APPENDIX D – NOISE LEVEL REPORT

Memorandum

BURNS McDONNELL

Date: June 26, 2017

To: Eric Dulle

From: Gabriel Weger

Subject: CERT Groundwater Remediation Project – Noise Analysis

Burns & McDonnell Engineering Company, Inc. (Burns & McDonnell) has performed a noise analysis for the Cimarron Environmental Response Trust (CERT) Groundwater Remediation Project (Project). The Project consists of installation and continuous operation of groundwater recovery, treatment, and discharge systems designed to remediate groundwater at the existing site near Cimarron City, Oklahoma (Facility).

The U.S. Nuclear Regulatory Commission (NRC), is in the process of reviewing the *Cimarron Facility Decommissioning Plan* (Decommissioning Plan), submitted by Environmental Properties Management LLC (EPM) in December 2015. The NRC will review the Decommissioning Plan and prepare an Environmental Report (ER) which will include information on the environmental effects of the proposed Project.

The NRC NUREG-1748, Sections 6.3.7 and 6.4.7, provide that the ER should include information about potential impacts from noise during remediation system operation. This noise analysis has been completed in response to comments received from the NRC on the Decommissioning Plan, and will be included as a supplement to the revised Decommissioning Plan.

Applicable Regulations and Guidelines

The State of Oklahoma does not have applicable state-wide noise regulations and has delegated the authority to the individual counties and cities. The Facility is located in an unincorporated area of Logan County near Cimarron City and the City of Guthrie. Logan County does not have any noise regulations applicable to the Facility, and the cities' noise ordinances would not be applicable to the Facility, as it is located outside each cities' limits. Neither the City of Guthrie nor Cimarron City establish numerical noise limits in their city ordinances.

The Noise Control Act of 1972 (the Act)[1] mandated a national policy "to promote an environment for all Americans free from noise that jeopardizes their health or welfare, to establish a means for effective coordination of federal research activities in noise control, to authorize the establishment of federal noise emission standards for products distributed in commerce, and to provide information to the public respecting the noise emission and noise reduction characteristics of such products." As required by the Act, the Environmental Protection Agency (EPA) published *Information on Levels of Environmental Noise Requisite to Protect*

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[1] United States Code (U.S.C.): 42 U.S.C. 4901 to 4918

Public Health and Welfare with an Adequate Margin of Safety[2] in 1974. These levels are shown in Table 1.

Table 1: EPA Noise Levels Identified to Protect Public Health and Welfare

Effect	Noise Level	Area
Hearing Loss	$L_{eq(24)} \leq 70$ dBA	All areas.
Outdoor activity interference	$L_{dn} \leq 55$ dBA	Outdoor residential and farm areas, and other outdoor areas where people spend widely varying amounts of time and other places in which quiet is a basis for use
	$L_{eq(24)} \leq 55$ dBA	Outdoor areas where people spend limited amounts of time, such as school yards, playgrounds, etc.
Indoor activity interference and annoyance	$L_{dn} \leq 45$	Indoor residential areas.
	$L_{eq(24)} \leq 45$ dBA	Other indoor areas with human activities, such as schools, etc.

The levels contained in Table 1 were established as required by the Act, but do not constitute enforceable federal regulations or standards. However, these noise levels represent valid criteria for evaluating the effect of project-generated noise on public health and welfare. Many noise studies performed for new projects compare residential noise levels to these EPA-established guidelines.

The recommended EPA guideline for outdoor activity in residential areas is a day-night average sound level (L_{dn}) of 55 dBA or less. An L_{dn} of 55 dBA can be equated to a steady-state energy equivalent sound level (L_{eq}) of 48.6 dBA for a 24-hour period, incorporating the 10-dB penalty that is applied to the nighttime hours.

Due to the absence of local noise regulations, the overriding design goal for surrounding noise-sensitive receivers will be an hourly L_{eq} of 48.6 dBA, per the EPA guidance.

[2] The United States Environmental Protection Agency, Office of Noise Abatement and Control

Ambient Measurements

Burns & McDonnell noise specialists conducted a noise survey on April 18 and 19, 2017, near the Facility. Burns & McDonnell personnel obtained ambient sound level measurements to establish baseline sound levels at various locations near the Facility. Measurements were taken using an American National Standards Institute (ANSI) S1.4 type 1 sound level meter (Larson Davis Model 831). The sound level meter was field calibrated before and after each set of measurements. None of the calibration level changes exceeded ± 0.5 dB, which is within the acceptable variance per ANSI guidance. A windscreen was used at all times on the microphone to avoid the influence of wind-induced sound increases.

Ambient measurements were taken during four time periods over a 24-hour span. All measurements were taken during times when meteorological conditions were favorable for conducting sound measurements. Meteorological conditions were obtained using a Kestrel 5000 anemometer and are presented in Table 2.

Table 2: Average Meteorological Conditions during Sound Measurements

Date	Time Period	Temperature (°F)	Relative Humidity (%)	Wind Speed (mph)	Sky Cover
4-18-2017	12:00 P.M.	74	57	5-10	Clear
4-18-2017	6:00 P.M.	80	49	3-8	Clear
4-19-2017	12:00 A.M.	71	71	calm	Clear
4-19-2017	6:00 A.M.	66	77	2-4	Clear

Ambient, sound level measurements were made at six locations, labeled Measurement Point (MP) 1 through MP6, as shown in Figure 1-1 of Attachment 1. The measurement locations were selected because they were accessible and representative of noise-sensitive receivers. The sound level measurement periods were 5 minutes long, and measured values were logged by the sound meter at each measurement location. The sound levels varied at each measurement point due to the extraneous sounds that occurred during each measurement.

Extraneous sounds during the measurement periods included sound associated with vehicular traffic from nearby roads and highways (including large trucks and motorcycles), insects, birds, and airplanes flying overhead. Various sound metrics can be used to qualify measured sound levels. The exceedance sound metric L_{90} – the sound level exceeded 90 percent of the time – is typically considered the background sound level for an area without short-duration, extraneous sound influences

The measured, A-weighted L_{eq} and L_{90} sound levels are presented in Attachment 1 Table 1 along with ambient sound sources noted throughout the measurements. Ambient A-weighted L_{eq} sound levels varied from a low of 34.8 dBA at MP1 during the midnight measurements to a high of 67.8 dBA at MP5 during the morning measurements. Ambient A-weighted L_{90} sound levels for areas near the Facility varied from a low of 32.6 dBA at MP1 during the midnight measurements to a high of 57.7 dBA at MP3 during the morning measurements. Due to constant traffic, ambient sound levels at some of the measurement locations exceed the design goal. Compliance measurements would need to account for ambient sound levels with environmental corrections to determine the Project's contribution to overall sound.

Predictive Modeling

Burns & McDonnell performed predictive sound modeling for the Project using the Computer Aided Design for Noise Abatement (CadnaA), Version 2017, published by DataKustik, Ltd., Munich, Germany. Air absorption, ground absorption, and reflections and shielding for each piece of sound-emitting equipment were considered per International Organization for Standardization (ISO) 9613-2, Acoustics – Sound Attenuation during Propagation Outdoors.

The ISO standard considers sound propagation and directivity. The sound-modeling software uses omnidirectional, downwind sound propagation and worst-case directivity factors. In other words, the model assumes that each piece of equipment propagates its maximum sound level in all directions at all times. Empirical studies accepted within the industry have demonstrated that modeling may over-predict sound levels in certain directions, and as a result, modeling results are generally considered a conservative prediction of the Project's actual sound level.

The modeled atmospheric conditions were assumed to be calm, and the temperature and relative humidity were left at the program's default values. Reflections and shielding were considered for sound waves encountering physical structures. The area surrounding the Facility has a significant amount of elevation change, which scatters and absorbs the sound waves. Thus, terrain was included to account for surface effects such as ground absorption and surface reflections. Ground absorption was set at a value of 0.5 for all areas surrounding the Facility, meaning only half the available ground absorption was considered. Ground elevation, based on United States Geological Survey 3D Elevation Program data, was included in the model. The Project basis of design layout is provided in Figure 2-1 of Attachment 2.

MPs from the sound survey, and the nearest off-site residential receivers (RES), were included in the model. The modeled receiver locations are provided in Figure 2-2 of Attachment 2.

Each piece of equipment associated with the proposed Project was modeled with expected sound power levels applied to them. The sound emitting equipment associated with the Project includes: various equipment and pump skids, air compressors, air handling units, and building exhaust fans. All sound emitting equipment was adjusted to meet a sound pressure level of 85

dBA at 3 feet horizontally from the emitting equipment. This is a conservative assumption, as some of the equipment may emit much lower sound levels. However, at this point in the design process, specific equipment sound levels are unknown. The following assumptions and equipment counts were used to develop the noise model and estimate sound levels at the nearest sensitive receptors.

- Treatment building with insulated metal panel walls and roof (STC=42)
  - Treatment building includes four (4) pumps (85 dBA at 3 feet, each)
- (1) Treatment building air handling unit (85 dBA at 3 feet)
- (2) Treatment building exhaust vent fans (85 dBA at 3 feet, each)
- (2) Bioreactor pump skids (85 dBA at 3 feet, each)
- (2) Blower skids (85 dBA at 3 feet, each)
- (2) Backwash pump skids (85 dBA at 3 feet, each)
- (2) Feed pump skids (85 dBA at 3 feet, each)
- (2) Sludge holding pumps (85 dBA at 3 feet, each)

The Project's estimated sound levels are based on the equipment data defined above. The majority of Project noise received by neighboring properties would be emitted from the pump skids located outside of the treatment building. The predicted overall sound levels experienced by neighboring properties would be the combination of the future Project sound and existing ambient sound. To determine the worst-case (loudest) increase to ambient sound, estimated Project sound levels were added to the lowest measured ambient sound levels to determine a maximum increase to ambient sound.

The amplitude of sound is measured as the logarithmic ratio of a sound pressure to a reference sound pressure (20 micropascals). The reference sound pressure corresponds to the typical threshold of human hearing. Because sound is measured on a logarithmic scale, sound levels cannot be added or subtracted directly and are somewhat cumbersome to handle mathematically. Some simple rules are useful in dealing with sound levels. First, if a sound's intensity is doubled, the sound level increases by 3 dB, regardless of the initial sound level. Thus, for example: 60 dB + 60 dB = 63 dB, not 120 dB. To the average listener, a 3-dB change in a continuous broadband sound is generally considered "just barely perceptible"; a 5-dB change is generally considered "clearly noticeable"; and a 10-dB change is generally considered a doubling (or halving, if the sound is decreasing) of the apparent loudness. The sound modeling results are provided below in Table 3.

Table 3: Predicted Sound Pressure Levels

Location	Receiver Type	Lowest L_{90} Ambient Sound Levels (dBA)	Predicted Project Sound Levels (dBA)	Predicted Overall Sound Levels[c] (dBA)	Increase to Ambient Sound Levels (dBA)
MP1	Monitoring Point	32.6	18.1	32.8	0.2
MP2	Monitoring Point	41.7	24.6	41.8	0.1
MP3	Monitoring Point	34.4	26.7	35.1	0.7
MP4	Monitoring Point	39.2	31.2	39.8	0.6
MP5	Monitoring Point	41.3	24.2	41.4	0.1
MP6	Monitoring Point	35.3	25.5	35.7	0.4
RES1	Residence[a]	35.3	24.9	35.7	0.4
RES2	Residence[b]	32.6	24.3	33.2	0.6
RES3	Residence[b]	32.6	27.0	33.7	1.1

(a) Ambient sound levels from MP6 were assumed for Residence 1
(b) Ambient sound levels from MP1 were assumed for Residences 2 and 3
(c) Predicted overall sound levels are the logarithmic addition of the ambient and Project sound levels.

The predicted sound pressure levels of the Project are shown as 5-dB contours in Figure 2-3 of Attachment 2. The contours are the expected sound pressure levels of the new equipment only, and do not include any contributions from ambient sound sources.

In addition to the operating remediation equipment, there will be two treatment system discharge outfalls located at the Cimarron River. These outfalls would have no operating equipment at their locations, only running water. Noise associated with these outfalls is not expected to be significant and would likely blend into the existing sound of running water from the Cimarron River.

As shown in Table 3, there are no significant increases to ambient sound levels expected at the offsite receiver locations. Generally, a 3-dB change in overall sound is considered noticeable and a 5-dB change is considered significant. The largest increases over the quietest measured background ambient sound levels are expected to be around one decibel. This does not suggest that the equipment will never be audible offsite, but rather that the sound generated from the new equipment will not increase overall ambient sound levels by a noticeable amount. The Project equipment as modeled will remain below the design goal of an hourly L_{eq} of 48.6 dBA at the

surrounding noise-sensitive receivers, per the EPA guidance. Therefore, no additional noise mitigation is suggested at this time.

Gabriel Weger,
Burns & McDonnell

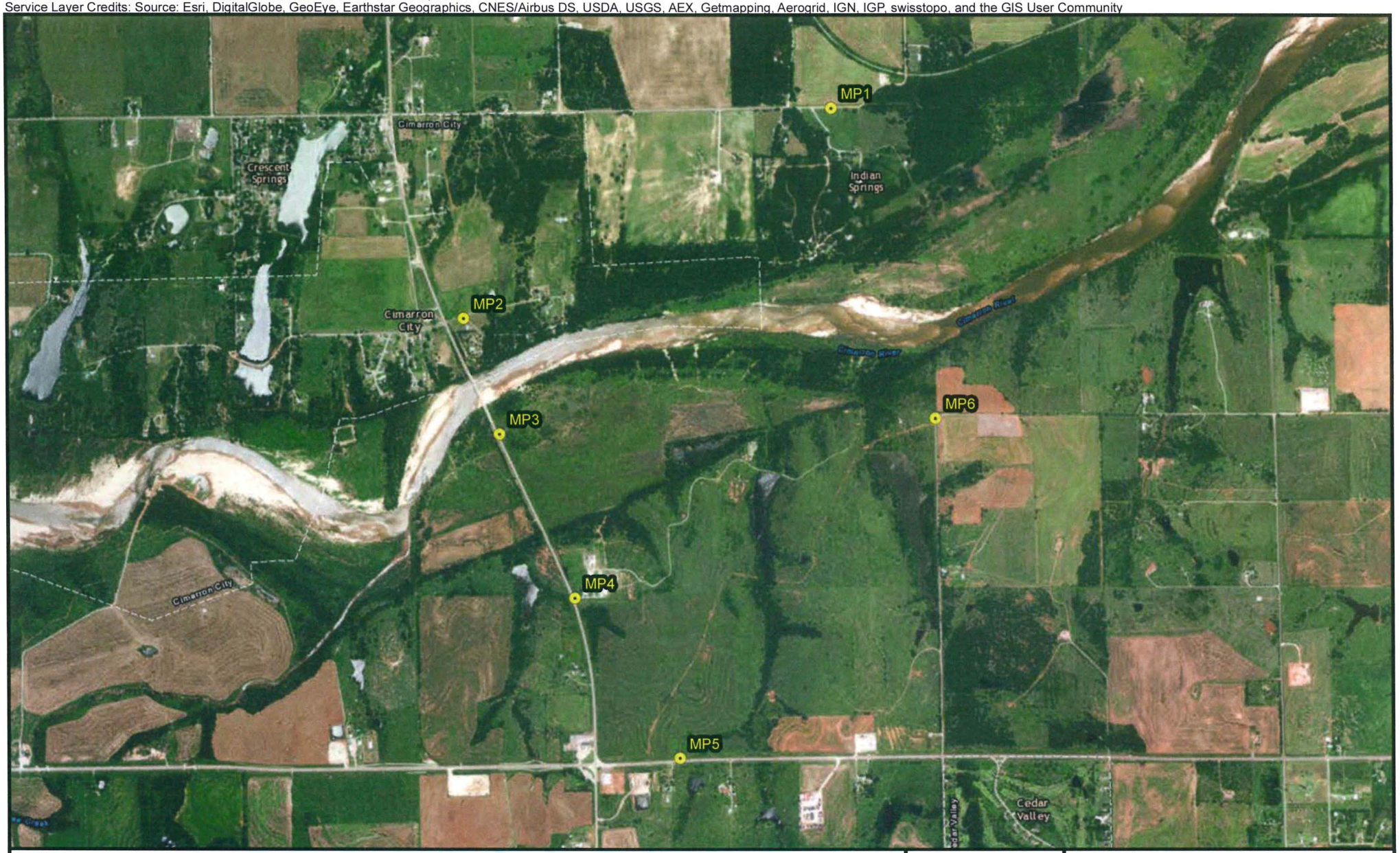
Attachments:

Attachment 1 – Ambient Measurements
Attachment 2 – Noise Modeling

ATTACHMENT 1

Path: G:\Air-Noise Dept\Project Files\Cimarron\Noise\GIS\Figure 1-1 Noise Monitoring Locations.mxd gweger 5/17/2017

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



Measurement Point

NORTH

2,000 1,000 0 2,000

Scale in Feet

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Figure 1-1

Noise Monitoring Locations

Source: Burns & McDonnell Engineering, Inc.

