

JOINT
PUBLIC NOTICE

CHARLESTON DISTRICT, CORPS OF ENGINEERS
150 Executive Center Drive, Suite 205
Greenville, South Carolina 29615

and

THE S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL
Water Quality Certification and Wetlands Section
2600 Bull Street
Columbia, South Carolina 29201

REGULATORY DIVISION

Refer to: P/N SAC-2019-00151

February 20, 2019

Pursuant to Sections 401 and 404 of the Clean Water Act (33 U.S.C. 1341), and the S.C. Construction in Navigable Waters Permit Program (R. 19-450, et. seq., 1976 S.C. Code of Laws, as amended), an application has been submitted to the Department of the Army and the South Carolina Department of Health and Environmental Control by

Duke Energy Carolinas, LLC
c/o
Ms. Sara Stavinoha
Anchor QEA of NC, PLLC
231 Haywood Street
Asheville, North Carolina 28801

for a permit to perform shoreline stabilization measures on the lake shoreline in

Lake Keowee

at all 10 project areas that are located on Lake Keowee, in Oconee County, South Carolina. Island 1C is located at 34.723961°N, 82.933541°W, Seneca Quadrangle, Island 1E is located at 34.725271°N, 82.955409°W, Seneca Quadrangle, Island 3C is located at 34.736249°N, 82.917147°W, Seneca Quadrangle, Island 3C” is located at 34.737801°N, 82.923198°W, Seneca Quadrangle, Island 5 is located at 34.748399°N, 82.922200°W, Seneca Quadrangle, Island 6 is located at 34.752676°N, 82.918831°W, Old Pickens Quadrangle, Island 16 is located at 34.854321°N, 82.905686°W, Old Pickens Quadrangle, High Falls II is located at 34.797343°N, 82.919006°W, Old Pickens Quadrangle, Mosquito Point is located at 34.778524°N, 82.922426°W, Old Pickens Quadrangle, and Falls Creek is located at 34.897822°N, 82.905329°W, Salem Quadrangle.

In order to give all interested parties an opportunity to express their views

NOTICE

is hereby given that written statements regarding the proposed work will be received by the **Corps** until

15 Days from the Date of this Notice,

and **SCDHEC** will receive written statements regarding the proposed work until

30 Days from the Date of this Notice

from those interested in the activity and whose interests may be affected by the proposed work.

The proposed work consists of implementing shoreline stabilization measures on designated recreation areas and islands within the Keowee Development Area as a part of the Federal Energy Regulatory Commission (FERC) Keowee-Toxaway Relicensing Agreement. In detail, the applicant is proposing to minimize erosion and to stabilize the shoreline of Lake Keowee by placing up to 5,200 cubic yards of mixed boulders combined with structural soil below the ordinary high water mark along 1,620 linear feet (0.45 acres) of shoreline along Island 1C, 390 linear feet (0.11 acres) of shoreline around Island 1E, 1,362 linear feet (0.38 acres) of shoreline around Island 3C, 918 linear feet (0.26 acres) of shoreline around Island 3C", 810 linear feet (0.23 acres) of shoreline around Island 5, 940 linear feet (0.26 acres) of shoreline around Island 6, 1,240 linear feet (0.35 acres) of shoreline around Island 16, along 1,005 linear feet (0.28 acres) of High Falls II shoreline, along 1,160 linear feet (0.32 acres) of Fall Creek Access Area shoreline, and along 1,002 linear feet (0.30 acres) of Mosquito Point shoreline. There will also be fill material placed along 40 linear feet (0.03 acres) at the Mosquito Point Access Area for material stockpile, staging, and barge loading that will be removed when the project is complete. The total area covers 10,487 linear feet or 2.97 acres of shoreline. The applicant is proposing to maintain existing vegetation located within the bank where possible as well as plant native vegetation. The applicant has not proposed any compensatory mitigation for impacts associated with this project. The project purpose is to stabilize designated recreation areas and islands within Lake Keowee over the next 5 years.

NOTE: This public notice and associated plans are available on the Corps' website at:
<http://www.sac.usace.army.mil/Missions/Regulatory/PublicNotices> .

The District Engineer has concluded that the discharges associated with this project, both direct and indirect, should be reviewed by the South Carolina Department of Health and Environmental Control in accordance with provisions of Section 401 of the Clean Water Act. As such, this notice constitutes a request, on behalf of the applicant, for certification that this project will comply with applicable effluent limitations and water quality standards. This activity may also require evaluation for compliance with the S. C. Construction in Navigable Waters Permit Program. State review, permitting and certification is conducted by the S. C. Department of Health and Environmental Control. The District Engineer will not process this application to a conclusion until such certifications are received. The applicant is hereby advised that supplemental information may be required by the State to facilitate the review.

This notice initiates the Essential Fish Habitat (EFH) consultation requirements of the Magnuson-Stevens Fishery Conservation and Management Act. Implementation of the proposed project would impact 10,487 linear feet or 2.97 acres of freshwater habitat well inland of estuarine substrates and emergent wetlands utilized by various life stages of species comprising the shrimp, and snapper-grouper management complexes. The District Engineer's initial determination is that the proposed action would not have a substantial individual or cumulative adverse impact on EFH or fisheries managed by the South Atlantic Fishery Management Council and the National Marine Fisheries Service (NMFS). The District Engineer's final determination relative to project impacts and the need for mitigation measures is subject to review by and coordination with the NMFS.

Pursuant to the Section 7 of the Endangered Species Act of 1973 (as amended), the

applicant has provided a protected species survey for the property associated with the activity described above. Based upon this report, the District Engineer has determined that the project is not likely to adversely affect any Federally endangered, threatened, or proposed species or result in the destruction or adverse modification of designated or proposed critical habitat. This public notice serves as a request for written concurrence from the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service on this determination.

Pursuant to Section 106 of the National Historic Preservation Act (NHPA), this public notice also constitutes a request to Indian Tribes to notify the District Engineer of any historic properties of religious and cultural significance to them that may be affected by the proposed undertaking.

In accordance with Section 106 of the NHPA, the District Engineer has consulted South Carolina ArchSite (GIS), for the presence or absence of historic properties (as defined in 36 C.F.R. 800.16)(1)(1)), and has initially determined that there are historic properties present, but they will not be affected; therefore, there will be no effect on historic properties. To ensure that other historic properties that the District Engineer is not aware of are not overlooked, this public notice also serves as a request to the State Historic Preservation Office and other interested parties to provide any information they may have with regard to historic properties. This public notice serves as a request for concurrence within 30 days from the SHPO (and/or Tribal Historic Preservation Officer).

The District Engineer's final eligibility and effect determination will be based upon coordination with the SHPO and/or THPO, as appropriate and required and with full consideration given to the proposed undertaking's potential direct and indirect effects on historic properties within the Corps-identified permit area.

Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider this application. Requests for a public hearing shall state, with particularity, the reasons for holding a public hearing.

The decision whether to issue a permit will be based on an evaluation of the probable impact including cumulative impacts of the activity on the public interest and will include application of the guidelines promulgated by the Administrator, Environmental Protection Agency (EPA), under authority of Section 404(b) of the Clean Water Act. That decision will reflect the national concern for both protection and utilization of important resources. The benefit which reasonably may be expected to accrue from the project must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the project will be considered including the cumulative effects thereof; among those are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, flood plain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production and, in general, the needs and welfare of the people. A permit will be granted unless the District Engineer determines that it would be contrary to the public interest. In cases of conflicting property rights, the Corps cannot undertake to adjudicate rival claims.

The Corps is soliciting comments from the public; Federal, state, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this activity. Any comments received will be considered by the Corps to determine whether to issue, modify, condition or deny a permit for this project. To make this decision, comments are

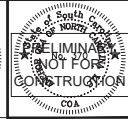
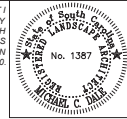
used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the activity. **Please submit comments in writing, identifying the project of interest by public notice number, to the following address:**

**U.S. Army Corps of Engineers
ATTN: REGULATORY DIVISION
150 Executive Center Drive, Suite 205
Greenville, South Carolina 29615**

If there are any questions concerning this public notice, please contact Adrianna E. Krzywicka, Project Manager, at (864) 609-4325.

30% DESIGN SUBMITTAL

I HAVE PLACED MY SEAL ON THE DESIGN DOCUMENTS SUBMITTED SIGNIFYING THAT I ACCEPT THE RESPONSIBILITY FOR THE DESIGN OF THE SYSTEM. FURTHER, I CERTIFY TO THE BEST OF MY KNOWLEDGE AND BELIEF THAT THE DESIGN IS CONSISTENT WITH THE REQUIREMENTS OF TITLE 49, CHAPTER 14 OF THE CODE OF LAWS OF SC, 1976 AS AMENDED, PURSUANT TO REGULATION 72-300 ET SEQ. (IF APPLICABLE), AND IN ACCORDANCE WITH THE TERMS AND CONDITIONS OF SCR100000.

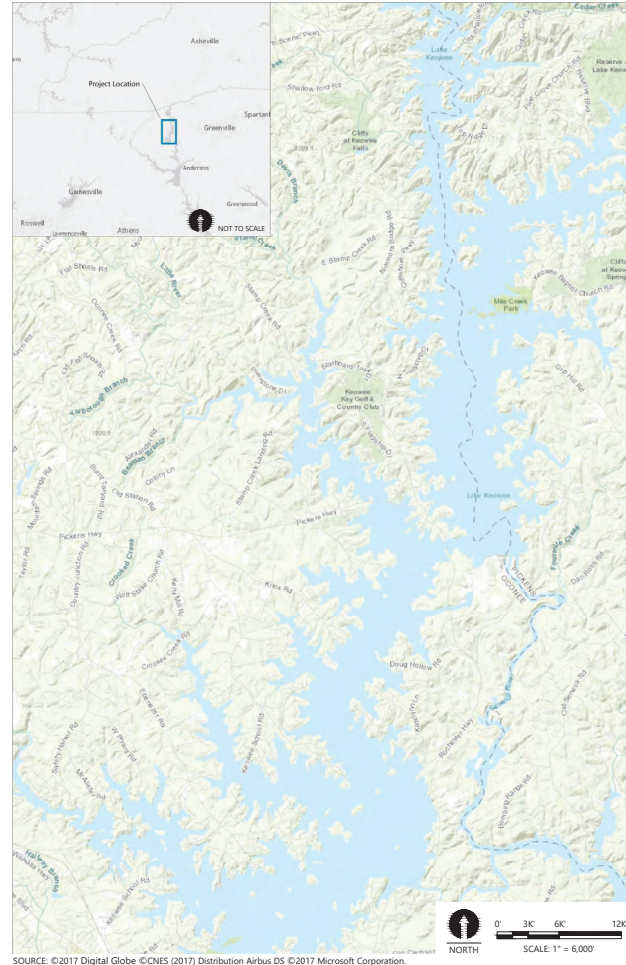


30% DESIGN SUBMITTAL LAKE KEOWEE SHORELINE STABILIZATION - PHASE 2

DUKE ENERGY - SOUTH CAROLINA FERC PROJECT #2503

SHEET LIST	
SHEET NO.	SHEET TITLE
C-1.0	COVER
C-2.0	OVERALL PROJECT MAP
C-3.0	NOTES
C-4.0	CONSTRUCTION STAGING AREA MOSQUITO POINT
C-4.1	EROSION AND SEDIMENTATION CONTROL DETAILS 1
C-4.2	EROSION AND SEDIMENTATION CONTROL DETAILS 2
C-5.0	BANK HEIGHT ANALYSIS PLAN ISLAND 1C
C-6.0	BANK HEIGHT ANALYSIS PLAN ISLAND 1E
C-7.0	BANK HEIGHT ANALYSIS PLAN ISLAND 3C
C-8.0	BANK HEIGHT ANALYSIS PLAN ISLAND 3C"
C-9.0	BANK HEIGHT ANALYSIS PLAN ISLAND 5
C-10.0	BANK HEIGHT ANALYSIS PLAN ISLAND 6
C-11.0	BANK HEIGHT ANALYSIS PLAN ISLAND 16
C-12.0	BANK HEIGHT ANALYSIS PLAN HIGH FALLS SHORELINE
C-13.0	BANK HEIGHT ANALYSIS PLAN MOSQUITO POINT SHORELINE
C-14.0	BANK HEIGHT ANALYSIS PLAN FALL CREEK SHORELINE
C-15.0	STABILIZATION DETAILS 1
C-15.1	STABILIZATION DETAILS 2
C-16.0	PLANTING DETAILS 1

VICINITY MAP



DESIGNED BY: AL DALE & STAMBOUGH
DRAWN BY: AL DALE
CHECKED BY: AL DALE
APPROVED BY: AL DALE
SCALE: AS SHOWN
DATE: 1/24/19

ANCHOR OCEA
Anchor OCEA of North Carolina, PLLC
231 Baywood Street
Asheville, North Carolina 28801
(828) 281-3550

