(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowne	r's Name: _	Duke Ener	rgy Carolinas	, LLC	Date: _	4/09/2	009	Stream	вv
County: _	Cherokee	County	Prepared by: _	Krister	n Roop/	Jason	Isbanio	oly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

	102 (2204222 11002 11002		
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.
cutting		floodplain.	_
10	7	3	1

SCORE: 8

2. Hydrology Alteration (flooding is out of bank flooding)

2. Hydrology Alteratio	in thooding is out of Dai	ik nooding)	•
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.
not incised.			
10	7	3	1

SCORE: 6

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation includes hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1

7. Dank Stability			
Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 7

5. Water Appearance

or water rippeurance			
Very clear; or clear but tea colored; objects visible at depths of 3-6 feet. No noticeable film on surface or submerged objects.	Occasionally cloudy, especially after storm event; but clears rapidly; objects visible at depth of 1.5-3 feet; may have slight green color.	Considerable cloudiness most of the time; objects visible to depth of .5-1.5 feet; submerged objects with heavy green film, or moderate odor of ammonia.	Very turbid or muddy appearance most of the time; objects visible to depth <.5 feet; heavy coat of film on surface or submerged objects; strong odor of ammonia.
10	7	3	1

SCORE: 7

6. Nutrient Enrichment

or realisate Darrement			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 9

7. Barriers to Fish Movement

7. Dairiers to Fish wide entitle					
No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.	
10	8	5	3	1	

SCORE:

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover
				types present.
10	8	5	3	1

SCORE:

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

Coldwater Fishery (Pickens, Oconee, Greenville Counties above US Hwy 11)

		· /	
>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.
shaded and upstream	>75% shaded in reach and		
2-3 miles generally	2-3 miles upstream poorly		
shaded.	shaded.		
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: __7__

11. Manure Presence

No livestock	Evidence of livestock access	Occasional manure in	Extensive amount of
accessible to stream,	to riparian area.	stream; waste storage	manure on banks or in
riparian area, or	İ	structure located in	stream.
floodplain.		floodplain.	
10	5	3	1

SCORE:

AVERAGE SCORE (TOTAL SCORE / 11): __7.1

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

6.0 Poor
 6.1 - 7.4 Fair
 7.5 - 8.9 Good
 > 9.0 Excellent

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landown	er's Name: _	Duke Ener	gy Carolinas	LLC	Date: _	4/09/2	009 .		Stream	BW
County:	Cherokee	County	Prepared by: _	Krister	n Roop/	Jason	Isban	io	ly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

	21 Oliver Collection (was quare to confine to Bone and at tende a time the challes which)					
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down			
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,			
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with			
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.			
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent			
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.			
cutting		floodplain.	-			
10	7	3	1			

SCORE: 6

2. Hydrology Alteration (flooding is out of bank flooding)

Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.
not incised.			
10	7	3	1

SCORE: __4

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation includes hardwood trees, mixed shrubs, and native herbaceous species)

Natural reportation	Matural	Matural manatation	Maranal annual and a second as
Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
100	2	-	
10	8	1 5	ļ l

77 Dulik Stubility			
Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 6

5. Water Appearance

3. Water Appearance			
Very clear; or clear but tea	Occasionally cloudy,	Considerable	Very turbid or muddy
colored; objects visible at	especially after storm	cloudiness most of the	appearance most of the
depths of 3-6 feet. No	event; but clears	time; objects visible to	time; objects visible to
noticeable film on surface	rapidly; objects	depth of .5-1.5 feet;	depth <.5 feet; heavy coat
or submerged objects.	visible at depth of	submerged objects with	of film on surface or
	1.5-3 feet; may have	heavy green film, or	submerged objects; strong
	slight green color.	moderate odor of	odor of ammonia.
		ammonia.	
10	7	3	1

SCORE: 7

6. Nutrient Enrichment

o. Ituticut Emilenment			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: <u>10</u>

7. Barriers to Fish Movement

TO DUILING TO LIGHT TO COMMENT					
No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.	
10	8	5	3	1	

