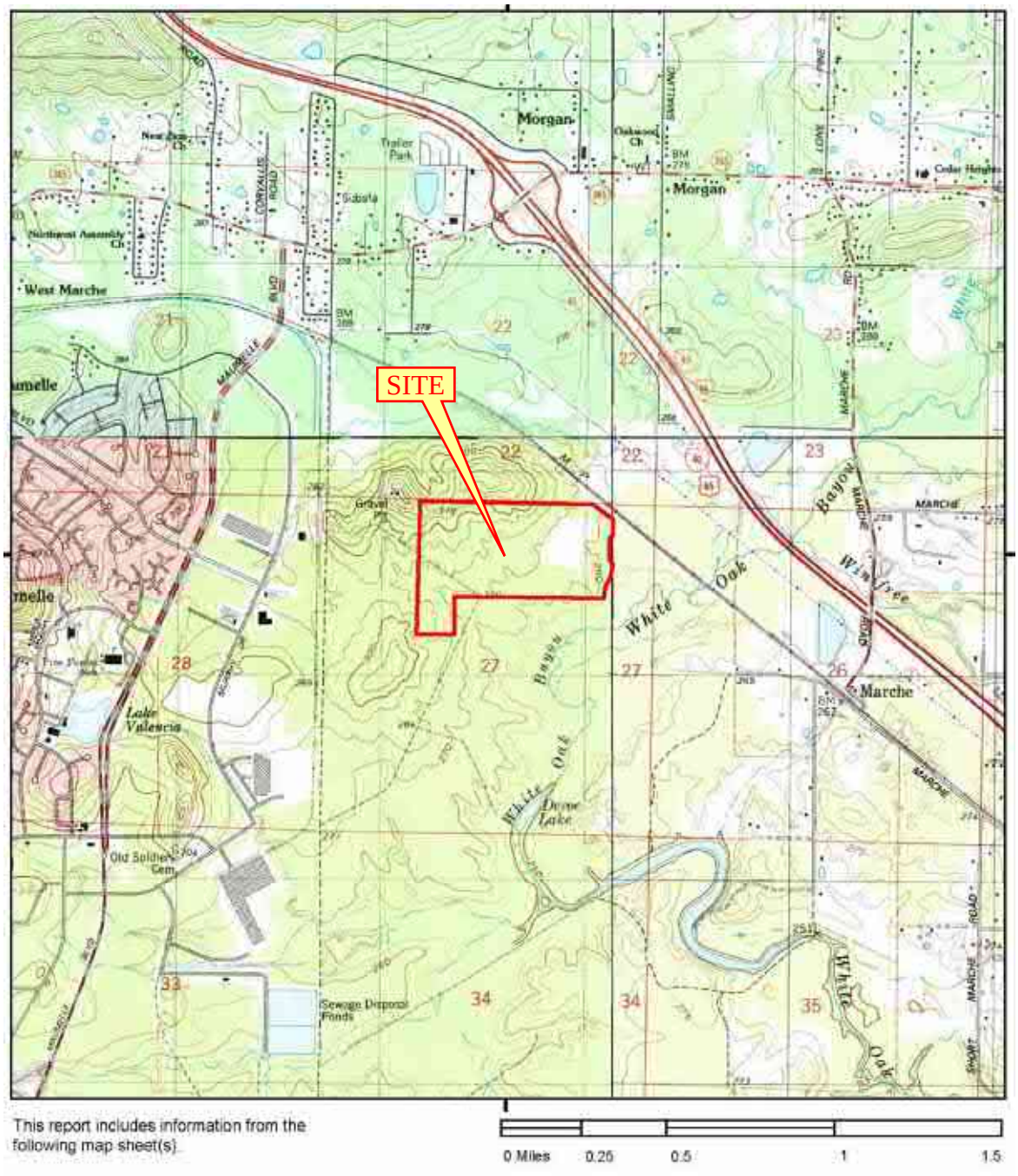


TARGET QUAD: 2014 PINNACLE MOUNTAIN/CATO/NORTH LITTLE ROCK/MAYFLOWER

JOB NO. 15956

2014 TOPOGRAPHIC MAP

HEA PROPERTIES, LLC SITE
CHAMPS BOULEVARD
MAUMELLE, ARKANSAS

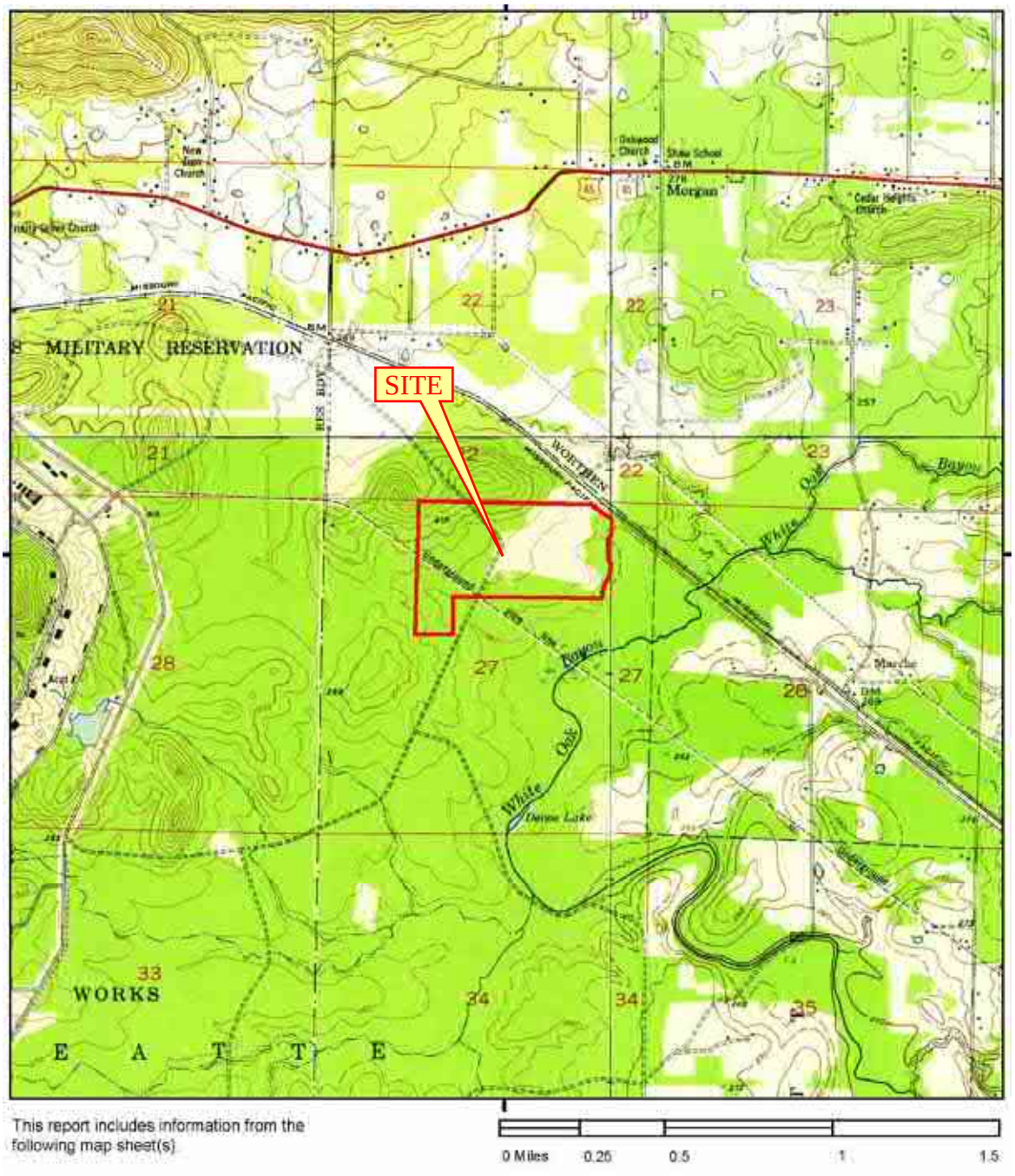


TARGET QUAD: 1986/1987 PINNACLE MOUNTAIN/CATO/NORTH LITTLE ROCK/MAYFLOWER

JOB NO. 15956

1986/1987 TOPOGRAPHIC MAP

HEA PROPERTIES, LLC SITE
CHAMPS BOULEVARD
MAUMELLE, ARKANSAS

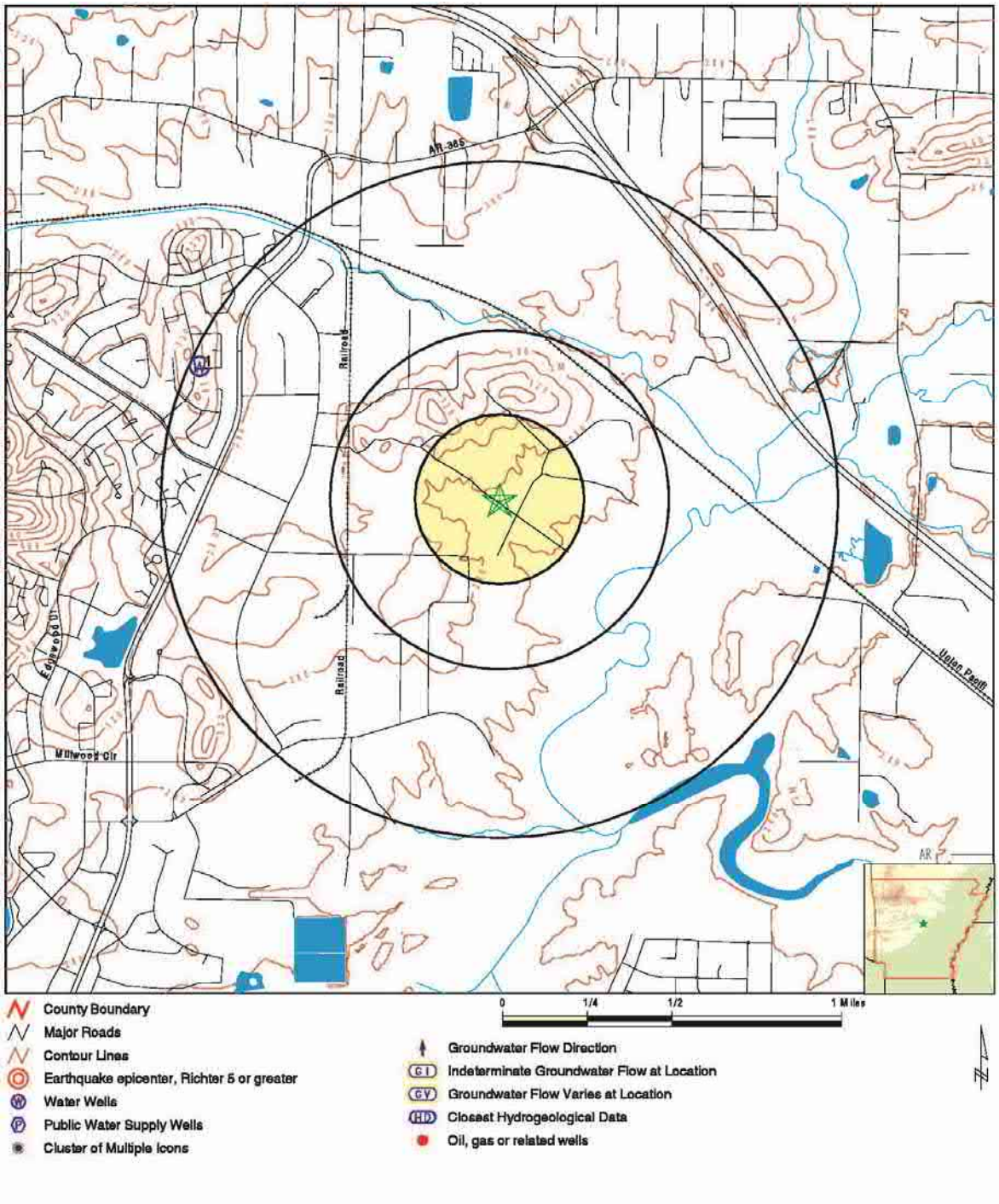


TARGET QUAD: 1953/1954 PINNACLE MOUNTAIN/CATO/NORTH LITTLE ROCK/MAYFLOWER

JOB NO. 15956

1953/1954 TOPOGRAPHIC MAP

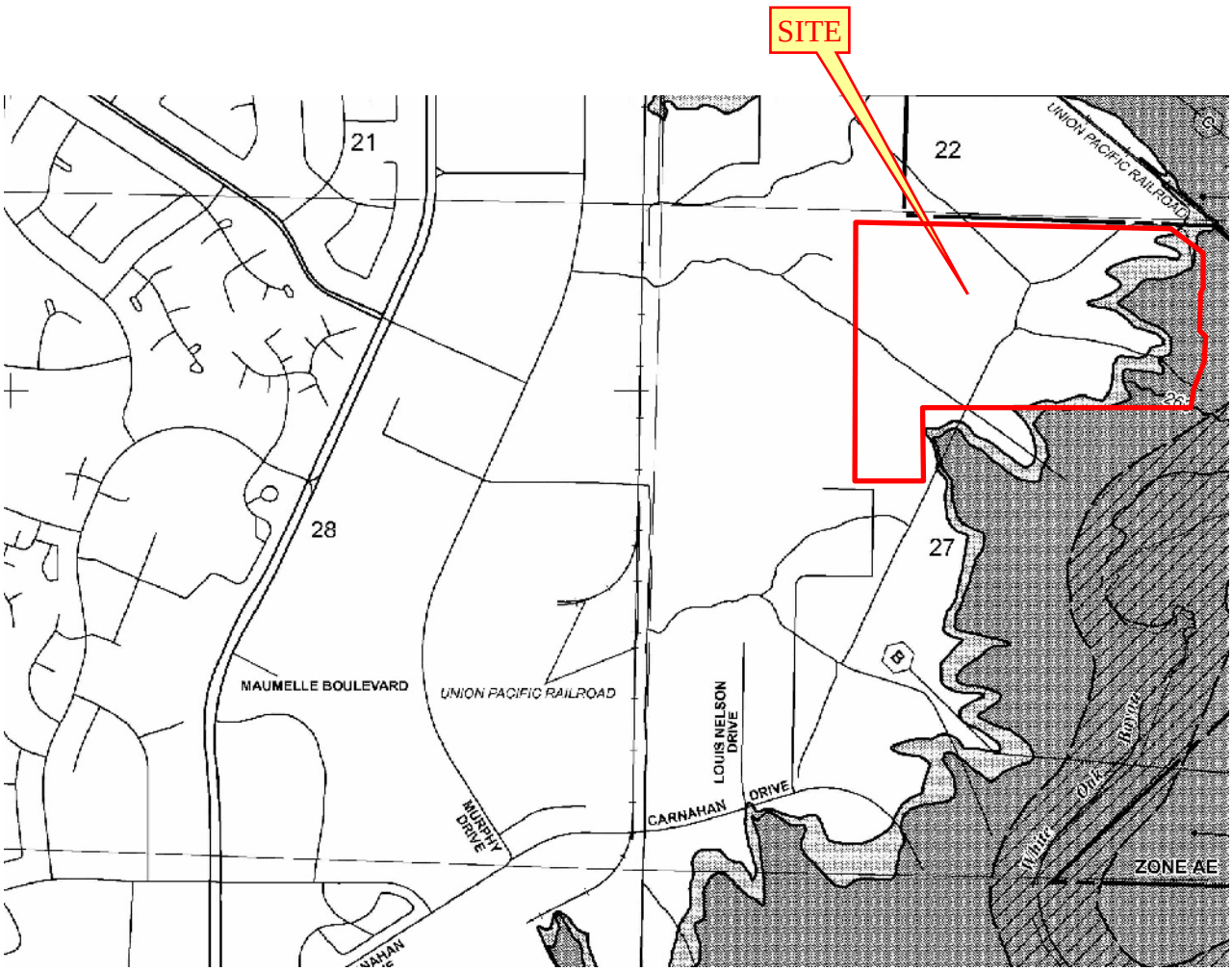
HEA PROPERTIES, LLC SITE
CHAMPS BOULEVARD
MAUMELLE, ARKANSAS



JOB NO. 15956

WELL LOCATOR MAP

HEA PROPERTIES, LLC SITE
CHAMPS BOULEVARD
MAUMELLE, ARKANSAS



FIRM PANEL NO. 05119C0310G
EFFECTIVE ON: 07/06/2015

JOB NO. 15956

FEMA FLOOD
INSURANCE MAP

HEA PROPERTIES, LLC SITE
CHAMPS BOULEVARD
MAUMELLE, ARKANSAS

Zone C, Zone X - Areas determined to be outside 500-year floodplain determined to be outside the 1% and 0.2% annual chance floodplains.

Zone B, Zone X500 - Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood. An area inundated by 0.2% annual chance flooding.

Zone A - An area inundated by 1% annual chance flooding, for which no BFEs have been determined.

Zone AE - An area inundated by 1% annual chance flooding, for which BFEs have been determined.

Zone AH - An area inundated by 1% annual chance flooding (usually an area of ponding), for which BFEs have been determined; flood depths range from 1 to 3 feet.

Zone AO - An area inundated by 1% annual chance flooding (usually sheet flow on sloping terrain), for which average depths have been determined; flood depths range from 1 to 3 feet.

Zone AR - .An area inundated by flooding, for which BFEs or average depths have been determined. This is an area that was previously, and will again, be protected from the 1% annual chance flood by a Federal flood protection system whose restoration is Federally funded and underway

Zone A1-A30 - An area inundated by 1% annual chance flooding, for which BFEs have been determined. .

Area Not Included (ANI),(N) - An area that is located within a community or county that is not mapped on any published FIRM.

Zone D - An area of undetermined but possible flood hazards.

Undescribed (UNDES) - Area of Undesignated Flood Hazard. A body of open water, such as a pond,lake, ocean, etc., located within a community's jurisdictional limits, that has no defined flood hazard.

Zone VE - An area inundated by 1% annual chance flooding with velocity hazard (wave action); BFEs have been determined.

Zone V(1-30) - Costal flood with velocity hazard (wave action); BFEs have not been determined.

FWIC - An area where the floodway is contained within the channel banks and the channel is too narrow to show to scale. An arbitrary channel width of 3 meters is shown. BFEs are not shown in this area, although they may be reflected on the corresponding profile. (Floodway Contained in Channel)

100IC - An area where the 1% annual chance flooding is contained within the channel banks and the channel is too narrow to show to scale. An arbitrary channel width of 3 meters is shown. BFEs are not shown in this area, although they may be reflected on the corresponding profile. (1% Annual Chance Flood Discharge Contained in Channel)

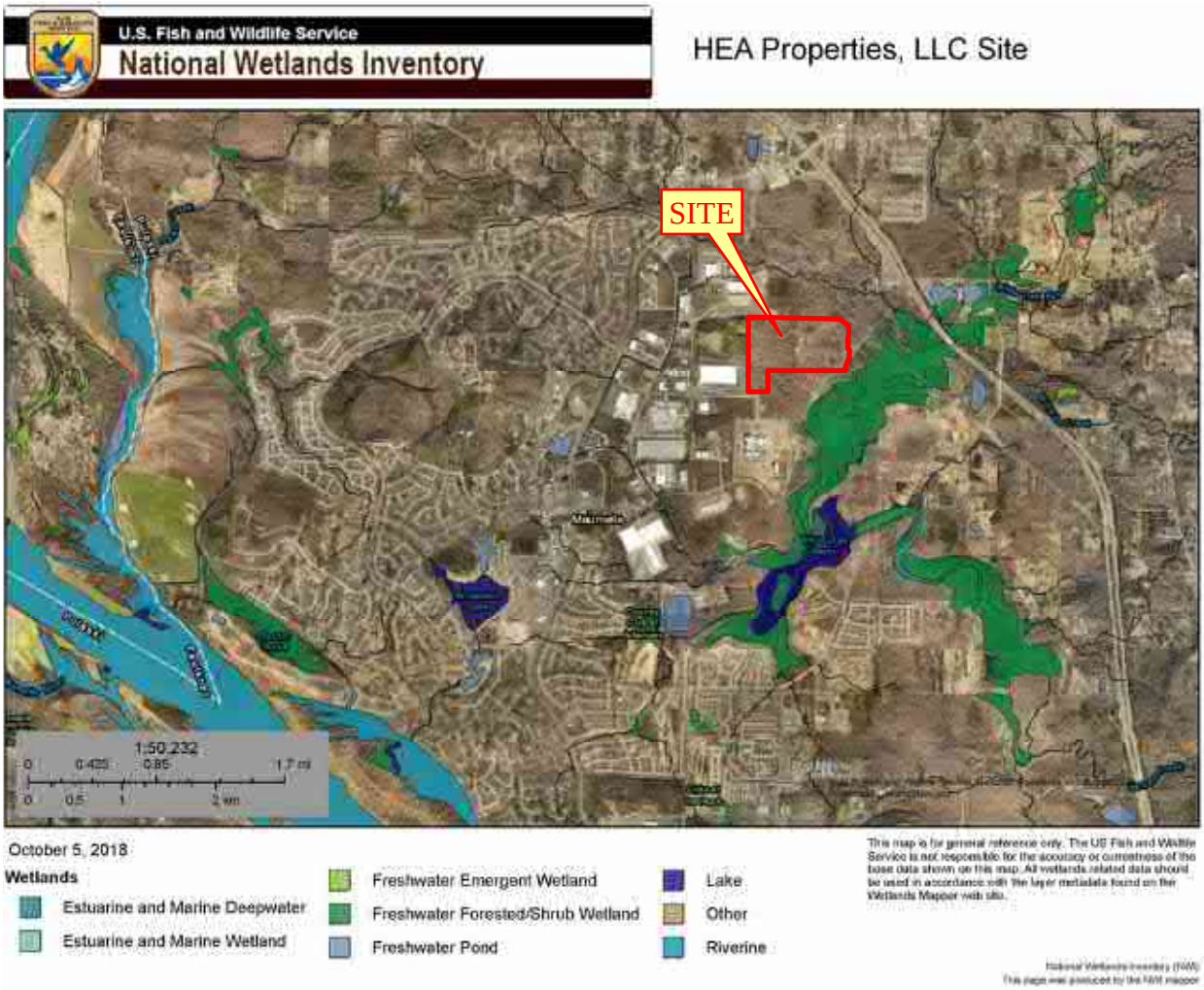
500IC - An area where the 0.2% annual chance flooding is contained within the channel banks and the channel is too narrow to show to scale. An arbitrary channel width of 3 meters is shown. (2% Annual Chance Flood Discharge Contained in channel)

**BFE = Base Flood Elevation*

JOB NO. 15956

FLOOD ZONE DEFINITIONS

HEA PROPERTIES, LLC SITE
CHMAPS BOULEVARD
MAUMELLE, ARKANSAS

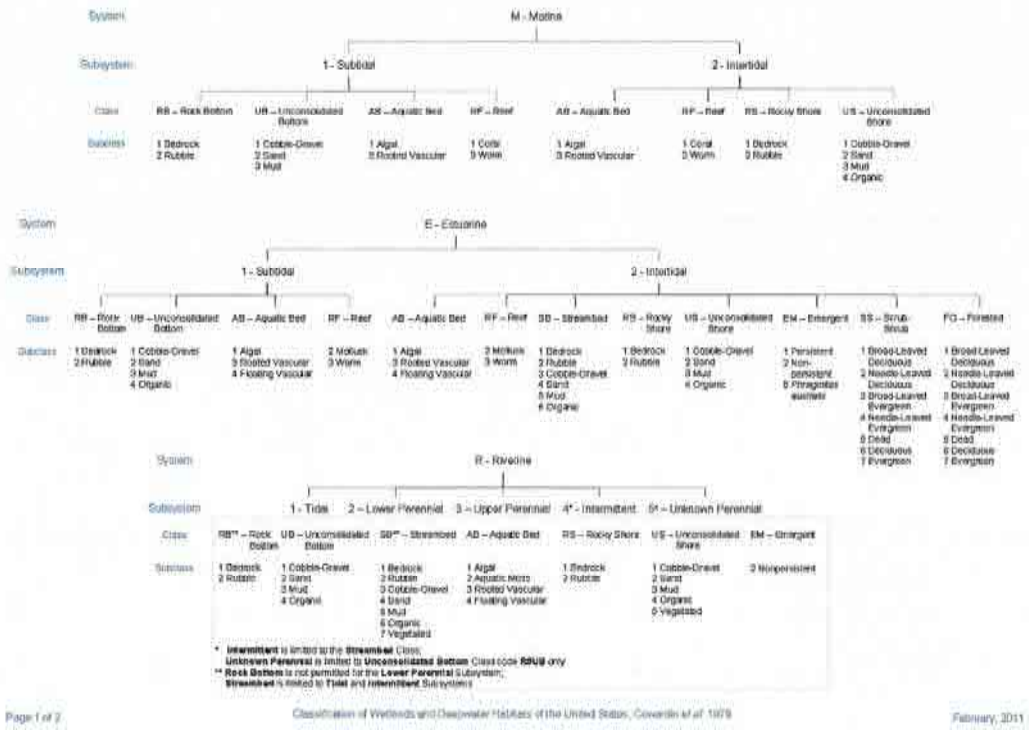


JOB NO. 15956

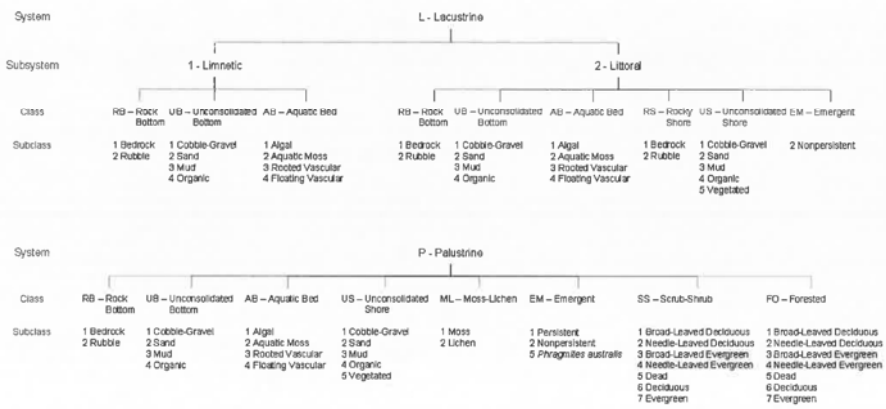
WETLANDS INVENTORY MAP

HEA PROPERTIES, LLC SITE
CHAMPS BOULEVARD
MAUMELLE, ARKANSAS

WETLANDS AND DEEPWATER HABITATS CLASSIFICATION



WETLANDS AND DEEPWATER HABITATS CLASSIFICATION



MODIFIERS

In order to more adequately describe the wetland and deepwater habitats, one or more of the water regime, water chemistry, soil, or special modifiers may be applied at the class or lower level in the hierarchy. The farmed modifier may also be applied to the ecological system.

Water Regime			Special Modifiers	Water Chemistry			Soil
Nontidal	**Saltwater Tidal**	**Freshwater Tidal**		**Coastal Halinity**	**Inland Salinity**	**pH Modifiers for all Fresh Water**	
A Temporarily Flooded	L Subtidal	S Temporarily Flooded-Tidal	b Beaver	1 Hyperhaline	7 Hypersaline	a Acid	g Organic
B Saturated	M Irregularly Exposed	R Seasonally Flooded-Tidal	d Partly Drained/Ditched	2 Euhaline	8 Eusaline	t Circumneutral	n Mineral
C Seasonally Flooded	N Regularly Flooded	T Semipermanently Flooded-Tidal	f Farmed	3 Mixohaline (Brackish)	9 Miosaline	i Alkaline	
E Seasonally Flooded/ Saturated	P Irregularly Flooded	V Permanently Flooded-Tidal	h Diked/Impounded	4 Polyhaline	0 Fresh		
F Semipermanently Flooded			r Artificial	5 Mesohaline			
G Intermittently Exposed			s Spoil	6 Oligohaline			
H Permanently Flooded			x Excavated	0 Fresh			
J Intermittently Flooded							
K Artificially Flooded							

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JOB NO. 15956

2017 AERIAL PHOTOGRAPH

HEA PROPERTIES, LLC SITE
CHAMPS BOULEVARD
MAUMELLE, ARKANSAS

JOB NO. 15956

2000 AERIAL PHOTOGRAPH

HEA PROPERTIES, LLC SITE
CHAMPS BOULEVARD
MAUMELLE, ARKANSAS

JOB NO. 15956

1983 AERIAL PHOTOGRAPH

HEA PROPERTIES, LLC SITE
CHAMPS BOULEVARD
MAUMELLE, ARKANSAS

JOB NO. 15956

1949 AERIAL PHOTOGRAPH

HEA PROPERTIES, LLC SITE
CHAMPS BOULEVARD
MAUMELLE, ARKANSAS

JOB NO.: 15956

DATE: 10/05/18

LOCATION: North Boundary

DIRECTION: Southeast

BY: Stuart Scheiderer

PHOTOGRAPH NO. 1

DESCRIPTION

This photograph depicts conditions observed along a gravel/dirt roading leading into the site from the northern boundary.

JOB NO.: 15956

DATE: 10/05/18

LOCATION: Northern Boundary

DIRECTION: West

BY: Stuart Scheiderer

PHOTOGRAPH NO. 2

DESCRIPTION

This picture illustrates evidence of excavations, possibly for utilities observed near the northwest corner of the site.

JOB NO.: 15956

DATE: 10/05/18

LOCATION: Northern Portion

DIRECTION: Southeast

BY: Stuart Scheiderer

PHOTOGRAPH NO. 3

DESCRIPTION

This picture depicts conditions observed near the middle of the northern portion of the site. The gravel/dirt road shown in Photograph 1 forks to the southeast and southwest.

JOB NO.: 15956

DATE: 10/05/18

LOCATION: Northern Portion

DIRECTION: South/Southwest

BY: Stuart Scheiderer

PHOTOGRAPH NO. 4

DESCRIPTION

This photograph shows the other road that extends to the south and southwest from the same location as the previous photograph.

JOB NO.: 15956

DATE: 10/05/18

LOCATION: Northern Portion

DIRECTION: N/A

BY: Stuart Scheiderer

PHOTOGRAPH NO. 5

DESCRIPTION

This picture shows a relatively large hole observed near the intersection of the roads shown previously.

JOB NO.: 15956

DATE: 10/05/18

LOCATION: Eastern Portion

DIRECTION: Southeast

BY: Stuart Scheiderer

PHOTOGRAPH NO. 6

DESCRIPTION

This picture depicts conditions observed along the dirt road leading to the powerlines that cross a portion of the site.

JOB NO.: 15956

DATE: 10/05/18

LOCATION: Eastern Boundary

DIRECTION: Southwest

BY: Stuart Scheiderer

PHOTOGRAPH NO. 7

DESCRIPTION

This picture illustrates the conditions along the powerlines to the southwest.

JOB NO.: 15956

DATE: 10/05/18

LOCATION: Eastern Boundary

DIRECTION: Northeast

BY: Stuart Scheiderer

PHOTOGRAPH NO. 8

DESCRIPTION

This photograph shows conditions observed looking to the northeast along the powerlines toward the railroad tracks.

JOB NO.: 15956

DATE: 10/05/18

LOCATION: Southern Boundary

DIRECTION: West

BY: Stuart Scheiderer

PHOTOGRAPH NO. 9

DESCRIPTION

This picture illustrates conditions along the southern portion of the site adjacent to Champs Boulevard.

JOB NO.: 15956

DATE: 10/05/18

LOCATION: Western Boundary

DIRECTION: North

BY: Stuart Scheiderer

PHOTOGRAPH NO. 10

DESCRIPTION

This photograph depicts conditions observed along the western boundary of the site adjacent to the Pepsi/Leisure Arts facility.

Environmental Data Resources, Inc., (EDR), Radius Map Report for HEA Properties, LLC site located on Champs Boulevard in Maumelle, Arkansas, prepared by EDR, Report No. 5430036.2s dated September 20, 2018.

Radon information provided by U.S. Geologic Survey, Geologic Radon Potential of EPA Region 6, dated 1993.

Aerial photographs dated 1937, 1940, 1949, 1960, 1970, 1974, 1983, 1989, 1994, 2000, 2006, 2010, 2013 and 2017 provided by EDR.

Sanborn Fire Insurance Maps, no coverage, provided by EDR.

USGS – 7.5 Minute Topographic Quadrangle Map, Pinnacle Mountain/Cato/North Little Rock/Mayflower Quadrangle, dated 2014
7.5 Minute Topographic Quadrangle Map, Pinnacle Mountain/Cato/North Little Rock/Mayflower Quadrangle, dated 1986/1987
7.5 Minute Topographic Quadrangle Map, Pinnacle Mountain/Cato/North Little Rock/Mayflower Quadrangle, dated 1953/1954

Geologic Map of Arkansas, Published by the Arkansas Geologic Commission, dated 1993 revised from 1976.

Federal Emergency Management Agency, Federal Insurance Administration, National Flood Insurance program, Flood Insurance map, Panels No. 05119C0310G, dated 07/06/2015.

National Wetlands Inventory, United States Department of the Interior
(www.fws.gov/wetlands/data/mapper.html)

APPENDIX B

ENVIRONMENTAL DATABASE RECORDS

HEA Properties, LLC Site
Champs Boulevard
Maumelle, AR 72113

Inquiry Number: 5430036.2s
September 20, 2018

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

TABLE OF CONTENTS

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

CHAMPS BOULEVARD
MAUMELLE, AR 72113

COORDINATES

Latitude (North):	34.8687260 - 34˚ 52' 7.41''
Longitude (West):	92.3830210 - 92˚ 22' 58.87''
Universal Tranverse Mercator:	Zone 15
UTM X (Meters):	556391.8
UTM Y (Meters):	3858461.8
Elevation:	275 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	6065269 PINNACLE MOUNTAIN, AR
Version Date:	2014
Northeast Map:	6065243 CATO, AR
Version Date:	2014
Southeast Map:	6065265 NORTH LITTLE ROCK, AR
Version Date:	2014
Northwest Map:	6064657 MAYFLOWER, AR
Version Date:	2014

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20150713
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
CHAMPS BOULEVARD
MAUMELLE, AR 72113

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
A1	FORMER MAUMELLE ORDN		UXO	Higher	1 ft.
A2	MAUMELLE ORDNANCE WO		FUDS	Higher	1 ft.
3	OZARK CHEMICAL CO	1500 MURPHY DRIVE	SEMS-ARCHIVE, RCRA NonGen / NLR	Lower	2143, 0.406, WNW

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ..... National Priority List
Proposed NPL ..... Proposed National Priority List Sites
NPL LIENS ..... Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ..... National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY ..... Federal Facility Site Information listing
SEMS ..... Superfund Enterprise Management System

Federal RCRA CORRACTS facilities list

CORRACTS ..... Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ..... RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ..... RCRA - Large Quantity Generators
RCRA-SQG ..... RCRA - Small Quantity Generators
RCRA-CESQG ..... RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

LUCIS ..... Land Use Control Information System
US ENG CONTROLS ..... Engineering Controls Sites List
US INST CONTROL ..... Sites with Institutional Controls

Federal ERNS list

ERNS ..... Emergency Response Notification System

EXECUTIVE SUMMARY

State- and tribal - equivalent NPL

SHWS..... Hazardous Substance Remedial Action Trust Fund Priority List

State and tribal landfill and/or solid waste disposal site lists

SWF/LF..... Solid Waste Facility Permit Database
SWID..... Solid Waste Illegal Dumps Database

State and tribal leaking storage tank lists

LTANKS..... Leaking Storage Tank Location Listing
INDIAN LUST..... Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

FEMA UST..... Underground Storage Tank Listing
UST..... Underground Storage Tank Data
AST..... Aboveground Tank Database
INDIAN UST..... Underground Storage Tanks on Indian Land

State and tribal institutional control / engineering control registries

ENG CONTROLS..... Engineering Controls Sites Listing
INST CONTROL..... Institutional Control/Land Use Restriction Sites

State and tribal voluntary cleanup sites

VCP..... Voluntary Cleanup Program Sites
INDIAN VCP..... Voluntary Cleanup Priority Listing

State and tribal Brownfields sites

BROWNFIELDS..... Brownfields Projects

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS..... A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

SWRCY..... Recycling Directory
INDIAN ODI..... Report on the Status of Open Dumps on Indian Lands
DEBRIS REGION 9..... Torres Martinez Reservation Illegal Dump Site Locations
ODI..... Open Dump Inventory
IHS OPEN DUMPS..... Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL..... Delisted National Clandestine Laboratory Register
CDL..... Methamphetamine Contaminated Properties Listing

EXECUTIVE SUMMARY

US CDL ..... National Clandestine Laboratory Register

Local Land Records

LIENS 2 ..... CERCLA Lien Information

Records of Emergency Release Reports

HMIRS ..... Hazardous Materials Information Reporting System
SPILLS ..... Emergency Response Incidents
SPILLS 90 ..... SPILLS 90 data from FirstSearch
SPILLS 80 ..... SPILLS 80 data from FirstSearch

Other Ascertainable Records

RCRA NonGen / NLR ..... RCRA - Non Generators / No Longer Regulated
DOD ..... Department of Defense Sites
SCRD DRYCLEANERS ..... State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR ..... Financial Assurance Information
EPA WATCH LIST ..... EPA WATCH LIST
2020 COR ACTION ..... 2020 Corrective Action Program List
TSCA ..... Toxic Substances Control Act
TRIS ..... Toxic Chemical Release Inventory System
SSTS ..... Section 7 Tracking Systems
ROD ..... Records Of Decision
RMP ..... Risk Management Plans
RAATS ..... RCRA Administrative Action Tracking System
PRP ..... Potentially Responsible Parties
PADS ..... PCB Activity Database System
ICIS ..... Integrated Compliance Information System
FTTS ..... FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS ..... Material Licensing Tracking System
COAL ASH DOE ..... Steam-Electric Plant Operation Data
COAL ASH EPA ..... Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER ..... PCB Transformer Registration Database
RADINFO ..... Radiation Information Database
HIST FTTS ..... FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS ..... Incident and Accident Data
CONSENT ..... Superfund (CERCLA) Consent Decrees
INDIAN RESERV ..... Indian Reservations
FUSRAP ..... Formerly Utilized Sites Remedial Action Program
UMTRA ..... Uranium Mill Tailings Sites
LEAD SMELTERS ..... Lead Smelter Sites
US AIRS ..... Aerometric Information Retrieval System Facility Subsystem
US MINES ..... Mines Master Index File
ABANDONED MINES ..... Abandoned Mines
FINDS ..... Facility Index System/Facility Registry System
DOCKET HWC ..... Hazardous Waste Compliance Docket Listing
ECHO ..... Enforcement & Compliance History Information
FUELS PROGRAM ..... EPA Fuels Program Registered Listing
AIRS ..... Permitted Facility Emission & Stack Data
ASBESTOS ..... Asbestos Notification of Intent Database
COAL ASH ..... Coal Ash Disposal Site Listing
ENF ..... Consent Administrative Order, Notice of Violation Information Database

EXECUTIVE SUMMARY

Financial Assurance..... Financial Assurance Information Listing
PERMITS..... Permit Data System
AR Sludge..... Poultry Sludge Permit Sites
TIER 2..... Tier 2 Information Listing
UIC..... Underground Injection Wells Database Listing

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP..... EDR Proprietary Manufactured Gas Plants
EDR Hist Auto..... EDR Exclusive Historical Auto Stations
EDR Hist Cleaner..... EDR Exclusive Historical Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA HWS..... Recovered Government Archive State Hazardous Waste Facilities List
RGA LF..... Recovered Government Archive Solid Waste Facilities List
RGA LUST..... Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
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.

STANDARD ENVIRONMENTAL RECORDS

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE: SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS 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 the 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. The 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 potential NPL site.

A review of the SEMS-ARCHIVE list, as provided by EDR, and dated 07/17/2018 has revealed that there

is 1 SEMS-ARCHIVE site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
OZARK CHEMICAL CO	***1500 MURPHY DRIVE***	***WNW 1/4 - 1/2 (0.406 mi.)***	***3***	***9***
Site ID: 0600103				
EPA Id: ARD058073388				

ADDITIONAL ENVIRONMENTAL RECORDS

Other Ascertainable Records

FUDS: The Listing includes locations of Formerly Used Defense Sites Properties where the US Army Corps Of Engineers is actively working or will take necessary cleanup actions.

A review of the FUDS list, as provided by EDR, and dated 01/31/2015 has revealed that there is 1 FUDS site within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
MAUMELLE ORDNANCE WO		0 - 1/8 (0.000 mi.)	A2	8
Federal Facility ID:: AR9799F6049				
INST ID:: 57863				

UXO: A listing of unexploded ordnance site locations

A review of the UXO list, as provided by EDR, and dated 09/30/2017 has revealed that there is 1 UXO site within approximately 1 mile of the target property.

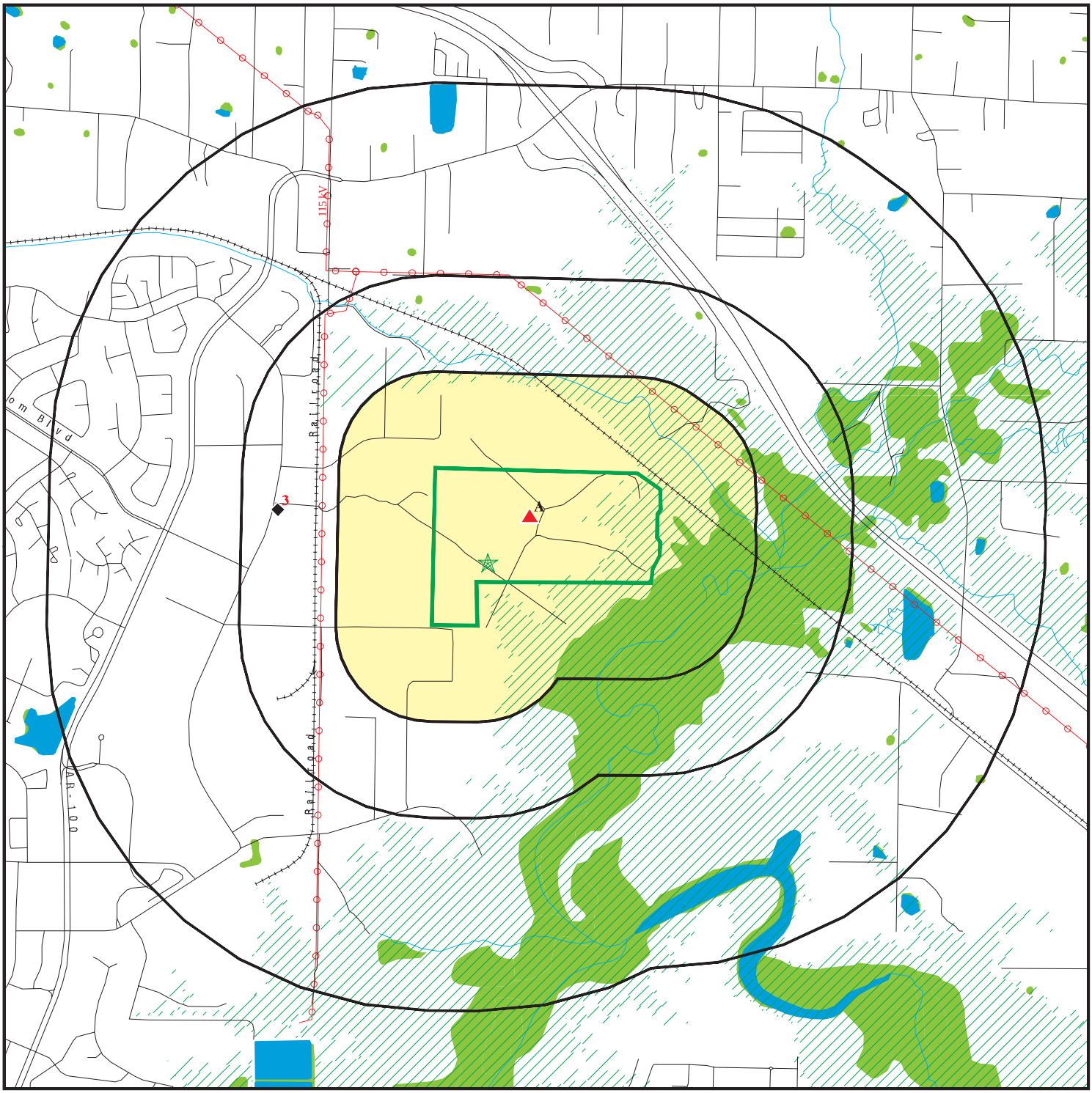
Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
FORMER MAUMELLE ORDN		0 - 1/8 (0.000 mi.)	A1	8

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 4 records.

Site Name	Database(s)
LOVES COUNTRY STORE #236	LTANKS
LOVE'S COUNTRY STORE	LTANKS
LOVES COUNTRY STORE #236	LTANKS
FORMER 7-ELEVEN #12335	LTANKS

OVERVIEW MAP - 5430036.2S



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites

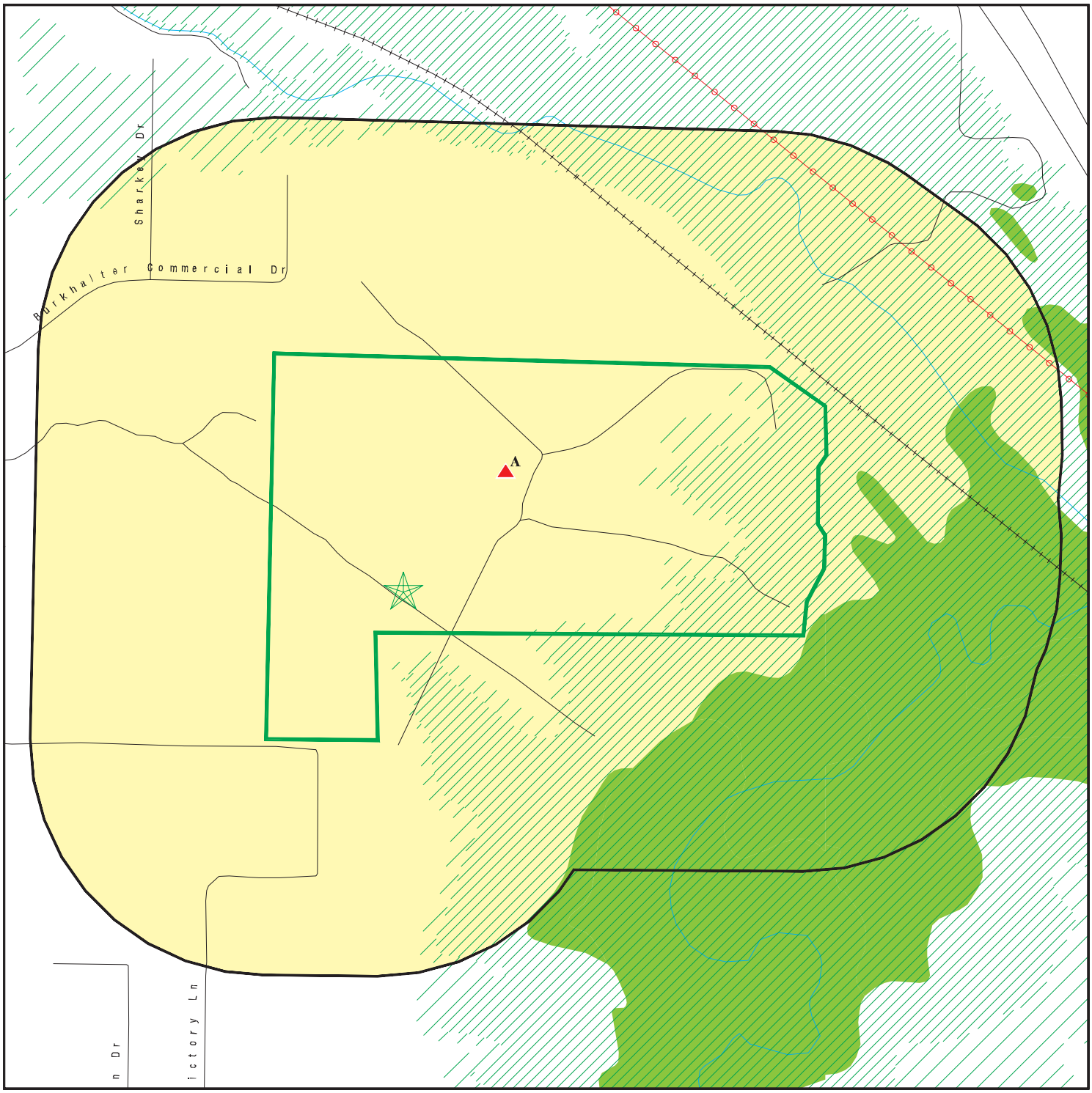
0 1/4 1/2 1 Miles

- Indian Reservations BIA
- Power transmission lines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands
- Upgradient Area

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: HEA Properties, LLC Site ADDRESS: Champs Boulevard Maumelle AR 72113 LAT/LONG: 34.868726 / 92.383021	CLIENT: Anderson Engineering Cons. CONTACT: Melissa/Stuart INQUIRY #: 5430036.2s DATE: September 20, 2018 10:30 am

DETAIL MAP - 5430036.2S



Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

Sensitive Receptors

National Priority List Sites

Dept. Defense Sites

0 1/8 1/4 1/2 Miles

Indian Reservations BIA

Power transmission lines

100-year flood zone

500-year flood zone

National Wetland Inventory

State Wetlands

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: HEA Properties, LLC Site	CLIENT: Anderson Engineering Cons.
ADDRESS: Champs Boulevard Maumelle AR 72113	CONTACT: Melissa/Stuart INQUIRY #: 5430036.2s
LAT/LONG: 34.868726 / 92.383021	DATE: September 20, 2018 10:30 am

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	TP		NR	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	1	NR	NR	1
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
SHWS	1.000		0	0	0	0	NR	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
SWID	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LTANKS	0.500		0	0	0	NR	NR	0
INDIAN LUST	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal institutional control / engineering control registries								
ENG CONTROLS	0.500		0	0	0	NR	NR	0
INST CONTROL	0.500		0	0	0	NR	NR	0
State and tribal voluntary cleanup sites								
VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
SWRCY	0.500		0	0	0	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	TP		NR	NR	NR	NR	NR	0
CDL	TP		NR	NR	NR	NR	NR	0
US CDL	TP		NR	NR	NR	NR	NR	0
Local Land Records								
LIENS 2	TP		NR	NR	NR	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0
SPILLS	TP		NR	NR	NR	NR	NR	0
SPILLS 90	TP		NR	NR	NR	NR	NR	0
SPILLS 80	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		1	0	0	0	NR	1
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
UXO	1.000		1	0	0	0	NR	1
DOCKET HWC	TP		NR	NR	NR	NR	NR	0
ECHO	TP		NR	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
AIRS	TP		NR	NR	NR	NR	NR	0
ASBESTOS	TP		NR	NR	NR	NR	NR	0
COAL ASH	0.500		0	0	0	NR	NR	0
ENF	TP		NR	NR	NR	NR	NR	0
Financial Assurance	TP		NR	NR	NR	NR	NR	0
PERMITS	TP		NR	NR	NR	NR	NR	0
AR Sludge	0.500		0	0	0	NR	NR	0
TIER 2	TP		NR	NR	NR	NR	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA HWS	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
RGA LF	TP		NR	NR	NR	NR	NR	0
RGA LUST	TP		NR	NR	NR	NR	NR	0
- Totals --		0	2	0	1	0	0	3

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

A1 **FORMER MAUMELLE ORDNANCE WORKS** **UXO** **1018150274**
N/A

< 1/8
1 ft.

MAUMELLE, AR

Site 1 of 2 in cluster A

Relative:
Higher

Actual:
279 ft.

UXO:

DoD Component:	FUDS
Installation Name:	MAUMELLE ORDNANCE WORKS
Facility Address 2:	Not reported
Site ID:	01OEW
Site Type:	Explosive Ordnance Disposal Area
Latitude:	34.870556
Longitude:	-92.381111

A2 **MAUMELLE ORDNANCE WORKS** **FUDS** **1007212122**
N/A

< 1/8
1 ft.

MAUMELLE, AR

Site 2 of 2 in cluster A

Relative:
Higher

Actual:
279 ft.

