

May 15, 2020

J.R. Wauford & Company
Mr. Kevin Young, P.E.
2835 Lebanon Pike
Nashville, TN 37214

Re: Request for Fee Proposal
Baseline Environmental Assessment
City of Crossville, Tennessee Water Supply Project
Wauford Project No. 4637-P3
Crossville, Cumberland County, Tennessee

Dear Mr. Young:

BDY Environmental LLC (BDY) and Ecosystem Planning and Restoration (EPR) are pleased to present this Fee Proposal for the Baseline Environmental Assessment for the City of Crossville, Tennessee Water Supply Project (Wauford Project No. 4637-P3). Per our recent telephone conversation on May 13, 2019, BDY and EPR (Team) believe that efficient identification and evaluation of jurisdictional features to be included in the Complete Waters of the U.S. Delineation Report and functional loss determination requires an iterative scope of work. A phased approach to the assessment will allow the Team to provide the requested services in the most cost-effective manner possible.

Our scope of work includes Phase I tasks for a kickoff meeting with regulatory agencies, desktop analyses of existing data to more precisely quantify the extent of required analyses, preliminary assessments of the streams that would potentially be impacted, an acoustic survey for listed bat species, regulatory agency coordination, and Phase II scoping.

PHASE I SCOPE OF WORK

The baseline environmental assessment of the “permit review area” will be conducted to support the Department of the Army Section 404 permit and the Section 401 Water Quality Certification applications. The “permit review area” is depicted on the attached maps provided in the Request for Qualifications and Proposed Scope of Work bid package. The preliminary estimate of the area included in the “permit review area” is approximately 363 acres, excluding the existing reservoir.

The scope of work includes:

PROJECT KICKOFF MEETING

In order to assure regulatory agencies concur with the proposed scope of investigation prior to undertaking costly onsite analyses, we propose to conduct a kickoff meeting with the Project Team and representative personnel from the Tennessee Department of Environment and Conservation (TDEC), U.S. Army Corps of Engineers (USACE) and U.S. Fish and Wildlife Service (USFWS).

Given the number of proposed attendees and geographic distribution, we propose to conduct the kickoff meeting via teleconference in a format approved under mutual agreement by the parties involved (Zoom, Skype, Google Meet, etc.). The meeting will inform proper methodologies and limits to site analyses in consideration of existing resources and their hydrologic connection to Meadow Park Lake. Prior to the meeting, the Team will develop an agenda for your review to be distributed to attendees upon your approval.

DESKTOP REVIEW AND PREPARATION

Based on preliminary information provided by the City of Crossville, the estimated area of wetlands to be impacted is approximately 60 acres comprised of 23 individual wetland areas, and the estimated length of stream channel to be impacted is about 20,000 linear feet. These estimates have not been confirmed by J. R. Wauford & Company Consulting Engineers, Inc. and are provided only as a general estimate of the magnitude of jurisdictional waters to be impacted.

To better define the resource features within the area of investigation, our Team will develop Geographic Information System (GIS) mapping of the site to refine the estimation of stream footage and wetland area and assess watershed and site conditions. Stream channel locations and lengths, watershed boundaries, and drainage areas for streams will be estimated and soils maps will be developed from data available through the Natural Resources Conservation Service (NRCS) to aid in the field assessments. Field maps and digital data files will be developed that will be used in the field assessment portion of the work.

FIELD ASSESSMENTS

Four (4) BDY staff members will spend up to five (5) workdays assessing the project site and streams for Phase I of the project, with potential assistance from additional Team members, as needed. We will conduct a hydrologic determination of the watercourses identified within the “permit review area.” The determination will be conducted on the extent of each watercourse contained within the “permit review area.” The purpose of the hydrologic evaluations will be to determine the jurisdictional status of the identified watercourse with regard to Tennessee’s statutory definition of a stream.^{1,2} The evaluation will be conducted per TDEC Hydrologic Determination (HD) protocols (TDEC Rules of the Tennessee Water Quality Control Board 0400-40-03-.05(9), *et seq.*).

¹“Stream’ means a surface water that is not a wet weather conveyance”, Tenn. Code Ann. §69-3-103 (38).

² “Wet weather conveyance’ means, notwithstanding any other law or rule to the contrary, man-made or natural watercourses, including watercourses that have been modified by channelization: (A) that flow only in direct response to precipitation runoff in their immediate locality; (B) whose channels are at all times above the groundwater table; (C) that are not suitable for drinking water supplies; and (D) in which hydrological and biological analysis indicate that, under normal weather conditions, due to naturally occurring ephemeral or low flow there is not sufficient water to support fish, or multiple populations of obligate lotic aquatic organisms whose life cycle includes an aquatic phase of at least two (2) months.”, *Ibid.*, §69-3-103 (43) (A-D)

Documentation will include field notes, photographs, completed Hydrologic Determination Field Data Sheets, and other necessary supporting information to develop a Primary or Secondary Indicator score suitable for presentation to TDEC.

