

Erosion & Sediment Control Workshop
Raleigh, NC
December 3, 2019

Erosion & Sediment Control Challenges for Linear and Non-Linear Power Industry Applications

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Agenda

“STORM READY STATE”

Part 1 “Linear” Transmission Lines

Part 2 “Non-Linear” Substations

“PROVIDE ADDITIONAL MARGIN”

Focus: Identify E&SC issues
commonly encountered on power sites
and provide solutions for compliance

Typical Transmission Line Construction Operations Triggering E&SC

- New Construction
- Relocation
- Decommission
- Maintenance



Typical Transmission Line New Construction

- Up to 100-200 acres of disturbance
- 2/3 ROW Clearing
- 1/3 Access Roads
- Fraction of impact involves soil disturbance

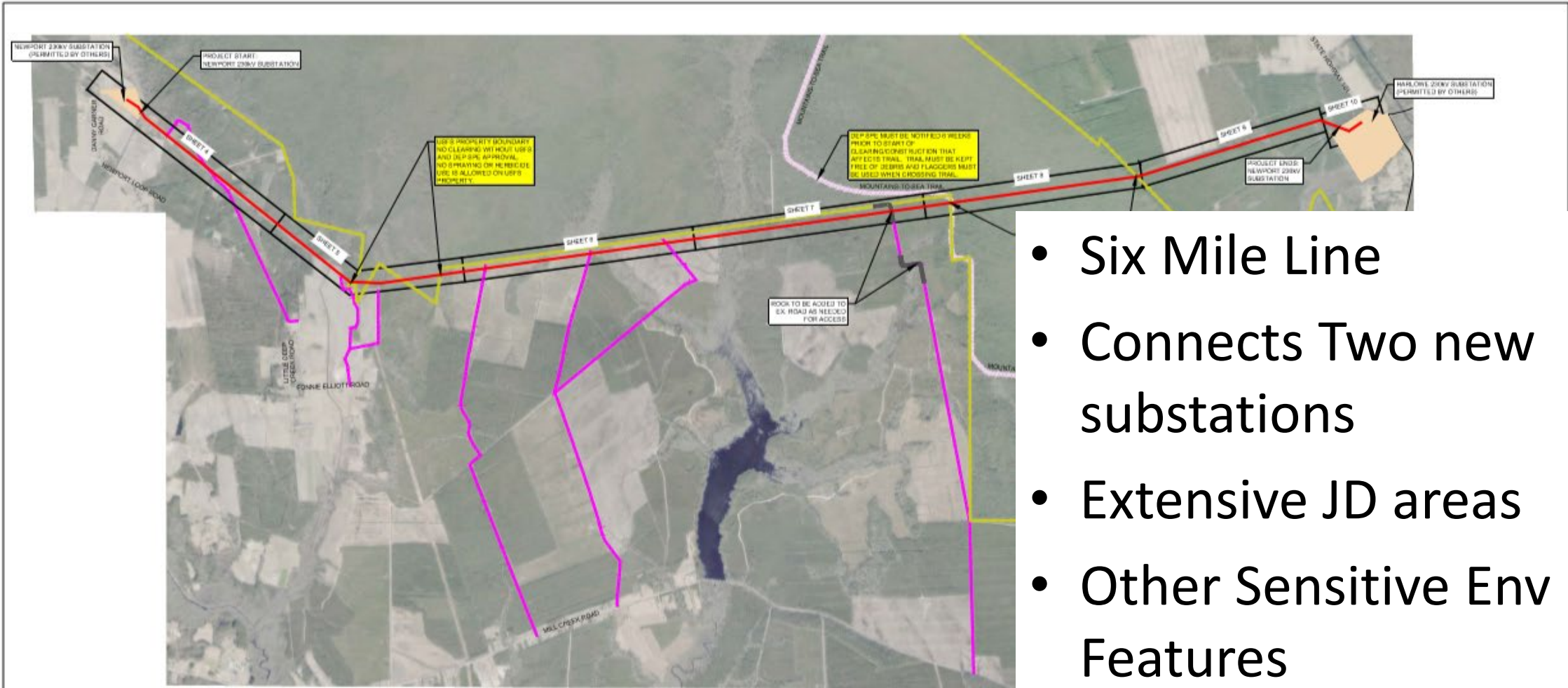


5 Access is a BIG CHALLENGE

- Timber or Composite Mats
 - Wetlands
 - Selected Access Roads
 - Selected Construction Entrances
- Equipment w/ Low Ground Pressure