FUDS:

EPA Region:	06
Congressional District:	02
FUDS Number:	K06AR0050
State:	AR
Facility Name:	MAUMELLE ORDNANCE WORKS
Fiscal Year:	2013
City:	MAUMELLE
Federal Facility ID:	AR9799F6049
Telephone:	918-669-7366
INST ID:	57863
County:	PULASKI
RAB:	Not reported
CORPS_DIST:	Tulsa District (SWT)
NPL Status:	Not Listed
CTC:	179.90000000000001
Current Owner:	Private Sector
Future Prog:	Not reported
Description:	The site is located on the north bank of the Arkansas River just south of Interstate 40. Since the U.S. sold the property, it has been extensively developed for residential, commercial and industrial use.
Current Program:	Not reported
History:	The U.S. acquired the property in 1941 and between 1942 and 1945; the site was used to manufacture bulk explosives that were shipped off site to be loaded into munitions elsewhere. The property was declared excess in 1960 and sold to Perry Equipment Company in 1961 and later resold to the Maumelle Land Development Company. It has been extensively developed into a residential, commercial, and industrial area. Military munitions materials were produced or demilitarized at this location and therefore may present an explosive hazard.
Latitude Degree:	34
Latitude Minute:	52
Latitude Second:	14
Latitude Direction:	N
Longitude Degree:	-92
Longitude Minute:	23
Longitude Second:	52
Longitude Direction:	E

MAUMELLE ORDNANCE WORKS (Continued) **1007212122**

FUDS:

Inst ID:	57863
FUDS Number:	K06AR0050
Facility Name:	MAUMELLE ORDNANCE WORKS
PHASE:	4
ARC:	Y
DIST:	SWT
MMRP:	Y
MRA ID:	K06AR005001R01

Inst ID:	57863
FUDS Number:	K06AR0050
Facility Name:	MAUMELLE ORDNANCE WORKS
PHASE:	4
ARC:	Y
DIST:	SWT
MMRP:	Y
MRA ID:	K06AR005001R01

FUDS:

Inst ID:	57863
FUDS Number:	K06AR0050
Facility Name:	MAUMELLE ORDNANCE WORKS
PHASE:	4
Site ID:	01
DIST:	SWT
MMRP:	Y
MRA ID:	K06AR005001R01
PROJ NO:	K06AR005001

Inst ID:	57863
FUDS Number:	K06AR0050
Facility Name:	MAUMELLE ORDNANCE WORKS
PHASE:	4
Site ID:	01
DIST:	SWT
MMRP:	Y
MRA ID:	K06AR005001R01
PROJ NO:	K06AR005001

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3 **OZARK CHEMICAL CO** **SEMS-ARCHIVE** **1000363224**
WNW **1500 MURPHY DRIVE** **RCRA NonGen / NLR** **ARD058073388**
1/4-1/2 **MAUMELLE, AR 72118**
0.406 mi.
2143 ft.

Relative:
Lower

Actual:
269 ft.

SEMS Archive:

Site ID:	600103
EPA ID:	ARD058073388
Cong District:	2
FIPS Code:	5119
FF:	N
NPL:	Not on the NPL
Non NPL Status:	NFRAP-Site does not qualify for the NPL based on existing information

SEMS Archive Detail:

OZARK CHEMICAL CO (Continued) **1000363224**

Region:	6
Site ID:	600103
EPA ID:	ARD058073388
Site Name:	OZARK CHEMICAL CO
NPL:	N
FF:	N
OU:	0
Action Code:	VS
Action Name:	ARCH SITE
SEQ:	1
Start Date:	Not reported
Finish Date:	1995-05-12 00:00:00
Qual:	Not reported
Current Action Lead:	EPA Perf In-Hse

Region:	6
Site ID:	600103
EPA ID:	ARD058073388
Site Name:	OZARK CHEMICAL CO
NPL:	N
FF:	N
OU:	0
Action Code:	SI
Action Name:	SI
SEQ:	1
Start Date:	1981-03-01 00:00:00
Finish Date:	1981-03-01 00:00:00
Qual:	N
Current Action Lead:	EPA Perf

Region:	6
Site ID:	600103
EPA ID:	ARD058073388
Site Name:	OZARK CHEMICAL CO
NPL:	N
FF:	N
OU:	0
Action Code:	PA
Action Name:	PA
SEQ:	1
Start Date:	1980-08-01 00:00:00
Finish Date:	1980-08-01 00:00:00
Qual:	L
Current Action Lead:	EPA Perf

Region:	6
Site ID:	600103
EPA ID:	ARD058073388
Site Name:	OZARK CHEMICAL CO
NPL:	N
FF:	N
OU:	0
Action Code:	DS
Action Name:	DISCVRY
SEQ:	1
Start Date:	1979-12-01 00:00:00
Finish Date:	1979-12-01 00:00:00

OZARK CHEMICAL CO (Continued) **1000363224**

Qual: Not reported
Current Action Lead: EPA Perf

RCRA NonGen / NLR:
Date form received by agency: 11/22/1994
Facility name: IMBICOR - MAUMELLE PLANT
Facility address: 1500 MURPHY DRIVE
MAUMELLE, AR 72118
EPA ID: ARD058073388
Mailing address: PO BOX 13142
MAUMELLE, AR 72118
Contact: DAVID SPAIN
Contact address: PO BOX 13142
MAUMELLE, AR 72118
Contact country: US
Contact telephone: 501-851-3100
Contact email: Not reported
EPA Region: 06
Classification: Non-Generator
Description: Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:
Owner/operator name: ITC DELAWARE
Owner/operator address: 1201 ORANGE ST
WILMINGTON, DE 19801
Owner/operator country: Not reported
Owner/operator telephone: 519-453-0988
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

. Waste code: D001
. Waste name: IGNITABLE HAZARDOUS WASTES ARE THOSE WASTES WHICH HAVE A FLASHPOINT OF LESS THAN 140 DEGREES FAHRENHEIT AS DETERMINED BY A PENSKY-MARTENS

OZARK CHEMICAL CO (Continued) **1000363224**

CLOSED CUP FLASH POINT TESTER. ANOTHER METHOD OF DETERMINING THE FLASH POINT OF A WASTE IS TO REVIEW THE MATERIAL SAFETY DATA SHEET, WHICH CAN BE OBTAINED FROM THE MANUFACTURER OR DISTRIBUTOR OF THE MATERIAL. LACQUER THINNER IS AN EXAMPLE OF A COMMONLY USED SOLVENT WHICH WOULD BE CONSIDERED AS IGNITABLE HAZARDOUS WASTE.

Violation Status: No violations found

Count: 4 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
NORTH LITTLE ROCK	S118666536	LOVES COUNTRY STORE #236	I-40 & GALLOWAY EXIT		LTANKS
NORTH LITTLE ROCK	S118666532	LOVE'S COUNTRY STORE	I-40 AND GALLOWAY EXIT		LTANKS
NORTH LITTLE ROCK	S118666513	LOVES COUNTRY STORE #236	I-40 AND GALLOWAY EXIT		LTANKS
NORTH LITTLE ROCK	S106571010	FORMER 7-ELEVEN #12335	4700 CAMP ROBINSON & 47TH ST.		LTANKS

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 07/17/2018
Date Data Arrived at EDR: 08/09/2018
Date Made Active in Reports: 09/07/2018
Number of Days to Update: 29

Source: EPA
Telephone: N/A
Last EDR Contact: 08/09/2018
Next Scheduled EDR Contact: 10/15/2018
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 07/17/2018
Date Data Arrived at EDR: 08/09/2018
Date Made Active in Reports: 09/07/2018
Number of Days to Update: 29

Source: EPA
Telephone: N/A
Last EDR Contact: 08/09/2018
Next Scheduled EDR Contact: 10/15/2018
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

Federal Delisted NPL site list

Delisted NPL: National Priority List Deletions

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.

Date of Government Version: 07/17/2018
Date Data Arrived at EDR: 08/09/2018
Date Made Active in Reports: 09/07/2018
Number of Days to Update: 29

Source: EPA
Telephone: N/A
Last EDR Contact: 08/09/2018
Next Scheduled EDR Contact: 10/15/2018
Data Release Frequency: Quarterly

Federal CERCLIS list

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 11/07/2016
Date Data Arrived at EDR: 01/05/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 92

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 07/06/2018
Next Scheduled EDR Contact: 10/15/2018
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list 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). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 07/17/2018
Date Data Arrived at EDR: 08/09/2018
Date Made Active in Reports: 09/07/2018
Number of Days to Update: 29

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 08/09/2018
Next Scheduled EDR Contact: 10/29/2018
Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS 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 the 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. The 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 potential NPL site.

Date of Government Version: 07/17/2018
Date Data Arrived at EDR: 08/09/2018
Date Made Active in Reports: 09/07/2018
Number of Days to Update: 29

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 08/09/2018
Next Scheduled EDR Contact: 10/29/2018
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/28/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 86

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 09/19/2018
Next Scheduled EDR Contact: 10/08/2018
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

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). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/28/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: 214-665-6444
Last EDR Contact: 09/19/2018
Next Scheduled EDR Contact: 10/08/2018
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

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). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/28/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: 214-665-6444
Last EDR Contact: 09/19/2018
Next Scheduled EDR Contact: 10/08/2018
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

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). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/28/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: 214-665-6444
Last EDR Contact: 09/19/2018
Next Scheduled EDR Contact: 10/08/2018
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

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.

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/28/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: 214-665-6444
Last EDR Contact: 09/19/2018
Next Scheduled EDR Contact: 10/08/2018
Data Release Frequency: Quarterly

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 05/14/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 07/16/2018
Next Scheduled EDR Contact: 11/26/2018
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 07/31/2018
Date Data Arrived at EDR: 08/28/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 17

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 08/28/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 07/31/2018
Date Data Arrived at EDR: 08/28/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 17

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 08/28/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System
Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 06/18/2018
Date Data Arrived at EDR: 06/27/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 79

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 06/27/2018
Next Scheduled EDR Contact: 10/08/2018
Data Release Frequency: Quarterly

State- and tribal - equivalent NPL

SHWS: Hazardous Substance Remedial Action Trust Fund Priority List
A partial prioritized listing of sites at which remedial actions and/or investigations shall be provided by the Hazardous Substance Remedial Action Trust Fund.

Date of Government Version: 06/11/2018
Date Data Arrived at EDR: 06/13/2018
Date Made Active in Reports: 07/23/2018
Number of Days to Update: 40

Source: Department of Environmental Quality
Telephone: 501-682-0850
Last EDR Contact: 09/11/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Annually

State and tribal landfill and/or solid waste disposal site lists

SWF/LF: Solid Waste Facility Permit Database
Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 08/02/2018
Date Data Arrived at EDR: 08/06/2018
Date Made Active in Reports: 08/23/2018
Number of Days to Update: 17

Source: Department of Environmental Quality
Telephone: 501-682-0597
Last EDR Contact: 08/03/2018
Next Scheduled EDR Contact: 11/19/2018
Data Release Frequency: Quarterly

SWID: Solid Waste Illegal Dumps Database
A listing of illegal solid waste dumps.

Date of Government Version: 08/01/2018
Date Data Arrived at EDR: 08/06/2018
Date Made Active in Reports: 08/23/2018
Number of Days to Update: 17

Source: Department of Environmental Quality
Telephone: 501-682-0600
Last EDR Contact: 08/06/2018
Next Scheduled EDR Contact: 11/19/2018
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LTANKS: Leaking Underground Storage Tank Data
A listing of leaking underground and aboveground storage tank locations.

Date of Government Version: 06/18/2018
Date Data Arrived at EDR: 06/20/2018
Date Made Active in Reports: 07/23/2018
Number of Days to Update: 33

Source: Department of Environmental Quality
Telephone: 501-682-0984
Last EDR Contact: 09/18/2018
Next Scheduled EDR Contact: 12/31/2018
Data Release Frequency: Quarterly

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 04/24/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 07/27/2018
Next Scheduled EDR Contact: 11/05/2018
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 04/25/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 07/27/2018
Next Scheduled EDR Contact: 11/05/2018
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 04/10/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 07/27/2018
Next Scheduled EDR Contact: 11/05/2018
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 04/01/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 07/27/2018
Next Scheduled EDR Contact: 11/05/2018
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 05/08/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 07/27/2018
Next Scheduled EDR Contact: 11/05/2018
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 04/13/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 07/27/2018
Next Scheduled EDR Contact: 11/05/2018
Data Release Frequency: Varies

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 04/12/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 07/27/2018
Next Scheduled EDR Contact: 11/05/2018
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 04/12/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 07/27/2018
Next Scheduled EDR Contact: 11/05/2018
Data Release Frequency: Varies

State and tribal registered storage tank lists

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 05/15/2017
Date Data Arrived at EDR: 05/30/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 136

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 07/11/2018
Next Scheduled EDR Contact: 10/22/2018
Data Release Frequency: Varies

UST: Underground Storage Tank Data
Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 06/18/2018
Date Data Arrived at EDR: 06/20/2018
Date Made Active in Reports: 07/23/2018
Number of Days to Update: 33

Source: Department of Environmental Quality
Telephone: 501-682-0984
Last EDR Contact: 09/18/2018
Next Scheduled EDR Contact: 12/31/2018
Data Release Frequency: Quarterly

AST: Aboveground Tank Database
Aboveground storage tank locations.

Date of Government Version: 06/18/2018
Date Data Arrived at EDR: 06/20/2018
Date Made Active in Reports: 07/23/2018
Number of Days to Update: 33

Source: Department of Environmental Quality
Telephone: 501-682-0984
Last EDR Contact: 09/18/2018
Next Scheduled EDR Contact: 12/31/2018
Data Release Frequency: Quarterly

INDIAN UST R4: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 05/08/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 07/27/2018
Next Scheduled EDR Contact: 11/05/2018
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 04/10/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 07/27/2018
Next Scheduled EDR Contact: 11/05/2018
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 04/01/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 07/27/2018
Next Scheduled EDR Contact: 11/05/2018
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 04/12/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 07/27/2018
Next Scheduled EDR Contact: 11/05/2018
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 04/25/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 07/27/2018
Next Scheduled EDR Contact: 11/05/2018
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 04/12/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 07/27/2018
Next Scheduled EDR Contact: 11/05/2018
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 04/24/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 07/27/2018
Next Scheduled EDR Contact: 11/05/2018
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 04/13/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 07/27/2018
Next Scheduled EDR Contact: 11/05/2018
Data Release Frequency: Varies

State and tribal institutional control / engineering control registries

ENG CONTROLS: Engineering Controls Sites Listing
A listing of sites with engineering controls in place.

Date of Government Version: 08/08/2018
Date Data Arrived at EDR: 08/10/2018
Date Made Active in Reports: 08/23/2018
Number of Days to Update: 13

Source: Department of Environmental Quality
Telephone: 501-682-0867
Last EDR Contact: 08/10/2018
Next Scheduled EDR Contact: 11/26/2018
Data Release Frequency: Varies

INST CONTROL: Institutional Control/Land Use Restriction Sites
Sites that have institutional controls and/or land use restrictions in place.

Date of Government Version: 08/08/2018
Date Data Arrived at EDR: 08/10/2018
Date Made Active in Reports: 08/23/2018
Number of Days to Update: 13

Source: Department of Environmental Quality
Telephone: 501-682-0867
Last EDR Contact: 08/10/2018
Next Scheduled EDR Contact: 11/26/2018
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng
A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 06/22/2018
Next Scheduled EDR Contact: 10/08/2018
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Sites
A listing of Voluntary Cleanup Program projects.

Date of Government Version: 04/30/2018
Date Data Arrived at EDR: 05/17/2018
Date Made Active in Reports: 06/21/2018
Number of Days to Update: 35

Source: Department of Environmental Quality
Telephone: 501-682-0867
Last EDR Contact: 08/09/2018
Next Scheduled EDR Contact: 11/26/2018
Data Release Frequency: Varies

State and tribal Brownfields sites

BROWNFIELDS: Brownfields Projects
Projects that the Department of Environmental Quality has received Brownfields applications for.

Date of Government Version: 08/08/2018
Date Data Arrived at EDR: 08/10/2018
Date Made Active in Reports: 08/23/2018
Number of Days to Update: 13

Source: Department of Environmental Quality
Telephone: 501-682-0867
Last EDR Contact: 08/10/2018
Next Scheduled EDR Contact: 11/26/2018
Data Release Frequency: Varies

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 06/18/2018	Source: Environmental Protection Agency
Date Data Arrived at EDR: 06/20/2018	Telephone: 202-566-2777
Date Made Active in Reports: 09/14/2018	Last EDR Contact: 09/18/2018
Number of Days to Update: 86	Next Scheduled EDR Contact: 12/31/2018
	Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

SWRCY: Recycling Directory

A listing of recycling facilities.

Date of Government Version: 08/03/2018	Source: Department of Environmental Quality
Date Data Arrived at EDR: 08/06/2018	Telephone: 501-682-0865
Date Made Active in Reports: 08/23/2018	Last EDR Contact: 08/06/2018
Number of Days to Update: 17	Next Scheduled EDR Contact: 11/19/2018
	Data Release Frequency: Semi-Annually

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998	Source: Environmental Protection Agency
Date Data Arrived at EDR: 12/03/2007	Telephone: 703-308-8245
Date Made Active in Reports: 01/24/2008	Last EDR Contact: 07/30/2018
Number of Days to Update: 52	Next Scheduled EDR Contact: 11/12/2018
	Data Release Frequency: Varies

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations

A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009	Source: EPA, Region 9
Date Data Arrived at EDR: 05/07/2009	Telephone: 415-947-4219
Date Made Active in Reports: 09/21/2009	Last EDR Contact: 07/17/2018
Number of Days to Update: 137	Next Scheduled EDR Contact: 11/05/2018
	Data Release Frequency: No Update Planned

ODI: Open Dump Inventory

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985	Source: Environmental Protection Agency
Date Data Arrived at EDR: 08/09/2004	Telephone: 800-424-9346
Date Made Active in Reports: 09/17/2004	Last EDR Contact: 06/09/2004
Number of Days to Update: 39	Next Scheduled EDR Contact: N/A
	Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land
A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 08/03/2018
Next Scheduled EDR Contact: 11/12/2018
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register
A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 05/18/2018
Date Data Arrived at EDR: 06/20/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 86

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 05/30/2018
Next Scheduled EDR Contact: 09/10/2018
Data Release Frequency: No Update Planned

CDL: Methamphetamine Contaminated Properties Listing
A listing of properties believed to be contaminated by the illegal manufacture of drugs.

Date of Government Version: 07/23/2018
Date Data Arrived at EDR: 07/25/2018
Date Made Active in Reports: 08/23/2018
Number of Days to Update: 29

Source: Department of Environmental Quality
Telephone: 501-683-1552
Last EDR Contact: 07/25/2018
Next Scheduled EDR Contact: 11/05/2018
Data Release Frequency: Varies

US CDL: Clandestine Drug Labs
A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 05/18/2018
Date Data Arrived at EDR: 06/20/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 86

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 08/28/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: Quarterly

Local Land Records

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 05/13/2018
Date Data Arrived at EDR: 05/30/2018
Date Made Active in Reports: 06/29/2018
Number of Days to Update: 30

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 08/09/2018
Next Scheduled EDR Contact: 11/05/2018
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System
Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 03/26/2018
Date Data Arrived at EDR: 03/27/2018
Date Made Active in Reports: 06/08/2018
Number of Days to Update: 73

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 03/27/2018
Next Scheduled EDR Contact: 07/09/2018
Data Release Frequency: Quarterly

SPILLS: Emergency Response Incidents
Spills and releases notified to the Department of Environmental Quality

Date of Government Version: 07/08/2018
Date Data Arrived at EDR: 07/11/2018
Date Made Active in Reports: 08/23/2018
Number of Days to Update: 43

Source: Department of Environmental Quality
Telephone: 501-682-0716
Last EDR Contact: 07/11/2018
Next Scheduled EDR Contact: 10/22/2018
Data Release Frequency: Quarterly

SPILLS 90: SPILLS90 data from FirstSearch
Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 05/08/2011
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 03/06/2013
Number of Days to Update: 62

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SPILLS 80: SPILLS80 data from FirstSearch
Spills 80 includes those spill and release records available from FirstSearch databases prior to 1990. Typically, they may include chemical, oil and/or hazardous substance spills recorded before 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 80.

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 03/06/2013
Number of Days to Update: 62

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated
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.

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/28/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: 214-665-6444
Last EDR Contact: 09/19/2018
Next Scheduled EDR Contact: 10/08/2018
Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites
The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 01/31/2015
Date Data Arrived at EDR: 07/08/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 97

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 08/24/2018
Next Scheduled EDR Contact: 12/03/2018
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 07/11/2018
Next Scheduled EDR Contact: 10/22/2018
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 07/13/2018
Next Scheduled EDR Contact: 10/22/2018
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 08/17/2018
Next Scheduled EDR Contact: 11/26/2018
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/27/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 87

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 06/27/2018
Next Scheduled EDR Contact: 10/08/2018
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 08/03/2018
Next Scheduled EDR Contact: 11/19/2018
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

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.

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 05/08/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 73

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 08/10/2018
Next Scheduled EDR Contact: 11/19/2018
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA 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.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 06/21/2017
Date Made Active in Reports: 01/05/2018
Number of Days to Update: 198

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 06/22/2018
Next Scheduled EDR Contact: 10/01/2018
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 01/10/2018
Date Made Active in Reports: 01/12/2018
Number of Days to Update: 2

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 08/24/2018
Next Scheduled EDR Contact: 12/03/2018
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

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.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 07/27/2018
Next Scheduled EDR Contact: 11/05/2018
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 05/13/2018
Date Data Arrived at EDR: 05/30/2018
Date Made Active in Reports: 06/29/2018
Number of Days to Update: 30

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 09/07/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Annually

RMP: Risk Management Plans

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.

Date of Government Version: 05/01/2018
Date Data Arrived at EDR: 05/17/2018
Date Made Active in Reports: 09/07/2018
Number of Days to Update: 113

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 07/20/2018
Next Scheduled EDR Contact: 11/05/2018
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties

A listing of verified Potentially Responsible Parties

Date of Government Version: 10/25/2013
Date Data Arrived at EDR: 10/17/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 3

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 08/09/2018
Next Scheduled EDR Contact: 11/19/2018
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 06/01/2017
Date Data Arrived at EDR: 06/09/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 126

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 07/13/2018
Next Scheduled EDR Contact: 10/22/2018
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

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.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 07/09/2018
Next Scheduled EDR Contact: 10/22/2018
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 08/30/2016
Date Data Arrived at EDR: 09/08/2016
Date Made Active in Reports: 10/21/2016
Number of Days to Update: 43

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 07/23/2018
Next Scheduled EDR Contact: 11/05/2018
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76

Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 09/07/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 07/01/2014
Date Data Arrived at EDR: 09/10/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 09/04/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 05/24/2017
Date Data Arrived at EDR: 11/30/2017
Date Made Active in Reports: 12/15/2017
Number of Days to Update: 15

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 07/27/2018
Next Scheduled EDR Contact: 11/05/2018
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 04/03/2018
Date Data Arrived at EDR: 04/05/2018
Date Made Active in Reports: 06/29/2018
Number of Days to Update: 85

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 07/05/2018
Next Scheduled EDR Contact: 10/15/2018
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 07/31/2012
Date Data Arrived at EDR: 08/07/2012
Date Made Active in Reports: 09/18/2012
Number of Days to Update: 42

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 08/09/2018
Next Scheduled EDR Contact: 11/12/2018
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 03/31/2018
Date Data Arrived at EDR: 04/16/2018
Date Made Active in Reports: 06/29/2018
Number of Days to Update: 74

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 09/17/2018
Next Scheduled EDR Contact: 12/31/2018
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 09/28/2017
Number of Days to Update: 218

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 08/24/2018
Next Scheduled EDR Contact: 12/03/2018
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 07/11/2018
Next Scheduled EDR Contact: 10/22/2018
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 08/08/2017
Date Data Arrived at EDR: 09/11/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 3

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 09/11/2018
Next Scheduled EDR Contact: 11/19/2018
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 06/23/2017
Date Data Arrived at EDR: 10/11/2017
Date Made Active in Reports: 11/03/2017
Number of Days to Update: 23

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 08/20/2018
Next Scheduled EDR Contact: 12/03/2018
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 05/13/2018
Date Data Arrived at EDR: 05/30/2018
Date Made Active in Reports: 06/29/2018
Number of Days to Update: 30

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 08/09/2018
Next Scheduled EDR Contact: 10/15/2018
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)

The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data
A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US MINES: Mines Master Index File
Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 05/03/2018
Date Data Arrived at EDR: 05/31/2018
Date Made Active in Reports: 06/29/2018
Number of Days to Update: 29

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 08/29/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing
This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 12/05/2005
Date Data Arrived at EDR: 02/29/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 49

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 08/31/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing
Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 08/31/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines
An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/11/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 3

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 09/10/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 02/21/2018
Date Data Arrived at EDR: 02/23/2018
Date Made Active in Reports: 03/23/2018
Number of Days to Update: 28

Source: EPA
Telephone: (214) 665-2200
Last EDR Contact: 09/18/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Quarterly

DOCKET HWC: Hazardous Waste Compliance Docket Listing

A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 01/04/2018
Date Data Arrived at EDR: 01/19/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 84

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 08/31/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: Varies

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 06/19/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 87

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 07/13/2018
Next Scheduled EDR Contact: 10/29/2018
Data Release Frequency: Varies

ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 09/02/2018
Date Data Arrived at EDR: 09/05/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 9

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 09/05/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Quarterly

FUELS PROGRAM: EPA Fuels Program Registered Listing

This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 05/21/2018
Date Data Arrived at EDR: 05/23/2018
Date Made Active in Reports: 09/07/2018
Number of Days to Update: 107

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 08/22/2018
Next Scheduled EDR Contact: 12/03/2018
Data Release Frequency: Quarterly

AIRS: Permitted Facility Emission & Stack Data

Permitted facility emissions and stack data for the state.

Date of Government Version: 06/25/2018
Date Data Arrived at EDR: 06/27/2018
Date Made Active in Reports: 07/25/2018
Number of Days to Update: 28

Source: Department of Environmental Quality
Telephone: 501-682-0726
Last EDR Contact: 06/27/2018
Next Scheduled EDR Contact: 10/08/2018
Data Release Frequency: Quarterly

ASBESTOS: Asbestos Notification of Intent Database
The database contains all properties/facilities that have submitted a Notice of Intent for renovation or demolition activities.

Date of Government Version: 07/23/2018
Date Data Arrived at EDR: 07/25/2018
Date Made Active in Reports: 08/23/2018
Number of Days to Update: 29

Source: Department of Environmental Quality
Telephone: 501-682-0717
Last EDR Contact: 07/25/2018
Next Scheduled EDR Contact: 11/05/2018
Data Release Frequency: Quarterly

COAL ASH: Coal Ash Disposal Site Listing
A listing of coal ash disposal site locations.

Date of Government Version: 05/16/2018
Date Data Arrived at EDR: 05/22/2018
Date Made Active in Reports: 07/23/2018
Number of Days to Update: 62

Source: Department of Environmental Quality
Telephone: 501-682-0600
Last EDR Contact: 08/01/2018
Next Scheduled EDR Contact: 11/19/2018
Data Release Frequency: Varies

ENFORCEMENT: Consent Administrative Order, Notice of Violation Information Database
Violations issued to facilities in various Department of Environmental Quality programs, including Air, Hazardous Waste, Storage Tanks, Solid Waste and Water.

Date of Government Version: 07/23/2018
Date Data Arrived at EDR: 07/25/2018
Date Made Active in Reports: 08/23/2018
Number of Days to Update: 29

Source: Department of Environmental Quality
Telephone: 501-682-0892
Last EDR Contact: 07/25/2018
Next Scheduled EDR Contact: 11/05/2018
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing
Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 06/14/2018
Date Data Arrived at EDR: 06/19/2018
Date Made Active in Reports: 07/23/2018
Number of Days to Update: 34

Source: Department of Environmental Quality
Telephone: 501-682-0876
Last EDR Contact: 09/17/2018
Next Scheduled EDR Contact: 12/31/2018
Data Release Frequency: Varies

Financial Assurance 2: Financial Assurance Information Listing
Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 03/31/2014
Date Data Arrived at EDR: 04/18/2014
Date Made Active in Reports: 05/13/2014
Number of Days to Update: 25

Source: Department of Environmental Quality
Telephone: 501-682-0589
Last EDR Contact: 08/01/2018
Next Scheduled EDR Contact: 10/22/2018
Data Release Frequency: Quarterly

Financial Assurance 3: Financial Assurance Information Listing
A listing of financial assurance information for underground storage tank facilities.

Date of Government Version: 06/18/2018
Date Data Arrived at EDR: 06/20/2018
Date Made Active in Reports: 07/23/2018
Number of Days to Update: 33

Source: Department of Environmental Quality
Telephone: 501-682-0979
Last EDR Contact: 09/18/2018
Next Scheduled EDR Contact: 12/31/2018
Data Release Frequency: Quarterly

PERMITS: Permit Data System
A list of sites permitted by the Department of Environmental Quality, including Air, Mining, Solid Waste and Water.

Date of Government Version: 06/11/2018
Date Data Arrived at EDR: 06/13/2018
Date Made Active in Reports: 07/23/2018
Number of Days to Update: 40

Source: Department of Environmental Quality
Telephone: 501-682-0673
Last EDR Contact: 09/11/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Quarterly

SLUDGE: Poultry Sludge Permit Sites
Broiler fryer roast chickens, chicken eggs, poultry hatcheries, poultry and egg processing sites.

Date of Government Version: 06/11/2018
Date Data Arrived at EDR: 06/13/2018
Date Made Active in Reports: 07/23/2018
Number of Days to Update: 40

Source: Department of Environmental Quality
Telephone: 501-682-0673
Last EDR Contact: 09/11/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Quarterly

TIER 2: Tier 2 Information Listing
A listing of facilities which store or manufacture hazardous materials and submit a chemical inventory report.

Date of Government Version: 12/31/2013
Date Data Arrived at EDR: 09/24/2014
Date Made Active in Reports: 10/29/2014
Number of Days to Update: 35

Source: Department of Environmental Management
Telephone: 501-683-6700
Last EDR Contact: 06/20/2018
Next Scheduled EDR Contact: 08/27/2018
Data Release Frequency: Varies

UIC: Underground Injection Wells Database Listing
A listing of wells identified as Underground Injection Wells, in the Arkansas Oil and Gas Wells data base.

Date of Government Version: 07/02/2018
Date Data Arrived at EDR: 07/18/2018
Date Made Active in Reports: 08/23/2018
Number of Days to Update: 36

Source: Arkansas Oil & Gas Commission
Telephone: 870-862-4965
Last EDR Contact: 07/18/2018
Next Scheduled EDR Contact: 10/29/2018
Data Release Frequency: Varies

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historical Auto Stations
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.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historical Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry 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.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA HWS: Recovered Government Archive State Hazardous Waste Facilities List

The EDR Recovered Government Archive State Hazardous Waste database provides a list of SHWS incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Environmental Quality in Arkansas.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/02/2014
Number of Days to Update: 185

Source: Department of Environmental Quality
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Environmental Quality in Arkansas.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/16/2014
Number of Days to Update: 199

Source: Department of Environmental Quality
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Environmental Quality in Arkansas.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/04/2014
Number of Days to Update: 187

Source: Department of Environmental Quality
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 08/10/2018
Date Data Arrived at EDR: 08/10/2018
Date Made Active in Reports: 09/10/2018
Number of Days to Update: 31

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 08/09/2018
Next Scheduled EDR Contact: 11/26/2018
Data Release Frequency: No Update Planned

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 07/01/2018
Date Data Arrived at EDR: 08/01/2018
Date Made Active in Reports: 08/31/2018
Number of Days to Update: 30

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 08/01/2018
Next Scheduled EDR Contact: 11/12/2018
Data Release Frequency: Quarterly

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 07/25/2017
Date Made Active in Reports: 09/25/2017
Number of Days to Update: 62

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 07/12/2018
Next Scheduled EDR Contact: 10/29/2018
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 02/23/2018
Date Made Active in Reports: 04/09/2018
Number of Days to Update: 45

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 08/21/2018
Next Scheduled EDR Contact: 12/03/2018
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 06/15/2018
Date Made Active in Reports: 07/09/2018
Number of Days to Update: 24

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 09/06/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Annually

Oil/Gas Pipelines
Source: PennWell Corporation
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Electric Power Transmission Line Data
Source: PennWell Corporation
This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: US Fish & Wildlife Service
Telephone: 703-358-2171

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

HEA PROPERTIES, LLC SITE
CHAMPS BOULEVARD
MAUMELLE, AR 72113

TARGET PROPERTY COORDINATES

Latitude (North):	34.868726 - 34˚ 52’ 7.41’’
Longitude (West):	92.383021 - 92˚ 22’ 58.88’’
Universal Tranverse Mercator:	Zone 15
UTM X (Meters):	556391.8
UTM Y (Meters):	3858461.8
Elevation:	275 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	6065269 PINNACLE MOUNTAIN, AR
Version Date:	2014
Northeast Map:	6065243 CATO, AR
Version Date:	2014
Southeast Map:	6065265 NORTH LITTLE ROCK, AR
Version Date:	2014
Northwest Map:	6064657 MAYFLOWER, AR
Version Date:	2014

EDR’s GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

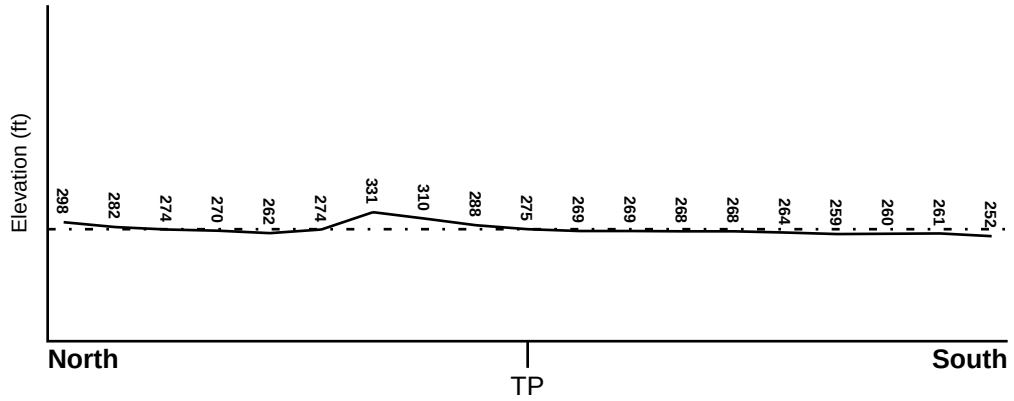
TOPOGRAPHIC INFORMATION

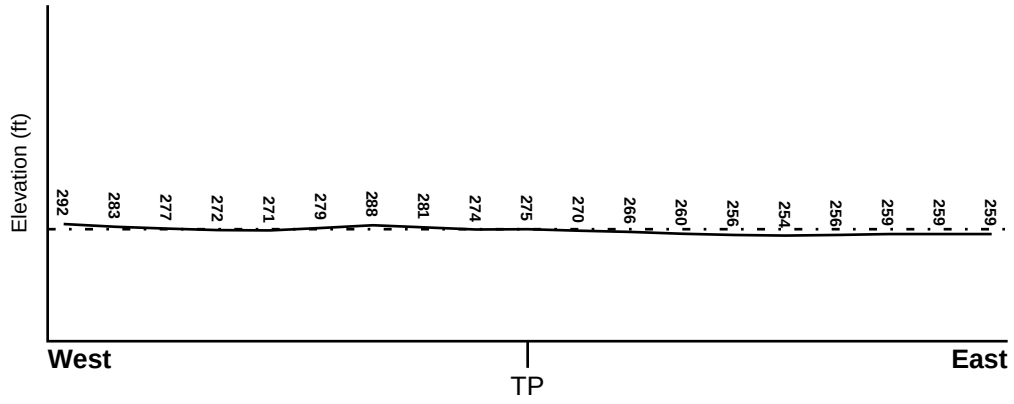
Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

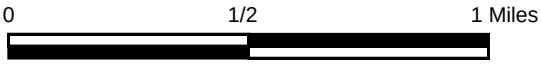
General Topographic Gradient: General SSE

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES





Target Property Elevation: 275 ft.



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
05119C0310G	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
05119C0145G	FEMA FIRM Flood data
05119C0165G	FEMA FIRM Flood data
05119C0330G	FEMA FIRM Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
PINNACLE MOUNTAIN	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

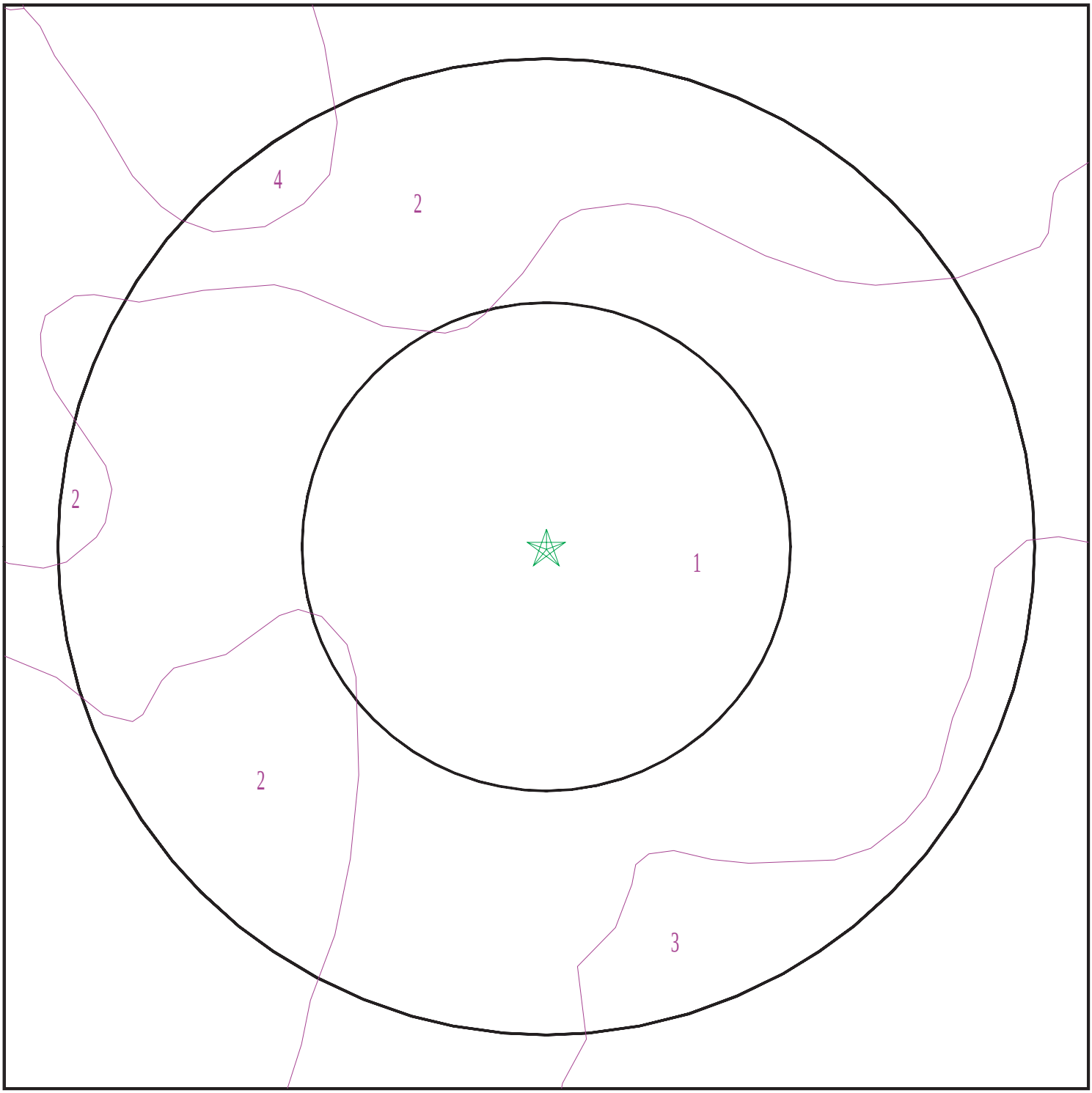
GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT		**GEOLOGIC AGE IDENTIFICATION**	
Era:	Paleozoic	Category:	Stratifed Sequence
System:	Pennsylvanian		
Series:	Atokan and Morrowan Series Jackfork Sandstone		
Code:	PP1a*(decoded above as Era, System & Series)*		

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 5430036.2s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	HEA Properties, LLC Site	CLIENT:	Anderson Engineering Cons.
ADDRESS:	Champs Boulevard Maumelle AR 72113	CONTACT:	Melissa/Stuart
		INQUIRY #:	5430036.2s
LAT/LONG:	34.868726 / 92.383021	DATE:	September 20, 2018 10:30 am

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: Leadvale

Soil Surface Texture: silt loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Moderately well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 61 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	7 inches	silt loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 0.42	Max: 5.5 Min: 4.5
2	7 inches	16 inches	silt loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 0.42	Max: 5.5 Min: 4.5
3	16 inches	48 inches	silt loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 0.42	Max: 5.5 Min: 4.5
4	48 inches	72 inches	silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 0.42	Max: 5.5 Min: 4.5

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Map ID: 2

Soil Component Name: Linker

Soil Surface Texture: gravelly fine sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 77 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	3 inches	gravelly fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 1.4 Min: 0.42	Max: Min:
2	3 inches	9 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 1.4 Min: 0.42	Max: Min:
3	9 inches	20 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 1.4 Min: 0.42	Max: Min:
4	20 inches	29 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 1.4 Min: 0.42	Max: Min:
5	29 inches	33 inches	unweathered bedrock	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 1.4 Min: 0.42	Max: Min:

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Map ID: 3

Soil Component Name: Guthrie

Soil Surface Texture: silt loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Poorly drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 23 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	1 inches	5 inches	silt loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay. FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 14 Min: 4	Max: 6 Min: 4.5
2	5 inches	16 inches	silt loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay. FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 14 Min: 4	Max: 6 Min: 4.5
3	16 inches	46 inches	silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay. FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 14 Min: 4	Max: 6 Min: 4.5

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
4	46 inches	72 inches	silt loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay. FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 14 Min: 4	Max: 6 Min: 4.5
5	0 inches	1 inches	silt loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay. FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 14 Min: 4	Max: 6 Min: 4.5

Soil Map ID: 4

Soil Component Name: Linker

Soil Surface Texture: gravelly fine sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 41 inches

Depth to Watertable Min: > 0 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	3 inches	gravelly fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 1.4 Min: 0.42	Max: Min:
2	3 inches	9 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 1.4 Min: 0.42	Max: Min:
3	9 inches	20 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 1.4 Min: 0.42	Max: Min:
4	20 inches	29 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 1.4 Min: 0.42	Max: Min:
5	29 inches	33 inches	unweathered bedrock	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 1.4 Min: 0.42	Max: Min:

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

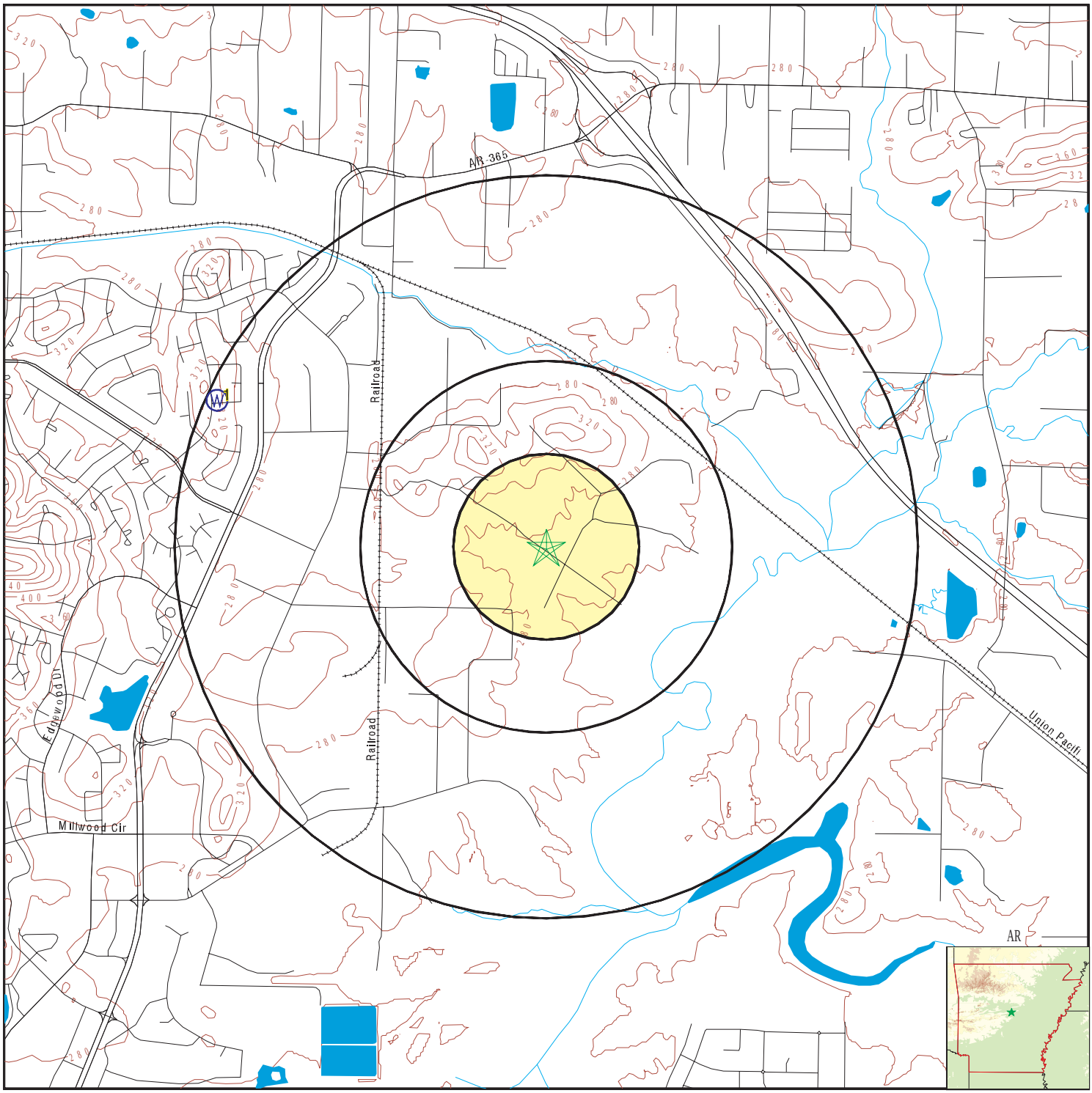
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	AR1000000048055	1/2 - 1 Mile WNW

PHYSICAL SETTING SOURCE MAP - 5430036.2s



County Boundary
Major Roads
Contour Lines
Earthquake epicenter, Richter 5 or greater
Water Wells
Public Water Supply Wells
Cluster of Multiple Icons

0 1/4 1/2 1 Miles

Groundwater Flow Direction
GI Indeterminate Groundwater Flow at Location
GV Groundwater Flow Varies at Location
HD Closest Hydrogeological Data
Oil, gas or related wells

N

SITE NAME:	HEA Properties, LLC Site	CLIENT:	Anderson Engineering Cons.
ADDRESS:	Champs Boulevard Maumelle AR 72113	CONTACT:	Melissa/Stuart
		INQUIRY #:	5430036.2s
LAT/LONG:	34.868726 / 92.383021	DATE:	September 20, 2018 10:30 am

Map ID Direction Distance Elevation	Database	EDR ID Number
1 **WNW** **1/2 - 1 Mile** **Higher**	**AR WELLS**	**AR1000000048055**

Well id:	92235534522801	Original w:	922355345228
City and z:	RUSSELLVILLE, AR. 72801	County nam:	PULASKI
Latitude:	34-52-28	Longitude:	92-23-55
Well statu:	Replacement	Depth:	250
Date well:	20080701	Use code:	Not Reported
Owner name:	ROOD HEATING AND COOLING	Driller na:	CHRIS BUCKMAN
Remarks:	THIS REPORT CONSISTS OF TWO WELLS	Site id:	AR1000000048055

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: AR Radon

Radon Test Results

Total Meas	Mean	Geom mean	Median	Std Dev	Max	% Sites>4 pCi/L	% Sites>20 pCi/L
127	0.9	0.6	0.6	1.4	15.2	2	0

Federal EPA Radon Zone for PULASKI 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 Zip Code: 72113

Number of sites tested: 2

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.750 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: US Fish & Wildlife Service
Telephone: 703-358-2171

HYDROGEOLOGIC INFORMATION

AQUIFLOW[R] Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

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).

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 RECORDS

Arkansas Community Public Water Systems
Source: Health Department
Telephone: 501-661-2623

OTHER STATE DATABASE INFORMATION

Oil and Gas Well Database
Source: Arkansas Geographic Information Office
Telephone: 501-682-2929
Oil and gas well locations.

RADON

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.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary faultlines, prepared in 1975 by the United State Geological Survey

PHYSICAL SETTING SOURCE RECORDS SEARCHED

STREET AND ADDRESS INFORMATION

APPENDIX C

PROFESSIONAL RESUMES

PROFESSIONAL RESUME

Stuart M. Scheiderer, P.E.
5 West Point Drive
Maumelle, Arkansas 72113
501/851-8525 (Residence)
501/455-4545 (Office)
501/690-2723 (Cell)
Birth Date: March 6, 1974

Vice President, Anderson Engineering Consultants, Inc.
Senior Geotechnical Engineer

REGISTRATIONS

Registered Professional Engineer

Arkansas #11424
Texas #102965

National Registry of Environmental Professionals (NREP)

Registered Environmental Professional #191357

EDUCATION/TRAINING

2001 – Master of Science in Civil Engineering
Geotechnical Engineering
Oklahoma State University
Stillwater, Oklahoma

1998 – Bachelor of Science in Engineering
Arkansas State University
Jonesboro, Arkansas

1999 – AHTD Technician Training and Certification Program
Basic Aggregates and Basic Soils
University of Arkansas

1999 – OSHA 1910.120 Health and Safety Training for Hazardous Waste – Supervisor

1998 – Augered Cast-in-Place Piles Seminar
Deep Foundations Institute
Houston, Texas

1997 – Troxler – Nuclear Gauge Operator

1996 – ACI – Grade 1 Concrete Field Testing

EXPERIENCE

1994 – 95 Arkansas Highway and Transportation Department – Wynne, Arkansas
Full-time summer employee for the Resident Engineer's office. Performed various testing and inspection in the field necessary in highway construction. Also performed laboratory testing for construction materials.

1996 Roy Anderson Corporation – Forrest City, Arkansas
Summer employee for the general contractor in the construction of a federal prison. Duties included preparing submittals, posting revisions to construction drawings, documenting projects progress, and various tasks as assigned by the Project Manager.

1997 Anderson Engineering Consultants, Inc. – Jonesboro, Arkansas
Employed as a technician performing field testing of concrete, subgrades, inspection of structural steel, and routine laboratory testing of construction materials.

1998 – present Anderson Engineering Consultants, Inc. – Little Rock, Arkansas
Began career in the quality control department primarily performing field and laboratory inspections in addition to supervision of technicians. Has held the title of Materials Engineer, Geotechnical Engineer, and presently Senior Geotechnical Engineer/Vice-President. Serves as Geotechnical Engineer of Record for Dillards, Inc., which involves the evaluation of geotechnical reports, site inspections, and recommendations for conformance with Dillard Pad Criteria for projects across the country. Has supervised and authored geotechnical reports for projects in over twenty states across the country. Performed several forensic type investigations and evaluations for projects that experienced foundation, floor slab, or pavement distress. Currently serves as supervisor for Jonesboro office of AECI.

NOTABLE PROJECTS

Uptown Village – Cedar Hill, Texas
The Village at Riverwatch – Augusta, Georgia
The Village at Fairview – Fairview, Texas
Northeast Arkansas Baptist Health System – Jonesboro, Arkansas
Welspun Tubular – Plants 1 and 2 – Little Rock, Arkansas
The Promenade at Chenal – Little Rock, Arkansas
Armed Forces Reserve Centers – Arkansas, Georgia, North Carolina, Florida
Dillards Stores – Multiple States and Locations

SOCIETIES AND ASSOCIATIONS

American Society of Civil Engineers
National Society of Professional Engineers

PROFESSIONAL RESUME

Scott W. Anderson, P.E.
14601 Royal Oak Drive
Little Rock, Arkansas 72210
501/455-1745 (Residence)
501/455-4545 (Office)
Birth Date: June 11, 1962

President, Anderson Engineering Consultants, Inc.

REGISTRATIONS

Registered Professional Engineer

Arkansas #7713	Mississippi #14743
Alabama #23812	Missouri #25773
Arizona #39884	Nebraska #E9968
Colorado #35966	Nevada #12471
Florida #57757	New Mexico #16944
Georgia #26563	North Carolina #26072
Idaho #7959	Ohio #67882
Illinois #54228	Oklahoma #16736
Kansas #12843	South Carolina #20648
Kentucky #21928	Tennessee #106675
Louisiana #29146	Texas #87196
Minnesota #43402	Virginia #35404

Water Well License

Arkansas #1121	Oklahoma #0005
Alabama #482	Tennessee #777
Mississippi #0-520	

National Registry of Environmental Professionals (NREP)
Registered Environmental Professional #5680

Arkansas Contractors License #0068170402

EDUCATION/TRAINING

1985 - Associate of Science in Engineering
University of Arkansas
Little Rock, Arkansas

1986 - Bachelor of Science in Civil Engineering
Memphis State University
Memphis, Tennessee

1987 - Master of Science in Civil Engineering
Geotechnical Engineering
Oklahoma State University
Stillwater, Oklahoma

1985 to 2005 Various short courses - continuing education programs
1988 - OSHA 1910.120 Health and Safety Training for Hazardous Waste

EXPERIENCE

1980 – 89 Anderson Engineering & Testing Company - Little Rock, Arkansas

Civil Engineer Assistant (Part-Time) while attending University of Arkansas at Little Rock pursuing the requirements for the Bachelors Degree in Civil Engineering. Worked in the soils and materials engineering laboratory performed laboratory tests on soils, concrete, asphalt, and other engineering materials. Supervised drilling crews in obtaining soils samples and diamond coring of rock. Evaluated geology and developed solutions to engineering geology problems related to all type of civil engineering structures.

