PUBLIC NOTICE
File Number NRS16.166

Pursuant to Tennessee Rules Chapter 0400-04-07, the proposed activity described below has been submitted for approval under an Aquatic Resource Alteration Permit and §401 Water Quality Certification. This notice is intended to inform interested parties of this permit application and to ask for comments and information necessary to determine possible impacts to water quality. No decision has been made whether to issue or deny this application.

PERMIT COORDINATOR Robert Baker

APPLICANT
U.S. Army Corps of Engineers - Nashville District
Stephen F. Murphy, Lieutenant Colonel
110 9th Avenue South; Room A -405
Nashville, Tennessee 37203
(615) 736-7954

LOCATION

Nickajack Reservoir (Tennessee River Mile 471.0) in Hamilton County, Latitude N35.1055, Longitude W-85.23126

PROJECT DESCRIPTION / PURPOSE

The applicant proposes to excavate rock from within an existing cofferdam adjacent to Chickamauga Lock. The work would include installation of anchors, construction of an interior wall, excavation of approximately 98,000 cubic yards of rock, disposal of excavated material and a new outfall associated with re-routing of a toe drain.

IMPACTS

The U.S. Army Corps of Engineers, Nashville District (Corps) is proposing to excavate approximately 98,000 cubic yards of material from the bed of Nickajack Reservoir (Tennessee River Mile 471.0), directly below Chickamauga Dam in Chattanooga, Tennessee. The excavation would take place within an existing cofferdam structure directly adjacent to Chickamauga Lock. Activities associated with the excavation work would consist of the following activities:

1) Secant Pile Wall- construction of a secant pile wall approximately 51’ x 2’ in size on the interior of the existing cofferdam to stabilize the structure before excavation;

2) Inclined Rock Anchors- installation of 44 inclined rock anchors for stability purposes within the interior of the cofferdam (anchors are 60-68 strand, ranging in length from 66’ to 102’ and

have bond lengths of 39’ to 43’);

3) Exploratory Drilling- drilling of 71 exploratory holes within the cofferdam, up to approximately 70 feet below the bottom of the reservoir;

4) Rock Excavation- excavation of approximately 98,000 cubic yards of predominately limestone rock within the boundaries of the existing cofferdam (approximately 6.48 acres). The area within the cofferdam has been previously dewatered and excavated during previous construction activities. Mussels from the cofferdam were relocated prior to excavation in earlier construction efforts. Excavation would vary from a minimum depth of 5 feet to a maximum depth 32 feet within the cofferdam area depending on the required founding elevations of the new concrete lock structure and the potential presence of bentonite clay formations. The excavation will be carried down utilizing support measures such as rock bolts and shotcrete;

5) Disposal of Excavated Materials- Materials excavated from the cofferdam would be disposed of at a site consisting of approximately 4.5 acres of uplands and 0.03 acre of emergent wetlands. The site has been used for disposal materials from previous excavations from Chickamauga Lock. As part of the disposal activities, an existing toe drain for Chickamauga Dam would be either removed and replaced at the current location with a stronger pipe, capable of withstanding the weight of increased fill material or a supplemental drain would be constructed around the disposal area to a new outfall location. The pipe for the toe drain currently runs underneath the disposal area and empties into North Chickamauga Creek. Total impacts to waters of the State would involve the excavation of 98,000 cy of rock from approximately 6.48 acres of Nickajack Reservoir located within an existing cofferdam and the permanent fill of 0.03 acre of emergent wetlands at the proposed disposal site.

WATERSHED / WATERBODY DESCRIPTION

Nickajack Lake is located within the Lower Tennessee River watershed (06020001). The watershed area at the point of impact is about 20782 square miles. For more information on the Lower Tennessee Watershed, please visit http://www.tn.gov/environment/article/wr-ws-lower-tennessee-river-watershed.

Ecoregion - Southern Limestone/Dolomite Valleys and Low Rolling Hills

Stream Name / ID - Nickajack Reservoir (Tennessee River) / TN06020001001_1000

Designated Use	Use Support	Causes	Sources
livestock watering & wildlife	fully supporting		
irrigation	fully supporting		
recreation	not supporting	Polychlorinated biphenyls	Contaminated Sediments
recreation	not supporting	Dioxin (including 2,3,7,8-TCDD)	Contaminated Sediments
fish and aquatic life	fully supporting		

industrial water supply	fully supporting		
domestic water supply	fully supporting		

To view the proposed location of these impacts and the watershed condition, please visit: http://tdeconline.tn.gov/dwr/

Assessment Date: 5/11/2012

DETERMINATIONS

In accordance with the Tennessee Anti-degradation Statement (Rule 0400-40-03-.06), the Division has determined that the proposed activities will result in no more than *de minimis* degradation to water quality.

FACTORS CONSIDERED

In deciding whether to issue or deny a permit, the department will consider all comments of record and the requirements of applicable federal and state laws. In making this decision, a determination will be made regarding the lost value of the resource compared to the value of any proposed mitigation. The department shall consider practicable alternatives to the alteration. The department shall also consider loss of waters or habitat, diminishment in biological diversity, cumulative or secondary impacts to the water resource, and adverse impact to unique, high quality, or impaired waters.

HOW TO COMMENT

Persons wishing to comment on the proposal are invited to submit written comments to the department. Written comments must be received within **thirty days of the date that this notice is posted**. Comments will become part of the record. The applicant's name and permit number should be referenced. Send all written comments to the department's address listed below and to the attention of the permit coordinator.

PUBLIC HEARING

Interested persons may request in writing that the department hold a public hearing on this application. The request must be received by the department within the comment period, indicate the interest of the person requesting it, the reasons that the hearing is warranted, and the water quality issues being raised. When there is sufficient public interest in water quality issues, the department will hold a public hearing. Send all public hearing requests to the attention of the permit coordinator at the address listed below.

APPEAL

A permit appeal may be filed, pursuant to T.C.A. §§ 69-3-105(i) and Rule 0400-40-05, by the permit applicant or by any aggrieved person who participated in the public comment period

announced by this notice. This petition must be filed within THIRTY (30) DAYS after public notice of the issuance of the permit. The petition must specify what provisions are being appealed and the basis for the appeal. It should be addressed to the technical secretary of the Tennessee Board of Water Quality, Oil and Gas at the following address: Tisha Calabrese Benton, Director, Division of Water Resources, William R. Snodgrass Tennessee Tower, 312 Rosa L. Parks Ave, 11th floor, Nashville, TN 37243. Any hearing would be in accordance with T.C.A. §§69-3-110 and 4-5-301 et seq.

FILE REVIEW

The permit application, supporting documentation including detailed plans and maps, and related comments are available at the department's address (listed below) for review and/or copying or visiting the TDEC website.