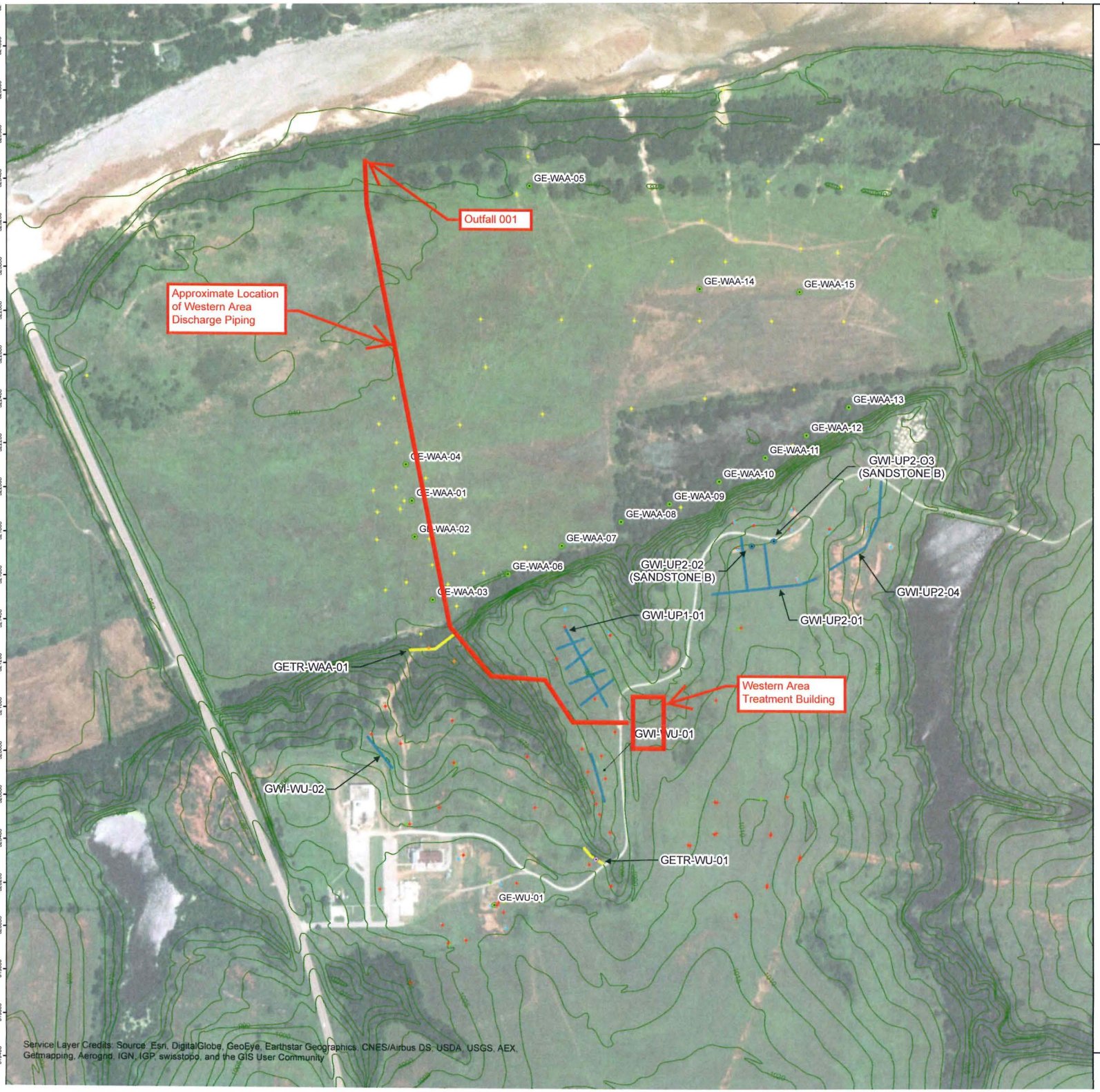
Issued: 5/17/2017

Attachment 1 - Table 1

CERT Ambient Measurements

Point Number	*File Name*	*LAeq*	*LA90*	*Notes*
Ambient Measurements: 4/18/2017 12:00:00 PM				**Calibration before: 113.80**
74° F, 57% Humidity, 58° F dew point, 5-10 mph winds				**Calibration after: 114.07**
MP1	001	41.0 dBA	34.5 dBA	Birds, light wind, insects, rooster, airplane
MP2	002	56.4 dBA	48.3 dBA	Traffic, birds, insects, light wind
MP3	003	67.0 dBA	55.5 dBA	Traffic, airplane, birds, insects, light wind
MP4	004	61.3 dBA	48.9 dBA	Traffic, birds, insects
MP5	005	62.7 dBA	44.5 dBA	Traffic, birds, insects
MP6	006	44.7 dBA	35.5 dBA	Birds, insects, light wind
Ambient Measurements: 4/18/2017 6:00:00 PM				**Calibration before: 114.01**
80° F, 49% Humidity, 60° F dew point, 3-8 mph winds				**Calibration after: 114.06**
MP1	007	40.9 dBA	34.3 dBA	Birds, light wind, insects, dog
MP2	008	60.5 dBA	49.5 dBA	Traffic, birds, light wind
MP3	009	65.9 dBA	55.2 dBA	Traffic, insects, light wind
MP4	010	64.2 dBA	47.8 dBA	Traffic, birds, insects, light wind, airplane
MP5	011	64.9 dBA	48.3 dBA	Traffic, birds, insects, light wind
MP6	012	41.5 dBA	37.7 dBA	Traffic, birds, insects, light wind, airplane
Ambient Measurements: 4/19/2017 12:00:00 AM				**Calibration before: 113.96**
71° F, 71% Humidity, 60° F dew point, calm winds				**Calibration after: 114.03**
MP1	013	34.8 dBA	32.6 dBA	Traffic, insects, dog
MP2	014	55.7 dBA	41.7 dBA	Traffic, birds, insects, dog
MP3	015	57.5 dBA	34.4 dBA	Traffic, insects, cow, coyote
MP4	016	51.5 dBA	39.2 dBA	Traffic, insects, cow
MP5	017	66.1 dBA	41.3 dBA	Traffic, insects, frogs
MP6	018	43.7 dBA	35.3 dBA	Traffic, dog, insects, frogs
Ambient Measurements: 4/19/2017 6:00:00 AM				**Calibration before: 113.98**
66° F, 77% Humidity, 63° F dew point, 2-4 mph winds				**Calibration after: 113.96**
MP1	019	44.8 dBA	41.7 dBA	Traffic, birds, turkey
MP2	020	61.7 dBA	53.6 dBA	Traffic, birds, frogs, insects
MP3	021	67.1 dBA	57.7 dBA	Traffic, birds, insects
MP4	022	61.8 dBA	52.4 dBA	Traffic, birds, insects, car door, horn
MP5	023	67.8 dBA	55.5 dBA	Traffic, birds, insects, wind
MP6	024	42.5 dBA	40.1 dBA	Traffic, birds, turkey, insects, light wind

ATTACHMENT 2



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environmental properties management LLC

Figure 2-1

Project Layout

Legend

- MONITORING WELL IN TRANSITION ZONE
- MONITORING WELL IN ALLUVIUM
- MONITORING WELL IN SANDSTONE A
- MONITORING WELL IN SANDSTONE B
- MONITORING WELL IN SANDSTONE C
- PROPOSED EXTRACTION TRENCH SUMP
- PROPOSED INJECTION WELL
- PROPOSED EXTRACTION WELL
- PROPOSED GROUNDWATER EXTRACTION TRENCH
- PROPOSED TREATED WATER INJECTION TRENCH
- 1010 TOPOGRAPHIC CONTOUR AND ELEVATION

GE-WAA-01 = EXTRACTION WELL
GETR-WAA-01 = EXTRACTION TRENCH
GWI-WU-01 = INJECTION WELL OR TRENCH

Notes:
1. Extraction Well GE-WAA-01 is an existing well and has been incorporated into the remedial Design.
2. All upland remediation components will be installed in Sandstone A unless otherwise noted.
3. Nitrate remediaiton goal for is 52 mg/L in the Process Building Area and 22.9 mg/L for the remander of the Site.

0 150 300 600 Feet

N

Source: ESRI and Burns & McDonnell Engineering.
COORDINATES: NAD 83) STATE PLANE OKLAHOMA NORTH FEET
DATE : AERIAL PHOTO - 2010 / MAP PRODUCED - 1/17/2017

Path: G:\Air-Noise Dept\Project Files\Cimarron\Noise\GIS\Figure 2-2 Model Receiver Locations.mxd gweger 5/17/2017

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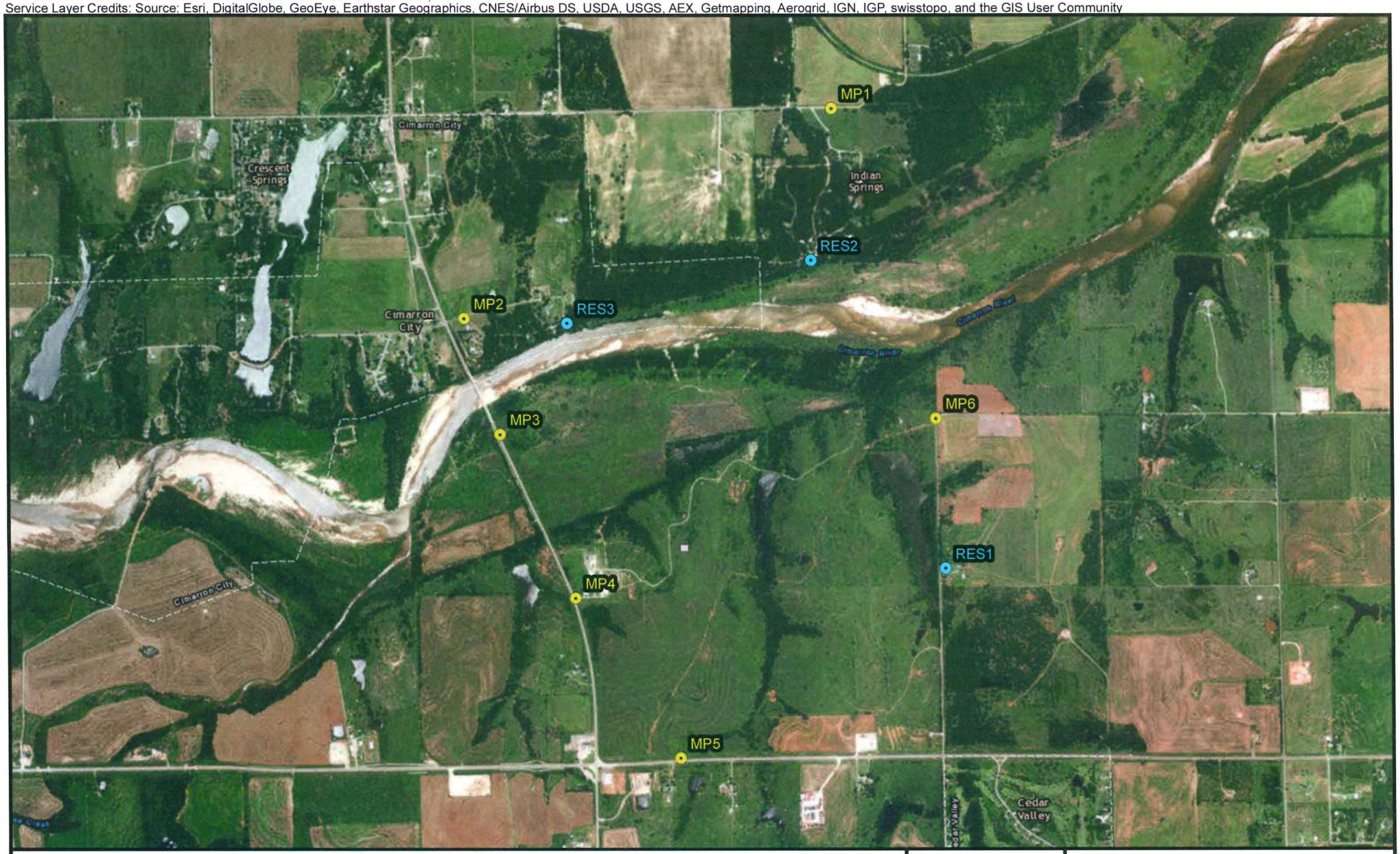

Residential Receiver

Measurement Point

NORTH

2,000 1,000 0 2,000

Scale in Feet

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Figure 2-2

Model Receiver Locations

Source: Burns & McDonnell Engineering, Inc.

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Path: G:\Air-Noise Dept\Project Files\Cimarron\Noise\GIS\Figure 2-3 Sound Level Contours.mxd gweger 5/17/2017

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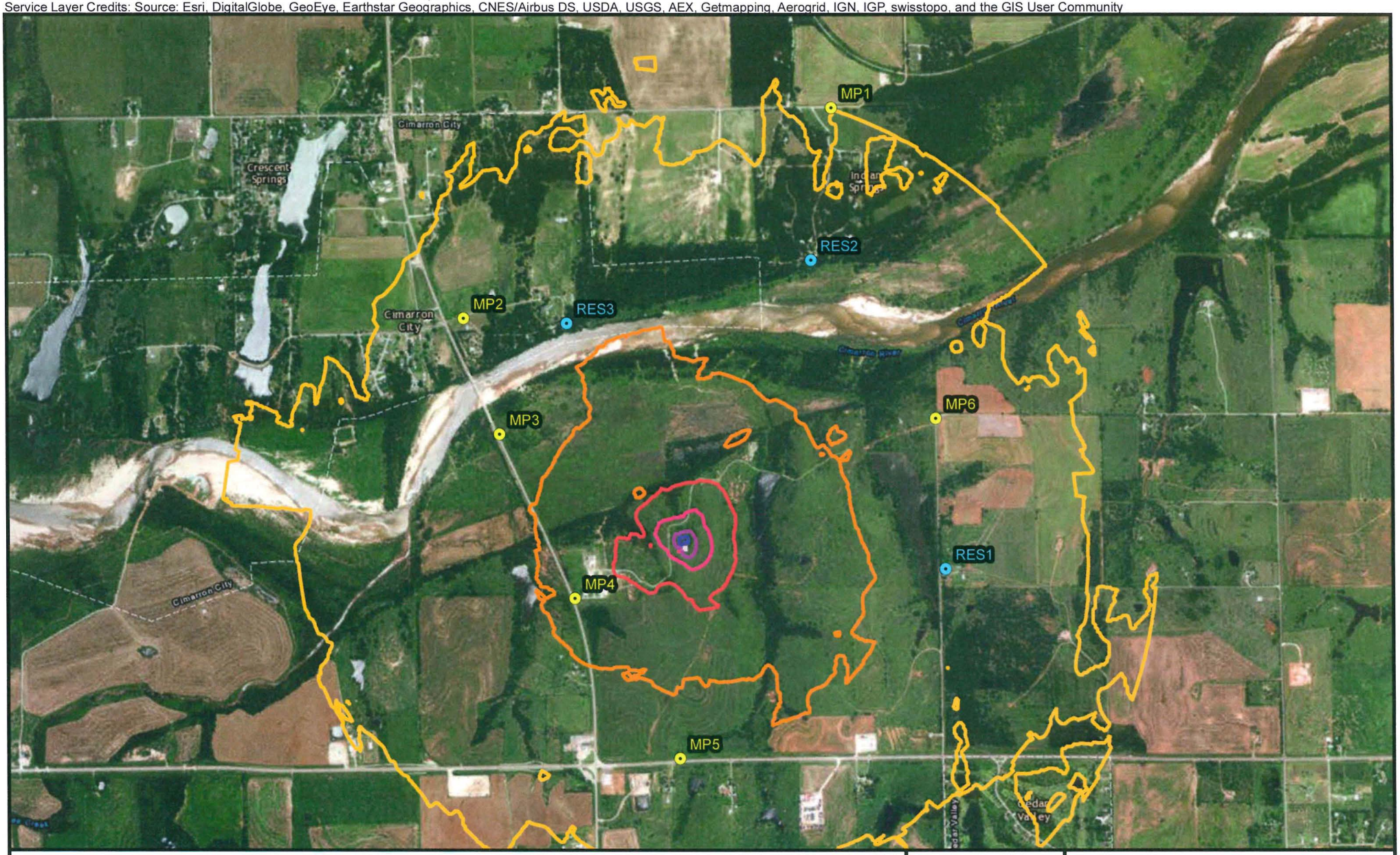

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Figure 2-3

Sound Level Contours

Source: Burns & McDonnell Engineering, Inc.

Issued: 5/17/2017

APPENDIX E – HISTORICAL AND CULTURAL RESOURCES DOCUMENTATION

BURNS McDONNELL

August 6, 2018

Catherine Wood
Section 106 Coordinator
Oklahoma Historic Preservation Office
800 Nazih Zuhdi Drive
Oklahoma City, Oklahoma 73105

Re: Request for SHPO Consultation
CERT Groundwater Remediation Project
Logan County, Oklahoma
Cimarron Environmental Response Trust

Dear Ms. Wood:

Cimarron Environmental Response Trust (CERT) is proposing to construct a Groundwater Remediation Project (Project) in Logan County, Oklahoma (Attachment 1: Figure A-1). The proposed Project is located on U. S. Geological Survey (USGS) Crescent and Navina topographic quadrangle maps at Township 16 N, Range 4 W, Section 12. The Project requires a Pre-Construction Notification to the United States Army Corps of Engineers (USACE) Tulsa District under a Nationwide Permit 12, which requires compliance with the terms of Section 106 of the National Historic Preservation Act (NHPA).

CERT is proposing the installation of approximately 17,746 feet (5,409 meters [m]) of two to eight-inch (5 to 20 centimeter [cm]) utility and groundwater conveyance lines, 4,662 feet (1,421 m) of four to six-inch (10 to 15 cm) discharge lines, and two associated permanent structures relating to groundwater treatment (Attachment 1: Figure A-2). The proposed depth of impacts are 3 feet (0.9 m) associated with water conveyance systems, approximately 18 to 36 inches (0.5 to 0.9 m) associated with water discharge piping installation, and a maximum of 40 feet associated with extraction and injection trenches. The proposed Area of Potential Effects (APE) is approximately 503 acres and is located on private property.