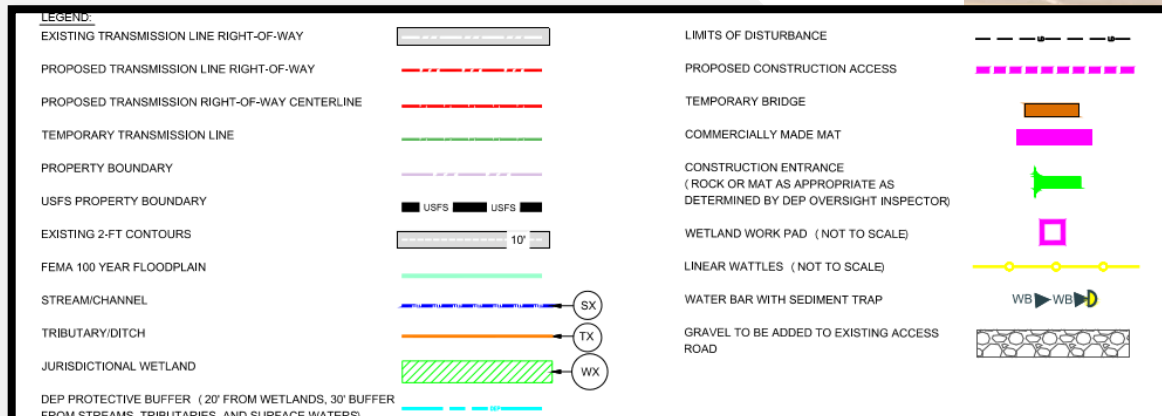
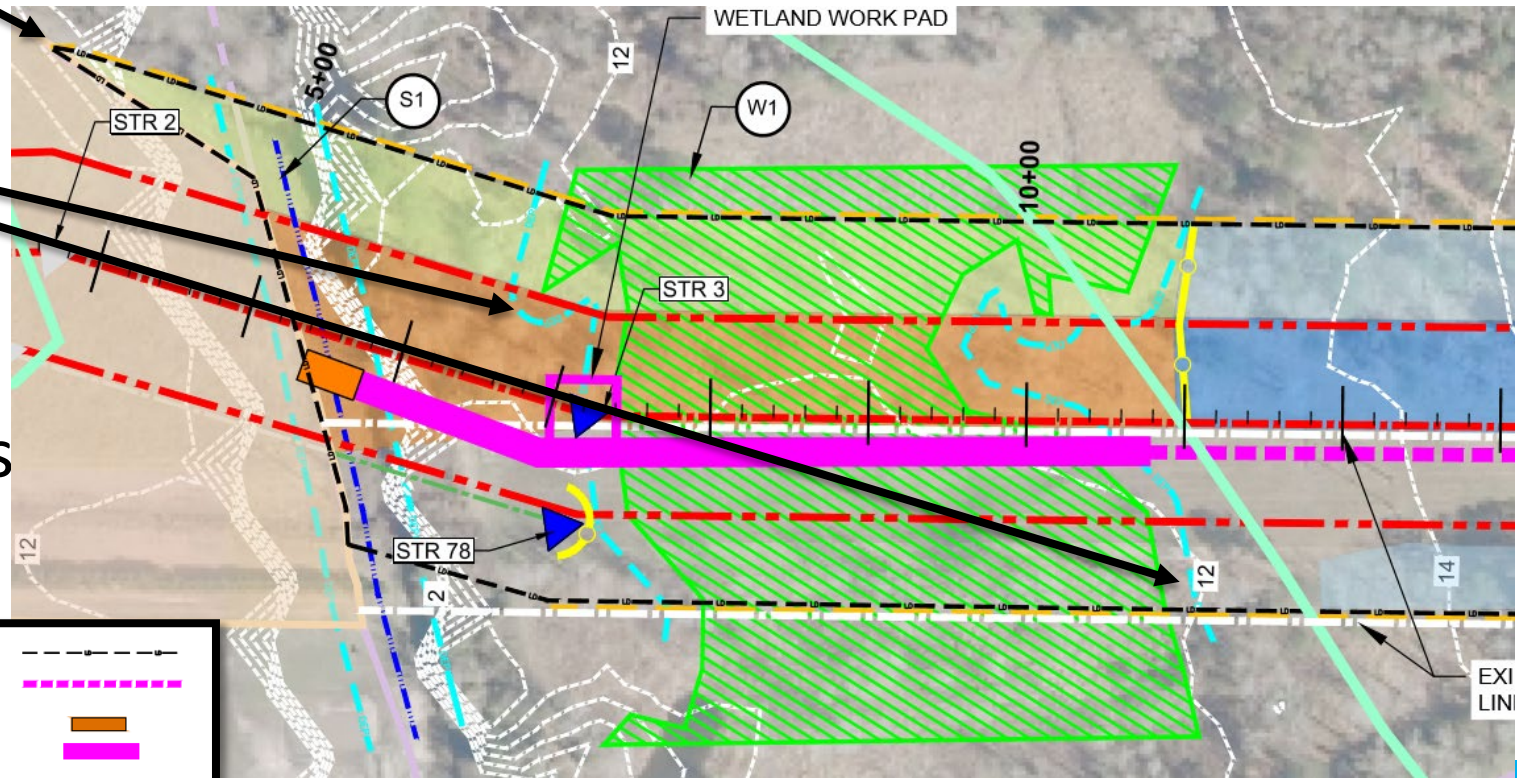
Check Out this ACCESS!