Tennessee Department of Environment & Conservation
Division of Water Resources, Natural Resources Unit
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243

Application for a
Tennessee Department of Environment and Conservation
Division of Water Resources
Aquatic Resource Alteration Permit/State §401 Water Quality Certification

Supporting Documentation
Application Sections 6 – 11

Chickamauga Lock; Proposed Excavation Within an Existing Cofferdam Structure and Disposal of Excavated Materials

Tennessee River Mile 471.0
Chattanooga, Tennessee; Hamilton County

US Army Corps of Engineers – Nashville District
Project Planning Branch
Travis Wiley, Biologist
615-736-7954

Project Description

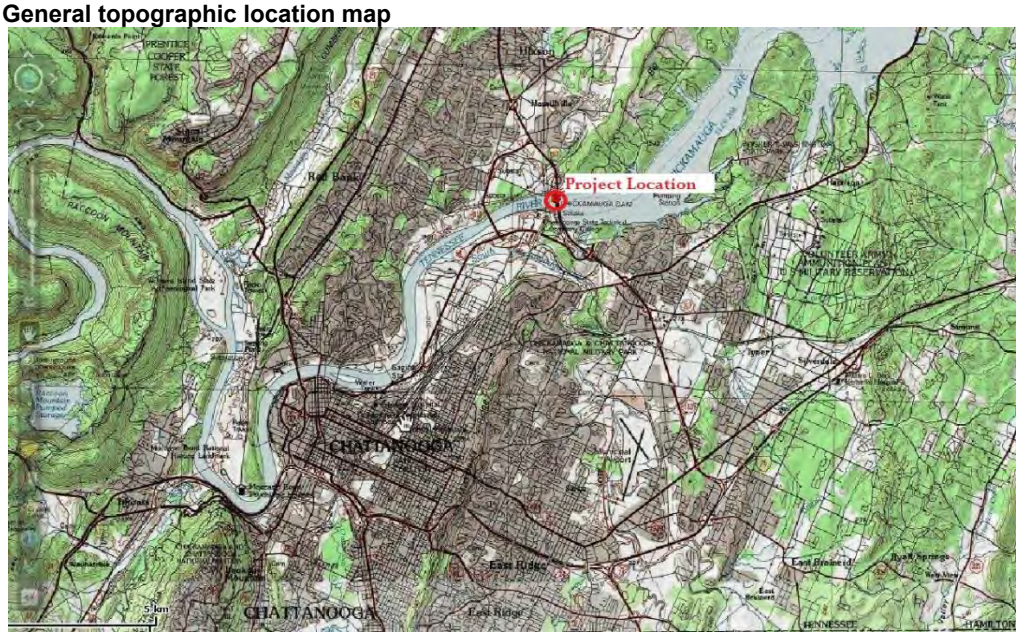
The U.S. Army Corps of Engineers, Nashville District (Corps) is proposing to excavate approximately 98,000 cubic yards of material from the bed of Nickajack Reservoir (Tennessee River Mile 471.0), directly below Chickamauga Dam in Chattanooga, Tennessee. The excavation would take place within an existing cofferdam structure directly adjacent to Chickamauga Lock. Activities associated with the excavation work would consist of the following activities:

1) Secant Pile Wall- construction of a secant pile wall approximately 51' x 2' in size on the interior of the existing cofferdam to stabilize the structure before excavation;
2) Inclined Rock Anchors- installation of 44 inclined rock anchors for stability purposes within the interior of the cofferdam (anchors are 60-68 strand, ranging in length from 66' to 102' and have bond lengths of 39' to 43');
3) Exploratory Drilling- drilling of 71 exploratory holes within the cofferdam, up to approximately 70 feet below the bottom of the reservoir;
4) Rock Excavation- excavation of approximately 98,000 cubic yards of predominately limestone rock within the boundaries of the existing cofferdam (approximately 6.48 acres). The area within the cofferdam has been previously dewatered and excavated during previous construction activities. Mussels from the cofferdam were relocated prior to excavation in earlier construction efforts. Excavation would vary from a minimum depth of 5 feet to a maximum depth 32 feet within the cofferdam area depending on the required founding elevations of the new concrete lock structure and the potential presence of bentonite clay formations. The excavation will be carried down utilizing support measures such as rock bolts and shotcrete;
5) Disposal of Excavated Materials- Materials excavated from the cofferdam would be disposed of at a site consisting of approximately 4.5 acres of uplands and 0.03 acre of emergent wetlands. The site has been used for disposal materials from previous excavations from Chickamauga Lock. As part of the disposal activities, an existing toe drain for Chickamauga Dam would be either removed and replaced at the current location with a stronger pipe, capable of withstanding the weight of increased fill material or a supplemental drain would be constructed around the disposal area to a new outfall location. The pipe for the toe drain currently runs underneath the disposal area and empties into North Chickamauga Creek. The two options are further discussed in Section 6.4 of this document.

Total impacts to waters of the State would involve the excavation of 98,000 cy of rock from approximately 6.48 acres of Nickajack Reservoir located within an existing cofferdam and the permanent fill of 0.03 acre of emergent wetlands at the proposed disposal site. The previous construction associated with replacement of Chickamauga Lock was authorized by TDEC under the following permit numbers:

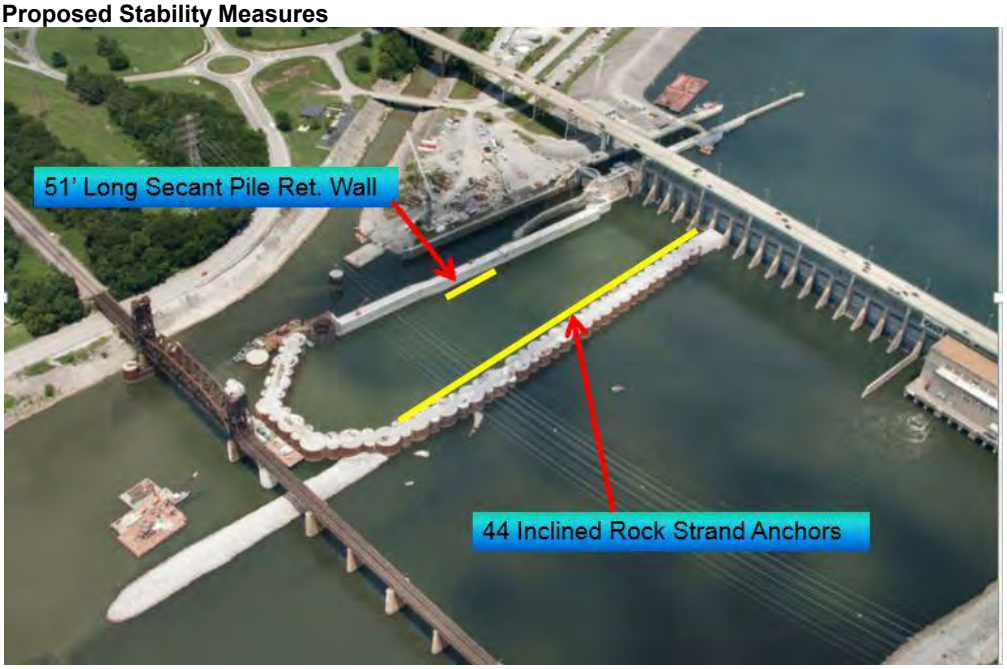
NRS02.392	(Issued 1 June 2004 – Expired 31 May 2009)	(IARAP)
NRS07.009	(Issued 22 March 2007 – Expired 21 March 2008)	(GARAP)
NRS07.079	(Issued 27 April 2007 – Expired 26 April 2009)	(GARAP)
NRS08.012	(Issued 14 February 2008 – Expired 13 February 2009)	(GARAP)
TNG 110337	(Issued 15 November 2007 - Expired 31 October 2012)	(RMCP)
TNR 110796	(Issued 17 September 2012 – Expired 16 August 2015)	(CGP)
TNR 111188	(Issued 20 December 2006 – Expired 17 September 2012)	(CGP)

General topographic location map



The photographs below shows the proposed excavation area within an existing cofferdam and disposal area.