1989 to Present Anderson Engineering Consultants, Inc. - Little Rock, Arkansas

President and Senior Geotechnical Engineer responsible for management of drilling and environmental divisions as well as author of both geotechnical and environmental reports. Has been in responsible charge of many large geotechnical projects including the Dillard's Corporate Office Building, Dillard's Distribution Center (Otter Creek), Alltel Arena, St. Joseph's Regional Medical Center, Community Psychiatric Hospital and the Embassy Suites Hotel and Convention Center. Also have significant experience with soils in the Arkansas River Valley and the Delta of Eastern Arkansas. Foundation experience includes footings on rock, auger cast piles, driven piling, drilled shafts and raft/mat foundations. Design experience includes Crib-Lok wall system and deadman/tieback anchors at Park Plaza Mall, and many AT&T Wireless Tower foundations across Arkansas, Oklahoma, and Missouri.

Environmental experience includes Phase I real estate audits on several hundred real estate parcels including some work on the Alltel Arena site as a subcontractor to Pollution Management, Inc. Have recently completed Phase I investigation for Little Rock Convention and Visitors Bureau for possible site of improvements associated with the Convention Center Project. Performs remediation of contaminated land design and design of monitoring/recovery of contaminated groundwater. Experience with landfarming and bioremediation of hydrocarbon contaminated soils on a large site in Mena, Arkansas.

NOTABLE PROJECTS

Geotechnical

Alltel Arena - North Little Rock, Arkansas
St. Joseph's Hospital - Hot Springs, Arkansas
Kimberly Clark Plant - Maumelle, Arkansas
Tank Wash Facility - Ft. Drum, New York
Community Psychiatric Hospital - Little Rock, Arkansas
Ridgewood Court Center - Jackson, Mississippi
Dillard's Corporate Headquarters - Little Rock, Arkansas
Meridian Mall - Meridian, Mississippi
Park Plaza - Little Rock, Arkansas
University Mall - Little Rock, Arkansas
U.S. Bankruptcy Court - Little Rock, Arkansas
Kimberly-Clark Distribution Center - Conway, Arkansas

Environmental

Suitemark Hotel - Little Rock, Arkansas
Meridian Mall - Meridian, Mississippi
Kinney Shoe Distribution Center - Little Rock, Arkansas
Missouri-Pacific Hospital - Little Rock, Arkansas
Union Pacific Railroad Depot - Little Rock, Arkansas
Rock Island Depot - Little Rock, Arkansas
Dillard's Corporate Headquarters - Little Rock, Arkansas

SOCIETIES AND ASSOCIATIONS

American Concrete Institute

American Society of Civil Engineering

Association of Groundwater Scientists & Engineers

Association of General Contractors

Association of Engineering Geologists

National Groundwater Association

Arkansas Groundwater Association

National Society of Professional Engineers

SOCIETIES AND ASSOCIATIONS

American Concrete Institute

American Society of Civil Engineering

Association of Groundwater Scientists & Engineers

Association of General Contractors

Association of Engineering Geologists

National Groundwater Association

Arkansas Groundwater Association

National Society of Professional Engineers

ARTICLE V. - STORMWATER, POLLUTION PREVENTION AND EROSION CONTROL

DIVISION 1. - GENERALLY

Sec. 94-791. - Purposes.

The purpose and objectives of this article are as follows:

(1) To maintain and improve the quality of water impacted by the storm drainage system within the city.

(2) To prevent the discharge of contaminated stormwater runoff and illicit discharges from industrial, commercial, residential, and construction sites into the storm drainage system within the city.

(3) To promote public awareness of the hazards involved in the improper discharge of trash, yard waste, lawn chemicals, pet waste, wastewater, oil, petroleum products, cleaning products, paint products, hazardous waste, sediment and other pollutants into the storm drainage system.

(4) To encourage recycling of used motor oil and safe disposal of other hazardous consumer products.

(5) To facilitate compliance with state and federal standards and permits by owners of construction sites within the city.

(6) To enable the city to comply with all federal and state laws and regulations applicable to the National Pollutant Discharge Elimination System (NPDES) permitting requirements for stormwater discharges.

(Ord. No. 585, § 1, 12-5-2005)

Sec. 94-792. - Administration.

Except as otherwise provided herein, the department responsible shall administer, implement, and enforce the provisions of this article.

(Ord. No. 585, § 1, 12-5-2005)

Sec. 94-793. - Abbreviations.

The following abbreviations when used in this article shall have the designated meanings:

ADEQ—Arkansas Department of Environmental Quality.

BMP—Best management practices.

CFR—Code of Federal Regulations.

EPA—U.S. Environmental Protection Agency.

HHW—Household hazardous waste.

MS4—Municipal separate storm sewer system.

NPDES—National Pollutant Discharge Elimination System.

SWP3—Stormwater pollution prevention plan.

(Ord. No. 585, § 1, 12-5-2005)

Sec. 94-794. - Definitions.

Unless a provision explicitly states otherwise, the following terms and phrases as used in this article, shall have the meanings hereinafter designated:

Best management practices (BMPs) here refers to management practices and methods to control pollutants in stormwater. BMPs are of two types: "source controls" (nonstructural) and "treatment controls" (structural). Source controls are practices that prevent pollution by reducing potential pollutants at their source, before they come into contact with stormwater. Treatment controls remove pollutants from stormwater. The selection, application and maintenance of BMPs must be sufficient to prevent or reduce the likelihood of pollutants entering the storm drainage system.

City means the City of Maumelle, Arkansas.

Clearing means the act of cutting, removing from the ground, burning, damaging or destroying trees, stumps, hedge, brush, roots, logs, or scalping existing vegetation.

Commercial means pertaining to any business, trade, industry, or other activity engaged in for profit.

Construction site means any location where construction activity occurs.

Contaminated means containing harmful quantities of pollutants.

Contractor means any person or firm performing or managing construction work at a construction site, including any construction manager, general contractor or subcontractor. Also includes, but is not limited to, earthwork, paving, building, plumbing, mechanical, electrical or landscaping contractors, and material suppliers delivering materials to the site.

Coordinator means the person, in the department responsible, appointed to the position of stormwater program coordinator by the City of Maumelle, Arkansas.

Discharge means any addition or release of any pollutant, stormwater or any other substance whatsoever into storm drainage system.

Discharger means any person who causes, allows, permits, or is otherwise responsible for, a discharge, including, without limitation, any owner of a construction site or industrial facility.

Domestic sewage means sewage originating primarily from kitchen, bathroom and laundry sources, including waste from food preparation, dishwashing, garbage grinding, toilets, baths, showers and sinks.

Earthwork means the disturbance of soils on a site associated with clearing, grading, or excavation activities.

Environmental Protection Agency (EPA) means the United States Environmental Protection Agency, the regional office thereof, any federal department, agency, or commission that may succeed to the authority of the EPA, and any duly authorized official of the EPA or such successor agency.

Facility means any building, structure, installation, process, or activity from which there is or may be a discharge of a pollutant.

Fertilizer means a substance or compound that contains an essential plant nutrient element in a form available to plants and is used primarily for its essential plant nutrient element content in promoting or stimulating growth of a plant or improving the quality of a crop, or a mixture of two or more fertilizers.

Fire protection water means any water, and any substances or materials contained therein, used by any person to control or extinguish a fire, or to inspect or test fire equipment.

Garbage means putrescible animal and vegetable waste materials from the handling, preparation, cooking, or consumption of food, including waste materials from markets, storage facilities, and the handling and sale of produce and other food products.

Groundwater means any water residing below the surface of the ground or percolating into or out of the ground.

Harmful quantity means the amount of any substance that the coordinator determines will cause an adverse impact to storm drainage system or will contribute to the failure of the city to meet the water quality based requirements of the NPDES permit for discharges from the MS4.

Hazardous substance means any substance listed in Table 302.4 of 40 CFR Part 302.

Hazardous waste means any substance identified or listed as a hazardous waste by the EPA pursuant to 40 CFR Part 261.

Household hazardous waste (HHW) means any material generated in a household (including single and multiple residences) that would be classified as hazardous.

Illegal discharge: See illicit discharge below.

Illicit discharge means any discharge to the storm drainage system that is prohibited under this article.

Illicit connection means any drain or conveyance, whether on the surface or subsurface, which allows an illicit discharge to enter the storm drainage system.

Industrial waste (or commercial waste) means any wastes produced as a byproduct of any industrial, institutional or commercial process or operation, other than domestic sewage.

Infrastructure means all platted streets, drainage, walkpaths, sidewalks, street lighting, utility connections, or other improvements which are a part of the basic improvements of a subdivision.

Land alteration means the process of grading, clearing, filling, excavating, quarrying, tunneling, trenching, construction or similar activities.

Mechanical fluid means any fluid used in the operation and maintenance of machinery, vehicles and any other equipment, including lubricants, antifreeze, petroleum products, oil and fuel.

Mobile commercial cosmetic cleaning (or mobile washing) means power washing, steam cleaning, and any other method of mobile cosmetic cleaning, of vehicles and/or exterior surfaces, engaged in for commercial purposes or related to a commercial activity.

Municipal Separate Storm Sewer System (MS4) means the system of conveyances, including roads, streets, curbs, gutters, ditches, inlets, drains, catch basins, pipes, tunnels, culverts, channels, detention basins and ponds owned and operated by the city and designed or used for collecting or conveying stormwater, and not used for collecting or conveying sanitary sewage.

NPDES means the National Pollutant Discharge Elimination System.

NPDES permit means a permit issued by EPA that authorizes the discharge of pollutants to waters of the United States, whether the permit is applicable on an individual, group, or general area-wide basis.

Notice of violation means a written notice detailing any violations of this article and any action expected of the violators.

Oil means any kind of oil in any form, including, but not limited to: petroleum, fuel oil, crude oil, synthetic oil, motor oil, cooking oil, grease, sludge, oil refuse, and oil mixed with waste.

Owner means the person who owns a facility, part of a facility, or land.

Person means any individual, partnership, co-partnership, firm, company, corporation, association, joint stock company, trust, estate, governmental entity, or any other legal entity; or their legal representatives, agents, or assigns, including all federal, state, and local governmental entities.

Pesticide means a substance or mixture of substances intended to prevent, destroy, repel, or migrate any pest.

Pet waste or *animal waste* means excrement and other waste from domestic animals.

Petroleum product means a product that is obtained from distilling and processing crude oil and that is capable of being used as a fuel or lubricant in a motor vehicle or aircraft, including motor oil, motor gasoline, gasohol, other alcohol blended fuels, aviation gasoline, kerosene, distillate fuel oil, and #1 and #2 diesel.

Pollutant means any substance attributable to water pollution, including but not limited to rubbish, garbage, solid waste, litter, debris, yard waste, pesticides, herbicides, fertilizers, pet waste, animal waste, domestic sewage, industrial waste, sanitary sewage, wastewater, septic tank waste, mechanical fluid, oil, motor oil, used oil, grease, petroleum products, antifreeze, surfactants, solvents, detergents, cleaning agents, paint, heavy metals, toxins, household hazardous waste, small quantity generator waste, hazardous substances, hazardous waste, soil and sediment.

Pollution means the alteration of the physical, thermal, chemical, or biological quality of, or the contamination of, any water that renders the water harmful, detrimental, or injurious to humans, animal life, plant life, property, or public health, safety, or welfare, or impairs the usefulness or the public enjoyment of the water for any lawful or reasonable purpose.

Potable water means water that has been treated to drinking water standards and is safe for human consumption.

Private drainage system means all privately or publicly owned ground, surfaces, structures or systems, excluding the MS4, that contribute to or convey stormwater, including but not limited to, roofs, gutters, downspouts, lawns, driveways, pavement, roads, streets, curbs, gutters, ditches, inlets, drains, catch basins, pipes, tunnels, culverts, channels, detention basins, ponds, draws, swales, streams and any ground surface.

Public improvement plans means engineering drawings subject to approval by the city engineer for the construction of public improvements.

Qualified person means a person who possesses the required certification, license, or appropriate competence, skills, and ability as demonstrated by sufficient education, training, and/or experience to perform a specific activity in a timely and complete manner consistent with the regulatory requirements and generally accepted industry standards for such activity.

Release means to dump, spill, leak, pump, pour, emit, empty, inject, leach, dispose or otherwise introduce into the storm drainage system, whether intentional or unintentional.

Rubbish means nonputrescible solid waste, excluding ashes that consist of:

(a) Combustible waste materials, including paper, rags, cartons, wood, excelsior, furniture, rubber, plastics, yard trimmings, leaves, and similar materials; and

(b) Noncombustible waste materials, including glass, crockery, tin cans, aluminum cans, metal furniture, and similar materials that do not burn at ordinary incinerator temperatures (1,600 to 1,800 degrees Fahrenheit).

Sanitary sewage means the domestic sewage and/or industrial waste that is discharged into the city sanitary sewer system and passes through the sanitary sewer system to the city sewage treatment plant for treatment.

Sanitary sewer means the system of pipes, conduits, and other conveyances which carry industrial waste and domestic sewage from residential dwellings, commercial buildings, industrial and manufacturing facilities, and institutions, whether treated or untreated, to the city sewage treatment plant (and to which stormwater, surface water, and groundwater are not intentionally admitted).

Sediment means soil (or mud) that has been disturbed or eroded and transported naturally by water, wind or gravity, or mechanically by any person.

Septic tank waste means any domestic sewage from holding tanks such as vessels, chemical toilets, campers, trailers, septic tanks and aerated tanks.

Shall means mandatory; *May* means discretionary.

Site means the land or water area where any facility or activity is physically located or conducted, including adjacent land used in connection with the facility or activity.

Solid waste means any garbage, rubbish, refuse and other discarded material, including solid, liquid, semisolid, or contained gaseous material, resulting from industrial, municipal, commercial, construction, mining or agricultural operations, and residential, community and institutional activities.

State means the State of Arkansas.

Storm drainage system means all surfaces, structures and systems that contribute to or convey stormwater, including private drainage systems, the MS4, surface water, groundwater, Waters of the State and Waters of the United States.

Stormwater means runoff resulting from precipitation.

Stormwater pollution prevention plan (SWP3) means a document that describes the best management practices to be implemented at a site, to prevent or reduce the discharge of pollutants.

Subdivision development includes activities associated with the platting of any parcel of land into two or more lots and includes all construction activity taking place thereon.

Surface water means water bodies and any water temporarily residing on the surface of the ground, including oceans, lakes, reservoirs, rivers, ponds, streams, puddles, channelized flow and runoff.

Uncontaminated means not containing harmful quantities of pollutants.

Used oil or *used motor oil* means any oil that as a result of use, storage, or handling, has become unsuitable for its original purpose because of impurities or the loss of original properties.

Utility agency means private utility companies, city departments or contractors working for private utility companies or city departments, engaged in the construction or maintenance of utility distribution lines and services, including water, sanitary sewer, storm sewer, electric, gas, telephone, television and communication services.

Wastewater means any water or other liquid, other than uncontaminated stormwater, discharged from a facility.

Water of the state or *water* means any groundwater, percolating or otherwise, lakes, bays, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, inside the territorial limits of the state, and all other bodies of surface water, natural or artificial, navigable or nonnavigable, and including the beds and banks of all water courses and bodies of surface water, that are wholly or partially inside or bordering the State or inside the jurisdiction of the state.

Water quality standard means the designation of a body or segment of surface water in the state for desirable uses and the narrative and numerical criteria deemed by state or federal regulatory standards to be necessary to protect those uses.

Waters of the United States means all waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and the flow of the tide; all interstate waters, including interstate wetlands; all other waters the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce; all impoundments of waters otherwise defined as waters of the United States under this definition; all tributaries of waters identified in this definition; all wetlands adjacent to waters identified in this definition; and any waters within the federal definition of "waters of the United States" at 40 CFR § 122.2; but not including any waste treatment systems, treatment ponds, or lagoons designed to meet the requirements of the Federal Clean Water Act.

Wetland means any area that is inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

Yard waste means leaves, grass clippings, tree limbs, brush, soil, rocks or debris that result from landscaping, gardening, yard maintenance or land clearing operations.

(Ord. No. 585, § 1, 12-5-2005)

Secs. 94-795—94-800. - Reserved.

DIVISION 2. - PROHIBITIONS AND REQUIREMENTS

Sec. 94-801. - Prohibitions.

(1) No person shall release or cause to be released into the drainage system any discharge that is not composed entirely of uncontaminated stormwater, except as allowed herein. Common stormwater contaminants include trash, yard waste, lawn chemicals, pet waste, wastewater, oil, petroleum products, cleaning products, paint products, hazardous waste and sediment.

(2) Any discharge shall be prohibited by this section if the discharge in question has been determined by the coordinator to be a source of pollutants to the storm drainage system.

(3) The construction, use, maintenance or continued existence of illicit connections to the storm drain system are prohibited. This prohibition expressly includes, without limitation, illicit connections made in the past, regardless of whether the connection was permissible under law or practices applicable or prevailing at the time of connection.

(4) No person shall connect a line conveying sanitary sewage, domestic sewage or industrial waste, to the storm drainage system, or allow such a connection to continue.

(5) No person shall maliciously destroy or interfere with BMPs implemented pursuant to this article.

(Ord. No. 585, § 1, 12-5-2005)

Sec. 94-802. - Exemptions.

The following nonstormwater discharges are deemed acceptable and not a violation of this section:

(1) A discharge authorized by an NPDES permit other than the NPDES permit for discharges from the MS4;

(2) Uncontaminated waterline flushing and other infrequent discharges from potable water sources;

(3) Infrequent uncontaminated discharge from landscape irrigation or lawn watering;

(4) Discharge from the occasional noncommercial washing of vehicles on properties zoned R1, R2, R3, R4, R5 and PRD;

(5) Uncontaminated discharge from foundation, footing or crawl space drains, sump pumps and air conditioning condensation drains;

(6) Uncontaminated groundwater, including rising groundwater, groundwater infiltration into storm drains, other utility structures, or pumped groundwater and springs;

(7) Diverted stream flows and natural riparian habitat or wetland flows; and

(8) A discharge or flow of fire protection water that does not contain oil or hazardous substances or materials.

(Ord. No. 585, § 1, 12-5-2005)

Sec. 94-803. - Requirements applicable to certain dischargers.

(1) *Private drainage system maintenance.* The owner of any private drainage system shall maintain the system to prevent or reduce the discharge of pollutants. This maintenance shall include, but is not limited to, sediment removal, bank erosion repairs, maintenance of vegetative cover, and removal of debris from pipes and structures.

(2) *Minimization of irrigation runoff.* A discharge of irrigation water that is of sufficient quantity to cause a concentrated flow in the storm drainage system is prohibited. Irrigation systems shall be managed to reduce the discharge of water from a site.

(3) *Cleaning of paved surfaces required.* The owner of any paved parking lot, street or drive shall clean the pavement as required to prevent the buildup and discharge of pollutants. The visible buildup of mechanical fluid, waste materials, sediment or debris is a violation of this article. Paved surfaces shall be cleaned by dry sweeping, wet vacuum sweeping, collection and treatment of washwater or other methods in compliance with this Code. This section does not apply to pollutants discharged from construction activities.

(4) *Maintenance of equipment.* Any leak or spill related to equipment maintenance in an outdoor, uncovered area shall be contained to prevent the potential release of pollutants. Vehicles, machinery and equipment must be maintained to reduce leaking fluids.

(5) *Materials storage.* In addition to other requirements of this Code, materials shall be stored to prevent the potential release of pollutants. The uncovered, outdoor storage of unsealed containers of hazardous substances is prohibited.

(6) *Pet waste.* Pet waste shall be disposed of as solid waste or sanitary sewage in a timely manner, to prevent discharge to the storm drainage system.

(7) *Pesticides, herbicides and fertilizers.* Pesticides, herbicides and fertilizers shall be applied in accordance with manufacturer recommendations and applicable laws. Excessive application shall be avoided.

(8) *Prohibition on use of pesticides and fungicides banned from manufacture.* Use of any pesticide, herbicide or fungicide, the manufacture of which has been either voluntarily discontinued or prohibited by the Environmental Protection Agency, or any federal, state or city regulation is prohibited.

(9) *Open drainage channel maintenance.* Every person owning or occupying property through which an open drainage channel passes shall keep and maintain that part of the drainage channel within the property free of trash, debris, excessive vegetation, and other obstacles that would pollute, contaminate, or retard the flow of water through the drainage channel. In addition, the owner or occupant shall maintain existing privately owned structures adjacent to a drainage channel, so that such structures will not become a hazard to the use, function, or physical integrity of the drainage channel.

(10) *Concrete washout facilities.* Any subdivision, phase, development, or construction site which will utilize or require the provision of concrete must provide reasonable, all-weather access to a concrete washout facility and maintain the same in accordance with this article or shall make arrangements with the concrete provider to fully remove and dispose of any concrete waste. Construction sites that do not have reasonable access to a phase, subdivision or development concrete washout facility must provide and adequately maintain a facility on-site or make alternate arrangements for the removal of the same. All concrete trucks or concrete-coated equipment shall be cleaned in a manner which prevents any concrete, runoff, or other discharge which may be contaminated by the concrete from entering the drainage system. Further requirements may be set forth herein for said washout facilities.

(Ord. No. 585, § 1, 12-5-2005; Ord. No. 768, § 1, 4-4-2011)

Sec. 94-804. - Release reporting and cleanup.

Any person responsible for a known or suspected release of materials which are resulting in or may result in illegal discharges to the storm drainage system shall take all necessary steps to ensure the discovery, containment, abatement and cleanup of such release. In the event of such a release of a hazardous material, said person shall comply with all state, federal, and local laws requiring reporting, cleanup, containment, and any other appropriate remedial action in response to the release. In the event of such a release of nonhazardous materials, said person shall notify the department responsible no later than 5:00 p.m. of the next business day, with special allowances for emergency situations.

(Ord. No. 585, § 1, 12-5-2005)

Sec. 94-805. - Authorization to adopt and impose best management practices.

The city may adopt and impose requirements identifying best management practices for any activity, operation, or facility, which may cause a discharge of pollutants to the storm drainage system. Where specific BMPs are required, every person undertaking such activity or operation, or owning or operating such facility shall implement and maintain these BMPs at their own expense.

(Ord. No. 585, § 1, 12-5-2005)

Secs. 94-806—94-810. - Reserved.

DIVISION 3. - STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES

Sec. 94-811. - General requirements for construction sites.

(1) The owner of a site of construction activity shall be responsible for compliance with the requirements of this article.

(2) Waste disposal. Solid waste, industrial waste, yard waste and any other pollutants or waste on any construction site shall be controlled through the use of best management practices. Waste or recycling containers shall be provided and maintained by the owner or contractor on construction sites where there is the potential for release of waste. Uncontained waste that may blow, wash or otherwise be released from the site is prohibited.

(3) Ready-mixed concrete, or any waste or materials resulting from the cleaning of vehicles or equipment containing or used in transporting or applying ready-mixed concrete, must be fully and adequately contained on the construction site; within a concrete washout pit provided by the site, phase, subdivision, or development; or must be completely removed from the site for proper disposal. Any release of these materials is expressly prohibited. The person or entity responsible for any release shall be subject to penalties expressed herein.

(4) Erosion and sediment control. Best management practices shall be implemented to prevent the release of sediment from construction sites. Disturbed areas shall be minimized, disturbed soil shall be managed and construction site entrances shall be managed to prevent sediment tracking. Excessive sediment tracked onto public streets shall be removed immediately.

(5) Upon completion of permitted construction activity on any site, the property owner and subsequent property owners will be responsible for continued compliance with the requirements of this article, in the course of maintenance, reconstruction or any other construction activity on the site.

(Ord. No. 585, § 1, 12-5-2005; Ord. No. 768, § 2, 4-4-2011)

Sec. 94-812. - Construction sites requiring an approved SWP3.

This section applies to all construction sites where construction on a site will disturb soil or remove vegetation on one or more acres of land during the life of the construction project, and to any commercial site that requires the submission of a large-scale development plan, regardless of size. An approved stormwater pollution prevention plan (SWP3) for the project must be provided and implemented by the construction site owner as follows:

(1) The area disturbed shall be assumed to include the entire property area unless all applicable plans specifically exclude certain areas from disturbance.

(2) The SWP3 must be provided by the owner and submitted to the city for approval. Two copies of the SWP3 shall be submitted to the department responsible. For sites subject to plan review by the planning office, the plan will not be released for construction until an approved SWP3 has been obtained.

(3) The department responsible will review the SWP3 submitted for the site and will return either an approval of SWP3 or a request for revisions. Construction activity, including any soil disturbance or removal of vegetation, shall not commence on the site until the department responsible has issued an approval of SWP3.

(4) The owner/developer bears the responsibility for implementation of the SWP3 and notification of all contractors and utility agencies on the site.

(Ord. No. 585, § 1, 12-5-2005)

Sec. 94-813. - Subdivision developments requiring an approved SWP3.

Where construction of a subdivision development will disturb soil or remove vegetation on one or more acres of land during the life of the development project, approved stormwater pollution prevention plans (SWP3s) for the project must be provided and implemented by the subdivision owner/developer as follows:

(1) The area disturbed shall be assumed to include the entire platted area.

(2) SWP3s must be provided by the subdivision owner/developer.

(3) SWP3s must be provided for all phases of development, including sanitary sewer construction, storm drainage system construction, waterline, street and sidewalk construction, and general grading. The subdivision owner/developer will not be required to develop an SWP3 for the activities specific to utility agencies within the subdivision.

(4) The subdivision owner/developer shall provide a copy of the approved SWP3s to all utility agencies prior to their working within the subdivision.

(5) The subdivision owner/developer bears the responsibility for implementation of the approved SWP3s for all construction activity within the development regarding infrastructure, excluding construction managed by utility agencies.

(6) The subsequent owner or builder of an individual lot bears the responsibility for implementation of approved SWP3s for all construction activity within or related to the individual lot, excluding construction managed by utility agencies.

(Ord. No. 585, § 1, 12-5-2005)

Sec. 94-814. - Stormwater pollution prevention plans.

Preparation and implementation of stormwater pollution prevention plans for construction activity shall comply with the following:

(1) *Preparation.*

(a) The SWP3 shall be prepared under the direction of a qualified person.

(b) The SWP3 shall provide the name, address and phone number of the project owner for purposes of correspondence and enforcement, as well as an emergency after hours number.

(c) The SWP3 shall identify existing natural resources such as streams, forest cover and other established vegetative cover.

(d) The SWP3 shall specify and provide detail for all BMPs necessary to meet the requirements of this article, including any applicable BMPs that have been adopted and imposed by the city.

(e) The SWP3 shall specify when each BMP will be installed, and for how long it will be maintained within the construction sequence. Multiple plans may be required for major phases of construction such as rough grading, building construction and final grading.

(f) The SWP3 shall delineate all anticipated disturbed areas and specify the vegetative cover that must be established in those areas to achieve final stabilization.

(2) *Implementation.*

(a) BMPs shall be installed and maintained by qualified persons. The owner/developer or their representative shall be able to provide upon the request of the department responsible, a copy of the SWP3 on site and shall be prepared to respond to unforeseen maintenance of specific BMPs immediately.

(b) The owner/developer or their representative shall inspect all BMPs at least once per month and within 24 hours after a rainfall of one-half inch or more as measured at the site or as measured by the National Weather Service as having fallen in the city for the period not exceeding 24 hours from the prior to the time of inspection. Logs of such inspections shall be kept on site and available for inspection by code enforcement officials.

(c) Based on inspections performed by the owner/developer or by authorized city personnel, modifications to the SWP3 will be necessary if at any time the specified BMPs do not meet the objectives of this article. In this case, the owner/developer or authorized representative shall meet with authorized city personnel to determine the appropriate modifications. All modifications shall be completed within seven days of the referenced inspection, except in circumstances necessitating more timely attention, and shall be recorded on the owner's copy of the SWP3.

(d) Overall subdivision SWP3 shall be kept at a central location, close enough to the development so as to be delivered on site at the request of staff.

(e) Builders will be requested to keep ADEQ permit certificate and on-site stormwater construction notice at individual building sites .

(Ord. No. 585, § 1, 12-5-2005)

Sec. 94-815. - Requirements for utility construction.

(1) Utility agencies shall be responsible for compliance with the requirements of this article.

(2) Utility agencies shall implement best management practices (BMPs) to prevent the discharge of pollutants or the release of sediment on any site of utility construction within the city. If deemed necessary, the city may adopt and impose BMPs on utility construction activity.

(3) Disturbed areas shall be minimized, disturbed soil shall be managed and construction site entrances shall be managed to prevent sediment tracking. Excessive sediment tracked onto public streets shall be removed immediately.

(4) Prior to entering a construction site or subdivision development, utility agencies shall have obtained from the owner a copy of any SWP3s for the project. Any disturbance to BMPs resulting from utility construction shall be repaired as soon as practical by the utility company in compliance with the SWP3.

(5) Utility agencies effecting emergency utility repairs within the city shall be exempted from compliance with this article except as compliance becomes practical in consideration of the circumstances leading to the emergency which necessitated the repairs.

(Ord. No. 585, § 1, 12-5-2005)

Sec. 94-816. - Construction sites not requiring an approved SWP3.

All construction sites that do not require an SWP3 will be required to implement and maintain erosion control best management practices throughout the duration of the project, and until final site stabilization, all constructions sites are subject to the fines stated in this article regardless of size or SWP3 requirement.

(Ord. No. 585, § 1, 12-5-2005)

Secs. 94-817—94-820. - Reserved.

DIVISION 4. - ENFORCEMENT

Sec. 94-821. - Enforcement personnel authorized.

The following personnel employed by the city shall have the power to issue notices of violations and implement other enforcement actions under this article as provided by the city:

(1) All inspectors, code enforcement officers, or other authorized personnel under the supervision of the department responsible for enforcement of this article.

(Ord. No. 585, § 1, 12-5-2005)

Sec. 94-822. - Right of entry and sampling.

(1) Whenever the departments responsible has cause to believe that there exists, or potentially exists, in or upon any premises any condition which constitutes a violation of this article, the enforcement personnel shall have the right to enter the premises at any reasonable time to determine if the discharger is complying with all requirements of this article. In the event that the owner or occupant refuses entry after a request to enter has been made, the city is hereby empowered to seek assistance from a court of competent jurisdiction in obtaining such entry.

(2) The enforcement personnel shall have the right to set up on the property of any discharger to the storm drainage system such devices that are necessary to conduct sampling of discharges.

(Ord. No. 585, § 1, 12-5-2005)

Sec. 94-823. - Enforcement procedures.

This policy establishes a formal enforcement procedure to be followed by the city department responsible when enforcement action is necessary on sites that do not comply with the city's stormwater pollution prevention or erosion control ordinance. Enforcement cases can be generated in any of three

ways: (1) through the construction review process; (2) through complaints from individuals, groups, etc; and (3) through referrals from city/state agencies. Procedures to be followed for each of these methods are outlined below.

(1) *Construction review.* Every effort is made to use the construction review process to correct deficiencies in site compliance whenever possible. Should that process fail to achieve expected results or if the site reviewer feels that a violation is serious enough to warrant enforcement action, the following procedures shall be followed:

a. Issuance of notice of violation. If site deficiencies are noted, the owner/developer or authorized agent shall be given a notice of violation. The notice of violation shall be specific as to the noted violation, corrective measures to be taken, and time frame allowed to complete the work.

b. Compliance review. At the end of the time period specified above, a follow-up site inspection shall take place to determine whether compliance has been achieved. Depending on that determination, the following actions may occur:

1. Site violations corrected. If all previous site violations have been corrected, the site reviewer shall issue an inspection report stating that fact and the site shall be returned to a normal construction review status.

2. Previous violations not corrected. If previously noted violations have not been satisfactorily corrected, the further actions may be initiated as outlined in the following section.

(2) *Submissions from the general public.* Members of the general public may submit information pertaining to this article to the city. The department responsible will consider such submissions as they pertain to the implementation and enforcement of this article and will provide written or verbal response to the person submitting the information.

(3) *Referrals.* Referrals from other agencies will be handled in the following manner:

a. Cases will be referred directly to the stormwater staff or enforcement personnel of the department responsible. At this point the department responsible will determine if enforcement actions are warranted and if proper documentation has been obtained. If the stormwater staff determines that action is required, the enforcement process will be set into motion.

b. Cases received by stormwater staff will handled on a first come, first served basis. All enforcement actions will be initiated by a site inspection to verify site conditions that caused the case to be referred. If conditions have been corrected or do not exist as stated in the referral, the case will be returned to file for documentation and reporting purposes. If conditions exist as stated in the referral, enforcement actions will proceed.

c. Once site conditions have been verified and the site is determined to be in a state of noncompliance two avenues of enforcement can be pursued, one for the infrequent offender and one for the frequent offender.

1. Infrequent offender. If an individual or company is being reviewed for a violation by the stormwater staff for the first time or it has been at least two years since the last violation in the city (24 months has elapsed since last review), notice to comply will be issued to the owner/developer informing them they are not in compliance with the city's stormwater pollution prevention and erosion control ordinance, the steps needed to be taken to get into compliance, and that they have an established time frame to complete the work. At the end of the period stormwater staff will reinspect to check for compliance. If all work has been satisfactorily completed the case will be returned to file for documentation and reporting purposes. If the work has not been satisfactorily completed within the established time frame a citation (ticket) will be issued to the owner developer and follow up will be done until the site is brought into compliance.

2. Frequent offender. If an individual or company has been reviewed for a violation by stormwater staff at any time in the preceding 24 months, and have made no effort to comply, they will be considered repeat offenders. Repeat offenders will be issued a citation (ticket) by stormwater staff upon verification of noncompliance with the city's stormwater pollution prevention and erosion control ordinance and after consulting with the responsible department. Follow-up will continue until the site has been brought into compliance.

(Ord. No. 585, § 1, 12-5-2005)

Sec. 94-824. - Enforcement options for failure to comply.

(a) City of Maumelle stormwater staff, in conjunction with the responsible department, may issue a stop work order to any persons violating any provision of the city's stormwater pollution prevention and erosion control ordinance by ordering that all site work stop except that necessary to comply with any administrative order.

(b) City of Maumelle stormwater staff may request that the office of the responsible department or building inspections office refrain from performing any further building inspections on any lot currently in violation of the stormwater ordinance, until outstanding violations have been remedied.

(c) City of Maumelle stormwater staff may initiate penalties as stipulated herein. Complete information concerning enforcement and penalties is described below.

(Ord. No. 585, § 1, 12-5-2005)

Sec. 94-825. - Action without prior notice.

Any person who violates a prohibition or fails to meet a requirement of this article will be subject to one or more of the enforcement actions. This may take place immediately, without notice, when attempts to contact the person have failed and the enforcement actions are necessary to stop an actual or threatened discharge which presents or may present imminent danger to the environment, or to the health or welfare of persons, or to the storm drainage system.

(Ord. No. 585, § 1, 12-5-2005)

Sec. 94-826. - Enforcement actions.

(a) *Recovery of costs.* Within 30 days after abatement by city representatives, the coordinator shall notify the property owner of the costs of abatement, including administrative costs, and the deadline for payment. The property owner may protest the assessment before the city council. The written protest must be received by the mayor's office within 15 days of the date of the notification. A hearing on the matter will be scheduled before the city council. The decision of the city council shall be final. If the amount due is not paid within the protest period or within ten days of the decision of the city council, the charges shall become a special assessment against the property and shall constitute a lien on the property for the amount of the assessment. A copy of the resolution shall be turned over to the county clerk so that the clerk may enter the amounts of the assessment against the parcel as it appears on the current assessment roll, and the treasurer shall include the amount of the assessment on the bill for taxes levied against the parcel of land.

(b) *Performance bonds.* Where necessary for the reasonable implementation of this article, the authorized personnel from the responsible department may, by written notice, order any owner of a construction site or subdivision development to file a satisfactory bond, payable to the city, in a sum not to exceed a value determined by staff to be necessary to achieve consistent compliance with this article. The owner may protest the amount of the performance bond before the city council. The

written protest must be received by the mayor's office within 15 days of the date of the notification. A hearing on the matter will be scheduled before the city council.

(c) *Criminal prosecution* . Any person who violates or continues to violate a prohibition or requirement of this article shall be liable to criminal prosecution to the fullest extent of the law, and shall be subject to criminal penalties.

(Ord. No. 585, § 1, 12-5-2005)

Sec. 94-827. - Criminal penalties.

The violation of any provision of this article shall be deemed a municipal offense. Any person violating this article shall, upon an adjudication of guilt or a plea of no contest, be fined according to the schedule of fines. Each separate day on which a violation is committed or continues shall constitute a separate offense.

(Ord. No. 585, § 1, 12-5-2005)

Sec. 94-828. - Other legal action.

Notwithstanding any other remedies or procedures available to the city, if any person discharges into the storm drainage system in a manner that is contrary to the provisions of this article, the city attorney may commence an action for appropriate legal and equitable relief including damages and costs in any court of competent jurisdiction. The city attorney may seek a preliminary or permanent injunction or both which restrains or compels the activities on the part of the discharger.

(Ord. No. 585, § 1, 12-5-2005)

Sec. 94-829. - Violations/schedule of fines.

A violation of any of the foregoing provisions shall be punished according to the following schedule of fines:

Offense	Fine (Per Offense)
First	$ 500.00
Second	1,000.00
Third	1,000.00
Fourth and subsequent offenses	1,000.00

(Ord. No. 585, § 1, 12-5-2005)

Sec. 94-830. - Transition period.

Any construction or development project under way as of the date of the effective date of this article shall come into full compliance with the requirements of this article within 60 days of the effective date of this article.

(Ord. No. 585, § 1, 12-5-2005)

Secs. 94-831—94-835. - Reserved.

DIVISION 5. - EROSION AND SEDIMENT CONTROL GUIDELINES

Sec. 94-836. - Introduction.

(a) *Effects of urbanization.* Urban development alters the hydrology of watersheds and streams by disrupting the natural water cycle. Impacts include:

(1) Runoff volumes increase up to 50 percent over predeveloped volumes.

(2) Peak runoff discharges increase two to five times predeveloped discharges.

(3) Runoff velocities increase.

(4) Time of concentrations decrease.

(5) Frequency of bankfull and near bankfull events increase.

(6) Flooding increases.

(7) Dry weather flows (baseflow) decrease.

(b) *Sources of pollutants.* Urbanization increases the amount of sediment, nutrients, microbes, organic matter, toxic pollutants, and trash in stormwater flows.

(1) Sediment in water (suspended solids, dissolved solids, and/or turbidity) is the cause of:

a. Filling of lakes and reservoirs.

b. Stream turbidity.

c. Habitat changes.

d. Recreation/aesthetic loss.

e. Transport of other contaminants.

(2) Nutrients in water (nitrate, nitrite, ammonia, organic nitrogen, phosphate, and total phosphorus) are the cause of:

a. Algae blooms.

b. Eutrophication.

c. Ammonia Toxicity to aquatic life.

d. Nitrate Toxicity.

(3) Microbes in water (total and fecal coliform, fecal streptococci, viruses, E.Coli, enteroccus) can be the cause of:

a. Gastrointestinal diseases.

b. Ear/Intestinal infections.

c. Shellfish bed closure.

(4) Organic matter (vegetation, septic tank overflows, pet waste) in water is the cause of:

a. Dissolved oxygen depletion.

b. Odors.

c. Fish kills.

(5) Toxic pollutants (heavy metals such as cadmium, copper, lead, zinc, organics, hydrocarbons, pesticides/herbicides) can be the cause of:

a. Human and aquatic toxicity.

b. Bioaccumulation in the food chain.

c. Thermal pollution dissolved oxygen depletion.

d. Habitat changes.

(6) Trash and debris cause:

a. Recreation loss.

b. Aesthetic loss.

(Ord. No. 585, § 1, 12-5-2005)

Sec. 94-837. - Construction BMPs.

(1) *Purpose.* Construction BMPs fall into two categories, erosion control and sediment control. Erosion control is the protection of the soil surface from the impact of rain drops and the resulting detachment of soil particles. Sediment control are the practices that capture soil particles that have been detached and transported down slope. It is far more efficient and cost effective to prevent erosion than to capture sediment.

(2) *Design methodology and BMP selection criteria.* Construction BMPs are typically designed for erosion control, sediment control, or control of wastes (hazardous, solid, etc.). For the best results, BMPs should be used in series with one or more BMPs. The operator of the construction site should concentrate efforts on erosion control; but, provide sediment control backup BMPs. A listing of construction erosion and sediment control BMPs and the benefits each provides is shown in Figures 5 through 10.

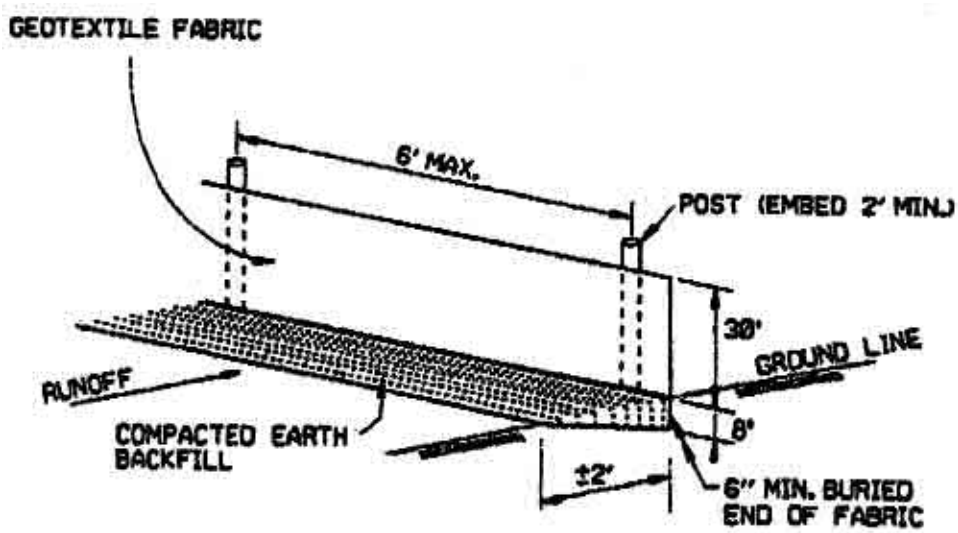


Figure 5. Embedded Silt Fence (Source: AHTD, 2001)

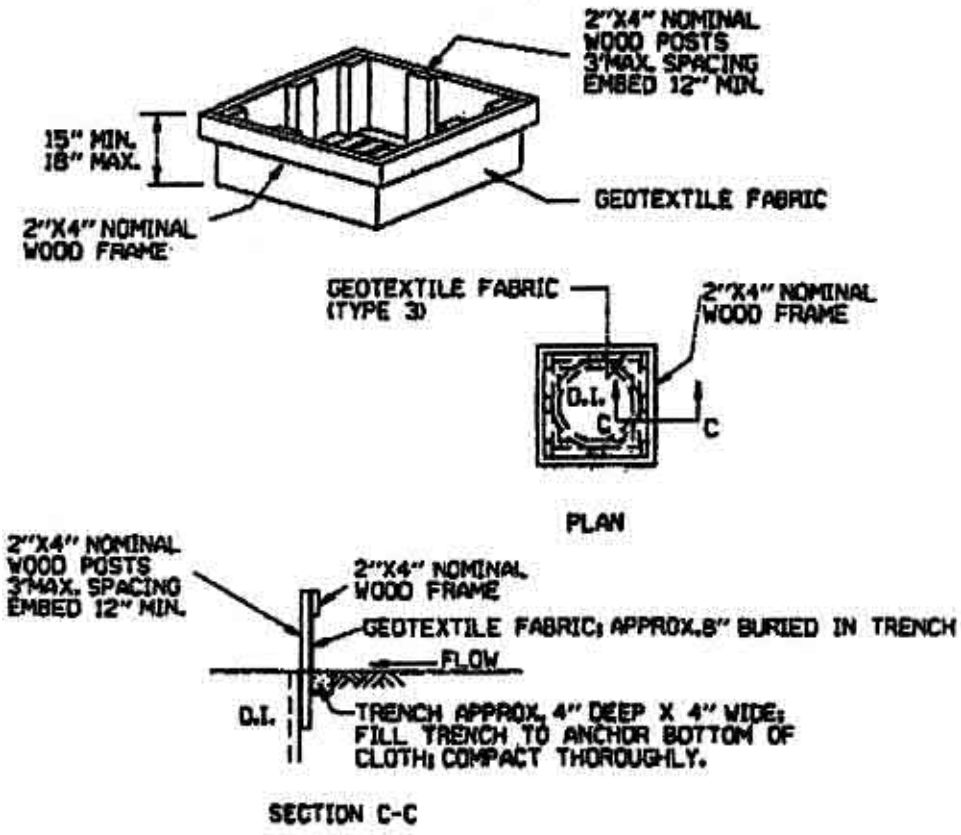


Figure 6. Silt fence inlet protection detail (Source: AHTD, 2001)

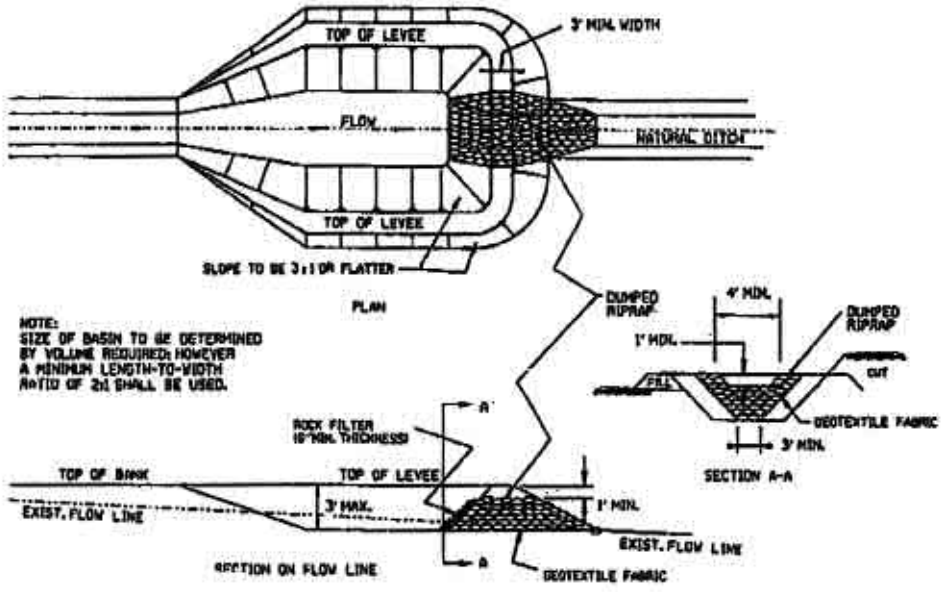


Figure 7 Sediment trap detail (Adapted from: AHTD, 2001)

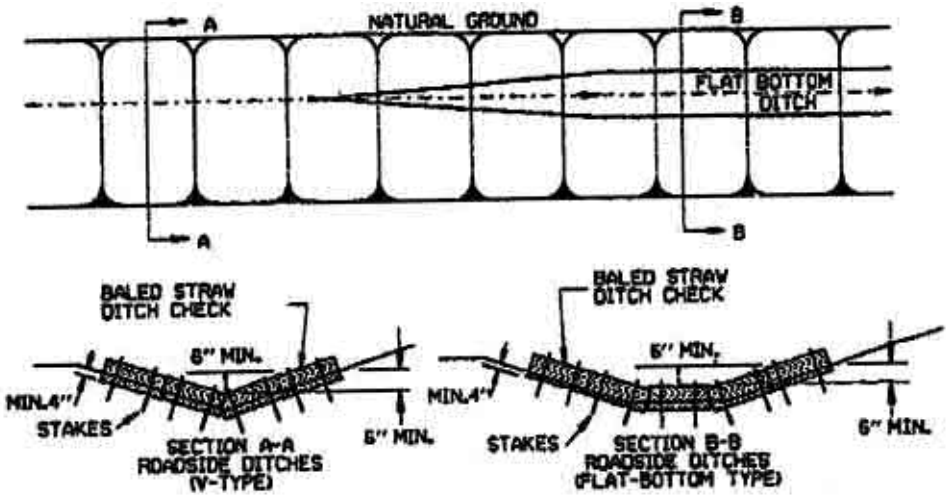


Figure 8 Baled straw check dam detail. (Source: AHTD, 2001)

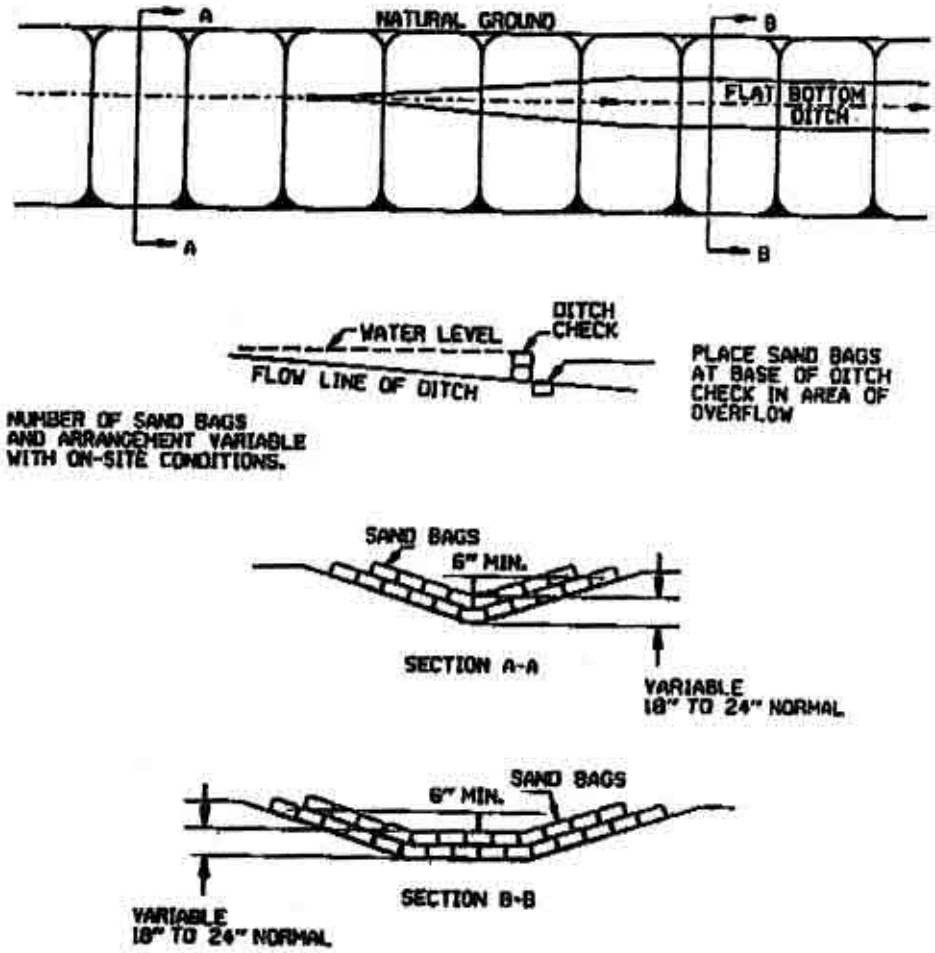


Figure 9 Sand bag check dam detail. (Source: AHTD, 2001)

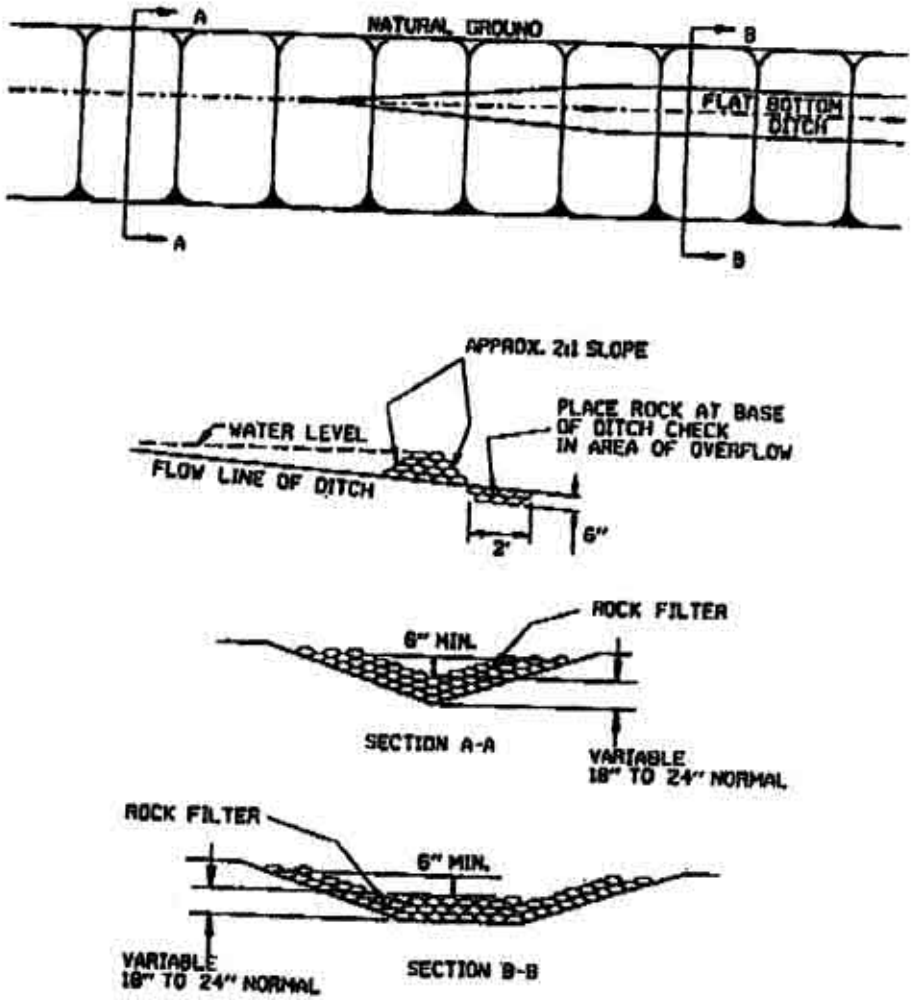


Figure 10 Rock check dam detail. (Source: AHTD, 2001)

(3) *Construction planning.* Minimize clearing and compaction.