- Six Mile Line
- Connects Two new substations
- Extensive JD areas
- Other Sensitive Env Features

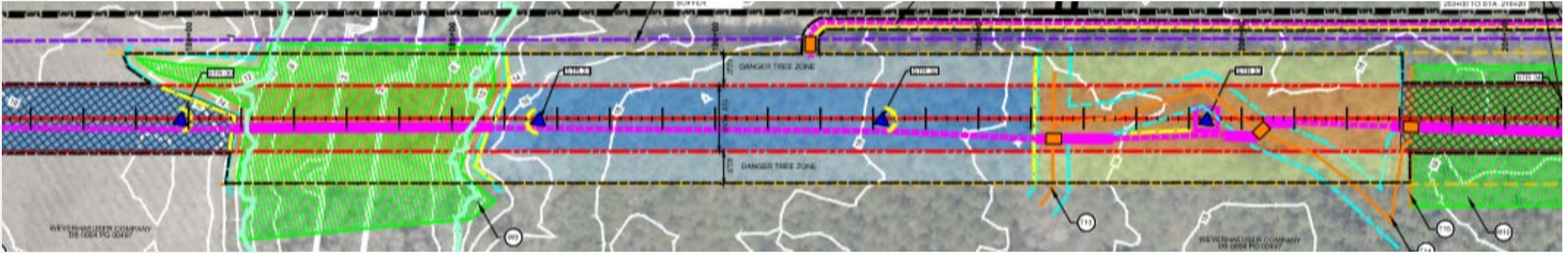
LOD & Environmental Buffer Flagging – HIGH PRIORITY

- LOD flagged
 - Protective Buffers Observed
- Off Sets:
- 20' Wetlands
 - 30' Non-regulated streams
 - 50' Regulated streams



Minimizing Ground Disturbance is CHALLENGING

Machine Clear – No Grub



MACHINE CLEAR, NO GRUB: ROW



MACHINE CLEAR, NO GRUB: ROW
(RECENTLY LOGGED - CLEAR TO
DEP SPEC)



MACHINE CLEAR, NO GRUB:
DANGER TREE ZONE



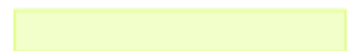
LOW IMPACT/SENSITIVE CLEARING,
NO GRUB : ROW



LOW IMPACT/SENSITIVE CLEARING,
NO GRUB: ROW (RECENTLY
LOGGED - CLEAR TO DEP SPEC)