Proposed Stability Measures



Excavation Site: The location of the cofferdam maintenance is Nickajack Reservoir, an open water impoundment of the Tennessee River (mile 471.0) directly downstream of Chickamauga Dam. The construction area is within an existing cofferdam that has previously been excavated. The substrate consists of limestone bedrock with sparse amounts of rock and gravel that has accumulated since initial construction. Pictures of the lock floor after a dewatering event in 2012 are shown below.

Overview of cofferdam (dewatered)

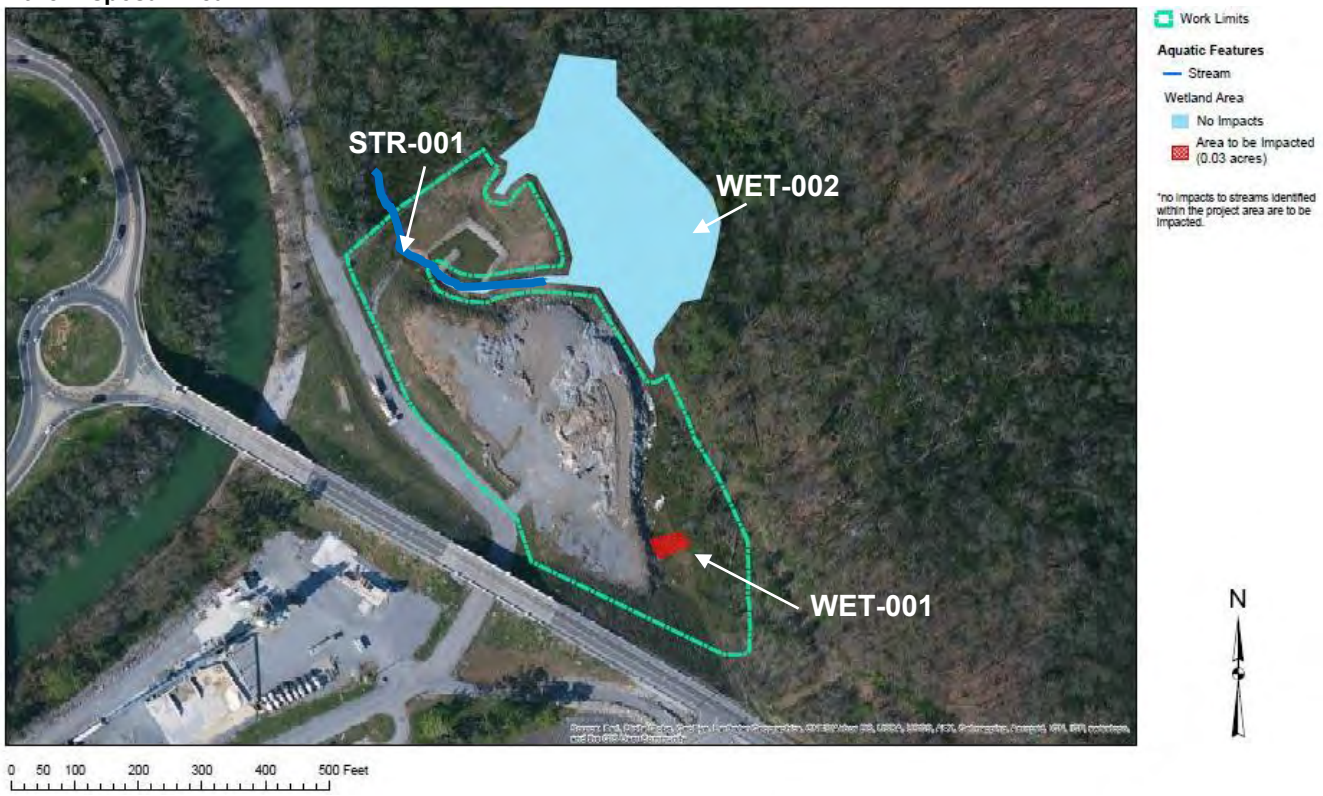
Substrate in cofferdam

Disposal Site: The disposal area is a site approximately 4.5 acres in size and approximately 1,800' northeast of Chickamauga Lock, near the left descending bank of North Chickamauga Creek. The disposal area was used up to 2012 during a previous excavation used to create the existing cofferdam area.

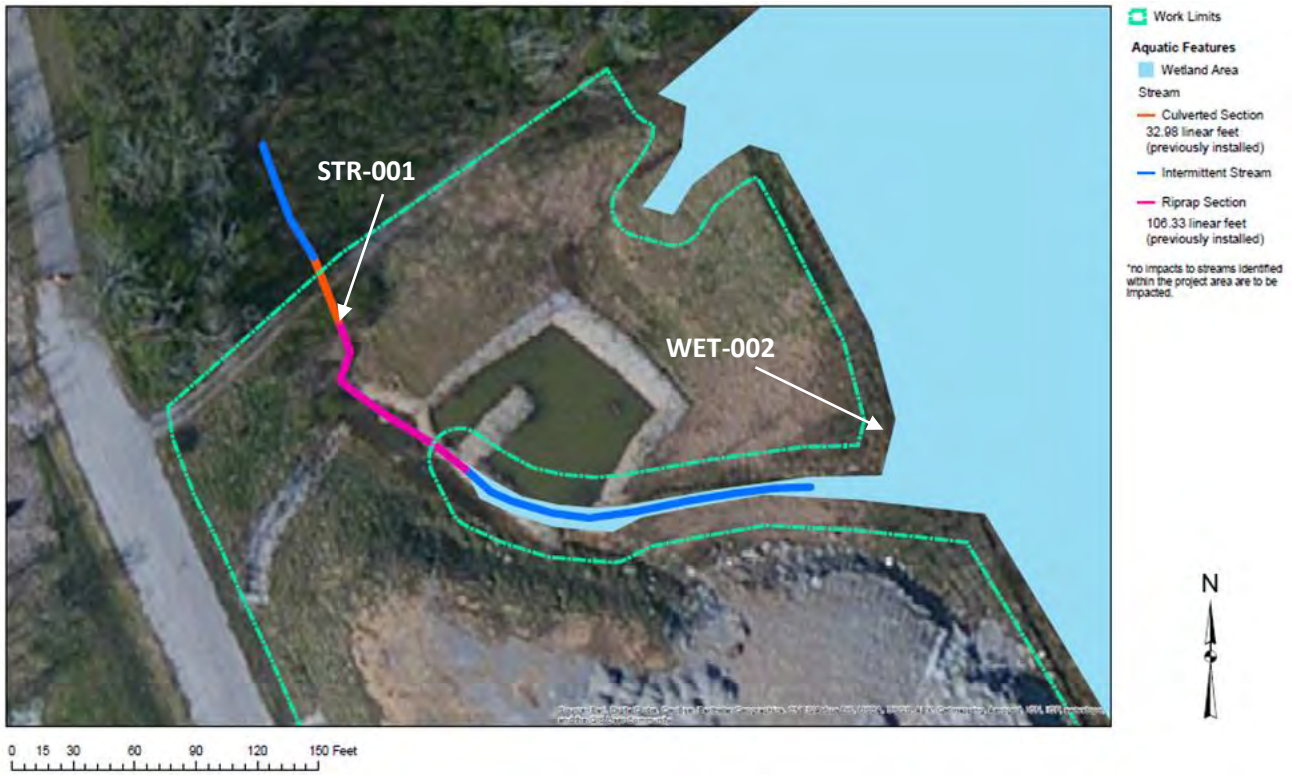
Chickamauga Lock Disposal Area Location Map

The site consists almost entirely of uplands, however the disposal area is bordered to the northeast by a forested wetland (WET-002), which discharges to an **intermittent** stream (STR-001). STR-001 runs through the northern portion of the proposed disposal area for approximately **340 linear feet** from east to west as shown in figures below. Based on previous records, the stream was created by changes in the diversion of water on the site from previous disposal activities. STR-001 begins from the drainage of WET-002 and flows across the disposal site into a riprapped ditch (approximately 106') and then into a culvert (approximately 33') before flowing off the site. One alternative under consideration (Alternative 2 – See Section 10; Figure 14), would use the entire disposal area, with the exception of the southwest corner to store excavated materials. However, under Alternative 1 (Preferred Alternative), **impacts to WET-002 and STR-001 would be avoided by this project**. In the photographs below, it is important to note that the blue line represents the contractor work area for disposal of excavated materials, not the fill area, which is further discussed in Section 10.