On behalf of CERT, a Burns & McDonnell archeologist performed a background review of the APE and a 1-mile buffer at the Oklahoma Archeological Survey (OAS) in Norman, Oklahoma and online using the architectural Oklahoma Landmark Inventory (OLI) and National Register of Historic Places (NRHP) NPGallery Database, and historic-age United States Geological Survey (USGS) maps.

Previously Records Archeological Sites and Surveys

The records review revealed four previously recorded cultural resources surveys within a 1-mile radius of the Project, none of which intersect with the APE (Table 1; Attachment A: Figure A-3).

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o 817-377-0361 \ F 817-377-0394 \ burnsmcd.com

Table 1: Previous Cultural Resources Surveys within One Mile of the Project

Date	Surveyed by	Agency	Intersects APE
10/14/1999	Duncan	NRCS-FEMA	No
12/16/1997	NSFW	NSFW	No
4/30/2010	O'Shea	ODOT	No
7/2/2004	Graystone	FCC	No

The review also identified one previously recorded archeological site within the 1-mile buffer (Table 2; Attachment A: Figure A-3). Neither is within the APE.

Table 2: Previously Recorded Archeological Sites within One Mile of the Project

Trinomial	Site Type	NRHP Eligibility Recommendation	Intersects APE
34LG91	Historic Farmstead	Not Eligible	No

No additional previously recorded cultural resources were identified within the APE or 1-mile buffer in an examination of the OLI and the NRHP NPGallery Database.

A review of historic-age maps covering the APE identified that two buildings once stood within the APE. The buildings are depicted on the USGS Kingfisher, OK, topographic quadrangle map dating to 1892, revised 1922 (Attachment A: Figure A-4). These structures are missing on subsequent maps dating from 1954, 1957, and 1963 (USGS 2018). Additionally, the 1970 USGS Crescent, OK, Topographic Quadrangle map depicts the current buildings and 'Sewage Disposal Ponds' within the APE. These detention ponds are no longer extant as of 1991 aerial photographs (NETR 2018).

The proposed Project location is located on the south bank of the Cimarron River with Holocene-age alluvium within the floodplain and Permian-age Garber Sandstone composing the river bluff (Heran et al. 2003). Soils are mapped as both the Yahola-Gracemore-Goodnight-Gaddy (s6236) and the Vanoss-Teller-Norge-Konawa (s6276), respectively (NRCS 2018). The Yahola-Gracemore-Goodnight-Gaddy Complex is composed mainly of sandy or loamy soils derived predominately from Holocene-age alluvium. The Vanoss-Teller-Norge-Konawa Complex is also

composed of sandy and loamy soils derived predominately from Pleistocene-age alluvium (NRCS 2018).

Given the proximity to a major waterway, the Cimarron River, and the large amounts of alluvial deposits, the location does appear to have a high probability for buried cultural material. Although no previously recorded archeological sites are within the APE, the area does not appear to have been previously surveyed for cultural resources. Due to the proximity of the Cimarron River and deep, alluvial soils within the floodplain, the APE has potential for containing previously unrecorded cultural resources. Burns & McDonnell, on behalf of CERT, respectfully requests guidance on how to proceed with fulfilling our obligations under Section 106 of NHPA.

We greatly appreciate your assistance and timely response. If you have any questions, please contact me at dprodriguez@burnsmcd.com or (817) 570-0009.

Sincerely,

Daniel Rodriguez, MA, RPA
Staff Cultural Resources Specialist

Attachment 1: Figure A-1: Project location
Attachment 2: Figure A-2: Project Design
Attachment 3: Figure A-3: Background Review Results
Attachment 4: Figure A-4: Project with 1892 (revised 1922) USGS map

REFERENCES

Heran, W. D., Green, G. and Stoeser, D. B.
2003 *A Digital Geologic Map Database of Oklahoma: U.S.G.S.* Open File Report 03-247.

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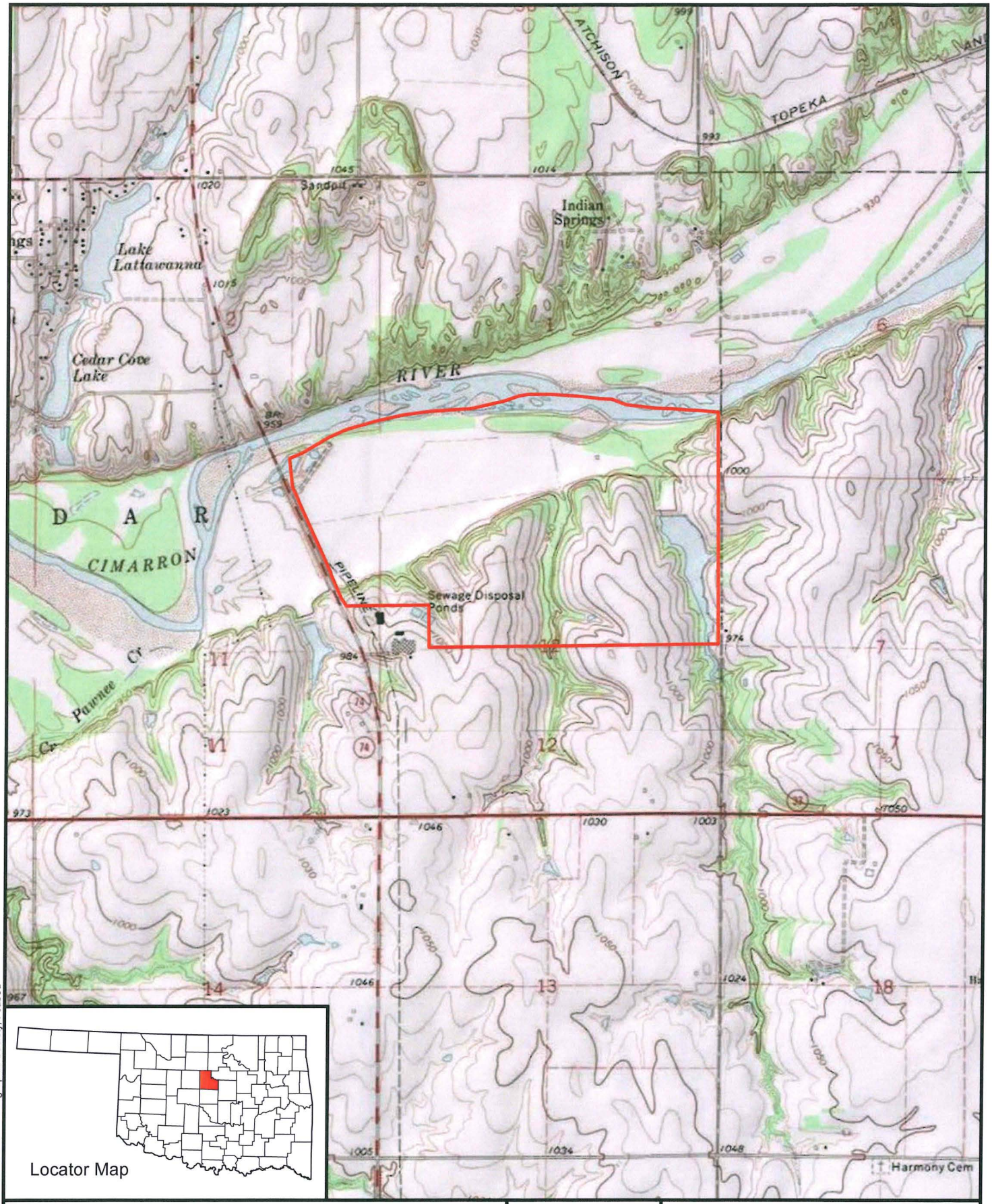
2018 *NRCS Web Soil Survey*. Retrieved July 16, 2018, from http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm.

Nationwide Environmental Title Research (NETR)
2018 *Historic Aerials Viewer*. Retrieved July 16, 2018, from https://www.historicaerials.com/viewer

U.S. Geological Survey (USGS)
2018 *Texas Geology Web Map Viewer*. Retrieved July 16, 2018, from */ /Txpub.usgs.gov*, txpub.usgs.gov/dss/texasgeology/

ATTACHMENT 1 - FIGURE 1, PROJECT LOCATION



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Attachment 1: Figure A-1
Project Location
Groundwater Remediation Project
Cimarron Environmental Response Trust
Logan County, Oklahoma

Source: ESRI; Cimarron Environmental Response Trust; Burns & McDonnell Engineering Company, Inc.

Issued: 7/30/2018

ATTACHMENT 2 - FIGURE 2, PROJECT DESIGN

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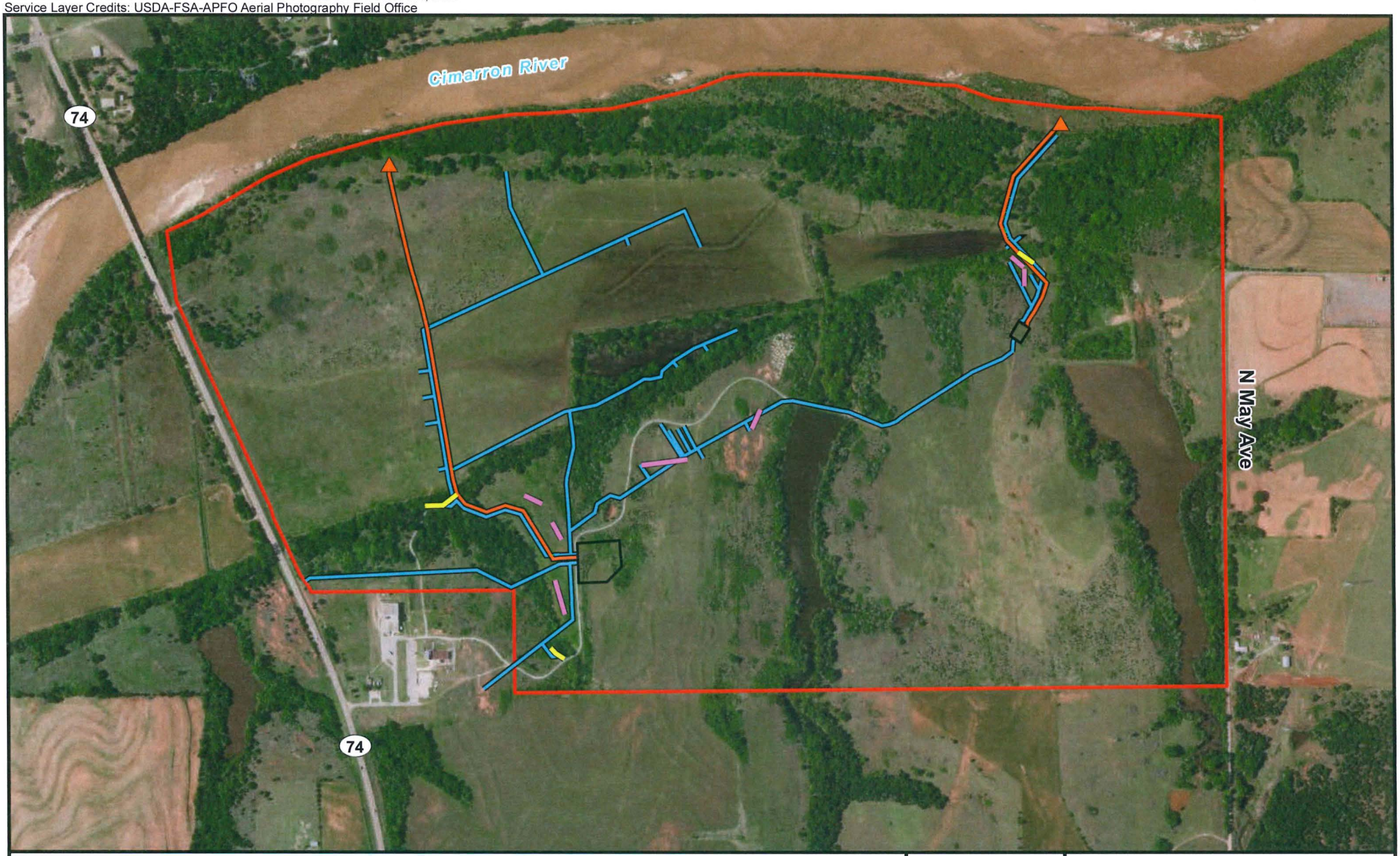
Service Layer Credits: USDA-FSA-APFO Aerial Photography Field Office



Outfall
Extraction Trench
Injection Trench
Discharge Line
Utility and Water Line
Structure
Study Area

NORTH

800 400 0 800

Feet

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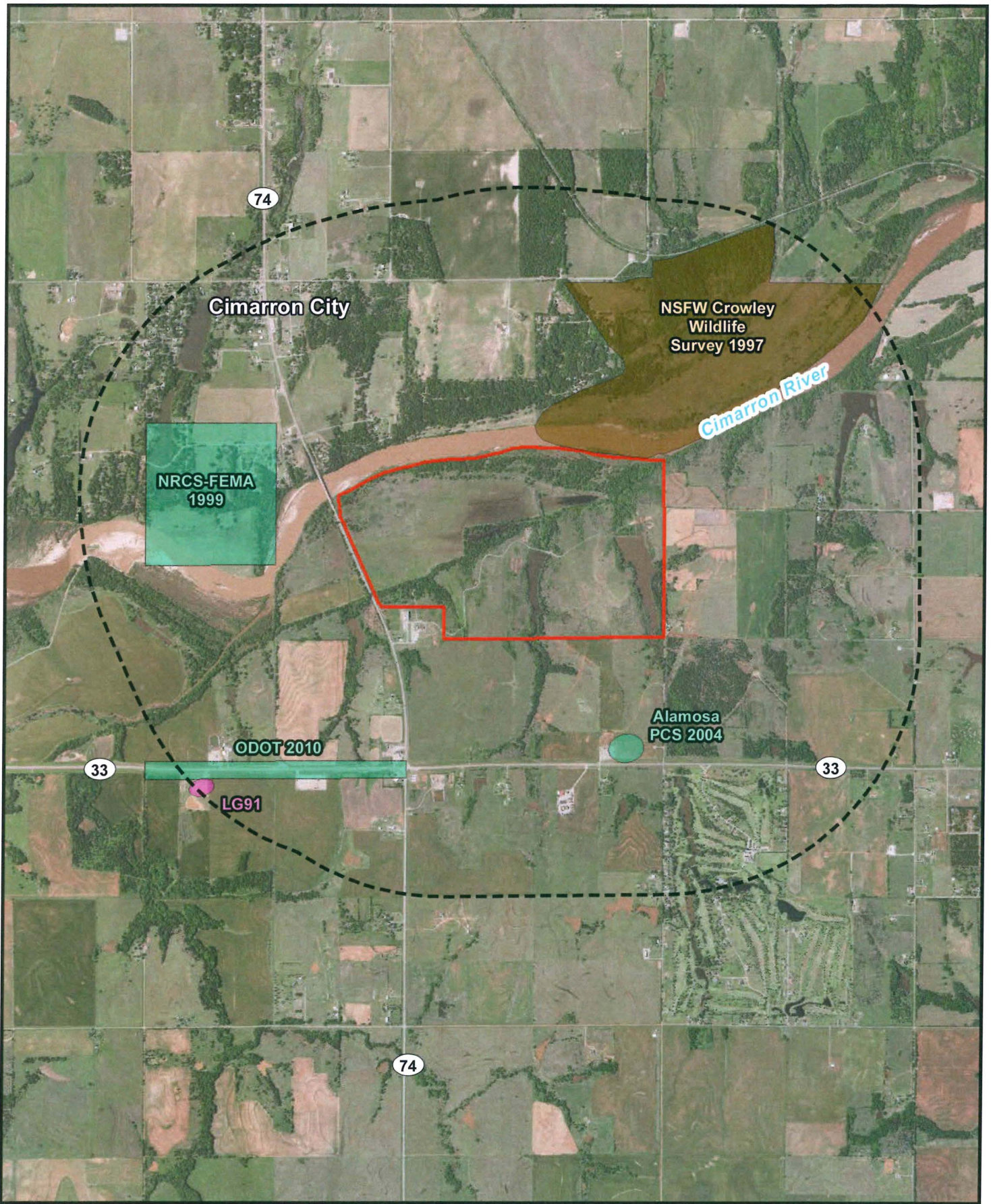
Attachment 2: Figure A-2
Project Design
Groundwater Remediation Project
Cimarron Environmental Response Trust
Logan County, Oklahoma

Source: ESRI; Cimarron Environmental Response Trust; Burns & McDonnell Engineering Company, Inc.

Issued: 7/30/2018

ATTACHMENT 3 - FIGURE 3, BACKGROUND REVIEW RESULTS



Previously Recorded Archaeological Site
Previously Conducted Archaeological Survey
Previously Conducted Wildlife Survey
Study Area
1-mile Records Review Buffer

NORTH

0 0.25 0.5
Miles

BURNS McDONNELL

Attachment 3: Figure A-3
Records Review
Groundwater Remediation Project
Cimarron Environmental
Response Trust
Logan County, Oklahoma

Source: ESRI; Cimarron Environmental Response Trust; Burns & McDonnell Engineering Company, Inc.