SCORE: ____

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover
				types present.
10	8	5	3	1

SCORE:

9. Pools

7. T UUIS			
Deep and shallow pools abundant (>3); pools at least 5 ft.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
deep.	7	2	1
10	1)	1 1

Coldwater Fishery	/D: 1 ^	~ ~ ***	~	TIO TT 441
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COIGNATEL L'ISHELY	II ICKCHS. O	CONCC. OF CCHAIR	C COUNITIES ADDITE	

>75% of water surface shaded and upstream 2-3 miles generally shaded.	>50% shaded in reach; or >75% shaded in reach and 2-3 miles upstream poorly shaded.	20-50% shaded.	<20% shaded in reach.
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1 , ,

SCORE: 6

11. Manure Presence

No livestock accessible to stream, riparian area, or floodplain.	Evidence of livestock access to riparian area.	Occasional manure in stream; waste storage structure located in floodplain.	Extensive amount of manure on banks or in stream.
Hoodplain.		1100apiain.	
10	5	3	1

SCORE:

AVERAGE SCORE (TOTAL SCORE / 11): 6.1

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landown	er's Name:	Duke I	Energy Carolinas,	LLC 1	Date:	4/09/20	009	Stream	вх
County:	Cherokee	County	Prepared by:	Kristen	Roop/	Jáson	Isbani	oly -	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Chamber Condit	1. Channel Condition (adequate noodplain is generally at least 2 times the channel width)					
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down			
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,			
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with			
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.			
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent			
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.			
cutting		floodplain.				
10	7	3	1			

SCORE: 6

2. Hydrology Alteration (flooding is out of bank flooding)

Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.
not incised.			
10	7	3	1

SCORE: 3

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation includes hardwood trees, mixed shrubs, and native herbaceous species)

	mara wood troop minea and about the near to her baccous operios,					
Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <			
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.			
feet on each side.	feet on each side.	on each side.				
10	8	5	1			

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 7

5. Water Appearance

5. water Appearance			
Very clear; or clear but tea colored; objects visible at depths of 3-6 feet. No noticeable film on surface or submerged objects.	Occasionally cloudy, especially after storm event; but clears rapidly; objects visible at depth of 1.5-3 feet; may have slight green color.	Considerable cloudiness most of the time; objects visible to depth of .5-1.5 feet; submerged objects with heavy green film, or moderate odor of ammonia.	Very turbid or muddy appearance most of the time; objects visible to depth <.5 feet; heavy coat of film on surface or submerged objects; strong odor of ammonia.
10	7	3	1

SCORE: 6

6. Nutrient Enrichment

o. Nutrient Enrichment			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 9

7. Barriers to Fish Movement

No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

SCORE: ____

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover
				types present.
10	8	5	3	1

SCORE:

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

Coldwater Fishery (Pickens, Oconee, Greenville Counties abov	e US Hw	y 11)
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>75% of water surface shaded and upstream	>50% shaded in reach; or >75% shaded in reach and	20-50% shaded.	<20% shaded in reach.
2-3 miles generally	2-3 miles upstream poorly		
shaded.	shaded.		
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 6

11. Manure Presence

No livestock accessible to stream, riparian area, or floodplain.	Evidence of livestock access to riparian area.	Occasional manure in stream; waste storage structure located in floodplain.	Extensive amount of manure on banks or in stream.
10	5	3	1

SCORE:

AVERAGE SCORE (TOTAL SCORE / 11): __6.0

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner's	Name: _	Duke Energ	y Carolinas	, LLC	Date: _	4/09/2	009	Stream	BY
County:C	nerokee	County	Prepared by: _	Kriste	n Roop/	Jason	Isbanic	oly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in **completing** assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull
 flow. If the flow is contained within the channel at two times the maximum depth, then the
 channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.
cutting		floodplain.	
10	7	3	1

SCORE: 7

2. Hydrology Alteration (flooding is out of bank flooding)

2. Hydrology Alteratio	in (mooding is out of Dai	ik nooding <i>j</i>	
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.
not incised.			
10	7	3	1