Entire Disposal Area



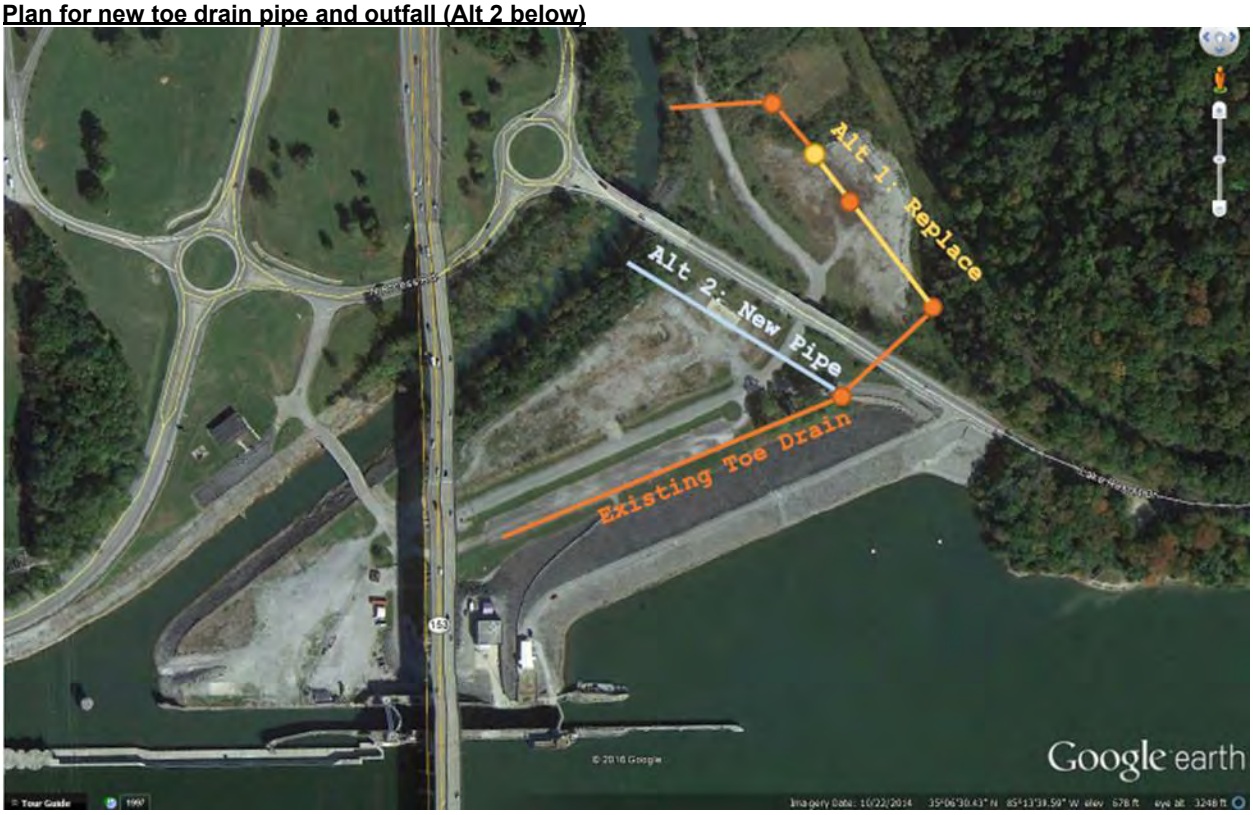
STR-001 Baseline Condition Drawing



The disposal of excavated material from within the cofferdam would permanently fill WET-001 resulting in 0.03 acre permanent loss of emergent wetlands.

An existing toe drain for Chickamauga Dam currently runs underneath the disposal area and empties into North Chickamauga Creek. To avoid damages to the toe drain associated with the extra weight of additional fill material, two alternatives are being considered. Alternative 1 would excavate and replace the existing toe drain in place with a stronger pipe of the same diameter that will be able to support the additional overburden weight. Alt 1 would result in the excavation and fill of 0.03 acre of emergent wetlands (WET-001), the same wetlands proposed to be filled during disposal activities. Realignment of the toe drain is a second alternative being considered (Alt 2). The realignment would result in the addition of a pipe from an existing manhole south of the disposal area and would convey water into North Chickamauga Creek, approximately 450' linear feet downstream of the current outfall. Under Alt 2, the current toe drain and outfall would be left in place to collect any seepage from the northwest portion of the property. Although a new outfall would be constructed, the route of the new toe drain pipe is proposed totally in uplands and no waters of the State would be altered, other than a new outfall, which would empty into North Chickamauga Creek.