Issued: 7/30/2018

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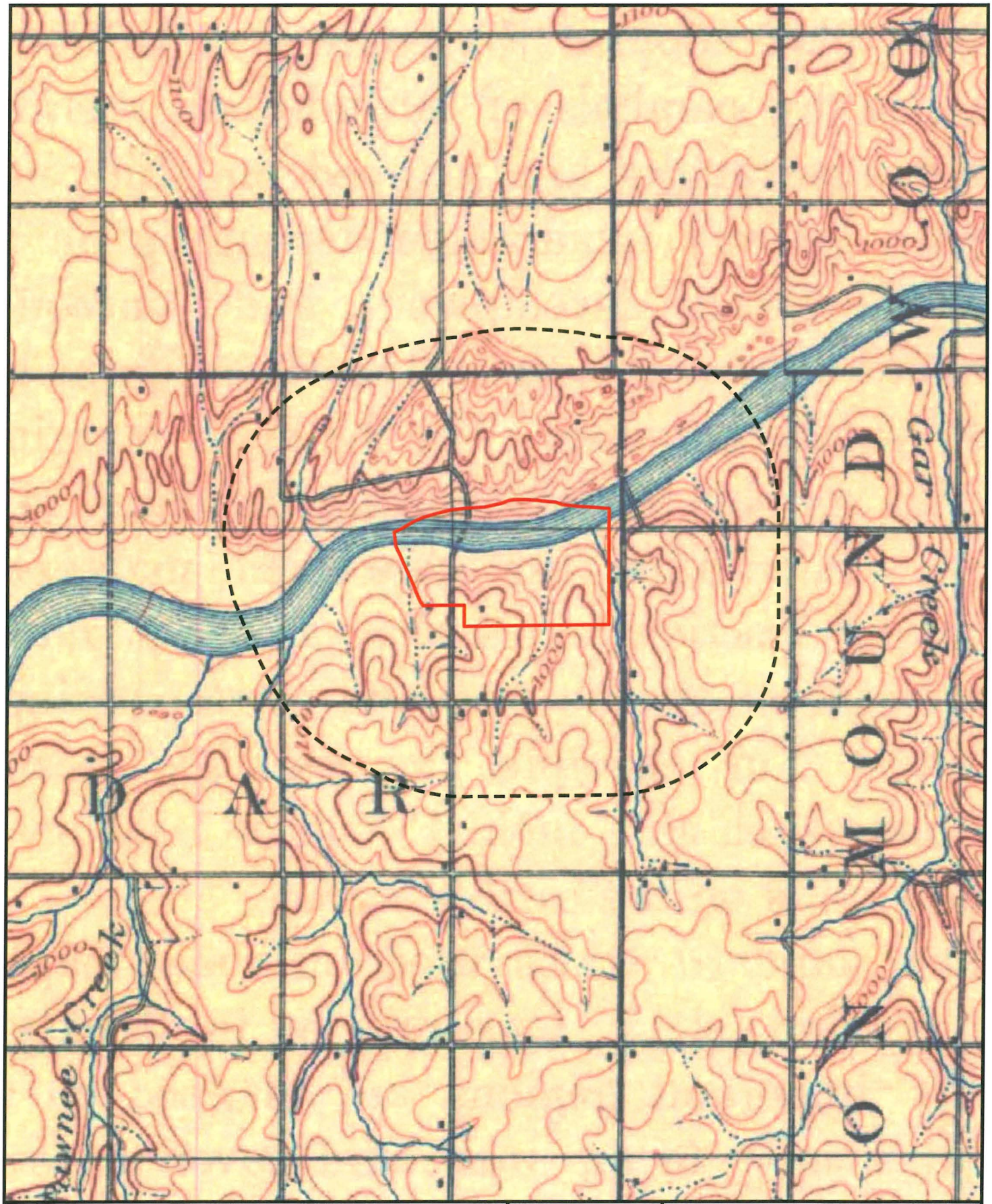
ATTACHMENT 4 - FIGURE 4, PROJECT WITH 1892 (REVISED 1922) USGS MAP



Attachment 4: Figure A-4
Kingfisher, OK 1892 (rev. 1922)
1:125000 Quadrangle
Groundwater Remediation Project
Cimarron Environmental
Response Trust
Logan County, Oklahoma

BURNS McDONNELL

Source: ESRI; Cimarron Environmental Response Trust; Burns & McDonnell Engineering Company, Inc.

Issued: 7/30/2018

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Service Layer Credits:

APPENDIX F – VISUAL AND SCENIC RESOURCE ASSESSMENT

1.0 VIEWSHED ANALYSIS

1.1 INTRODUCTION

A viewshed is the geographical area from which a structure or feature is visible. A viewshed includes all surrounding points that are in line-of-sight with the structure or feature. It excludes points that are past the horizon or from which the view of the structure or feature is obstructed by topography, other structures, vegetation, etc. Consequently, a viewshed may consist of numerous separate areas, based on the relative location of the viewer and the specified structure or feature.

This document provides the results of a viewshed analysis performed to establish the areas in which the facilities proposed for construction in this decommissioning plan can be viewed and to provide an inventory of features that could be visually impacted. The viewshed was produced from 10-meter national elevation data; this is the highest resolution dataset available that provides complete ground coverage. The resulting viewshed area was compared to publicly available data to generate a list of potential features that could be visually impacted. The purpose of this analysis is to describe the proposed treatment facility structures and potential impacts on scenic and visual resources.

1.2 BACKGROUND

The site is located in a rural area of Logan County, Oklahoma consisting mostly of cultivated land and herbaceous vegetation. The landscape is a mix of small rolling hills and grasslands occasionally interrupted by riparian areas around streams. There are a few small towns within ten miles, of which the largest is the city of Guthrie, Oklahoma located nine miles east of the site. Farmsteads and houses are scattered throughout the area, with the nearest homes located approximately 0.5 miles away.

Details regarding the proposed treatment facility construction are provided in Appendices J and K. The proposed structures will be neutral in color consistent with pre-engineered industrial buildings. The structures will be placed on upland areas above the flood plain of the Cimarron River, with nearby surrounding riparian vegetation providing a natural visual screen. Of the proposed new buildings, the tallest structure rises 48.8 feet above the current ground level.

1.3 ANALYSIS

The viewshed analysis was conducted using ESRI's ArcGIS 10.4 Desktop software. USGS 10-meter national elevation data and the heights of the proposed structures were modeled to produce a

viewshed that represents all surrounding land areas where the site could potentially be visible (see Figure 1).

To evaluate potential visual impacts to sensitive receptors located near the site, publicly available data representing federal, state, and local parks, National Register of Historic Places, tribal-owned lands, wildlife recreational areas, federal and state-owned lands, and scenic rivers were incorporated into the GIS system. The receptor site locations were evaluated in comparison to the produced viewshed to identify any sites that were located within the defined viewshed area boundary.

1.4 RESULTS

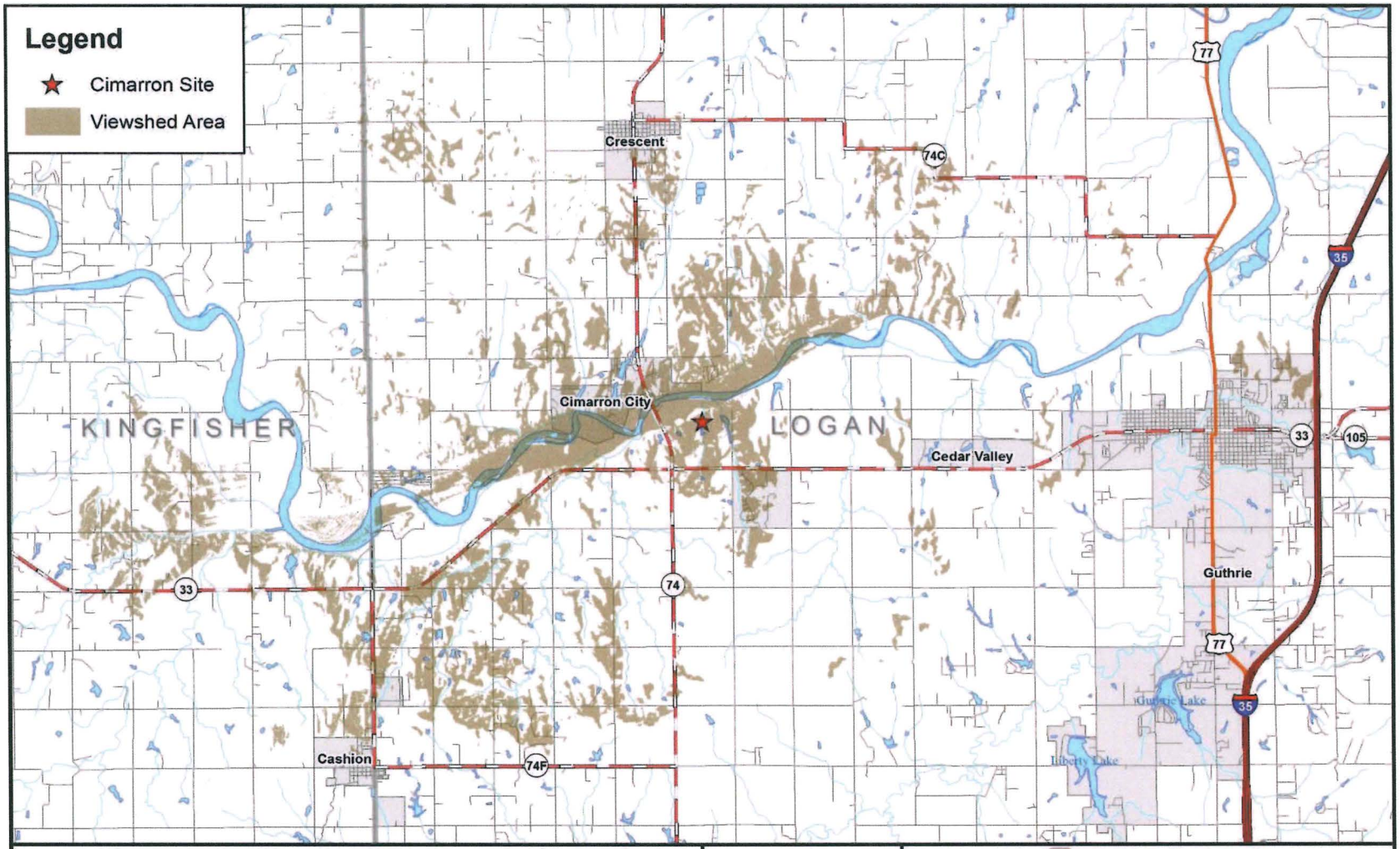
The maximum extent of the potential viewshed is approximately 20 miles. Within this approximate radius of the site's structures, a total of 52 sensitive receptors were identified. The closest sensitive receptor is over 6 miles away. These potential sensitive receptors include the following:

- 24 Local Parks
- 28 National Register of Historic Places Sites

There were no federal or state parks, wildlife recreational areas, federal and state-owned lands, tribal lands, or scenic rivers located within 20 miles of the site. There were numerous roads and highways that cross the viewshed area, including Interstate 35 and Highways 74, 74F, and 33.

Because visual effects are inversely proportional to distance, the effects of the proposed structures are anticipated to be minimal at distances greater than 5 miles. As the distance from the structures increases, the angle of vision occupied by the structures decreases significantly. Although the structures may be visible at 20 miles, they would occupy less than three hundredths of a degree of the field of vision. At 5 miles the same structures would occupy a tenth of a degree of the field of vision. As seen in Figure 1, the majority of the viewshed area runs in a general east to west pattern along the Cimarron River. Because the proposed structures will be located next to riparian areas, some of the visual impacts will be blocked by vegetation. The neutral colors of the structures will further reduce visual impacts.

When comparing the identified sites to the viewshed, none of the potential receptors were located within the viewshed area. Therefore, no visual impacts to sensitive receptors are anticipated to be associated with this project. Furthermore, while the roadways are located within the viewshed area, any potential visual impact to motorists are anticipated to be temporary.



Prepared for: EPM

Subject Property:
Cimarron Fuel Fabrication Site
Section 12, T16N R4W
Logan County, Oklahoma

N
W E
S

1:140,000

ENERCON

Figure 1: Viewshed Map
Source: University of Oklahoma Center for Spatial Analysis
US Geological Suvey
Prepared by: JL Riggs; June 15, 2018

0 1.25 2.5 5 Miles

APPENDIX G – FLOODPLAIN DEVELOPMENT PERMIT

FLOODPLAIN DEVELOPMENT APPLICATION

(For Proposed Development in Floodplain Areas)

Date 2-28-17 Permit No LG-17-01

NOI Fee Collected: Yes X No _____ Amount 100

Applicant/Developer Burns & McDonnell Engineering Company, Inc.

Address 9400 Ward Parkway

Kansas City, KS 64114

Telephone Number (314) 682-1560 Email Address jhesemann@burnsmcd.com

Contact Name John Hesemann

List Type and Purpose of Development Groundwater injection and extraction analysis

Located at Latitude 35°53'00.84"N, Longitude 97°34'34.03"W (see attached map)

Flood Zone Type: Zone A

If property will be located in an identified Special Flood Hazard Area complete the following and require certified elevation of proposed lowest floor (including basement) & lowest adjacent grade.

Name of Community Logan County, Unincorporated Areas

NFIP Community No 40083C0250F

Applicant Requests To:

☐ Construct ☑ Mine ☐ Construct Addition ☐ Remodel ☐ Elevate

☐ Drilling ☐ Demolish ☐ Add Fill ☐ Manufactured Housing (Placement)

☐ Storage (Equipment or Supplies)

Base Food Elevation Undetermined Proposed Lowest Floor Elevation N/A

Flood Map Effective Date September 29, 2010

Community - Panel No. 400096 - 0250 F

Permit Fee $100.00 Has permit fee been collected? X Yes ☐ No

Plans, specifications and elevation certificate filed by the applicant shall constitute by reference, a part of this permit.

FOR OFFICIAL USE ONLY

This application has been reviewed by David Ball
Print Name Here

Date 2-28-17 David Ball
Signature of Reviewer

This application is considered complete and complies with the local floodplain ordinance or set of regulations

Are other local, state or federal permits required? ☐ Yes ☐ No If yes, list type(s)

DEVELOPMENT PERMIT APPLICATION

For Proposed Development on
LANDS LOCATED IN FLOODPLAIN AREAS

INSTRUCTIONS

TO COMPLY WITH FLOODPLAIN MANAGEMENT REGULATIONS AND TO MINIMIZE POTENTIAL FLOOD DAMAGE, IF YOU ARE BUILDING WITHIN AN IDENTIFIED FLOOD HAZARD AREA, YOU MUST AGREE TO CONSTRUCT YOUR PROPOSED DEVELOPMENT IN ACCORDANCE WITH THE FOLLOWING SPECIAL PROVISIONS:

SPECIAL FLOODPLAIN PROVISIONS

1. For RESIDENTIAL structures, the lowest floor (including basement) must be elevated to or above the base flood elevation (100-year flood elevation) as delineated in this community's floodplain management regulations or ordinances. See provisions for manufactured homes in local regulations.

2. For NON-RESIDENTIAL structures, the lowest floor must be elevated to or above the base flood elevation, or floodproofed to withstand the flood depths, pressures, velocities, impact and uplift forces associated with the 100-year flood as delineated in this community's floodplain management regulations or ordinances.

3. For ALL STRUCTURES, the foundation and the materials used must be constructed to withstand the pressures, velocities, impact and uplift forces associated with the 100-year flood.

4. All utility supply lines, outlets, switches and equipment must be installed and elevated so as to minimize damage from potential flooding. Water and sewer connections must have automatic back flow devices installed.

5. You must submit certification on the attached form(s) from a REGISTERED ENGINEER, ARCHITECT or LAND SURVEYOR, that the floor elevation and/or floodproofing requirements have been met. Failure to provide the required certification is a violation of this permit.

6. Other Provisions — See attached list _____ None _____

AUTHORIZATION

I have read or had explained to me and understand the above special provisions for flood plain development. Authorization is hereby granted the permitting authority and their agents or designees, singularly or jointly, to enter upon the above-described property during daylight hours for the purpose of making inspections or for any reason consistent with the issuing authority's floodplain management regulation. I further verify that the above information is true and accurate to the best of my knowledge and belief.

John R. Heemann — 02/09/2017

Signature of Applicant — Date

BURNS McDONNELL

June 18, 2018

Brian Noblitt
U.S. Army Corps of Engineers
1645 South 101st East Avenue
Tulsa, OK 74128

Re: Cimarron Environmental Response Trust Site in Logan County, Oklahoma
Regulatory Office File Tracking and Permit Number: SWT-2015-609
Burns & McDonnell Project Number: 104407

Dear Mr. Noblitt:

Burns & McDonnell Engineering Company, Inc. (Burns & McDonnell) was retained by Cimarron Environmental Response Trust (CERT) to provide wetland delineation and permitting services for the Cimarron Environmental Response Trust Site (Project) in Logan County, Oklahoma (Appendix A). The purpose of this Project is to mitigate the uranium, nitrates, and fluorides in the groundwater through extraction, treatment, and discharge of affected groundwater. The Project is currently underway. Due to unexpected construction delays, the new estimated completion date is July 31, 2020. A U.S. Army Corps of Engineers (USACE) Nationwide Permit 12 (NWP 12) was issued for the project in 2015 and an extension of that permit is requested.