We will assess previously identified and potentially unidentified wetland area and estimate the approximate size and extent of wetland features. The updated approximation of the number and size of wetlands will assist in estimating the scope of Phase II services.

Two (2) EPR staff members will spend up to two (2) workdays assessing the project site and streams for Phase I of the project. Assessments will focus on ground-truthing the number of streams that will need to be assessed for functional loss determination in Phase II of the Project. The Phase I field assessment will verify the accuracy of the desktop review estimates and provide updated estimates to be used in Phase II scoping efforts. Other efforts will include general assessments of stream functions and conditions and site access and logistics. The goal of the Phase I efforts will be to gather enough additional information such that Phase II can be accurately scoped. Information gathered from this field assessment may also be used to develop questions and clarifications needed from the regulatory agencies. Our findings will be reported and discussed with you.

ACOUSTIC SURVEY FOR LISTED BATS

Our Team will consult with the USFWS to develop an approved plan for conducting an acoustic survey for listed bat species. Based upon the size of the study area, we anticipate that we will conduct an acoustic survey for 24 detector nights on the referenced property during May 15 – August 15, 2020 to determine use of the habitat by listed bat species. Six (6) detectors will be deployed for four (4) calendar nights in areas of suitable summer habitat where bats are likely to forage or commute. The sampling period will begin at sunset and end at sunrise the next day. We will conduct analysis using Kaleidoscope Pro, to determine presence of the Indiana and northern long-eared bat. If presence is considered likely at either site, we will conduct qualitative analysis of probable Indiana/northern long-eared bat calls. Calls will be manually vetted by a qualified acoustic surveyor. Documentation will include field notes, photographs of detector locations and approximate zone of detection, GPS coordinates for acoustic files, and results and analysis of the acoustic ID program. Our findings will be reported and discussed with you and the USFWS.

TDEC HYROLOGIC DETERMINATION SUBMITTAL

We will compile the data acquired during the Field Assessments and develop a comprehensive submittal of identified watercourse features to support submittal to TDEC of a Hydrologic Determination (HD) for watercourse reaches contained within the permit review area. The HD submittal documentation will include field notes, photographs, completed Hydrologic Determination Field Data Sheets, and other necessary supporting information to develop a Primary or Secondary Indicator score suitable for presentation to TDEC. Our findings will be reported and discussed with you. This scope of work includes developing a comprehensive report for submittal to TDEC, as is required under TDEC's protocols to present a rebuttable presumption of jurisdictional status, as is provided under TDEC's HD rules.

CONSULTATION WITH USACE AND TDEC

Upon receiving concurrence regarding the hydrologic determination submittal, the Team will meet with the larger project team and regulatory agencies (TDEC, USACE, and USFWS) to discuss the work to be conducted, types of assessments required, and discuss appropriate parameters for use in the wetland delineations and Stream Quantification Tool (SQT) methodology. The team will also discuss methods that may reduce the effort required, resulting in potential cost savings for the Client. It is assumed that this will be an on-site meeting at Meadow Park Lake.

PHASE II SCOPING

The Team will use the information gathered from the field assessment and regulatory meeting to develop the scope of work and fee for Phase II of this project. Phase II services will include wetland delineations conducted per guidelines established in the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0), a Complete Waters of the U.S. Delineation Report in accordance with the requirements of the “Components of a Complete Waters of the U.S. Delineation Report” (Nashville District) dated February 2017 and its appendices, requests for AJDs and PJDs (as appropriate), and providing functional loss determinations by utilizing the TN SQT, as described in the TDEC 2019 TN Stream Mitigation Guidelines (DWR-NR-G-01). Phase II will include collecting required field data and producing summaries that detail the existing functional condition of the site streams that may be impacted. We will use the data collected during Phase II as inputs to the TN Debit Tool (as described in document DWR-NR-G-01) to estimate the potential mitigation that would be required as a result of raising the water level of Meadow Park Lake.

PHASE I ASSUMPTIONS

The following assumptions were used in developing this scope of work and cost estimate:

- One (1) regulatory agency meeting will be held at the project site.
- Two-person field crews will be required to perform the field assessments in a safe and efficient manner.
- Impacts from COVID-19 related issues such as travel restrictions and accommodation availability will be minimized but some flexibility in schedule may be required.
- Field crews may access the streams by either boat or overland travel but use of a boat is expected.
- Motorized boat rentals will be available to provide teams of two access to evaluate stream channels and wetland areas from the existing lake.