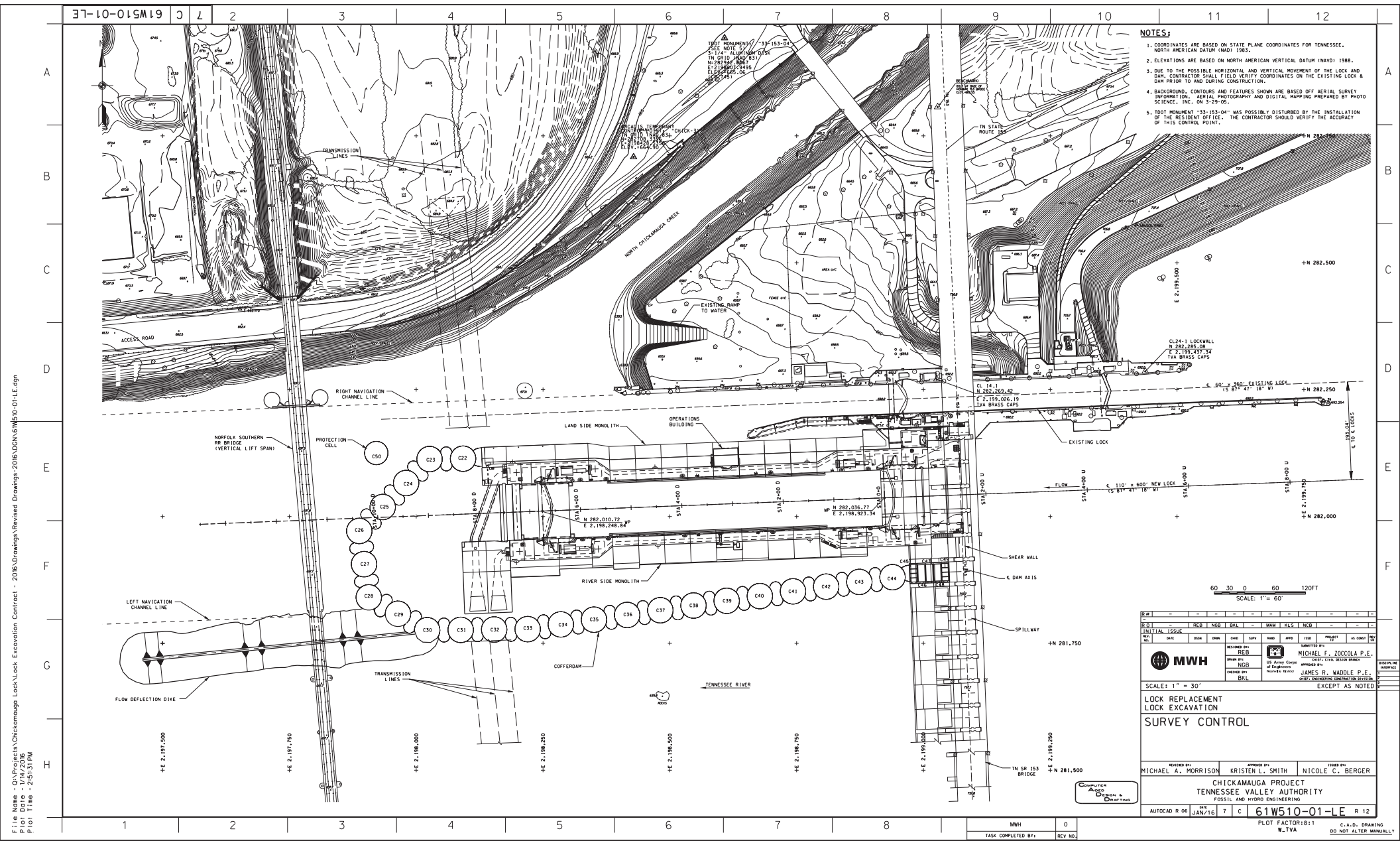
Plan for new toe drain pipe and outfall (Alt 2 below)



Photograph of WET-001

The proposed excavation would take place within an existing cofferdam structure and would change the bottom elevation within the cofferdam to varying degrees depending on the required founding elevations of the new concrete lock structure and the potential presence of bentonite clay formations. The resulting condition of the river bed within the cofferdam would be a solid bedrock bottom, much like the existing substrate, with varying depths. There would be no functional loss from the baseline conditions in the excavation area.

In the disposal area, impacts to WET-002 and STR-001 would be avoided. A 15-foot buffer would be left around WET-002 to minimize any potential indirect effects from the surrounding disposal activities. Either a realignment or replacement of an existing toe drain would occur. Approximately 0.03 acre of emergent wetland (WET-001) would be permanently filled beneath the excavated material. Although a minor loss of function associated with WET-001 would occur, the functional capacity of the wetland is poor given its position on the landscape, disturbed soils and lack of habitat for wildlife. Due to the small size of proposed wetland impacts and the limited functions provided by WET-001, no compensatory mitigation is proposed for the 0.03 acre impact.



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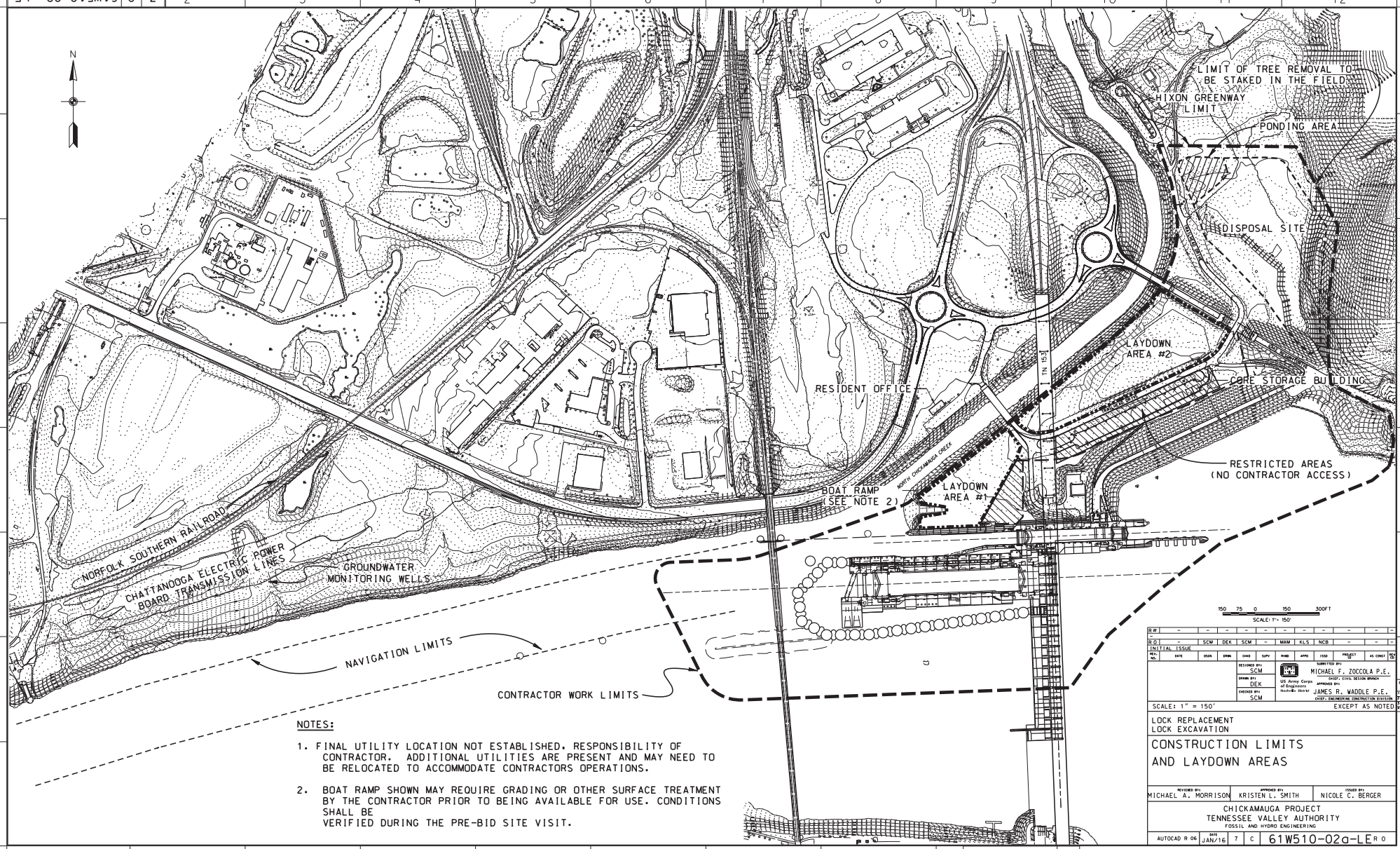