REV	DATE	BY	APP'D	DESCRIPTION

COVER
SHORELINE STABILIZATION - PHASE 2
DUKE ENERGY-FERC PROJECT #2503
LAKE KEOWEE, SOUTH CAROLINA

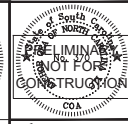
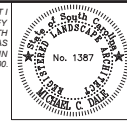
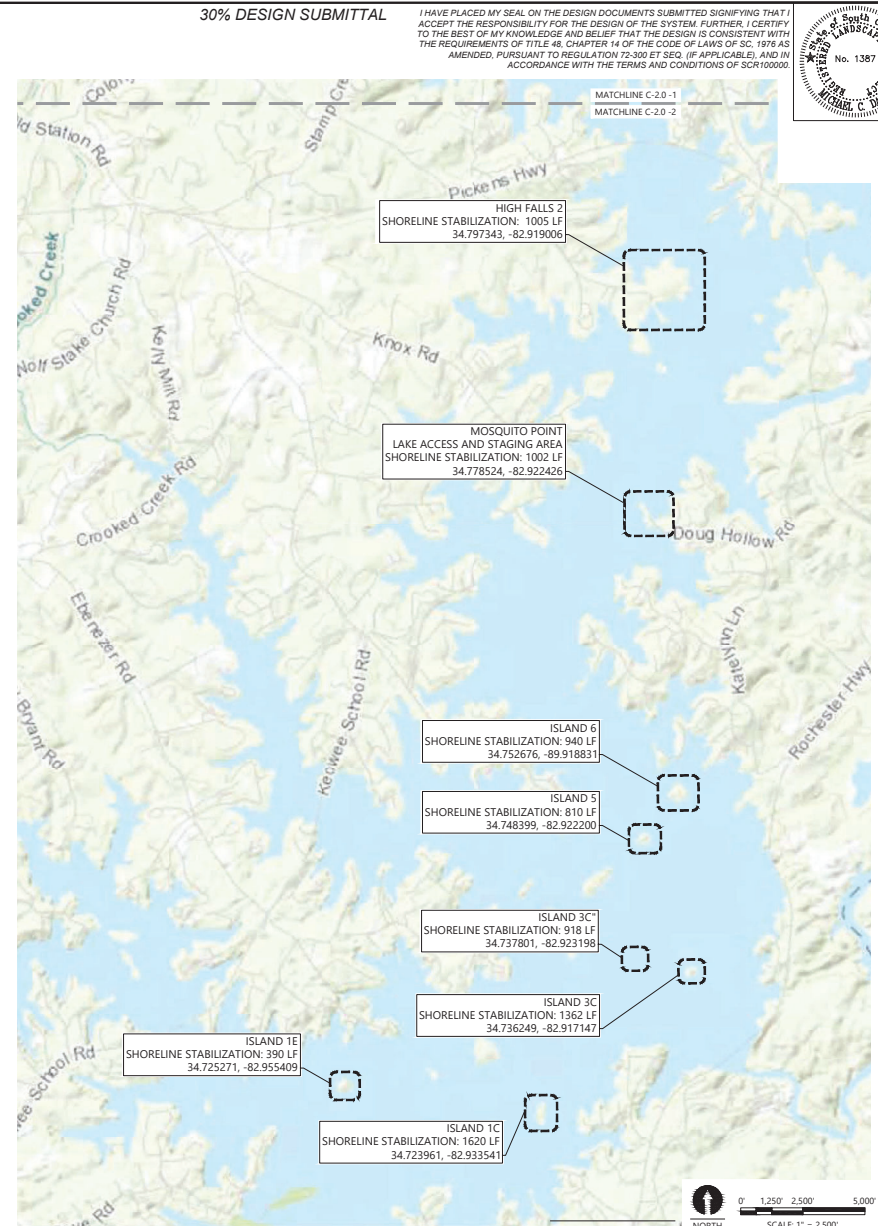
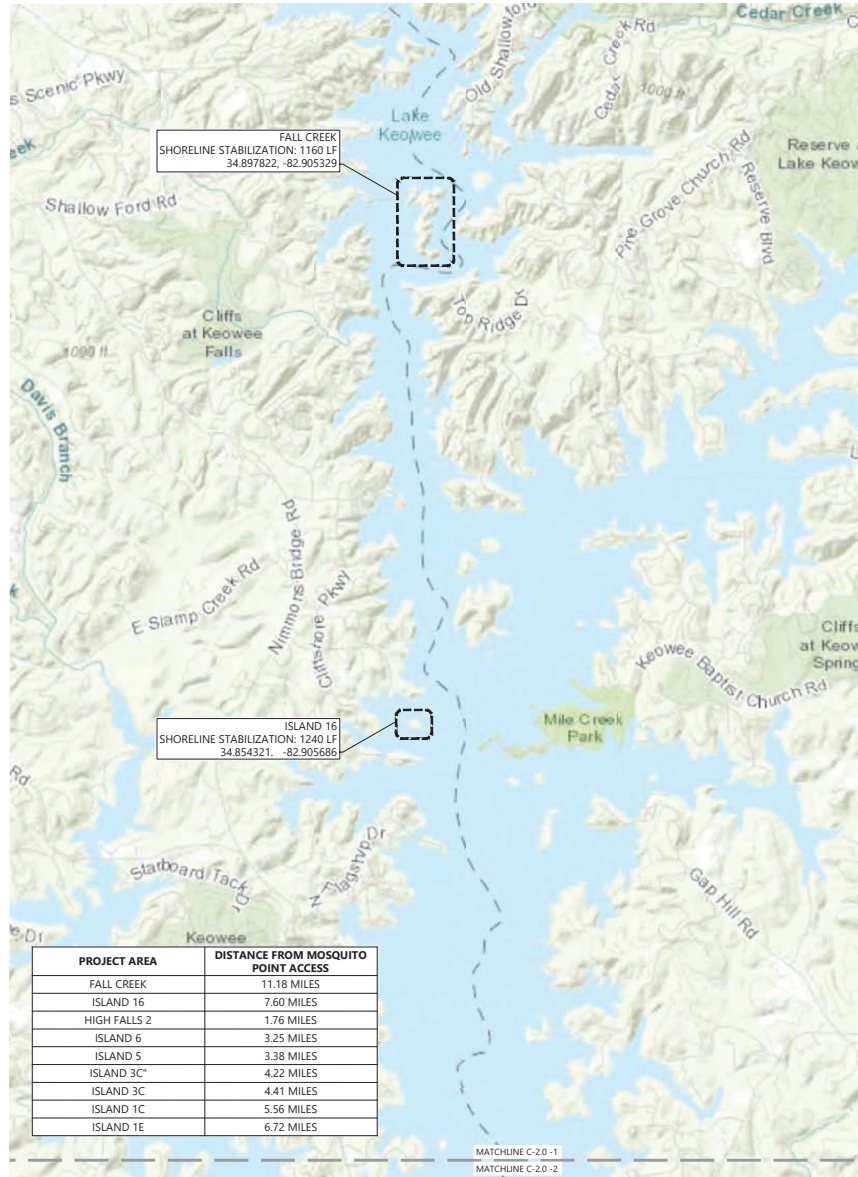
C-1.0
PROJ. #: CT1290-33.02

Jan 24, 2019, 3:02pm istawmohs \\ashwille1\hsh\inf\proj\2503\Lake Energy\Lake Services\Lake Keowee Shoreline PH2\CADD\Cover_Notes.dwg C-1.0

SAC-2019-00151

Figure 1 of 16

Jan 24, 2019 1:20pm starworks \\starworks\Users\jduke\Projects\Lake Energy\Lake Services\Lake Keowee Shoreline P\2\CADD\Cover_Note.dwg C-20



DESIGNED BY: AL DALE & STANBACH
 DRAWN BY: AL DALE
 CHECKED BY: AL DALE
 APPROVED BY: AL DALE
 SCALE: AS SHOWN
 DATE: 1/24/19



REV	DATE	BY	APP'D	DESCRIPTION

OVERALL PROJECT MAP

SHORELINE STABILIZATION - PHASE 2
 DUKE ENERGY-FERC PROJECT #2503
 LAKE KEOWEE, SOUTH CAROLINA

C-2.0

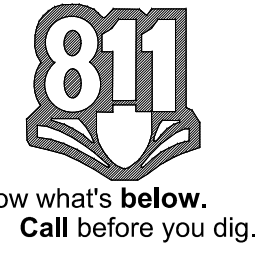
PROJ. #: CT1290-33.02

Feb 12, 2019 9:53am sstavinoha \\ashville\ashville\Projects\Duke Energy\Lake Services\Lake Keowee Shoreline Ph2\CADD\Construction\Staging_Area_Mosquito_Point

30% DESIGN SUBMITTAL

I HAVE PLACED MY SEAL ON THE DESIGN DOCUMENTS SUBMITTED SIGNIFYING THAT I ACCEPT THE RESPONSIBILITY FOR THE DESIGN OF THE SYSTEM. FURTHER, I CERTIFY TO THE BEST OF MY KNOWLEDGE AND BELIEF THAT THE DESIGN IS CONSISTENT WITH THE REQUIREMENTS OF TITLE 48, CHAPTER 14 OF THE CODE OF LAWS OF SC, 1976 AS AMENDED, PURSUANT TO REGULATION 72-300 ET SEQ. (IF APPLICABLE), AND IN ACCORDANCE WITH THE TERMS AND CONDITIONS OF SCR100000.

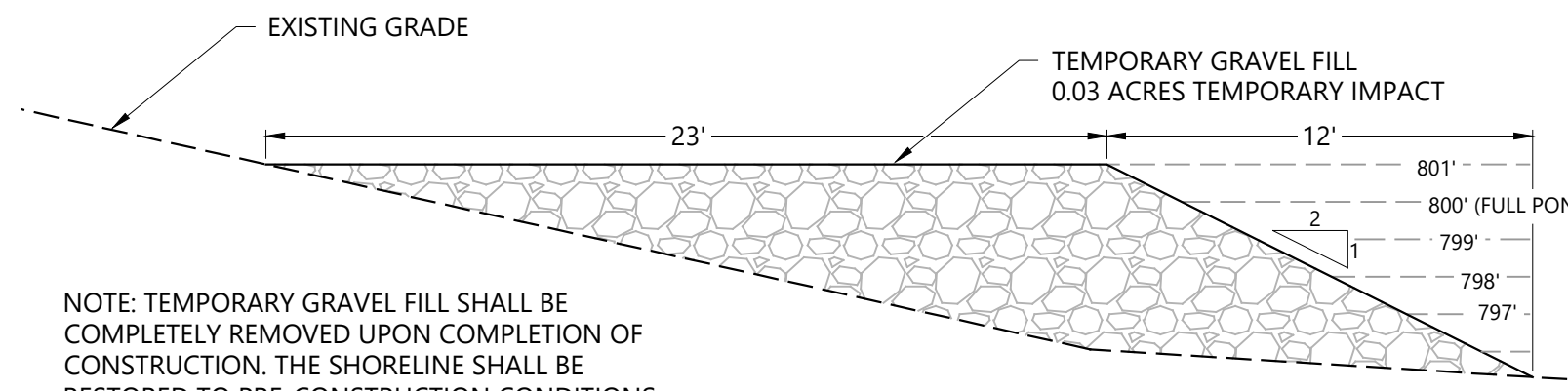
ONE INCH
AT FULL SIZE, IF NOT ONE INCH SCALE ACCORDINGLY



PRELIMINARY
NOT FOR
CONSTRUCTION

DESIGNED BY: M. DALE / S. STAVINOHIA
DRAWN BY: S. STAVINOHIA
CHECKED BY: M. DALE
APPROVED BY: M. DALE
SCALE: AS SHOWN
DATE: 1/14/19

ANCHOR QEA
Anchor QEA of North Carolina, PLLC
231 Haywood Street
Asheville, North Carolina 28801
(828) 281-3350



NOTE: TEMPORARY GRAVEL FILL SHALL BE COMPLETELY REMOVED UPON COMPLETION OF CONSTRUCTION. THE SHORELINE SHALL BE RESTORED TO PRE-CONSTRUCTION CONDITIONS.

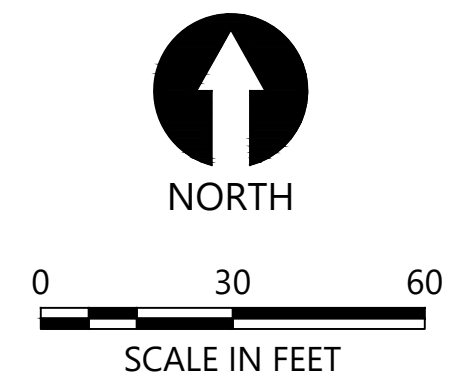
SECTION A - A'

1
C-4.0 TEMPORARY GRAVEL BARGE LOADING RAMP

SCALE: 1" = 5'

LEGEND	
---	LIMITS OF DISTURBANCE
---	LAKE BOUNDARY
-x-	SILT FENCE OR SEDIMENT TUBE

SHEET NOTES
1. ALL DISTURBED AREAS SHALL BE SEEDED WITH ERNST SEED MIX OR APPROVED EQUAL.
2. SEE NOTES SHEET C-3.0 FOR EROSION CONTROL AND SEEDING NOTES.
3. SEE 'LEASE AREA SURVEY' FOR LEASE AREA #1 BOUNDARIES.

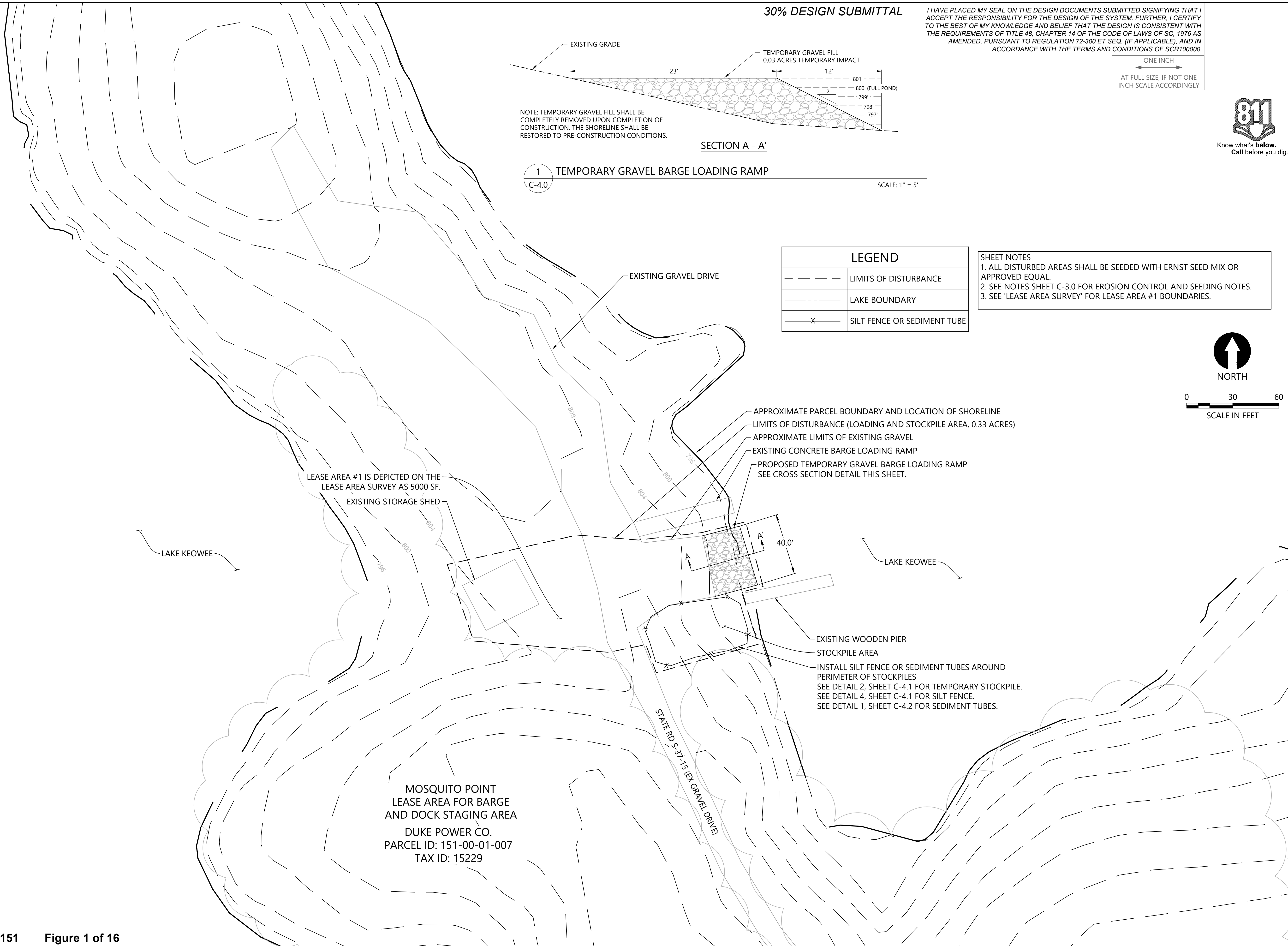


REVISIONS		DESCRIPTION
REV	DATE	BY

**CONSTRUCTION STAGING AREA
MOSQUITO POINT**
SHORELINE STABILIZATION - PHASE 2
DUKE ENERGY-FERC PROJECT #2503
LAKE KEOWEE, SOUTH CAROLINA

C-4.0

PROJ. #: C71290-33.02

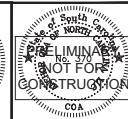
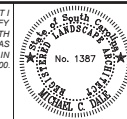


- APPROXIMATE PARCEL BOUNDARY AND LOCATION OF SHORELINE
- LIMITS OF DISTURBANCE (LOADING AND STOCKPILE AREA, 0.33 ACRES)
- APPROXIMATE LIMITS OF EXISTING GRAVEL
- EXISTING CONCRETE BARGE LOADING RAMP
- PROPOSED TEMPORARY GRAVEL BARGE LOADING RAMP SEE CROSS SECTION DETAIL THIS SHEET.