SCORE: 7

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation includes hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1

10 2022 0000 1210)			
Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 6

5. Water Appearance

Very clear; or clear but tea colored; objects visible at depths of 3-6 feet. No noticeable film on surface or submerged objects.	Occasionally cloudy, especially after storm event; but clears rapidly; objects visible at depth of 1.5-3 feet; may have slight green color.	Considerable cloudiness most of the time; objects visible to depth of .5-1.5 feet; submerged objects with heavy green film, or moderate odor of ammonia.	Very turbid or muddy appearance most of the time; objects visible to depth <.5 feet; heavy coat of film on surface or submerged objects; strong odor of ammonia.
10	7	3	1

SCORE: __7___

6. Nutrient Enrichment

Or A tuesteme Chinement			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1
SCORE: 8			

7. Barriers to Fish Movement							
No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.			
10	8	5	3	1			

SCORE: 7

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover types present.
10	8	5	3	1

SCORE: 4

9. Pools

2. Z 0010			
Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

_				_			_	_		
C	aldwater	Richery	(Pickens.	Ocones	Creenvil	le Cai	untice :	ahova	HC Hw	v 11)

>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.
shaded and upstream	>75% shaded in reach and		
2-3 miles generally	2-3 miles upstream poorly		
shaded.	shaded.		
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 9

11. Manure Presence

No livestock accessible to stream,	Evidence of livestock access to riparian area.	Occasional manure in stream; waste storage structure located in	Extensive amount of manure on banks or in
riparian area, or floodplain.		floodplain.	stream.
10	5	3	1

SCORE:

AVERAGE SCORE (TOTAL SCORE / 11): 6.7

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

6.0 Poor
 6.1 - 7.4 Fair
 7.5 - 8.9 Good
 > 9.0 Excellent

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowne	r's Name: _	Duke Ene	rgy Carolinas	, LLC	Date: _	4/09/2	009	Stream	ВZ
County: _	Cherokee	County	Prepared by: _	Krister	n Roop/	Jason	Isbani	oly -	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

11 Olivario Collection (accordante nocupitata is generally at least 2 times the channel width)					
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down		
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,		
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with		
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.		
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent		
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.		
cutting		floodplain.	-		
10	7	3	1		

SCORE: 8

2. Hydrology Alteration (flooding is out of bank flooding)

2. Hydrology michaelo	2: Hydrology riteration (modding is out of bank modding)								
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply						
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent						
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam						
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood						
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have						
structures limiting the	although present, do	available low flow	caused severe loss of low flow						
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on						
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.						
not incised.									
10	7	3	1						

SCORE: 8

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation includes hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 7

5. Water Appearance

5. Water Appearance			
Very clear; or clear but tea colored; objects visible at depths of 3-6 feet. No noticeable film on surface or submerged objects.	Occasionally cloudy, especially after storm event; but clears rapidly; objects visible at depth of 1.5-3 feet; may have slight green color.	Considerable cloudiness most of the time; objects visible to depth of .5-1.5 feet; submerged objects with heavy green film, or moderate odor of ammonia.	Very turbid or muddy appearance most of the time; objects visible to depth <.5 feet; heavy coat of film on surface or submerged objects; strong odor of ammonia.
10	7	3	1

SCORE: 8

6. Nutrient Enrichment

o. Puttient Emilenment			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 9

7. Barriers to Fish Movement

No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

SCORE: 8

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover
				types present.
10	8	5	3	1

SCORE: 6

9. Pools

71 T 0013			
Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

SCORE: __7___

Coldwater Fisher	(Pickens	, Oconee.	, Greenville Counties above US Hwy	11)

>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.
shaded and upstream	>75% shaded in reach and		
2-3 miles generally	2-3 miles upstream poorly		•
shaded.	shaded.		
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

	25-90% of reach shaded.	>90% shaded; full canopy.	 <25% of surface shaded in reach.]
Γ	10	7	1	1