(a) *Description.* Clearing of natural vegetation and vehicular traffic on the site will expose and compact soils causing erosion and greater amounts of runoff. Minimization of clearing and compaction will decrease the amount of soil exposed to erosion and will decrease the amount runoff from due to compacted soil.

(b) *Applicability.* Existing vegetation can often be incorporated into the design and construction of a development lessening the amount of bare soil exposed to rain and wind. Compacted soil does not allow for adequate infiltration of precipitation, therefore increasing runoff quantities and flowrates. Increased flowrates increase erosion and sediment transport.

(c) *Design criteria.* Landscaping and clearing requirements vary from project to project. Vehicular traffic within the construction site should be limited and confined to areas that are protected with adequate sediment control practices.

(d) *Limitations.* Some native plants and grasses are not considered appropriate for developed sites; so, non-native grasses and plants would need to be planted.

(e) *Maintenance requirements.* Maintenance of protective fencing as needed.

(4) *Construction sequencing.*

(a) *Description.* Exposing soil before required for construction can expose the soil to erosion for an extended period. Construction sequencing coordinates land disturbing activities with construction requirements to minimize the amount of soil exposed to erosion at any time.

(b) *Applicability.* Only land needed for building activities and vehicular traffic should be cleared. Projects on larger sites and on projects that land disturbing activities can be phased are best suited for construction sequencing.

(c) *Design criteria.* Areas of the site to be preserved should be clearly marked on the plans and delineated on the site. The timing of clearing and access to different areas of the site should be indicated in the contract documents.

(d) *Limitations.* Sometimes, smaller projects do not lend themselves to sequencing of land disturbing activities.

(e) *Maintenance requirements.* Maintenance of protective fencing as needed.

(5) *Runoff and run-on control BMPs.*

(1) *Construction entrances; description.* Mud and sediment carried off-site on the tires of equipment and vehicles will be deposited on the neighboring streets. This sediment will end up in the local streams if not swept up. Development construction entrances are systems that clean vehicles of mud, sediment, and aggregate prior to leaving the site.

(a) Development construction (for construction or development on one acre or larger).

(i) Applicability. Any entrance/exit of a construction site upon which one acre is being developed.

(ii) Design criteria. A six-inch layer of washed gravel or c-ballast (greater than one inch) can be used to stabilize construction site entrances. The stabilized entrance should be at least 50 feet long or as long as the longest vehicle that will enter the site, whichever is larger. If larger volumes of traffic are expected, a two-lane entrance is appropriate.

(b) Small lot construction (for construction on less than one acre)

(i) Applicability. Any entrance/exit of a construction site upon which less than one acre is being developed.

(ii) Design criteria. A layer of washed gravel or c-ballast (greater than one inch in diameter) of at least two inches can be used to stabilize construction site entrances. In certain circumstances, a greater amount may be required by persons authorized to enforce this chapter. The stabilized entrance should measure from the curb to the building line on the lot.

(c) Criteria applicable to all construction.

(i) Other methods of removing mud from vehicles are wheel wash facilities (dunk or mechanical) and rubble strips (cattle guard, logs, etc.).

(ii) A dunk wheel wash is a water filled, stabilized (one inch or greater gravel or stone) pit. The water depth should be at least two feet deep and the pit should be at least 20 feet long. The pit should be two-vehicle lengths from the construction site exit and the entrance and exit to the pit should be stabilized.

(iii) Limitations. In order to avoid puncturing tires, stabilized entrances should not be constructed with sharp edge stones.

(iv) Maintenance requirements. Stabilized entrances require periodic cleaning or addition of stone as the voids in the stones fill with mud and sediment.

(v) Wheel wash facilities and rubble strips will need to be cleaned as the pits fill in order to provide more room to store new mud and sediment.

(vi) The street in front of the entrance should be cleaned as required to remove sediment that has been tracked off site.

(2) *Interceptor swale and dike.*

a. Description. Water running onto the site will increase erosion and be a nuisance to construction activities. Additionally, runoff from the construction site can have excessive amounts of sediment that can end up in local streams. Interceptor swales and dikes are diversion systems used to divert runoff around a site or to direct runoff from a site to a pond in order to settle out sediment prior to discharge from the site.

b. Applicability. Any area that that is subject to runoff from up hill drainage areas.

c. Design criteria. The swale (channel) and dike should be situated to capture runoff uphill of the work area with a vegetative buffer uphill of the swale to remove sediment before it enters the swale. The stabilized swale and ditch should be in-place prior to all other earthwork on the project. The channel should be designed to handle the ten-year storm, with the bottom and sides protected for the anticipated water velocity. Typically, the ditch will be two feet wide at the bottom and six feet wide at the top. Maximum water velocity in the swale should not exceed five feet per second. Side slopes should be no steeper than 1:3 (vertical: horizontal). Energy dissipation should be provided at the exit from the swale as needed.

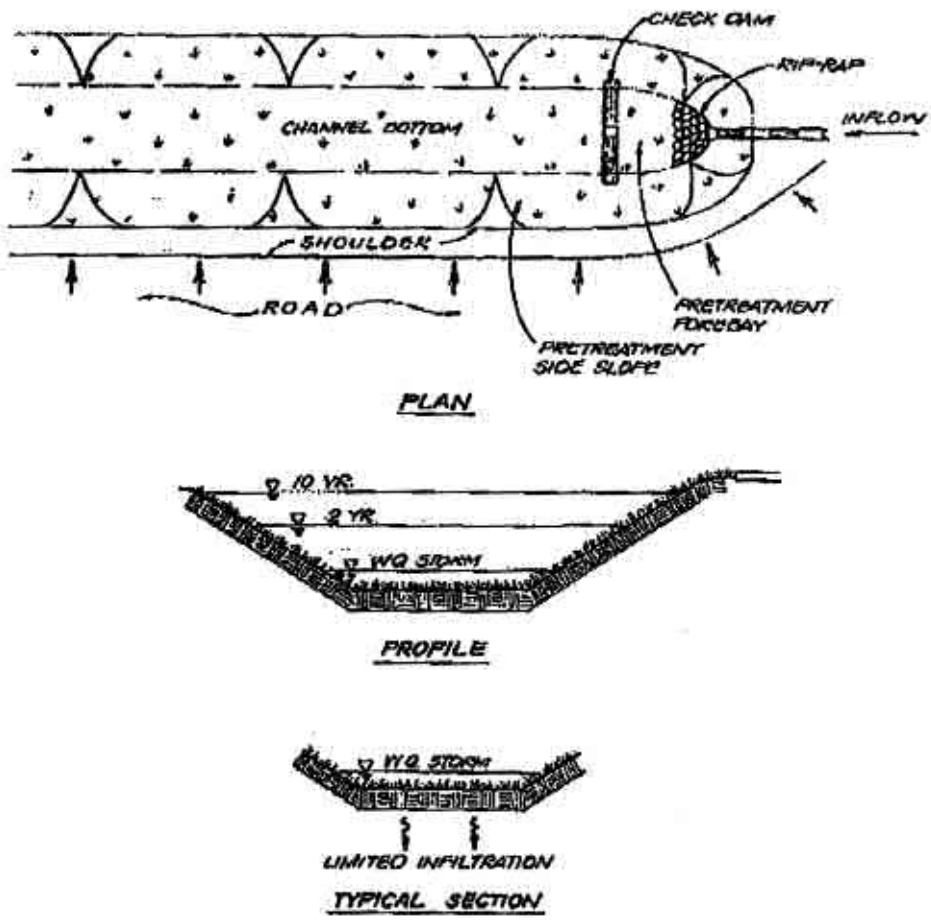


Figure 15 Grass swale detail. (Source: GSWMM, 2001)

d. Limitations. Excessive flowrates can cause scour in the swale; therefore requiring a sediment control pond at the end of the swale. In the event that the dike over flows during larger storm events, the site can be damaged and excessive erosion and sediment transport can occur.

e. Maintenance requirements. The swale should be cleared of debris and excessive vegetation as required.

(3) *Slope drain.*

a. Description. Gullying and excessive erosion will take place on slopes subjected to concentrated flows of runoff. Slope drains are conduits (open or closed) used to direct water down a slope while protecting the slope from erosion.

b. Applicability. Slopes with the potential for intended or unintended concentrated flows

c. Design criteria. Slope drains (rundowns, pipe slope drains, etc.) should be placed where runoff from uphill drainage areas will concentrate. Slope drains should be sized to handle a ten-year storm from an area no greater than five acres. Minimum size for a pipe slope drain is 12-inch diameter. Slope rundowns (stone or riprap lined channels) should be constructed with the middle sufficiently lower than the sides to ensure flow stays in the rundown. Slope drains operate best when used in conjunction with interceptor swales and dikes on the top of the slope. Appropriate energy protection should be placed at the outlet of the pipe.

d. Limitations. For larger storms, the slope drain may not operate properly and can cause excessive gullying and slope erosion as well as damage to the construction site. Slope drains that are improperly designed or constructed such that the flow does not stay in the drain will cause excessive erosion.

e. Maintenance requirements. Slope drains should be inspected weekly and kept clear of trash, debris, and vegetation.

(4) *Energy dissipation—Riprap aprons.*

a. Description. Water exiting a channel, swale, pipe, or culvert (any water carrying conduit) typically is in a concentrated stream with a relatively high velocity. This high energy stream of water erodes unprotected soil. Energy dissipation is a structural BMP placed at the exit of a water-carrying conduit to slow the velocity and decrease the turbulence of the water. Permanent energy dissipation controls can be used during the construction phase of the project, and should be designed according to methods described in the residential and commercial BMPs section of this article.

b. Applicability. All channels or pipes carrying runoff at velocities that will erode the soil in the discharge area.

c. Design criteria. Determine the required median size (d_{50}) of riprap using graph in Figure 3 below. Enter the graph on the X-axis with the discharge in cubic feet per second, move vertically to intersect either the appropriate depth of flow (d) line or the velocity of flow (v) line, then read to the horizontally to Y-axis on the right side to determine the required median diameter of riprap (d_{50}). Determine the minimum required apron length using the graph in Figure 3. Enter the graph on the X-axis with the discharge in cubic feet per second, move vertically to the second set of lines to intersect the appropriate depth of flow (d), then read horizontally to the left to determine the minimum required length of apron (L_a) in feet.

d. Limitations. Riprap aprons are best suited for applications where the Froude Number at the conduit exit is less than 2.5. Some communities do not allow riprap as a permanent control method of energy dissipation.

e. Maintenance requirements. The apron should be inspected after large storms to ensure that the riprap is in place. Riprap should be replaced when it is dislodged or missing.

(Ord. No. 585, § 1, 12-5-2005)

Sec. 94-838. - Erosion control BMPs.

(a) *Soil roughening.*

(1) *Description.* Water flowing down a bare slope will erode soil and transport soil to the bottom of the slope. Soil roughening is the practice of increasing the roughness of exposed soil by making grooves, tracks, or terraces (stair-steps) which run perpendicular to the flow path (parallel to slope) slowing flow and trapping sediment.

(2) *Applications.* Soil roughening can be used on a wide variety of slopes and in conjunction with seeding and mulching.

(3) *Design criteria.* Tracking with lugged tracked equipment is appropriate on sandy material so as to not excessively compact the soil. Grooving can be accomplished using a plow with the furrows three inches deep and less than 15 inches apart. Terraced (stair-stepping) slopes should have the vertical cuts no more than two feet deep and the horizontal steps should be wider than the depth of the vertical cut. The horizontal step should slope backward to the vertical cut upslope on the hill. The slope should be seeded immediately after roughening and mulch or chemical stabilization should be utilized where appropriate.

(4) *Limitations.* Soil roughening should not be used on rocky soils or soils that are high in clay content. Tracking may cause excessive compaction which can lead to greater erosion

(5) *Maintenance requirements.* Roughened slopes should be inspected after one-half inch and greater storms and problem areas noted. After a rain event, slopes may need reconstruction, re-roughening, reseeding, and remulching.

(b) *Chemical stabilization.*

(1) *Description.* Erosion is caused by rainfall impact detaching soil particles and runoff carrying the particles downslope. Chemical stabilization is the practice of spraying chemicals (tackifiers, soil binders) on the soil to hold the soil particles in place and protect against erosion.

(2) *Applicability.* Areas that have been cleared of vegetation or do not have a protective cover on the soil. If temporary seeding can not be used or would not be effective due to the time of year, steepness of slope, or other reasons, chemical stabilizers can be applied to protect against erosion. Chemical stabilization can be used in conjunction with seeding and mulching.

(3) *Design criteria.* The type of chemical used (asphalt emulsion, polyacrylamides (PAM), vinyl, or rubber), the application rate, and application method should meet the manufactures recommendations.

(4) *Limitations.* Improper application methods or rates can result in over application which can diminish infiltration and cause additional runoff.

(5) *Maintenance requirements.* Chemically stabilized areas should be inspected regularly and after one-half inch or greater rainfalls and stabilizer reapplied as required.

(c) *Mulch.*

(1) *Description.* Erosion is caused by rainfall impact detaching soil particles and runoff carrying the particles downslope. Mulch can be applied to the area to hold the soil particles in place and protect against erosion. Mulching is the practice of applying a layer of organic material (hay, straw, wood fiber, paper fiber, etc.) to protect the soil from impact of precipitation.

(2) *Applicability.* Areas that have been cleared of vegetation or do not have a protective cover on the soil. Mulches are typically used to protect areas that have been seeded. Mulching can be used in conjunction with chemical stabilization.

(3) *Design criteria.* Straw mulch should be evenly applied at a rate of two tons of dry straw per acre. The mulch should be crimped into the soil immediately after application. Mulch should not be applied in areas with concentrated flows or on steep slopes. Mulch is typically applied using a mulch blower; but, can be applied by hand in small or hard to reach areas.

(4) *Limitations.* Wind and concentrated water flows can blow or wash mulch from the application area.

(5) *Maintenance requirements.* Mulched areas should be inspected regularly and after one-half inch or greater rainfalls and mulch reapplied as required.

(d) *Erosion control mats.*

(1) *Description.* Erosion is caused by rainfall impact detaching soil particles and runoff carrying the particles downslope. Erosion control mats can be applied to the area to hold the soil particles in place and protect against erosion. Erosion control mats are manufactured blankets of netting with organic filler or geosynthetic material used to protect the soil from impact of precipitation.

(2) *Applicability.* Areas that have been cleared of vegetation or do not have a protective cover on the soil. Erosion control mats are typically used to protect short steep slopes or in areas of concentrated water flows.

(3) *Design criteria.* There are many different types of erosion control mats and each is made for different situations (slope, duration of protection, amount of protection, soil, degradability of mat, etc.); therefore, the type of erosion control mat used and the installation methods should meet the manufactures recommendations.

(4) *Limitations.* If not properly installed (anchored to the ground and overlapped on the edges), erosion control mats can be washed downslope.

(5) *Maintenance requirements.* Areas with erosion control mats should be inspected regularly and after one-half inch or greater rainfalls and problem areas corrected as required.

(e) *Vegetation.*

(1) *Description.* Erosion is caused by rainfall impact detaching soil particles and runoff carrying the particles downslope. Vegetation (seeded or sodded) can hold the soil particles in place and protect against erosion.

(2) *Applicability.* Any area of a construction site that the natural vegetation has been removed. Seeding or sodding can be used as a temporary or a final erosion control measure. A substantial savings can be realized by completing the earthwork for an area and implementing final vegetative stabilization.

(3) *Design criteria.* The type temporary vegetation appropriate for a site is dependent upon the time of year. Prior to application of seed, grading of the site should be complete including all erosion and sediment control practices. If the soils have become compacted, they should be loosened to a depth of at least six inches. If the pH of the soil is less than six, lime should be added to the top six inches of soil. Fertilizer (10-10-10) should also be incorporated into the top six inches of soil at a rate of 100 lb/acre. Soil roughening techniques should be used for slopes greater than 3:1, 33 percent. The seed bed should be loose, without large clods, and uniform before seeding.

(4) *Limitations.* Vegetation is not appropriate for heavily trafficked areas (vehicular and pedestrian) and is not appropriate for rocky, gravelly, or course grained soils. For these types of soils, apply six inches of clean topsoil before seeding.

(5) *Maintenance requirements.* Vegetated areas should be protected from runoff from adjacent areas and traffic (vehicular and pedestrian). Until established, the vegetation will require fertilization and water.

(Ord. No. 585, § 1, 12-5-2005)

Sec. 94-839. - Sediment control BMPs.

(a) *Embedded silt fence.*

(1) *Description.* Water flowing in sheet or shallow flow will carry sediment down a slope and off-site. Embedded silt fence (ESF) is a barrier made of geotextile fabric placed along a contour to capture water, slow the flowrate, trap sediment, and allow water to filter through the fabric. Silt fence used within the planning jurisdiction of the city may be wire reinforced/wire backed, if necessary, as deemed by inspection of the site.

(2) *Applications.* Small drainage areas with sheet flow or shallow flow.

(3) *Design criteria.* Embedded silt fence (ESF) used within the planning jurisdiction of the city may be wire reinforced/wire backed. Embedded silt fence (ESF) should be placed on a contour and designed to hold runoff from the ten-year storm from an area of 100 square feet for each foot of fence. The maximum depth of retained water on the upstream side of the fence should be two feet. The maximum slope length above the fence should be no more than 100 feet. The maximum slope above the fence is 1:1. The fabric shall be buried in a trench that is at least eight-inch deep posts shall be made of metal (T-post) or wood (two inches by two inches) and placed no more than eight feet apart.

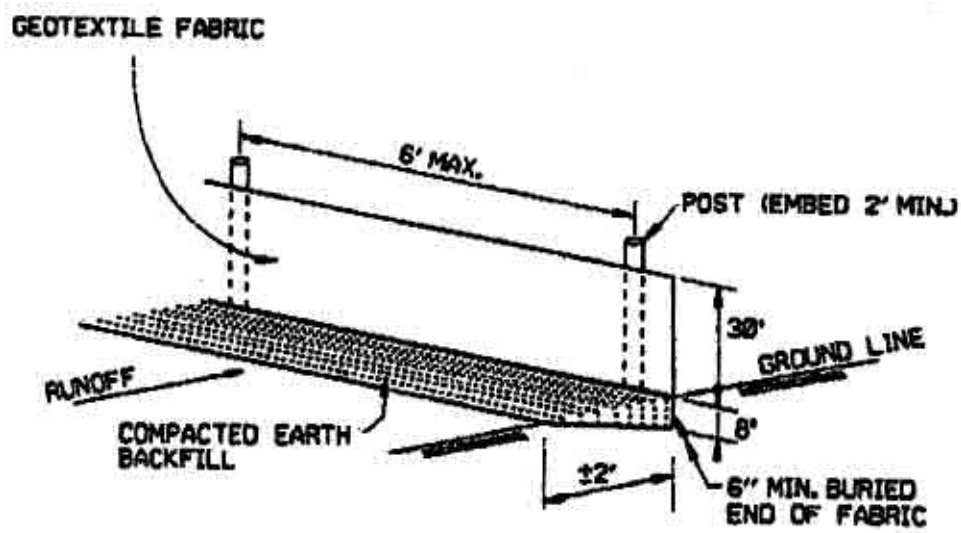


Figure 5. Embedded Silt Fence (Source: AHTD, 2001)

(4) *Limitations.* Silt fence must be embedded or it will not function properly and should not be installed in rocky soil where it cannot be properly embedded. Silt fence is not designed to hold back concentrated flow and therefore should not be placed across channels, gullies, or streams. Silt fence should not be run down slopes as it will concentrate flow causing gully erosion and causing downstream BMPs to fail. Silt fence should not be placed at the top of slopes as it will not provide any sediment control but will increase costs.

(5) *Maintenance requirements.* ESF should be inspected weekly and after one-half inch or greater rainfalls for proper installation, defective fencing, erosion on the ends, and excessive sediment buildup behind the fence (half the fence height).

(b) *Inlet protection.*

(1) *Description.* Runoff from a construction site often carries sediment into the stormwater sewer system, which discharges into local streams. Besides the problems caused by sediment, other pollutants (e.g. oil, grease, and nutrients) are often attached to the sediment. Inlet protection is

the practice of placing gravel, sand bags, or silt fence around an inlet to allow runoff to pond and sediment to settle out prior to entering the stormwater sewer system.

(2) *Applications.* Any storm drain inlet that could receive runoff from the construction site.

(3) *Design criteria.* For inlets that are not in paved areas, a detention pond should be excavated around the inlet that is at least one foot deep (below the inlet crest) and that has a detention volume of at least 35 yards per disturbed acre of watershed. The pond should start at the toe of the dam material; so, if gravel or sandbags are to be used the pond will be at least three feet from the inlet, whereas if silt fence is used, the pond can start at the edge of the inlet. The side slopes of the detention pond should be no greater than 2:1. If silt fence is used as the dam material, the post should be driven at the edge of the inlet and should be no greater than three feet apart. The fence should be installed according to the detail in Figure 6. For inlets in paved areas, either gravel or sandbags should be used as the dam material. If gravel is to be used as the dam material, the gravel should be at least one inch in diameter. The dam should be no higher than one foot high and the side should have no greater than a 2:1 (horizontal: vertical) slope. If sandbags are used as the dam material, the bags shall be no heavier than 50 pounds and shall be stacked no higher than three bag diameters high, with the bags layered in a pyramid formation.

(4) *Limitations.* Inlet protection control measures are not capable of handling large quantities of sediment and can require maintenance during rain events in order to protect nearby facilities and to eliminate flooding. Ponding can cause flooding problems for surrounding facilities.

(5) *Maintenance requirements.* Inlet protection measures should be inspected during storm events to ensure surrounding facilities are not flooded. Inlet protection measures should be inspected weekly and after one-half inch or greater rainfalls for proper installation, defective fencing, erosion, and excessive sediment buildup and defective measures repaired or replaced within 24 hours.

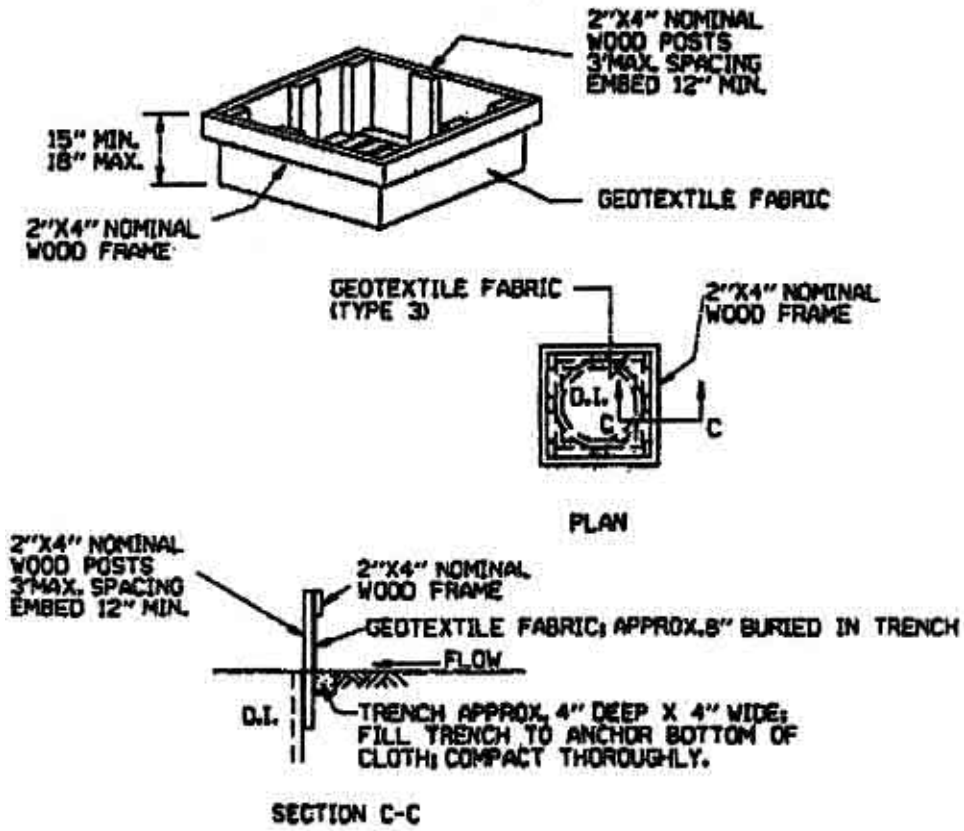


Figure 6. Silt fence inlet protection detail (Source: AHTD, 2001)

(c) *Sediment trap.*

(1) *Description.* Water carrying sediment off-site can cause damage to neighboring property and local streams. Sediment traps provide an area for sediment to settle out of the runoff prior to discharge from the site.

(2) *Applications.* Sediment traps are well suited for sites that will be required to have a permanent stormwater control basin; but, should be used for any concentrated flow (culvert, pipe, swale, etc.) that could have sediment in the runoff leaving the site.

(3) *Design criteria.* The removal efficiency of sediment traps is a function of the total surface area of the pond, the shape of the pond, the influent flow rate, and the type of soil in the runoff. The maximum drainage area for a sediment trap shall be three acres, for larger areas a sediment basin shall be used. Trap minimum bottom area and spillway width are given in Table 3. The berm or levee will curving upstream to hold the water, the berm will have 3:1 side slopes (maximum) and have a maximum depth of three feet. The outlet spillway shall be made of six inches of stone (six-inch diameter minimum) and be placed on a geotextile fabric.

Table 3
Minimum Sediment Trap Dimensions

Drainage Area (Acres)	Trap Water Bottom Area	Width Overflow Spillway

	(Square Feet)	(Feet)
One or less	250	6
One to two	675	12
Two to three	1,500	18

(4) *Limitations.* Sediment traps do not have sufficient surface area to allow for settling of very small particles (e.g. clay, silt). Sediment traps are not appropriate for runoff from areas greater than three acres.

(5) *Maintenance requirements.* Sediment traps should be inspected weekly and after one-half inch or greater rainfalls for proper installation, erosion, and excessive sediment buildup and defective measures repaired or replaced within 24 hours.

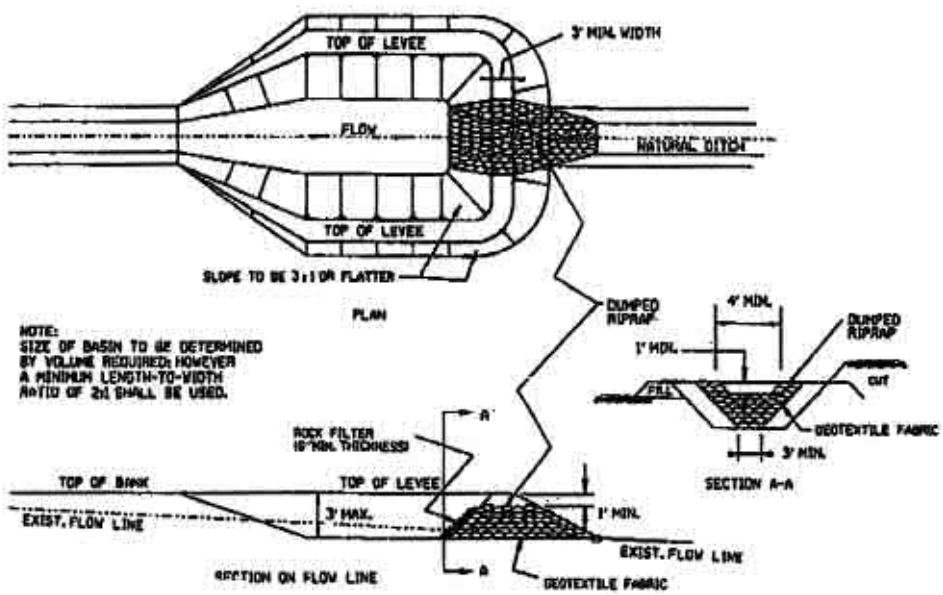


Figure 7 Sediment trap detail (Adapted from: AHTD, 2001)

(d) *Check dams.*

(1) *Description.* Excessive velocity of water in swales or channels causes erosion and transports the sediment downstream to local streams. Check dams (ditch check) slow water in channels and provide an area for sediment to settle out of the water before it flows over the dam.

(2) *Applications.* Any unlined channel or any channel that the vegetative protection has not developed. Steeper slopes are more subject to erosion than flatter slopes.

(3) *Design criteria.* Place ditch checks such that the top of the downstream check is at the same elevation as the bottom of the next upstream check. Checks must constructed such that the top

elevation of the center of the check is at least six inches below the bottom elevation of both ends of the check. The dam must be excavated into the channel no less than six inches as shown in Figures 8, 9, and 10.

(4) *Limitations.* If improperly constructed, water will flow around or through the check dam and erode the banks of the channel. Large flows (less frequent storms) can washout the check dams, erode the banks at the end of the check dams, or cause excessive scour at the outfall of the check dam.

(5) *Maintenance requirements.* Check dams should be inspected weekly and after one-half inch or greater rainfalls for proper installation, erosion, and excessive sediment buildup and defectives should be repaired or replaced within 24 hours.

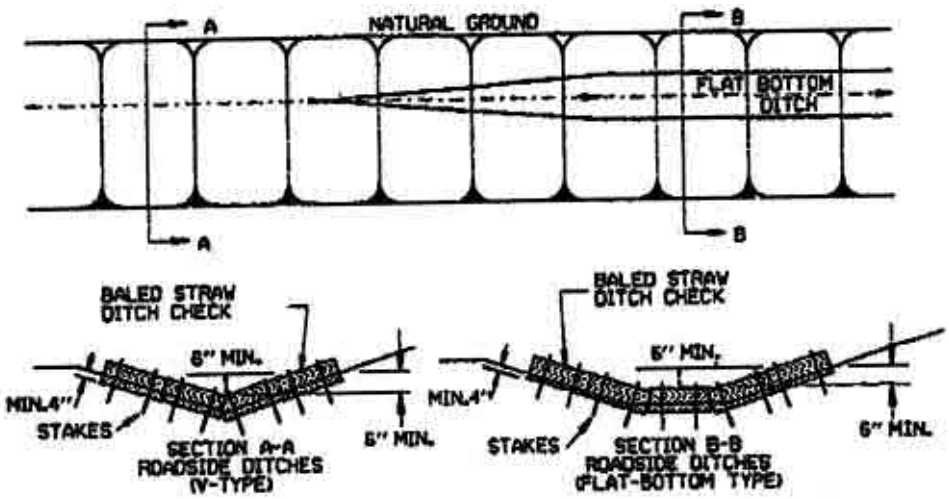


Figure 8 Baled straw check dam detail. (Source: AHTD, 2001)

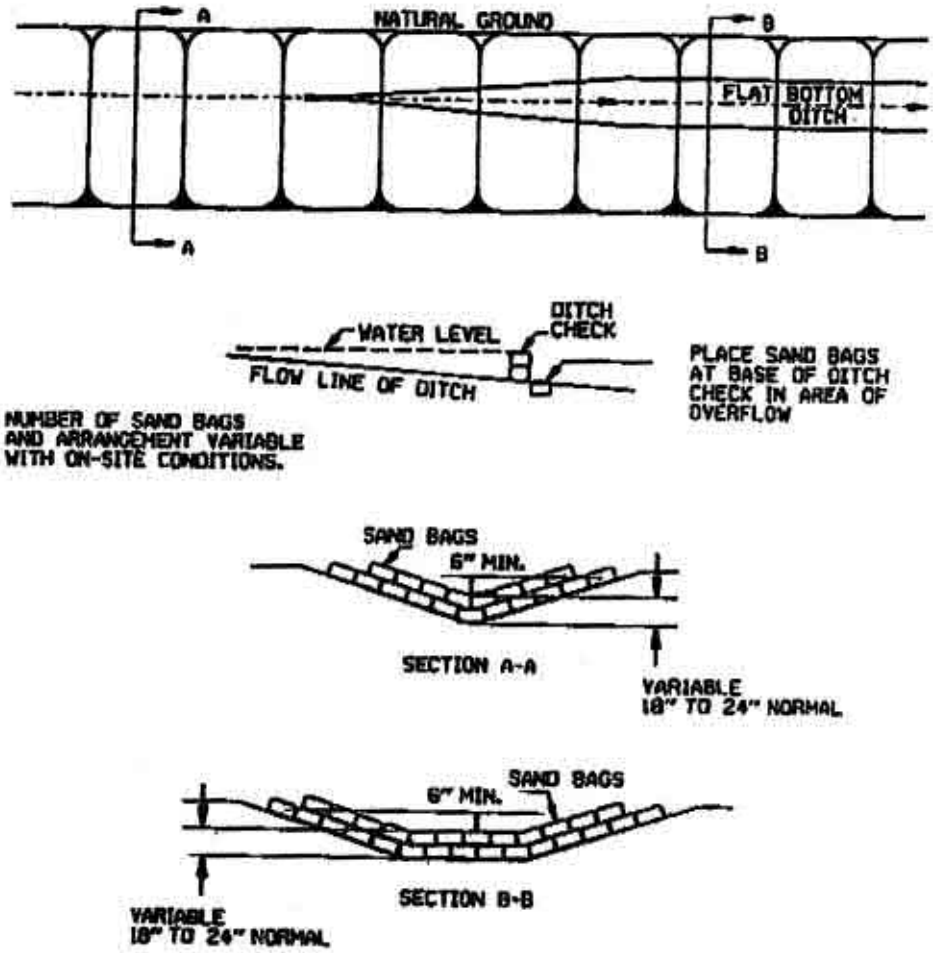


Figure 9 Sand bag check dam detail. (Source: AHTD, 2001)

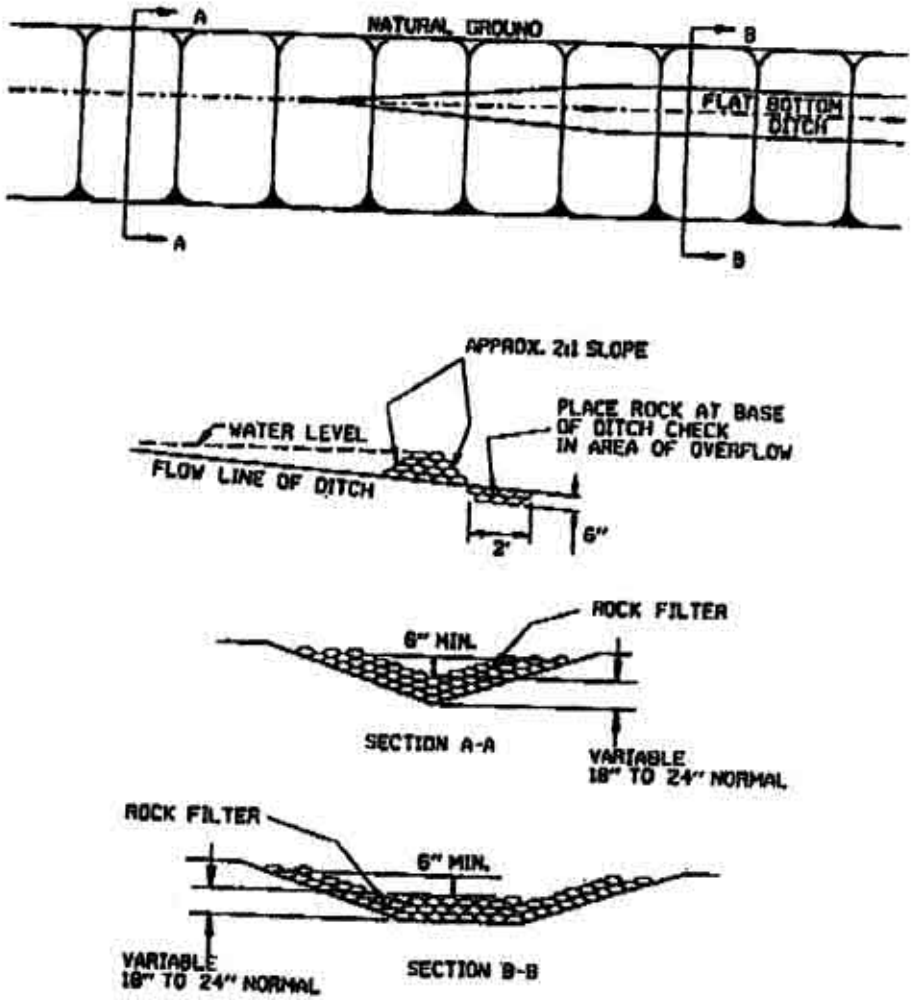


Figure 10 Rock check dam detail. (Source: AHTD, 2001)

(e) *Solid waste management.*

(1) *Description.* Solid wastes that are improperly disposed of, can be blow or washed from construction sites causing others to pickup the wastes from their property. Solid waste management refers to the proper handling and disposal of all construction wastes.

(2) *Applications.* All construction sites.

(3) *Criteria.* Trash and waste construction blowable materials should be picked up daily and properly disposed of.

(4) *Limitations.* None.

(5) *Maintenance requirements.* Daily pickup of trash and construction waste materials.

(f) *Hazardous waste management.*

(1) *Description.* Hazardous wastes can be washed or accidentally dumped into the stormwater system causing serious pollution of local streams. Hazardous waste management is the proper handling, storage, use, and disposal of material listed as hazardous by EPA and/or ADEQ.

(2) *Applications.* All materials listed as hazardous by EPA and/or ADEQ.

(3) *Criteria.* Guidelines published by EPA and OSHA for the types of materials to be used on the construction site should be incorporated into the SWPPP.

The types of materials that are generally considered hazardous are:

Fuels (diesel, gas, etc).

Oils and greases (lubricating, cutting, etc).

Petroleum based materials (asphalt, emulsions, solvents).

Paints (including wood preservatives, stains, and lead based).

Solvents (paint thinners, cleaners, etc).

Pesticides, herbicides, insecticides.

Proper management of hazardous materials entails:

Replace hazardous materials with a nonhazardous materials.

Minimize the use of hazardous materials.

Reuse and recycle hazardous materials.

Proper use of hazardous materials.

Proper storage and handling of hazardous materials.

Proper disposal of hazardous materials.

Employees must be trained in the use, storage, and disposal of hazardous wastes. Hazardous materials should be stored so only authorized personnel can use the material.

The following methods should be followed for spill prevention and clean-up:

The manufacturers recommended methods for spill clean-up should be clearly posted and personnel should be trained in the location of clean-up supplies and clean-up procedures.

Clean-up supplies should be kept in a secure on site.

Personnel should wear proper protective clothing when cleaning up the spill.

Spills should be cleaned up immediately and the waste properly disposed of.

Licensed hazardous waste haulers must be used to transport hazardous wastes to approved treatment and disposal sites.

(g) *Concrete waste management.*

(1) *Description.* Concrete waste from washout of ready mix trucks, concrete pumps, and other concrete equipment causes chemical and changes in runoff by increasing sediment and changing the pH. Concrete waste management is the practice of capturing all concrete wastes and protecting the drainage system from any discharge contaminated by concrete. This concrete waste includes sweepings from concrete or other concrete slurry wastes.

(2) *Applications.* Concrete waste management requirements shall apply to all construction sites, phases, subdivisions, or developments with concrete work. This includes the use of concrete delivered by truck or other concrete coated equipment, mortar-mixing stations, or where concrete dust, debris, or slurry is created by either construction or demolition. Concrete waste

management practices shall also apply to any operator of a vehicle used to deliver or apply concrete products.

a. Until a phase, subdivision, or development is 75 percent built out, the phase, subdivision, or development must provide and identify a minimum of one facility within a reasonable distance for the use of all lots under construction, renovation, or destruction within the phase subdivision or development.

b. If a construction site is not within a phase, subdivision, or development as described in subsection (2)a. above, the construction site shall provide and identify a reasonable concrete washout facility for the use of those providing concrete or concrete-related services on that site or make arrangements for the removal of concrete waste.

c. In some cases, particularly in the case of an owner-builder construction or renovation of a single structure in an otherwise fully developed subdivision, the concrete provider is expected to dispose of or washout any excess concrete or debris in a manner consistent with this section even if the site does not lend itself to a separate washout facility.

(3) *Design criteria.* Provide a minimum of six cubic feet of containment volume for every ten cubic yards of concrete to be poured. There must be a minimum freeboard of six inches for those facilities built above the ground or a minimum of 12 inches for those built below grade. Prefabricated washout facilities are allowed so long as they meet the criteria of temporary facilities in terms of capacity, protection from runoff and clean out requirements. All washout areas must:

a. Be located as far away from storm drains, ditches, or other bodies of water as is practical. In phases, subdivisions, or developments, washout areas must be at least 50 feet from storm drains, ditches, or other bodies of water.

b. Provide all-weather access with sufficient controls to keep mud or debris from the streets surrounding the facility.

c. Physically restrict all runoff from the area by construction of temporary pit or bermed area of sufficient size. Artificial berms may be created from straw bales or sand bags so long as the same is staked and is double or triple-lined with polyethylene sheeting of sufficient thickness and without holes or tears.

d. Be clearly marked by signage.

e. Be lined with polyethylene sheeting of sufficient thickness and which is free from holes, tears, or defects that compromise the impermeability of the material.

(4) *Limitations.* Improperly sized washout area can overflow and washout will not be contained.

(5) *Maintenance requirements.* The washout pit shall be cleaned and maintained on a regular basis.

a. The facility must be removed or cleaned out when the facility is no longer required for work in the area or when the facility is at 75 percent capacity.

b. To remove or clean the facility, the hardened concrete should be removed and disposed of. Materials used to construct the temporary facility must also be removed and disposed of when they are no longer suitable for use or no longer needed.

c. Any holes or depressions caused by a temporary washout facility should be backfilled and repaired and the soil shall be stabilized.

d. Be cleaned up immediately in the event that any liquid or other contaminant is found outside the washout facility.

e. All concrete waste material must be properly disposed of.

(Ord. No. 585, § 1, 12-5-2005; Ord. No. 768, § 3, 4-4-2011)

Sec. 94-840. - Residential and commercial BMPs.

(a) *Introduction.* Historically, stormwater management policies were developed to mitigate the impact of land development in terms of the quantity of water released; therefore, systems were sized to reduce the post-development peak discharge rates to the predevelopment rates. But, stormwater systems sized to reduce peak discharge are not effective at removal of pollutants; therefore, the design of stormwater systems must now incorporate methods for improving water quality.

(b) *Dry basin.*

(1) *Description.* Increased flow rates due to development cause increased erosion and increased stream bank erosion. In addition, runoff leaving as developed site it will carry sediment and attached pollutants. A dry basin is a surface storage structure designed to provide water quantity control through decrease and attenuation runoff peaks and by providing an area for sedimentation to remove sediment and attached pollutants.

(2) *Application.* Dry basins are applicable for large drainage areas and should used in conjunction with a water quality control structure. In addition, the basin can be used for recreational and other open space opportunities between storm runoff events.

(3) *Design criteria.* The maximum contributing drainage area to be served by a dry basin is 75 acres. Dry basins should be sized to temporarily store the volume of runoff required to reduce the post-development peak flow of the five-year, ten-year, 25-year, and 50-year storm events to the pre-development rates, and control the 100-year storm if required. The basin should an elongated and irregular shape with a length to width ratio of 2:1; but 3:1 is preferred. Routing calculations must be used to demonstrate that the storage volume is adequate. A detail of a dry basin is shown below. Embankments shall be less than eight feet in height and shall have side slopes no steeper than 3:1 (horizontal to vertical). Geotechnical slope stability analysis is recommended for embankments greater than four feet in height. The bottom area of storage facilities should be graded toward the outlet to prevent standing water conditions. A low flow or pilot channel across the facility bottom from the inlet to the outlet is recommended to convey low flows and prevent standing water conditions. Adequate maintenance access must be provided for all basins. Inlet inflow channels are to be stabilized with flared riprap aprons, or the equivalent. A sediment forebay sized to 0.1 inches per impervious acre of contributing drainage should be provided. Seepage control or anti-seep collars should be provided for all outlet pipes. Riprap, plunge pools or pads, or other energy dissipators are to be placed at the end of the outlet to prevent scouring and erosion. If the basin discharges to a channel with dry weather flow, care should be taken to minimize tree clearing along the downstream channel, and to reestablish a forested riparian zone in the shortest possible distance. An emergency spillway is to be included in the stormwater pond design to safely pass the extreme flood flow. The spillway prevents pond water levels from overtopping the embankment and causing structural damage. The emergency spillway must be designed and located so that downstream structures will not be impacted by spillway discharges. A minimum of one foot of freeboard must be provided, measured from the top of the water surface elevation for the extreme flood, to the lowest point of the dam embankment not counting the emergency spillway. In the event that further reduced peak flowrates are required to protect the downstream channel, a dry extended detention basin can be utilized. Dry extended detention basins should be equipped with a low flow orifice capable of releasing the channel protection volume over 24 hours must. The channel protection orifice should have a minimum diameter of three inches and should be adequately protected from clogging by an acceptable external trash rack. A detail of a dry extended detention basin is shown below.

(4) *Limitations.* Dry basins are only moderately effective at removing suspended pollutants (sediment and attached pollutants, nutrients and metals) and are ineffective at removing dissolved pollutants. During some periods of the year, dry ponds can be a breeding site for mosquitoes.

(5) *Maintenance.* Dry ponds require inspection and maintenance as shown below.

Bi-weekly or as needed, mow and tend to grass around pond.

Monthly or more frequently if required, remove trash and debris from pond, outlet structure, and surrounding area.

Annually, inspect embankments, outlets, and spillways for damage and maintain as required.

Annually, inspect for sediment buildup and remove buildup as required.

Annually, remove any invasive vegetation.

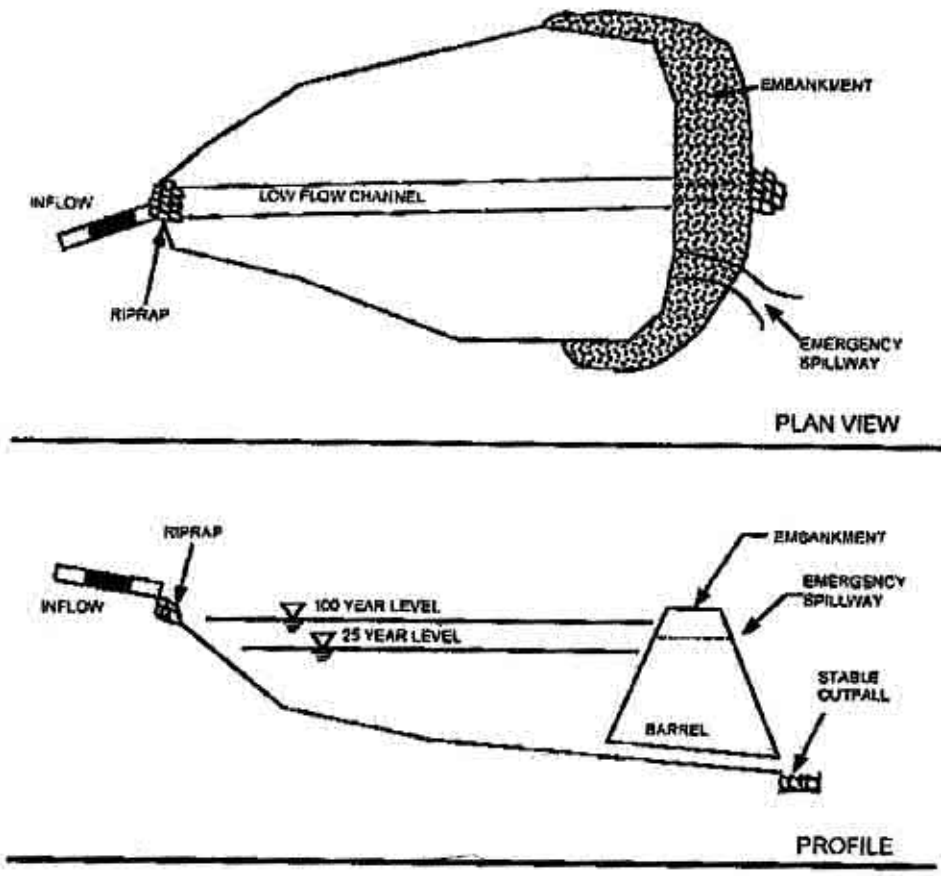


Figure 11 Dry detention basin detail. (Source: GSWMM, 2001)

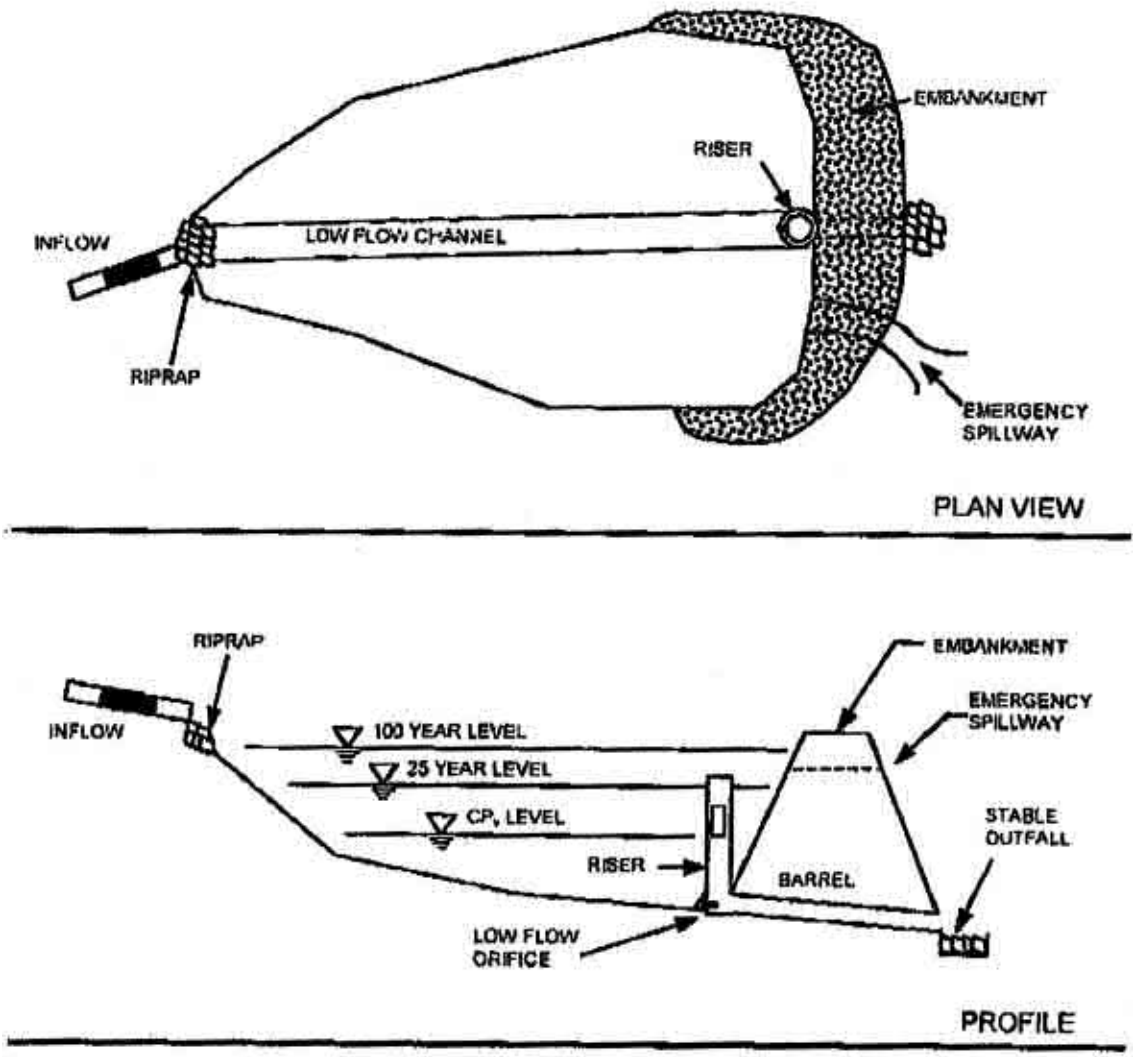


Figure 12 Extended dry detention basin detail (Source: GSWMM, 2001)

(c) *Wet basin.*

(1) *Description.* Increased flowrates due to development cause increased erosion and increased stream bank erosion. In addition, runoff leaving as developed site it will carry sediment and attached pollutants. Wet ponds (retention ponds, wet extended detention ponds) are constructed to provide a permanent pool of water during the wet season or year-round. The pond provides for peak discharge attenuation and pollutant removal. Pollutants are removed from stormwater by settling and biological uptake.