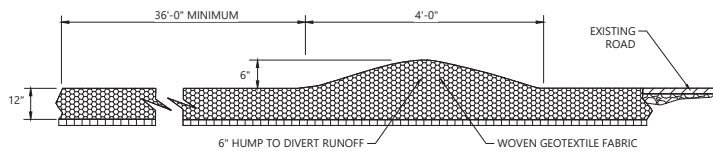
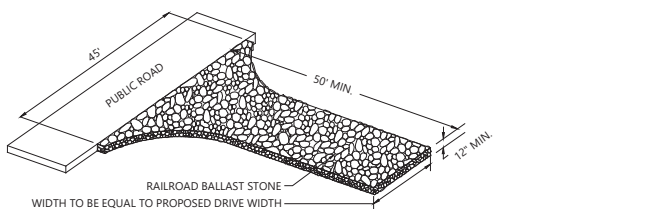
- EXISTING WOODEN PIER
- STOCKPILE AREA
- INSTALL SILT FENCE OR SEDIMENT TUBES AROUND PERIMETER OF STOCKPILES SEE DETAIL 2, SHEET C-4.1 FOR TEMPORARY STOCKPILE. SEE DETAIL 4, SHEET C-4.1 FOR SILT FENCE. SEE DETAIL 1, SHEET C-4.2 FOR SEDIMENT TUBES.

30% DESIGN SUBMITTAL

I HAVE PLACED MY SEAL ON THE DESIGN DOCUMENTS SUBMITTED SIGNIFYING THAT I ACCEPT THE RESPONSIBILITY FOR THE DESIGN OF THE SYSTEM. FURTHER, I CERTIFY TO THE BEST OF MY KNOWLEDGE AND BELIEF THAT THE DESIGN IS CONSISTENT WITH THE REQUIREMENTS OF TITLE 48, CHAPTER 14 OF THE CODE OF LAWS OF SC, 1976 AS AMENDED, PURSUANT TO REGULATION 72-300 ET SEQ. (IF APPLICABLE), AND IN ACCORDANCE WITH THE TERMS AND CONDITIONS OF SCRI10000.



DESIGNED BY: M. DALEK, STATION CHAIR
 DRAWN BY: S. STAVINOVA
 CHECKED BY: M. DALEK
 APPROVED BY: M. DALEK
 SCALE: AS SHOWN
 DATE: 1/24/13
 COA



NOTES:
 1. A STABILIZED PAD OF CRUSHED STONE SHALL BE LOCATED WHERE TRAFFIC WILL BE ENTERING OR LEAVING A CONSTRUCTION SITE TO OR FROM A PUBLIC STREET. STONE TO BE RAILROAD TYPE BALLAST.
 2. FILTER FABRIC SHALL BE PLACED UNDER THE ENTRANCE/EXIT AND SHALL BE MIRAFI 500 OR EQUAL.

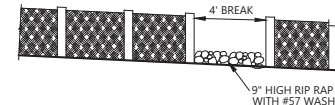
MAINTENANCE:
 1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC STREETS OR EXISTING PAVEMENT. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
 2. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC STREETS MUST BE REMOVED IMMEDIATELY.
 3. WHEELS MUST BE CLEAN PRIOR TO ENTERING A PUBLIC STREET. WHEN WASHING OF WHEELS IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE WHICH DRAINS INTO AN APPROVED SEDIMENT BASIN.

1
C-4.1

CONSTRUCTION ENTRANCE

NOT TO SCALE

MAINTENANCE:
 1. INSPECT SEDIMENT FENCES AT LEAST ONCE A WEEK AND AFTER EACH RAINFALL.
 2. REPLACE COMPONENTS OF THE SILT FENCE IF AREAS ARE TORN, COLLAPSED, OR OTHERWISE INEFFECTIVE.
 3. REMOVE ACCUMULATED SEDIMENT ONCE IT REACHES 1/2 THE HEIGHT OF THE SILT FENCE.

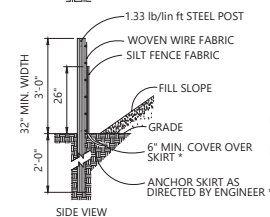
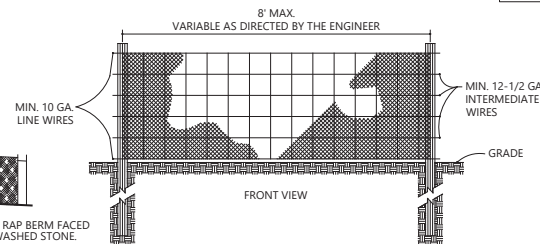


NOTE:
 1. USE SILT FENCE ONLY WHEN DRAINAGE AREA DOES NOT EXCEED 1/4 ACRE OR 100LF AND NEVER IN AREAS OF CONCENTRATED FLOW.
 2. PROVIDE SILT FENCE BREAKS EVERY 200 FEET OF FENCING OR AT LOW POINTS.

STEEL POSTS:
 - 5' LONG W/ANCHOR PLT.
 - 1 1/2" DIA.
 - MIN. WT. 1.25LB/FT
 - ANCHOR PLATE MIN AREA = 14SQ"

WIRE STAPLES:
 - 1 1/2" LENGTH MIN.
 - NO. 9 STAPLE
 - SILT FENCE FABRIC:
 - NCDOT CLASS B

WOVEN WIRE:
 - TOP & BOTTOM WIRES: 10 GAGE MIN.
 - INTERMEDIATE WIRES: 12 1/2 GAGE MIN.
 - MAXIMUM MESH SPACING: 6 INCHES



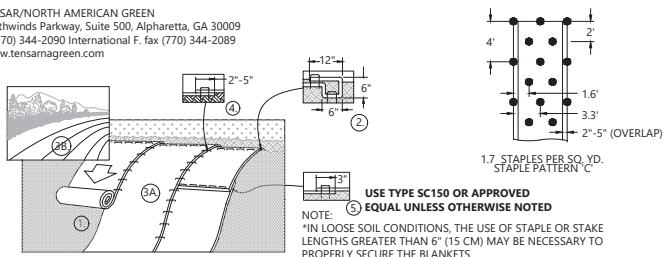
* FOR REPAIR OF SILT FENCE FAILURES USE NO. 57 WASHED STONE, AS AN ANCHOR WHEN SILT FENCE IS PROTECTING CATCH BASIN.

2
C-4.1

SILT FENCE

NOT TO SCALE

MFR: TENSAR/NORTH AMERICAN GREEN
 2500 Northwinds Parkway, Suite 500, Alpharetta, GA 30009
 T. work (770) 344-2090 International F. fax (770) 344-2089
 http://www.tensamagreen.com



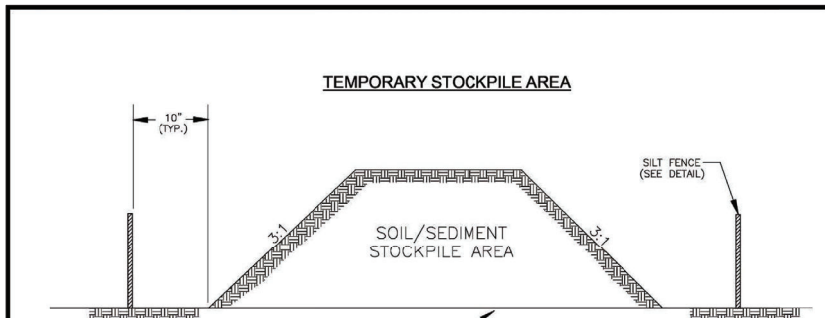
INSTALLATION:
 1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
 NOTE: WHEN USING CELL-O-SEED DO NOT SEED PREPARED AREA. CELL-O-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
 2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH WITH APPROXIMATELY 12" (30 CM) OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30 CM) PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30 CM) APART ACROSS THE WIDTH OF THE BLANKET.
 3. ROLL THE BLANKETS (A) DOWN OR (B) HORIZONTALLY ACROSS THE SLOPE. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
 4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2" - 5" (5 CM - 12.5 CM) OVERLAP DEPENDING ON BLANKET TYPE. 5. CONSECUTIVE BLANKETS SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" (7.5 CM) OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" (30 CM) APART ACROSS ENTIRE BLANKET WIDTH.

MAINTENANCE:
 1. INSPECT SLOPE AND MATTING AT LEAST ONCE A WEEK AND AFTER EACH RAINFALL.
 2. CONTACT BETWEEN THE GROUND AND MATTING SHOULD BE MAINTAINED, AND EROSION MUST NOT OCCUR BENEATH THE MATTING. REPAIR AREAS WHERE MATTING HAS BEEN DAMAGED IN A TIMELY MANNER.

3
C-4.1

SLOPE MATTING

NOT TO SCALE



NOTES:
 1. SILT FENCE TO EXTEND AROUND ENTIRE PERIMETER OF STOCKPILE, OR IF STOCKPILE AREA IS LOCATED ON/NEAR A SLOPE THE SILT FENCE IS TO EXTEND ALONG CONTOURS OF THE DOWN-GRADE AREA.
 2. IF STOCKPILE IS TO REMAIN FOR MORE THAN 14 DAYS, TEMPORARY STABILIZATION MEASURES MUST BE IMPLEMENTED.
 3. SILT FENCE SHALL BE MAINTAINED UNTIL STOCKPILE AREA HAS EITHER BEEN REMOVED OR PERMANENTLY STABILIZED.
 4. THE KEY TO FUNCTIONAL TEMPORARY STOCKPILE AREAS IS WEEKLY INSPECTIONS, ROUTINE MAINTENANCE, AND REGULAR SEDIMENT REMOVAL.

4
C-4.1

TEMPORARY STOCKPILE

NOT TO SCALE

South Carolina Department of Health and Environmental Control
TEMPORARY STOCKPILE
 STANDARD DRAWING NO. SC-15 PAGE 1 of 1
 NOT TO SCALE
 FEBRUARY 2014
 DATE

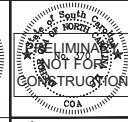
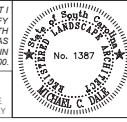
REV.	DATE	BY	APP'D	DESCRIPTION

EROSION AND SEDIMENTATION CONTROL DETAILS 1
 SHORELINE STABILIZATION - PHASE 2
 DUKE ENERGY-FERC PROJECT #2503
 LAKE KEOWEE, SOUTH CAROLINA

C-4.1
 PROJ. NO. C71290-33.02

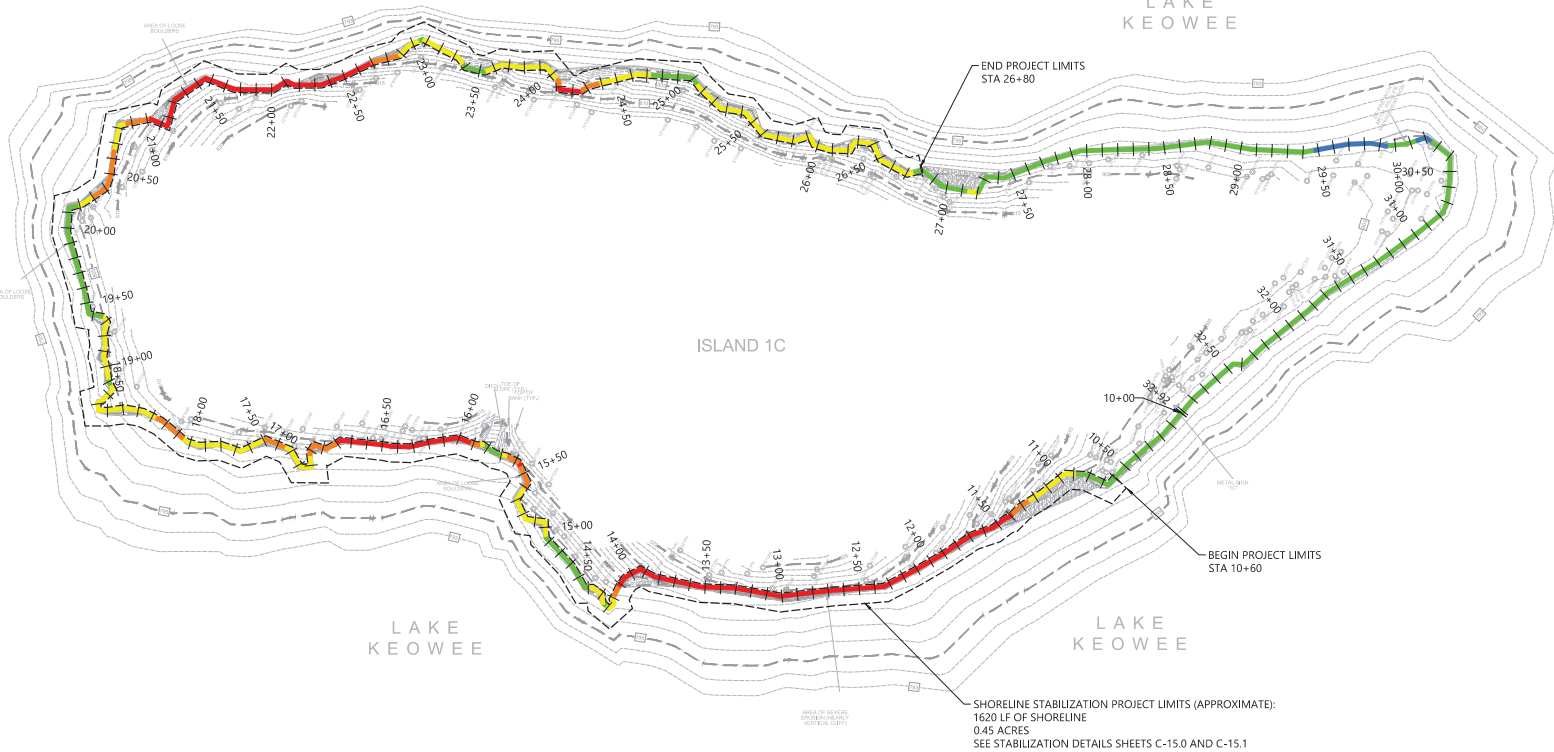
30% DESIGN SUBMITTAL

I HAVE PLACED MY SEAL ON THE DESIGN DOCUMENTS SUBMITTED SIGNIFYING THAT I ACCEPT THE RESPONSIBILITY FOR THE DESIGN OF THE SYSTEM. FURTHER, I CERTIFY TO THE BEST OF MY KNOWLEDGE AND BELIEF THAT THE DESIGN IS CONSISTENT WITH THE REQUIREMENTS OF TITLE 46, CHAPTER 14 OF THE CODE OF LAWS OF SC, 1979 AS AMENDED, PURSUANT TO REGULATION 72-300 ET SEQ. (IF APPLICABLE), AND IN ACCORDANCE WITH THE TERMS AND CONDITIONS OF SCR100000.