PHASE I DELIVERABLES

The following deliverables will be developed by the Team during Phase I:

Project Kickoff Meeting: Meeting Agenda
Meeting notes with any required scope refinements.

Desktop Review and Preparation: Updated site mapping to include potential additional stream footage and wetland areas, watershed delineation, soils and geology, and Federal and State listed species potentially affected by the project.

Field Assessments: Identification and assumed Federal and State jurisdictional status of all stream and wetland features identified on the site, and potential RTE habitat for listed plant, fish and mussel species. General assessments of stream functions and conditions and preliminary estimates of compensatory mitigation requirements for impacts to streams and wetlands.

Acoustic Survey for Listed Bats: A report documenting presence/ absence of listed bat species, and concurrence from USFWS regarding findings including potential restrictions (e.g. seasonal timbering, leaving trees in new inundated areas) and compensatory mitigation requirements.

TDEC HD Submittal: A comprehensive hydrologic determination report for submittal to TDEC and concurrence from TDEC regarding our identified jurisdictional status.

Regulatory Meeting: Meeting Agenda
Meeting notes with scope refinements for Phase II investigations.

Phase II Scoping: A refined scope and lump sum fee schedule for Phase II activities.

PHASE I LUMP SUM FEES

We propose a lump sum fee of \$76,310 to complete the foregoing scope of work, as itemized below.

Project Kickoff Meeting:	\$4,435
Desktop Review and Preparation:	\$5,220
Field Assessments:	\$38,990
Acoustic Survey for Listed Bats:	\$10,460
TDEC HD Submittal:	\$6,910

Regulatory Meeting:	\$5,190
Phase II Scoping:	\$5,105
TOTAL LUMP SUM FEE	\$76,310

BDY and EPR will submit monthly invoices to the Client on a lump sum, percent complete basis, using the foregoing task budgets. All work is expected to be completed within two (2) months of Notice to Proceed.

PHASE II SCOPE OF WORK

The following tasks remain to be completed as part of Phase II.

USACE WATERS OF THE U.S. DELINEATION REPORT

Our team will prepare a Complete Waters of the U.S. Delineation Report in accordance with the requirements of the “*Components of a Complete Waters of the U.S. Delineation Report*” (Nashville District) dated February 2017 and its appendices. This report will include components for delineated wetlands, Preliminary Jurisdictional Determinations (PJDs), Approved Jurisdictional Determinations (AJDs), and TDEC HDs. To implement this scope of work, we will conduct site visits to observe, document, and score pertinent reaches of the resources within the “permit review area.”

WETLAND DELINEATION

Our team will delineate the boundaries of wetlands within the subject property boundaries as depicted in the attached exhibit. The purpose of the delineations is to determine the areal extent of jurisdictional wetlands that would need to be avoided or otherwise permitted in regard to the proposed site development. The wetland delineations will be conducted per guidelines established in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0)*. The boundaries of delineated wetlands would be marked in the field with either pin flags or flagging labeled ‘Wetland Boundary’. The areal extent of each feature will be recorded utilizing a high-resolution GPS unit. Our documented findings will be summarized in a narrative report, which will include wetland data sheets, photographs, and maps.

APPROVED JURISDICTIONAL DETERMINATION

Based upon this report, an AJD request and supporting materials will be prepared and submitted to the USACE. The AJD is a definitive, legally-determinative, and appealable identification of aquatic resources on the Site that are jurisdictional under the Clean Water Act. Our AJD request will consist of a letter report documenting our presumptive basis regarding the federal jurisdictional status of water features on the Site. Our request, along with background data including climate, soils, and historic aerial imagery, and will be prepared using the USACE Nashville District guidance document *Components of a Complete Waters of the U.S. Delineation Report* dated February 2016. We will accompany USACE personnel on the AJD field visit and

offer data, if possible, to support our presumptions of the jurisdictional status of aquatic resources on the Site. Based on the AJD Field Visit and requests by the USACE, we will revise and resubmit AJD request maps depicting Waters of the U.S., as necessary.