LOW IMPACT/SENSITIVE CLEARING,
NO GRUB: DANGER TREE ZONE



Temporary Stream Crossing ISSUES

- Temporary Bridges
- Perimeter Wattle Protection



Perimeter Protection CHALLENGES

- Compost Logs
- Fiber Rolls-Wattles
- (Silt Fence/Compost Berms/Water bars/Diversions/Sumps/Pits/Basins)



Structure Installation ISSUES

- Augering Spoils
- Material Stockpiles



Laydown Yard CHALLENGES

- Permanent Stabilization
- Material Stockpiles
- E&SC Maintenance



ROW Stabilization ISSUES



- No grubbing helps!
- Mulch/chips groundcover
- S&M in Uplands
- Seeding no mulch in Wetlands

Excellent E&SC Plan Design MITIGATES MANY CHALLENGES

Matting and Bridge Schedule

MAT/BRIDGE ID	SHEET NO.	MATT/BRIDGE LENGTH
BRIDGE T1	6	15
BRIDGE T2	7	7.5
BRIDGE T2A	7	14
BRIDGE T4	8	10
BRIDGE T5	8	8
BRIDGE T6	8	10
BRIDGE T7	9	10
BRIDGE T8	9	10
BRIDGE T9	10	10
TOTAL		94.5

CONSTRUCTION ENTRANCE (CE)/ROADSIDE DITCH CROSSINGS

Sheet	Gravel Crossings	Mat Crossings	Total # Crossings
5	3 *		3
6	1 *		1
7	2		2
8	1 *		1
9	1		1
9		2	2
			10
Total Mats:		12 **	

NOTE:

- * SOME OF THE CONSTRUCTION ENTRANCES ARE BEYOND THE LIMITS OF THE PLAN SHEET INDICATED. HOWEVER THE CONSTRUCTION ENTRANCE IS WITHIN CLOSE VICINITY OF THE PLAN SHEET NOTED.
- ** ESTIMATE 9 MATS FOR EVERY MAT CE/CROSSING

Wattles Schedule

Structure /Wetland/Tributary	Sheet	LF
STR.236	5	70
STR.237	5	70
STR.235	5	70
STR.238	5	70
STR.234	5	70
STR.231 (West of Structure)	5	190
STR.229	6	70
STR.244	6	70
W1	6	355
STR.224	7	70
STR.249	7	70
STR.222	8	70
STR.251	8	70
STR.221	8	70
STR.252	8	70
STR.219	9	70
STR.254	9	70
STR.259	10	70
STR.212	10	70
STR.261	10	70
Laydown Area	10-A	1889
Total		3694

Wetland Work Pad

(Estimate 3,234 sf of Matting per Structure)

Structure	Sheet	SF
STR.246	7	3,234
STR.227	7	3,234
STR.247	7	3,234
STR.226	7	3,234
STR.248	7	3,234
STR.225	7	3,234
STR.250	8	3,234
STR.223	8	3,234
STR.256	9	3,234
STR.217	9	3,234
STR.257	9	3,234
STR.216	9	3,234
STR.258	10	3,234
STR.215	10	3,234
STR.214	10	3,234
STR.260	10	3,234
STR.213	10	3,234
N10	10	3,234
Total		58,212