KEY		
COLOR	BANK HEIGHT RANGE	LINEAR FEET
Blue	0'-2'	60
Green	2'-5'	835
Yellow	5'-8'	651
Orange	8'-10'	202
Red	10'+	544
TOTAL SURVEYED LINEAR FEET:		2292
TOTAL STABILIZATION LINEAR FEET:		1620

LAKE KEOWEE



ONE INCH
AT FULL SIZE, IF NOT ONE
INCH SCALE ACCORDINGLY



DESIGNED BY: M. DALE & STANWICH
DRAWN BY: S. STANWICH
CHECKED BY: M. DALE
APPROVED BY: M. DALE
SCALE: AS SHOWN
DATE: 1/26/19

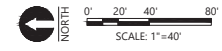
ANCHOR OCEA
Anchor OCEA of North Carolina, PLLC
231 Baywood Street
Asheville, North Carolina 28801
(828) 281-3550

REV	DATE	BY	APP'D	DESCRIPTION

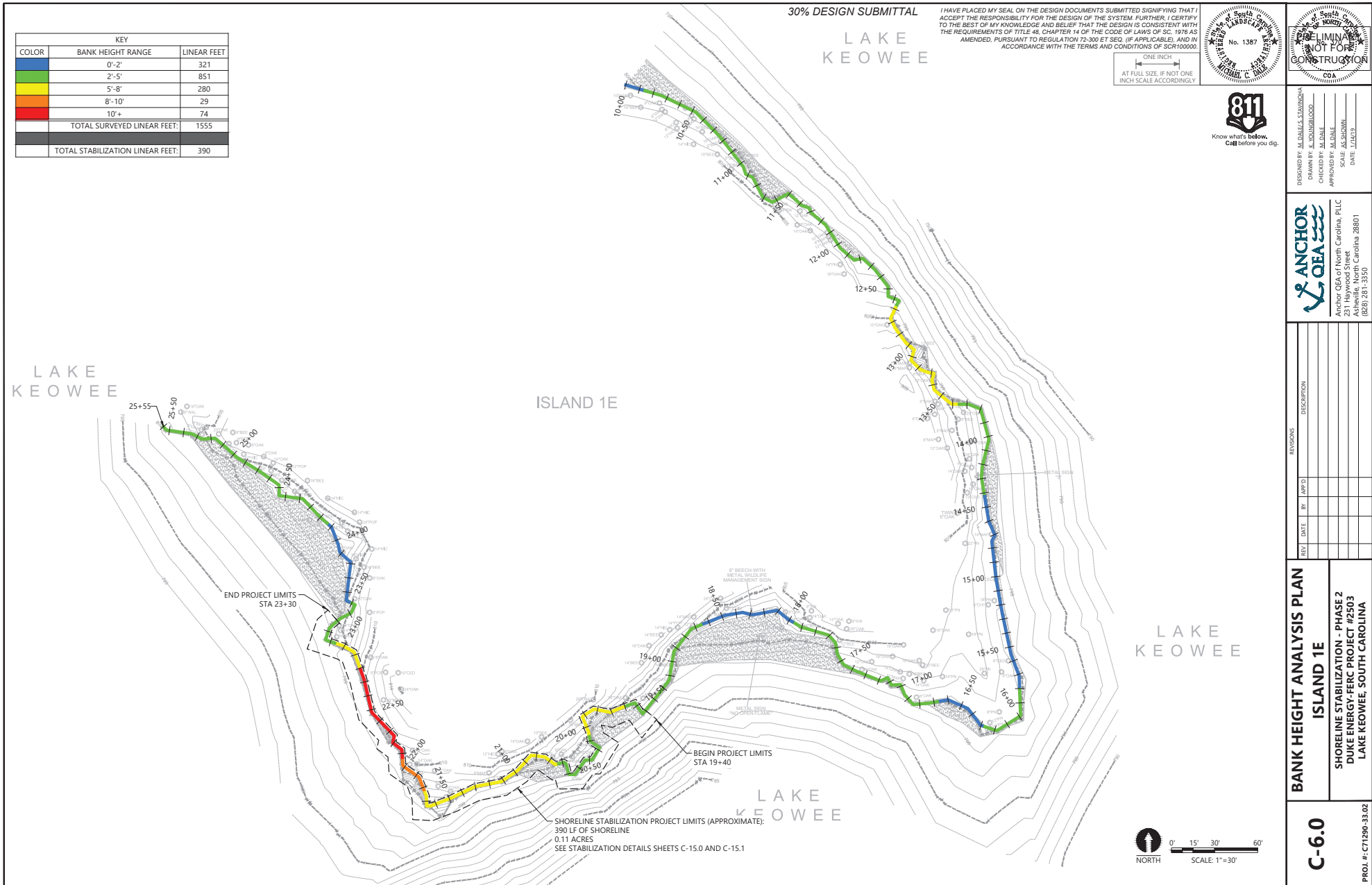
**BANK HEIGHT ANALYSIS PLAN
ISLAND 1C**
SHORELINE STABILIZATION - PHASE 2
DUKE ENERGY-FERC PROJECT #2503
LAKE KEOWEE, SOUTH CAROLINA

SAC-2019-00151

Figure 5 of 16



C-5.0
PROJ. #: C71290-33.02



30% DESIGN SUBMITTAL

LAKE KEOWEE

I HAVE PLACED MY SEAL ON THE DESIGN DOCUMENTS SUBMITTED SIGNIFYING THAT I ACCEPT THE RESPONSIBILITY FOR THE DESIGN OF THE SYSTEM. FURTHER, I CERTIFY TO THE BEST OF MY KNOWLEDGE AND BELIEF THAT THE DESIGN IS CONSISTENT WITH THE REQUIREMENTS OF TITLE 46, CHAPTER 14 OF THE CODE OF LAWS OF SC, 1976 AS AMENDED, PURSUANT TO REGULATION 72-300 ET SEQ. (IF APPLICABLE), AND IN ACCORDANCE WITH THE TERMS AND CONDITIONS OF SCR100000.

KEY		
COLOR	BANK HEIGHT RANGE	LINEAR FEET
	0'-2'	321
	2'-5'	851
	5'-8'	280
	8'-10'	29
	10'+	74
TOTAL SURVEYED LINEAR FEET:		1555
TOTAL STABILIZATION LINEAR FEET:		390

ONE INCH
AT FULL SIZE, IF NOT ONE INCH SCALE ACCORDINGLY

811
Know what's below.
Call before you dig.

DESIGNED BY: M. DALE S. STAMOND
DRAWN BY: M. DALE S. STAMOND
CHECKED BY: M. DALE S. STAMOND
APPROVED BY: M. DALE S. STAMOND
SCALE: AS SHOWN
DATE: 1/25/19

ANCHOR OEA
Anchor OEA of North Carolina, PLLC
231 Baywood Street
Asheville, North Carolina 28801
(828) 281-3550

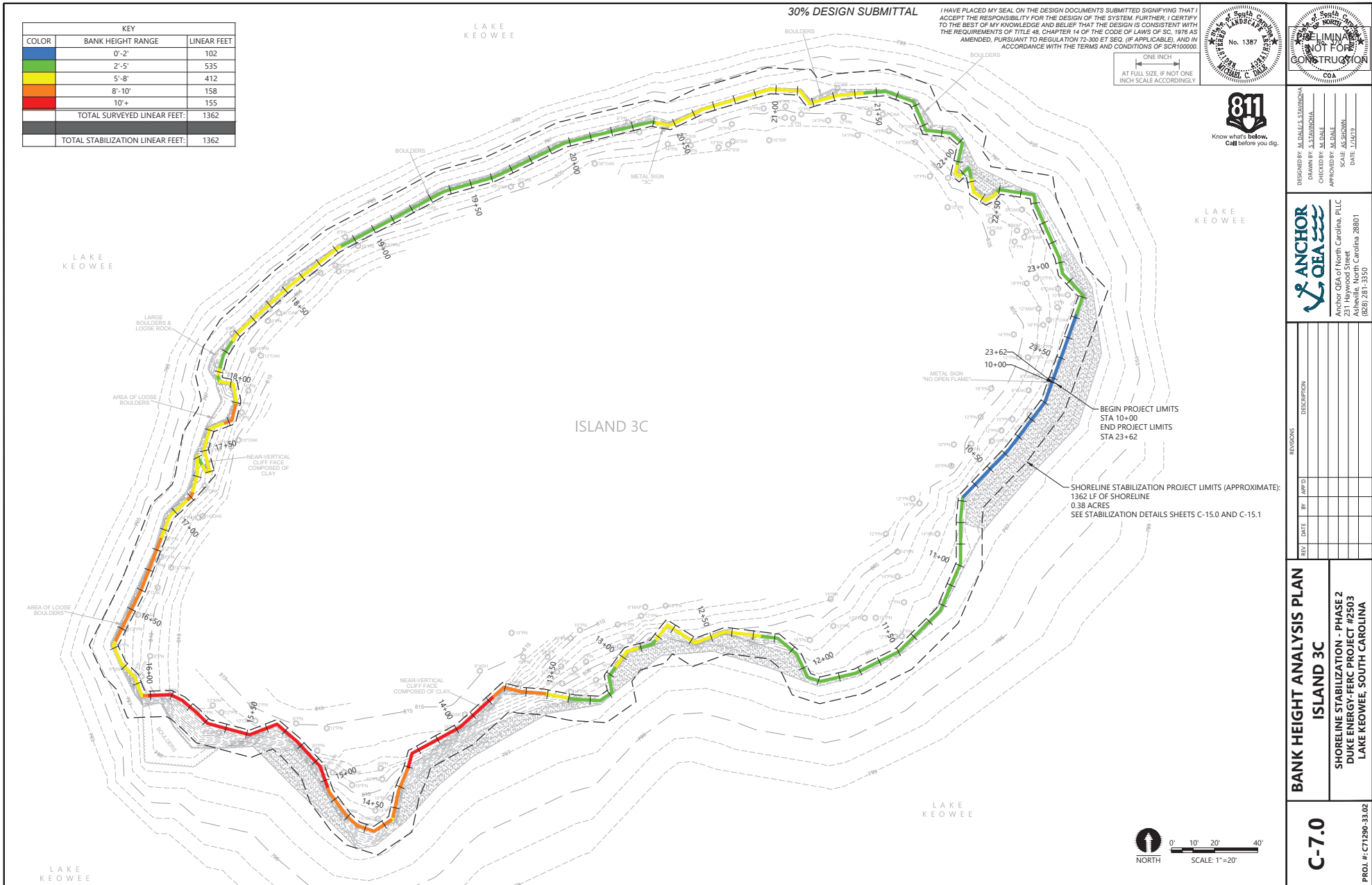
REV	DATE	BY	APP'D	DESCRIPTION

**BANK HEIGHT ANALYSIS PLAN
ISLAND 1E**

SHORELINE STABILIZATION - PHASE 2
DUKE ENERGY-FERC PROJECT #2503
LAKE KEOWEE, SOUTH CAROLINA

C-6.0

PROJ. #: C71290-33.02



30% DESIGN SUBMITTAL

I HAVE PLACED MY SEAL ON THE DESIGN DOCUMENTS SUBMITTED SIGNIFYING THAT I ACCEPT THE RESPONSIBILITY FOR THE DESIGN OF THE SYSTEM. FURTHER, I CERTIFY TO THE BEST OF MY KNOWLEDGE AND BELIEF THAT THE DESIGN IS CONSISTENT WITH THE REQUIREMENTS OF TITLE 46, CHAPTER 14 OF THE CODE OF LAWS OF SC, 1976 AS AMENDED, PURSUANT TO REGULATION 72-300 ET SEQ. (IF APPLICABLE), AND IN ACCORDANCE WITH THE TERMS AND CONDITIONS OF SCR100000.