PRELIMINARY JURISDICTIONAL DETERMINATION

Our team will prepare a PJD request for submittal to the USACE. The PJD is not an official determination of the jurisdictional status of aquatic resources, but, rather, identifies features that the USACE considers “may” be jurisdictional Waters of the U.S. (WOTUS), subject to the provisions of the Clean Water Act. Any permit decisions made based on a PJD will treat all waters that would be affected in any way by the permitted activity as if they are jurisdictional WOTUS. PJD’s are issued in a timelier manner than AJD. PJDs allow an applicant to expeditiously obtain USACE permit authorization. The PJD request will consist of a letter report documenting the presumptive federal jurisdictional status of water features on the Site along with background data including climate, soils, and historic aerial imagery, and the PJD request will be prepared using the USACE Nashville District guidance document *Components of a Complete Waters of the U.S. Delineation Report* dated February 2016. We will accompany USACE personnel on the PJD field visit and offer additional data, if necessary, to support the presumptive jurisdictional status of aquatic resources on the Site.

FUNCTIONAL LOSS DETERMINATION

Our team will use the Tennessee Debit Tool per the 2019 TN Stream Mitigation Guidelines to calculate an existing conditions score and functional loss for each stream reach that will be impacted by the proposed raising of the Meadow Park Lake dam resulting in the inundation of approximately 20,000 linear feet of stream. Tennessee Debit Tool option 1 will be utilized and all required parameter and metrics will be measured and reported. All required parameters and metrics for Debit Tool Option 1 will be collected, except water quality and biological parameters. Field values for bacteria, nitrogen, phosphorus, and macroinvertebrate parameters will be developed through review of available data and discussions with the USACE and TDEC regarding appropriate parameter scores for the watershed. TN SQT Rapid Assessment Forms will be completed for each assessed stream reach. Field data sheets, field notes, workbooks, cross section and longitudinal profile plots will be documented and provided for each assessed stream reach and will include representative photographs.

PERMITTING & COMPENSATORY MITIGATION

Following confirmation of jurisdictional status, our Team will assist in preparing application materials for unavoidable alterations to jurisdictional streams and wetlands. The number and extent of jurisdictional features for which permitted alterations will be required will be known after the completion of the foregoing tasks.

Our scope will include preparing and submitting the necessary maps and exhibits, project descriptions, antidegradation and alternatives analyses, and mitigation plans. Our scope includes meeting with project principals and agency personnel, as required, and our support of the permitting processes’ public participation requirements.

A part of our scope will include working with site planners and project designers to minimize impacts and address how site modifications may offset impacts and reduce costly compensatory mitigation credit purchases.

PHASE II ASSUMPTIONS

The following assumptions were used in developing this scope of work and cost estimate:

- This estimate assumes 20,000 linear feet of stream channel and approximately 60 acres comprising 23 individual wetlands will be assessed in Phase II. If additional streams or wetlands are identified during Phase I and/or HD/JD efforts, additional funding will be required. We anticipate our Phase I efforts will allow us to combine analyses for similar resources and reduce the scope of Phase II analyses.
- A three-person field crew for Functional Loss Determination and a two-person field crew for Wetland Delineation will be required to perform the assessments in a safe and efficient manner.
- The regulatory meeting will be held in person.
- TN Debit Tool Option 1 will be used to assess all potential stream impacts.
- Field crews may access the streams and wetlands by either boat or overland travel but use of a boat is expected, and motorized boats will be available to rent onsite.
- Impacts from COVID-19 related issues such as travel restrictions and accommodation availability will be minimized but some flexibility in schedule may be required.

PHASE II LUMP SUM FEES

Based upon the current assumptions, and potential requirements to conduct boundary delineations of every wetland area and assess every identified channel as part of the Functional Loss Determination, estimated Phase II lump sum fees would currently be \$165,000. We anticipate our Phase I efforts will allow us to reduce Phase II fees by condensing the extent of required Functional Loss Determination and Wetland Delineation site assessments based upon Phase I assessments and regulatory coordination. We also anticipate integrating design considerations to minimize compensatory mitigation requirements in the permitting process.

We appreciate very much the opportunity to be of service to you. Please contact us at (615) 460-9797 if you require further information.