SCORE: 10

11. Manure Presence

No livestock accessible to stream, riparian area, or floodplain.	Evidence of livestock access to riparian area.	Occasional manure in stream; waste storage structure located in floodplain.	Extensive amount of manure on banks or in stream.
10	5	3	1

SCORE: ____

AVERAGE SCORE (TOTAL SCORE / 11): 8.1

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner's Name:	Duke	Energy	Carolinas,	LLC	Date: _	3/30/2	009	Stream	С
County: Union Co	unty	Pro	epared by:	Krister	Roop/	Jason	Isbanio	ly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Channel Condition (adequate hoodplain is generally at least 2 times the channel width)						
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down			
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,			
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with			
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.			
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent			
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.			
cutting		floodplain.				
10	7	3	1			

SCORE: 8

2. Hydrology Alteration (flooding is out of bank flooding)

2. Hydrology Aite	ration (nooding is out or bar	uk nooding)	
Flooding out of ban	k Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or	2.0 once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals,	no incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting th		available low flow	caused severe loss of low flow
stream's access to the	ne not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel	l is habitat for biota.		a 1 year rain event or less.
not incised.			
10	7	3	1

SCORE: 2

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 6

5. Water Appearance

or water representance			
Very clear; or clear but tea colored; objects visible at depths of 3-6 feet. No noticeable film on surface or submerged objects.	Occasionally cloudy, especially after storm event; but clears rapidly; objects visible at depth of 1.5-3 feet; may have	Considerable cloudiness most of the time; objects visible to depth of .5-1.5 feet; submerged objects with heavy green film, or	Very turbid or muddy appearance most of the time; objects visible to depth <.5 feet; heavy coat of film on surface or submerged objects; strong
	slight green color.	moderate odor of ammonia.	odor of ammonia.
		ammoma.	
10] 7] 3	_ 1

SCORE: 8

6. Nutrient Enrichment

Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 10

7. Barriers to Fish Movement

77 2002 2 1012	I.IO. CIMOMC			
No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

SCORE: N/A

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

	Douldel 5/ CODDI	e, mines, anacical bi	inns, thick foot mues,		
>7 cover types 6-7 cover types		4-5 cover types	2-3 cover types	1 or less cover	
					types present.
	10	8	5	3	1

SCORE: N/A

9. Pools

> 1 0 0 to			
Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

Coldwater Fishery (Pickens, Oconee, Greenville Counties above US Hwy 11)

>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.
shaded and upstream	>75% shaded in reach and		, in the second
2-3 miles generally	2-3 miles upstream poorly		
shaded.	shaded.		
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 7

11. Manure Presence

No livestock accessible to stream, riparian area, or	Evidence of livestock access to riparian area.	stream; waste storage structure located in	Extensive amount of manure on banks or in stream.
floodplain.		floodplain.	
10	5	3	1

SCORE: N/A

AVERAGE SCORE (TOTAL SCORE / 11): 6.8

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landown	er's Name: _	Duke Ene	ergy Carolinas	, LLC	_Date: _	4/09/2	009	Stream	CA
County:	Cherokee	County	Prepared by: _	Kriste	n Roop/	Jason	Isbanio	ply	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1: Channel Condition (adequate hoodplain is generally at least 2 times the channel width)						
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down			
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,			
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with			
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.			
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent			
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.			
cutting		floodplain.				
10	7	3	1			

SCORE: 6

2. Hydrology Alteration (flooding is out of bank flooding)

2. Hydrology Alteratio	in (nooding is out of Dai	ik nooding)	
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.
not incised.		,	
10	7	3	1

SCORE: 4

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 8

5. Water Appearance

or water rippearance			
Very clear; or clear but tea colored; objects visible at depths of 3-6 feet. No noticeable film on surface or submerged objects.	Occasionally cloudy, especially after storm event; but clears rapidly; objects visible at depth of 1.5-3 feet; may have slight green color.	Considerable cloudiness most of the time; objects visible to depth of .5-1.5 feet; submerged objects with heavy green film, or moderate odor of ammonia.	Very turbid or muddy appearance most of the time; objects visible to depth <.5 feet; heavy coat of film on surface or submerged objects; strong odor of ammonia.
10	7	3	1

SCORE: 8

6. Nutrient Enrichment

Of 1 det lent Bullenment			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 10

7. Barriers to Fish Movement

7. Dailiels to Fish	Movement			
No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

SCORE: ____

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover types present.
10	8	5	3	1

SCORE: ____

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10			
10	77	3	1 .