PROJECT DESCRIPTION

The Project is located at a site that was formerly owned and operated by Kerr-McGee Nuclear Corporation. The onsite facilities were utilized for the production of mixed oxide fuel and uranium fuel, including enriched uranium reactor fuel pellets and eventually fuel rods from 1966 to 1975. During this time, exposure of process water and material to the environment resulted in the contamination of the site groundwater. The site is now owned by the CERT. The concentration of uranium, nitrates, and fluorides in the groundwater must be reduced to achieve unrestricted release of the site and license termination from the Nuclear Regulatory Commission (NRC). Mitigation of these constituents will be achieved through the extraction, treatment, and discharge of affected groundwater. These processes will require the construction of groundwater extraction wells, groundwater extraction trenches, groundwater injection wells, groundwater injection trenches, process piping, two outfalls to the Cimarron River, and groundwater treatment facilities. All best management practices (BMPs) will be implemented in compliance with associated erosion and sedimentation regulations for disturbance; thereby minimizing those associated impacts.

SUMMARY

Burns & McDonnell conducted a wetland delineation of the Survey Area to identify wetlands and other waters of the U.S. on April 23 through 25, 2015, by Jack Finley, senior wetland scientist, and Micheal Hogan, Global Positioning System (GPS) specialist, both with Burns & McDonnell. One wetland and three stream channels were identified. The original delineation cover letter is included in attachment B. Although impacts to the waters will avoided to the

extent practicable, the installation of the two outfall structures will create permanent, unavoidable impacts at the Cimarron River. Additionally, temporary impacts will occur to the wetland due to open trenching during construction of the outfall at that location.

A current concurrence letter from U.S. Fish and Wildlife Service (USFWS), as well as a Protected Species Determination Table has been requested prior to the USACE granting an extension to the NWP 12. Per instructions by the USFWS, an online project review has been conducted and submitted to the USFWS. There has been no change in the online review results, or in the design and location of the outfalls. Due to this, it is not expected to receive a response from USFWS and for the concurrence letter to be excepted. Therefore Burns & McDonnell on behalf of CERT would like to respectfully request an extension to the NWP 12.

If you have any questions about the content of this request extension of the NWP 12, please contact Ken Gouvion at (972) 455-3157 or kgouvion@burnsmcd.com.

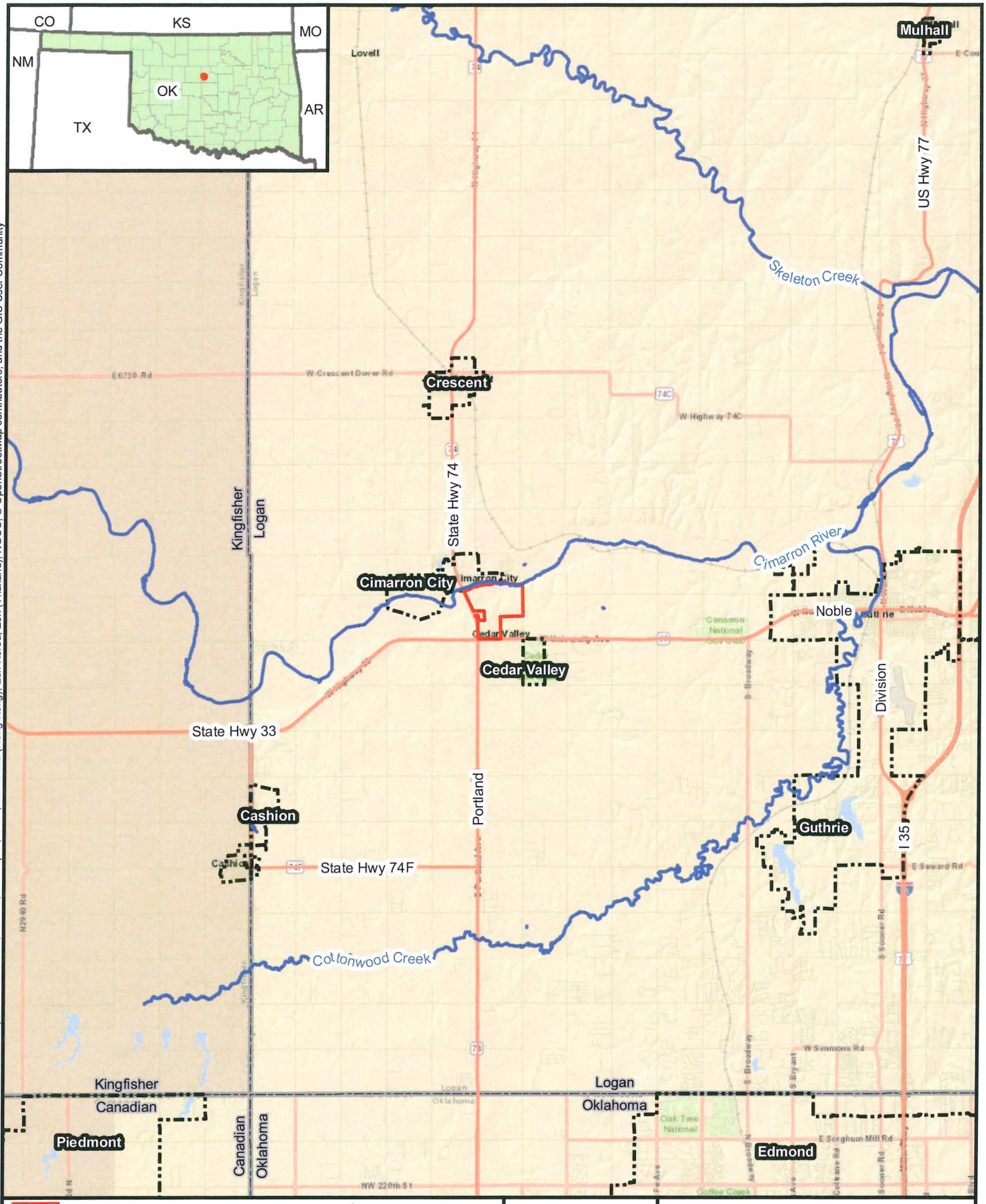
Sincerely,

Kenneth Gouvion, CPESC, CISEC
Staff Environmental Scientist

Appendices:
Appendix A - Figures
Appendix B - Original Wetland Delineation Cover Letter
Appendix C - USFWS Online Concurrence Letter
Appendix D - Species List: Oklahoma Ecological Services Field Office
Appendix E - Protected Species Determination Table
Appendix F - Previously Issued Online Concurrence Letter

cc: Eric Dulle – Burns & McDonnell
John Hesemann – Burns & McDonnell
Jeff Lux – Environmental Properties Management, LLC

APPENDIX A - FIGURES



Path: Z:\General\KCMENS\Dept\EHS C&I\12) SWPPP\02) Working Documents\072) 89761 CERT Groundwater Remediation Project, OK\01) GIS\DataFiles\ArcDocs\CERT General Vicinity Map USFWS.mxd kgouvion 6/15/2018

BURNS McDONNELL

Figure A-1
General Vicinity Map
Groundwater Remediation Project
Cimarron Environmental Response Trust
Logan County, Oklahoma

Source: ESRI; USGS NHD; Cimarron Environmental Response Trust; Burns & McDonnell Engineering Company, Inc.

Issued: 6/15/2018

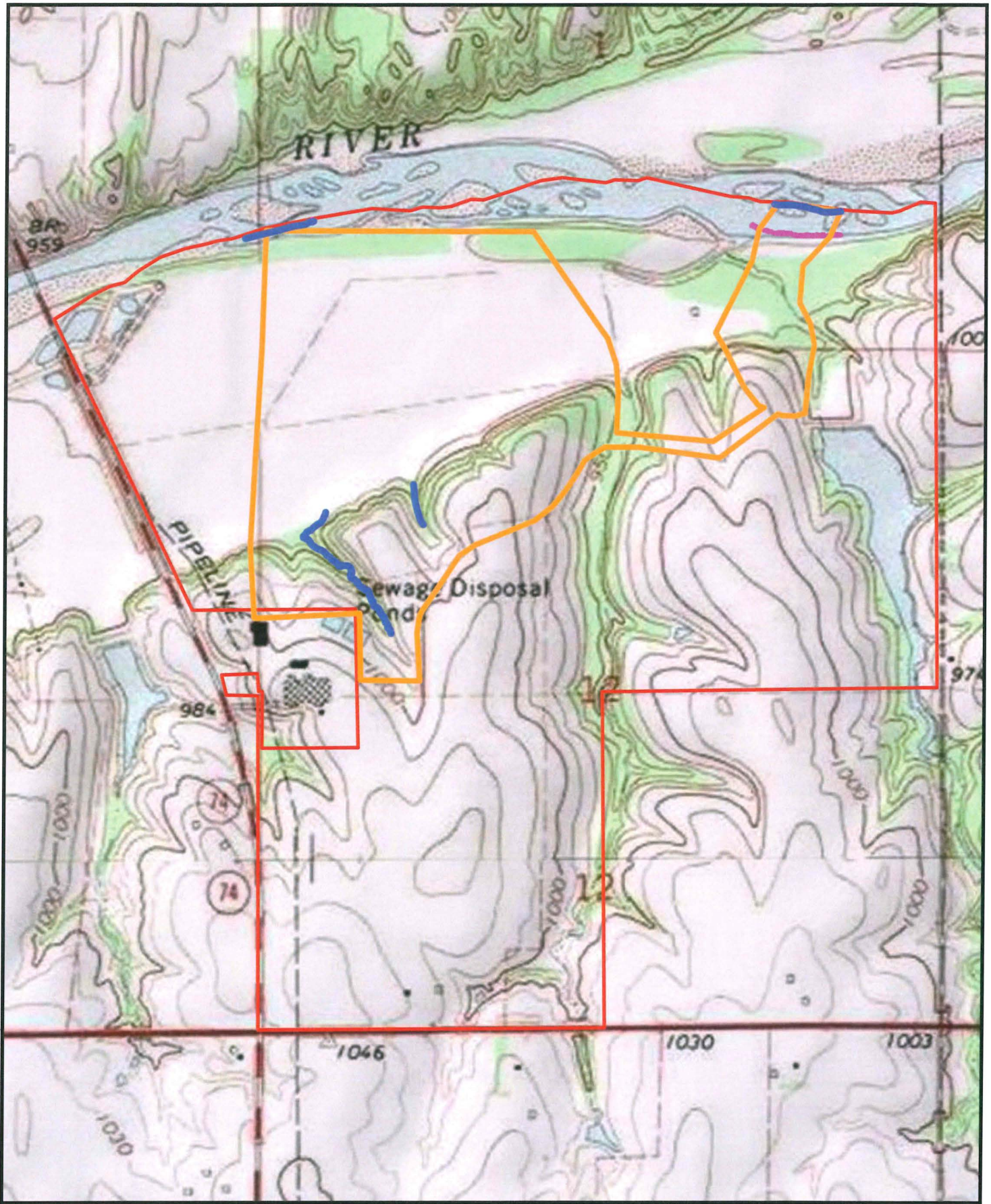


Figure A-2
Wetlands Delineation Map
Groundwater Remediation Project
Cimarron Environmental
Response Trust
Logan County, Oklahoma

BURNS McDONNELL

Source: ESRI; Cimarron Environmental Response Trust; Burns & McDonnell Engineering Company, Inc.

Issued: 6/15/2018

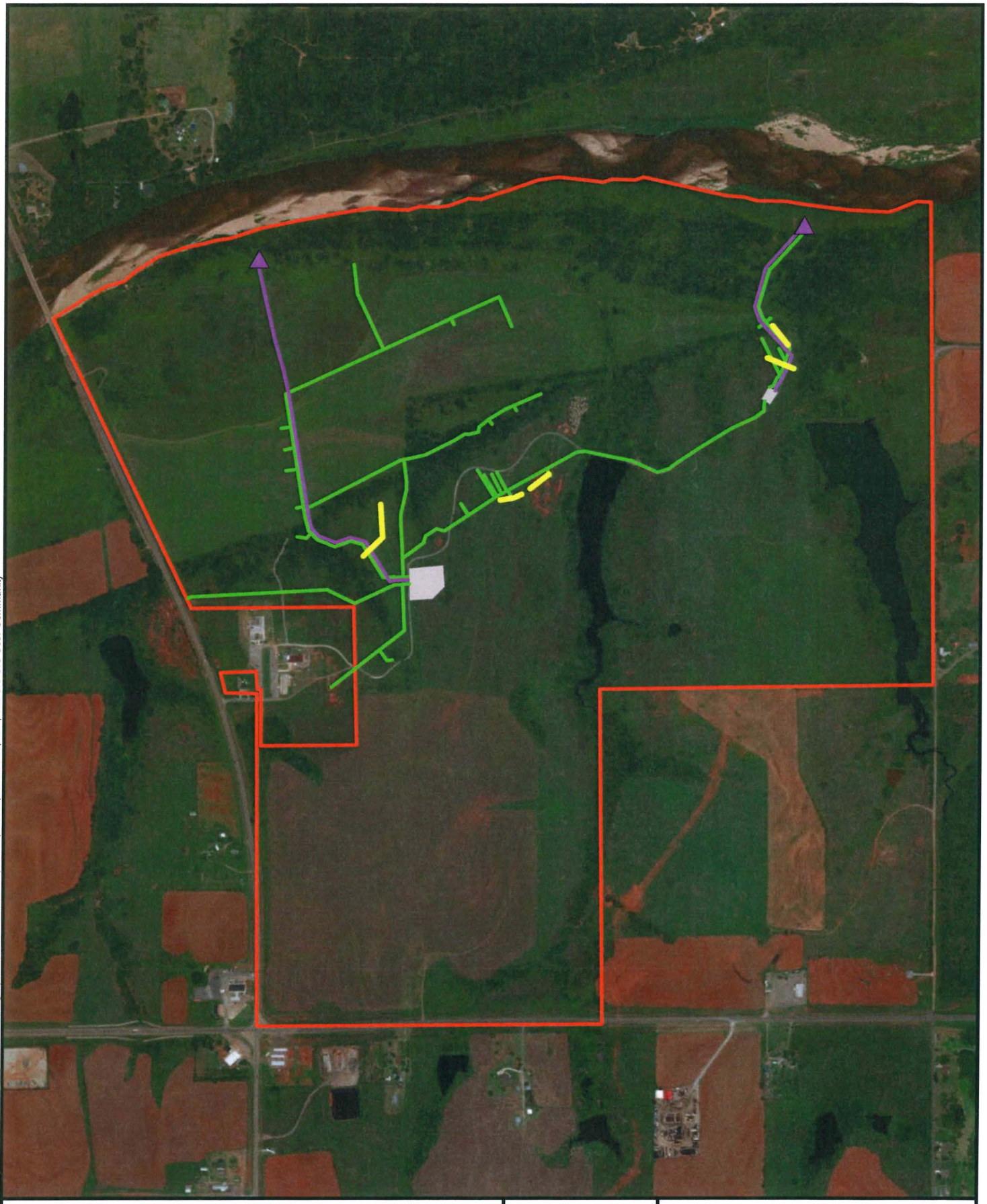


Figure A-3
Structure Location Map
Groundwater Remediation Project
Cimarron Environmental Response Trust
Logan County, Oklahoma

Source: ESRI; Cimarron Environmental Response Trust; Burns & McDonnell Engineering Company, Inc.

Issued: 6/15/2018

APPENDIX B - ORIGINAL WETLAND DELINEATION COVER LETTER

BURNS McDONNELL

September 8, 2015

Division Chief
U.S. Army Corps of Engineers
CESWT-RO
1645 South 101st East Ave
Tulsa, OK 74128

Re: Cimarron Remediation Project

Dear Sir/Madam:

Burns & McDonnell Engineering Company, Inc. (Burns & McDonnell) was retained by the Cimarron Environmental Response Trust (Trust) to provide wetland delineation and permitting services for the proposed Cimarron Remediation Project (Project). These actions are part of a larger effort to remediate groundwater contaminated by a former uranium enrichment facility.

INTRODUCTION

The Project is located at a site that was formerly owned and operated by Kerr-McGee Nuclear Corporation (KMNC) (Figure A-1 in Appendix A). From 1966 to 1975, the onsite facilities were utilized for the production of mixed oxide fuel and uranium fuel including enriched uranium reactor fuel pellets and eventually fuel rods. During this time, exposure of process water and material to the environment resulted in the contamination of site groundwater. The site is now owned by the Trust. The concentration of uranium, nitrates, and fluorides in the groundwater must be reduced to achieve unrestricted release of the site and license termination from the U.S. Nuclear Regulatory Commission (NRC) and the Oklahoma Department of Environmental Quality (DEQ). Mitigation of these constituents will be achieved through the extraction, treatment, and discharge of affected groundwater. These processes will require the construction of groundwater extraction wells, groundwater extraction trenches, groundwater injection wells, groundwater injection trenches, process piping, two outfalls to the Cimarron River, and groundwater treatment facilities.

The Project has the potential to impact wetlands or other waters of the U.S. that may be under the jurisdiction of the U.S. Army Corps of Engineers (USACE) as designated by Section 404 of the Clean Water Act. Burns & McDonnell conducted a wetland delineation for the Project to evaluate for the presence of waters of the U.S., including streams, creeks, and ponds. This report has been prepared to identify and assess potential impacts to these waters.

The Project Survey Area included in the wetland delineation (Figures A-2 and A-3) consists of land that may be disturbed during the construction and operation of groundwater remediation activities and totals approximately 600 acres. Some trenching will occur outside of the Survey Area, but will be confined to existing low-maintenance roads in these areas.

9400 Ward Parkway \ Kansas City, MO 64114
O 816-333-9400 \ F 816-333-3690 \ burnsmcd.com

METHODS

The following sections summarize the methods used to review existing data for the Survey Area and to conduct the onsite wetland delineation.