Silt Fence

Sheet	LF	Outlet?
5	135	Yes

Excellent E&SC Plan Design MAKES A DIFFERENCE

RAEFORD 230kV TRANSMISSION LINE
CLEARING SUMMARY TABLE

LEFT OF CL		RIGHT OF CL		APPROXIMATE ACERAGE (Ac.)						DISPOSAL METHOD
BEGIN STATION	END STATION	BEGIN STATION	END STATION	RIGHT OF WAY CLEARING			DANGER TREE CLEARING **			
				MACHINE CLEAR	HAND CLEAR	NO CLEAR	MACHINE CLEAR	HAND CLEAR	NO CLEAR	
1406+48.79	1418+80.80	1406+48.79	1418+59.72	5.68						Chipping per PEC Spec. T4-15.1 Section 6.2.3
1406+48.79	1418+80.80	1406+48.79	1418+12.55				3.42			Chipping per PEC Spec. T4-15.1 Section 6.2.3
1418+80.80	1457+97.87	1418+59.72	1459+49.02			18.08				N/A
1457+27.47	1460+97.97	1459+49.02	1460+90.23				0.71			Chipping per PEC Spec. T4-15.1 Section 6.2.3
1457+97.87	1460+82.37	1459+49.02	1460+73.44	0.87						Chipping per PEC Spec. T4-15.1 Section 6.2.3
1460+97.97	1486+73.63	1460+90.23	1463+46.61					3.69		Hand Cutting per PEC Spec. T4-15.1 Section 6.2.3
-	-	1466+52.08	1468+39.55				0.28			Chipping per PEC Spec. T4-15.1 Section 6.2.3
-	-	1468+39.55	1483+62.86					2.28		Hand Cutting per PEC Spec. T4-15.1 Section 6.2.3
1460+82.37	1464+39.28	1460+73.44	1463+97.21		1.52					Hand Cutting per PEC Spec. T4-15.1 Section 6.2.3
1464+39.28	1465+23.43	1463+97.21	1466+40.27	0.74						Chipping per PEC Spec. T4-15.1 Section 6.2.3
1465+23.43	1486+15.94	1466+40.27	1483+96.68		8.67					Hand Cutting per PEC Spec. T4-15.1 Section 6.2.3
1486+73.63	1491+90.01	1483+62.86	1489+75.98				1.64			Chipping per PEC Spec. T4-15.1 Section 6.2.3
1491+90.01	1499+96.51	1489+75.98	1501+25.79					2.78		Hand Cutting per PEC Spec. T4-15.1 Section 6.2.3
1486+15.94	1490+02.14	1483+96.68	1490+96.00	2.43						Chipping per PEC Spec. T4-15.1 Section 6.2.3
1490+02.14	1499+94.67	1490+96.00	1499+64.38		4.16					Hand Cutting per PEC Spec. T4-15.1 Section 6.2.3
1499+96.51	1500+43.25	1501+25.79	1501+26.80				0.11			Chipping per PEC Spec. T4-15.1 Section 6.2.3
1499+94.67	1532+14.51	1499+64.38	1532+64.58			13.64				N/A
1531+23.13	1531+73.98	-	-				0.07			Chipping per PEC Spec. T4-15.1 Section 6.2.3
1532+14.51	1540+08.19	1532+64.58	1554+10.68		4.43					Hand Cutting per PEC Spec. T4-15.1 Section 6.2.3
1540+08.19	1543+48.50	-	-	0.76						Chipping per PEC Spec. T4-15.1 Section 6.2.3
1543+48.50	1552+85.09	-	-		0.99					Hand Cutting per PEC Spec. T4-15.1 Section 6.2.3
1531+73.98	1538+87.68	1533+85.34	1556+08.30					3.53		Hand Cutting per PEC Spec. T4-15.1 Section 6.2.3
1538+87.68	1540+25.71	-	-				0.22			Chipping per PEC Spec. T4-15.1 Section 6.2.3
1542+99.09	1543+48.87	-	-				0.07			Chipping per PEC Spec. T4-15.1 Section 6.2.3
1543+48.87	1552+62.89	-	-					0.59		Hand Cutting per PEC Spec. T4-15.1 Section 6.2.3
1552+62.89	1553+08.46						0.07			Chipping per PEC Spec. T4-15.1 Section 6.2.3
1552+85.09	1558+40.18	1554+10.68	1558+18.59	1.91						Chipping per PEC Spec. T4-15.1 Section 6.2.3
1558+40.18	1560+46.17	1558+18.59	1560+58.98		0.86					Hand Cutting per PEC Spec. T4-15.1 Section 6.2.3
1560+46.17	END	1560+58.98	END	2.13						Chipping per PEC Spec. T4-15.1 Section 6.2.3
1558+41.01	1560+42.00	1558+02.31	1560+74.72					0.69		Hand Cutting per PEC Spec. T4-15.1 Section 6.2.3
1560+42.00	1564+56.35	1560+74.72	END				0.93			Chipping per PEC Spec. T4-15.1 Section 6.2.3
1564+56.35	END	-	-					0.27		Hand Cutting per PEC Spec. T4-15.1 Section 6.2.3
TOTALS:				14.52	20.63	31.72	7.52	13.83		