Coldwater Fishery (Pickens, Oconee, Greenville Counties above US Hwy 11)

>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.			
shaded and upstream	>75% shaded in reach and					
2-3 miles generally	2-3 miles upstream poorly					
shaded.	shaded.					
10	7	3	1			

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 6

11. Manure Presence

No livestock	Evidence of livestock access	Occasional manure in	Extensive amount of
accessible to stream,	to riparian area.	stream; waste storage	manure on banks or in
riparian area, or		structure located in	stream.
floodplain.		floodplain.	
10	5	3	1

SCORE:

AVERAGE SCORE (TOTAL SCORE / 11): 6.4

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner's Name:	Duke Ener	gy Carolinas	s, LLC	Date: _	4/15/2	009	Stream	СВ
County: Cherokee	County	Prepared by:	Kriste	n Roop/	Jason	Isbanio	oly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down
no structures, dikes. No	alteration, but with significant recovery of channel and	of the reach with riprap and/or channelization.	cutting or widening,
evidence of down	banks. Any dikes or levees	Excess aggradation;	>50% of the reach with riprap or channelization.
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent
excessive lateral cutting	to an adequate floodplain.	or levees restrict floodplain.	access to the floodplain.
10	7	3	1

SCORE: 7

2. Hydrology Alteration (flooding is out of bank flooding)

2. Hydrology Alteratio	2. Hydrology Arteration (nooding is out or bank nooding)				
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply		
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent		
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam		
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood		
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have		
structures limiting the	although present, do	available low flow	caused severe loss of low flow		
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on		
floodplain. Channel is	habitat for biota.	·	a 1 year rain event or less.		
not incised.					
10	7	3	1		

SCORE: 8

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation includes hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	· ·
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 5

5. Water Appearance

5. Water Appearance			
Very clear; or clear but tea colored; objects visible at depths of 3-6 feet. No noticeable film on surface or submerged objects.	Occasionally cloudy, especially after storm event; but clears rapidly; objects visible at depth of 1.5-3 feet; may have slight green color.	Considerable cloudiness most of the time; objects visible to depth of .5-1.5 feet; submerged objects with heavy green film, or moderate odor of ammonia.	Very turbid or muddy appearance most of the time; objects visible to depth <.5 feet; heavy coat of film on surface or submerged objects; strong odor of ammonia.
10	7	3	1

SCORE: 1

6. Nutrient Enrichment

o. Muthent Entitenment			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 7_

7. Barriers to Fish Movement

1	barriers; ural drops <1 t.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
	10	8	5	3	1

SCORE: 8

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover
				types present.
10	8	5	3	1

SCORE: 6

9. Pools

7. I 0013			
Deep and shallow pools abundant (>3);	Pools present, but not abundant (<3); pools at least	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
pools at least 5 ft.	3 ft. deep.	Sidnes, 5 in deep.	1000000
10	7	3	1
10	,	,	1 1

>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.
shaded and upstream	>75% shaded in reach and		
2-3 miles generally	2-3 miles upstream poorly		
shaded.	shaded.		
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 8

11. Manure Presence

No livestock accessible to stream, riparian area, or floodplain.	Evidence of livestock access to riparian area.	Occasional manure in stream; waste storage structure located in floodplain.	Extensive amount of manure on banks or in stream.
10	5	3	1

SCORE:

AVERAGE SCORE (TOTAL SCORE / 11): 6.4

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner's Name: _	Duke Energ	gy Carolinas	s, LLC	Date: _	4/15/20	009	Stream	CC
County:Cherokee	County	Prepared by: _	Kristen	Roop/	Jason	Isbanio	oly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

	ion (naedanie nooabiam is Bene	Turing at reade a crimes the t	manuer without
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.
cutting		floodplain.	
10	7	3	1