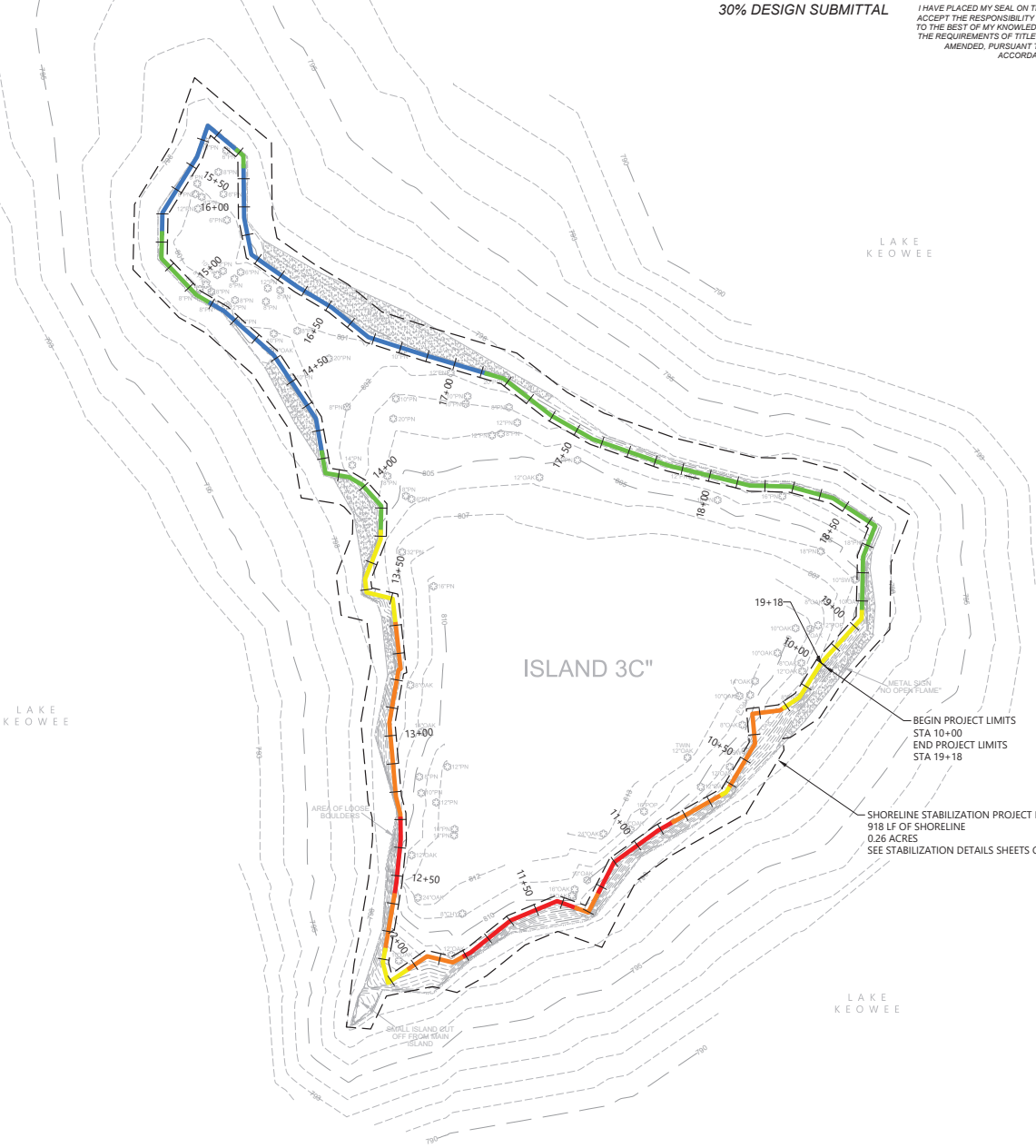
ONE INCH
AT FULL SIZE, IF NOT ONE
INCH SCALE ACCORDINGLY



DESIGNED BY: M. DALE & S. STAMANDIA
DRAWN BY: M. DALE
CHECKED BY: M. DALE
APPROVED BY: M. DALE
SCALE: AS SHOWN
DATE: 11/01/19

ANCHOR O&A
Anchor O&A of North Carolina, PLLC
231 Haywood Street
Asheville, North Carolina 28801
(828) 281-3550

KEY		
COLOR	BANK HEIGHT RANGE	LINEAR FEET
Blue	0'-2'	250
Green	2'-5'	261
Yellow	5'-8'	113
Orange	8'-10'	184
Red	10'+	110
TOTAL SURVEYED LINEAR FEET:		918
TOTAL STABILIZATION LINEAR FEET:		918



BEGIN PROJECT LIMITS
STA 10+00
END PROJECT LIMITS
STA 19+18

SHORELINE STABILIZATION PROJECT LIMITS (APPROXIMATE):
918 LF OF SHORELINE
0.26 ACRES
SEE STABILIZATION DETAILS SHEETS C-15.0 AND C-15.1



REV	DATE	BY	APP'D	DESCRIPTION

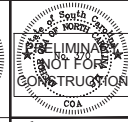
BANK HEIGHT ANALYSIS PLAN
ISLAND 3C
SHORELINE STABILIZATION - PHASE 2
DUKE ENERGY-FERC PROJECT #2503
LAKE KEOWEE, SOUTH CAROLINA

C-8.0
PROJ. #: C71290-33.02

KEY		
COLOR	BANK HEIGHT RANGE	LINEAR FEET
Blue	0'-2'	0
Green	2'-5'	1024
Yellow	5'-8'	446
Orange	8'-10'	137
Red	10'+	0
TOTAL SURVEYED LINEAR FEET:		1607
TOTAL STABILIZATION LINEAR FEET:		810

30% DESIGN SUBMITTAL

I HAVE PLACED MY SEAL ON THE DESIGN DOCUMENTS SUBMITTED SIGNIFYING THAT I ACCEPT THE RESPONSIBILITY FOR THE DESIGN OF THE SYSTEM. FURTHER, I CERTIFY TO THE BEST OF MY KNOWLEDGE AND BELIEF THAT THE DESIGN IS CONSISTENT WITH THE REQUIREMENTS OF TITLE 46, CHAPTER 14 OF THE CODE OF LAWS OF SC, 1976 AS AMENDED, PURSUANT TO REGULATION 72-300 ET SEQ. (IF APPLICABLE), AND IN ACCORDANCE WITH THE TERMS AND CONDITIONS OF SCR100000.

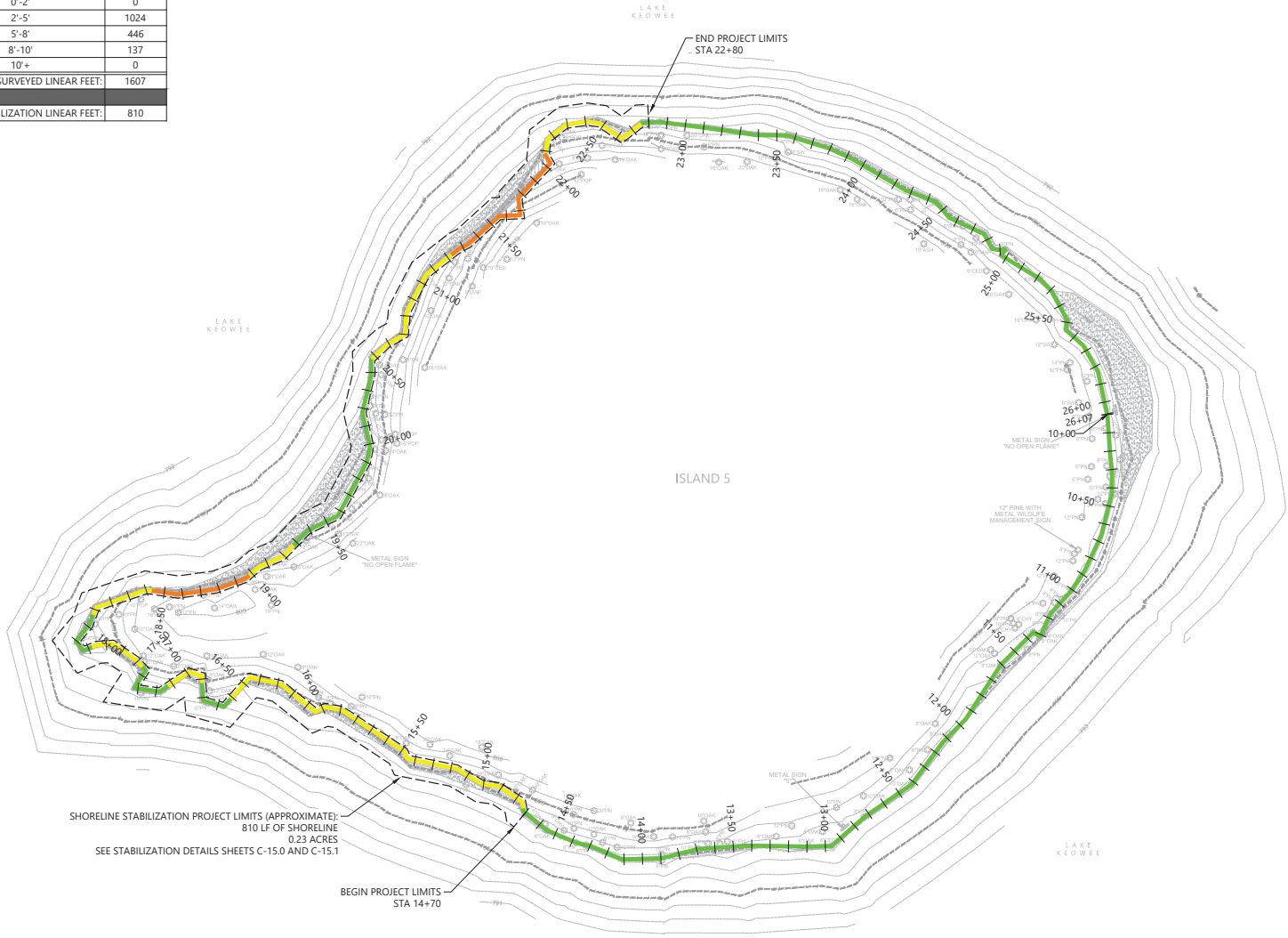


ONE INCH
AT FULL SIZE, IF NOT ONE INCH SCALE ACCORDINGLY



DESIGNED BY: M. DALE A. STAMANDIA
DRAWN BY: M. STAMANDIA
CHECKED BY: M. DALE
APPROVED BY: M. DALE
SCALE: AS SHOWN
DATE: 11/2019

ANCHOR OEA
Anchor OEA of North Carolina, PLLC
231 Baywood Street
Asheville, North Carolina 28801
(828) 281-3550



SHORELINE STABILIZATION PROJECT LIMITS (APPROXIMATE):
810 LF OF SHORELINE
0.23 ACRES
SEE STABILIZATION DETAILS SHEETS C-15.0 AND C-15.1

BEGIN PROJECT LIMITS
STA 14+70

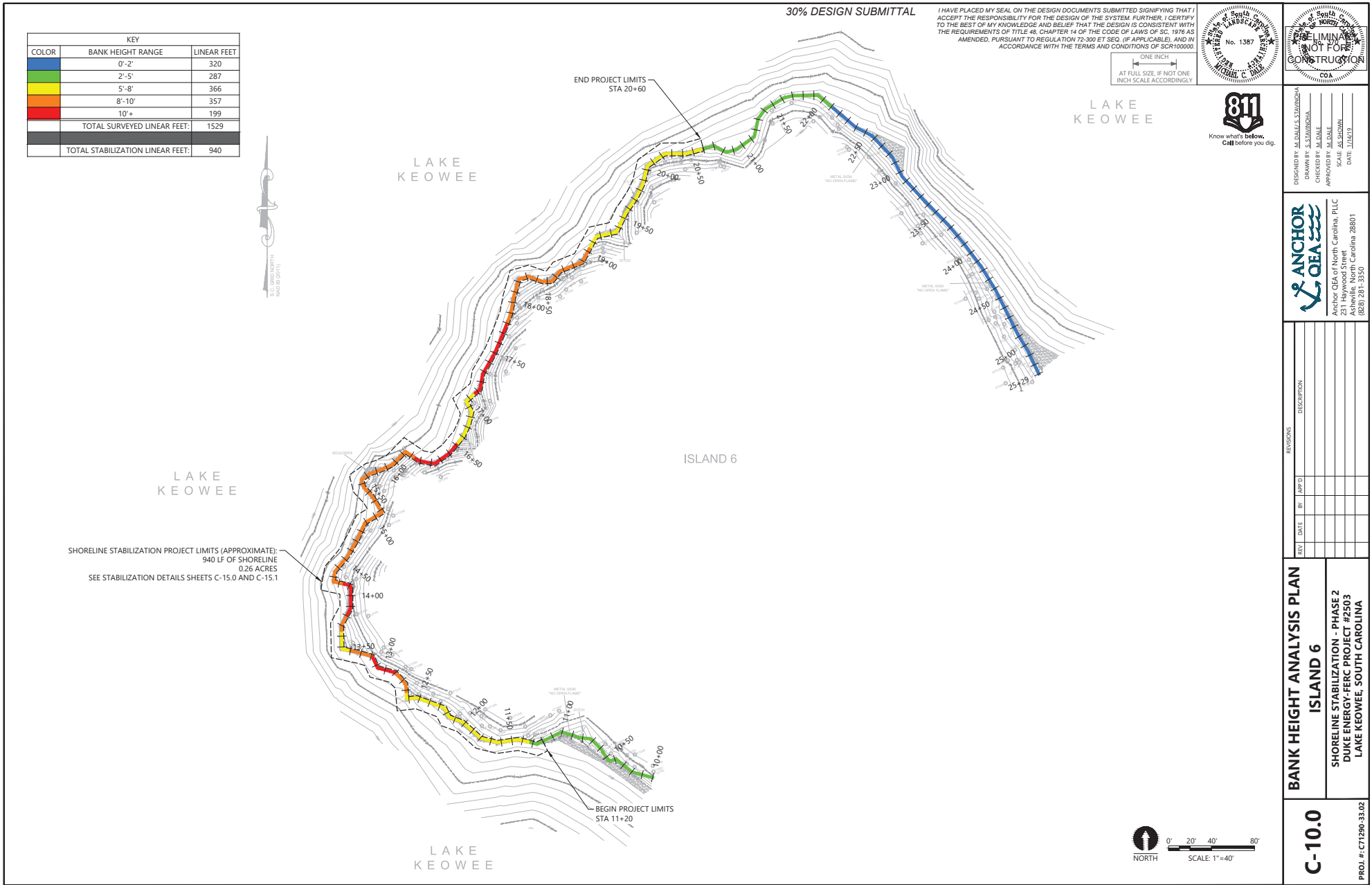
END PROJECT LIMITS
STA 22+80



REV	DATE	BY	APP'D	DESCRIPTION

BANK HEIGHT ANALYSIS PLAN
ISLAND 5
SHORELINE STABILIZATION - PHASE 2
DUKE ENERGY-FERC PROJECT #2503
LAKE KEOWEE, SOUTH CAROLINA

C-9.0
PROJ. #: C71290-33.02



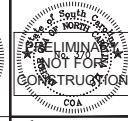
KEY		
COLOR	BANK HEIGHT RANGE	LINEAR FEET
Blue	0'-2'	320
Green	2'-5'	287
Yellow	5'-8'	366
Orange	8'-10'	357
Red	10'+	199
TOTAL SURVEYED LINEAR FEET:		1529
TOTAL STABILIZATION LINEAR FEET:		940



30% DESIGN SUBMITTAL

I HAVE PLACED MY SEAL ON THE DESIGN DOCUMENTS SUBMITTED SIGNIFYING THAT I ACCEPT THE RESPONSIBILITY FOR THE DESIGN OF THE SYSTEM. FURTHER, I CERTIFY TO THE BEST OF MY KNOWLEDGE AND BELIEF THAT THE DESIGN IS CONSISTENT WITH THE REQUIREMENTS OF TITLE 46, CHAPTER 14 OF THE CODE OF LAWS OF SC, 1976 AS AMENDED, PURSUANT TO REGULATION 72-300 ET SEQ. (IF APPLICABLE), AND IN ACCORDANCE WITH THE TERMS AND CONDITIONS OF SCR100000.