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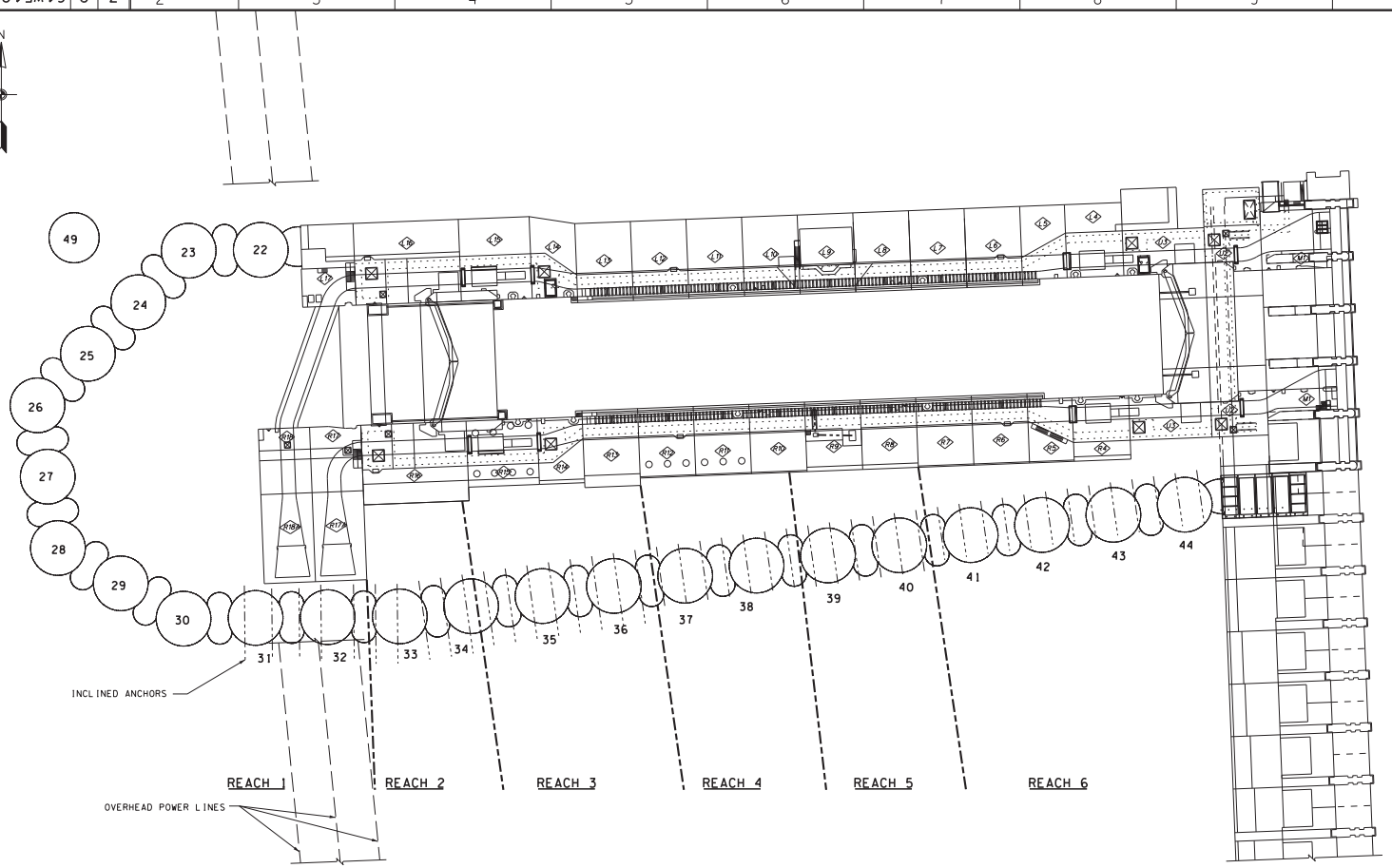

NOTES:

1. FOR ABBREVIATIONS SEE THIS SHEET.
2. SEE TABLE ON DRAWING 61W510-20-LE FOR ANCHOR TYPES AND DETAILS.
3. VERTICAL ANCHORS, PIEZOMETERS AND INCLINOMETERS HAVE BEEN INSTALLED IN THE COFFERDAM, SEE COFFERDAM AS BUILT DRAWINGS FOR LOCATIONS.

ABBREVIATIONS

AAP	APPROXIMATE
CL	CENTER LINE
CLSM	CONTROLLED LOW STRENGTH MATERIAL
E	EASTING
EA	EACH
EF	EACH FACE
EW	EACH WAY
EL	ELEVATION
N	NORTHING
NTS	NOT TO SCALE
OB	OVERBURDEN
S	SLOPE
SIM	SIMILAR
SP	SPACE
STA	STATION
T&B	TOP AND BOTTOM
TOR	TOP OF ROCK

CAUTION
SEE NOTE 3

SCALE: 1" = 40'
40' 0 40'

COMPUTER AIDED DESIGN & DRAFTING

R M	–	–	–	–	–	–	–	–	–	–	–	–	–
–													
R 0	–	JJK	LEN	GDS	–	MAM	KLS	NCB	–	–	–	–	–
INITIAL ISSUE													
REV. NO.	DATE	DSGN	DRWN	CHKD	SUPV	RVWD	APPD	ISSD	PROJECT ID	AS CONST	REV. NO.		

BLACK & VEATCH

DESIGNED BY: JJK
DRAWN BY: LEN
CHECKED BY: GDS

US Army Corps of Engineers Nashville District

SUBMITTED BY: MICHAEL F. ZOCCOLA P.E., CHIEF, CIVIL DESIGN BRANCH
APPROVED BY: JAMES R. WADDLE P.E., CHIEF, ENGINEERING CONSTRUCTION DIVISION