SCORE: 4

2. Hydrology Alteration (flooding is out of bank flooding)

2. Hydrology Alteratio	in (Hooding is out of Dai	ik nooding)	
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.
not incised.			
10	7	3	1

SCORE: 3

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation includes hardwood trees, mixed shrubs, and native herbaceous species)

	Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
	extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
	feet on each side.	feet on each side.	on each side.	10 1000 011 011011 01101
Ī	10	8	5	1

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 5

5. Water Appearance

3. Water Appearance			
Very clear; or clear but tea	Occasionally cloudy,	Considerable	Very turbid or muddy
colored; objects visible at	especially after storm	cloudiness most of the	appearance most of the
depths of 3-6 feet. No	event; but clears	time; objects visible to	time; objects visible to
noticeable film on surface	rapidly; objects	depth of .5-1.5 feet;	depth <.5 feet; heavy coat
or submerged objects.	visible at depth of	submerged objects with	of film on surface or
	1.5-3 feet; may have	heavy green film, or	submerged objects; strong
,	slight green color.	moderate odor of	odor of ammonia.
		ammonia.	
10	7	3	1

SCORE: 6

6. Nutrient Enrichment

Of 1 delicate Barrionide			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 9

7. Barriers to Fish Movement

7. Daniel to Fish	MOVCHICH			
No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

SCORE:

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types 2-3 cover types		1 or less cover
				types present.
10	8	5	3	1

SCORE:

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

Coldwater Fishery	(Pickens, Oc	onee, Greenville	Counties above	ve US Hwv 11)

	the state of the s					
>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.			
shaded and upstream	>75% shaded in reach and					
2-3 miles generally	2-3 miles upstream poorly					
shaded.	shaded.					
10	7	3	1			

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 7

11. Manure Presence

No livestock accessible to stream, riparian area, or	Evidence of livestock access to riparian area.	stream; waste storage structure located in	Extensive amount of manure on banks or in stream.
floodplain.		floodplain.	
10	5	3	1

SCORE:

AVERAGE SCORE (TOTAL SCORE / 11): 5.4

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner's Name: _	Duke Energ	gy Carolinas	LLC	Date: _	4/15/20	009	Stream	CD
County:Cherokee	County	Prepared by: _	Krister	n Roop/	/ Jason	Isbanio	oly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

	(
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.
cutting		floodplain.	
10	7	3	1

SCORE: 2

2. Hydrology Alteration (flooding is out of bank flooding)

2. Hydrology Alteratio	2. Hydrology Arteration (modding is out or bank modding)						
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply				
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent				
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam				
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood				
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have				
structures limiting the	although present, do	available low flow	caused severe loss of low flow				
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on				
floodplain. Channel is	habitat for biota.	•	a 1 year rain event or less.				
not incised.							
10	7	3	1				

SCORE: 3

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation includes hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 1

5. Water Appearance

 o. water Appearance			
Very clear; or clear but tea colored; objects visible at depths of 3-6 feet. No noticeable film on surface or submerged objects.	Occasionally cloudy, especially after storm event; but clears rapidly; objects visible at depth of 1.5-3 feet; may have slight green color.	Considerable cloudiness most of the time; objects visible to depth of .5-1.5 feet; submerged objects with heavy green film, or moderate odor of ammonia.	Very turbid or muddy appearance most of the time; objects visible to depth <.5 feet; heavy coat of film on surface or submerged objects; strong odor of ammonia.
10	7	3	1

SCORE: 2

6. Nutrient Enrichment

_	o. Nutrient Enrichment			
	Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
	10	7	3	1

SCORE: 4

7. Barriers to Fish Movement

77 During to 1 Ion 1/10 Chiefe					
No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.	
10	8	5	3	1	

SCORE:

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover
,				types present.
10	8	5	3	1