Desktop Evaluation

Burns & McDonnell reviewed available background information for the Survey Area to identify locations where wetlands or streams were likely to be present. This information included:

- U.S. Geological Survey (USGS) 1:24,000 Topographic Quadrangle: Crescent, Oklahoma (2002)
- U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) Quadrangle: Crescent, Oklahoma (2002)
- USGS National Hydrography Dataset (NHD) (2014)
- Natural Resources Conservation Service (NRCS) 2012 Soil Survey Geographic (SSURGO) digital data for Logan County, Oklahoma
- Geographic Information System (GIS) User Community aerial images (2015)
- Guidance from the Tulsa office of the USACE regarding the presence/absence of Section 10 Waters.

Wetland presence/absence depicted on the NWI maps was compared with local soil and hydrological data, aerial photography, and topographic maps to assess the most likely locations for wetlands and other waters of the U.S. based on available data. These maps are included as Figures A-2 and A-3.

Wetland Delineation

A jurisdictional wetland delineation was conducted on April 23 through 25, 2015, by Jack Finley, senior wetland scientist, and Michael Hogan, Global Positioning System (GPS) specialist, both with Burns & McDonnell. The wetland delineation was conducted in accordance with the 1987 *Corps of Engineers Wetlands Delineation Manual* (1987 Manual) and Version 2.0 (2010) of the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region* (Regional Supplement). Sample plots were established and Wetland Determination Data Forms from the Regional Supplement were completed to characterize the Survey Area (Appendix B). Vegetation, soil conditions, and hydrologic indicators were recorded at each of these sample plots. Locations of the sample plots and water features were recorded using a sub-meter-accurate GPS unit. Natural color photographs of sample plots, wetlands, streams, and uplands were taken onsite and are included as Photographs C-1 through C-21 in Appendix C.

RESULTS
The following sections describe the results of the existing data review and the completed wetland delineation.

Desktop Evaluation
Topographic, NWI, and NHD information is shown in Figure A-2. The Survey Area is located in the Cross Timbers Transition Zone of the Central Great Plains Ecoregion.[1] It consists of rough plains that are covered by prairie grasses and eastern red cedar, scattered oaks, and elms. Terrain and vegetation are transitional between the less rugged, grass-covered ecoregions to the west and the hilly oak savanna to the east. Today, land use is a mixture of grassland and fallow ground. This area has ridge and plain topography, with the ridges generally running north-south and the plains flat or gently sloped. The topography of the Survey Area ranges from an elevation of 1,010 feet on the bluffs overlooking the Cimarron River Floodplain to 930 feet within the floodplain. Topographic contours suggest that numerous drainageways likely to contain ephemeral or intermittent streams emanate from the bluffs into the floodplain.

NHD data indicates that the Project lies within the Lower Cimarron-Skelton Drainage Hydrologic Unit Code (HUC8) 11050002. NWI data indicate the presence of two freshwater ponds and one emergent wetland near the southern edge of the western Survey Area. NHD data shows an intermittent stream flowing through the eastern Survey Area toward the Cimarron River, which is a perennial river, with numerous freshwater wetlands evident throughout the channel.

As shown in Figure A-3, the NRCS SSURGO digital data indicate that the Survey Area includes 12 soil types:

- CoIC2 Coyle-Ironmound complex, 3 to 5 percent slopes, eroded
- DiRG Darsil-Rock outcrop complex, 15 to 45 percent slopes
- GaGA Gaddy-Gracemore complex, 0 to 1 percent slopes, frequently flooded
- GadA Gaddy loamy fine sand, 0 to 1 percent slopes, occasionally flooded
- GooE Goodnight fine sand, 1 to 15 percent slopes
- IrCE Ironmound-Coyle complex, 5 to 15 percent slopes
- LerA Lebron clay, 0 to 1 percent slopes, occasionally flooded
- PIT Pits
- URB Urban land
- YaaA Yahola loam, 0 to 1 percent slopes, occasionally flooded

---

[1] Woods, A.J., Omernik, J.M., Butler, D.R., Ford, J.G., Henley, J.E., Hoagland, B.W., Arndt, D.S., and Moran, B.C., 2005, *Ecoregions of Oklahoma* (color poster with map, descriptive text, summary tables, and photographs): Reston, Virginia, U.S. Geological Survey (map scale 1:1,250,000).

- YahA Yahola fine sandy loam, 0 to 1 percent slopes, occasionally flooded
- W Water

Of these 12 soil types, 6 (Gaddy-Gracemore complex, 0 to 1 percent slopes, frequently flooded; Gaddy loamy fine sand, 0 to 1 percent slopes, occasionally flooded; Goodnight fine sand, 1 to 15 percent slopes; Lebron clay, 0 to 1 percent slopes, occasionally flooded; Yahola loam, 0 to 1 percent slopes, occasionally flooded; and the Yahola fine sandy loam, 0 to 1 percent slopes) are included on the local and national hydric soil lists.

Aerial imagery indicates a river system with a forested riparian buffer followed by a broad herbaceous community. This community ends abruptly at another woody community that runs in a southwest to northeast direction. Several prominent wooded drainageways emanate from this community in a southerly direction. Numerous areas of disturbance including roads and excavated areas are present. Several dammed impoundments are adjacent to the Survey Area.

Wetland Delineation
On April 22 through 24, 2015, Jack Finley, senior wetland scientist, and Michael Hogan, Global Positioning System (GPS) Specialist, both with Burns & McDonnell, conducted a wetland delineation of the Survey Area. The vegetation, soils, and hydrology within the Survey Area are described below.

Vegetation. The Survey Area was largely composed of grassland. Typical vegetation in the upland portions of the Survey Area included drooping brome (*Bromus tectorum*), southern sedge (*Carex austrina*), goldenrod (*Solidago* sp.), common hackberry (*Celtis occidentalis*), and green ash (*Fraxinus pennsyvanica*).

Soils. Typical upland soils were dark reddish brown (5YR 3/4 or 5YR 4/6) or dark red (2.5YR 4/4 or 2.5YR 3/4) and silt or sand in texture. Wetland soils were also dark reddish brown (5YR 3/4 or 5YR 4/6) and sandy or silty in texture.

Hydrology. The primary sources of hydrology within the Survey Area are precipitation and surface water runoff. Common hydrology indicators included geomorphic position and a positive FAC-Neutral Test.

Jurisdictional Areas
One Palustrine Emergent (PEM) wetland, one perennial stream, and two intermittent streams were identified during the wetland delineation (Figure A-4; Photographs C-3 through C-21). Sample plots were located in the wetlands and adjacent uplands. USACE data forms from the Regional Supplement were completed for each sample plot (Appendix B).

Wetlands

Wetland 1 (W-1). W-1 (0.28 acre) is a PEM wetland located in the northern portion of the Survey Area (Figure A-4; Photographs C-6, C-7, and C-9). Vegetation in this wetland was dominated by littletooth sedge (*Carex microdonta*), reed canary grass (*Phalaris arundinacea*), and stinging nettle (*Urtica dioica*). The hydrology was indicated by Geomorphic Position (D2) and a positive FAC-Neutral Test (A2).

Streams

Stream 1 (S-1) S-1 is a perennial stream (Cimarron River) that flows in an easterly direction at the northern boundary of the Survey Area (Figure A-4; Photographs C-15 and C-16). S-1 averaged more than 400 feet wide, and 988 linear feet of its length were delineated within the Survey Area. S-1 is approximately 6 feet deep at the ordinary high water mark (OHWM). Surrounding vegetation included sandbar willow (*Salix interior*) and eastern red cedar (*Juniperus virginiana)*.

Stream 2 (S-2) S-2 is an intermittent stream that flows in a northerly direction through the Survey Area (Figure A-4; Photographs C-17 and C-18). S-2 averaged 3 feet wide, and 326 linear feet of its length were delineated within the Survey Area. S-2 had a depth of 0.5 foot at the OHWM, and the substrate of S-2 consisted of silt and sandstone.

Stream 3 (S-3) S-3 is an intermittent stream that flows in a northerly direction through the Survey Area (Figure A-4; Photographs C-20 and C-21). S-3 averaged 3 feet wide, and 1,395 linear feet of its length were delineated within the Survey Area. The substrate of S-3 consisted of silt and sandstone, and the depth at the OHWM was 0.3 foot.

SUMMARY

Burns & McDonnell conducted a wetland delineation of the Survey Area to identify wetlands and other waters of the U.S. One wetland and three stream channels were identified. Although impacts to these waters will be avoided to the extent practicable, the installation of the two outfall structures will create permanent, unavoidable impacts at the Cimarron River (S-1). Additionally, temporary impacts will occur at W-1 due to open trenching during construction of the outfall at that location. As a result, it is anticipated that the Project will require authorization under a Nationwide Permit 7 (NWP 7) for intake and outfall structures, requiring formal notification to the USACE.

Burns & McDonnell on behalf of the Trust would like to respectfully request a preliminary jurisdictional determination of the waters described in this report. Additionally, we would like to request concurrence that the Project, as currently designed, would qualify for authorization under a NWP 7.

If you have any questions or require additional information, please contact me by telephone at (816) 822-4311 or by e-mail at jbailey@burnsmcd.com.

Sincerely,

Justin E. Bailey, PWS
Senior Wetland Specialist

Attachments:

Appendix A - Figures
Appendix B - USACE Data Forms
Appendix C - Ground Photographs

cc: Brian Weis – Burns & McDonnell
John Hesemann – Burns & McDonnell
Jeff Lux – Environmental Properties Management

APPENDIX C - USFWS ONLINE CONCURRENCE LETTER

August 2015

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Division of Ecological Services
9014 East 21st Street
Tulsa, Oklahoma 74129
918/581-7458 / (FAX) 918/581-7467

June 7, 2018

Online Project Review Concurrence Letter

To: Kenneth Gouvion
Burns & McDonnell Engineering Company, Inc.
15950 N. Dallas Parkway, Tower II, Suite 700
Dallas, TX 75248
Phone: (972) 455-3157, Email: kgouvion@burnsmcd.com

Project Name: Cimarron Environmental Response Trust Site in Logan County, Oklahoma
Burns & McDonnell Project No. 104407

Consultation Code: 02EKOK00-2018-SLI-1456 - Current
(02EKOK00-2015-SLI-1367 - August 25, 2015)

Dear Applicant:

Thank you for using the U.S. Fish and Wildlife Service (Service) Oklahoma Ecological Services Field Office (ESFO) online project review process. By providing this letter in conjunction with your complete project review package, you are certifying that you have accurately completed the online project review process for the referenced project in accordance with all instructions provided, using the best available information to reach your conclusions. Concurrence with "not likely to adversely affect" determinations does not provide any exemption for violations of section 9 of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544, 87 Stat. 884), as amended (ESA) or "take" of federally-listed species. The Federal action agency is ultimately responsible for ensuring compliance with the ESA and any take that occurs due to your proposed action would be considered a violation under section 9 of the ESA.

This letter and the enclosed project review package complete the review of your project in accordance with the ESA. This letter also provides information for your project review under the National Environmental Policy Act (National Environmental Policy Act of 1969 (P.L. 91-190, 42 U.S.C.4321-4347, 83 Stat. 852), as amended.

A copy of this letter and the project review package must be emailed to **okprojectreview@fws.gov** for this certification to be valid. This letter and the project review package will be maintained in Service records. **Please allow the Oklahoma ESFO 45 days to review your information. If the Oklahoma ESFO determines that the package is not complete, or that additional coordination is necessary, we will contact your office. If, after 45 days from the date of your email submittal of your project review package, the Oklahoma ESFO has not contacted your office, consider your section 7 consultation complete.**

The proposed action consists of:

Burns & McDonnell Engineering Company, Inc. (Burns & McDonnell) is providing environmental support services for the Cimarron Environmental Response Trust (CERT) at a site formerly owned and operated by Kerr-McGee Nuclear Corporation (KMNC) in Logan County, Oklahoma (Project) (Appendix A). For the purpose of informal consultation with the U.S. Fish and Wildlife Service (USFWS), Burns & McDonnell evaluated threats to species protected by the Endangered Species Act (ESA) (16 U.S.C. 1531 et seq.), Bald and Golden Eagle Protection Act (BGEPA) (16 U.S.C. 668), and the Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703).

Project start and completion dates:

Project is currently underway. Due to unexpected construction delays, the new estimated completion date is July 31, 2020.

Federal agency or federal program providing a permit, funding, grant, authorization, loan, etc. associated with the proposed project and how that agency is associated with your project:

U.S. Nuclear Regulatory Commission is providing oversight. A U.S. Army Corps of Engineers (USACE) nationwide permit was issued for the project in 2015 and a request for an extension of that permit has been submitted. The USACE has requested a current project

Federal Agency/Program Point of contact (Name, phone, and email address):

Kenneth Kalman
Phone: (301) 415-6664
Email: kenneth.kalman@nrc.gov

The species conclusions table in the enclosed project review package summarizes your ESA conclusions. These conclusions resulted in "not likely to adversely affect/modify" determinations for listed species and critical habitat in relation to potential effects of your proposed project. We certify that the use of the online project review process in strict accordance with the instructions provided as documented in the enclosed project review package results in reaching the appropriate determinations. Therefore, we concur with determinations of "not likely to adversely affect" for listed species and critical habitat reached by proper use of this process. For projects where this particular determination is reached, additional coordination with this office is not needed.

Candidate species are not legally protected pursuant to the ESA. However, the Service encourages efforts to avoid or minimize adverse impacts to them from project effects. Some federal agencies have standing policies that grant limited protections to candidate species. Conservation of candidate species now may preclude future needs to federally list them as endangered or threatened, at which point their legal protection would become required. Please contact this office for additional coordination if your project action area contains candidate species.

Should project plans change or if additional information on the distribution of listed species or critical habitat becomes available, this determination may be reconsidered. You should re-visit the Service's Information, Planning, and Conservation (IPaC) website at http://ecos/fws.gov/ipac/ within 90 days of project initiation to ensure species information is correct. If new species or critical habitat is identified, this letter is no longer valid and a new project package should be submitted to the Oklahoma ESFO.

Information about the online project review process including instructions and use, species information, and other information regarding project reviews within Oklahoma is available at our website: <http://www.fws.gov/southwest/es/oklahoma/ >. If you have any questions, please call 918-581-7458 or send an email message to OKProjectReview@fws.gov.

Sincerely,
/s/ Jonna Polk
Field Supervisor
Oklahoma Ecological Services Field Office

Enclosures:

1) ENTIRE PROJECT REVIEW
   - ☒ PACKAGE: Species Conclusion Table
   - ☒ IPaC Species List and Action Area map
   - ☒ This letter (Online Concurrence Letter)
   - ☒ (Optional) Additional maps
2) Other relevant project data/documents

The USFWS concurrence letter form August 25, 2015, has been included with this submittal.

APPENDIX D - SPECIES LIST: OKLAHOMA ECOLOGICAL SERVICES FIELD OFFICE

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Oklahoma Ecological Services Field Office
9014 East 21st Street
Tulsa, OK 74129-1428
Phone: (918) 581-7458 Fax: (918) 581-7467
http://www.fws.gov/southwest/es/Oklahoma/

In Reply Refer To: May 01, 2018
Consultation Code: 02EKOK00-2018-SLI-1456
Event Code: 02EKOK00-2018-E-03449
Project Name: Cimarron Environmental Response Trust Site in Logan County, Oklahoma

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 threatened, endangered, 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.).

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.

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.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Non-federal entities conducting activities that may result in take of listed species should consider seeking coverage under section 10 of the ESA, either through development of a Habitat Conservation Plan (HCP) or, by becoming a signatory to the General Conservation Plan (GCP) currently under development for the American burying beetle. Each of these mechanisms provides the means for obtaining a permit and coverage for incidental take of listed species during otherwise lawful activities.

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

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 through our Project Review step-wise process http://www.fws.gov/southwest/es/oklahoma/OKESFO%20Permit%20Home.htm.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Migratory Birds
- Wetlands

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:

Oklahoma Ecological Services Field Office
9014 East 21st Street
Tulsa, OK 74129-1428
(918) 581-7458

Project Summary

Consultation Code: 02EKOK00-2018-SLI-1456

Event Code: 02EKOK00-2018-E-03449

Project Name: Cimarron Environmental Response Trust Site in Logan County, Oklahoma

Project Type: LAND - RESTORATION / ENHANCEMENT

Project Description: Burns & McDonnell Engineering Company, Inc. (Burns & McDonnell) is providing environmental support services for the Cimarron Environmental Response Trust (CERT) at a site formerly owned and operated by Kerr-McGee Nuclear Corporation (KMNC) in Logan County, Oklahoma (Project) (Appendix A). For the purpose of informal consultation with the U.S. Fish and Wildlife Service (USFWS), Burns & McDonnell conducted desktop analyses to evaluate threats to species protected by the Endangered Species Act (ESA) (16 U.S.C. 1531 et seq.), Bald and Golden Eagle Protection Act (BGEPA) (16 U.S.C. 668), and the Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703).