TOTAL LIMITS OF DISTURBANCE = 101.48 ACRES

- INCLUDES CONSTRUCTION ACCESS ROADS
- INCLUDES HAND CLEARED AREAS
- INCLUDES LAYDOWN AREA

AREAS OF LIMITS OF DISTURBANCE
FOR CONSTRUCTION ACCESS ROADS

ACCESS ROAD #	LENGTH	SF	AC
5-A	2,015	24,180	0.56
5-B	1,340	16,080	0.37
6-A	4,206	50,472	1.16
6-B	1,974	23,688	0.54
7-A	197	2,364	0.05
7-B	450	5,400	0.00 *
8	1,190	14,280	0.33
9	255	3,060	0.07
Total		139,524	3.08

NOTE: WIDTH OF ACCESS ROAD LIMITS OF DISTURBANCE ASSUMED TO BE 12'.

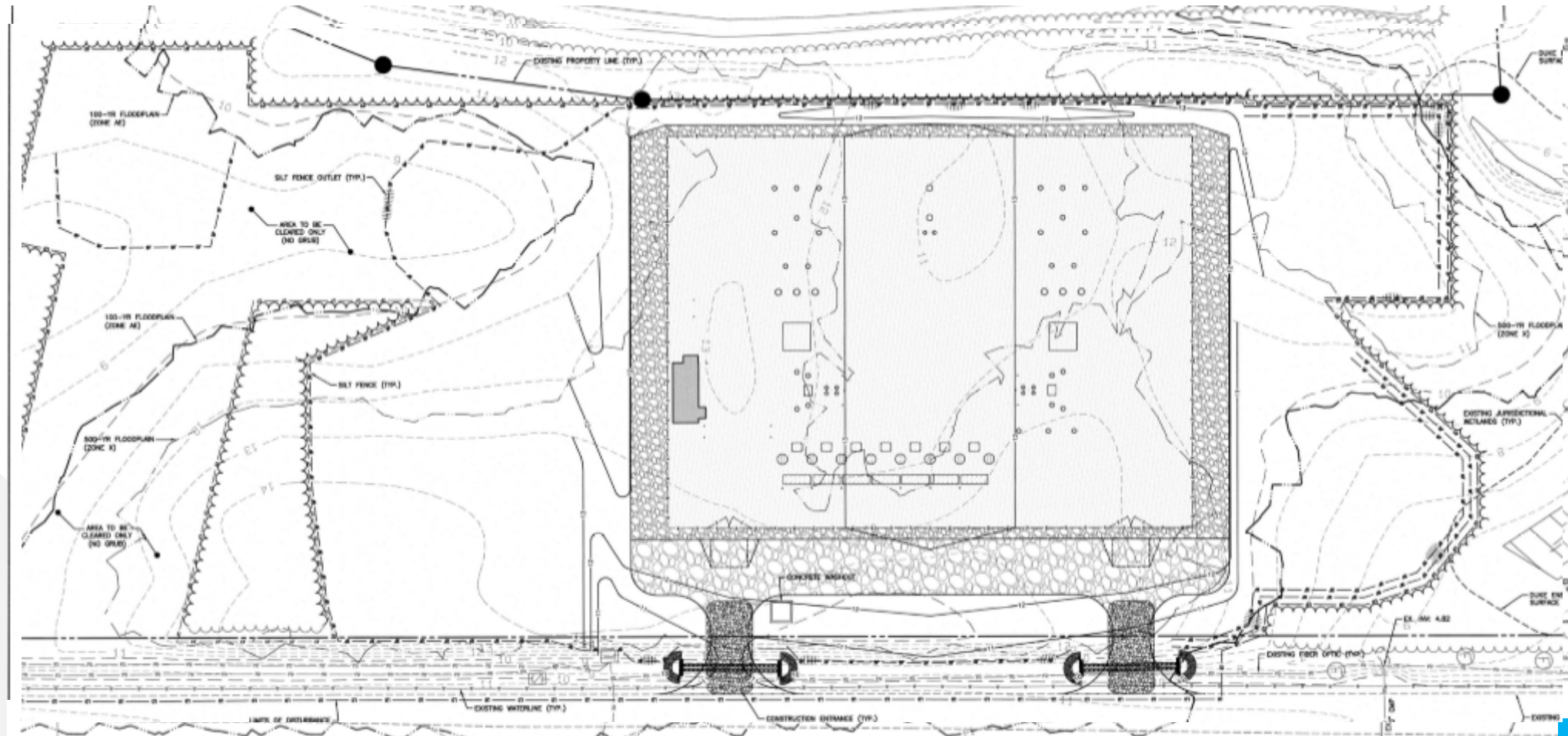
*LIMITS OF DISTURBANCE FOR ACCESS ROAD 7-B ARE INCLUDED IN EXISTING LOD.