SCORE:

9. Pools

7. I 0013			
Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

Coldwater Fishery (Pickens, Oconee, Greenville Counties above US Hwy 11)

>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.		
shaded and upstream	>75% shaded in reach and				
2-3 miles generally	2-3 miles upstream poorly				
shaded.	shaded.				
10	7	3	1		

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: __3__

11. Manure Presence

SCORE:

AVERAGE SCORE (TOTAL SCORE / 11): 2.3

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner	's Name: _	Duke	Energy	Carolinas	LLC	Date: _	4/15/2	009	Stream	CE
County: _	Cherokee	Count	Pr	epared by: _	Krister	n Roop/	Jason	Isbanic	oly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull
 flow. If the flow is contained within the channel at two times the maximum depth, then the
 channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

	ton (acceptante neceptant is gene	Total of reside a cities of the	manifet withthis
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.
cutting		floodplain.	
10	7	3	1

SCORE: 9

2. Hydrology Alteration (flooding is out of bank flooding)

Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.
not incised.			
10	7	3	1

SCORE: 6

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	•
10	8	5	1

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 7

5. Water Appearance

5. water Appearance			
Very clear; or clear but tea colored; objects visible at depths of 3-6 feet. No noticeable film on surface or submerged objects.	Occasionally cloudy, especially after storm event; but clears rapidly; objects visible at depth of 1.5-3 feet; may have slight green color.	Considerable cloudiness most of the time; objects visible to depth of .5-1.5 feet; submerged objects with heavy green film, or moderate odor of ammonia.	Very turbid or muddy appearance most of the time; objects visible to depth <.5 feet; heavy coat of film on surface or submerged objects; strong odor of ammonia.
10	7	3	1

SCORE: 6

6. Nutrient Enrichment

v. Natificat Entichment			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 9

7. Barriers to Fish Movement

No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

SCORE: ____

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover
				types present.
10	8	5	3	1

SCORE:

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

Coldwata	r Fichary	(Dickone	Oconoo	Croonville	Counties	ahava III	S Hwv 11)
Culuwate	1 1 12HC1 4	II ICKCHS.	Oconec.	OI CCH AIRC	Countries	abuve U	3 11 W Y 11 I

>75% of water surface shaded and upstream 2-3 miles generally shaded.	>50% shaded in reach; or >75% shaded in reach and 2-3 miles upstream poorly shaded.	20-50% shaded.	<20% shaded in reach.
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 7

11. Manure Presence

No livestock accessible to stream, riparian area, or floodplain.	Evidence of livestock access to riparian area.	Occasional manure in stream; waste storage structure located in floodplain.	Extensive amount of manure on banks or in stream.
10	5	3	1

SCORE:

AVERAGE SCORE (TOTAL SCORE / 11): __7.3

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

6.0 Poor
 6.1 - 7.4 Fair
 7.5 - 8.9 Good
 > 9.0 Excellent

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landown	er's Name: _	Duke Ene	ergy Carolinas	LLC	Date: _	4/15/2009	_ Stream	CF
County:	Cherokee	County	_ Prepared by: _	Kriste	n Roop	/ Jason Isbani	oly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

21 0 20 20 20 20 20 20 20 20 20 20 20 20 2	TOTAL CHARGE THE COMPANY IS BOME	turny are rouse a times the t	manufact withten,
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.
cutting	<u></u>	floodplain.	
10	7	3	1

SCORE: 4

2. Hydrology Alteration (flooding is out of bank flooding)

2. Hydrology Alteratio	2. Hydrology Arter ation (nooding is out of Dank nooding)						
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply				
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent				
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam				
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood				
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have				
structures limiting the	although present, do	available low flow	caused severe loss of low flow				
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on				
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.				
not incised.							
10	7	3	1				