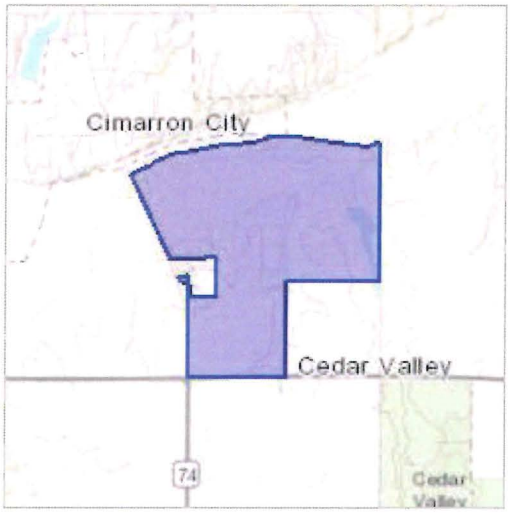
Burns & McDonnell and CERT are requesting a concurrence with the findings of this desktop habitat assessment that the proposed Project has not effect or is not likely to adversely affect species protected under the jurisdiction of the USFWS.

The Project is located at a site that was formerly owned and operated by Kerr-McGee Nuclear Corporation. The onsite facilities were utilized for the production of mixed oxide fuel and uranium fuel, including enriched uranium reactor fuel pellets and eventually fuel rods from 1966 to 1975. During this time, exposure of process water and material to the environment resulted in the contamination of the site groundwater. The site is now owned by the CERT. The concentration of uranium, nitrates, and fluorides in the groundwater must be reduced to achieve unrestricted release of the site and license termination from the Nuclear Regulatory Commission (NRC). Mitigation of these constituents will be achieved through the extraction, treatment, and discharge of affected groundwater. These processes will require the construction of groundwater extraction wells, groundwater extraction trenches, groundwater injection wells, groundwater injection trenches, process piping, two outfalls to the Cimarron River, and groundwater treatment facilities. All best management practices (BMPs) will be implemented in compliance with

associated erosion and sedimentation regulations for disturbance; thereby minimizing those associated impacts.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/35.88045145911566N97.5770481123075W



Counties: Logan, OK

Endangered Species Act Species

There is a total of 5 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
Least Tern Sterna antillarum Population: interior pop. No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8505	Endangered
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
Red Knot Calidris canutus rufa No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1864	Threatened
Whooping Crane Grus americana Population: Wherever found, except where listed as an experimental population There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/758	Endangered

Fishes

NAME	STATUS
Arkansas River Shiner Notropis girardi Population: Arkansas River Basin (AR, KS, NM, OK, TX) There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4364	Threatened

Critical habitats

There is 1 critical habitat wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Arkansas River Shiner Notropis girardi https://ecos.fws.gov/ecp/species/4364#crithab	Final

USFWS National W ildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

---

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

THERE ARE NO FWS MIGRATORY BIRDS OF CONCERN WITHIN THE VICINITY OF YOUR PROJECT AREA.

Migratory Birds F AQ

Tell me mor e about conservation measur es I can implement to avoid or minimize impacts to migratory birds.
Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?
The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the E-bird Explore Data Tool.

What does IPaC use to generate the pr obability of pr esence graphs for the migratory birds potentially occurring in my specified location?
The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is br eeding, wintering, migrating or pr esent year -r ound in my pr oject ar ea?
To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What ar e the levels of concern for migratory birds?
Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that ar e potentially affected by offshor e pr ojects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?
If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Pr oper Interpr etation and Use of Your Migratory Bird Report
The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Wetlands

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

FRESHWATER EMERGENT WETLAND

- PEM1Fx
- PEM1C

FRESHWATER FORESTED/SHRUB WETLAND

- PSS2C
- PSS/EM1Fh

FRESHWATER POND

- PUBHx
- PAB4Hx
- PUBHh

LAKE

- L1UBHh

RIVERINE

- R2UBH
- R2USC

APPENDIX E - PROTECTED SPECIES DETERMINATION TABLE

Table 1: Species Conclusion Table

Project Name: Cimarron Environmental Response Trust Site in Logan County, Oklahoma

Date: June 7, 2018

Name	Status	Habitat Determination	Notes / Documentation	Effect Determination
Least tern (*Sterna antillarum*)	Endangered	No Potential Habitat Present	Project impacts will not include areas in the Cimarron River. No exposed salt flats, beaches, or sand bars within the vicinity of the action are.	No Effect
Piping plover (*Charadrius melodus*)	Threatened	No Potential Habitat Present	Project impacts will not include areas in the Cimarron River. No exposed salt flats, beaches, or sand bars within the vicinity of the action are.	No Effect
Red knot (*Calidris canutus rufa*)	Threatened	No Potential Habitat Present	Project impacts will not include areas in the Cimarron River. No exposed salt flats, beaches, or sand bars within the vicinity of the action are.	No Effect
Whooping crane (*Grus americana*)	Endangered	No Potential Habitat Present	No stop-over habitat is present. Project impacts will not include areas in the Cimarron River. No other suitable habitat is present.	No Effect
Arkansas River shiner (*Notropis girardi*)	Threatened	No Potential Habitat Present	Project impacts will not include areas in the Cimarron River. Project discharges will be compliant with all other permitting requirements and include all appropriate best management practices for construction to control for erosion and sedimentation.	No Effect
Arkansas River Shiner Critical Habitat	Threatened	Critical Habitat Not Present	Project impacts will not include areas in the Cimarron River. Project discharges will be compliant with all other permitting requirements and include all appropriate best management practices for construction to control for erosion and sedimentation.	Not Likely to Adversely Modify Critical Habitat

Information confirmed through the USFWS Information, Planning, and Conservation System (IPaC) official species list for the Project (http://ecos.fws.gov/ipac accessed May 01, 2018) and the ODWC list of threatened, endangered, and rare species, (http://www.wildlifedepartment.com/wildlifemgmt/endangered/State_Listed_by_County.pdf accessed June 7, 2018).

APPENDIX F - PREVIOUSLY ISSUED ONLINE CONCURRENCE LETTER

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Division of Ecological Services
9014 East 21st Street
Tulsa, Oklahoma 74129
918/581-7458 / (FAX) 918/581-7467

July 28, 2015

Online Project Review Concurrence Letter

To: Bryan R. Gasper
Burns & McDonnell Engineering Company, Inc.
9400 Ward Parkway
Kansas City, Missouri 64114

Project Name: Cimarron Environmental Response Trust Site in Logan County, Oklahoma
Burns & McDonnell Project No. 72454
USFWS Consultation Code: 02EKOK00-2015-SLI-1367

Dear Applicant:

Thank you for using the U.S. Fish and Wildlife Service (Service) Oklahoma Ecological Services Field Office online project review process. By providing this letter in conjunction with your project review package, you are certifying that you have accurately completed the online project review process for the referenced project in accordance with all instructions provided, using the best available information to reach your conclusions. Concurrence with "not likely to adversely affect" determinations does not provide any exemption for violations of section 9 of the ESA or "take" of federally-listed species. The Federal action agency is ultimately responsible for ensuring compliance with the ESA and any take that occurs due to your proposed action would be considered a violation under section 9 of the ESA.

This letter and the enclosed project review package complete the review of your project in accordance with the Endangered Species Act of 1973 (16 U.S.C. 1531-1544, 87 Stat. 884), as amended (ESA). This letter also provides information for your project review under the National Environmental Policy Act (National Environmental Policy Act of 1969 (P.L. 91-190, 42 U.S.C. 4321-4347, 83 Stat. 852), as amended. A copy of this letter and the project review package must be emailed to **okprojectreview@fws.gov** for this certification to be valid. This letter and the project review package will be maintained in Service records. **Please allow the OKESFO 60 days to review your information. If the OKESFO determines that the package is not complete, or that additional coordination is necessary, we will contact your office. If after 60 days from the time you emailed your project review package the OKESFO has not contacted your office, consider your section 7 consultation complete.**

The proposed action consists of

Burns & McDonnell Engineering Company, Inc. (Burns & McDonnell) is providing environmental support services for the Cimarron Environmental Response Trust (CERT) at a site formerly owned and operated by Kerr-McGee Nuclear Corporation (KMNC) in Logan County, Oklahoma (Project) (Appendix A). For the purpose of informal consultation with the U.S. Fish and Wildlife Service (USFWS), Burns & McDonnell conducted desktop analyses to evaluate threats to species protected by the Endangered Species Act (ESA) (16 U.S.C. 1531 et seq.), Bald and Golden Eagle Protection Act (BGEPA) (16 U.S.C. 668), and the Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703).

Burns & McDonnell and CERT are requesting a concurrence with the findings of this desktop habitat assessment that the proposed Project has not effect or is not likely to adversely affect species protected under the jurisdiction of the USFWS.

The Project is located at a site that was formerly owned and operated by Kerr-McGee Nuclear Corporation. The onsite facilities were utilized for the production of mixed oxide fuel and uranium fuel, including enriched uranium reactor fuel pellets and eventually fuel rods from 1966 to 1975. During this time, exposure of process water and material to the environment resulted in the contamination of the site groundwater. The site is now owned by the CERT. The concentration of uranium, nitrates, and fluorides in the groundwater must be reduced to achieve unrestricted release of the site and license termination from the Nuclear Regulatory Commission (NRC). Mitigation of these constituents will be achieved through the extraction, treatment, and discharge of affected groundwater. These processes will require the construction of groundwater extraction wells, groundwater extraction trenches, groundwater injection wells, groundwater injection trenches, process piping, two outfalls to the Cimarron River, and groundwater treatment facilities. All best management practices (BMPs) will be implemented in compliance with associated erosion and sedimentation regulations for disturbance; thereby minimizing those associated impacts.

The project is expected to be completed:

July 2018

This project review is needed for:

The concentration of uranium, nitrates, and fluorides in the groundwater must be reduced to achieve unrestricted release of the site and license termination from the NRC.

The species conclusions table in the enclosed project review package summarizes your ESA conclusions. These conclusions resulted in "not likely to adversely affect/modify" determinations for listed species and critical habitat in relation to potential effects of your proposed project. We certify that the use of the online project review process in strict accordance with the instructions provided as documented in the enclosed project review package results in reaching the appropriate determinations. Therefore, we concur with determinations of "not likely to adversely affect" for listed species and critical habitat reached by proper use of this process. For projects where this particular determination is reached, additional coordination with this office is not needed.

Candidate species are not legally protected pursuant to the ESA. However, the Service encourages efforts to avoid or minimize adverse impacts to them from project effects. Some federal agencies have standing policies that grant limited protections to candidate species. Conservation of candidate species now may preclude future needs to federally list them as endangered or threatened, at which point their legal protection would become required. Please contact this office for additional coordination if your project action area contains candidate species.

Should project plans change or if additional information on the distribution of listed species or critical habitat becomes available, this determination may be reconsidered. You should re-visit the Service's Information, Planning, and Conservation (IPaC) website at http://ecos/fws.gov/ipac/ within 90 days of project inititaion to ensure species information is correct. If new species or critical habitat is identified, this letter is no longer valid and a new project package should be submitted to the OKESFO.

Information about the online project review process including instructions and use, species information, and other information regarding project reviews within Oklahoma is available at our website: <http://www.fws.gov/southwest/es/oklahoma/ >. If you have any questions, please call 918-581-7458 or send an email message to OKProjectReview@fws.gov.

Sincerely,
/s/ Jontie Aldrich
Acting Field Supervisor
Oklahoma Ecological Services Field Office

Enclosures:

1) ENTIRE PROJECT REVIEW PACKAGE:
   - ☑ Species Conclusion Table
   - ☑ IPaC Species List and Action Area map
   - ☑ This letter (Online Concurrence Letter)
   - ☑ (Optional) Additional maps
2) Other relevant project data/documents

ODWC state list of protected species by county - Logan County, OK.

BURNS McDONNELL

02/09/2017

David Ball
Logan County Emergency Management
312 East Harrison
Guthrie, OK 73044

Re: Floodplain Permit Application for the Environmental Properties Management, LLC Groundwater Remediation Project

Dear Mr. Ball,

Environmental Properties Management LLC (EPM), a Trustee for the Cimarron Environmental Response Trust (CERT), has retained Burns & McDonnell Engineering Company, Inc. (Burns & McDonnell) to provide FEMA floodplain permitting for the proposed Groundwater Remediation Project (Project). These actions are part of a larger effort to remediate groundwater contaminated by a former nuclear fuel production facility.

The Project is located at a site that was formerly owned and operated by Kerr-McGee Nuclear Corporation (KMNC) in Logan County, Oklahoma. From 1966 to 1975, the onsite facilities were utilized for the production of mixed oxide fuel and uranium fuel including enriched uranium reactor fuel pellets and eventually fuel rods. During this time, exposure of process water and material to the environment resulted in the contamination of site groundwater. The site is now owned by CERT. The concentration of uranium, nitrates, and fluorides in the groundwater must be reduced to achieve unrestricted release of the site and license termination from the U.S. Nuclear Regulatory Commission (NRC) and the Oklahoma Department of Environmental Quality (DEQ). Mitigation of these constituents will be achieved through the extraction, treatment, and discharge of affected groundwater.

This phase of the Project will construct four water injection trenches and one groundwater extraction trench, followed by testing of injection and extraction efficiencies as part of final design for the Project. Two of the test trenches will be within the FEMA 100-year floodplain. These test trenches will be excavated to the specified dimensions. The injection wells will be constructed in the trenches and the then the trench will be partially backfilled with aggregate. The trenches will then be returned to their previous contours using the excavated spoils and stabilized.

The groundwater injection and extraction efficiency will be tested by placing a frac tank, utilized to supply clean water, near the targeted injection trench and moved as necessary. Following completion of injection testing activities, this frac tank will be removed from the Project site. Two frac tanks will be utilized to store water generated during the extraction trench tests. These frac tanks will remain onsite pending characterization and treatment (as necessary) of the extracted water. These tanks will be staged outside of the FEMA 100-year floodplain to avoid any potential impacts, to the extent practicable, should flooding occur.

15950 North Dallas Parkway \ Tower II, Suite 700 \ Dallas, TX 75248
O 972-455-3100 \ F 972-386-4026 \ burnsmcd.com

Per our phone conversation, the following procedures will be followed during construction:

- The spoils will be stockpiled outside of the FEMA 100-year floodplain during construction activities.
- Equipment and materials will not be staged within the limits of the FEMA 100-year floodplain.
- Excess spoils will be spread and stabilized outside of the FEMA 100-year floodplain.

Enclosed is the Logan County Floodplain Development Application, General Vicinity Map, Excavation and Grading Plans, and $100 permit fee. If you require any additional information or clarification, please contact me by phone at (816) 605-7821, or by email at kgouvion@burnsmcd.com.

Sincerely,

Ken Gouvion, CISEC
Staff Environmental Scientist

Enclosure

FLOODPLAIN DEVELOPMENT APPLICATION

(For Proposed Development in Floodplain Areas)

Date July 28, 2015 Permit No _____

NOI Fee Collected: Yes _____ No _____ Amount _____

Applicant/Developer Burns & McDonnell Engineering Company, Inc.

Address 9400 Ward Parkway

Kansas City, KS 64114

Telephone Number (314) 682-1560 Email Address jhesemann@burnsmcd.com

Contact Name John Hesemann

List Type and Purpose of Development Groundwater injection and extraction analysis

Located at Latitude 35°53'00.84"N, Longitude 97°34'34.03"W (see attached map)

Flood Zone Type: Zone A

If property will be located in an identified Special Flood Hazard Area complete the following and require certified elevation of proposed lowest floor (including basement) & lowest adjacent grade.

Name of Community Logan County, Unincorporated Areas

NFIP Community No 40083C0250F

Applicant Requests To:

☐ Construct ☒ Mine ☐ Construct Addition ☐ Remodel ☐ Elevate

☐ Drilling ☐ Demolish ☐ Add Fill ☐ Manufactured Housing (Placement)

☐ Storage (Equipment or Supplies)

Base Food Elevation Undetermined Proposed Lowest Floor Elevation N/A

Flood Map Effective Date September 29, 2010

Community - Panel No. 400096 - 0250 F

Permit Fee $100.00 Has permit fee been collected? ☐ Yes ☐ No

Plans, specifications and elevation certificate filed by the applicant shall constitute by reference, a part of this permit.

FOR OFFICIAL USE ONLY

This application has been reviewed by _____

Print Name Here

Date _____ _____

Signature of Reviewer

This application is considered complete and complies with the local floodplain ordinance or set of regulations

Are other local, state or federal permits required? ☐ Yes ☐ No If yes, list type(s) _____

DEVELOPMENT PERMIT APPLICATION

For Proposed Development on
LANDS LOCATED IN FLOODPLAIN AREAS

INSTRUCTIONS

TO COMPLY WITH FLOODPLAIN MANAGEMENT REGULATIONS AND TO MINIMIZE POTENTIAL FLOOD DAMAGE, IF YOU ARE BUILDING WITHIN AN IDENTIFIED FLOOD HAZARD AREA, YOU MUST AGREE TO CONSTRUCT YOUR PROPOSED DEVELOPMENT IN ACCORDANCE WITH THE FOLLOWING SPECIAL PROVISIONS:

SPECIAL FLOODPLAIN PROVISIONS

1. For RESIDENTIAL structures, the lowest floor (including basement) must be elevated to or above the base flood elevation (100-year flood elevation) as delineated in this community's floodplain management regulations or ordinances. See provisions for manufactured homes in local regulations.

2. For NON-RESIDENTIAL structures, the lowest floor must be elevated to or above the base flood elevation, or floodproofed to withstand the flood depths, pressures, velocities, impact and uplift forces associated with the 100-year flood as delineated in this community's floodplain management regulations or ordinances.

3. For ALL STRUCTURES, the foundation and the materials used must be constructed to withstand the pressures, velocities, impact and uplift forces associated with the 100-year flood.

4. All utility supply lines, outlets, switches and equipment must be installed and elevated so as to minimize damage from potential flooding. Water and sewer connections must have automatic back flow devices installed.