ONE INCH
AT FULL SIZE, IF NOT ONE INCH SCALE ACCORDINGLY



LAKE KEOWEE



DESIGNED BY: M. DALE'S STAINOCHIA
DRAWN BY: A. STAINOCHIA
CHECKED BY: M. DALE
APPROVED BY: M. DALE
SCALE: AS SHOWN
DATE: 1/26/19

ANCHOR OCEA
Anchor OCEA of North Carolina, PLLC
231 Baywood Street
Asheville, North Carolina 28801
(828) 281-3550

REV	DATE	BY	APP'D	DESCRIPTION

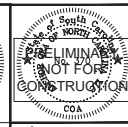
**BANK HEIGHT ANALYSIS PLAN
ISLAND 6**
SHORELINE STABILIZATION - PHASE 2
DUKE ENERGY-FERC PROJECT #2503
LAKE KEOWEE, SOUTH CAROLINA

C-10.0
PROJ. #: C71290-33.02

KEY		
COLOR	BANK HEIGHT RANGE	LINEAR FEET
Blue	0'-2'	396
Green	2'-5'	1061
Yellow	5'-8'	133
Orange	8'-10'	0
Red	10'+	0
TOTAL SURVEYED LINEAR FEET:		1590
TOTAL STABILIZATION LINEAR FEET:		1240

30% DESIGN SUBMITTAL

I HAVE PLACED MY SEAL ON THE DESIGN DOCUMENTS SUBMITTED SIGNIFYING THAT I ACCEPT THE RESPONSIBILITY FOR THE DESIGN OF THE SYSTEM. FURTHER, I CERTIFY TO THE BEST OF MY KNOWLEDGE AND BELIEF THAT THE DESIGN IS CONSISTENT WITH THE REQUIREMENTS OF TITLE 49, CHAPTER 14 OF THE CODE OF LAWS OF SC, 1979 AS AMENDED, PURSUANT TO REGULATION 72-300 ET SEQ. (IF APPLICABLE), AND IN ACCORDANCE WITH THE TERMS AND CONDITIONS OF SCR100000.



ONE INCH
AT FULL SIZE, IF NOT ONE INCH SCALE ACCORDINGLY



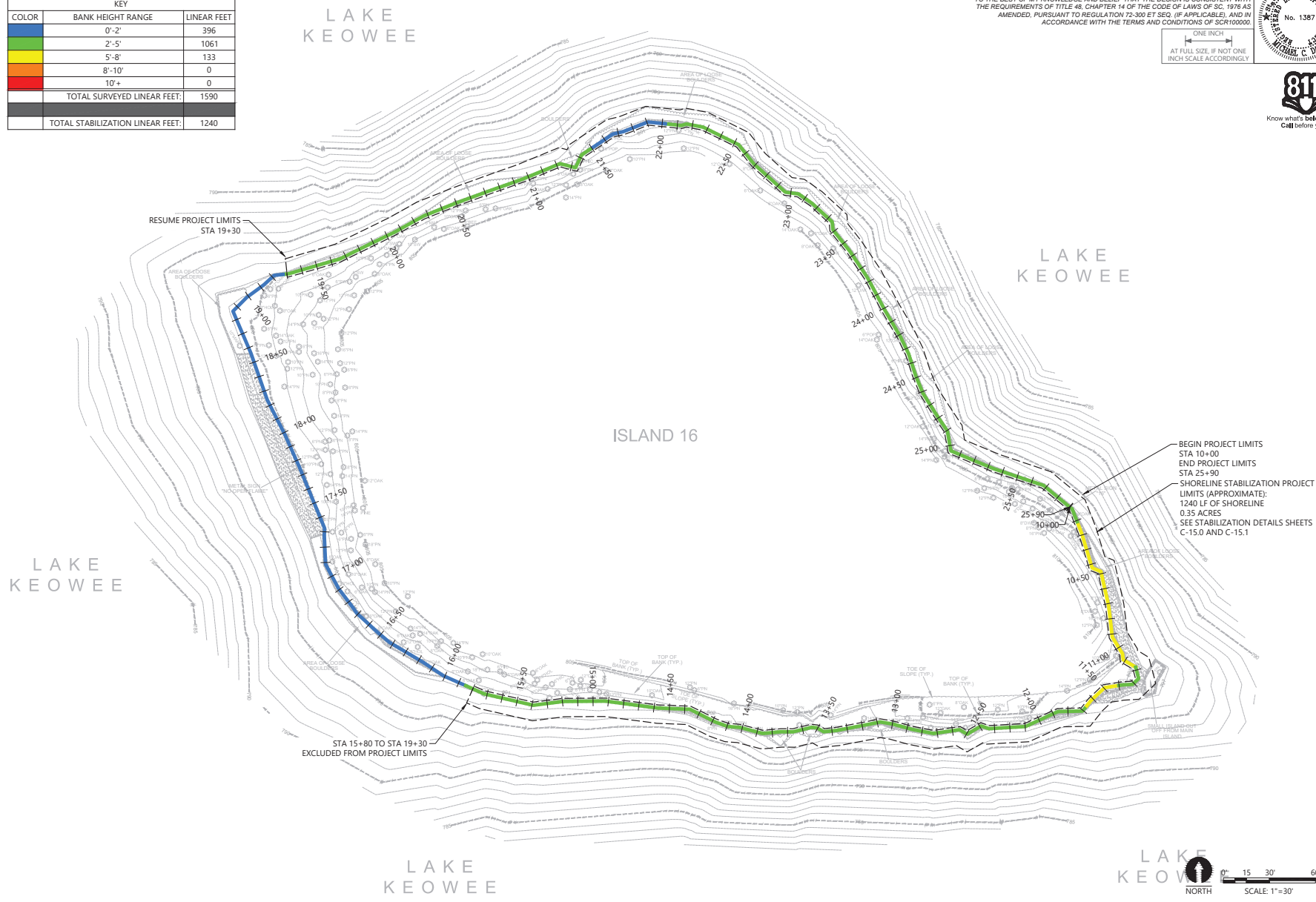
DESIGNED BY: M. DALE'S STABILIZATION LABORATORY
DRAWN BY: M. DALE
CHECKED BY: M. DALE
APPROVED BY: M. DALE
SCALE: AS SHOWN
DATE: 1/26/19

ANCHOR OCEA
Anchor OCEA of North Carolina, PLLC
231 Haywood Street
Asheville, North Carolina 28801
(828) 281-3550

REV	DATE	BY	APP'D	DESCRIPTION

BANK HEIGHT ANALYSIS PLAN
ISLAND 16
SHORELINE STABILIZATION - PHASE 2
DUKE ENERGY-FERC PROJECT #2503
LAKE KEOWEE, SOUTH CAROLINA

C-11.0
PROJ. #: C71290-33.02



30% DESIGN SUBMITTAL

I HAVE PLACED MY SEAL ON THE DESIGN DOCUMENTS SUBMITTED SIGNIFYING THAT I ACCEPT THE RESPONSIBILITY FOR THE DESIGN OF THE SYSTEM. FURTHER, I CERTIFY TO THE BEST OF MY KNOWLEDGE AND BELIEF THAT THE DESIGN IS CONSISTENT WITH THE REQUIREMENTS OF TITLE 46, CHAPTER 14 OF THE CODE OF LAWS OF SC, 1976 AS AMENDED, PURSUANT TO REGULATION 72-300 ET SEQ. (IF APPLICABLE), AND IN ACCORDANCE WITH THE TERMS AND CONDITIONS OF SCR100000.



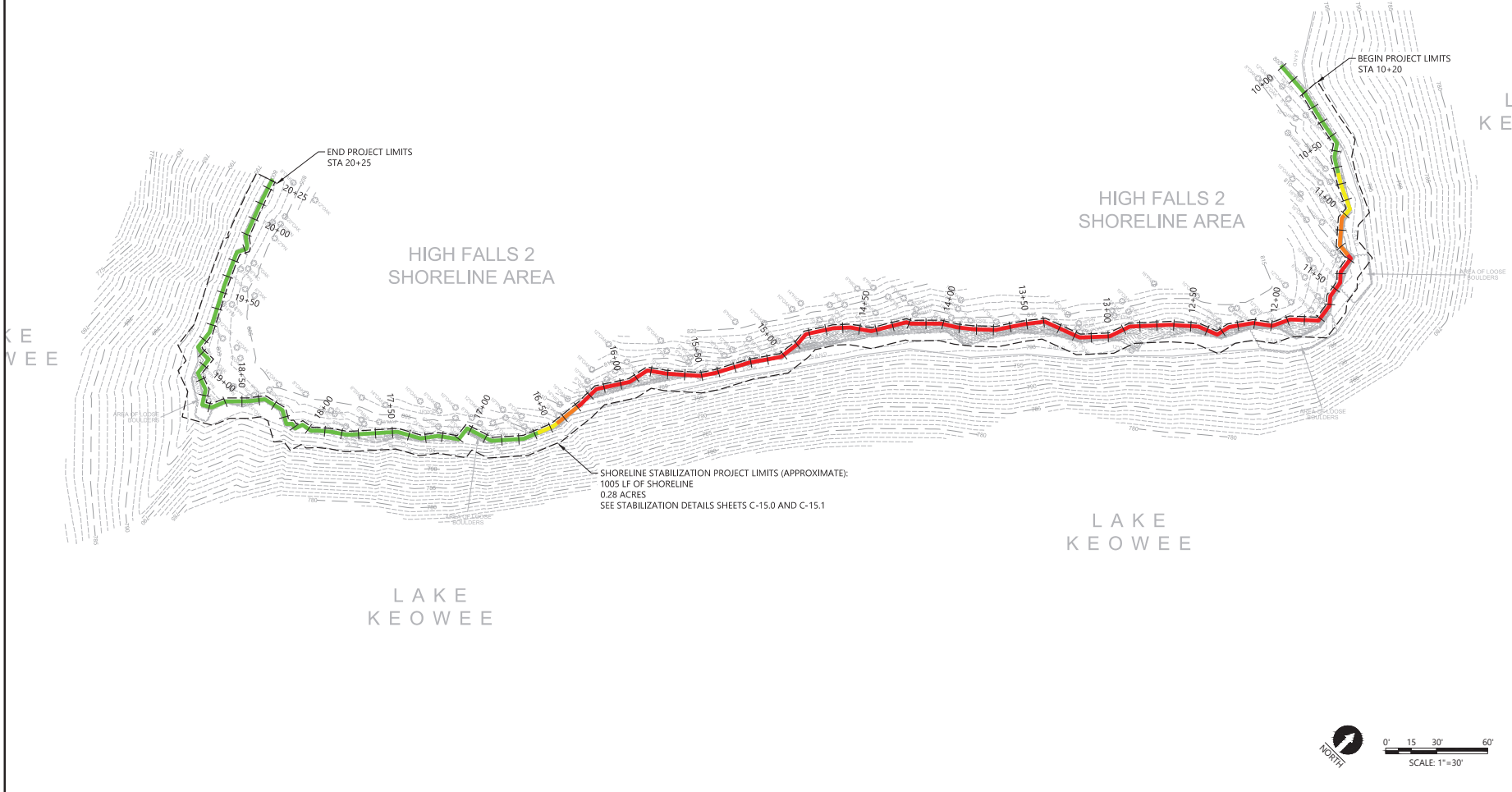
ONE INCH
AT FULL SIZE, IF NOT ONE
INCH SCALE ACCORDINGLY



DESIGNED BY: M. DALE S. STAMANDHA
DRAWN BY: M. YOUNGBLOOD
CHECKED BY: M. DALE
APPROVED BY: M. DALE
SCALE: AS SHOWN
DATE: 1/16/19
COA

ANCHOR O&E
Anchor O&E of North Carolina, PLLC
231 Baywood Street
Asheville, North Carolina 28801
(828) 281-3550

KEY		
COLOR	BANK HEIGHT RANGE	LINEAR FEET
Blue	0'-2'	0
Green	2'-5'	440
Yellow	5'-8'	40
Orange	8'-10'	42
Red	10'+	
TOTAL SURVEYED LINEAR FEET:		1025
TOTAL STABILIZATION LINEAR FEET:		1005



REV	DATE	BY	APP'D	DESCRIPTION

BANK HEIGHT ANALYSIS PLAN
HIGH FALLS SHORELINE
SHORELINE STABILIZATION - PHASE 2
DUKE ENERGY-FERC PROJECT #2503
LAKE KEOWEE, SOUTH CAROLINA

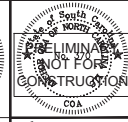
C-12.0
PROJ. #: C71290-33.02

KEY		
COLOR	BANK HEIGHT RANGE	LINEAR FEET
Blue	0'-2'	198
Green	2'-5'	642
Yellow	5'-8'	162
Orange	8'-10'	0
Red	10'+	0
TOTAL SURVEYED LINEAR FEET:		1002
TOTAL STABILIZATION LINEAR FEET:		1002

LAKE
KEOWEE

30% DESIGN SUBMITTAL

I HAVE PLACED MY SEAL ON THE DESIGN DOCUMENTS SUBMITTED SIGNIFYING THAT I ACCEPT THE RESPONSIBILITY FOR THE DESIGN OF THE SYSTEM. FURTHER, I CERTIFY TO THE BEST OF MY KNOWLEDGE AND BELIEF THAT THE DESIGN IS CONSISTENT WITH THE REQUIREMENTS OF TITLE 46, CHAPTER 14 OF THE CODE OF LAWS OF SC, 1976 AS AMENDED, PURSUANT TO REGULATION 72-300 ET SEQ. (IF APPLICABLE), AND IN ACCORDANCE WITH THE TERMS AND CONDITIONS OF SCR100000.