(2) *Applicability.* Wet ponds can be designed to enhance the landscaping and provide an attractive addition to a development. To maintain a permanent pool, wet ponds typically require about a minimum drainage area of 25 acres. Maintenance needs, dissolved oxygen requirements, and safety concerns should be addressed during design.

(3) *Design criteria.* The maximum contributing drainage area to be served by a wet basin is 75 acres and the minimum is 25 acres. The active pool of the wet Basins should be sized to temporarily store the volume of runoff required to reduce the post-development peak flow of the

five-year, ten-year, 25-year, and 50-year storm events to the pre-development rates, and control the 100-year storm if required. The basin should an elongated and irregular shape with a length to width ratio of 2:1; but 3:1 is preferred. Routing calculations must be used to demonstrate that the storage volume is adequate. A detail of a wet basin is shown in Figure 13 and a typical cross section of a wet basin is shown in Figure 14. The designer must conduct a water balance to ensure that sufficient inflow is available to maintain the permanent pool. The permanent pool should be at least four feet deep is discourage growth of aquatic plants. Embankments shall be less than eight feet in height and shall have side slopes no steeper than 3:1 (horizontal to vertical). Geotechnical slope stability analysis is recommended for embankments greater than four feet in height. Adequate maintenance access must be provided for all basins. Inlet inflow channels are to be stabilized with flared riprap aprons, or the equivalent. A sediment forebay sized to 0.1 inches per impervious acre of contributing drainage should be provided. Seepage control or anti-seep collars should be provided for all outlet pipes. Riprap, plunge pools or pads, or other energy dissipators are to be placed at the end of the outlet to prevent scouring and erosion. If the basin discharges to a channel with dry weather flow, care should be taken to minimize tree clearing along the downstream channel, and to reestablish a forested riparian zone in the shortest possible distance. An emergency spillway is to be included in the stormwater pond design to safely pass the extreme flood flow. The spillway prevents pond water levels from overtopping the embankment and causing structural damage. The emergency spillway must be designed and located so that downstream structures will not be impacted by spillway discharges. A minimum of one foot of freeboard must be provided, measured from the top of the water surface elevation for the extreme flood, to the lowest point of the dam embankment not counting the emergency spillway.

(4) *Limitations.* Depending on the location, wet ponds can require maintenance to remove trash and overgrowth. In developments with excess nutrients (nitrogen and phosphorus in particular) due to over fertilization, wet ponds can require mechanisms (fountains, bubblers) to input oxygen. In some developments a permanent pool of water can be viewed as a safety concern.

(5) *Inspection and maintenance.* Wet ponds should be inspected and maintained according to the following schedule:

Bi-weekly or as needed, mow and tend to grass around pond.

Monthly or more frequently if required, remove trash and debris from pond, outlet structure, and surrounding area.

Annually, inspect embankments, outlets, and spillways for damage and maintain as required.

Annually, inspect for sediment buildup in forebay and wet pool, remove buildup if required.

Annually, harvest wetland vegetation (if used) and remove any invasive vegetation.

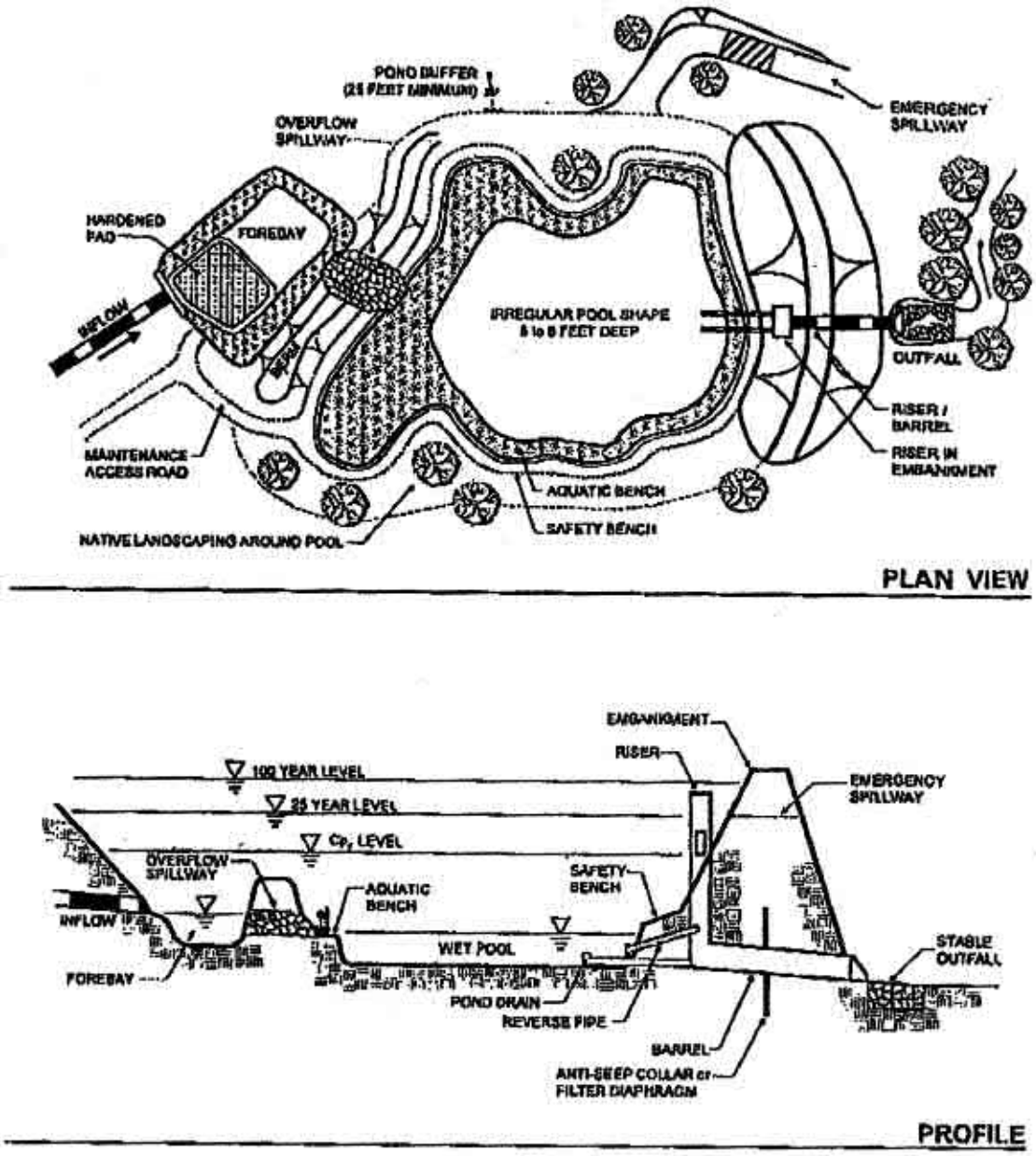


Figure 13 Wet pond detail. (Source: Center of Water Shed Protection)

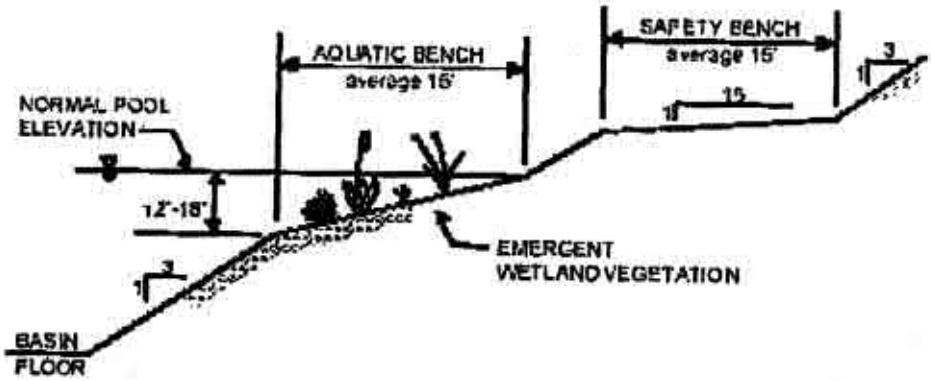


Figure 14 Cross section of a wet basin

(d) *Vegetated swales and strips.*

(1) *Description.* Vegetated swales (grass lined swales, biofilters, grassed channels) combine a channel, storage, and vegetation. The channel is used to move stormwater from one place to another; but, the channel is designed to provide some stormwater storage. The swale is designed to allow ponding (backwater) in the channel to enhance infiltration and pollutant removal. The vegetation provides increased pollutant (sediment, nutrients, metals) removal.

(2) Section criteria. Swales are best suited for sites with long narrow areas available for stormwater handling and storage. Swales are also well suited for areas that generate highly contaminated runoff such as filling stations. Generally swales are appropriate for drainage areas of five acres or less and should be constructed on flat slopes (one to two percent). The bottom of the swale should be two feet above the seasonally high water table.

(3) *Design and sizing.* Swales function best if the stormwater moves through the channel slowly and they are designed to maximize the channel surface area wetted by the flow. A swale should be designed such that a one-inch storm will take ten minutes to travel down the swale and should be designed as shown in the detail below. Swales should be designed as trapezoidal or parabolic channels with longitudinal slopes of one to two percent and side slopes no greater than 4:1 (25 percent). The channel bottom should be two to eight feet wide. The swale should have dense vegetative cover that should be able to withstand the velocities induced by larger storms (25-year storm).

(4) *Limitations.* Pollutant removal capabilities are substantially decreased for swales in highly impermeable soils, for swales constructed on steep slopes, and for swales handling runoff from too large of drainage areas.

(5) *Inspection and maintenance.* Swales should be inspected and maintained as indicated below:

Bi-weekly or as needed, keep grass at a height of three to four inches.

Monthly or more frequently if required, remove trash and debris, outlet structure, and surrounding area.

Annually, inspect embankments and outlets for damage and maintain as required.

Annually, inspect for sediment buildup and remove buildup when required.

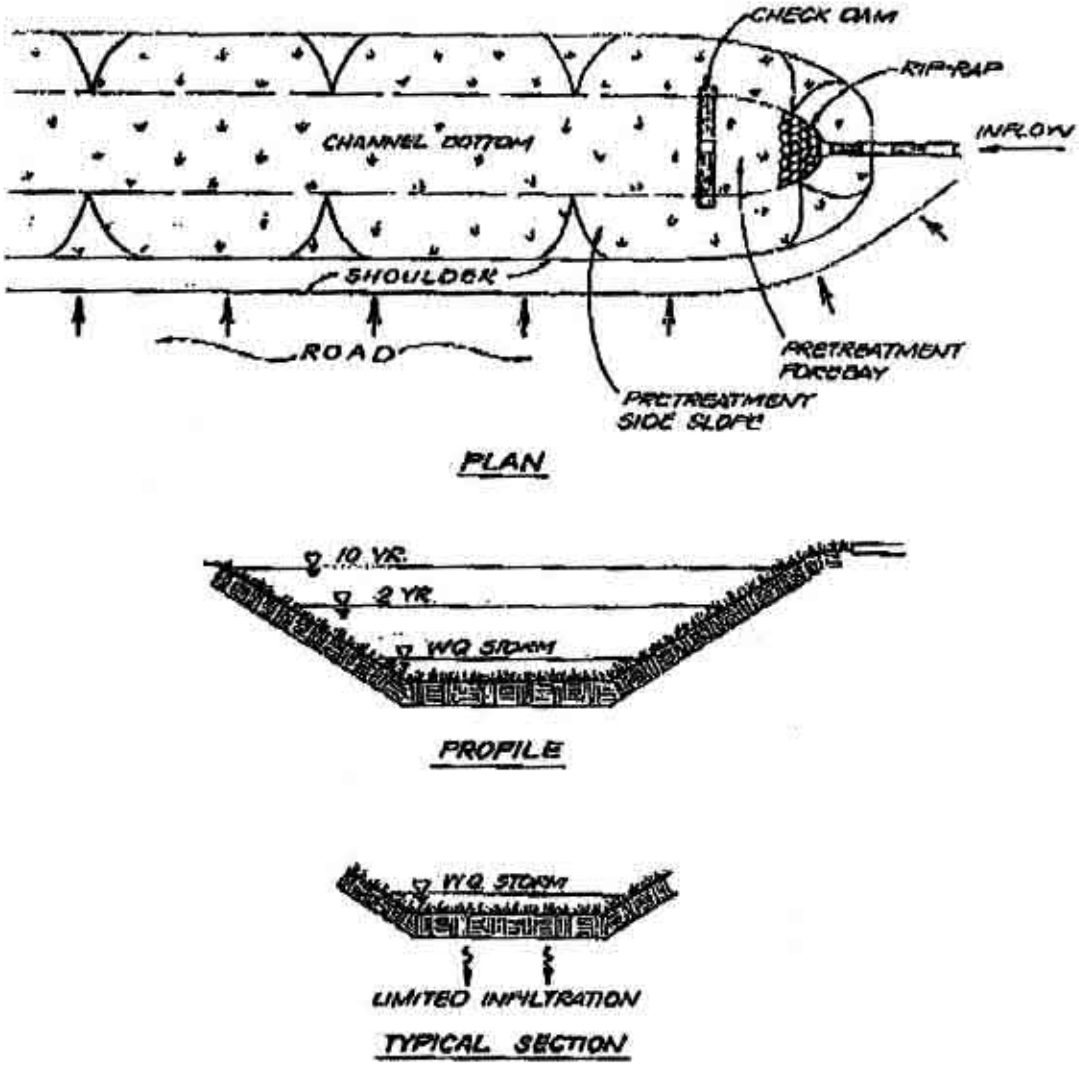


Figure 15 Grass swale detail. (Source: GSWMM, 2001)

(e) *Grass filter strip.*

(1) *Description.* Runoff flowing in sheet flow and carrying sediment and associated pollutants will end up in the local streams causing the steams to be polluted. Grass filter strips remove sediment from runoff in sheet flow.

(2) *Application.* Areas adjacent to low or medium density residential or commercial areas on gentle slopes (less than 15 percent) with a width of strip running along the contour.

(3) *Design criteria.* Grass filter strips should be placed adjacent to low or medium density residential or commercial areas with a width equal to the width of the runoff area. The filter strip should have a dense mat of vegetation to bind the soil and should have a moderate slope (five percent or less). The length of the strip should meet the minimum standards shown in Table 4. Filter strips should be layout according to the detail in Figure 16. A stone drop made from pea gravel should be built at the head of the filter to pretreat the runoff and to act as a level spreader. The stone drop should be at least one foot wide and one foot deep.

Table 4
Minimum length of filter strips (Source: MAACD, 1995)

Slope of Strip (Percent)	Length of Grassed Filter Strip (Feet)	Length of Forested Filter Strip (Feet)
0	10	25
2	12	29
4	14	33
6	16	37
8	18	41
10	20	45
15	25	55

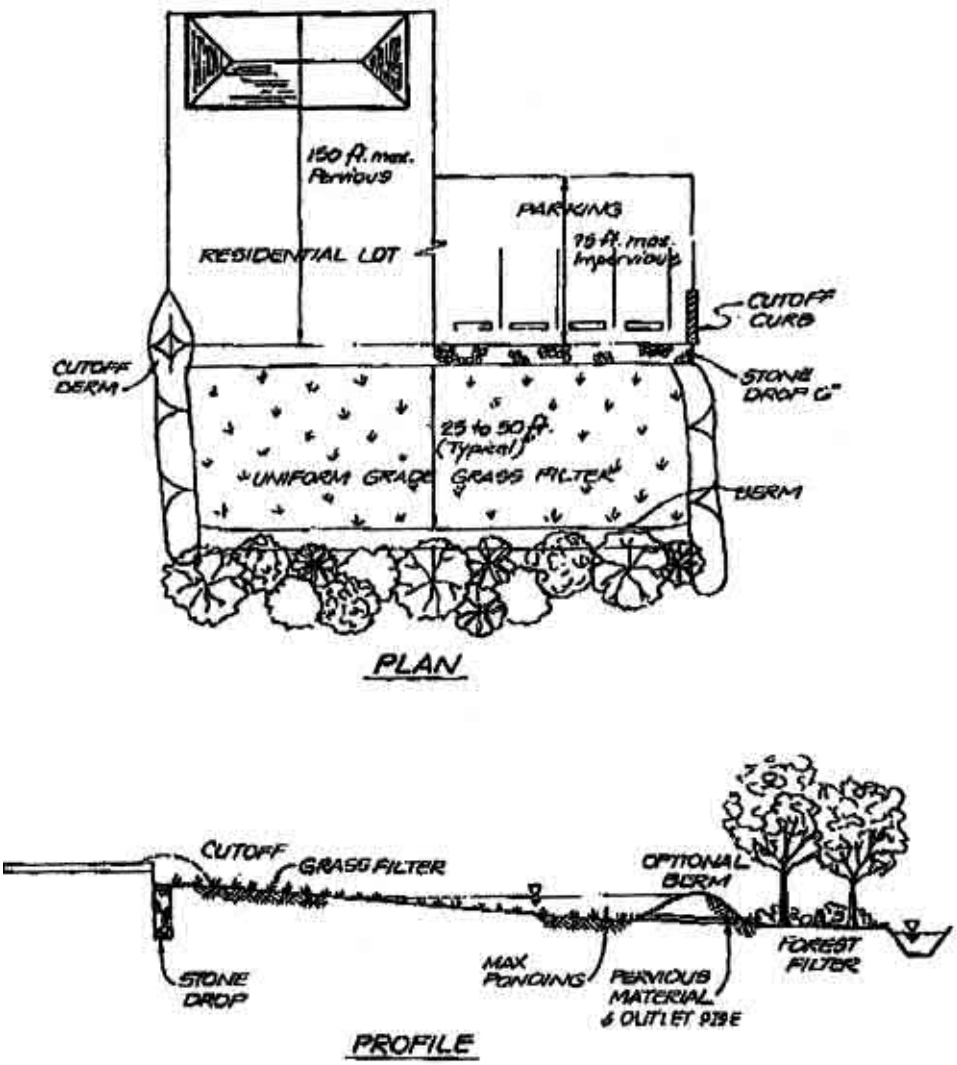


Figure 16 Filter strip detail. (Source: GSWMM, 2001)

(4) *Limitations.* If not planned properly, the land requirements of filter strips can be a problem in some developments. If the filter strip does not have a uniform grade, runoff will concentrate and could cause erosion in the filter strip.

(5) *Inspection and maintenance.* Filter strips should be inspected periodically to ensure that the filter strip is working properly and that no erosion is taking place. The strip should be mowed to height of four to six inches as required.

(f) *Inlet floatables interceptor.*

(1) *Description.* Trash, debris, and lawn wastes are picked up by stormwater and carried to local streams causing unsightly conditions and pollution of the stream. Inlet floatable interceptors are placed in curb or drop inlets to screen the floatables out of the runoff.

(2) *Applicability.* Curb inlets and drop inlets that are subject to excess trash and debris.

(3) *Design and sizing.* Inlet floatable interceptors are manufactured BMPs that fit into curb inlets or drop inlets. The inserts should be purchased, installed, and maintained according to the manufacturers recommendations.

(4) *Limitations.* Inlet floatable interceptors are very high maintenance BMPs. Debris that is collected from one storm can dry between storms be resuspended during the next storm. Increased public education on proper disposal of trash might provide better results.

(5) *Inspection and maintenance.* Inlet floatable interceptors should be inspected at least weekly and after every one-half inch or greater rain and any accumulated debris removed.

(g) *Oil-sediment separator.*

(1) *Description.* Runoff from filling stations, vehicle service areas, and truck parking lots typically has large concentrations of hydrocarbons (oil, grease, fuel) and other vehicle fluids. Oil-sediment separators are used in these hot spots to remove the hydrocarbons from the stormwater prior to discharge to the stormwater system.

(2) *Applicability.* Any high use area that has the potential for large amounts of sediment and/or hydrocarbons in the runoff.

(3) *Design and sizing.* Individual oil-sediment separators are appropriate for drainage areas of one acre or less and should be sized to provide a detention volume of 400 cubic feet/acre of drainage area. The detention volume is the volume of water behind the last overflow weir as shown in the detail below. The minimum depth of water in the detention volume should be three feet. Sediment will be removed in the first chamber and oil and floating debris will be trapped in the first and second chambers; therefore, adequate volume must be provided for storage of these pollutants based upon the runoff source and the prescribed maintenance schedule.

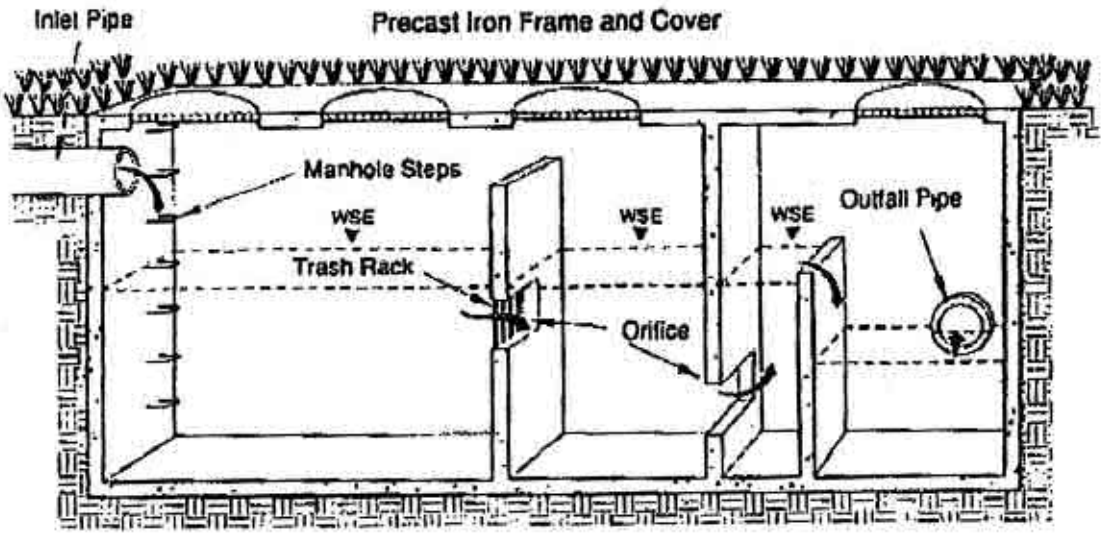


Figure 17 Oil-sediment separator vault detail (Source: GSWMM, 2001)

(4) *Limitations.* If oil and sediment are not removed regularly, oil-sediment separators will not function properly.

(5) *Inspection and maintenance.* The separator should be inspected monthly for buildup of sediment, oil, and floatables and removed as required.

(h) *Infiltration trench.*

(1) *Description.* Pollutants and sediment in runoff from developed areas cause pollution in local streams. Infiltration trenches are structural BMPs that take the first flush of rainfall and provide for decreased peak runoff flowrates and removal of pollutants.

(2) *Applicability.* Infiltration trenches are appropriate BMPs for residential and light commercial areas. The runoff should not have large amounts of sediment.

(3) *Design criteria.* Infiltration trenches can be used for drainage areas of five acres or less and should only be constructed in areas with soils that have an infiltration rate of 0.5 inches per hour or greater. Infiltration Trenches should be only be placed in areas that the bottom of the trench will be a minimum of three feet above the season high water table. The trench should be designed such that the voids in the trench will hold one-half inch of rainfall from the drainage area. The trench should only be filled with uniform aggregate of two-inch or three-inch diameter. The trench should have a grass filter strip on the upstream side to remove sediment and prolong the useful life of the trench. An observation well must be provided to allow inspection of the trench and determine if the trench is draining properly. The detail below is a typical layout of an infiltration trench.

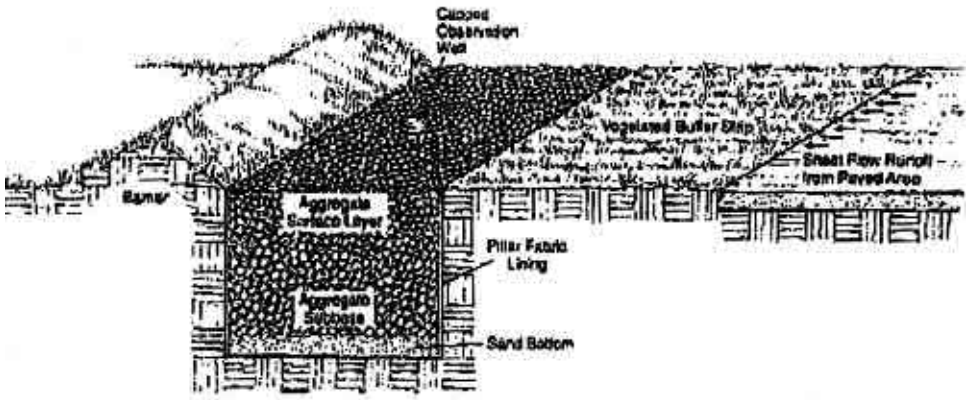


Figure 18. Infiltration trench detail (Source: GSWMM, 2001)

(4) *Limitations.* Runoff with excessive sediment will plug the pore space in the trench and decrease the useful life of the trench; therefore, infiltration trenches should only be used for runoff that will not care large amounts of sediment.

(5) *Inspection and maintenance.* The trench and drainage area should be inspected monthly and after any rainfall event to ensure that both are fee of debris and sediment build up. The observation well should be checked four times a year to determine if the captured water is draining within three days after the rainfall stops. If the trench is not working properly, the rock media and filter fabric must be removed, the trench walls must be scarified to expose new soil, and the filter fabric and trench rock media replaced.

(i) *Porous pavement.*

(1) *Description.* Runoff from paved areas often pollutants from vehicles (e.g. oil, brake fluid, antifreeze) that are carried to the local streams. Excessive runoff from parking lots causes erosion and stream bank erosion. Porous pavement is a stormwater management practice that allows runoff to infiltrate into and through the pavement, which decreases the amount of the runoff from the pavement and for treatment of the pollutants.

(2) *Applicability.* Porous pavement is best suited for low traffic or overflow parking lots on soils with adequate infiltration capacity.

(3) *Design criteria.* Porous pavement should only be used in low traffic or overflow parking lots that will not receive large amounts of sediment from vehicles. The pavement structure should be constructed according to the detail in Figure 19 and must be placed on soils with a minimum infiltration capacity of one inch per hour. The stone reservoir should have a capacity of holding

one inch of rainfall in the voids of the stones. The pavement should be placed at least three feet above the seasonal high water table.

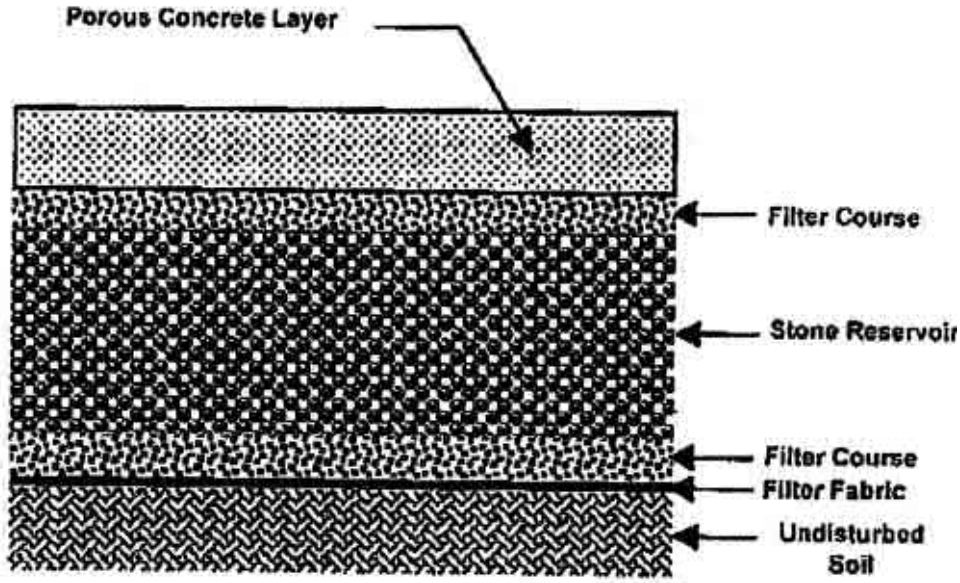


Figure 19 Porous pavement detail (Source: GSWMM, 2001)

(4) *Limitations.* Failure of porous pavement is typically do to excessive sediment build up on the pavement surface from either too much sediment being tracked onto the pavement or from inadequate cleaning of the pavement. Porous pavement should not be used in areas that require sanding during icy conditions.

(5) *Inspection and maintenance.* The pavement should be inspected and vacuum swept monthly or more frequently as required to keep the pavement clean. Sediment buildup should be removed after ever storm. The pavement should not be resurfaced with non-porous pavement.

(j) *Underground detention vault.*

(1) *Description.* In high density development areas, dry basins and wet basins may take too much land space that is needed for development. Underground detention vaults provide are a structural BMP that provides for peak flow attenuation and reduction without taking up valuable surface area.

(2) *Application.* Ultra-urban or high density developments where land space is not available for surface detention basins.

(3) *Design criteria.* Underground detention systems are sized to temporarily store the volume of runoff required to reduce the post development peak flow of the 25-year storm event to the predevelopment rate. Due to the storage volume required, underground detention vaults and tanks are typically not used to control the 100-year storm except for very small drainage areas (less than one acre). Routing calculations must be used to demonstrate that the storage volume is adequate. Underground detention tanks and vaults must meet structural requirements for overburden support and traffic loading if appropriate. The minimum pipe diameter for underground detention tanks is 36 inches. Whereas, underground detention vaults must be constructed with a minimum of 3,000 psi structural reinforced concrete and all construction joints must be provided with water stops. Cast-in-place wall sections must be designed as retaining walls. The maximum depth from finished grade to the vault invert should be 20 feet. Underground vaults should be designed according to the detail shown below. Adequate maintenance access must be provided for all underground detention systems. Access must be

provided over the inlet pipe and outflow structure. Access openings can consist of a standard frame, grate and solid cover, or a removable panel. Vaults with widths of ten feet or less should have removable lids. A separate sediment sump or vault chamber sized to 0.1 inches per impervious acre of contributing drainage should be provided at the inlet for underground detention systems. Outlet orifices or weirs should be designed to match the predevelopment flowrates of the frequencies of storms as required by local regulations.

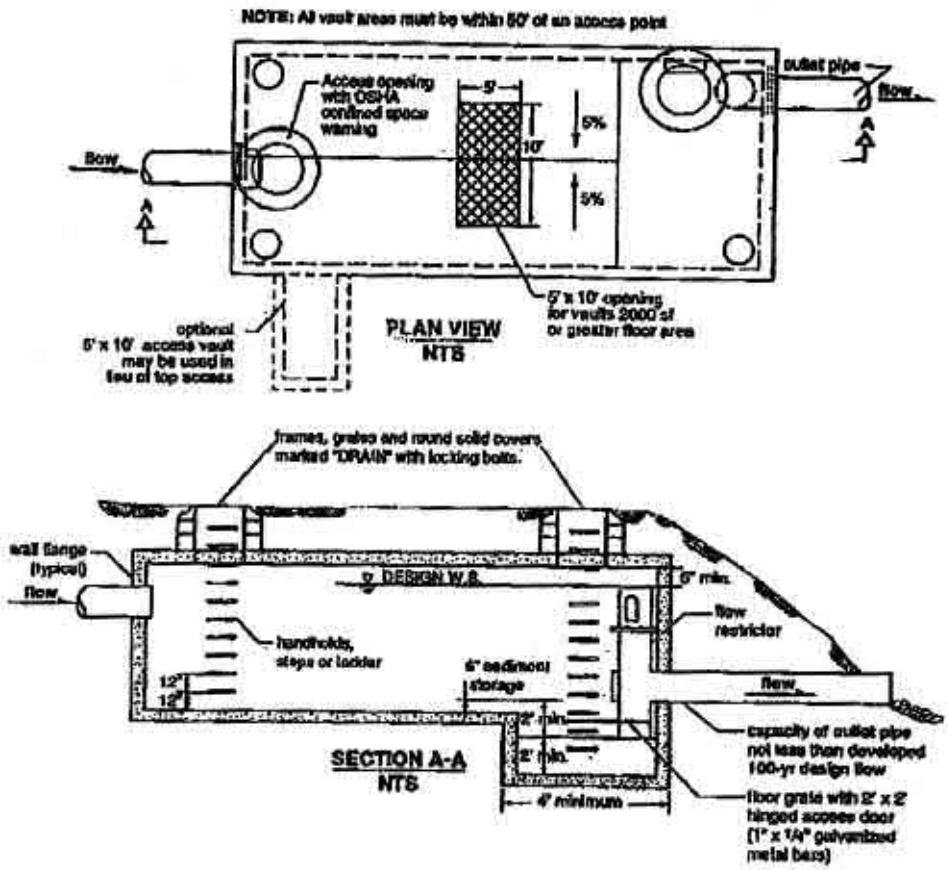


Figure 20 Underground detention vault detail. (Source: WDE, 2000)

(4) *Limitations.* Underground detention vaults are not typically designed to remove pollutants. Extra construction costs and maintenance costs make utilization of underground detention vaults prohibitively expensive except where land costs make them affordable. Runoff should go through a pollutant removal BMP prior to the underground vault.

(5) *Inspection and maintenance.* The inlet to the vault should be inspected and trash or sediment removed. Quarterly the vault or tank should be inspected for buildup of sediment and trash, which should be removed as required.

(Ord. No. 585, § 1, 12-5-2005)

Geotechnical

Soils Report: The deepest depth tested within 0.5 miles of the site was 25 feet. No water was found. For ease of reference, a map is provided depicting the site in relation to the soil borings along with a radius ring of 0.5 miles. **See attachment GT-1 for detail.**

Seismic Rating: Maumelle is located in Zone 1 in the historical seismic zone map, which has the least amount of seismic activity.

The United States Geological Survey provides National Seismic Hazard Maps which derived from seismic hazard curves calculated on a grid of sites across the United States that describe the annual frequency of exceeding a set of ground motions. Maumelle is in one of the lower ratings of probability of exceeding peak ground acceleration.

See map behind GT-2 for more detail.


N34°52'23.52"
120 acres
W 92°23'6"
N34°51'57.6"
B3 to 25 ft
B15 auger refusal at 20 ft
B8 to 25 ft
B16 auger refusal at 20 ft
B7 auger refusal at 22ft
B8 25ft
B26 auger refusal at 7 ft
Google Earth

Grubbs, Hoskyn, Barton & Wyatt, INC.
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October 22, 2008
Job No. 08-232

Pulaski County Special School District
925 East Dixon Road
Little Rock, Arkansas 72206

Attn: Mr. Larry O'Briant

GEOTECHNCIAL INVESTIGATION
PROPOSED OAK GROVE HIGH SCHOOL
MAUMELLE, ARKANSAS

INTRODUCTION

Presented herein are the results of the geotechnical investigation performed for the proposed Oak Grove High School in Maumelle, Arkansas. These services were authorized by Mr. Jack See of Wittenberg, Delony and Davidson on behalf of the Pulaski County Special School District on August 11, 2008 and have been performed in general accordance with our proposal of August 8, 2008 (GHBW Proposal No. 08-133R). The results of the borings were discussed with the design team shortly after completion of the field studies during the design team meeting of September 19, 2008.

We understand that the new campus will be constructed on a 92-acre tract located northeast of the intersection of Carnahan Drive and Louis Nelson Drive in Maumelle, Arkansas. The construction will be performed in phases with the initial work anticipated to consist primarily of construction of the academic building and surrounding features. The main academic building will have approximately 200,000 sq ft plan footprint area. This will be a multi-story building of steel-frame construction and partial brick veneer. Some loading docks will be included on the north side of the building. Future construction will also include a multi-purpose facility/field house and several athletic fields. Extensive paved drives and parking areas will also be included in the project. Finish floor for the new building is planned at El 274, with site grading expected to include up to about 12 feet of cut and 2 feet of fill planned in the building area. Grades to the west and north of the school building will be transitioned via retaining walls with cuts retained and the grade at the

base of the walls expected to be at approximately El 278. Cuts for landscaping up to about 28 ft could be required.

Both cut and fill is expected for construction of new roads. It is our understanding that grades will be raised several feet for construction of the new field house. However, specific information regarding site grading for that project facet has not been developed as of this writing. We also understand that specific information regarding site grading for other project facets has not been determined at this time.

The purposes of this geotechnical investigation have been to explore subsurface conditions at the school site and to develop recommendations to guide design and construction. We have accomplished these purposes by performing a multi-phased study that has included:

- ◊ Drilling sample borings to explore subsurface soil, rock and groundwater conditions;
- ◊ Reviewing and incorporating appropriate information developed by the preliminary study performed in 2007 (GHBW Report No. 07-257);
- ◊ Performing laboratory tests to evaluate pertinent engineering properties of the foundation and subgrade strata; and
- ◊ Analyzing the results of the subsurface exploration to develop recommendations for foundation and pavement design, site grading, and construction.

The following report sections discuss the results of the field study. Conclusions and recommendations are discussed in subsequent report sections.

SUBSURFACE EXPLORATION

Subsurface conditions at the new school site were explored by drilling 38 sample borings. The boring depths and locations were selected on the basis of the site layout and the information available at the time of the field studies. The site location is shown on Plate 1. The approximate boring locations are shown on the Plan of Borings, Plate 2. Logs of the borings, presenting descriptions of the subsurface strata encountered and results of field and laboratory tests, are included as Plates 3 through 40. The approximate borehole ground surface elevation, as inferred from the topographic information provided by the Architect, is also shown on the logs. It must be recognized that the elevations shown are approximate and actual elevations may vary. A key to the terms and symbols used on the logs is presented as Plate 41. A summary of the subsurface exploration program is provided below.

Table 1: Summary of Subsurface Exploration Program

Boring No.	Approximate Surface Elevation	Depth, ft	Feature	Note
1	280	21	School	Auger refusal at 21 ft
2	275	20	School	
3	273	25	School	
4	276	15	School	
5			School	Not drilled – limited access
6	282	21	School	Auger refusal at 21 ft
7	274	22	School	Auger refusal at 22 ft
8	272	25	School	
9	285	20	School	
10	280	20	School	
11	273	20	School	
12	286	19.5	School	Auger refusal at 19 ft
13	277	25	School	
14	273	25	School	
15	267	20	Bleachers, outdoor track	Auger refusal at 20 ft
15T	261	10	East side of track	
16	267	20	Bleachers, outdoor track	Auger refusal at 20 ft
16T	261	10	East side of track	
17	266	25	Bleachers, football stadium	
18	266	25	Bleachers, football stadium	
19	261	25	Bleachers, football stadium	
20	267	25	Field House	
21	266	25	Field House	
22	265	25	Future Multi-Purpose Facility	
23	263	25	Future Field House	
24	268	5.5	Entry drive - Carnahan	
25	275	5.5	Entry Road	
26	285	3.5	West Parking - School	Auger refusal at 3.5 ft in sandstone
27	286	5	West Parking - School	
28	294	15	NW Corner - retaining wall	
29	305	15	NW Corner - retaining wall	Site was graded ±6 ft below existing grade for new road. Ground elevation estimated.
30	284	15	NW Tennis Court	

Boring No.	Approximate Surface Elevation	Depth, ft	Feature	Note
31	282	15	NW Corner- retaining wall	Site was graded ±3 ft below existing grade for new road. Ground elevation estimated.
32	269	5	Parking - east side of school	
33	267	5.5	Parking - east side of school	
34	264	5.5	Parking - east side of school	
35	262	5.5	South of practice field	
36	263	5.5	South of practice field	
37	261	5.5	Entry drive - west of softball field	

The borings were drilled with truck-mounted Mobile B-53 and SIMCO 2400 rotary-drilling rigs using dry-auger drilling techniques. Samples were generally obtained by driving a 2-inch diameter split-barrel sampler. The penetration values (N-values) presented in the "Blows-Per Ft" column on the boring logs represent the number of blows of a 140-lb safety hammer dropped 30 inches required to drive the split-barrel sampler the final 12 inches, or portion thereof, of an 18-inch drive, in accordance with Standard Penetration Test (SPT) procedures. Where rock hardness precluded split-spoon recovery, cuttings were obtained for use in visual classification.

All samples were extruded or otherwise removed from samplers in the field. Samples were visually classified and placed in appropriate containers to prevent moisture loss and disturbance during transfer to our laboratory for further examination and testing.

The borings were advanced using dry-auger procedures to facilitate evaluation of shallow groundwater conditions. Observations regarding groundwater are noted in the lower-right portion of each log and are discussed in subsequent sections of this report.

In addition, test pits excavated at the site in 2007 for a preliminary geotechnical study at the project site are included in Appendix A. The approximate test pit locations are also shown on Plate 2.

LABORATORY TESTING

To evaluate pertinent physical and engineering characteristics of the on-site soils, laboratory tests were performed on selected representative soil and rock samples. To develop a water content profile for each boring, 189 natural water content determinations were performed. The results of

these tests are plotted on the logs as solid circles, in accordance with the scale and symbols shown in the legend located in the upper-right corner.

To verify field classification and to evaluate soil plasticity, 33 liquid and plastic limit (Atterberg limits) determinations and 27 sieve analyses were performed on selected representative samples. The Atterberg limits are plotted on the logs as pluses connected with a dashed line using the water content scale. The percent of soil passing the No. 200 Sieve is noted in the "- No. 200 %" column on the appropriate log forms. Classification test results, as well as soil classification by the Unified Soil Classification System, are summarized in Appendix B. Classification test results developed from the test pits performed for the feasibility study are also provided in Appendix B.

SITE and SUBSURFACE CONDITIONS

Site Conditions

The project site consists of a 92-acre tract located northeast of the intersection of Carnahan Drive and Louis Nelson Drive in Maumelle, Arkansas. At the time of the field studies, the site was vacant and undeveloped. It was moderately to heavily wooded with numerous large trees. Some prior clearing had been performed along the northwest side of the site and in some areas to the west along the entry drive. In addition, some narrow clearings had been cut from east to west for surveying purposes. However, many of these clearings have since been repopulated with thick growth. The site terrain is undulating and generally falls to the southeast, with some localized low-lying areas. A draw-like feature extends east-west through the center of the planned campus building. Surface drainage of the site varies from poor in the low-lying areas to good on the higher terrain.

Site Geology

The site locale is located in the mapped exposure of the Pennsylvanian Period Jackfork Sandstone Formation. Shale is predominant in the Jackfork, with a variable content of fine- to coarse-grained sandstone. The shale is typically argillaceous, though some carbonaceous shale is present. The shale and sandstone units are typically moderately dipping to steep and quartz veins and inclusions are relatively common. The Jackfork is conformable on the Stanley Shale and is reported to have a thickness varying from 3500 to 6000 ft.

Seismic Conditions

The Pulaski County, Arkansas site is located in Seismic Zone 1, i.e., the area of least anticipated seismic damage. Based on the average soil and rock conditions revealed by the borings, the anticipated finish floor elevation of El 274, and our knowledge of the site geology, a Seismic Site Class B (rock profile) is considered applicable to the site in accordance with IBC 2000 and 2006 criteria. The liquefaction potential is considered negligible for the silty clay overburden soils and weathered shale encountered within the exploration depths of the borings and test pits.

Subsurface Conditions

Locally, some on-site fill is evident on the ground surface (see Borings 20, 21, and 25). Additionally, a large soil stockpile was present on the northeast side of the planned building location, in the vicinity of the Boring 5 plan location. This stockpile was on-site soil accumulated during clearing activity performed to gain access to the site as well as the initial clearing performed to construct the perimeter roads on the west and northwest. The results of the borings and test pits indicate the on-site fill is limited in extent and localized.

Based on the results of the borings and the test pits from the prior study, the subsurface conditions may be generalized into five (5) primary strata as follows.

Stratum I: The surface soils typically consist of soft to very stiff tan to brown silty clay (CL) to clay (CH) extending to depths of 2 to 4 ft below present grade. Some rootlets and organic matter are typically present within the upper portions of this stratum. The silty clay and clay were seasonally dry at shallow depths in September 2008 and exhibited moderate to high *apparent* shear strength. When saturated, some strength loss is to be expected for these soils.

Stratum II: Firm to very stiff tan and reddish brown to tan and gray silty clay (CL) to clay (CH) is typically below the surface soils and extends to 2 to 5.5 feet below existing grade. The upper soils are locally weak and shear strength typically increases with depth and compressibility decreases. Some shale and sandstone fragments are locally present at depth. The silty clay and clay below 2- to 4-ft depth typically exhibit moderate shear strength and low compressibility. The clay is of moderate to high plasticity, with some potential for shrink-swell activity.

Stratum III: Stiff to very stiff reddish tan, tan and gray clay (CH) with ferrous staining is typically below the Stratum II silty clay and clay and extends to 5.5- to 9-ft depth. Some shale fragments are present at depth. This stratum represents residual soil formed from weathering of the basal shale stratum. The clay is locally blocky with slickensides and exhibits high plasticity. It has a moderate shrink-swell potential at present soil water content levels.

Stratum IV: The basal stratum encountered in the borings and test pits consists of very soft to soft gray, reddish brown, tan, purple and dark gray highly to

moderately weathered shale. The weathered shale is found at 3- to 15-ft depth. In the main building area, the depth to shale varies from 3 to 9 feet below existing grade (El 269± to El 283±), with the shallower depths encountered on the east side of the building site. The weathered shale exhibits, moderate to high shear strength, low compressibility, and low to moderate plasticity. Competence of the weathered shale increases with depth.

Stratum V: A discontinuous stratum of soft brown weathered fine-grained sandstone is locally present (see Borings 15, 16, 26, and 32). The weathered sandstone is strong and well-cemented.

Groundwater Conditions

Groundwater was not encountered in the borings during the recent study (August and September 2008) or in the test pits excavated for the September 2007 study. However, some perched groundwater could be present within the near-surface soils and fractured, weathered rock zones, particularly following precipitation and in low-lying areas and downgradient of higher terrain. Seasonal seeps and springs could also be present. Water levels will vary with seasonal precipitation, surface runoff and infiltration, and stream levels in nearby waterways.

Significant Conditions

The site and subsurface conditions considered significant to design and construction of the new school campus are:

a) The thickly wooded site with a relatively deep organic zone;

b) The undulating site terrain with some low-lying areas and the variable surface drainage conditions;

c) The localized weak and unstable surface soils extending to 2- to 4-ft depth;

d) The predominately moderate shear strength of the near-surface silty clay and clay (Strata II and III) below about 2- to 4-ft depth;

e) The localized zones of moderately to highly plastic clay (Stratum II) and the predominant highly-plastic clay at depth (Stratum III)

f) The presence of competent weathered shale (Stratum IV) at 3 to 9 feet below existing grade (El 269±to El 283±), that is suitable for the support of foundation loads;

g) The localized presence of well-cemented sandstone (Stratum V) that could be difficult to excavate; and

h) The apparent absence of shallow groundwater in the borings in August and September 2008 and the test pits excavated in September 2007, with the potential for variations in groundwater levels and amounts as well as seasonal seeps and springs.

The relationship of these factors to design and construction of the proposed school facility has been considered in developing the conclusions and recommendations discussed in the following sections of this report.

ANALYSES and RECOMMENDATIONS

Foundations

Foundations for the new school campus must satisfy two (2) basic and independent design criteria. First, the maximum bearing pressure transmitted to the bearing strata should not exceed the allowable bearing pressure based on an adequate factor of safety with respect to shear strength. Second, foundation movements resulting from consolidation, shrinking, or swelling of the supporting soils should be within tolerable limits for the structures. Construction factors such as installation of foundation units, excavation procedures, and surface and groundwater conditions must also be considered. Recommendations for the individual structures are summarized below.

School Building (Borings 1 through 14)

Foundations. We understand the finish floor for the school building will be El 274. Based on the results of the borings and the planned grades, we recommend the structural loads of the school building be supported on shallow footings founded in the very soft to soft reddish tan, tan and gray moderately weathered shale (Stratum IV).

Foundation loads should be supported on continuous or individual footings founded with a minimum of 1 ft of penetration into the very soft to soft weathered shale (Stratum IV) at a minimum depth of 2 ft below final grade. Footings so founded may be sized based on maximum net allowable bearing pressures of 4500 and 5500 lbs per sq ft for continuous and individual footings, respectively. The recommended allowable bearing pressures include a minimum factor of safety of 2.5 with respect to competence of the weathered shale. The recommended allowable bearing pressures may be increased by 33 percent for short-term transient and seismic loads. Post-construction settlement of foundations supported as recommended should be less than 1.0 inch.

Based on the results of the borings, the depth to weathered shale is deeper on the east side of the building area (see Borings 8, 11 and 14). The weathered shale bearing stratum could be as deep as El 268, i.e. 6 feet below plan finish floor, or more. In lieu of relatively deep footings, the footing excavation may be undercut to the weathered shale bearing stratum and backfilled with flowable fill (minimum compressive strength of 500 psi) or concrete to the plan footing bottom elevation.

A minimum footing depth of 2 ft is recommended. Continuous footings should have a minimum width of 18 inches and individual footings a minimum dimension of 24 inches. All footing excavations and footing undercuts should be observed by the Geotechnical Engineer to verify suitable bearing.

Floor Slabs. Slab-on-grade or slab-on-fill construction is recommended for the school building floor slabs. We recommend the floor slabs be supported on a 4- to 6-inch-thick clean crushed stone or gravel layer placed on a properly prepared subgrade. The granular layer should be densified with vibrating equipment prior to floor slab construction. Impervious sheeting should be placed between the slab and granular course to act as a vapor retarder.

As noted previously, the on-site clay has moderate to high plasticity and is potentially expansive. Given the plan finish floor elevation in the building area, it is expected that a majority of the clay will be removed during site grading. Nonetheless, where highly-plastic clay (i.e., plasticity index (PI) greater than 25) is encountered during grading, these should be undercut at least 3 feet below plan subgrade elevation and backfilled with low-plasticity, select fill.

Field House and Multi-Purpose Building (Borings 20, 21, 22 and 23)

Foundations. Specific information regarding site grading for the field house or houses and the multi-purpose facility has not been developed as of this writing. However, due to the low-lying terrain of this area, it is expected that site grades will be raised several feet. Of significant consequence to design of foundation systems at this site is the presence of highly-plastic clay at relative shallow depth. Based on the results of the borings and in anticipation of raising grades, a foundation system of shallow footings is recommended. All parties must be aware of the potential for some shrink-swell activity. If the structures cannot tolerate some movement, a deep foundation system should be considered. In order to reduce the swell potential, we recommend that all footings be underlain by low-plasticity soils. This may be accomplished by undercutting, raising grades or a combination of both. For preliminary design, we recommend that a minimum of 4 ft of select, low-plasticity fill be assumed below footings, However, this must be reviewed when site grading information has been developed. Where footings are undercut, the undercut width should be at least two (2) times the footing width.

Continuous and individual footings underlain by at least 4 ft of select fill may be sized based on a maximum net allowable soil bearing pressure of 1500 and 2000 lbs per sq ft for continuous and individual footings, respectively. The recommended bearing values are based on a

minimum factor of safety of 2.5 with respect to the anticipated shear strength of properly compacted fill. The allowable bearing values may be increased by 33 percent for short-term transient and seismic loads. Post-construction settlement of foundations supported in select fill as recommended and underlain my less than about 6 ft of compacted fill should be less than 1.0 inch. The settlement potential of shallow footings supported in deeper fill must be reviewed based on final loading conditions, structure type, and final grading plans.