5. You must submit certification on the attached form(s) from a REGISTERED ENGINEER, ARCHITECT or LAND SURVEYOR, that the floor elevation and/or floodproofing requirements have been met. Failure to provide the required certification is a violation of this permit.

6. Other Provisions — See attached list _____ None _____

AUTHORIZATION

I have read or had explained to me and understand the above special provisions for flood plain development. Authorization is hereby granted the permitting authority and their agents or designees, singularly or jointly, to enter upon the above-described property during daylight hours for the purpose of making inspections or for any reason consistent with the issuing authority's floodplain management regulation. I further verify that the above information is true and accurate to the best of my knowledge and belief.

John R. Hesemann — 02/09/2017

Signature of Applicant — Date

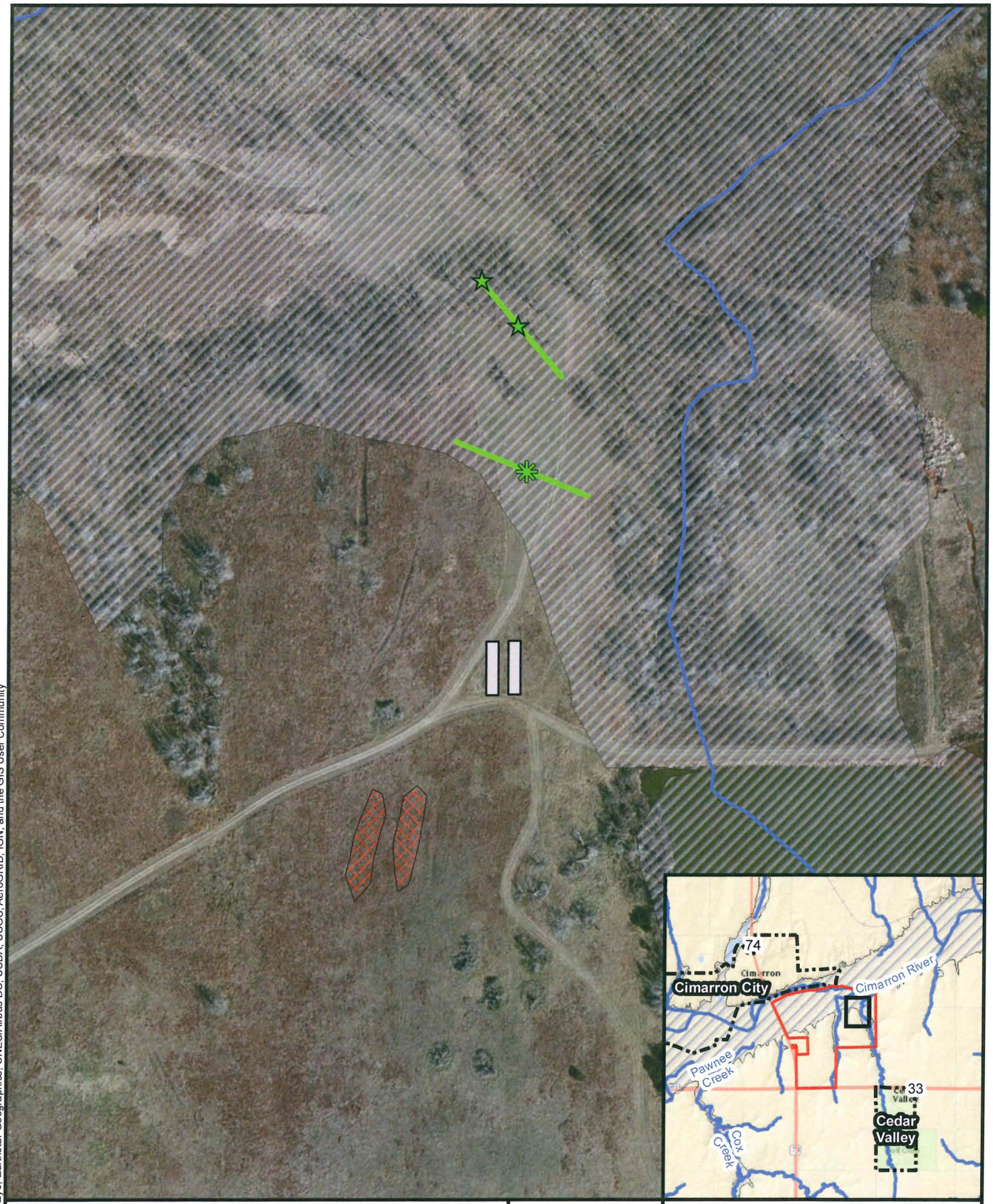
LOGAN COUNTY FLOODPLAIN BOARD FEE SCHEDULE

The Floodplain Board for Logan County establishes the following fee schedule not to exceed $500 for any one service:

A. Notice of Intent Fee- $25.00 maximum
B. Floodplain Development Permit Application Review- $100
C. Floodplain Development Permit Fee- $25.00
D. Inspection Fee-per inspection- $25.00

Questions can be directed to Logan County Floodplain Administrator David Ball Phone 405-282-0494 or Email

Loganoem@gmail.com



Extraction Well
Injection Well
Trench
Spoil Pile
Site Boundary
Frac Tank
NHD Stream
100-year FEMA Floodplain
Construction Area
City Limit

NORTH
0 100 200
Feet

BURNS McDONNELL

General Vicinity Map
Groundwater Remediation Project
Cimarron Environmental Response Trust
Logan County, Oklahoma

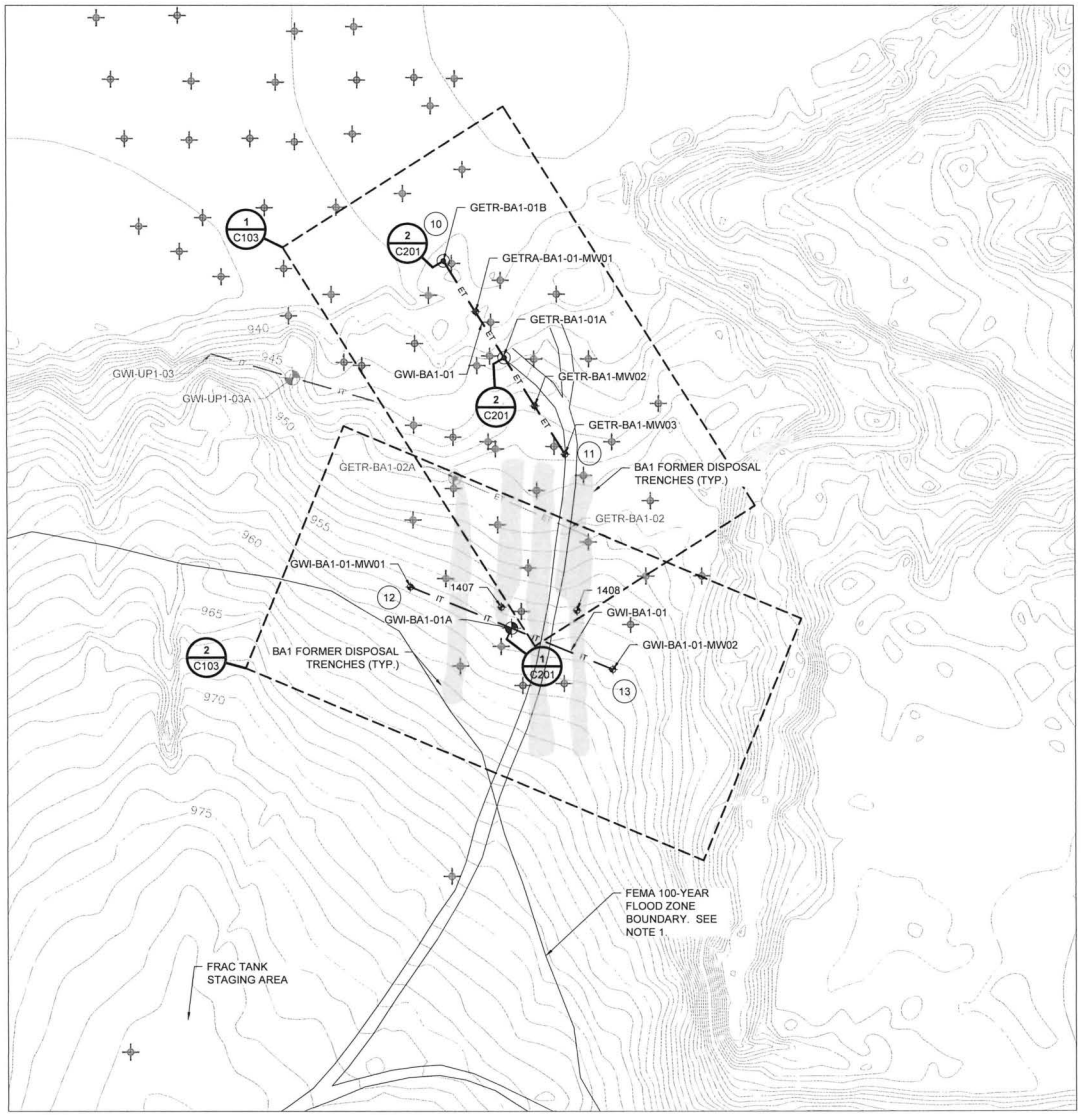
Source: ESRI; USGS NHD; FEMA Floodplains; Cimarron Environmental Response Trust; Burns & McDonnell Engineering Company, Inc.

Issued: 1/31/2017

Path: Z:\General\KCM\ESP\Dept\Enviro_Monitoring\SWPPP\02) Working Documents\89761 CERT Groundwater Remediation Project, OK\01) GIS\DataFiles\ArcDocs\CERT Floodplain Map.mxd kgouvion 1/31/2017

Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



no.	date	by	ckd	description
A	2/01/17	BC	JH	FOR REVIEW

NOTES:
1. FRAC TANKS, EQUIPMENT, TRENCH SPOILS, ETC. SHALL BE STAGED AT AN ELEVATION ABOVE THE FEMA 100-YEAR FLOOD ELEVATION IN ACCORDANCE WITH THE SWPPP.
2. CONTRACTOR SHALL PROTECT EXISTING MONITOR WELLS DURING INJECTION AND EXTRACTION TRENCH INSTALLATION AND PILOT TESTING ACTIVITIES. CONTRACTOR MAY SUBMIT ALTERNATE TRENCH ALIGNMENT FOR ENGINEER APPROVAL IN EFFORT TO PROTECT EXISTING MONITOR WELLS.
3. TOPOGRAPHY SHOWN IS FROM AN AERIAL SURVEY DATED MAY 2014.

NORTH

0 50' 100'
SCALE IN FEET

PRELIMINARY - NOT FOR CONSTRUCTION

BURNS McDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
OKLAHOMA FIRM LICENSEE NO. 421

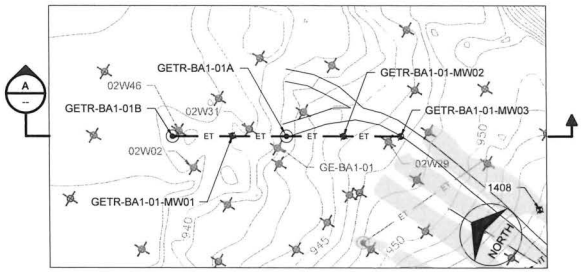
FEBRUARY 2017	B. CLEMENT
B. CLEMENT	checked J. HESEMANN

Cimmaron Environmental Response Trust
BURIAL AREA 1
SITE PLAN

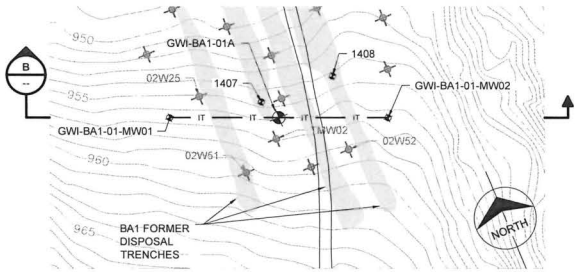
96785 | contract

BMCD-GWREMED-C002 — rev. A

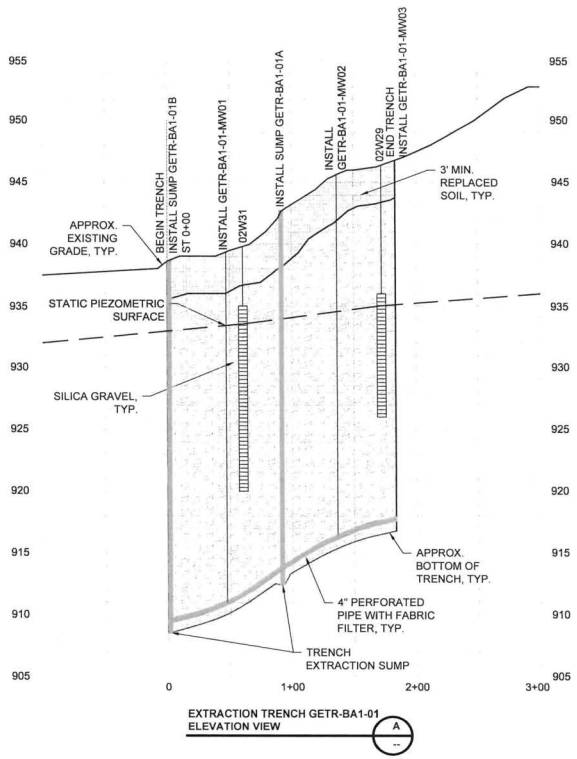
sheet 5 of 11 sheets
file C001-OVERALL SITE PLAN.DWG



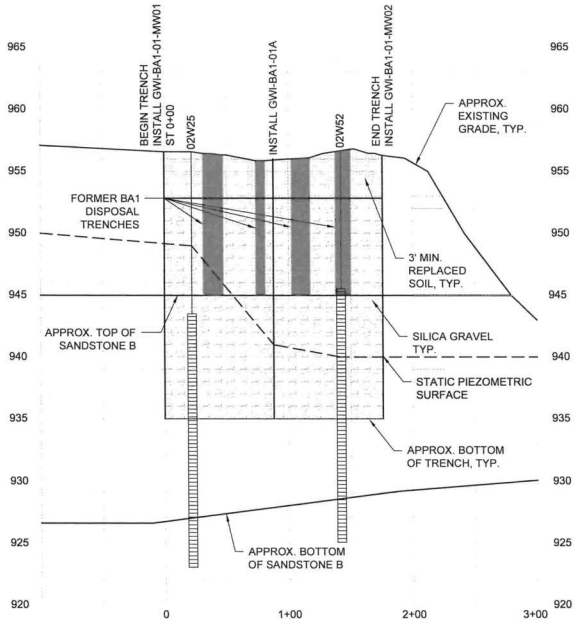
EXTRACTION TRENCH GETR-BA1-01 DETAIL — 1 / C003



INJECTION TRENCH GWI-BA1-01 DETAIL — 2 / C003



EXTRACTION TRENCH GETR-BA1-01 ELEVATION VIEW — A / --



INJECTION TRENCH GWI-BA1-01 ELEVATION VIEW — B / --

NOTES:
1. TOPOGRAPHY SHOWN IS FROM AN AERIAL SURVEY DATED MAY 2014.
2. STATIC PIEZOMETRIC SURFACE FOR BURIAL AREA 1 CREATED FROM WATER LEVEL MEASUREMENTS FROM SANDSTONE B AND TRANSITION ZONE MONITOR WELLS ON AUGUST 8, 2016.
3. EXISTING SANDSTONE B AND TRANSITION ZONE MONITOR WELL LOCATIONS AND SCREEN INTERVALS ARE PROJECTED IN CROSS SECTION.
4. CONTRACTOR SHALL ABANDON EXISTING MONITOR WELLS PRIOR TO TRENCH CONSTRUCTION AS DIRECTED BY ENGINEER. FOLLOWING COMPLETION OF TRENCH INSTALLATION, CONTRACTOR SHALL RE-INSTALL MONITOR WELLS AS DIRECTED BY ENGINEER. ENGINEER WILL PROVIDE MONITOR WELL LOCATIONS AND WELL CONSTRUCTION DETAILS FOR BA1 MONITOR WELLS NOT DEPICTED ON SHEET C103 UPON COMPLETION AND ACCEPTANCE OF TRENCH INSTALLATION.
5. MONITOR WELL 1407 SHALL BE CONSTRUCTED WITH A SCREEN INTERVAL FROM 8 TO 13 FEET BELOW GROUND SURFACE. MONITOR WELL 1408 SHALL BE CONSTRUCTED WITH A SCREEN INTERVAL ACROSS BOTH THE TRANSITION ZONE AND SANDSTONE B. SEE SHEET C202 FOR CONSTRUCTION DETAILS FOR ALL OTHER MONITOR WELL, INJECTION WELL, AND SUMPS DEPICTED ON SHEETS C003 AND C103.

no.	date	by	ckd	description
A	2/01/17	BC	JH	FOR REVIEW

PRELIMINARY - NOT FOR CONSTRUCTION

BURNS McDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
OKLAHOMA FIRM LICENSEE NO. 421

JANUARY 2017	B. CLEMENT
B. CLEMENT	checked J. HESEMANN

VERTICAL SCALE
0 5' 10'
SCALE IN FEET

HORIZONTAL SCALE
0 50' 100'
SCALE IN FEET

Cimmaron Environmental Response Trust
BA1 INJECTION AND EXTRACTION TRENCH DETAILS

96785 | contract
rev.

BMCD-GWREMED-C103

sheet 8 of 11 sheets
file C001-OVERALL SITE PLAN.DWG