Very truly yours,

BDY Environmental, LLC

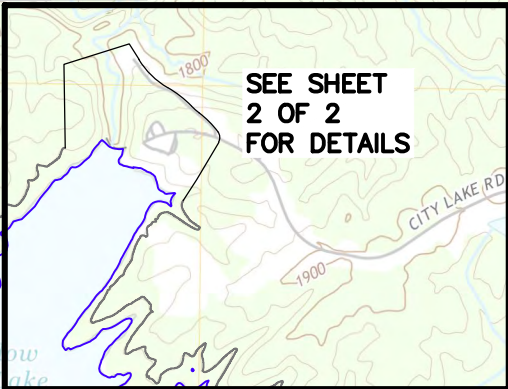
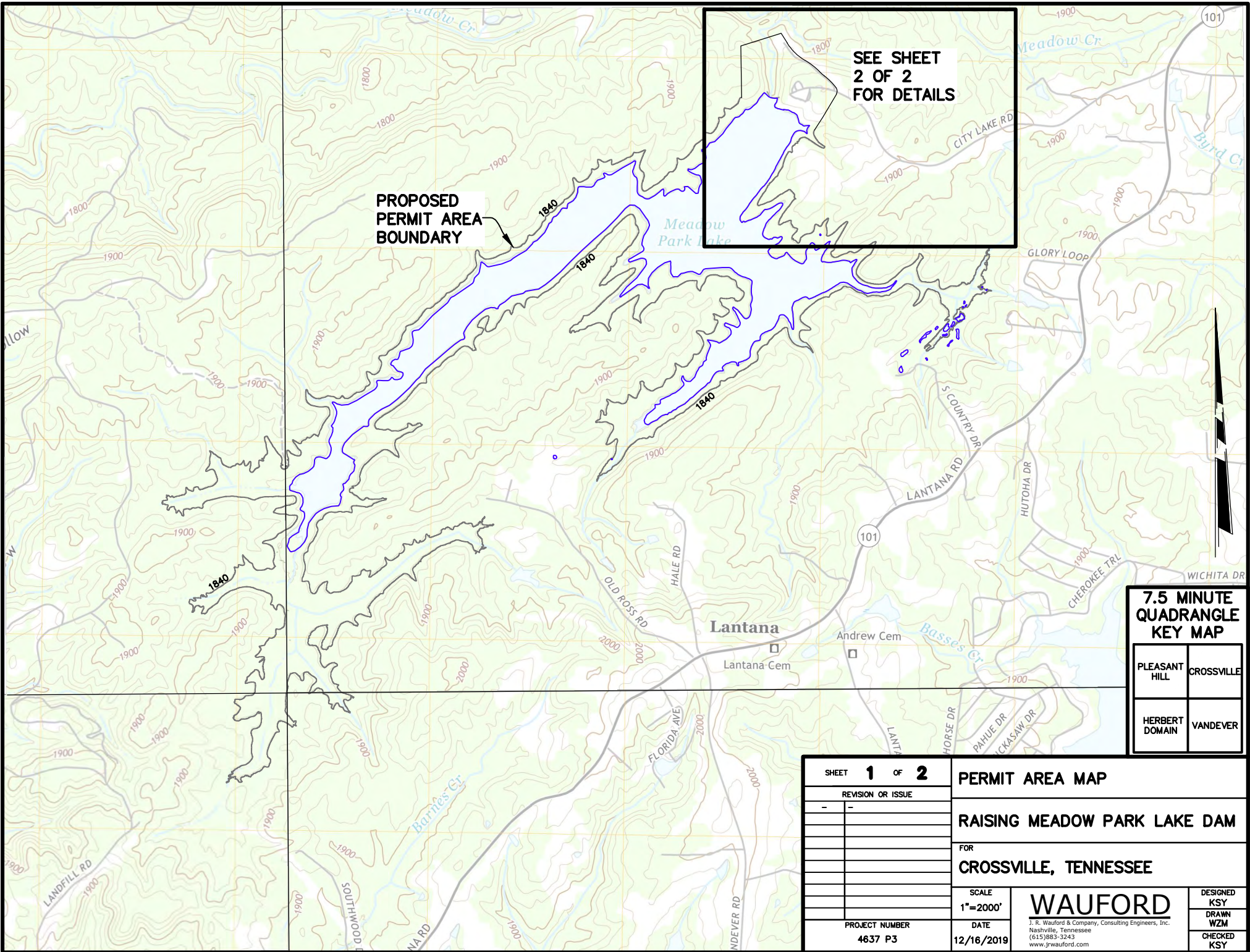


Dave Cour
Senior Scientist

Ecosystem Planning & Restoration



Jake Byers
Senior Water Resources Engineer



PROPOSED PERMIT AREA BOUNDARY

7.5 MINUTE QUADRANGLE KEY MAP

PLEASANT HILL	CROSSVILLE
HERBERT DOMAIN	VANDEVER

SHEET 1 OF 2	PERMIT AREA MAP		
REVISION OR ISSUE	RAISING MEADOW PARK LAKE DAM		
-	FOR		
	CROSSVILLE, TENNESSEE		
	SCALE	WAUFORD	DESIGNED KSY
	1"=2000'		
	DATE	J. R. Wauford & Company, Consulting Engineers, Inc. Nashville, Tennessee (615)883-3243 www.jrwauford.com	DRAWN WZM
PROJECT NUMBER	12/16/2019		
4637 P3			