Footings should be founded at 1.5 feet below final grade to provide adequate frost protection. Footings should be founded as shallow as possible to minimize the effects of potential swell activity. Interior footings or thickened sections may be supported in suitable bearing strata at shallower depth, consistent with structural requirements for thickness. Continuous footings should have a minimum width of 18 inches and individual footings a minimum dimension of 24 inches.

Floor Slabs. Slab-on-fill construction is appropriate for the building floor slabs. Unstable on-site soils should be undercut as required to develop suitable subgrade support for floor slabs, as well as providing a suitable thickness of low-plasticity soils to reduce the potential for shrink-swell activity. Specific requirements to reduce the swell potential must be reviewed when final grading plans are available. However, we recommend that preliminary design be based on a minimum 5 ft of low-plasticity select material below floor slabs. We also recommend the floor slabs be supported on a 4- to 6-in.-thick clean crushed stone or gravel layer placed on a properly prepared subgrade. Impervious sheeting should be placed between the slabs and granular course to act as a vapor retarder.

Concession Stands (Borings 17, 18 and 19)

Concession stands will be constructed beneath the bleachers of the football stadium. Based on preliminary drawings, the concession stands will be single-story with masonry block walls. Based on the results of the borings and test pits, potentially expansive clay is present at shallow depths in these areas. Site grading information is not available at this time, so the specific swell potential due to of the on-site clay cannot be quantified.

The light foundation loads of the concession stands can be supported on shallow footings. However, all parties must be aware that there is some potential for shallow foundation systems. If the structures cannot tolerate some movement, a deep foundation system should be considered.

Shallow foundations comprised of continuous or individual footings should be founded in low-plasticity select fill. To reduce the potential for heave due to the on-site clay, we recommend

that footings be underlain by at least 4 ft of low-plasticity select fill. The recommended thickness of low-plasticity select fill below footings may be attained by raising grades, undercutting or a combination of both. Where footings are undercut, the undercut width should be at least two (2) times the footing width.

Footings underlain by at least 4 ft of low-plasticity select fill may be sized based on a maximum net allowable soil bearing pressure of 1500 lbs per sq ft. The allowable bearing pressure includes a minimum factor of safety of 2.5 with respect to anticipated shear strength of compacted select fill. The recommended allowable bearing pressure may be increased by 33 percent for short-term transient and seismic loads. Post-construction settlement of foundations supported as recommended and underlain by less than about 6 ft of compacted fill should be less than 1.0 inch. The potential heave of footings underlain by at least 4 ft of low-plasticity select fill is expected to be less than 1.0 inch.

Footings should be founded at a minimum depth of 1.5 feet below final grade to provide adequate frost protection. Interior footings or thickened sections can be founded in compacted fill at shallower depths consistent with structural requirements for thickness. Footings should be founded as shallow as possible to minimize the effects of potential swell activity. Continuous footings should have a minimum width of 18 inches and individual footings a minimum dimension of 24 inches.

If a slab-on-grade is used for the concession stands, we recommend that it also be supported on a minimum of 5 ft of low-plasticity select fill. The low-plasticity select fill pad should extend at least 5 ft outside the building limits to the extent possible. The heave potential of the floor slab is estimated to be on the order of 1 inch when underlain by at least 5 ft of low-plasticity fill.

Fill and backfill used to replace the on-site highly-plastic clay in undercuts or to raise grades should comply with the recommendations in the Site Grading section of this report. In addition, it is recommended that at-grade slabs be supported on a 4- to 6-in.-thick clean crushed stone or gravel layer placed on a properly prepared subgrade. Impervious sheeting should be placed between the slab and granular course to act as a vapor retarder.

As an alternative to shallow footings, foundations for the concession stands may consist of stiffened-and-strengthened or post-tensioned turned-down slab systems. In light of the presence of expansive clay at shallow depth, we recommend that a turned down slab system be underlain by a minimum 4 ft of low-plasticity select fill. The low-plasticity select fill pad should extend at least 8

ft outside the building limits. The recommended thickness of low-plasticity select fill below the at-grade slab system may be achieved by raising grades, undercutting or a combination of both.

Perimeter beams and interior foundation elements of a turned-down slab should be kept as shallow as practical, to take advantage of the low-plasticity fill pad. The turned-down edges of the slab-on-ground system should extend a minimum of 18 in. below lowest exterior grade for frost protection. A minimum slab edge width of 15 in. is recommended. Interior foundation elements may be supported at shallower depths, as dictated by structural requirements for thickness. We also recommend that the concession stands be constructed independent of the bleachers in order to allow for some movement.

Based on preliminary calculations using empirical methods, the potential heave value for an at-grade slab-on-ground is estimated to be on the order 1 inch. Differential heave may be estimated as about one-half to two-thirds of the total value. These values should be re-evaluated when site grading information is available.

Shrink-Swell Potential

Due to the presence of highly-plastic clay, it is considered important that design includes passive measures to reduce the potential for soil water content changes and post-construction shrink-swell activity. To help prevent seasonal changes in soil moisture content, and reduce the potential for accompanying movement, the following are recommended:

1) All trees in the building areas should be removed as early in the construction sequence as possible.
2) The ground surface should slope away from building edges to prevent ponding water around the perimeter.
3) Surface and roof runoff and condensate water should be directed away from the buildings.
4) Deep-rooted shrubbery or trees, which can withdraw soil water, should not be located adjacent to the buildings.
5) Frequent control joints should be incorporated in masonry walls and concrete flatwork.

Cantilevered Retaining Walls

Grades in the northwest corner of the project site will be transitioned with retaining walls. The final grades at the wall base are planned at about El 278, with cuts up to about 28 ft being considered. We understand that consideration is being given to conventional cantilevered retaining

walls to transition these grades. Cantilevered retaining walls will be subject to some deflection at the top and will be acted on by active earth pressures.

It is expected the cantilevered retaining walls will be supported on continuous footings founded in the weathered shale or shale. Footings for retaining walls founded in weathered shale may be designed utilizing the same allowable bearing pressures and criteria as recommended for the as those developed for the school building. Resistance to sliding may be evaluated using an ultimate friction factor (tan δ) of 0.45 for concrete on weathered shale or shale. That portion of the wall footings extending greater than 2 ft below final grade may also be considered to utilize an ultimate passive pressure of 1500 lbs per sq ft of area in hard contact with the intact and competent weathered shale or shale. An appropriate factor of safety must be applied to a sliding analysis.

Equivalent fluid pressure (EFP) values have been developed based on cantilevered retaining walls. Lateral earth pressures will also vary with soil backfill type, degree of backfill compaction, and drainage conditions. It is expected that wall backfill will consist of either free-draining crushed stone, the on-site low-plasticity silty clay/shale fragment blend, or imported select fill. Moderately to highly plastic clay soils should not be used behind walls as backfill.

Clean crushed stone is recommended for free-draining backfill or a drainage zone when utilizing soil backfill. To minimize lateral earth pressure, the free-draining stone should be placed in a zone extending on a 1-horizontal to 1-vertical (1H:1V) configuration projected from the heel of the wall footing to the ground surface. Where cuts for walls are excavated in competent rock, the stone backfill zone may be limited to a maximum width of 6 ft. Where walls are backfilled with low plasticity select fill, the zone behind walls extending at least 24 in. laterally should be backfilled with clean, free-draining crushed stone encapsulated in filter fabric.

To allow drainage of infiltrated water, a perimeter drain should be provided within the granular zone behind retaining walls. Water should be discharged from the backfill by a positive drainage system of regularly-spaced, functioning weep holes. The stone should be fully isolated from the native soil and shale by a suitable geotextile filter fabric. A fabric such as Mirafi 140N or an approved equal is recommended.

Recommended equivalent fluid pressures are tabulated below for walls backfilled with either free-draining, clean, crushed stone in a 1H:1V zone or a minimum 6-ft-wide zone in competent rock and low-plasticity select backfill.

Table 2: Lateral Earth Pressures for Cantilevered Walls

Earth Pressure Condition	Free-draining crushed stone backfill, Equivalent Fluid Pressure, lbs per sq ft per ft depth	Low-plasticity select fill, Equivalent Fluid Pressure, lbs per sq ft per ft depth
Active (cantilevered), drained	35	65
Active (cantilevered), undrained	75	95

Undrained conditions assume that the wall will be subject to full hydrostatic pressure. Drained conditions assume positive and continuous drainage of infiltrated water from the backfill. Surcharge loads on retaining walls may be evaluated using earth pressure coefficients of 0.3 and 0.5 for clean stone and low-plasticity select backfill, respectively.

Clean granular backfill should be placed in maximum 12-in.-thick lifts and densified by vibrating equipment or other suitable means. Low-plasticity select backfill should be compacted to a minimum of 95 percent of the maximum dry density as determined by Standard Proctor (ASTM D-698) procedures. The top 12 to 18 inches of wall backfill should consist of low-permeability clayey soils compacted to the Standard Proctor value recommended above. This top layer should limit infiltration of surface water into backfill. The on-site silty clay and clay are suitable for this use. Maximum particle size in wall backfill should be limited to about 1.5 inches. Compaction within 5 ft of walls should be achieved with hand compaction equipment. Care should be taken when compacting as overcompaction may cause damage to walls.

Given the height of the cuts as planned, other retaining wall systems may be considered. This may include mechanically stabilized earth (MSE) retaining walls (i.e., segmental walls), tied-back wall systems, or other options. We are available to assist with review of other alternatives if desired.

Loading Dock Walls

Some loading dock walls will be constructed on the north side of the school building. It is expected that dock walls will be fixed at the top by framing and floor slabs, restricting rotation about the wall base. Consequently, these walls will be acted upon by at-rest lateral earth pressures.

The dock walls may be supported on continuous footings as previously recommended for the school building. Resistance to sliding may be evaluated using an ultimate friction factor (tan δ) of 0.45 for concrete on the weathered shale bearing stratum. That portion of the wall footings extending greater than 2 ft below final grade may also be considered to utilize an ultimate passive pressure of 1000 lbs per sq ft of area in hard contact with the stiff to very stiff silty clay and clay overburden soils and the weathered shale. An appropriate factor of safety must be applied to a sliding analysis.

Loading dock walls may be designed with respect to an equivalent fluid pressure value of 105 lbs per sq ft per ft depth. This value assumes a fixed wall (at-rest earth pressure condition), no drainage system (full hydrostatic pressure), and use of low-plasticity select fill for wall backfill. Wall surcharge loads must also be considered in design. A lateral earth pressure coefficient value of 0.65 is considered suitable for consideration of lateral pressures due to surcharge loads.

Pavements

The project will include extensive paved parking areas and drives. It is anticipated that the drives will be subject to occasional delivery truck and school bus traffic. Parking areas will be used primarily by automobiles and light utility vehicles. Bus traffic may be more frequent during dropoff and pickup hours and during campus events.

The pavement subgrade is expected to consist of a properly prepared subgrade of the on-site silty clay, clay or engineered fill. Some undercutting could be required for subgrade preparation, particularly in low-lying areas. Fair to good support for pavement structures is anticipated from select fill in conjunction with positive surface drainage.

Recommended alternatives for pavement sections are summarized below. Should traffic volumes or loads exceed the assumptions outlined, or if subgrade conditions vary, the recommended pavement sections should be re-evaluated.

Drives

- 4 in. Asphalt Concrete Hot Mix Surface Course (1996 AHTD Standard Specifications Section 407, Type 2)
- 10 in. Crushed Stone Base (1996 AHTD Standard Specifications Section 303, Class 7)

or:

6 in. Portland Cement Concrete ($f_c' = 4000$ psi @ 28 days)
4 in. Crushed Stone Base (1996 AHTD Standard Specifications Section 303, Class 7)

Parking

2 in. Asphalt Concrete Hot Mix Surface Course (1996 AHTD Standard Specifications Section 407, Type 2)
7 in. Crushed Stone Base (1996 AHTD Standard Specifications Section 303, Class 7)

or:

5 in. Portland Cement Concrete ($f_c' = 4000$ psi @ 28 days)
4 in. Crushed Stone Base (1996 AHTD Standard Specifications Section 303, Class 7)

Prior to pavement construction or placement of fill, the subgrade should be proof-rolled and visually examined, to detect soft or weak areas. Weak, soft or wet areas should be excavated, processed, and re-compacted or replaced with select fill, as recommended in the Site Grading section of this report. Localized undercut could be required for subgrade preparation, particularly during wet seasons. Where highly-plastic clay is encountered at the subgrade elevation, we recommend it be undercut a minimum of 12 inches below plan subgrade and replaced with low-plasticity select fill.

We recommend that pavements in service/trash dumpster areas are a minimum 6 inches of Portland cement concrete underlain by 4 inches of compacted aggregate base. The concrete area should be large enough to incorporate both the dumpster and the wheels of a service truck. The route to the trash dumpsters should utilize the recommended heavy-duty drive pavement section.

Subgrade preparation recommendations are provided in the Site Grading section of this report. We recommend that all subgrade be proof-rolled immediately prior to placing base course. Aggregate base should be compacted to a minimum of 98 percent of the AASHTO T-180 maximum dry density as per AHTD criteria.

The importance of positive surface drainage for acceptable pavement performance cannot be overemphasized. Grades should direct water off paved areas and ditches or storm drains should be used to develop positive flow away from pavement edges. Periodic maintenance of pavements should include sealing of all joints and cracks to prevent surface water infiltration. A maximum joint spacing of 10 to 12 ft is recommended for concrete paving.

Site Grading

Some limited site grading has previously been performed along the west side of the site. However, a majority of the site is still moderately to heavily wooded. Site preparation is expected to begin with clearing and grubbing and stripping of the organics. A stripping depth on the order of 12 to 18 inches is expected. However, in areas where larger trees with deep root structures are present, stripping depths of 24 in. or more could be warranted. All stump holes should be backfilled with select fill.

Following stripping and any cut, and prior to fill placement, the subgrade should be proof-rolled with a pneumatic tired-roller, loaded dump truck, or similar heavy equipment. Soft or weak areas identified during the proof-rolling process should be undercut and replaced with select fill or processed and recompacted, whichever is appropriate. Depending on seasonal site conditions and final grading plans, undercuts of 2 to 4 ft, more or less, could be warranted. In addition, some undercutting of highly-plastic clay could be required for footings, floor slabs, and pavements.

The surface soils contain numerous organics and are not suited for use as fill. The on-site silty clay and weathered shale with a maximum PI of 20 are suitable for use as fill and backfill in building areas. Because of the variability of the on-site silty clay, clay and weathered shale, some segregation of the highly-plastic soils from suitable low-plasticity soils will be required where used for fill. The on-site soils with a PI greater than 20 may be used in landscaped areas or athletic fields and up to within 12 inches of plan subgrade in pavement areas. The top 12 inches of pavement subgrade should have a PI less than 20 inches. Undercut spoil and on-site soils contaminated with debris or organics will not be suitable for fill or backfill use in building or pavement areas. Water content adjustment will be required for use of the on-site soils for fill and backfill.

Imported borrow for fill or backfill should consist of an approved silty clay/shale fragment blend, select clayey sand (SC), sandy clay (CL), or clayey gravel (GC) having a maximum plasticity index (PI) of 20, or an alternate approved by the Geotechnical Engineer. For backfilling undercuts of highly-plastic clay, select low-plasticity fill should have a PI between 5 and 20. All fill and backfill should be free of organic materials. All fill should be free of organics and durable rock fragments in excess of about 3-inch dimension. The top 18 in. of fills should have a maximum particle size limited to about 1.5 inches. All fill and backfill should be approved by the Geotechnical Engineer.

With the exception of retaining wall backfill, fill, backfill and recompacted soils should be compacted to a minimum of 95 percent of the Modified Proctor (ASTM D-1557) maximum dry density. Low-plasticity soils (clayey sand and sandy clay) should be compacted within a water content range of 2 percent below to 3 percent above optimum. Shale fragment blends should be compacted at a water content of optimum to 3 percent above the optimum value.

Fill and backfill should be placed in horizontal, nominal 6- to 8-inch-thick loose lifts. Short vertical steps should be cut into existing slopes as needed to allow placing fill in horizontal lifts. Each lift of backfill and fill should be tested and approved prior to placing subsequent lifts.

CONSTRUCTION CONSIDERATIONS

Site Drainage

Positive surface drainage should be established at the start of construction, should be maintained during the work, and be incorporated into final site grades. Groundwater was not encountered during the field studies (August and September 2008 and September 2007). However, shallow excavations could encounter seepage of perched groundwater. In addition, seasonal seeps or springs could be encountered during the work, particularly in rock cuts. Seepage into shallow excavations will probably be limited in extent and can likely be controlled by ditching or sump-and-pump methods. Foundation or subgrade soils that become saturated by ponding water or runoff should be excavated to undisturbed soils.

All loose and organic soils should be excavated from existing drainage features that will be filled. We recommend that drainage blankets with positive discharge to daylight be constructed in drainage features prior to filling. In addition, where surface seeps or springs are encountered during site grading, we recommend the seepage be directed via French drains or blanket drains to positive discharge at daylight or to storm drainage lines.

French drains and blanket drains should consist of clean filter stone ("C"-ballast) fully encapsulated by a filter fabric. A fabric such as Mirafi 140N or an approved equal is recommended. The use of gravel or crushed stone bedding encapsulated in filter fabric for bedding of storm drain lines can be considered to provide economical interception of potential downgradient seepage. Granular pipe bedding should be vented into storm drainage structures or daylighted for positive discharge.

Foundations

All foundation excavations and undercuts should be observed by the Geotechnical Engineer to verify suitable bearing and adequate undercut. Concrete should be placed in footing excavations expeditiously following final clean up and approval to limit changes in foundation conditions. Where footing excavations will be left open for extended periods, a thin layer of seal concrete should be used to protect the bearing stratum. Saturated or disturbed foundation soils should be excavated to suitable soils.

Temporary Excavations

Mass excavations are anticipated for some project facets. All excavations must comply with Local, State and Federal requirements for worker safety. Based on the results of the borings and site observations, the on-site soil and weathered rock typically classify as Type A or B by OSHA criteria. Consequently, temporary open-cut excavations can probably be made on 1-horizontal to 1-vertical (1H:1V) configuration. Where seepage is a problem or where steeply bedded, highly-fractured or weathered rock zones are encountered, side slopes will have to flattened or benched for stability. Special attention should be given during excavation to avoid undermining shale bedding planes. Temporary cuts in steeply-bedded weathered shale, shale, or sandstone may require configurations of 1-½-horizontal to 1-vertical (1.5H:1V) or flatter for stability. Temporary excavations that will be open for extended periods should be flattened to enhance long-term stability.

Rock Excavation

Shallow cuts in the soft weathered shale and the fractured sandstone can typically be performed with conventional heavy-duty excavation equipment. Deeper cuts extending to more resistant portions of the weathered shale may require ripping. Excavations could encounter hard sandstone, more resistant shale or interbedded shale and sandstone that require rock excavation methods. Rock excavation methods such as hoerams, jackhammers, or similar methods may be required to advance excavations into the more competent rock units. Drilling excavations for elevator shafts may require the use of a heavy-duty rock auger equipped with rock teeth.

The potential for rock excavation should be anticipated. Contract documents should include a unit price for removal and disposal of materials and obstructions that can not be excavated with conventional heavy-duty excavating equipment. The conventional heavy-duty excavating equipment may be defined as a Caterpillar D-8 bulldozer with single tooth ripper, a Caterpillar

330B track excavator equipped with rock teeth, or equipment of similar power and capability. Rock excavation volumes should be determined based on in-place measurements via cross sectioning. If excavation is to be unclassified, the Contractor must be responsible for assessing rock excavation requirements.

CLOSING

The Architect or a designated representative should monitor site preparation, grading work, and foundation and pavement construction. Subsurface conditions significantly at variance with those encountered in the borings and test pits should be brought to the attention of the Geotechnical Engineer. The conclusions and recommendations of this report should then be reviewed in light of the new information.

The following illustrations are attached and complete this report:

Plate 1	Site Vicinity
Plate 2	Plan of Borings
Plates 3 through 40	Boring Logs
Plate 41	Key to Terms and Symbols
Appendix A	Test Pit Logs - 2007 Feasibility Study
Appendix B	Summary of Classification Test Results

* * * * *

We appreciate the opportunity to be of service to you on this project. Should you have any questions regarding this information, or if we may be of assistance during final design and construction, please call on us.

Sincerely,

GRUBBS, HOSKYN,
BARTON & WYATT, INC.

Joshua E. Lee, P.E.

Mark E. Wyatt, P.E.
Vice President, Engineering

STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 7791
MARK E. WYATT

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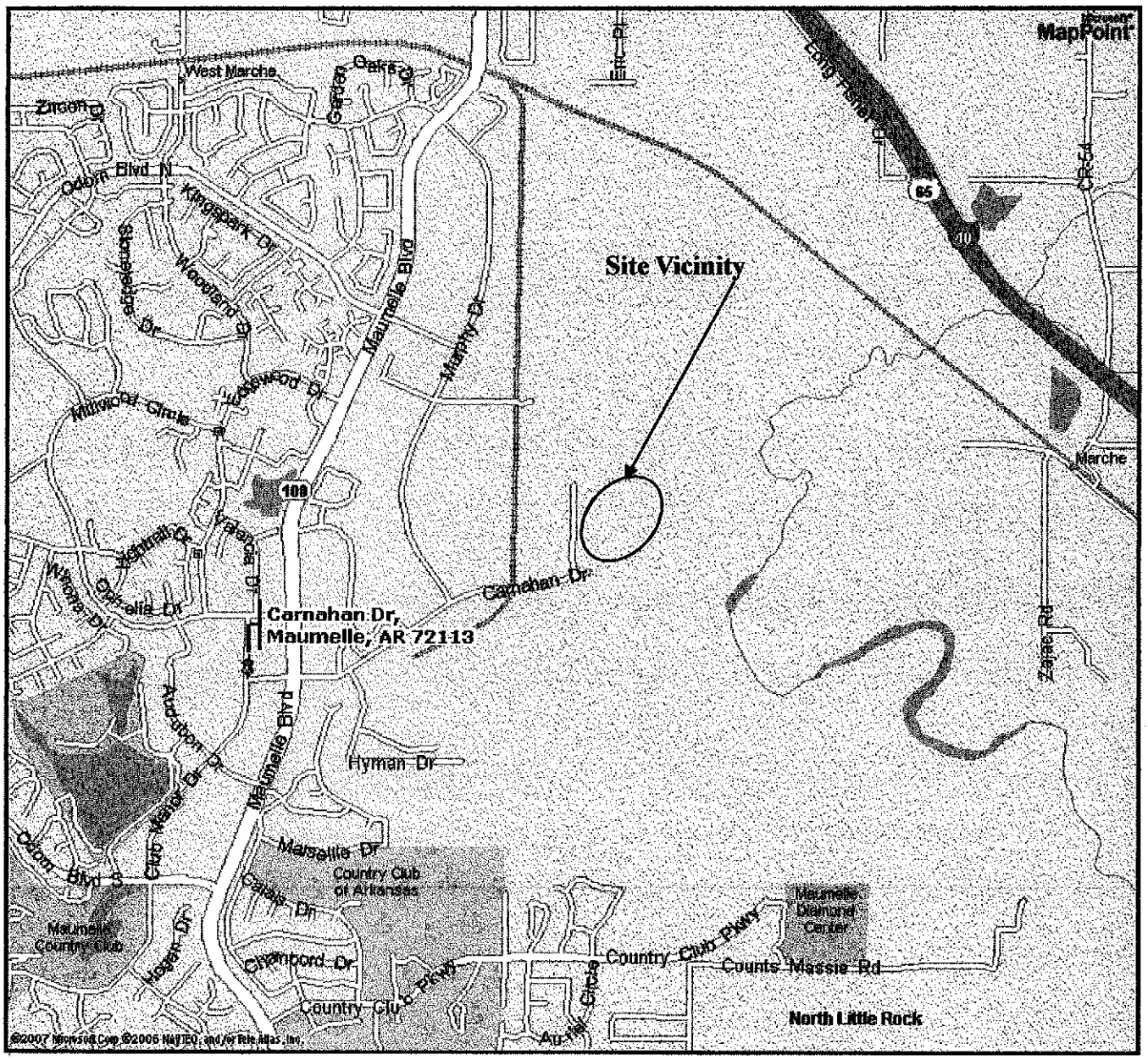
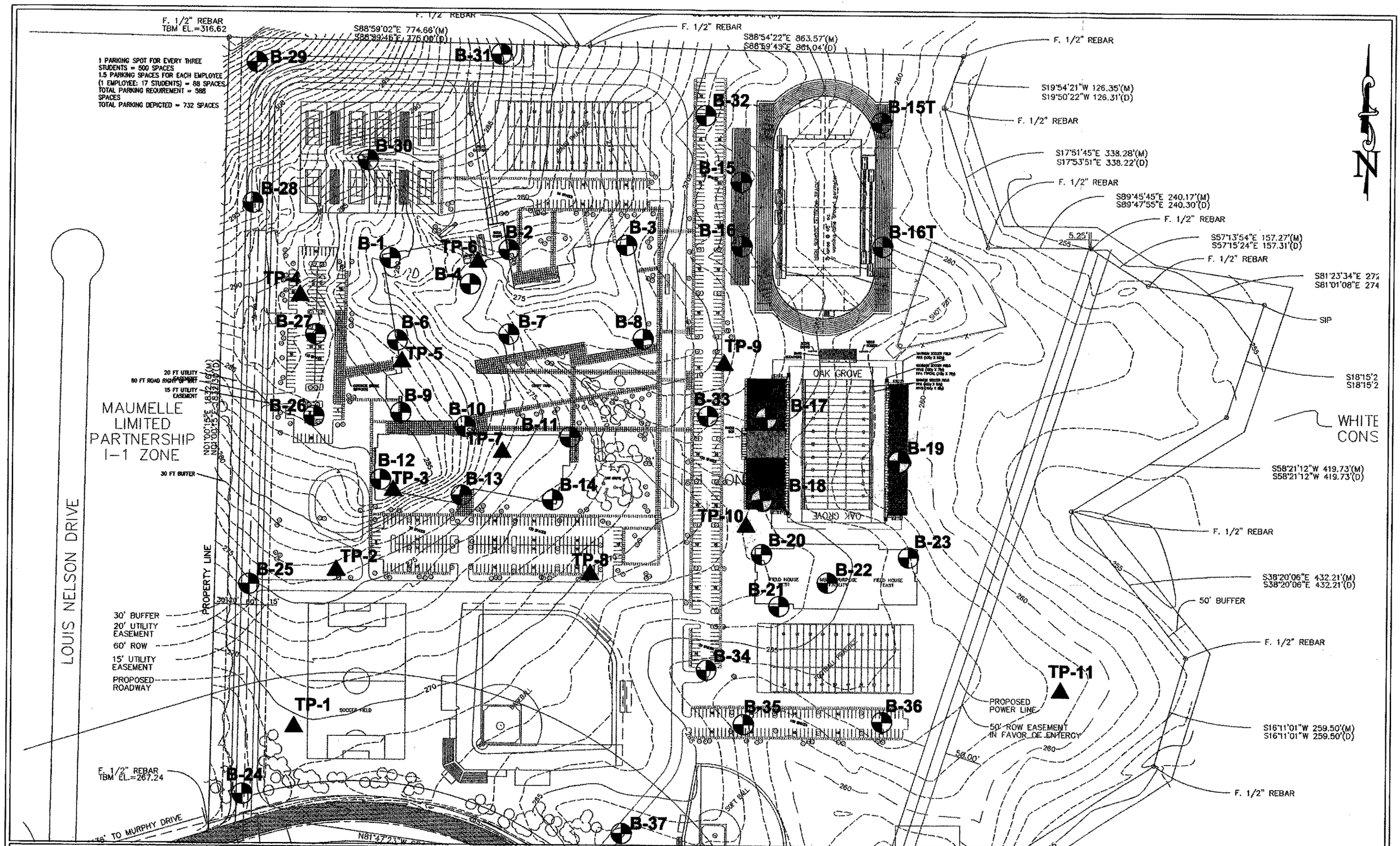
NORTH



Grubbs, Hoskyn, Barton & Wyatt, INC. CONSULTING ENGINEERS	**SITE VICINITY MAP** **Proposed Oak Grove High School** **Maumelle, Arkansas**	**Job No. 08-232** **Plate 1**



Note: Borings

Test Pits from 07-257 Study

SCALE: 1"=200'
100 ft 0 100 200 ft

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PLAN OF BORINGS
Proposed Oak Grove High School
Maumelle, Arkansas

Job No.: 08-232	Scale: As Shown
September 2008	Plate 2

08-232

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF BORING NO. 1

Proposed Oak Grove High School
Maumelle, Arkansas

TYPE: Auger

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 280±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Soft brown silty clay w/ferrous stains	6			86
			Soft tan silty clay w/ferrous stains and nodules				
			- stiff below 2.5 ft	11			
5			Very soft tan and gray moderately weathered shale w/ferrous staining	30			
			- soft below 6 ft	50/6"			
				50/7"			
10							
				50/4"			
15							
			Soft brown moderately weathered shale w/ferrous stains				
				50/1"			
20							
			- auger refusal at 21 ft				
25							

COMPLETION DEPTH: 21.0 ft
DATE: 9-8-08

DEPTH TO WATER IN BORING: Dry

DATE: 9/8/2008

LGBNEW 08-232.GPJ 10-21-08

08-232

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LOG OF BORING NO. 2

Proposed Oak Grove High School
Maumelle, Arkansas

TYPE: Auger

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 275±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Very stiff tan clay, dry - with some rootlets to 1 ft	43			91
			Very stiff tan and gray clay w/some ferrous stains and nodules, very dry	27			88
5			Very soft reddish brown, gray and tan moderately weathered shale w/ferrous staining	47			
				50			
			- soft below 8 ft	50/4"			
10							
			Soft to medium soft light gray moderately weathered shale w/ferrous staining	25/0"			
15							
				25/0"			
20							
25							

COMPLETION DEPTH: 20.0 ft
DATE: 8-28-08

DEPTH TO WATER IN BORING: Dry

DATE: 8/28/2008

LGBNEW 08-232.GPJ 10-21-08

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LOG OF BORING NO. 3

Proposed Oak Grove High School
Maumelle, Arkansas

TYPE: Auger

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 273±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Firm to stiff tan silty clay w/ferrous staining	10			88
			- firm below 2 ft	8			
5			Very stiff tan, reddish brown and gray clay w/shale fragments	41			87
				50/8"			
			Soft gray moderately weathered shale	50/4"			
10							
			- dark gray below 12 ft	50/4"			
15							
			Soft to medium soft light gray shale	25/0"			
20							
				25/0"			
25							

COMPLETION DEPTH: 25.0 ft
DATE: 9-9-08

DEPTH TO WATER IN BORING: Dry

DATE: 9/9/2008

LGBNEW 08-232.GPJ 10-21-08

08-232

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LOG OF BORING NO. 4

Proposed Oak Grove High School
Maumelle, Arkansas

TYPE: Auger

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 276±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Very stiff tan silty clay	34			
			- with sandstone fragments below 2 ft	50/8"			
5			Soft tan and gray moderately weathered shale w/ferrous stains	50/10"			
				50/6"			
				50/1"			
10			- soft to medium soft below 12 ft				
				25/0"			
15							
20							
25							

COMPLETION DEPTH: 15.0 ft
DATE: 8-29-08

DEPTH TO WATER IN BORING: Dry

DATE: 8/29/2008

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08-232

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LOG OF BORING NO. 6

Proposed Oak Grove High School
Maumelle, Arkansas

TYPE: Auger

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 282±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Firm brown silty clay	10			
			Firm to stiff light gray and tan clay w/ferrous stains	12			88
5			Soft gray and tan moderately weathered shale w/ferrous stains	50/9"			
				50/7"			
				50/7"			
10							
				50/3"			
15							
			- with a little tan and gray below 18 ft	50/2"			
20							
			- auger refusal at 21 ft				
25							

COMPLETION DEPTH: 21.0 ft
DATE: 9-8-08

DEPTH TO WATER IN BORING: Dry

DATE: 9/8/2008

LGBNEW 08-232.GPJ 10-21-08

08-232

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LOG OF BORING NO. 7

Proposed Oak Grove High School
Maumelle, Arkansas

TYPE: Auger

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 274±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT, WATER CONTENT, LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Firm tan silty clay	12			73
			Stiff reddish tan, bluish gray and tan silty clay w/shale fragments	22			57
			Soft brown and tan moderately weathered shale w/ferrous staining	50/10"			
5			- with dark gray and gray below 5.5 ft	50/7"			
			- sandstone layer at 8.5 ft	25/0"			
10			- soft to medium soft below 10 ft				
				25/0"			
15							
				25/0"			
20							
			- auger refusal at 22 ft				
25							

COMPLETION DEPTH: 22.0 ft
DATE: 9-9-08

DEPTH TO WATER IN BORING: Dry

DATE: 9/9/2008

LGBNEW 08-232.GPJ 10-22-08

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Consulting Engineers

LOG OF BORING NO. 8

Proposed Oak Grove High School
Maumelle, Arkansas

TYPE: Auger

LOCATION: See Plate 2

SURF. EL: 272±

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Firm tan silty clay	8			
			Very stiff reddish tan, bluish gray and tan silty clay w/shale fragments	24			
5			Soft tan and light gray moderately weathered shale w/ferrous staining	50/7"			
			- with numerous sandstone fragments 6.5 to 8 ft	50/5"			
				50/8"			
10							
				50/3"			
15							
			Soft to medium soft maroon, gray and tan moderately weathered shale	25/0"			
20							
				25/0"			
25							

COMPLETION DEPTH: 25.0 ft
DATE: 9-9-08

DEPTH TO WATER IN BORING: Dry

DATE: 9/9/2008

LGBNEW 08-232.GPJ 10-21-08

08-232

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF BORING NO. 9

Proposed Oak Grove High School
Maumelle, Arkansas

TYPE: Auger

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 285±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Stiff tan to brown silty clay w/ferrous staining and nodules and some sandstone fragments, dry	13			
			Stiff tan, reddish tan and brown silty clay w/some shale fragments	22			
5			- very stiff below 4 ft	50/11"			
			Soft tan and gray moderately weathered shale w/ferrous staining	50/6"			
				50/6"			
10			Soft brown and light gray moderately weathered shale w/ferrous staining				
				50/3"			
15							
				50/2"			
20							
25							

COMPLETION DEPTH: 20.0 ft
DATE: 8-27-08

DEPTH TO WATER IN BORING: Dry

DATE: 8/27/2008

LGBNEW 08-232.GPJ 10-21-08

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Consulting Engineers

LOG OF BORING NO. 10

Proposed Oak Grove High School
Maumelle, Arkansas

TYPE: Auger

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 280±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Soft tan silty clay w/ferrous staining and nodules, dry	4			
			- stiff below 2 ft	14			
5			Very stiff gray, tan with reddish brown silty clay w/shale fragments	26			
			Soft gray and tan moderately weathered shale w/ferrous stains	50/10"			
10				50/7"			
			- light gray and gray below 13 ft	50/5"			
15				25/0"			
20							
25							

COMPLETION DEPTH: 18.5 ft
DATE: 8-28-08

DEPTH TO WATER IN BORING: Dry

DATE: 8/28/2008

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Consulting Engineers

LOG OF BORING NO. 11

Proposed Oak Grove High School
Maumelle, Arkansas

TYPE: Auger

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 273±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Stiff brown and tan silty clay w/ferrous staining, dry	16			
			- very stiff below 2 ft	25			
5			Very stiff tan, reddish tan and gray silty clay w/shale fragments	33			
			Very soft tan with reddish brown moderately weathered shale w/ferrous stains - soft below 6 ft	50/10"			
				50/4"			
10							
				50/1"			
15			- soft to medium soft below 16 ft				
				25/0"			
20				25/0"			
25							

COMPLETION DEPTH: 20.0 ft
DATE: 8-28-08

DEPTH TO WATER IN BORING: Dry

DATE: 8/28/2008

LGBNEW 08-232.GPJ 10-22-08

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF BORING NO. 12

Proposed Oak Grove High School
Maumelle, Arkansas

TYPE: Auger

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 286±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Very stiff tan and reddish tan silty clay w/some sandstone fragments	28			
			Very soft tan, reddish tan and brown highly weathered shale w/ferrous staining	36			
			Soft light gray moderately weathered shale w/ferrous staining				
5				50/8"			
				50/4"			
				50/4"			
10							
				50/2"			
15			- soft to medium soft below 15 ft				
				25/0"			
20			- auger refusal at 19.5 ft				
25							

COMPLETION DEPTH: 19.5 ft
DATE: 8-27-08

DEPTH TO WATER IN BORING: Dry

DATE: 8/27/2008

LGBNEW 08-232.GPJ 10-21-08

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF BORING NO. 13

Proposed Oak Grove High School
Maumelle, Arkansas

TYPE: Auger

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 277±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Soft brown silty clay w/ferrous staining	4			
			Stiff gray, reddish tan and brown silty clay w/shale fragments and ferrous staining	15			
5			Soft maroon, brown and dark gray moderately weathered shale w/ferrous stains	50/6"			
				50/7"			
10			Soft brown and gray weathered shale	50/3"			
			- soft to medium soft below 13 ft	25/0"			
15							
				25/0"			
20							
				25/0"			
25							

COMPLETION DEPTH: 25.0 ft
DATE: 9-8-08

DEPTH TO WATER IN BORING: Dry

DATE: 9/8/2008

LGBNEW 08-232.GPJ 10-21-08

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF BORING NO. 14

Proposed Oak Grove High School
Maumelle, Arkansas

TYPE: Auger

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 273±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Soft tan silty clay w/ferrous staining	6			89
			- with light gray pockets below 2 ft - stiff below 2 ft	13			
5			Very soft brown and light gray moderately weathered shale w/ferrous staining - soft with purple and gray below 6 ft	49			
				50/6"			
				50/5"			
10							
				50/4"			
15							
				50/2"			
20							
			Soft to medium soft light purple, gray and tan moderately weathered shale	25/0"			
25							

COMPLETION DEPTH: 25.0 ft
DATE: 9-9-08

DEPTH TO WATER IN BORING: Dry

DATE: 9/9/2008

LGBNEW 08-232.GPJ 10-21-08

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF BORING NO. 15

Proposed Oak Grove High School
Maumelle, Arkansas

TYPE: Auger

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 267±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Firm tan silty clay	8			
				8			
			Soft brown weathered fine-grained sandstone	25/0"			
			Very soft brown moderately weathered shale w/ferrous staining				
5				42			
			- soft below 6 ft	50/11"			
				50/4"			
10							
			- soft to medium soft below 13 ft	25/0"			
15							
				25/0"			
20			- auger refusal at 20 ft				
25							

COMPLETION DEPTH: 20.0 ft
DATE: 9-9-08

DEPTH TO WATER IN BORING: Dry

DATE: 9/9/2008

LGBNEW 08-232.GPJ 10-21-08

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF BORING NO. 15T

Proposed Oak Grove High School
Maumelle, Arkansas

TYPE: Auger

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 261±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Soft tan clay	5			97
			Very stiff reddish brown clay, blocky	31			
5				26			
				32			
			Soft brown and reddish brown moderately weathered shale w/ferrous staining	48			
10							
15							
20							
25							

COMPLETION DEPTH: 10.0 ft
DATE: 9-9-08

DEPTH TO WATER IN BORING: Dry

DATE: 9/9/2008

LGBNEW 08-232.GPJ 10-21-08

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF BORING NO. 16

Proposed Oak Grove High School
Maumelle, Arkansas

TYPE: Auger

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 267±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT, WATER CONTENT, LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Soft tan silty clay	6			90
			Firm tan, reddish brown and light gray clay w/ferrous staining	9			95
			- very stiff below 4 ft				
5				37			
			- with some dark reddish brown sandstone fragments below 5 ft				
			Soft brown moderately weathered fine-grained sandstone	50/11"			
			Soft brown moderately weathered shale w/ferrous staining	50/8"			
10							
				50/3"			
15							
			- soft to medium soft below 17 ft				
				25/0"			
20			- auger refusal at 20 ft				
25							

COMPLETION DEPTH: 20.0 ft
DATE: 9-9-08

DEPTH TO WATER IN BORING: Dry

DATE: 9/9/2008

LGBNEW 08-232.GPJ 10-22-08

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF BORING NO. 16T

Proposed Oak Grove High School
Maumelle, Arkansas

TYPE: Auger

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 261±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Very soft tan silty clay w/roots	2			
			Stiff reddish brown clay w/ferrous staining	13			
5			- very stiff below 4 ft	27			
			- with shale fragments below 6.5 ft	39			
			Soft brown, reddish tan and gray moderately weathered shale	50/10"			
10							
15							
20							
25							

COMPLETION DEPTH: 10.0 ft
DATE: 9-9-08

DEPTH TO WATER IN BORING: Dry

DATE: 9/9/2008

LGBNEW 08-232.GPJ 10-21-08

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF BORING NO. 17

Proposed Oak Grove High School
Maumelle, Arkansas

TYPE: Auger

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 266±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Soft tan to brown silty clay w/ferrous staining	4			
			- firm below 2 ft	8			
5			Very stiff reddish tan, tan and gray silty clay w/ferrous staining and nodules	28			
			- with shale fragments below 6.5 ft	31			
				30			
10			Soft tan, gray and purple moderately weathered shale				
				50/7"			
15							
				50/2"			
20			- soft to medium soft below 21 ft				
				25/0"			
25							

COMPLETION DEPTH: 25.0 ft
DATE: 9-10-08

DEPTH TO WATER IN BORING: Dry

DATE: 9/10/2008

LGBNEW 08-232.GPJ 10-21-08

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF BORING NO. 18

Proposed Oak Grove High School
Maumelle, Arkansas

TYPE: Auger

LOCATION: See Plate 2

SURF. EL: 266±

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Soft tan and reddish tan silty clay w/ferrous staining	5			91
			- firm, tan and light gray below 2 ft	8			
5			Very stiff reddish brown and light gray clay	31			97
			- with sandstone fragments below 5.5 ft				
			Soft brown and gray moderately weathered shale w/ferrous staining and gray clay pockets	50/8"			
				50/6"			
10							
				50/2"			
15							
			Soft to medium soft purple, reddish tan and gray moderately weathered shale w/ferrous staining	25/0"			
20							
				25/0"			
25							

COMPLETION DEPTH: 25.0 ft
DATE: 9-10-08

DEPTH TO WATER IN BORING: Dry

DATE: 9/10/2008

LGBNEW 08-232.GPJ 10-21-08

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF BORING NO. 19

Proposed Oak Grove High School
Maumelle, Arkansas

TYPE: Auger

LOCATION: See Plate 2

SURF. EL: 261±

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Soft tan to brown silty clay	6			
			Firm reddish brown, gray and tan silty clay w/some silt partings	7			
			- very stiff below 4 ft	23			
5			- very stiff below 6 ft	37			
			Very soft brown, tan and gray moderately weathered shale w/ferrous staining	44			
10							
			- soft with some purple below 13 ft	50/7"			
15							
			Soft to medium soft purple, reddish tan and gray moderately weathered shale	50/2"			
20							
				25/0"			
25							

COMPLETION DEPTH: 25.0 ft
DATE: 9-10-08

DEPTH TO WATER IN BORING: Dry

DATE: 9/10/2008

LGBNEW 08-232.GPJ 10-21-08

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF BORING NO. 20

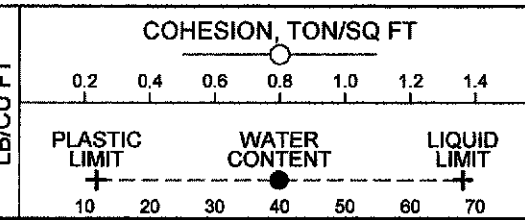
Proposed Oak Grove High School
Maumelle, Arkansas

TYPE: Auger

LOCATION: See Plate 2

SURF. EL: 267±

DEPTH, FT	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	- No. 200 %
	Very stiff reddish tan, tan and gray silty clay w/shale fragments (fill)	45		73
	Very stiff tan silty clay w/some ferrous nodules, stains and roots, dry	27		
5	- gray and tan below 4.5 ft	31		
	Very stiff reddish brown with tan and gray clay	50		97
	Soft tan moderately weathered shale w/ferrous stains	50/6"		
10				
		50/3"		
15				
	- soft to medium soft below 18.5 ft	25/0"		
20				
		25/0"		
25				



COMPLETION DEPTH: 25.0 ft
DATE: 8-29-08

DEPTH TO WATER IN BORING: Dry

DATE: 8/29/2008

LGBNEW 08-232.GPJ 10-21-08

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF BORING NO. 21

Proposed Oak Grove High School
Maumelle, Arkansas

TYPE: Auger

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 261±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Stiff brown silty clay w/numerous shale fragments (fill)	22			
			Stiff brown silty clay w/silty clay pockets	20			87
5			Very stiff brown and light gray clay w/ferrous staining	33			97
			Stiff reddish brown clay w/ferrous staining and shale fragments	23			98
			- very stiff to hard below 8 ft	50/6"			
10			- sandstone at 10.5 - 11 ft				
			Soft brown moderately weathered shale w/ferrous staining	50/4"			
15							
				50/2"			
20			- soft to medium soft below 22 ft				
				25/0"			
25							

COMPLETION DEPTH: 25.0 ft
DATE: 9-10-08

DEPTH TO WATER IN BORING: Dry

DATE: 9/10/2008

LGBNEW 08-232.GPJ 10-21-08

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF BORING NO. 22

Proposed Oak Grove High School
Maumelle, Arkansas

TYPE: Auger

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 265±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Very soft tan silty clay w/ferrous staining	3			
			- firm below 2 ft	10			
			Firm to stiff tan and reddish brown silty clay w/ferrous staining				
5				20			
			- very stiff below 6 ft	33			
10				38			
			Soft brown highly weathered fine-grained sandstone	25/0"			
15			Soft brown and purple moderately weathered shale w/ferrous staining				
				50/2"			
20							
			- soft to medium soft below 22 ft	25/0"			
25							

COMPLETION DEPTH: 25.0 ft
DATE: 9-10-08

DEPTH TO WATER IN BORING: Dry

DATE: 9/10/2008

LGBNEW 08-232.GPJ 10-22-08

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF BORING NO. 23

Proposed Oak Grove High School
Maumelle, Arkansas

TYPE: Auger

LOCATION: See Plate 2

SURF. EL: 263±

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Very soft tan silty clay w/ferrous staining	2			88
			- firm to stiff, tan and light gray below 2 ft	11			
5			Stiff reddish brown clay w/ferrous staining	13			98
			- very stiff below 6 ft	31			
				30			
10			Soft brown moderately weathered shale w/ferrous staining				
				50/7"			
15							
			- soft to medium soft, brown and purple below 17 ft	50/2"			
20							
				25/0"			
25							

COMPLETION DEPTH: 25.0 ft
DATE: 9-10-08

DEPTH TO WATER IN BORING: Dry

DATE: 9/10/2008

LGBNEW 08-232.GPJ 10-21-08

08-232

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF BORING NO. 24

Proposed Oak Grove High School
Maumelle, Arkansas

TYPE: Auger

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 268±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Stiff tan fine sandy clay (fill)	13			
			Firm to stiff brown and dark gray silty clay w/shale fragments (fill)	10			
5				12			
10							
15							
20							
25							

COMPLETION DEPTH: 5.5 ft
DATE: 9-11-08

DEPTH TO WATER IN BORING: Dry

DATE: 9/11/2008

LGBNEW 08-232.GPJ 10-21-08

08-232

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF BORING NO. 25

Proposed Oak Grove High School
Maumelle, Arkansas

TYPE: Auger

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 275±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Firm tan fine sandy clay (fill)	8			85
			Firm to stiff tan, gray and purple silty clay w/shale fragments (fill)	10			
5				11			
10							
15							
20							
25							

COMPLETION DEPTH: 5.5 ft
DATE: 9-11-08

DEPTH TO WATER IN BORING: Dry

DATE: 9/11/2008

LGBNEW 08-232.GPJ 10-21-08

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF BORING NO. 26

Proposed Oak Grove High School
Maumelle, Arkansas

TYPE: Auger

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 266±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Soft tan silty clay	5			
			- firm below 1.5 ft	8			
			Soft brown weathered fine-grained sandstone - auger refusal at 3.5 ft	25/0"			
5							
10							
15							
20							
25							

COMPLETION DEPTH: 3.5 ft
DATE: 9-8-08

DEPTH TO WATER IN BORING: Dry

DATE: 9/8/2008

LGBNEW 08-232.GPJ 10-22-08

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF BORING NO. 27

Proposed Oak Grove High School
Maumelle, Arkansas

TYPE: Auger

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 286±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Stiff tan and brown silty clay w/ferrous stains	19			86
				16			
			Very soft light gray moderately weathered shale w/ferrous staining - soft below 4 ft	50/8"			
5							
10							
15							
20							
25							

COMPLETION DEPTH: 5.0 ft
DATE: 9-8-08

DEPTH TO WATER IN BORING: Dry

DATE: 9/8/2008

LGBNEW 08-232.GPJ 10-21-08

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF BORING NO. 28

Proposed Oak Grove High School
Maumelle, Arkansas

TYPE: Auger

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 294±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Soft tan silty clay				
			Very soft dark gray, reddish brown and gray weathered shale w/ferrous stains - soft below 2 ft	25			
				50/10"			
				50/4"			
5							
				50/3"			
			Soft to medium soft light gray moderately weathered shale w/ferrous staining	50/1"			
10							
				25/0"			
15							
20							
25							

COMPLETION DEPTH: 15.0 ft
DATE: 9-11-08

DEPTH TO WATER IN BORING: Dry

DATE: 9/11/2008

LGBNEW 08-232.GPJ 10-21-08

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF BORING NO. 29

Proposed Oak Grove High School
Maumelle, Arkansas

TYPE: Auger

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 305±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Very soft maroon, gray and dark gray weathered shale w/ferrous stains	42			
			- soft below 2 ft	50/8"			
				50/7"			
5				50/3"			
				50/2"			
10			Soft to medium soft maroon and dark gray moderately weathered shale				
				25/0"			
15							
20							
25							

COMPLETION DEPTH: 15.0 ft
DATE: 9-11-08

DEPTH TO WATER IN BORING: Dry

DATE: 9/11/2008

LGBNEW 08-232.GPJ 10-21-08

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF BORING NO. 30

Proposed Oak Grove High School
Maumelle, Arkansas

TYPE: Auger

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 284±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Firm tan fine sandy clay w/ferrous stains	20			
			Stiff reddish brown and tan clay w/shale fragments				
			Very soft dark gray and tan weathered shale w/ferrous staining	38			
5			- soft below 4 ft	50/4"			
			Soft to medium soft light gray and dark gray shale	50/2"			
				25/0"			
10							
			- medium soft below 13 ft	25/0"			
15							
20							
25							

COMPLETION DEPTH: 15.0 ft
DATE: 9-11-08

DEPTH TO WATER IN BORING: Dry

DATE: 9/11/2008

LGBNEW 08-232.GPJ 10-21-08

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF BORING NO. 31

Proposed Oak Grove High School
Maumelle, Arkansas

TYPE: Auger

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 282±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Firm reddish brown and tan sandy clay	22			
			Very soft tan and light gray moderately weathered shale w/ferrous staining - gray and maroon below 2 ft	45			68
			- soft below 4 ft	50/4"			
5				50/3"			
			Soft to medium soft purple, tan to gray moderately weathered shale	50/1"			
10							
				25/0"			
15							
20							
25							

COMPLETION DEPTH: 15.0 ft
DATE: 9-11-08

DEPTH TO WATER IN BORING: Dry

DATE: 9/11/2008

LGBNEW 08-232.GPJ 10-21-08

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF BORING NO. 32

Proposed Oak Grove High School
Maumelle, Arkansas

TYPE: Auger

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 269±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Soft tan silty clay	6			
			Soft tan weathered fine-grained sandstone	50/9"			
				25/0"			
5							
10							
15							
20							
25							

COMPLETION DEPTH: 5.5 ft
DATE: 9-9-08

DEPTH TO WATER IN BORING: Dry

DATE: 9/9/2008

LGBNEW 08-232.GPJ 10-22-08

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF BORING NO. 33

Proposed Oak Grove High School
Maumelle, Arkansas

TYPE: Auger

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 267±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Very soft tan silty clay w/ferrous nodules and staining	3			
			- stiff below 2 ft	12			
			- light gray below 4 ft				
5			Very soft brown moderately weathered shale	40			
10							
15							
20							
25							

COMPLETION DEPTH: 5.5 ft
DATE: 9-10-08

DEPTH TO WATER IN BORING: Dry

DATE: 9/10/2008

LGBNEW 08-232.GPJ 10-21-08

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF BORING NO. 34

Proposed Oak Grove High School
Maumelle, Arkansas

TYPE: Auger

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 264±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Soft brown silty clay	4			83
			Firm reddish brown clay w/ferrous stains	8			
5			- stiff, brown below 4 ft	16			
10							
15							
20							
25							

COMPLETION DEPTH: 5.5 ft
DATE: 9-11-08

DEPTH TO WATER IN BORING: Dry

DATE: 9/11/2008

LGBNEW 08-232.GPJ 10-21-08

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF BORING NO. 35

Proposed Oak Grove High School
Maumelle, Arkansas

TYPE: Auger

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 261±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Very soft brown and tan silty clay w/ferrous stains	2			
			Firm to stiff reddish brown clay	10			
5			- stiff below 4 ft	13			
10							
15							
20							
25							

COMPLETION DEPTH: 5.5 ft
DATE: 9-11-08

DEPTH TO WATER IN BORING: Dry

DATE: 9/11/2008

LGBNEW 08-232.GPJ 10-21-08

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF BORING NO. 36

Proposed Oak Grove High School
Maumelle, Arkansas

TYPE: Auger

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 263±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT, WATER CONTENT, LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Very soft to soft tan silty clay	3			85
			Firm reddish brown silty clay w/ferrous staining	8			
5			- stiff below 4 ft	13			
10							
15							
20							
25							

COMPLETION DEPTH: 5.5 ft
DATE: 9-11-08

DEPTH TO WATER IN BORING: Dry

DATE: 9/11/2008

LGBNEW 08-232.GPJ 10-21-08

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF BORING NO. 37

Proposed Oak Grove High School
Maumelle, Arkansas

TYPE: Auger

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 261±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Very soft brown clayey silt				
			Very soft brown and tan clay	2			
			- firm below 2 ft	8			
			- stiff below 4 ft	13			
5							
10							
15							
20							
25							

COMPLETION DEPTH: 5.5 ft
DATE: 9-11-08

DEPTH TO WATER IN BORING: Dry

DATE: 9/11/2008

LGBNEW 08-232.GPJ 10-21-08

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

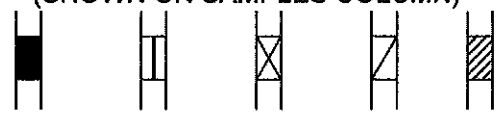
SYMBOLS AND TERMS USED ON BORING LOGS

SOIL TYPES
(SHOWN IN SYMBOLS COLUMN)

Gravel Sand Silt Clay

Predominant type shown heavy

SAMPLER TYPES
(SHOWN ON SAMPLES COLUMN)



Shelby Tube | Rock Core | Split Spoon | No Recovery | Cutting

TERMS DESCRIBING CONSISTENCY OR CONDITION

COARSE GRAINED SOILS (major portion retained on No. 200 sieve): Includes (I) Clean gravels and sands, and (2) silty or clayey gravels and sands. Condition is rated according to relative density, as determined by laboratory tests.