Typical Substation Construction

- 5-15 acres of disturbance
- Totally graded site
- 4-5 E&SC Phases
- Skimmer Basins
- Post Construction SW features



Typical Substation E&SC Phasing



LOD & Environmental Buffer Flagging – SIMILAR HIGH PRIORITY Perimeter Protection ISSUES – HIGH RISK

- Skimmer Basins
 - Diversion
 - Berms/ Swales
 - Infiltration vs Surface Skimmer
- Double Row TSF in ESAs
- Robust Silt Fence Outlets



Site Stabilization/Mnt. CHALLENGES

- Temp/Perm Turf
- Material Stockpiles
- E&SC Maintenance; remob
- Transitioning...temp to final phase



Implementing Technology - PAM polyacrylamine

- Stormwater flow path
- Pumping/dewatering
- Temp/perm stabilization



Thanks to the E&SC Professionals in the Power Industry!!



- Divert clean water
- Slow down dirty water
- Treat it...
- Impound it...
- Settle it...
- Release it...
- Maintain it



Summary

- Follow, implement, update E&SC plan
- Attention to detail!
- Manage runoff
- Flocculants (PAM)
- Basins/Baffles
- Clean water diversions
- Limit amount and duration of exposure
- What is my buffer b/w work zone & watercourse?
- Maintain E&SC measures
- Achieve rapid stand of ground cover



IECA Annual Conference and Expo

February 23-26, 2020 Raleigh



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February 23-26, 2020 | Raleigh, NC

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- Dynamic Speakers
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- Professional Motivation

IECA 
International Erosion Control Association
REGION ONE
Protecting Soil and Water Resources

IECA Southeast Chapter 2020 Conference Scholarships

Industry Professionals and Students

December 19, 2019 Deadline

IECA Southeast Chapter

2020 Annual Conference Scholarship Industry Professionals Application

Purpose:
The purpose of the IECA Southeast Chapter Scholarship is to provide a \$500 scholarship for industry professionals to attend the 2020 IECA Annual Conference and Expo February 23-26 in Raleigh, North Carolina. Recipients of the scholarship can use the funds for conference registration, hotel and travel costs. Please fill out the questions below and review/submit the appropriate materials.

Criteria (all applicants must):

- Be an IECA Southeast Chapter member. To join, visit www.seciecas.org/bio/
- Be an industry professional

Attach:

- Resume
- Two letters of documentation of employment in the field of erosion/sedimentation control

Deadlines:

- Submit complete application via email no later than **Thursday, December 19, 2019**
- Scholarship recipients will be notified no later than Thursday, January 9, 2020

Contact Information:

Name: _____

Company: _____

IECA Southeast Chapter

Conference Scholarship Student Application

Purpose:
The purpose of the IECA Southeast Chapter Scholarship is to provide a \$500 scholarship for students to attend the 2020 IECA Annual Conference and Expo February 23-26 in Raleigh, North Carolina. Recipients of the scholarship can use the funds for conference registration, hotel and travel costs. Please fill out the questions below and review/submit the appropriate materials.

Criteria (all applicants must):

- Be an IECA Southeast Chapter member. To join, visit www.seciecas.org/bio/
- Be a student

Attach:

- Resume
- Two letters of documentation of enrollment in the field of erosion/sedimentation control

Deadlines:

- Submit complete application via email no later than **Thursday, December 19, 2019**
- Scholarship recipients will be notified no later than Thursday, January 9, 2020

Contact Information:

Name: _____

Company: _____

www.secieca.org

Questions?

North Carolina Erosion and Sediment Control Design Workshop

December 3, 2019



Please Remember to Complete the End of Workshop Evaluation
(separate from the PDH sponsor evaluation)

bit.ly/Raleigh2019-ESC-Eval

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