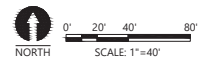
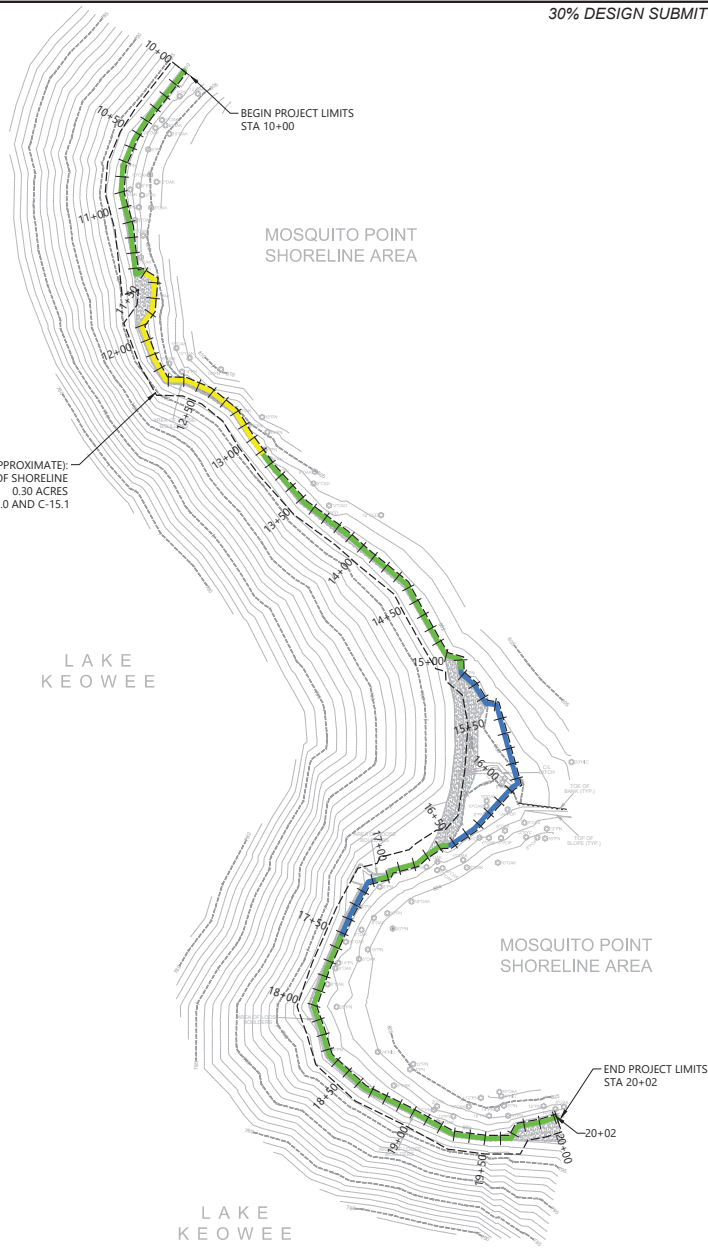


ONE INCH
AT FULL SIZE, IF NOT ONE
INCH SCALE ACCORDINGLY



DESIGNED BY: M. DALE, STANBACH
DRAWN BY: M. DALE
CHECKED BY: M. DALE
APPROVED BY: M. DALE
SCALE: AS SHOWN
DATE: 1/15/19

SHORELINE STABILIZATION PROJECT LIMITS (APPROXIMATE):
1002 LF OF SHORELINE
0.30 ACRES
SEE STABILIZATION DETAILS SHEETS C-15.0 AND C-15.1



ANCHOR O&A
Anchor O&A of North Carolina, PLLC
231 Baywood Street
Asheville, North Carolina 28801
(828) 281-3550

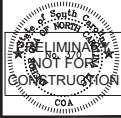
REV	DATE	BY	APP'D	DESCRIPTION

BANK HEIGHT ANALYSIS PLAN
MOSQUITO POINT SHORELINE
SHORELINE STABILIZATION - PHASE 2
DUKE ENERGY-FERC PROJECT #2503
LAKE KEOWEE, SOUTH CAROLINA

C-13.0
PROJ. #: C71290-33.02

30% DESIGN SUBMITTAL

I HAVE PLACED MY SEAL ON THE DESIGN DOCUMENTS SUBMITTED SIGNIFYING THAT I ACCEPT THE RESPONSIBILITY FOR THE DESIGN OF THE SYSTEM. FURTHER, I CERTIFY TO THE BEST OF MY KNOWLEDGE AND BELIEF THAT THE DESIGN IS CONSISTENT WITH THE REQUIREMENTS OF TITLE 49, CHAPTER 14 OF THE CODE OF LAWS OF SC, 1976 AS AMENDED, PURSUANT TO REGULATION 72-300 ET SEQ. (IF APPLICABLE), AND IN ACCORDANCE WITH THE TERMS AND CONDITIONS OF SCR100000.

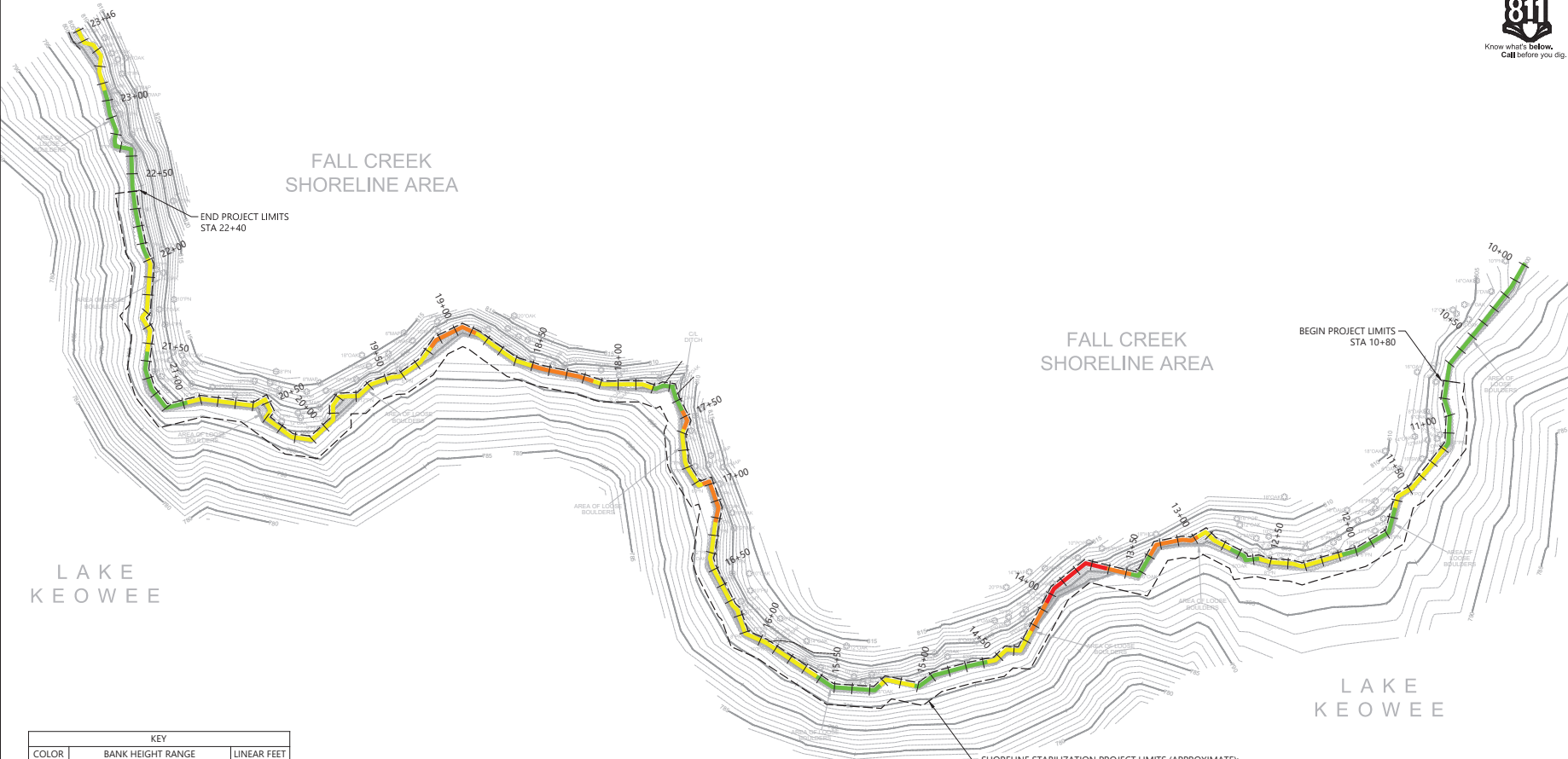


ONE INCH
AT FULL SIZE, IF NOT ONE
INCH SCALE ACCORDINGLY



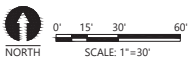
DESIGNED BY: M. DALE & STANBACH
DRAWN BY: M. DALE
CHECKED BY: M. DALE
APPROVED BY: M. DALE
SCALE: AS SHOWN
DATE: 1/26/19

ANCHOR OEA
Anchor OEA of North Carolina, PLLC
231 Baywood Street
Asheville, North Carolina 28801
(828) 281-3550



KEY		
COLOR	BANK HEIGHT RANGE	LINEAR FEET
Blue	0'-2'	0
Green	2'-5'	453
Yellow	5'-8'	681
Orange	8'-10'	176
Red	10'+	43
TOTAL SURVEYED LINEAR FEET:		1353
TOTAL STABILIZATION LINEAR FEET:		1160

SHORELINE STABILIZATION PROJECT LIMITS (APPROXIMATE):
1160 LF OF SHORELINE
0.32 ACRES
SEE STABILIZATION DETAILS SHEETS C-15.0 AND C-15.1



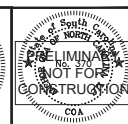
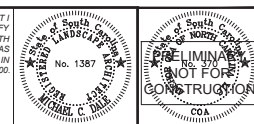
REV	DATE	BY	APP'D	DESCRIPTION

BANK HEIGHT ANALYSIS PLAN
FALL CREEK SHORELINE
SHORELINE STABILIZATION - PHASE 2
DUKE ENERGY-FERC PROJECT #2503
LAKE KEOWEE, SOUTH CAROLINA

C-14.0
PROJ. #: C71290-33.02

30% DESIGN SUBMITTAL

I HAVE PLACED MY SEAL ON THE DESIGN DOCUMENTS SUBMITTED SIGNIFYING THAT I ACCEPT THE RESPONSIBILITY FOR THE DESIGN OF THE SYSTEM. FURTHER, I CERTIFY TO THE BEST OF MY KNOWLEDGE AND BELIEF THAT THE DESIGN IS CONSISTENT WITH THE REQUIREMENTS OF TITLE 48, CHAPTER 14 OF THE CODE OF LAWS OF SC, 1976 AS AMENDED, PURSUANT TO REGULATION 172-300 ET SEQ. (IF APPLICABLE), AND IN ACCORDANCE WITH THE TERMS AND CONDITIONS OF SCR100009.



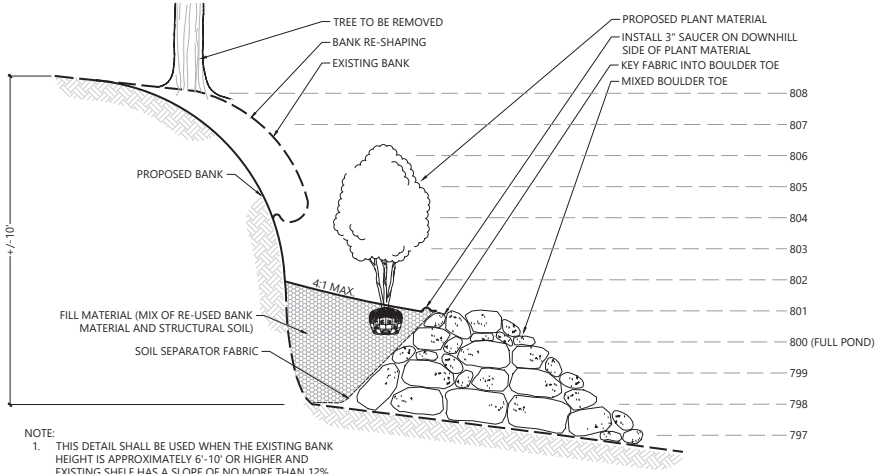
DESIGNED BY: M. DALEK, STATION# CHA
 DRAWN BY: S. STAVINOVA
 CHECKED BY: M. DALEK
 APPROVED BY: M. DALEK
 SCALE: AS SHOWN
 DATE: 12/24/13

ANCHOR OCEA
 Anchor OCEA (North Carolina), PLLC
 291 Bay Street
 Asheville, North Carolina 28801
 (828) 281-3350

REV	DATE	BY	APP'D	DESCRIPTION

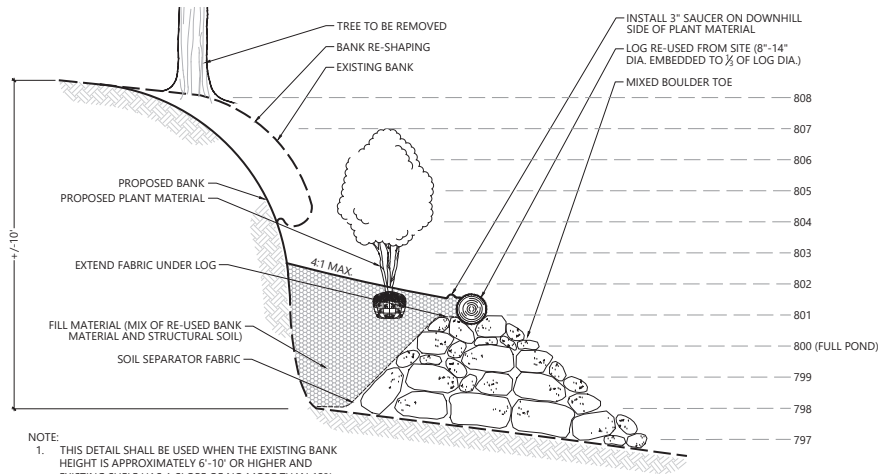
STABILIZATION DETAILS 1
 SHORELINE STABILIZATION - PHASE 2
 DUKE ENERGY- PERC PROJECT #2503
 LAKE KEOWEE, SOUTH CAROLINA

C-15.0
 PROJ. NO. C71290-33.02



NOTE:
 1. THIS DETAIL SHALL BE USED WHEN THE EXISTING BANK HEIGHT IS APPROXIMATELY 6'-10" OR HIGHER AND EXISTING SHELVE HAS A SLOPE OF NO MORE THAN 12%.

1 ROCK TOE WITH PLANTING AREA NOT TO SCALE



NOTE:
 1. THIS DETAIL SHALL BE USED WHEN THE EXISTING BANK HEIGHT IS APPROXIMATELY 6'-10" OR HIGHER AND EXISTING SHELVE HAS A SLOPE OF NO MORE THAN 12%.