DESCRIPTIVE TERM	N-VALUE	RELATIVE DENSITY
VERY LOOSE	0-4	0-15%
LOOSE	4-10	15-35%
MEDIUM DENSE	10-30	35-65%
DENSE	30-50	65-85%
VERY DENSE	50 and above	85-100%

FINE GRAINED SOILS (major portion passing No. 200 sieve): Includes (1) Inorganic and organic silts and clays, (2) gravelly, sandy, or silty clays, and (3) clayey silts. Consistency is rated according to shearing strength, as indicated by penetrometer readings or by unconfined compression tests.

DESCRIPTIVE TERM	UNCONFINED COMPRESSIVE STRENGTH TON/SQ. FT.
VERY SOFT	Less than 0.25
SOFT	0.25-0.50
FIRM	0.50-1.00
STIFF	1.00-2.00
VERY STIFF	2.00-4.00
HARD	4.00 and higher

NOTE: Slickensided and fissured clays may have lower unconfined compressive strengths than shown above, because of planes of weakness or cracks in the soil. The consistency ratings of such soils are based on penetrometer readings.

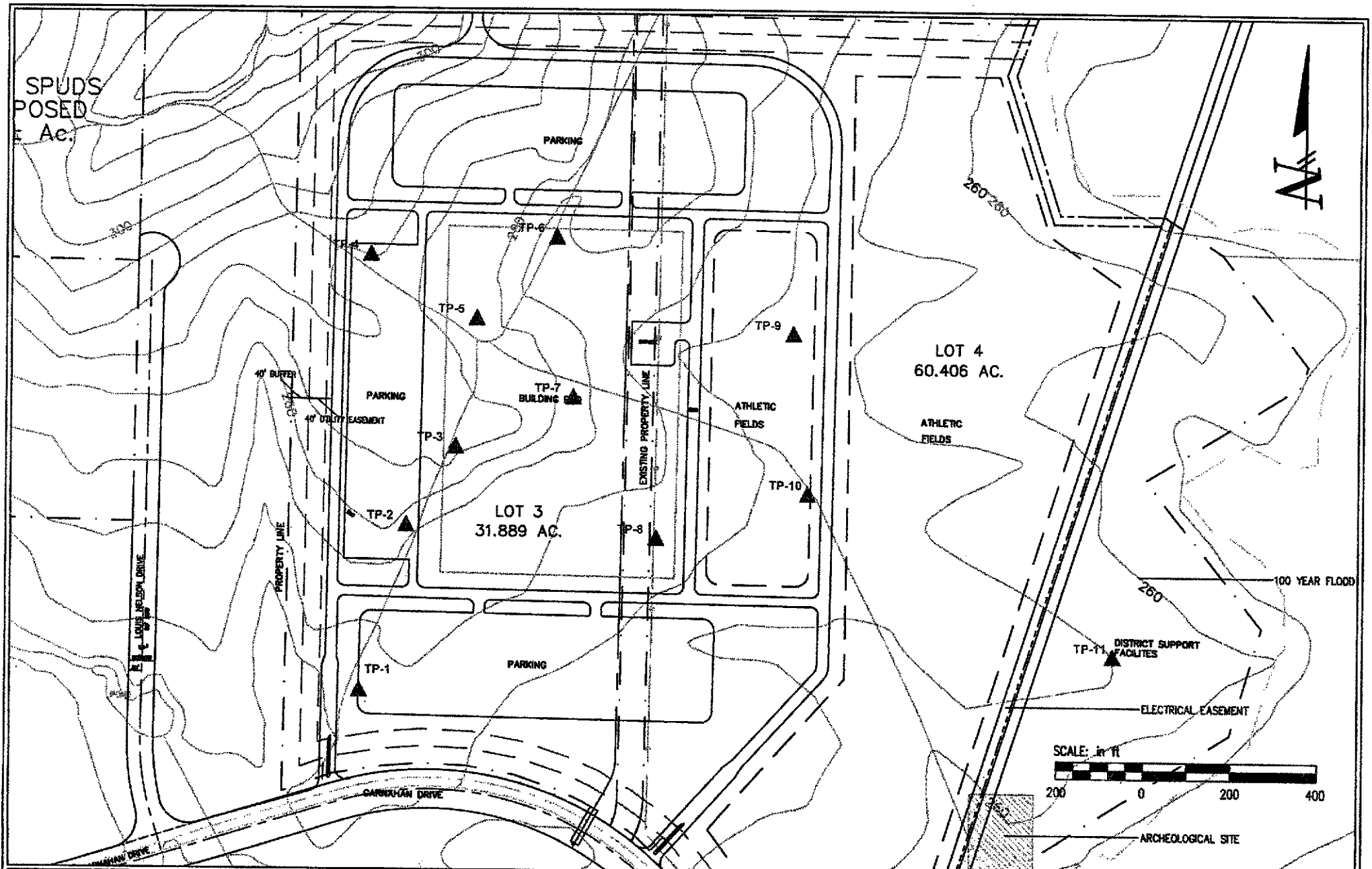
TERMS CHARACTERIZING SOIL STRUCTURE

SLICKENSIDED - having inclined planes of weakness that are slick and glossy in appearance.
FISSURED - containing shrinkage cracks, frequently filled with fine sand or silt; usually more or less vertical.
LAMINATED - composed of thin layers of varying color and texture.
INTERBEDDED - composed of alternate layers of different soil types.
CALCAREOUS - containing appreciable quantities of calcium carbonate.
WELL GRADED - having a wide range in grain sizes and substantial amounts of all intermediate particle sizes.
POORLY GRADED - predominantly of one grain size, or having a range of sizes with some intermediate sizes missing.

Terms used on this report for describing soils according to their texture or grain size distribution are in accordance with the UNIFIED SOIL CLASSIFICATION SYSTEM, as described in Technical Memorandum No.3-357, Waterways Experiment Station, March 1953

KEY 10-21-08

APPENDIX A



Grubbs, Hoskyn,
Barton & Wyatt, Inc.
Consulting Engineers

PLAN OF TEST PITS

Oak Grove Replacement High School
Maumelle, Arkansas

Job No.:07-257	Scale: As shown
September, 2007	Plate 2

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF TEST PIT NO. 1

Oak Grove Replacement High School
Maumelle, Arkansas

TYPE: Backhoe

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 270±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Stiff tan silty clay w/roots - reddish tan and tan below 1.5 ft				93
			Very stiff reddish tan and tan clay, slightly blocky w/ferrous nodules and stains, slickensided				96
5							
			Very stiff red clay, blocky w/organic stains, slickensided				98
10							
15							

COMPLETION DEPTH: 10.5 ft
DATE: 9-12-07

DEPTH TO WATER IN TEST PIT: Dry

DATE: 9/12/2007

LTPNEW 07-257.GPJ 9-25-08

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF TEST PIT NO. 2

Oak Grove Replacement High School
Maumelle, Arkansas

TYPE: Backhoe

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL.: 278±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Stiff reddish tan and tan silty clay w/roots and occasional sandstone cobbles and boulders				
			Stiff red and gray clay w/occasional sandstone cobbles and fragments and ferrous nodules and stains - slightly blocky, dry below 4 ft				82
5							
			Soft maroon and tan moderately weathered shale w/ferrous stains				
			- near backhoe refusal at 9.5 ft				
10							
15							

COMPLETION DEPTH: 9.5 ft
DATE: 9-12-07

DEPTH TO WATER IN TEST PIT: Dry

DATE: 9/12/2007

LTPNEW 07-257.GPJ 9-25-08

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF TEST PIT NO. 3

Oak Grove Replacement High School
Maumelle, Arkansas

TYPE: Backhoe

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 284±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Soft dark brown clayey silt w/surface organics and roots				
			Stiff to very stiff red clay w/some sandstone fragments and roots, moist				79
			Very stiff reddish tan and tan silty clay w/shale fragments				53
			Soft red, dark gray and tan weathered shale				
			- near backhoe refusal at 4.5 ft				
5							
10							
15							

COMPLETION DEPTH: 4.5 ft
DATE: 9-12-07

DEPTH TO WATER IN TEST PIT: Dry

DATE: 9/12/2007

LTPNEW 07-257.GPJ 9-25-08

07-257

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF TEST PIT NO. 4

Oak Grove Replacement High School
Maumelle, Arkansas

TYPE: Backhoe

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 288±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Stiff reddish tan silty clay w/some sandstone fragments, roots and occasional sandstone cobbles, moist				
			Very stiff reddish tan and tan silty clay w/ferrous nodules and stains and occasional sandstone fragments, dry				
			Very stiff tan and gray clay, slightly blocky w/shale fragments and some shale partings and seams, dry				
5			Soft red and dark gray moderately weathered shale w/occasional clay partings and ferrous stains				
			- near backhoe refusal at 6.5 ft				
10							
15							

COMPLETION DEPTH: 6.5 ft
DATE: 9-12-07

DEPTH TO WATER IN TEST PIT: Dry

DATE: 9/12/2007

LTPNEW 07-257.GPJ 9-25-08

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF TEST PIT NO. 5

Oak Grove Replacement High School
Maumelle, Arkansas

TYPE: Backhoe

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 282±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Stiff reddish tan and tan silty clay w/sandstone fragments, roots and occasional sandstone cobbles, moist				
			Very stiff tan and gray clay, blocky w/shale fragments and occasional sandstone cobbles, dry				
			Soft tan, dark gray and reddish tan moderately weathered shale w/ferrous stains and occasional clay partings				
5			- near refusal at 5 ft				
10							
15							

COMPLETION DEPTH: 5.0 ft
DATE: 9-12-07

DEPTH TO WATER
IN TEST PIT: Dry

DATE: 9/12/2007

LTPNEW 07-257.GPJ 9-25-08

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF TEST PIT NO. 6

Oak Grove Replacement High School
Maumelle, Arkansas

TYPE: Backhoe

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 276±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10, 20, 30, 40, 50, 60, 70)	- No. 200 %
			Stiff reddish tan silty clay w/sandstone fragments, roots and occasional sandstone cobbles				
			Very stiff tan and gray clay, blocky w/shale fragments and occasional shale seams				
5			Soft reddish tan, tan and dark gray moderately weathered shale w/occasional clay partings and seams and ferrous stains				
			- near backhoe refusal at 6 ft				
10							
15							

COMPLETION DEPTH: 6.0 ft
DATE: 9-12-07

DEPTH TO WATER IN TEST PIT: Dry

DATE: 9/12/2007

LTPNEW 07-257.GPJ 9-25-08

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF TEST PIT NO. 7

Oak Grove Replacement High School
Maumelle, Arkansas

TYPE: Backhoe

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 278±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT, WATER CONTENT, LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Stiff reddish tan and tan silty clay w/sandstone fragments, roots and occasional sandstone cobbles				
			Very stiff tan clay w/ferrous nodules and stains and occasional sandstone cobbles				
			Very stiff tan and gray silty clay, blocky w/some shale fragments and ferrous nodules and stains				
5			Very soft red and tan moderately weathered shale w/ferrous concretions and stains and occasional clay partings				
			- soft, with more ferrous concretions below 7 ft				
			- near refusal at 8 ft				
10							
15							

COMPLETION DEPTH: 8.0 ft
DATE: 9-12-07

DEPTH TO WATER IN TEST PIT: Dry

DATE: 9/12/2007

LTPNEW 07-257.GPJ 9-25-08

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF TEST PIT NO. 8

Oak Grove Replacement High School
Maumelle, Arkansas

TYPE: Backhoe

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 270±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Firm reddish tan and tan silty clay w/sandstone fragments, roots and some sandstone cobbles - damp below 1 ft				
			Stiff tan silty clay w/sandstone fragments and occasional sandstone cobbles, ferrous nodules and stains				75
5			Very stiff tan and gray clay, blocky w/slickensides, ferrous nodules and shale fragments				
			Soft reddish tan, tan and dark gray moderately weathered shale w/ferrous concretions and occasional clay partings and seams				
			- near backhoe refusal at 7.5 ft				
10							
15							

COMPLETION DEPTH: 7.5 ft
DATE: 9-12-07

DEPTH TO WATER IN TEST PIT: Dry

DATE: 9/12/2007

LTPNEW 07-257.GPJ 9-25-08

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF TEST PIT NO. 9

Oak Grove Replacement High School
Maumelle, Arkansas

TYPE: Backhoe

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 266±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Stiff tan silty clay w/sandstone fragments, roots and occasional sandstone cobbles, moist - reddish tan and tan below 1 ft				
			Very stiff gray and tan clay w/ferrous nodules and stains and occasional sandstone fragments and slickensided				
			Very stiff tan and gray clay, blocky w/ferrous nodules and stains and occasional slickensides				
5							
			Medium dense light gray and tan silty clay, very dry				
			- near backhoe refusal at 9.5 ft				
10							
15							

COMPLETION DEPTH: 9.5 ft
DATE: 9-12-07

DEPTH TO WATER IN TEST PIT: Dry

DATE: 9/12/2007

LTPNEW 07-257.GPJ 9-25-06

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF TEST PIT NO. 10

Oak Grove Replacement High School
Maumelle, Arkansas

TYPE: Backhoe

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 267±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Soft reddish tan and tan silty clay w/sandstone fragments, cobbles and boulders with ferrous stains and nodules, damp				
5			Very stiff tan and gray clay, blocky w/occasional sandstone cobbles, dry				
			Very stiff gray and red clay w/organic stains and occasional sandstone cobbles and boulders				
			Soft reddish tan, tan and gray weathered shale w/ferrous concretions and stains				
			- near refusal at 9 ft				
10							
15							

COMPLETION DEPTH: 9.0 ft
DATE: 9-12-07

DEPTH TO WATER IN TEST PIT: Dry

DATE: 9/12/2007

LTPNEW 07-257.GPJ 9-25-08

Grubbs, Hoskyn, Barton & Wyatt, Inc.
Consulting Engineers

LOG OF TEST PIT NO. 11

Oak Grove Replacement High School
Maumelle, Arkansas

TYPE: Backhoe

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 264±	BLOWS PER FT	UNIT DRY WT LB/CU FT	COHESION, TON/SQ FT (0.2 0.4 0.6 0.8 1.0 1.2 1.4) / PLASTIC LIMIT — WATER CONTENT — LIQUID LIMIT (10 20 30 40 50 60 70)	- No. 200 %
			Soft brown clayey silt, sandy w/surface organics and roots				
			Stiff reddish tan, tan and gray clay w/occasional roots				
			Very stiff red and tan clay, blocky w/slickensides				
5			- red below 5 ft				
			- with silt partings and pockets below 8 ft				
10							
15							

COMPLETION DEPTH: 10.0 ft
DATE: 9-12-07

DEPTH TO WATER IN TEST PIT: Dry

DATE: 9/12/2007

LTPNEW 07-257.GPJ 9-25-08

APPENDIX B

SUMMARY OF CLASSIFICATION TEST RESULTS

Project: Oak Grove High School
Location: Maumelle, Arkansas
Job No.: 08-232

Boring No.	Sample Depth, ft	Water Content, %	ATTERBERG LIMITS			Percent -No. 200, %	UNIFIED CLASS.
			Liquid Limit	Plastic Limit	Plasticity Index		
1	2.5-3.5	23	47	23	24	86	CL
1	4.5-5.5	10	54	24	30	----	GC
2	0.5-1.5	18	52	23	29	91	CH
2	2.5-3.5	14	55	25	30	88	CH
3	0.5-1.5	27	38	19	19	88	CL
3	4.5-5.5	21	53	22	31	87	CH
6	2.5-3.5	25	70	29	41	88	CH
6	4-5	7	31	17	14	----	GC
7	0.5-1.5	21	40	20	20	73	CL
7	2.5-3.5	15	48	24	24	57	CL
10	0.5-1.5	22	46	23	23	61	CL
10	8.5-9	9	39	19	20	----	GC
14	0.5-1.5	26	34	20	14	89	CL

GRUBBS, HOSKYN,
BARTON & WYATT, INC.
Consulting Engineers

SUMMARY OF CLASSIFICATION TEST RESULTS

Project: Oak Grove High School
Location: Maumelle, Arkansas
Job No.: 08-232

Boring No.	Sample Depth, ft	Water Content, %	ATTERBERG LIMITS			Percent -No. 200, %	UNIFIED CLASS.
			Liquid Limit	Plastic Limit	Plasticity Index		
15T	0.5-1.5	31	67	26	41	97	CH
15T	2.5-3.5	23	70	24	46	----	CH
16	0.5-1.5	24	37	20	17	90	CL
16	2.5-3.5	27	59	22	37	95	CH
17	4.5-5.5	20	31	18	13	----	CL
18	0.5-1.5	23	36	21	15	91	CL
18	4.5-5.5	27	67	23	44	97	CH
20	0.5-1.5	18	46	23	23	73	CL
20	2.5-3.5	14	40	19	21		CL
20	6.5-7.5	24	61	22	39	97	CH
21	2.5-3.5	15	40	23	17	87	CL
21	4.5-5.5	20	61	24	37	97	CH
21	6.5-7.5	22	64	22	42	98	CH
23	0.5-1.5	26	42	24	18	88	CL
23	4.5-5.5	27	62	21	41	98	CH

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BARTON & WYATT, INC.
Consulting Engineers

SUMMARY OF CLASSIFICATION TEST RESULTS

Project: Oak Grove High School
Location: Maumelle, Arkansas
Job No.: 08-232

Boring No.	Sample Depth, ft	Water Content, %	ATTERBERG LIMITS			Percent -No. 200, %	UNIFIED CLASS.
			Liquid Limit	Plastic Limit	Plasticity Index		
25	0.5-1.5	18	45	22	23	85	CL
27	0.5-1.5	20	33	19	14	86	CL
31	2.5-3.5	14	44	23	21	68	CL
34	0.5-1.5	28	38	21	17	83	CL
36	0.5-1.5	24	32	18	14	85	CL

GRUBBS, HOSKYN,
BARTON & WYATT, INC.
Consulting Engineers

SUMMARY OF CLASSIFICATION TEST RESULTS

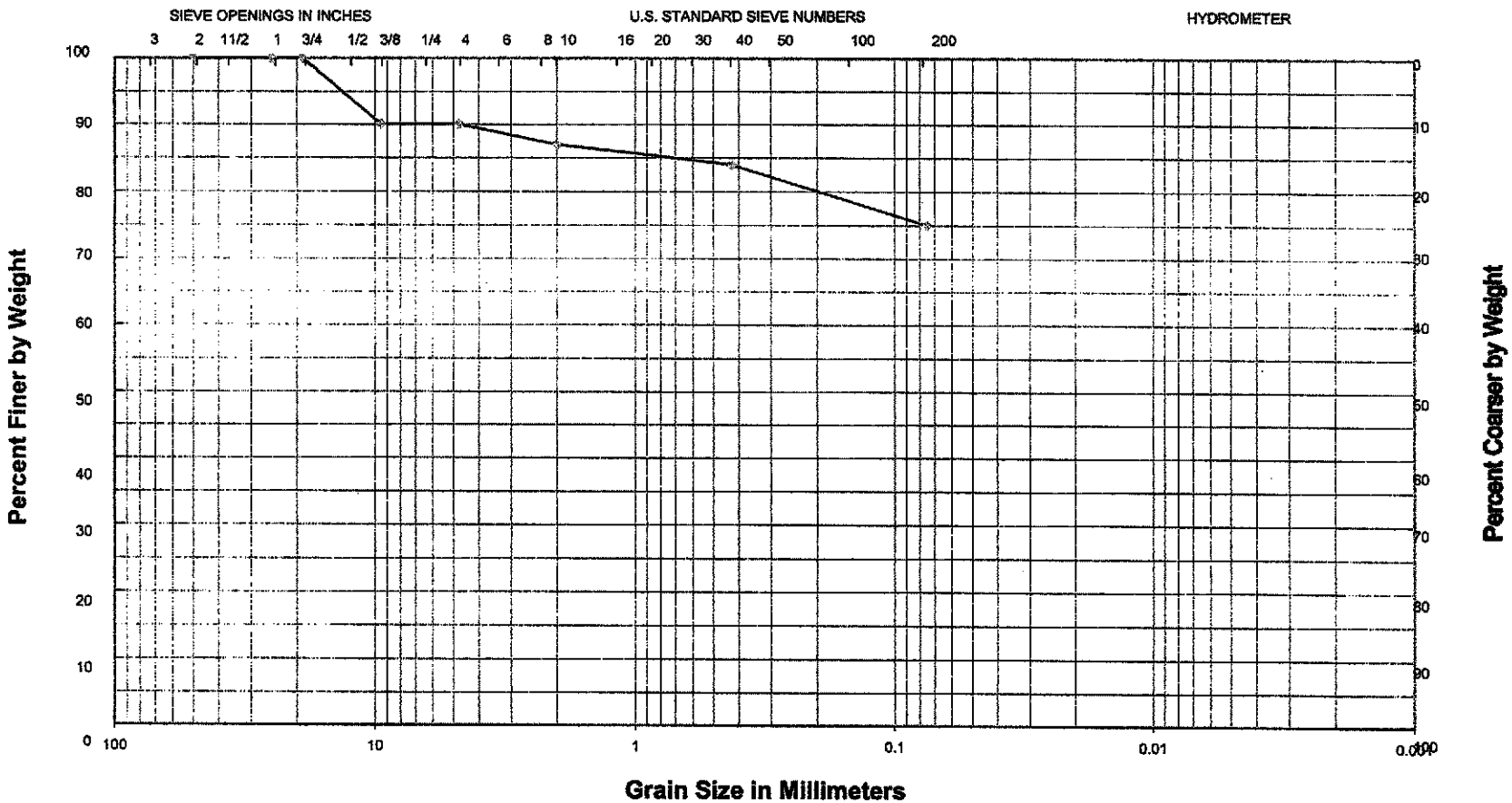
PROJECT: Oak Grove Replacement High School
Location: Maumelle, Arkansas
Job Number: 07-257

Test Pit No.	SAMPLE Depth, Ft.	WATER CONTENT (%)	ATTERBERG LIMITS			SIEVE ANALYSIS PERCENT PASSING, %								UNIFIED CLASS.
			LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	2 in.	1 in.	3/4 in.	3/8 in.	#4	#10	#40	#200	
1	0.5-1.5	20	31	19	12								93	CL
1	2-3	19	59	25	34								96	CH
1	7-8	22	65	27	38								98	CH
2	3-4	24	49	25	24								82	CL
3	0.5-1.5	27	61	31	30								79	CH
3	2-3	17	49	26	23								53	CL
4	2-3	14	44	28	16								---	CL
4	3.5-4.5	16	51	25	26								---	CH
6	3.2-4	21	60	29	31								---	CH
7	3.5-4.5	18	49	24	25								---	CL
8	2-3	20	34	19	15	100	100	100	90	90	87	84	75	CL
8	3.5-4.5	15	49	23	26								---	CL
9	3.5-4.5	18	57	26	31								---	CH
9	4.8-5.5	23	68	25	43								---	CH
11	2-3	21	69	30	39								---	CH
11	6-7	24	71	30	41								---	CH

GRUBBS, HOSKYN, BARTON & WYATT, INC.
Consulting Engineers

07-257

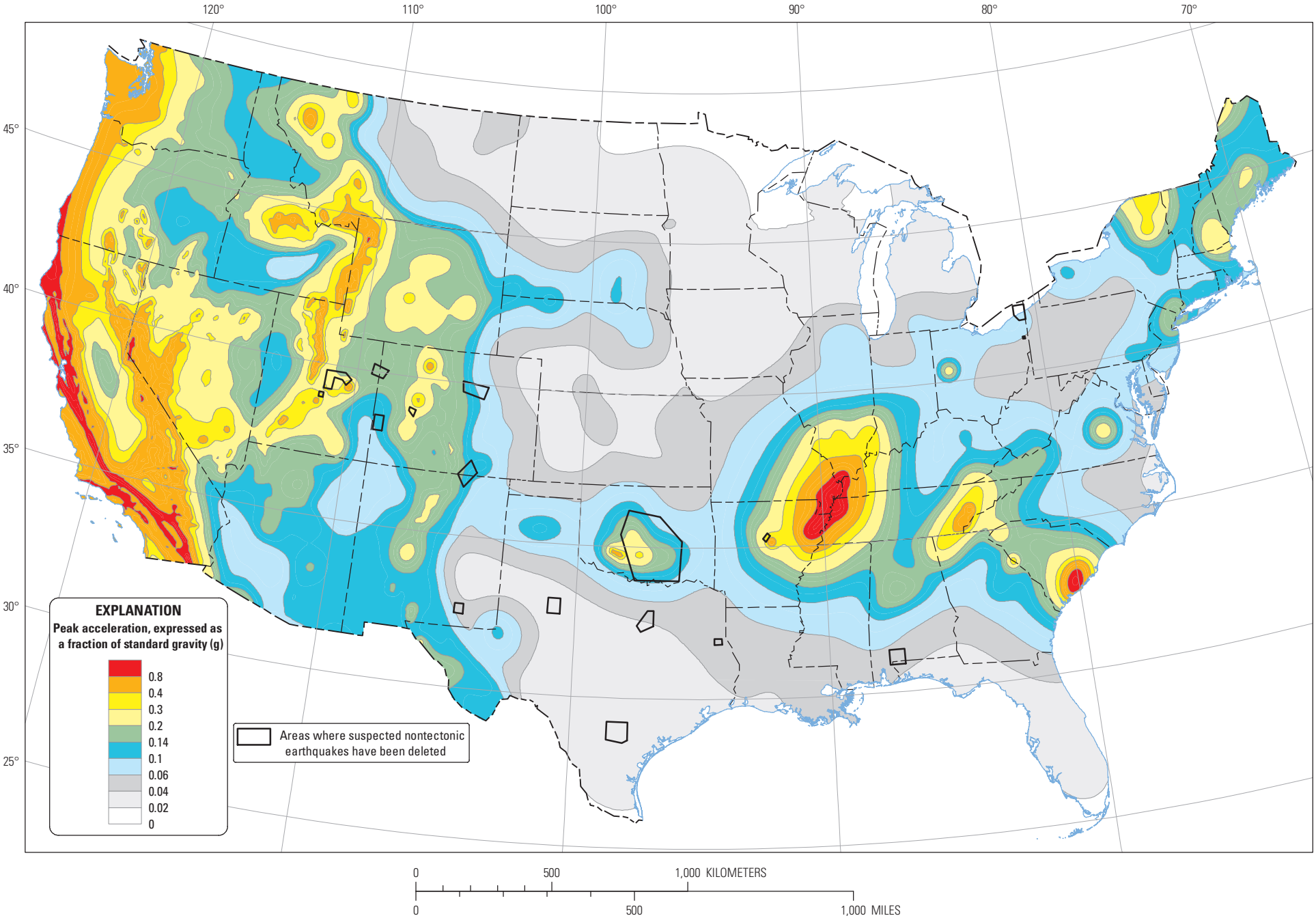
GRAIN SIZE CURVE



GRAVEL		SAND			SILT	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE		

Sample: Boring 8, 2-3 ft
Description: Tan clay with sandstone fragments; USCS= CL

Grubbs, Hoskyn, Barton & Wyatt, Inc.
CONSULTING ENGINEERS



Two-percent probability of exceedance in 50 years map of peak ground acceleration

Zoning/Permitting

Copy of Restrictive Covenants:	**See attachment Z-1 for detail.**
Current Classification and Proposed Zoning (if different) to Conform with Intended Use:	The site is zoned I-1; light industrial only.
Copy of Zoning Ordinance:	**See attachment Z-2 for detail.**
Explanation of Process to Change Zoning:	Not applicable. The site is zoned appropriately.

MAUMELLE CITY CODE

Published in 2002 by Order of the City Council

Re-adopted: May 7, 2018

Effective: May 7, 2018

Adopted: November 18, 2002

Effective: December 17, 2002

Chapter 94 - ZONING REGULATIONS

DIVISION 4. - I-1 INDUSTRIAL PARK DISTRICT

Municipal Code Corporation | P.O. Box 2235 Tallahassee, FL 32316
info@municode.com | 800.262.2633
www.municode.com

- **DIVISION 4. - I-1 INDUSTRIAL PARK DISTRICT**

- **Sec. 94-411. - Purpose and intent.**

The I-1 industrial park district is designed to provide a parklike development for industry with controls based upon industry performance as well as type. Part of the effectiveness of this control provides for a 50-foot buffer strip along the Maumelle Boulevard right-of-way, which is now generally tree covered, and if carefully landscaped, tailored and groomed, can allow occasional glimpses of the facilities beyond, but generally shields the resident and visitor to the city from the industries of the area. The provisions of this division will provide an efficient operating environment for industries and protect them from the encroachment of commercial and residential uses adverse to their operation and expansion.

- **Sec. 94-412. - District restrictions.**

(a)

Hazard restrictions and performance standards. It is the intent of this section to prevent land or buildings from being used or occupied in any manner to create any dangerous, injurious, noxious or otherwise objectionable condition related to fire, explosion, radioactivity, noise or vibration; smoke, dust, odor or other forms of air pollution; electrical or other disturbance; glare or heat, liquid or solid hazardous wastes or any dangerous or objectionable elements in a manner or amount to adversely affect the surrounding area.

(b)

Visual restrictions. All permitted uses and accessory activities shall be confined within completely enclosed buildings with the exception of off-street parking spaces, off-street loading berths, accessory or fuel storage and employee recreational facilities. In addition, no goods, equipment, supplies or other materials shall be stored in the open except on the rear two-thirds of any lot, and then only when such open storage is no higher than six feet and is fenced with a screening fence at least six feet in height.

(c)

Application. All proposals for development and uses of land and buildings are subject to site plan review submitted to and approved by the planning commission. In addition, the applicant shall submit a description of the proposed operation, including machinery, processes and products. The applicant will include specifications for the mechanisms, techniques and operations in sufficient detail so that the planning commission can determine or have determined whether the industrial pursuit meets the criteria of subsections (a) and (b) of this section.

- **Sec. 94-413. - Use regulations.**

(a)

Permitted uses. The following are permitted uses in the I-1 district:

Dwellings, only as living quarters for caretakers, and/or watchmen and their families.

Helistop.

Industrial and manufacturing uses which operate in conformance with the performance standards espoused by this section.

Off-street parking of motor vehicles as an accessory use.

Office buildings.

Public utility buildings and utility structures not otherwise permitted in other districts, including overhead electric power and energy transmission and distribution lines suspended from multilegged structures, aboveground pipelines, radio and television broadcasting stations and towers, and accessory structures.

Ready-mix plant for concrete.

Research, experimental and testing laboratories.

Retail sales and consumer service establishments (not including warehouse sales), accessory to any permitted use, and dealing primarily with employees of establishments permitted as principal uses, provided that such commercial uses shall not occupy more than five percent of the total floor area of all buildings on any lot or group of contiguous lots in common ownership or control.

Secondary schools, vocational technical schools and colleges.

Signs in accord with current city sign regulations, chapter 58.

Swimming pools, recreational facilities and dining facilities for use in connection with the operation of an establishment and primarily for employees as accessory buildings and uses.

Underground pipelines, underground electric power and energy transmission and distribution lines, underground or overhead telephone or telegraph lines, overhead electric power and energy transmission and distribution lines.

Warehouses and storage buildings.

Wireless communication facilities in compliance with section 78-71.

(b)

Accessory uses. A day care center in connection with an existing industrial facility is permitted as an accessory use.

(c)

Conditional uses. The following uses may be permitted in the I-1 district subject to the approval of a conditional use permit and all its required submissions and conditions. See section 94-91 for required submissions:

Churches and other religions institutions and their accessory buildings and uses.

Event center, according to and as more fully described in chapter 94, article III, division 3, as a conditional use in certain commercial zoning districts.

Health education facilities and their accessory buildings and uses.

(d)

Prohibited uses. The following uses are expressly prohibited:

Abattoir.

Ammonia, bleaching powder, chlorine, asphalt.

Arsenal.

Blast furnace.

Boiler works.

Celluloid or pyroxylin (or treatment thereof).

Central mixing plant for asphalt, concrete or other paving materials.

Disinfectants.

Distillation of bones.

Distillation of coal, tar or wood.

Dump.

Dye works.

Emery cloth and/or sandpaper.

Explosives, fireworks or gunpowder, or storage of such materials.

Fat rendering, grease, lard or tallow manufacturing or processing.

Fertilizers.

Fertilizer mixing plant.

Forge plant.

Foundry.

Gas for illumination or heating.

Glue, size or gelatin.

Grist mill.

Incinerator, or reduction of dead animals, garbage or offal, except when operated or licensed by a duly authorized public agency.

Insecticides.

Junkyard.

Lampblack.

Leather goods.

Linoleum.

Manufacture of:

Acetylene.

Brick, clay, terracotta and tile products.

Chemicals, including sulfuric, nitric or hydrochloric or other corrosive or offensive acids.

Cinder block.

Printing ink.

Rayon or similar products.

Starch, glucose, or dextrin.

Stove polish.

Matches.

Mortar, lime, plaster, cement, gypsum.

Oil cloth and/or oiled products.

Ore reduction.

Packinghouse, including meat canning or curing.

Paint, oil, shellac, turpentine or varnish employing a boiling or rendering process.

Plastics.

Potash.

Railroad yard or roundhouse.

Refining or storage of petroleum, ethanol, or other dangerous, injurious, noxious, or otherwise objectionable substance that may create a condition related to fire, explosion, radioactivity, noise, vibration, smoke, dust, odor, other forms of air pollution, disturbances electrical or otherwise, glare, heat, hazardous wastes, or other objectionable elements in a manner or amount to adversely affect the health and safety in the surrounding area.

Rock crusher, washing and screening plants.

Rolling mill.

Rubber or products made from rubber.

Sand, gravel or clay pit; rock or stone quarry.

Sawmill.

Shoe blacking or polish.

Smelting.

Soap.

Soda or soda compound.

Steam power plant.

Stockyard.

Sugar refining.

Sulfuric, nitric, hydrochloric or other corrosive acids.

Tallow, grease or lard.

Tanning, curing or storage of leather, rawhides or skins.

Tar or tarroofing or waterproofing or other tar products, or their distillation.

Wool pulling or scouring.

Yeast.

Any other use which is found by the planning commission to be a public nuisance by reason of the emission of dust, fumes, gas, smoke, odor, noise, vibration or other disturbance is and shall be expressly prohibited.

(Ord. No. 243, § 1, 12-5-1994; Ord. No. 332, § 2(K), 1-21-1999; Ord. No. 464, § 2, 5-5-2002; Ord. No. 724, § 3, 12-7-2009; Ord. No. 742, § 2, 4-19-2010; Ord. No. 935, § 1, 6-22-2017)

- **Sec. 94-414. - Bulk and area regulations.**

(a)

Required yards and landscaped areas. In the I-1 district:

(1)

No principal or accessory building, parking area, loading or maneuvering area shall be located:

a.

Less than 15 feet from any lot line.

b.

Less than 50 feet from the boundary of any residence lot or from the boundary of any lot used for an educational institution.

c.

Less than the following minimum distances from the street right-of-way line or proposed street right-of-way of the following types of streets or highways as designated on the master street plan:

Class II	75 feet

Class III and IV	75 feet
Class V and VI or a private way within the industrial park	50 feet

(2)

The required yards set forth in subsection (a)(1) of this section shall be landscaped in accordance with a plan approved by the planning commission. Landscaping shall mean the planting of grass, shrubs, trees and other comparable groundcover. To the maximum extent possible, driveways within such landscaped areas shall cross the areas by the most direct line; and all planting screens or walls required shall be located adjacent to parking areas rather than on the periphery of the lot. Such landscaped areas shall be maintained at all times.

(b)

Street access and frontage.

(1)

Each lot shall have a minimum frontage of 100 feet on a street or private way; however, the planning commission may approve a lesser frontage to a minimum of 60 feet for lots located on culs-de-sac or on street curves or having other extraordinary characteristics. Vehicular access shall be permitted only to one of the following types of streets:

a.

Class II.

b.

Class III or IV.

c.

A class V or VI or private way connecting only with class II, III or IV street.

(2)

The designation of any street or highway as to type shall be in conformance with that shown on the master street plan.

(c)

Building height limit. No building or other freestanding structure shall exceed a height of 50 feet at the building line. Building heights greater than 50 feet must be set back from the building line at a rate of three feet for each additional one foot of building height. Example: A building line has a maximum allowable building of 50 feet. If a building height of 55 feet is required, the new building line would be an additional 15 feet.

(d)

Lot coverage. Not more than 50 percent of the area of the lot may be covered by buildings, including accessory buildings.

(e)

Spacing between buildings. No building other than an accessory building shall be located closer to any other building than a distance equal to the height of the higher building, and in no event less than 30 feet from the other building.

(f)

Off-street parking.

(1)

Off-street parking shall be provided in accordance with the provisions set forth in article IV, division 3 of this chapter; except that for an industrial or manufacturing establishment or warehouse or similar use, the minimum requirement shall be one parking space for each 1½ employees, or one for each two employees on combined major and second shifts, and in addition one visitor parking space for every ten employees; except that the planning commission may authorize fewer visitor parking spaces if found that a fewer number will be sufficient for the operation anticipated. In addition to the foregoing, one parking space shall be provided for each company-owned or leased truck, passenger car or other vehicle located or principally based on the premises.

(2)

No parking spaces may be located within required front yards; except that an area equivalent to not more than 30 percent of the total area of all required parking spaces may be located within a required yard for use as parking space for visitors, selected personnel and minor deliveries. Off-street parking spaces may be grouped in facilities serving more than one lot or establishment.

(3)

When the lot on which parking spaces are located abuts the rear or side lot line of or is across the street from any residential land, a wall, fence or evergreen planting shall be maintained so as to screen substantially the parking lot from view from the nearest residential property. The screening shall be maintained in good condition at all times. In parking lots of one acre or more, at least five percent of the area of the parking lot shall be devoted to landscaping within the interior of the parking area.

City of Maumelle Explanation of Process to Change Zoning

- **Sec. 94-9. - Application for amendment.**

An application for amendment may be initiated by the city council, the planning commission, or by one or more owners or lessees of land affected by a proposed amendment. Such application must be filed with the city clerk's office 14 or more days prior to the date of the next regularly scheduled planning commission meeting. The city clerk will set the date for a public hearing on the proposed amendment with concurrence of the chairman of the planning commission.

- **Sec. 94-10. - Procedure for amendment.**

Upon filing an application for amendment with the city clerk's office, this chapter may be amended by the following procedures:

(1) The planning commission shall hold a public hearing on the proposed amendment not less than 15 days after notice of such hearing has been published in a newspaper of general circulation in the city. The notice shall be published at the applicant's expense and shall give the time and place of the proposed hearing and the proposed changes. The applicant shall inform all owners of land, by certified letter, return receipt requested, specifying the place of the hearing and the proposed change. The applicant shall notify owners of all lands which lie within 300 feet of the land for which the zoning change is requested of the time, date and place of the public hearing and the proposed change in zoning designation. All return receipts and a copy of the letter shall be furnished to the planning commission in care of the city clerk at least five days prior to the public hearing.

(2) Planning staff shall post or have posted signs on the property proposed for a change in zoning for the purpose of providing general notice to the public of the proposed changes.

a. The signs will be displayed on the property on a post not less than 15 days prior to the date of the public hearing.

b. The sign shall be displayed to be prominent and in full view of passing motorists and pedestrians. Signs shall be 48 inches by 48 inches in size.

c. All such signs posted shall be maintained by planning staff so that the signs remain visible and readable until the conclusion of the subject public hearing, or to the final conclusion of the resolution of the request. Subject signs shall be removed from the property by planning staff within five days of the concluding action.

(3) The amendment, as presented or modified by the action following the public hearing, shall be voted on by the planning commission.

(4) Following such vote, the planning commission shall certify its recommendations to the city council.

(5) The city council may return the proposed amendment to the planning commission for further study, or by majority vote adopt by ordinance the proposal as submitted by the planning commission.

(6) If the planning commission disapproves the proposed amendment, the proponent may appeal to the city council, which shall review the action and may approve the proposed amendment only by not less than three-fourths vote of all the members. Such appeal shall be made via the city clerk, who shall transmit one copy to the planning commission, which will prepare and transmit a report to the applicant, stating why the proposed amendment was disapproved.

(7) Should the proposal be adopted by the city council, the amendment ordinance shall be filed with the office of the city clerk.

Utilities

Electric Utility:

Name of Utility:	Entergy Arkansas
Contact Person(s):	Joe Bailey or Chris Murphy
Address:	425 West Capitol Ave., Suite 2700
City, State, Zip:	Little Rock, AR 72201
Phone:	501-377-4089 or 501-377-4467
Fax:	501-377-4448
Email:	jbail12@entergy.com or cmurph4@entergy.com
Service and Proximity to Site:	13.8 kV, 3 phase distribution is available at the site. A 115-kV transmission line goes across the southeast corner, and it is adjacent to the northeast corner of the property.

Natural Gas Utility:

Name of Utility:	CenterPoint
Contact Person(s):	Chauncey Taylor
Address:	P.O. Box 751
City, State, Zip:	Little Rock, AR 72203
Phone:	501-377-4557
Fax:	501-377-4630
Email:	chauncey.taylor@centerpointenergy.com
Service and Proximity to Site:	There is a 4-inch gas line adjacent to the property with a 10-60 psi, as well as, a 4 inch line running through the site that can be relocated.

Water Utility:

Name of Utility:	Central Arkansas Water (CAW)
Contact Person(s):	Jim Ferguson
Address:	221 East Capitol Avenue
City, State, Zip:	Little Rock, AR 72203
Phone:	501-377-1298
Fax:	
Email:	Jim.Ferguson@carkw.com
Service and Proximity to Site:	A 12-inch main water line runs along Champs Boulevard, and it is adjacent to the southwest corner of the site.

Utilities

Sewer:

Name of Utility: North Little Rock Wastewater
Contact Person(s): Michael Clayton
Address: 7400 Baucum Pike
City, State, Zip: North Little Rock, AR 72117
Phone: 501-945-7186
Fax:
Email: MClayton@nlrwu.com
Service and Proximity to Site: An 8-inch sewer line is located approximately 725 ft. south of the 120 acres.

Telecommunications:

Name of Utility: AT&T
Contact Person(s): Joseph Manion
Address: 1700 Cantrell Road
City, State, Zip: Little Rock, AR 72223
Phone: 501-416-5541
Fax:
Email: jm4138@att.com
Service and Proximity to Site: Fiber optic is available at 104 Champs Boulevard, which is adjacent to the southeast corner of the site.

Rail:

Name of Utility: Union Pacific
Contact Person(s): John Owens
Address: 24125 Old Aldine Westfield Road
City, State, Zip: Spring, TX 77373
Phone: 281-350-7302
Fax:
Email: jbowens@up.com
Service and Proximity to Site: The main rail line is just east of the 120 acres; however, there is a rail spur approximately 0.3 miles west of the site.

Taxes

Local Sales Tax Rates:	2% City Sales Tax 1% County Sales Tax 6.5% State Sales Tax
Property Tax Rates (Real, Personal) and Methods of Assessment:	Property taxes are calculated by multiplying the taxable value (20% of the appraisal value) times the millage rate. Maumelle's millage rate is 62.9 mils. For a $10,000,000 property, the property taxes would be: 0.20 x $10,000,000 = $2,000,000; $2,000,000 x .0629 = $125,800.
State Taxation Summary:	**See Arkansas Economic Development Commission's taxation summary behind tab T-1.**

ARKANSAS INC

Good company.

as of August 2019

State of Arkansas Taxation Summary

Corporate Income Tax

Taxable income is apportioned according to a single-factor formula (sales attributed to Arkansas during the tax period). Corporate income tax is levied statewide only; not on the local level.

Net Income	Tax Rate
First $3,000	1%
Next $3,000	2%
Next $5,000	3%
Next $14,000	5%
Next $75,000	6%
Over $100,000	6.5%*

*In 2021, the tax percentage for over $100,000 net income will be 5.9%.

Personal Income Tax

2019 (Personal income tax is levied statewide only; not on the local level)

For Incomes less than $21,000 per year

Taxable Income	Tax Rate
$0 - $4,299	0.0%
$4,300 – $8,399	2.0%
$8,400 - $ 12,599	3.0%
$12,600 - $20,999	3.4%

For incomes between $21,000 and $75,000

Taxable Income	Tax Rate
$0 - $4,299	0.75%
$4,300 - $8,399	2.5%
$8,400 - $12,599	3.5%

$12,600 - $20,999	4.5%
$21,000 - $35,099	5.0%
$35,100 - $75,000	6.0%

For incomes more than $75,000

Taxable Income	Tax Rate
$0 - $4,299	0.9%
$4,300 - $8,399	2.5%
$8,400 - $12,599	3.5%
$12,600 - $20,999	4.5%
$21,000 - $35,099	6.0%
$35,100 +	6.9%

Incomes between $75,000 and $80,000 shall reduce the amount of income tax due by deducting bracket adjustment as set forth below

Taxable Income	Tax Rate
$75,001 - $76,000	$440
$76,001 - $77,000	$340
$77,001 - $78,000	$240
$78,001 - $79,000	$140
$79,001 - $80,000	$ 40
$80,001and above	$ 0

Federal Insurance Contributions Act (FICA)

The Federal Insurance Contributions Act (FICA) tax includes two separate taxes. One is social security tax and the other is Medicare tax. Different rates apply for each of these taxes.

The current tax rate for social security is 6.2% for the employer and 6.2% for the employee, or 12.4% total. The current rate for Medicare is 1.45% for the employer and 1.45% for the employee, or 2.9% total.

Only the social security tax has a wage base limit. The wage base limit is the maximum wage that is subject to the tax for that year. For earnings in 2019, this base is $132,900. There is no wage base limit for Medicare tax. All covered wages are subject to Medicare tax.

Additional Medicare Tax are applied to an individual's Medicare wages that exceed a threshold amount based on the taxpayer's filing status. Employers are responsible for withholding the 0.9% Additional Medicare Tax on an individual's wages paid in excess of $200,000 in a calendar year, without regard to filing status. An employer is required to begin withholding Additional Medicare Tax in the pay period in which it pays wages in excess of $200,000 to an employee and continue to withhold it each pay period until the end of the calendar year. There is no employer match for Additional Medicare Tax.

Corporate Franchise Tax

The chart below lists the franchise tax rates for various entities under Arkansas Code 26-54-104.

Franchise Tax Type	Current Rate
Corporation/Bank with Stock	0.3% of the outstanding capital stock; $150 minimum
Corporation/Bank without Stock	$300
Limited Liability Company	$150
Insurance Corporation Legal Reserve Mutual, Assets Less Than $100 million	$300
Insurance Corporation Legal Reserve Mutual, Assets Greater Than $100 million	$400
Insurance Company Outstanding Capital Stock Less Than $500,000	$300
Insurance Company Outstanding Capital Stock Greater Than $500,000	$400
Mortgage Loan Corporation	0.3% of the outstanding capital stock; $300 minimum
Mutual Assessment Insurance Corporation	$300

Sales Tax

The Arkansas sales tax is 6.5% of the gross receipts from the sales of tangible personal property and certain selected services. "Sale" includes the lease or rental of tangible personal property. In addition to the state sales and use tax, local sales and use taxes may be levied by each city or county. However, businesses may apply to the Arkansas Department of Finance and Administration for a refund of local taxes. "Single transaction" means any sale of tangible personal property or taxable service reflected in a single invoice, receipt or statement for which an aggregate sales or use tax amount has been reported or remitted to the state for a single, local taxing jurisdiction. These taxes are collected by the state and distributed to the cities and counties each month.

Sales Tax Exemptions – Sales Tax Savings

Exemptions from sales and use taxes for manufacturers are as follows:

- Property which becomes a recognizable, integral part of property manufactured, compounded, processed, or assembled for resale.
- Machinery and equipment used directly in manufacturing which are purchased for a new or expanding manufacturing facility or to replace existing machinery or equipment
- Machinery and equipment required by Arkansas law to be purchased for air or water pollution control

The value of this statutory exemption depends on the amount of eligible expenditures as determined by the Arkansas Department of Finance and Administration.

Sales and Use Tax Reduction on Electricity and Natural Gas

The State of Arkansas has a reduced rate of 0.625% on electricity and natural gas used directly in the manufacturing process. For purposes of determining what utility usage is subject to this reduced rate, the manufacturing process includes processes beginning at the point where raw materials are first moved from raw material storage to the beginning of manufacturing or processing of those raw materials into items of tangible personal property and ends when the finished manufactured goods are packaged and ready for shipment or storage.

Sales and Use Tax Refund – Replacement and Repair

Effective July 1, 2014, state sales and use taxes relating to the partial replacement and repair of machinery and equipment used directly in manufacturing process may be refunded. Act 772 of 2019 Sales and Use Tax Refund for Machinery and Equipment used to Modify, Replace, or Repair Molds and Dies Used in Manufacturing. Amended the Arkansas code §26-52-447(a) related to sales tax refund related to the partial replacement and repair of certain machinery and equipment to include machinery and equipment purchased to modify, replace, or repair, either in whole or in part, existing molds and dies used directly in producing, manufacturing, fabricating, assembling, processing, finishing or packaging articles of commerce at a manufacturing or processing facility. Effective date: July 1, 2019. Manufacturers may utilize one of two of the options presented on the next page:

Option One:

- Provides a refund of one percent (1%) of the total sales and use taxes (5.875* percent) levied for the purchase and installation of machinery and equipment to modify, replace or repair, either in whole or part, existing machinery or equipment used directly in the manufacturing process.

Effective Date	Option 1 Percentage
July 1, 2014	1%
July 1, 2018	2%
July 1, 2019	3%
July 1, 2020	4%
July 1, 2021	5%
July 1, 2022	Full exemption of state sales and use taxes

Option Two:

- Provides for an increased refund of the total sales and use taxes (5.875* percent) levied. It is discretionary and may be offered by the Executive Director of AEDC to those manufacturers who have a major maintenance and improvement project totaling at least $3 million to purchase and install machinery or equipment used directly in the manufacturing process. The project is subject to approval and the Company must enter into a financial incentive agreement with AEDC for the project prior to incurring project expenditures.

*The excise tax of one-eighth of one percent (1/8 of 1%) levied in Arkansas Constitution, Amendment 75, and the temporary excise tax of one-half percent (0.5%) levied in Arkansas Constitution Amendment 91, are not subject to refund under this section.

Unemployment Insurance Tax

New Businesses

A business with no previous employment record in Arkansas is taxed at 3.2% on the first $10,000 of each employee's earnings until an employment record is established, usually within three years.