DISCIPLINE INTERFACE

SCALE: 1"=40' EXCEPT AS NOTED

LOCK REPLACEMENT
LOCK EXCAVATION

ROCK ANCHOR LAYOUT
INCLINED ANCHORS

REVIEWED BY:	APPROVED BY:	ISSUED BY:
MICHAEL A. MORRISON	KRISTEN L. SMITH	NICOLE C. BERGER

CHICKAMAUGA PROJECT
TENNESSEE VALLEY AUTHORITY
FOSSIL AND HYDRO ENGINEERING

AUTOCAD R 06	DATE JAN/16	7	C	61W510-11-LE	R 0

PLOT FACTOR:XX
W_TVA

C.A.D. DRAWING DO NOT ALTER MANUALLY

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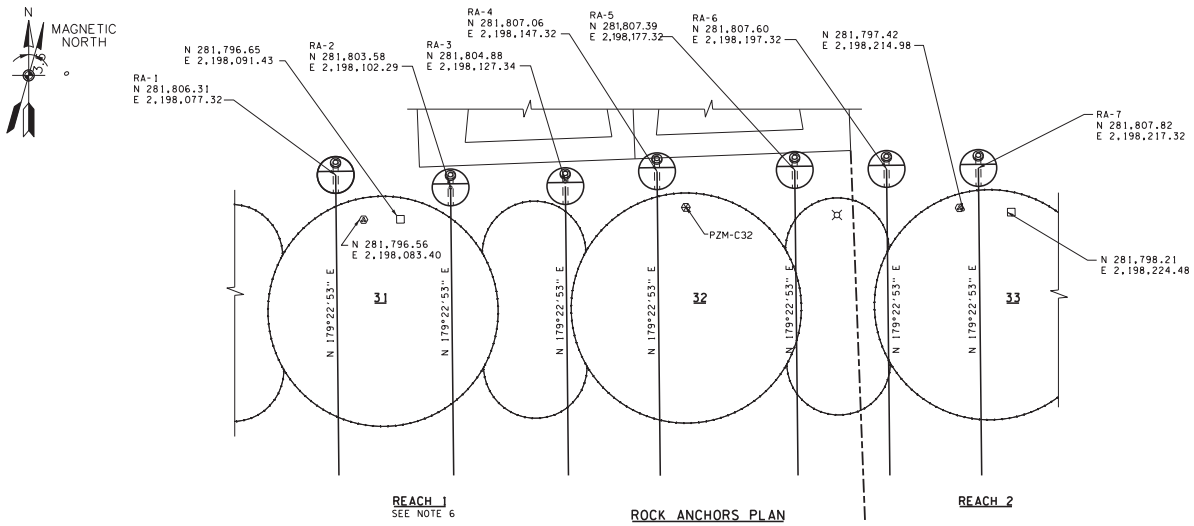
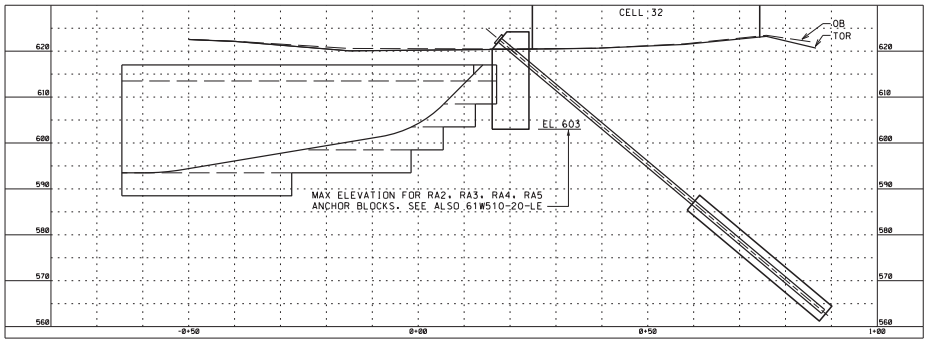


ROCK ANCHORS PLAN
SCALE: 1"=10'-0"



TYPICAL PROFILE NEAR OUTLET
SCALE: 1"=10'-0"

NOTES:

1. FOR ABBREVIATIONS SEE SHEET 61W510-11-LE.
2. HORIZONTAL PROJECTIONS OF ANCHORS ARE SHOWN. ACTUAL LENGTHS OF ANCHORS ARE SHOWN ON DRAWING 61W510-20-LE.
3. ANCHOR BEARINGS ARE SHOWN RELATIVE TO THE MAP GRID.
4. GRID COORDINATES ARE FOR THE CENTERS OF THE ANCHOR SUPPORTS. SEE 61W510-20-LE.
5. RA-1, RA-2 AND RA-3 SHALL BE THE DEMONSTRAION ANCHORS. SEE SPECIFICATION SECTION 31 68 14.

LEGEND

- LIGHT POLE
- INCLINED TENSION ANCHOR
- INCLINOMETER
- PIEZOMETER
- NESTED PIEZOMETER

SCALE: 1" = 10'
10' 0 10'

COMPUTER AIDED DESIGN & DRAFTING

REV. NO.	DATE	DSGN	DRWN	CHKD	SUPV	HYMD	APPD	ISSD	PROJECT ID	AS CONST
R W	-	-	-	-	-	-	-	-	-	-
R 0	-	JJK	LEN	GDS	-	MAM	KLS	NCB	-	-
INITIAL ISSUE										

BLACK & VEATCH

DESIGNED BY: JJK
DRAWN BY: LEN
CHECKED BY: GDS

US Army Corps of Engineers Nashville District

SUBMITTED BY: MICHAEL F. ZOCCOLA P.E. CHIEF, CIVIL DESIGN BRANCH
APPROVED BY: JAMES R. WADDLE P.E. CHIEF, ENGINEERING CONSTRUCTION DIVISION