2 ROCK TOE AND RE-USED LOG WITH PLANTING AREA NOT TO SCALE

MATERIALS SPECIFICATIONS:

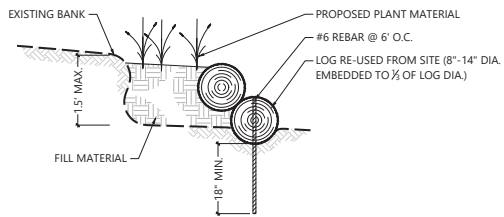
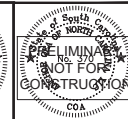
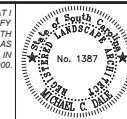
- MIXED BOULDERS:** SHALL CONSIST OF 'KEOWEE' ROCK MIXED WITH 50% SMALLER SIZE ROCK OF THE SAME VARIETY. BOULDERS SHALL RANGE IN SIZE FROM 2" TO 4" (MAXIMUM IN ANY DIRECTION). SMALLER ROCK SHALL RANGE IN SIZE FROM 0.5"-2".
- RIP RAP:** CLASS 1 GRANITE RIP RAP RANGING IN SIZE FROM 8" TO 18"
- STRUCTURAL SOIL:** SHALL BE COMPOSED OF: 75% TO 83% 2" TO 4" ANGULAR WASHED ROCK, 15% TO 20% CLAY LOAM SOIL, AND 2% TO 5% ORGANIC MATERIAL. STRUCTURAL SOIL SHALL BE THOROUGHLY MIXED BEFORE INSERTING INTO LIFT AREA. SAMPLES SHALL BE PROVIDED FOR REVIEW PRIOR TO PLACEMENT. CONTRACTOR SHALL INDICATE TO THE OWNER/LANDSCAPE ARCHITECT WHERE OFF SITE TOPSOIL AND ORGANIC MATERIAL WILL BE SOURCED. A VISUAL INSPECTION OF THE STOCKPILE AREA MAY OCCUR TO DETERMINE IF IT IS FREE OF INVASIVE PLANT MATERIAL AND WEED SEEDS.
- UNDERLYING GEOTEXTILE FABRIC:** FOR AREAS BELOW BOULDERS AND ALONG THE FACE OF THE ERODED BANK, FABRIC SHALL BE PROPEX GEOTEX 801 NON-WOVEN GEOTEXTILE FABRIC (OR APPROVED EQUAL).
- SOIL SEPARATOR GEOTEXTILE FABRIC:** TO BE USED AS SEPARATION BETWEEN GEOLIFTS AND WITHIN THE ROCK TREE RING, FABRIC SHALL BE PROPEX GEOTEXT 401 NON-WOVEN GEOTEXTILE FABRIC OR APPROVED EQUAL.
- METAL STAPLES:** 6" 11-GAUGE STEEL STAPLES.
- PLANT MATERIAL:** SHALL MEET THE STANDARDS OUTLINED ON SHEET C-3.0 GENERAL NOTES.
- SEED:** SHALL BE ERNST SOUTH CAROLINA UPLAND CUSTOM BLEND MIX OR APPROVED EQUAL. SEED SHALL INCLUDE A COVER CROP OF GRAIN OATS APPLIED ACCORDING TO ERNST RECOMMENDATIONS. SEE PRODUCT INFORMATION ON DETAIL SHEET C-16.0.
- EROSION CONTROL MATTING:** NORTH AMERICAN GREEN SC150 OR APPROVED EQUAL. SEE DETAIL 3, SHEET C-4.1.
- TOPSOIL:** ACCEPTABLE TOPSOIL SHALL BE FERTILE, WEED FREE, FRIABLE NATURAL LOAM, UNIFORM IN COMPOSITION, FREE OF STONES, LIMBS, PLANTS AND THEIR ROOTS, DEBRIS AND OTHER EXTRANEOUS MATTER OVER 2" IN DIAMETER. THE SOIL SHALL BE CAPABLE OF SUSTAINED PLANT GROWTH AND HAVE A 5% MINIMUM ORGANIC CONTENT. IN SITUATIONS REQUIRING A CUSTOM MIX OR STRUCTURAL SOIL, SPECIFICATIONS WILL BE PROVIDED BY THE LANDSCAPE ARCHITECT.

INSTALLATION SPECIFICATIONS:

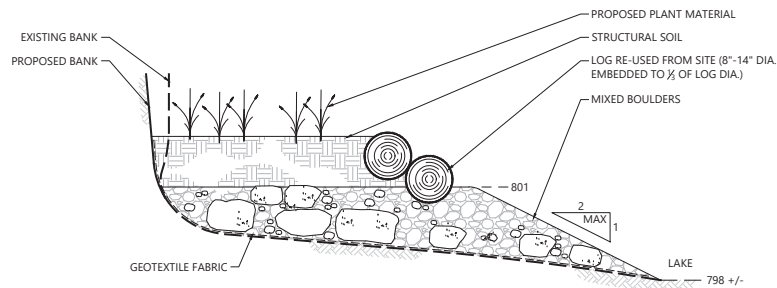
- LARGE EQUIPMENT SHALL BE OPERATED FROM A BARGE ONLY. BOULDERS SHALL BE INSTALLED AND POSITIONED FROM THE BARGE FOLLOWING DUKE ENERGY'S SAFETY REQUIREMENTS FOR WORKING ON OPEN WATER.
- UNDERLYING GEOTEXTILE FABRIC SHALL BE PLACED ON THE EXISTING GROUND SURFACE BELOW MIXED BOULDERS. FABRIC SHALL EXTEND FROM THE TOE OF THE MIXED BOULDER TO THE EXISTING SHORELINE, UP THE ENTIRE HEIGHT OF THE ERODED BANK. FABRIC MAY BE HELD IN PLACE WITH METAL STAPLES PENDING MIXED BOULDER PLACEMENT. FABRIC SHALL BE CONCEALED WITH MIXED BOULDERS AND SHALL NOT BE VISIBLE FROM ANY ANGLE.
- AFTER UNDERLYING GEOTEXTILE FABRIC HAS BEEN PLACED, MIXED BOULDERS SHALL BE POSITIONED OVER THE FABRIC IN A STABLE MANNER MIXING SMALLER AND LARGER SIZE ROCK TOGETHER TO FORM A TIGHT BOND. LARGEST BOULDERS SHALL BE PLACED AT THE BOTTOM OF SLOPE AND TRANSITION TO SMALLER BOULDERS AS ARMORING INCREASES IN ELEVATION. BOULDERS SHALL BE STACKED IN SUCH A WAY THAT THEY ARE ANGLED BACK TOWARD THE ERODED BANK. MIXED BOULDERS SHALL BE PUSHED AGAINST THE GEOTEXTILE FABRIC SO THAT THE BOULDERS WILL HOLD IT IN PLACE. MIXED BOULDERS SHALL FOLLOW THE UPLAND EDGE OF THE BANK AND SHALL NOT BE PLACED ABOVE THE 801 CONTOUR.
- EXISTING HOLES OR 'CAVES' IN THE SIDE OF THE BANK SHALL BE ADDRESSED IN ONE OF TWO WAYS. IF THE BANK AREA ABOVE THE CAVE IS IN A STABLE CONDITION AND THE ADJACENT PLANT MATERIAL IS IN GOOD HEALTH, THE CAVE MAY BE STABILIZED BY FILLING WITH ROCK AND THEN ARMORING THE BANK FACE AS OUTLINED IN NOTE 3. IF THE CAVE AND SURROUNDING AREA IS SEVERELY DEGRADED AND FUTURE EROSION COULD NOT BE PREVENTED BY FILLING THE CAVE HOLE, THE CAVE SHALL BE COLLAPSED AND THE VOID BACKFILLED AND COMPACTED WITH STRUCTURAL SOIL. THE FACE OF THE NEWLY CONSTRUCTED BANK SHALL BE STABILIZED WITH MIXED BOULDERS AS OUTLINED IN NOTE 3.
- BANK RESHAPING: IN AREAS WHERE TOP OF THE ERODED BANK IS HIGHER THAN THE 801 CONTOUR, BANK SHAPING MAY BE REQUIRED. IN AREAS WHERE THE EXISTING TOP OF BANK IS WITHIN ONE FOOT OF THE 801 CONTOUR (802 AND BELOW), THE BANK MAY BE RESHAPED IN ORDER TO BLEND INTO THE TOP OF THE NEWLY INSTALLED MIXED BOULDERS AND PROVIDE A STABLE SLOPE FOR VEGETATION (3:1). WHERE THE EXISTING BANK IS ABOVE THE 802, RESHAPING THESE AREAS WILL BE EVALUATED ON A CASE BY CASE BASIS AND SHALL BE APPROVED BY THE LANDSCAPE ARCHITECT AND OWNER PRIOR TO THE COMMENCEMENT OF THE ACTIVITY. DETERMINING FACTORS WILL INCLUDE THE PRESENCE OF EXISTING VEGETATION, OVERALL BANK HEIGHT AND UPLAND CONDITIONS. EXCAVATED MATERIAL SHALL BE PLACED ON THE UPLAND SIDE OF THE GEOTEXTILE FABRIC AND COMPACTED IN PLACE. ALL DISTURBED AREAS SHALL BE SEEDED AND EROSION CONTROL FABRIC INSTALLED. PLANT MATERIAL MAY ALSO BE SPECIFIED, REFER TO PLANTING PLANS FOR DETAILS.
- PLANT MATERIAL SHALL BE INSTALLED ACCORDING TO GENERAL NOTES, SHEET C-3.0. TREES PLANTED AT THE TOE OF THE ENHANCED RIP RAP SLOPE SHALL BE INSTALLED WITHIN A ROCK TREE RING. THE ROCK RING SHALL BE MADE OF MIXED BOULDERS AT A HEIGHT OF APPROXIMATELY 1'-1.5'. THE BOTTOM OF THE TREE BALL SHALL EXTEND INTO IN SITU SOIL. SOIL SEPARATOR FABRIC SHALL BE INSTALLED AROUND THE INSIDE OF THE ROCK RING AND STRUCTURAL SOIL ADDED TO FILL THE VOID TO THE CROWN OF THE ROOT BALL. FABRIC SHALL BE COVERED WITH A MINIMUM OF 4" OF STRUCTURAL SOIL AND SHALL NOT BE VISIBLE FROM ANY ANGLE. THE FABRIC SHOULD BE MODIFIED TO ALLOW FOR PLANT ROOT GROWTH. CONTRACTOR SHALL EITHER CUT A LARGE 'X' AND FOLD THE CORNERS UNDER THE MAIN FABRIC OR CUT A LARGE CIRCLE TO A DIAMETER OF TWO TIMES THAT OF THE ROOT BALL AND REMOVE THE SWATH.
- EROSION CONTROL MATTING SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS AND STAPLE PATTERN INDICATED ON DETAIL 3, SHEET C-4.1.

30% DESIGN SUBMITTAL

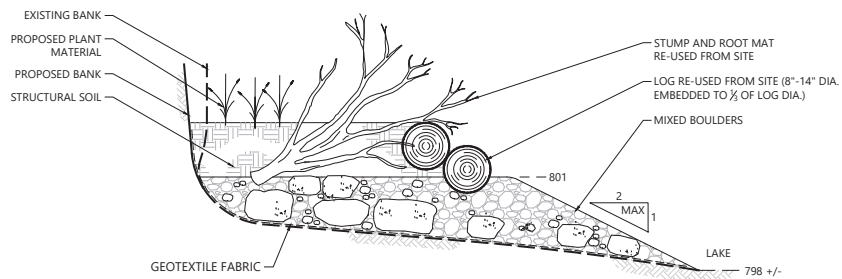
I HAVE PLACED MY SEAL ON THE DESIGN DOCUMENTS SUBMITTED SIGNIFYING THAT I ACCEPT THE RESPONSIBILITY FOR THE DESIGN OF THE SYSTEM. FURTHER, I CERTIFY TO THE BEST OF MY KNOWLEDGE AND BELIEF THAT THE DESIGN IS CONSISTENT WITH THE REQUIREMENTS OF TITLE 48, CHAPTER 14 OF THE CODE OF LAWS OF SC, 1976 AS AMENDED, PURSUANT TO REGULATION 172-300 ET SEQ. (IF APPLICABLE), AND IN ACCORDANCE WITH THE TERMS AND CONDITIONS OF SCRI100000.



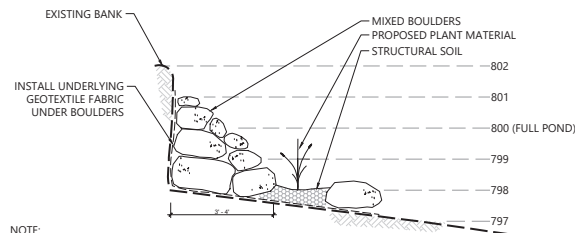
1 LOG AND PLANTING AREA
C-15.1 NOT TO SCALE



2 RIP RAP, ROOT MAT, AND LOGS WITH PLANTING AREA
C-15.1 NOT TO SCALE



3 RIP RAP, ROOT MAT, AND LOGS WITH PLANTING AREA
C-15.1 NOT TO SCALE



NOTE:
1. THIS DETAIL SHALL BE USED WHEN THE EXISTING TOP OF BANK ELEVATION IS 802' OR LOWER AND EXISTING SHELVE HAS A SLOPE OF NO MORE THAN 12%.

4 BOULDERS WITH PLANTING
C-15.1 NOT TO SCALE

MATERIALS SPECIFICATIONS:

- MIXED BOULDERS:** SHALL CONSIST OF 'KEOWEE' ROCK COLOR MIXED WITH 50% SMALLER SIZE ROCK OF THE SAME VARIETY. BOULDERS SHALL RANGE IN SIZE FROM 2" TO 4" (MAXIMUM) IN ANY DIRECTION). SMALLER ROCK SHALL RANGE IN SIZE FROM 0.5"-2".
- RIP RAP:** CLASS 1 GRANITE RIP RAP RANGING IN SIZE FROM 8" TO 18"
- STRUCTURAL SOIL:** SHALL BE COMPOSED OF: 75% TO 83% 2" TO 4" ANGULAR WASHED ROCK, 15% TO 20% CLAY LOAM SOIL, AND 2% TO 5% ORGANIC MATERIAL. STRUCTURAL SOIL SHALL BE THOROUGHLY MIXED BEFORE INSERTING INTO LIFT AREA. SAMPLES SHALL BE PROVIDED FOR REVIEW PRIOR TO PLACEMENT. CONTRACTOR SHALL INDICATE TO THE OWNER/LANDSCAPE ARCHITECT WHERE OFF SITE TOPSOIL AND ORGANIC MATERIAL WILL BE SOURCED. A VISUAL INSPECTION OF THE STOCKPILE AREA MAY OCCUR TO DETERMINE IF IT IS FREE OF INVASIVE PLANT MATERIAL AND WEED SEEDS.
- UNDERLYING GEOTEXTILE FABRIC:** FOR AREAS BELOW BOULDERS AND ALONG THE FACE OF THE ERODED BANK, FABRIC SHALL BE PROPEX GEOTEX 801 NON-WOVEN GEOTEXTILE FABRIC (OR APPROVED EQUAL).
- SOIL SEPARATOR GEOTEXTILE FABRIC:** TO BE USED AS SEPARATION BETWEEN GEOLIFTS AND WITHIN THE ROCK TREE RING, FABRIC SHALL BE PROPEX GEOTEX 401 NON-WOVEN GEOTEXTILE FABRIC OR APPROVED EQUAL.
- METAL STAPLES:** 6" 11-GAUGE STEEL STAPLES.
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DESIGNED BY: M. DALEK STAWUCHA
DRAWN BY: S. STAWUCHA
CHECKED BY: M. DALE
APPROVED BY: M. DALE
SCALE: AS SHOWN
DATE: 1/24/19

ANCHOR OCEA
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(828) 281-3350

REV	DATE	BY	APP'D	DESCRIPTION

STABILIZATION DETAILS 2
SHORELINE STABILIZATION - PHASE 2
DUKE ENERGY- PERC PROJECT #2503
LAKE KEOWEE, SOUTH CAROLINA

C-15.1
PROJ. # C71290-33.02