Existing Arkansas Businesses

2019 Experience-Based Rate range between 0.1% - 14.0% and average 1.54%. Each business' employment record is determined primarily by its taxable payroll and history of employee

voluntary termination. The tax is determined by past experience and the amount of the reserve-ratio. The reserve-ratio is the excess of contributions paid over benefits charged as related to payroll. The higher the reserve-ratio, the lower the tax rate. Currently, the maximum weekly benefit in Arkansas is $451.

Federal Unemployment Tax (FUTA)

Aside from state unemployment insurance taxes, employers pay a federal unemployment or FUTA tax. The FUTA tax rate is 6.0% with a taxable wage base of $7,000. However, if states operate their unemployment insurance programs in compliance with federal law then the FUTA tax is reduced (credit) by 5.4% to 0.6%.

Property Tax

The State of Arkansas does not have a property tax; however, Arkansas cities and counties do collect a property tax, which is the principal source of revenue for funding local public schools.

The tax is calculated based on 20 percent of the true market value of real and to the usual selling price of personal property (vehicles, boats, etc.) and the average annual value of merchants' stocks and/or manufacturers' inventories based on millage rates in individual school districts. Business firms and individuals are subject to annual property tax on all real and personal property.

Local county tax assessors and collectors calculate and collect all personal and real property taxes. Revenue derived from personal property taxes supports your local government agencies. Personal property must be assessed each year before May 31. Any personal property taxes assessed after the deadline will include a monetary penalty determined by the respective county. These taxes are due on or before October 15 of the following year.

Real Property Option (Using Arkansas Average Millage Rate as an Example):

Total Market Value	x	Assessment Level	=	Assessed Value
$4,000,000	x	20%	=	$800,000

Assessed Value	x	Millage Rate	=	Annual Property Tax Due
$800,000	x	.04748	=	$37,984

Please note: Corporate personal property taxes (equipment, office furniture, etc.) follow a depreciation schedule for each type of property. The schedule below (with exceptions dependent on the area) is issued by each County Assessor's Office in Arkansas.

COMMERCIAL PERSONAL PROPERTY
Depreciation Schedule

Remaining Life Percent

Schedule Age	3	5	6	8	10	12	16	20	25	30	Schedule Age
1	.55	.73	.78	.87	.89	.91	.93	.94	.96	.96	**1**
2	.30	.53	.60	.71	.82	.85	.88	.88	.91	.93	**2**
3	.10	.39	.48	.59	.75	.79	.84	.85	.87	.89	**3**
4		.24	.35	.50	.68	.73	.79	.81	.84	.87	**4**
5		.10	.23	.42	.61	.67	.75	.78	.81	.84	**5**
6			.10	.33	.53	.61	.70	.74	.79	.82	**6**
7				.24	.46	.55	.66	.71	.76	.80	**7**
8				.15	.39	.49	.61	.67	.73	.77	**8**
9					.32	.43	.57	.64	.70	.75	**9**
10					.25	.37	.52	.60	.67	.73	**10**
11						.31	.48	.57	.64	.70	**11**
12						.25	.43	.53	.62	.68	**12**
13							.39	.50	.59	.65	**13**
14							.34	.46	.56	.63	**14**
15							.30	.43	.53	.61	**15**
16							.25	.39	.50	.58	**16**
17								.36	.48	.56	**17**
18								.32	.45	.53	**18**
19								.29	.42	.51	**19**
20								.25	.39	.49	**20**
21									.36	.46	**21**
22									.33	.44	**22**
23									.31	.42	**23**
24									.28	.39	**24**
25									.25	.37	**25**
26										.34	**26**
27										.32	**27**
28										.30	**28**
29										.27	**29**
30										.25	**30**

Industrial revenue bond financing is available to a company in Arkansas for land acquisition, building acquisition, construction and equipment. Bonds can be issued as either taxable or tax exempt, depending on certain IRS qualifications and restrictions.

The Arkansas Economic Development Commission Bond Guaranty Program was created to provide long-term, tax exempt and taxable financing for businesses expanding or locating in Arkansas. Although the city or county may issue the revenue bond, the company is still responsible for paying the principal and interest.

Under this program, the Commission can guarantee timely payment of principal and interest, up to $5,000,000 principal per bond issue, to the bondholders. This guaranty gives the bonds a better rating, thereby making the bond more attractive to investors and reducing the company's cost to borrow money.

An additional benefit of bond financing is:

> Cities and counties are authorized to enter into a Payment in Lieu of Tax (PILOT) Agreement with industrial projects resulting in a reduction of property taxes that would otherwise be due. Industrial Revenue Bonds are issued by the city or county on behalf of the project. Under PILOT agreements, title to the property is held in name only by the public issuer for the term of the bond issue. At the end of the bond term, title will transfer to the company. The amount of the payment in lieu of taxes must not be less than 35% of what normal taxes would have been. The PILOT Agreement may not last longer than the term of the bond.

Inventory Tax

All real estate and tangible personal property (inventory) shall be assessed for taxation in the taxing district in which the property is located and kept in use.

If destination of a company's tangible personal property (inventory) is within the state, taxes will be assessed at its prior year's value only in the county/city of its destination.

Freeport Law

If destination of a company's tangible personal property (inventory) is out of state, the following statement applies:

Arkansas' Freeport Law exempts from property tax those finished goods and raw materials in transit or awaiting shipment to out-of-state customers.

Workers' Compensation Rate for the Manufacturing Sector

2018

Type of Rate	Rate per $100 payroll
Assigned Risk	$2.04
Advisory Loss Cost	$1.02

Source: NCCI July 2019 Arkansas Manufacturing Rates

The assigned risk rate is based on the inability for companies to obtain their own insurance, while the loss cost is for companies which are self-insured.

Maps

The following maps are provided:

- Transportation, Regional
- Transportation, Immediate
- Aerial
- Building Layouts
- Topographic
- Elevation Contours
- FEMA Flood Hazard
- National Wetlands Inventory
- Pipeline Infrastructure
- Electrical Infrastructure
- Surrounding Uses

425 West Capital Ave Suite 2700
Little Rock, AR 72201

Phone: 1-888-301-5861

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MAUMELLE CHAMPS SITE

Pulaski County, AR

Coordinates: -92.380418, 34.869945

Contents

Entergy BUSINESS DEVELOPMENT ARKANSAS

Maumelle Champs Site

Transportation, Regional

425 West Capitol Ave, Suite 2700
Little Rock, AR 72201

Phone: 1-888-301-5861

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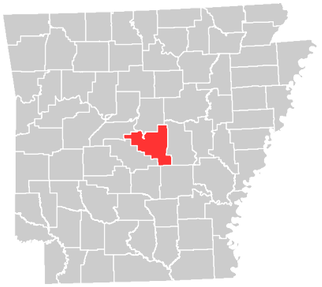
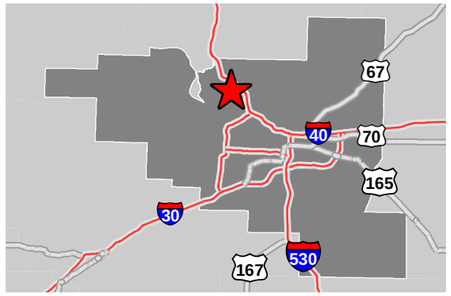
PULASKI COUNTY



VICINITY MAP



LEGEND

- SitePoint
- Port
- Airports
- Interstate
- U.S.

NOTE

These drawings are provided merely to assist in economic development efforts. The Entergy Companies make no representations or warranties whatsoever regarding the accuracy or completeness of any information contained herein nor the condition or suitability of any properties. Users should direct inquiries about any property to the listing broker for that property.

SOURCE

Roads: Census/TIGER database, 2014
Railroads: Federal Railroad Administration, Bureau of Transportation Statistics, ESRI, 2014
ESRI Basemaps; ESRI Datamaps 10.2

Created by: RPG
Date: 01/2019

0 20 40 Miles

0 25.34 50.68 Kilometers

N

Entergy BUSINESS DEVELOPMENT ARKANSAS

Maumelle Champs Site

Transportation, Immediate

425 West Capitol Ave, Suite 2700
Little Rock, AR 72201

Phone: 1-888-301-5861

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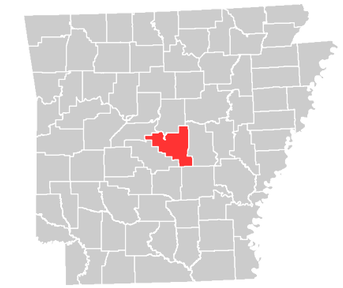
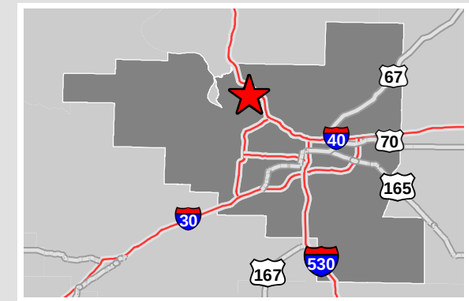
PULASKI COUNTY



VICINITY MAP



LEGEND

- Site Boundary
- Railroad
- Interstate Highway
- U.S. Highway
- State Highway

NOTE

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SOURCE

Roadway: Arkansas GIS Office Download 11/2018
Rail: Bureau of Transportation Stats 2014

Created by: RPG
Date: 01/2019

0 1,500 3,000 Feet

0 360 720 Meters

N

BUSINESS DEVELOPMENT
ARKANSAS

Maumelle Champs Site

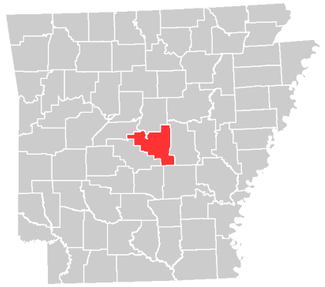
Aerial

425 West Capitol Ave, Suite 2700
Little Rock, AR 72201

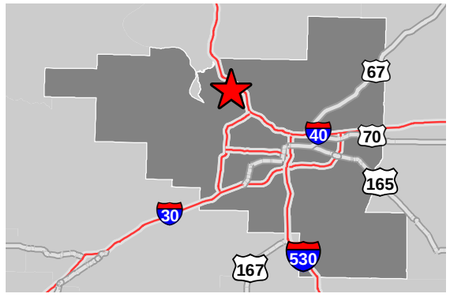
Phone: 1-888-301-5861

goentergy.com/ar

PULASKI COUNTY



VICINITY MAP



Site Boundary

Railroad

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SOURCE

Survey: Dimensions rounded from Survey of 121.482 acres in T3N R13W City fo Maumelle, Pulaski County, Arkansas by The Holloway Firm, Inc. , Dated 4/22/2005

Created by: RPG
Date: 01/2019

0 500 1,000 Feet

0 120 240 Meters

N

Entergy BUSINESS DEVELOPMENT ARKANSAS

Maumelle Champs Site

Proposed Building Layout 1

425 West Capitol Ave, Suite 2700
Little Rock, AR 72201

Phone: 1-888-301-5861

goentergy.com/ar

PULASKI COUNTY

VICINITY MAP

LEGEND

- Site Boundary
- Archaelogical Site
- Wetlands
- Wetlands (under mitigation)
- Streams (under mitigation)

NOTE

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SOURCE

Cultural Resources: Panamerican Consultants, Inc, Report date April 23, 2019.
Jurisdictional Determination: GBM and Associates, Report date April 25, 2019.

Created by: RPG
Date: 05/2019

0 500 1,000 Feet

0 120 240 Meters

N

Entergy BUSINESS DEVELOPMENT ARKANSAS

Maumelle Champs Site

Proposed Building Layout 2

425 West Capitol Ave, Suite 2700
Little Rock, AR 72201

Phone: 1-888-301-5861

PULASKI COUNTY

VICINITY MAP

LEGEND

- Site Boundary
- Archaelogical Site
- Wetlands
- Wetlands (under mitigation)
- Streams (under mitigation)

NOTE

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SOURCE

Cultural Resources: Panamerican Consultants, Inc, Report date April 23, 2019.
Jurisdictional Determination: GBM and Associates, Report date April 25, 2019.

Created by: RPG
Date: 05/2019

0 500 1,000 Feet

0 120 240 Meters

N

Entergy BUSINESS DEVELOPMENT ARKANSAS

Maumelle Champs Site

Topographic Map

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Little Rock, AR 72201

Phone: 1-888-301-5861

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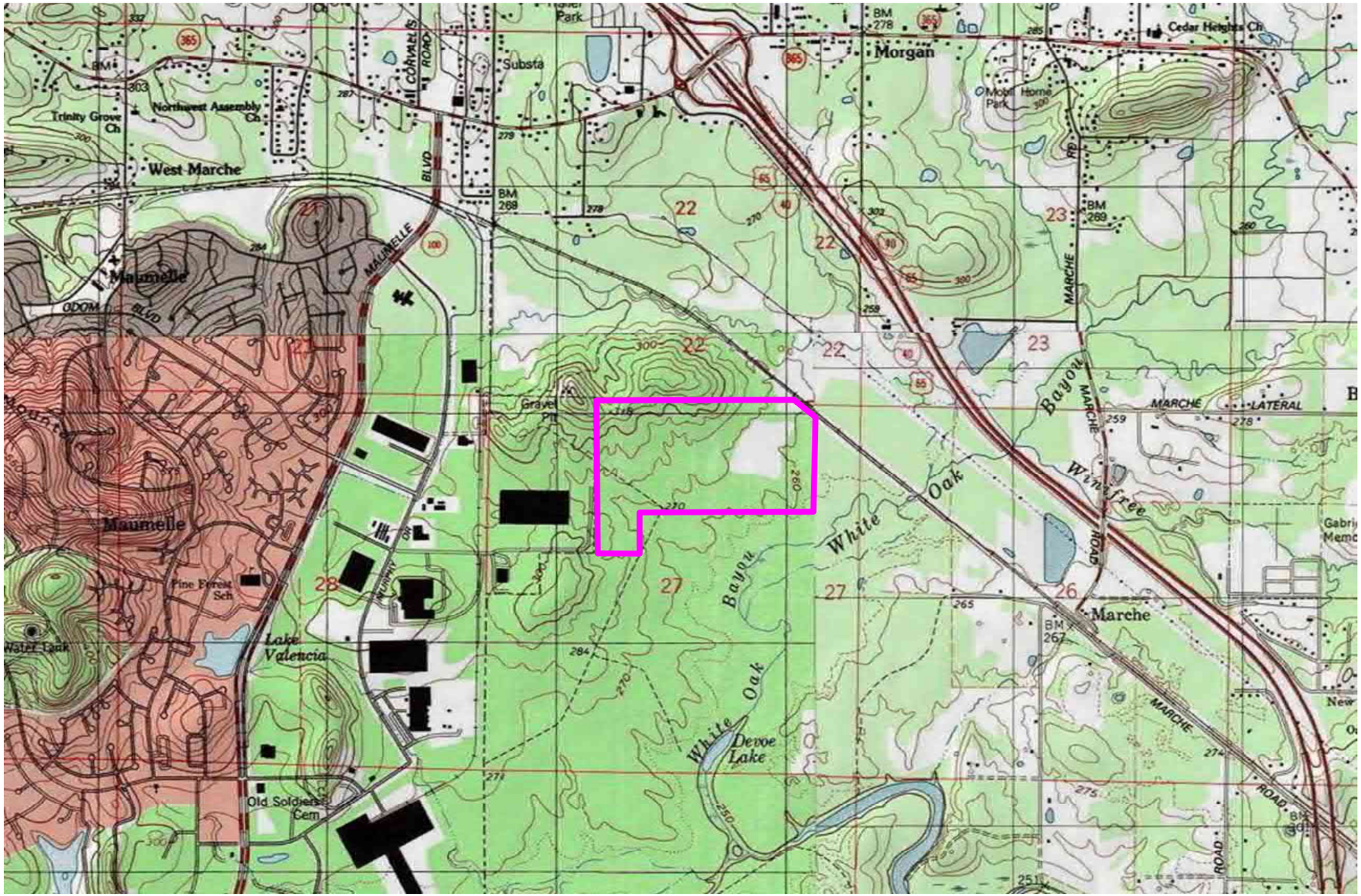
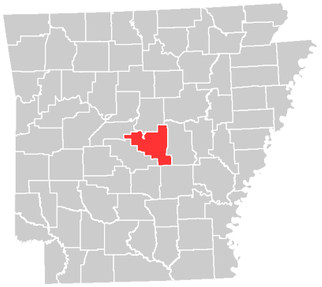
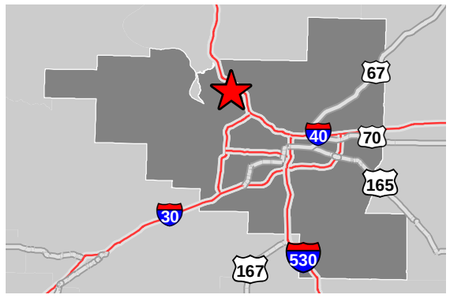


PULASKI COUNTY



VICINITY MAP



Site Boundary

NOTE

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SOURCE

Service Layer Credits: Copyright:© 2013 National Geographic Society, i-cubed

Created by: RPG
Date: 01/2019

0 1,500 3,000 Feet

0 360 720 Meters

N

BUSINESS DEVELOPMENT
ARKANSAS

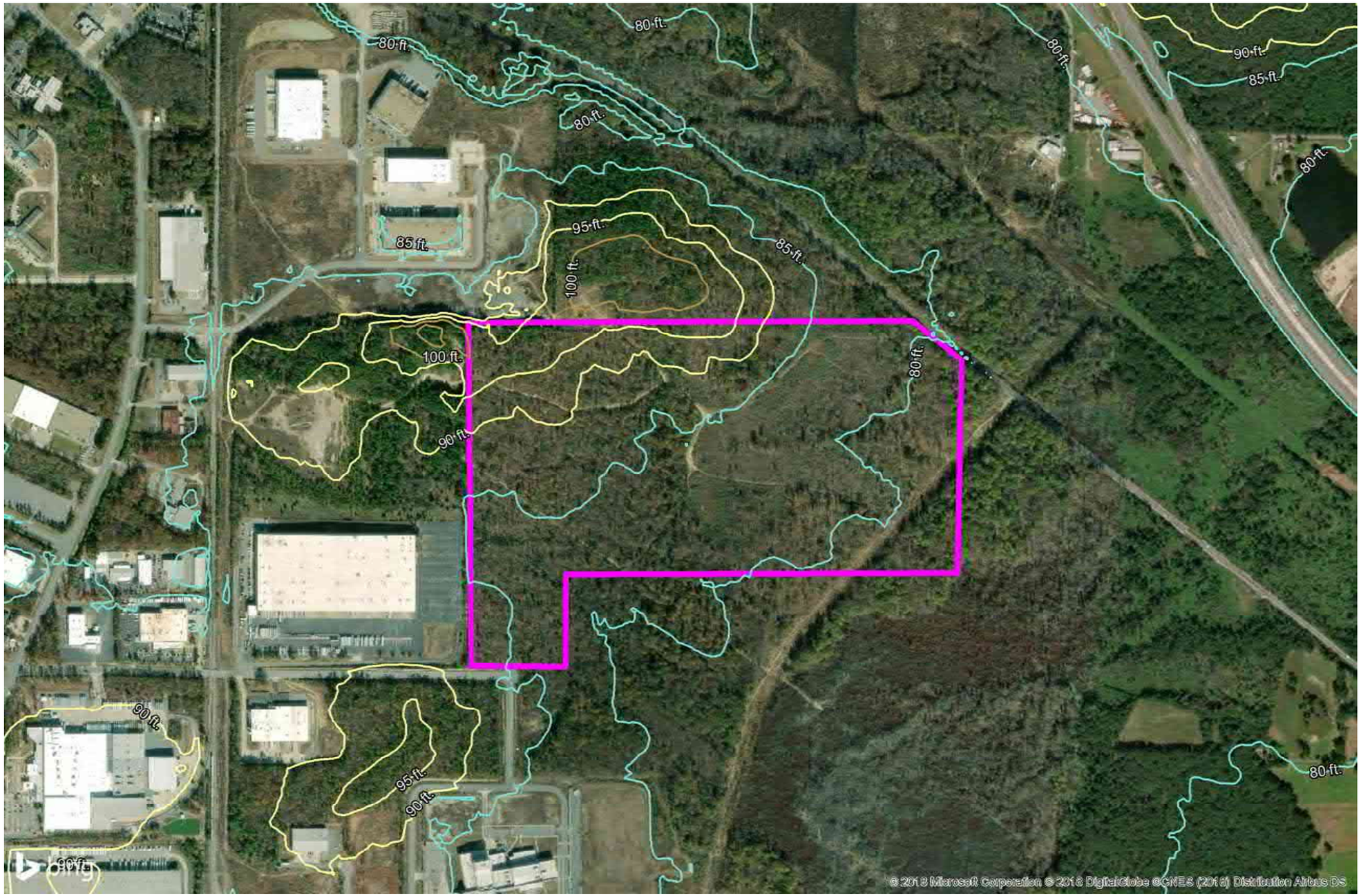
Maumelle Champs Site

Elevation Contours

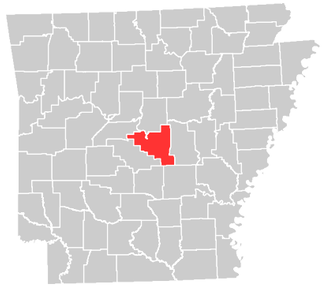
425 West Capitol Ave, Suite 2700
Little Rock, AR 72201

Phone: 1-888-301-5861

goentergy.com/ar



PULASKI COUNTY



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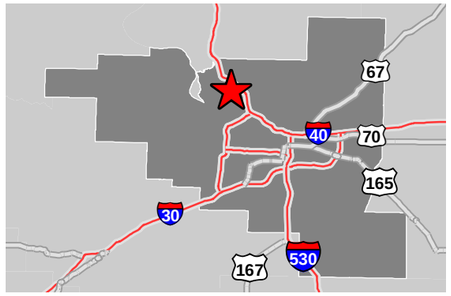

LEGEND

Site Boundary

Elevation Contours

80 ft. - 85.0 ft.

85.1 ft. - 95.0 ft.

95.1 ft. - 115.0 ft.

NOTE

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SOURCE

Contours made from USGS National Elevation Data Set Rasters

Created by: RPG
Date: 01/2019

0 667 1,334 Feet

0 160 320 Meters

N

Entergy BUSINESS DEVELOPMENT ARKANSAS

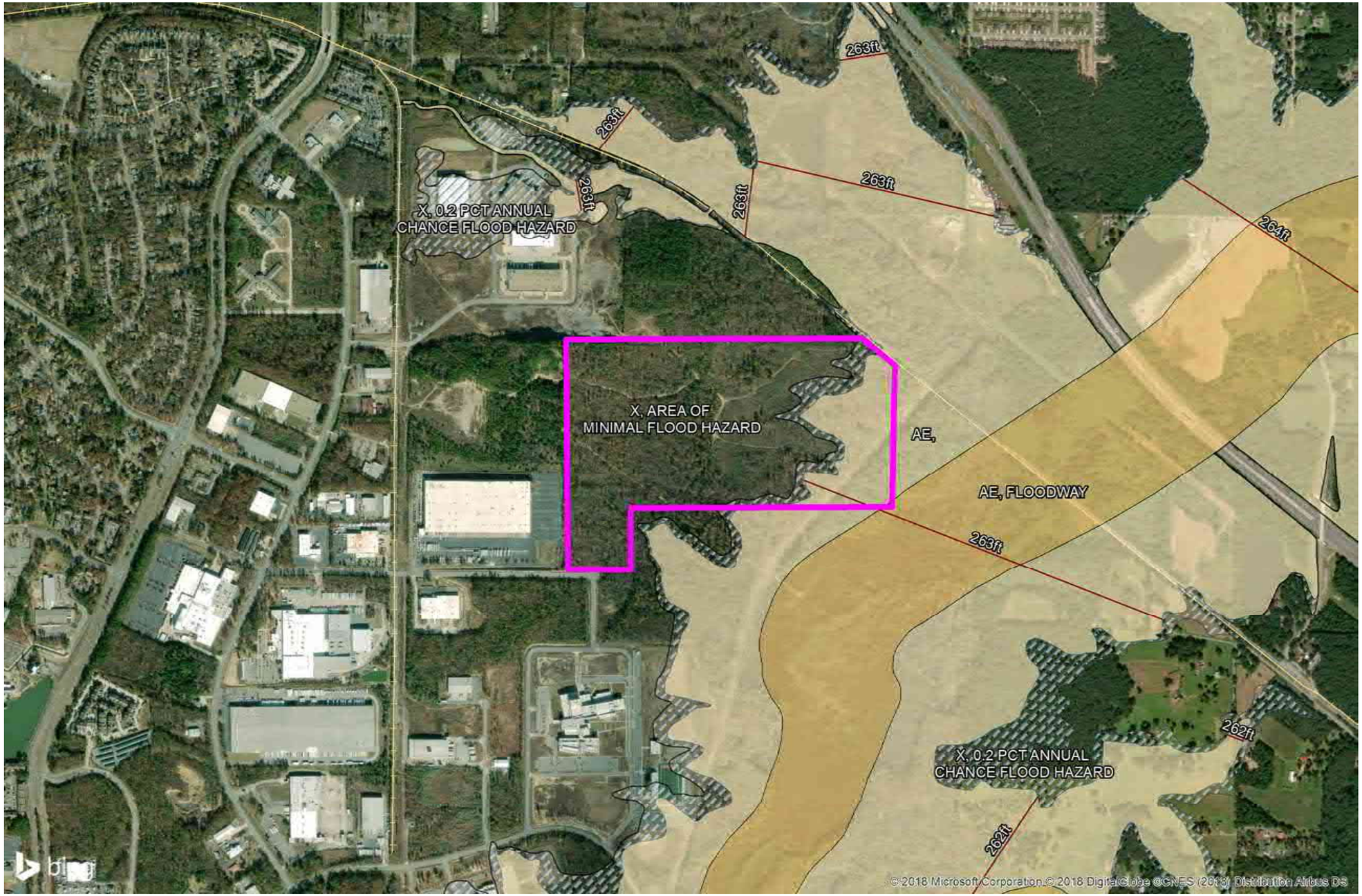
Maumelle Champs Site

FEMA Flood Hazard

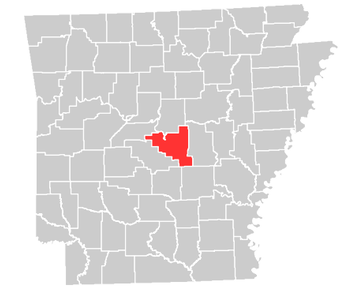
425 West Capitol Ave, Suite 2700
Little Rock, AR 72201

Phone: 1-888-301-5861

goentergy.com/ar



PULASKI COUNTY



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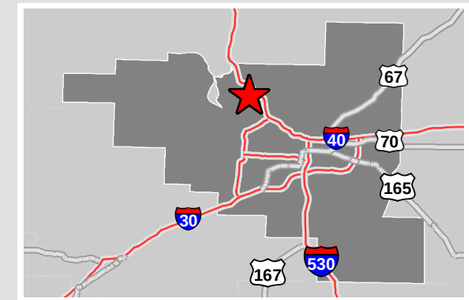

LEGEND

Site Boundary

Base Flood Elev

Flood Hazard

AE,

AE, FLOODWAY

X, 0.2 PCT ANNUAL CHANCE FLOOD HAZARD

X, AREA OF MINIMAL FLOOD HAZARD

NOTE

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SOURCE

FEMA, DFirm 05119C_LOMC, LOMR 18-06-0091, Publication Date 4/20/2018

Created by: RPG
Date: 01/2019

0 1,000 2,000 Feet

0 240 480 Meters

N

Entergy BUSINESS DEVELOPMENT ARKANSAS

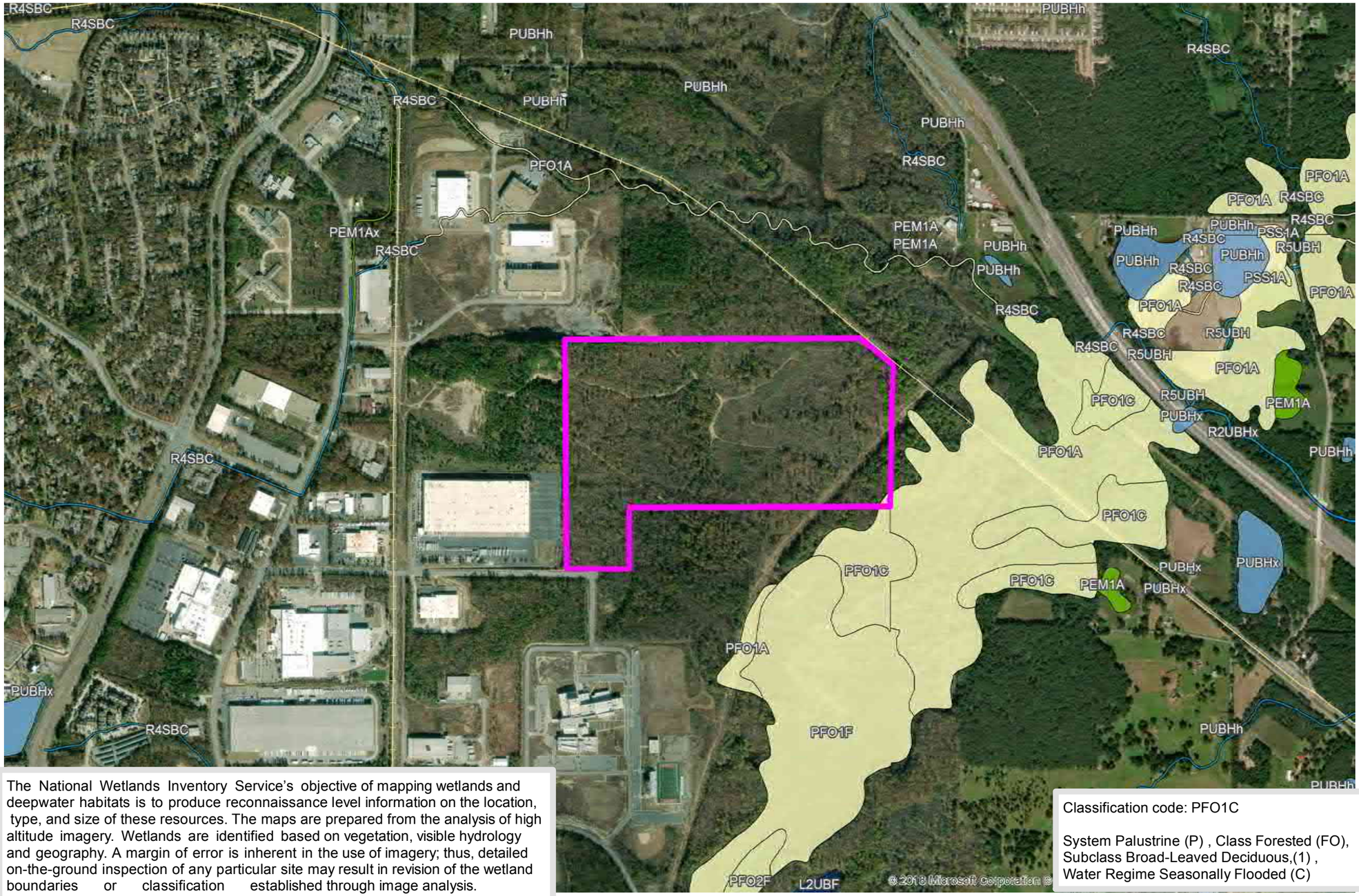
Maumelle Champs Site

National Wetlands Inventory

425 West Capitol Ave, Suite 2700
Little Rock, AR 72201

Phone: 1-888-301-5861

goentergy.com/ar

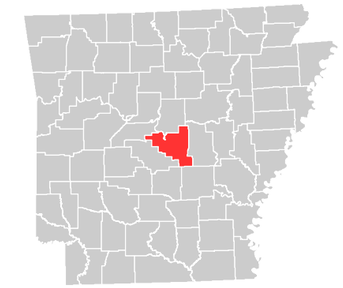


The National Wetlands Inventory Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type, and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

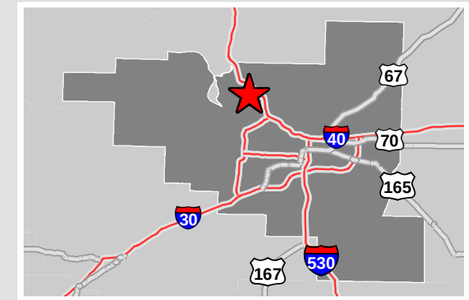
Classification code: PFO1C

System Palustrine (P) , Class Forested (FO), Subclass Broad-Leaved Deciduous,(1) , Water Regime Seasonally Flooded (C)

PULASKI COUNTY



VICINITY MAP



LEGEND

Site Boundary

WETLANDS

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine

NOTE

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SOURCE

US Fish and Wildlife Service, National Wetlands Inventory, HU8_11110207_Wetlands

Created by: RPG
Date: 01/2019

0 1,000 2,000 Feet

0 240 480 Meters

N

Entergy BUSINESS DEVELOPMENT ARKANSAS

Maumelle Champs Site

Pipeline Infrastructure

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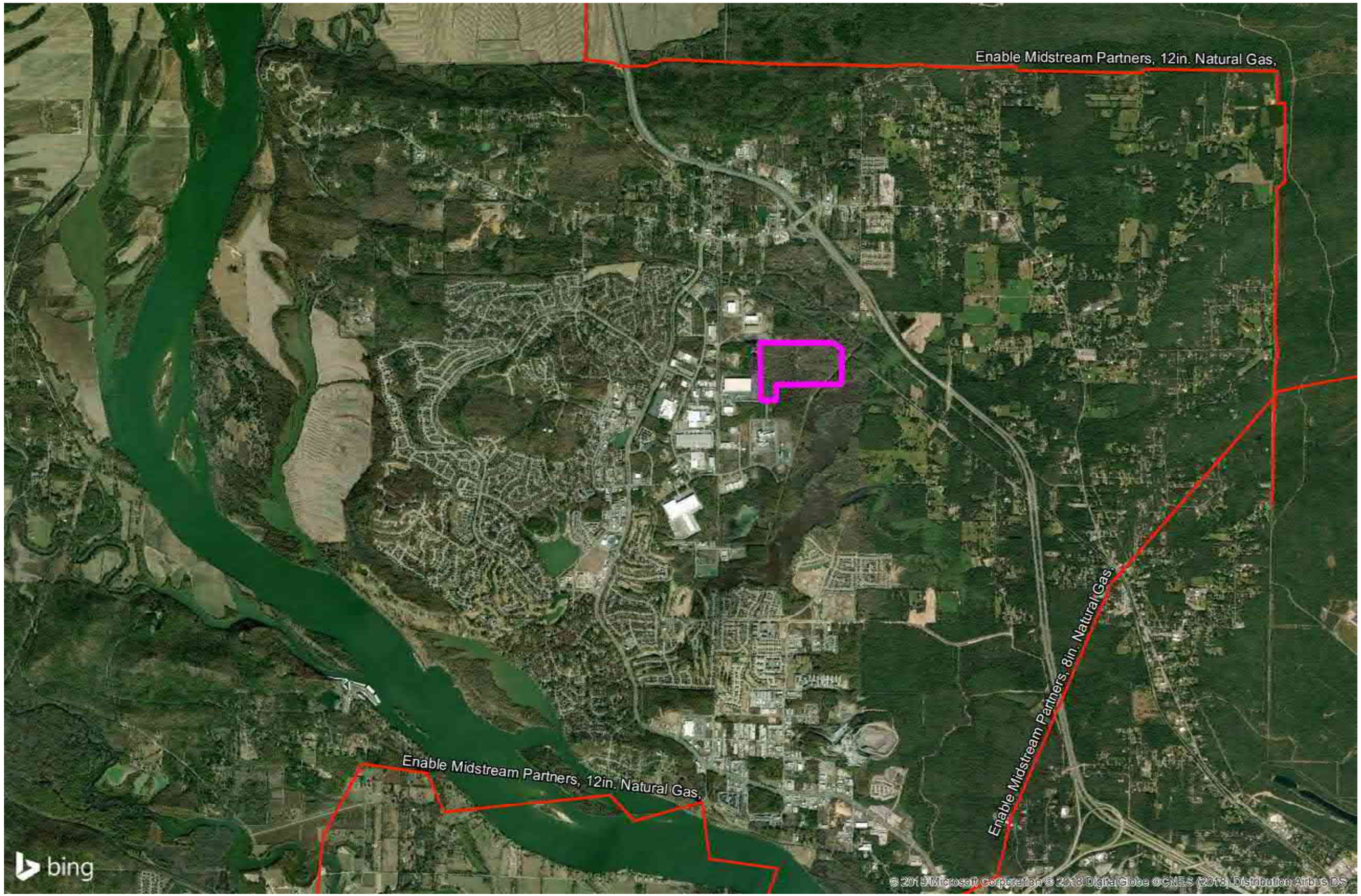
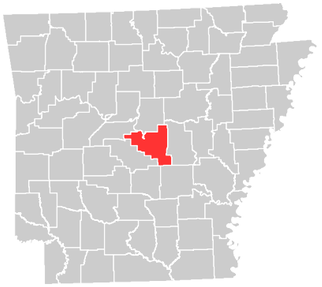
Little Rock, AR 72201

Phone: 1-888-301-5861

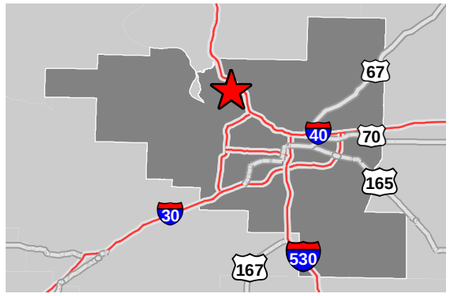
goentergy.com/ar



PULASKI COUNTY



VICINITY MAP



LEGEND

Site Boundary

Pipeline Infrastructure

Natural Gas

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SOURCE

Pipelines: 2018 Pennwell Data

Created by: RPG
Date: 01/2019

0 4,000 8,000 Feet

0 960 1,920 Meters

N

Entergy BUSINESS DEVELOPMENT ARKANSAS

Maumelle Champs Site

Entergy's Electrical Infrastructure

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Little Rock, AR 72201

Phone: 1-888-301-5861

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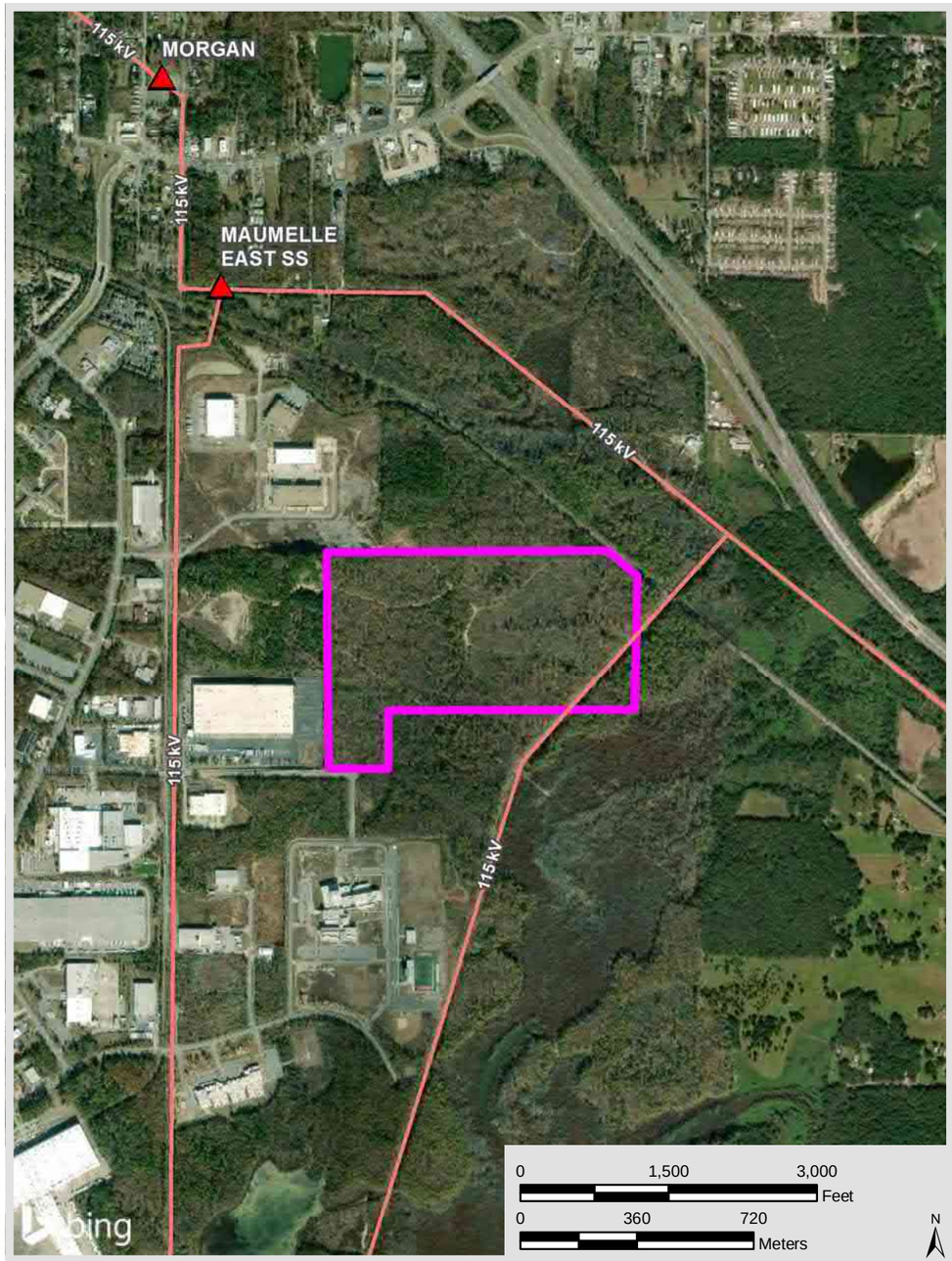
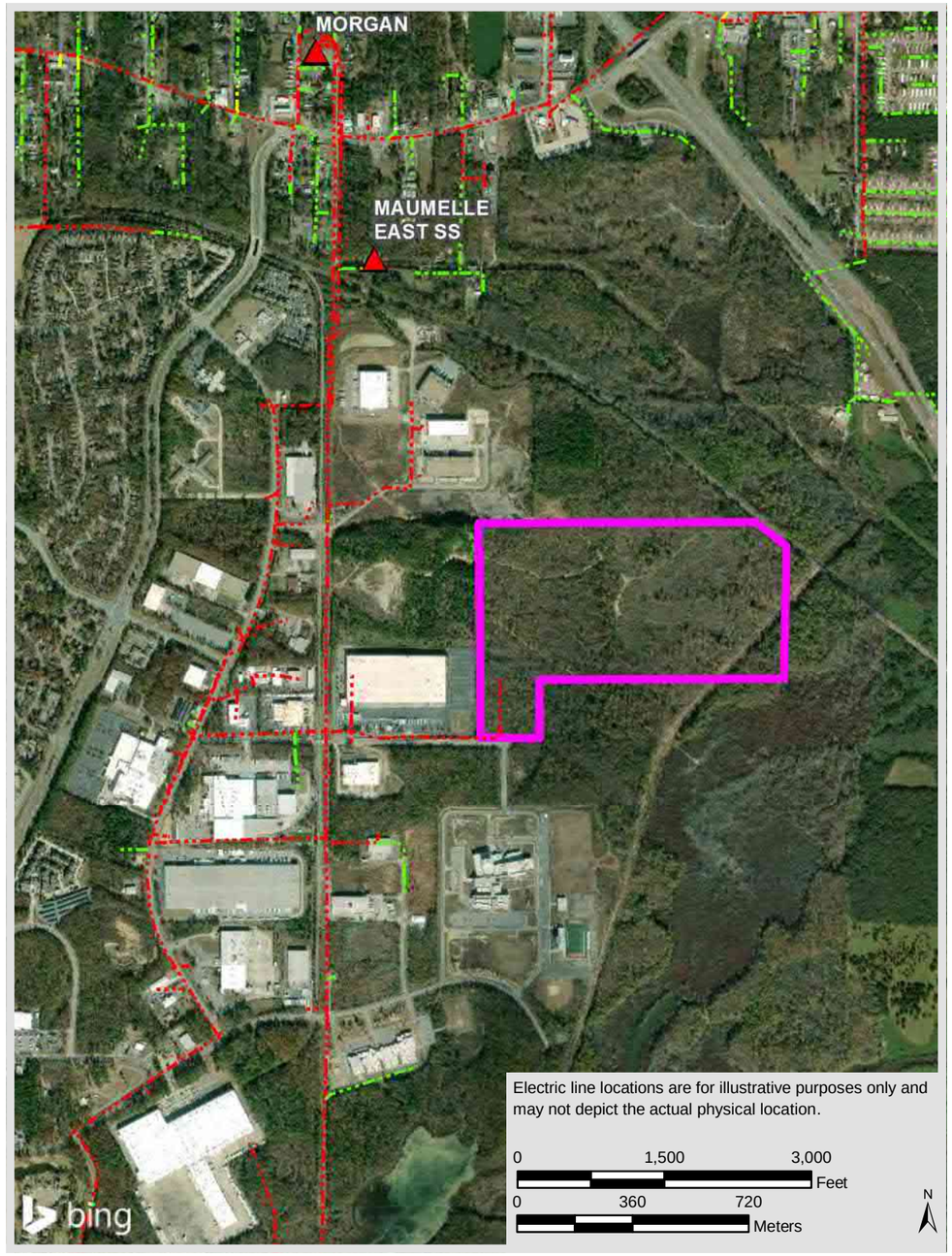
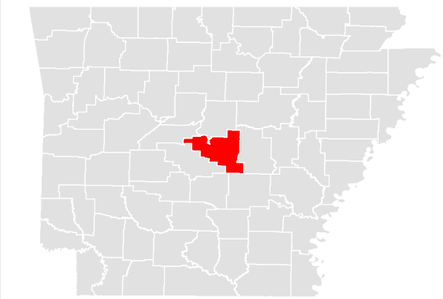
TRANSMISSION



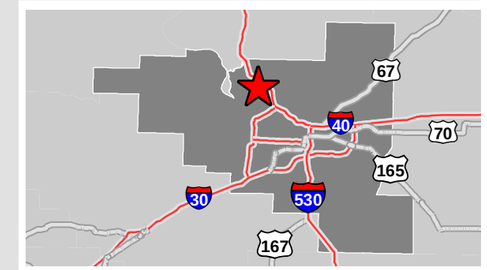
DISTRIBUTION



PULASKI COUNTY



VICINITY



LEGEND

Site Boundary

Transmission

Substations — 115 kV

Distribution

System Voltage, Phase

13.8 kV, Single Phase

13.8 kV, Two Phase

13.8 kV, Three Phase

NOTE

SOURCE

Source: Transmission-Entergy, 2019; Distribution-Entergy, 2019

Created by: RPG
Date: 01/2019

Entergy BUSINESS DEVELOPMENT ARKANSAS

Maumelle Champs Site

Surrounding Uses

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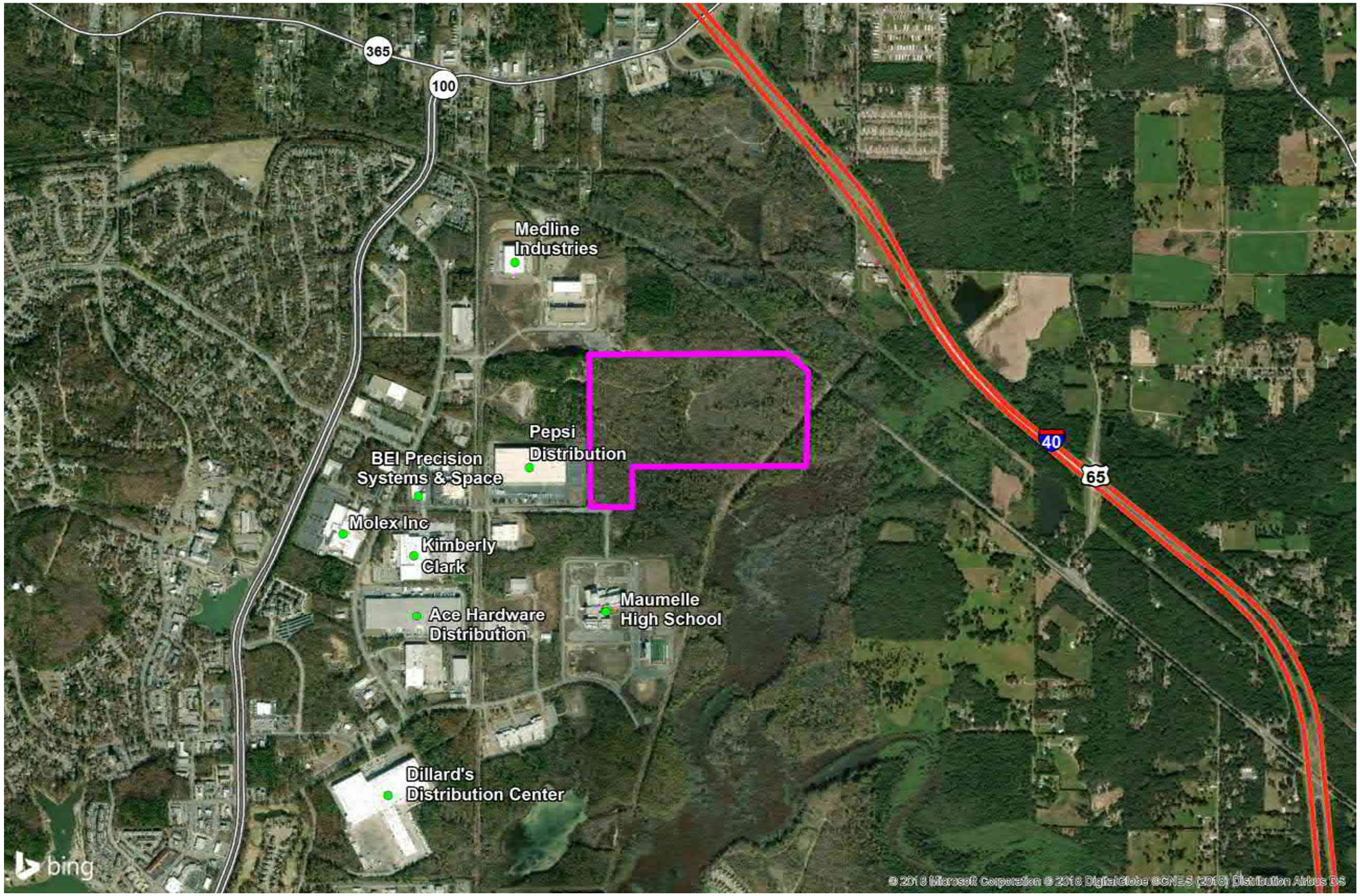
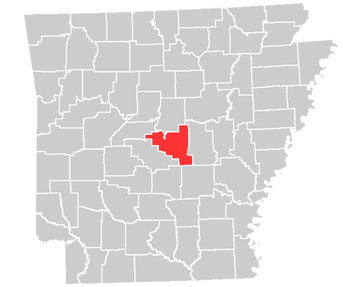
Little Rock, AR 72201

Phone: 1-888-301-5861

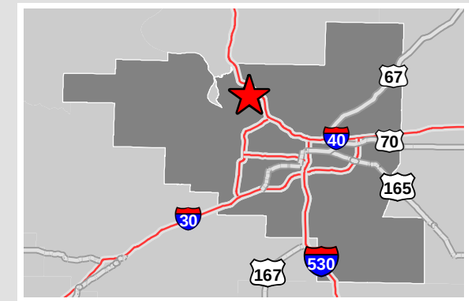
goentergy.com/ar



PULASKI COUNTY



VICINITY MAP



LEGEND

- Site Boundary
- Existing Industries
- Interstate Highway
- U.S. Highway
- State Highway

NOTE

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SOURCE

Roadway: Arkansas GIS Office Download 11/2018
Rail: Bureau of Transportation Stats 2014

Created by: RPG
Date: 01/2019

0 1,500 3,000 Feet

0 360 720 Meters

N

DISCLAIMER

Entergy Arkansas, LLC ("EAL"), nor anyone acting on behalf of EAL, makes no representations or warranties of whatsoever nature, directly or indirectly, express or implied, as to the site described herein or any improvements located thereon including, without limitation, the physical conditions or attributes of the site or improvements; condition of title to the site or improvements; suitability of the site or improvements for any particular purposes; compliance with federal, state or local laws, regulations or orders and applicable zoning, building and other legal requirements; and/or the correctness and completeness of the contents contained within these materials.

Recipients of these materials must perform their own investigation and due diligence concerning all aspects of the site and/or improvements, financial, tax, and business matters associated therewith so as to enable them to evaluate the merits and risks of the site and to make any informed decision with respect thereto.