SCALE: 1"=10' EXCEPT AS NOTED

LOCK REPLACEMENT
LOCK EXCAVATION

ANCHORS AT OUTLET
CELLS 31-33

REVIEWED BY:	APPROVED BY:	ISSUED BY:
MICHAEL A. MORRISON	KRISTEN L. SMITH	NICOLE C. BERGER

CHICKAMAUGA PROJECT
TENNESSEE VALLEY AUTHORITY
FOSSIL AND HYDRO ENGINEERING

AUTOCAD R 06 | DATE JAN/16 | 7 | C | 61W510-12A-LE R 0

PLOT FACTOR:XX
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C.A.D. DRAWING DO NOT ALTER MANUALLY

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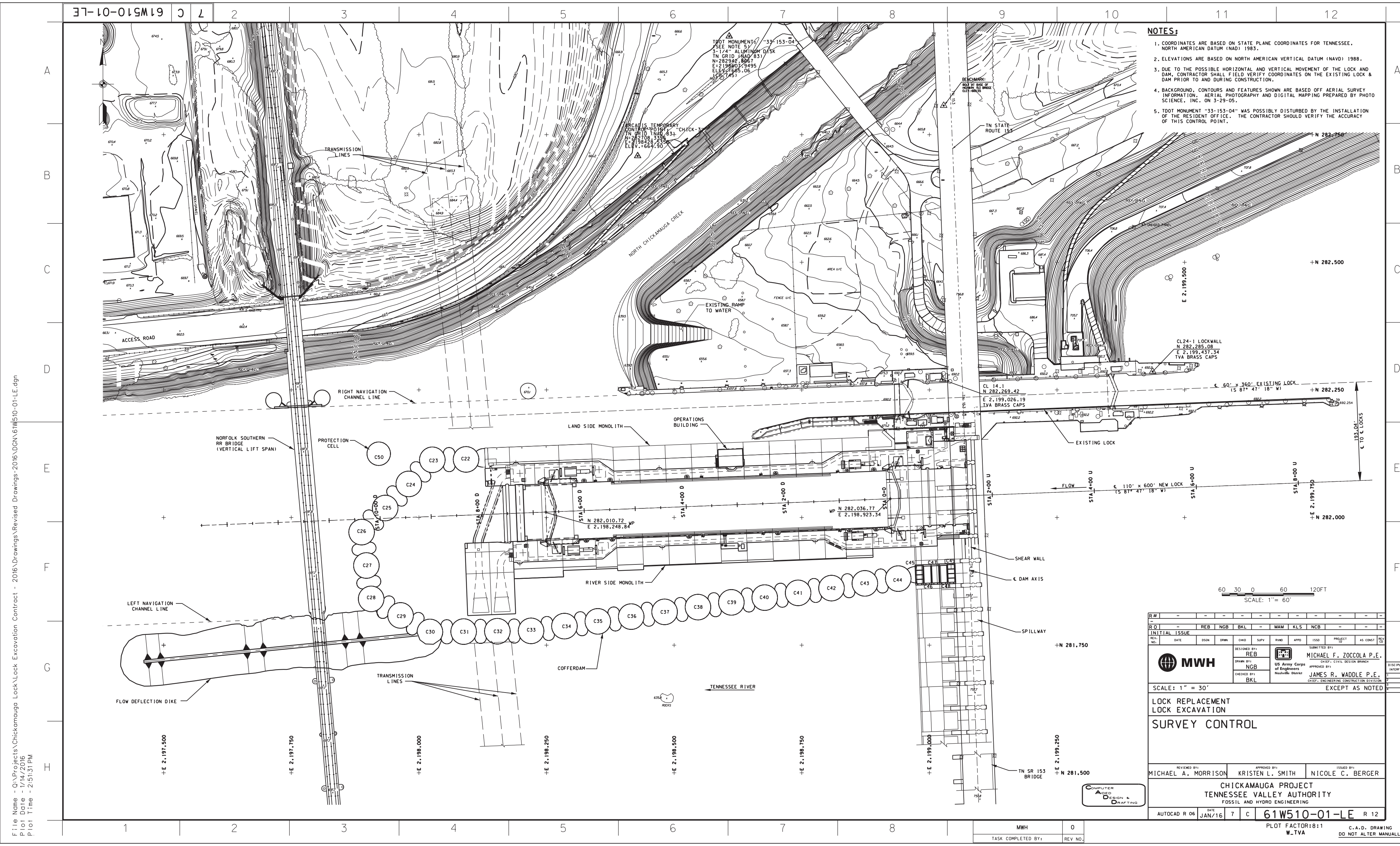
NOTES:
1. COORDINATES ARE BASED ON STATE PLANE COORDINATES FOR TENNESSEE, NORTH AMERICAN DATUM (NAD) 1983.
2. ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM (NAVD) 1988.
3. DUE TO THE POSSIBLE HORIZONTAL AND VERTICAL MOVEMENT OF THE LOCK AND DAM, CONTRACTOR SHALL FIELD VERIFY COORDINATES ON THE EXISTING LOCK & DAM PRIOR TO AND DURING CONSTRUCTION.
4. BACKGROUND, CONTOURS AND FEATURES SHOWN ARE BASED OFF AERIAL SURVEY INFORMATION. AERIAL PHOTOGRAPHY AND DIGITAL MAPPING PREPARED BY PHOTO SCIENCE, INC. ON 3-29-05.
5. TDOT MONUMENT "33-153-04" WAS POSSIBLY DISTURBED BY THE INSTALLATION OF THE RESIDENT OFFICE. THE CONTRACTOR SHOULD VERIFY THE ACCURACY OF THIS CONTROL POINT.
TRANSMISSION LINES
NORTH CHICKAMAUGA CREEK
EXISTING RAMP TO WATER
TN STATE ROUTE 153
ACCESS ROAD
RIGHT NAVIGATION CHANNEL LINE
NORFOLK SOUTHERN RR BRIDGE (VERTICAL LIFT SPAN)
PROTECTION CELL
LAND SIDE MONOLITH
OPERATIONS BUILDING
EXISTING LOCK
SHEAR WALL
DAM AXIS
RIVER SIDE MONOLITH
LEFT NAVIGATION CHANNEL LINE
SPILLWAY
COFFERDAM
TENNESSEE RIVER
FLOW DEFLECTION DIKE
TN SR 153 BRIDGE
FLOW
SCALE: 1"= 60'
SCALE: 1" = 30' EXCEPT AS NOTED
LOCK REPLACEMENT
LOCK EXCAVATION
SURVEY CONTROL
DESIGNED BY: REB
DRAWN BY: NGB
CHECKED BY: BKL
US Army Corps of Engineers Nashville District
SUBMITTED BY: MICHAEL F. ZOCCOLA P.E. CHIEF, CIVIL DESIGN BRANCH
APPROVED BY: JAMES R. WADDLE P.E. CHIEF, ENGINEERING CONSTRUCTION DIVISION
REVIEWED BY: MICHAEL A. MORRISON
APPROVED BY: KRISTEN L. SMITH
ISSUED BY: NICOLE C. BERGER
CHICKAMAUGA PROJECT
TENNESSEE VALLEY AUTHORITY
FOSSIL AND HYDRO ENGINEERING
AUTOCAD R 06
DATE JAN/16
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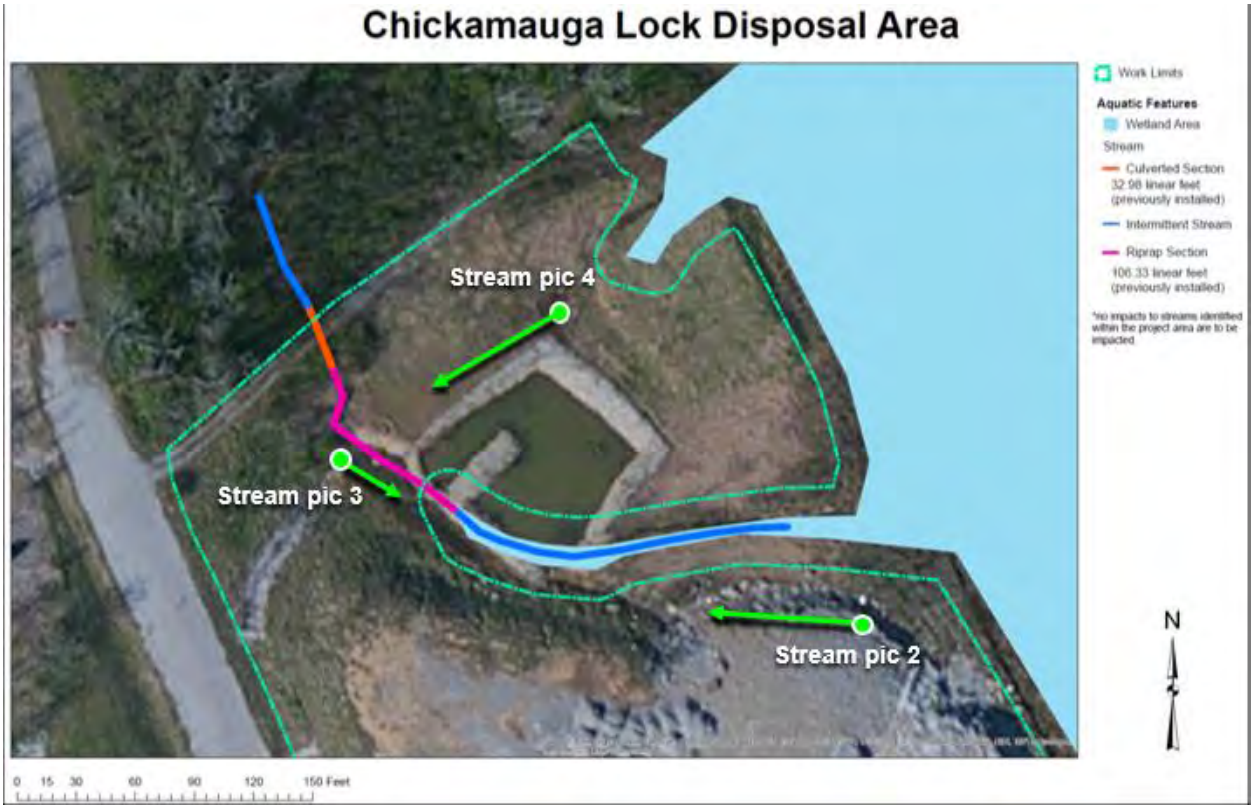
DO NOT ALTER MANUALLY


Chickamauga Lock Disposal Area
Work Limits
Aquatic Features
Wetland Area
Stream
Culverted Section
32.98 linear feet
(previously installed)
Intermittent Stream
Riprap Section
106.33 linear feet
(previously installed)
*no impacts to streams identified within the project area are to be impacted
Stream pic 4
Stream pic 3
Stream pic 2
N
0 15 30 60 90 120 150 Feet


stream
Pic 2


~15 ft Fill from
previous work
stream
Pic 3


Stream pic 4