SCORE: 2

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1

SCORE: <u>10</u>

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 6

5. Water Appearance

3. Water Appearance			
Very clear; or clear but tea	Occasionally cloudy,	Considerable	Very turbid or muddy
colored; objects visible at	especially after storm	cloudiness most of the	appearance most of the
depths of 3-6 feet. No	event; but clears	time; objects visible to	time; objects visible to
noticeable film on surface	rapidly; objects	depth of .5-1.5 feet;	depth <.5 feet; heavy coat
or submerged objects.	visible at depth of	submerged objects with	of film on surface or
	1.5-3 feet; may have	heavy green film, or	submerged objects; strong
	slight green color.	moderate odor of	odor of ammonia.
		ammonia.	
10	_ 7	3	1

SCORE: 6

6. Nutrient Enrichment

	o. Nutrent Entienment			
	Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
L	10	7	3	1

SCORE: 10

7. Barriers to Fish Movement

No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	. 1

SCORE: ____

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover
				types present.
10	8	5	3	1

SCORE:

9. Pools

7. I 0/10				
Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.	
10	7	3	1	

Coldwater Fishery (Pickens, Oconee, Greenville Counties above US Hwy 11)

ſ	>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.
ļ	shaded and upstream	>75% shaded in reach and		
١	2-3 miles generally	2-3 miles upstream poorly		
١	shaded.	shaded.		
ĺ	10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: _ 7

11. Manure Presence

No livestock accessible to stream,	Evidence of livestock access to riparian area.	Occasional manure in stream; waste storage	Extensive amount of manure on banks or in
riparian area, or		structure located in	stream.
floodplain.		floodplain.	
10	5	3	. 1

SCORE: ____

AVERAGE SCORE (TOTAL SCORE / 11): 6.1

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner	's Name: _	Duke En	ergy Carolinas	, LLC	Date: _	4/15/2	009	Stream	CG
County: _	Cherokee	County	Prepared by: _	Krister	n Roop/	Jason	Isbanic	ly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull
 flow. If the flow is contained within the channel at two times the maximum depth, then the
 channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.
cutting		floodplain.	
10	7	3	1

SCORE: 3

2. Hydrology Alteration (flooding is out of bank flooding)

2. Hydrology Alteratio	II (HOUGHE IS OUT OF DAI	ik nooding)	· ·
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.
not incised.			
10	7	3	1

SCORE: 4

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 3

5. Water Appearance

3. Water Appearance			
Very clear; or clear but tea colored; objects visible at depths of 3-6 feet. No noticeable film on surface or submerged objects.	Occasionally cloudy, especially after storm event; but clears rapidly; objects visible at depth of 1.5-3 feet; may have	Considerable cloudiness most of the time; objects visible to depth of .5-1.5 feet; submerged objects with heavy green film, or	Very turbid or muddy appearance most of the time; objects visible to depth <.5 feet; heavy coat of film on surface or submerged objects; strong
	slight green color.	moderate odor of ammonia.	odor of ammonia.
10	7	3	1

SCORE: 4

6. Nutrient Enrichment

o. Itutilent Entiemment			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 4

7. Barriers to Fish Movement

7. Duilliels to I ish	7. Dairieis to 1 ish Movement				
No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.	
10	8	5	3	1	

SCORE:

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover
				types present.
10	l 8	1 5	1 3	1

SCORE:

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

Coldwater Fishery (Pickens, Oconee, Greenville Counties above US Hwy 11)

>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.
shaded and upstream	>75% shaded in reach and		
2-3 miles generally	2-3 miles upstream poorly	(
shaded.	shaded.	1	
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10.	7	1

SCORE: _ 7

11. Manure Presence

No livestock	Evidence of livestock access	Occasional manure in	Extensive amount of
accessible to stream,	to riparian area.	stream; waste storage	manure on banks or in
riparian area, or	·	structure located in	stream.
floodplain.		floodplain.	
10	5	3	1

SCORE: 6

AVERAGE SCORE (TOTAL SCORE / 11): __4.2

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

6.0 Poor
 6.1 - 7.4 Fair
 7.5 - 8.9 Good
 > 9.0 Excellent

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner'	s Name: _	Duke E	Energy	Carolinas,	LLC	Date: _	4/15/20	109	Stream	CH
County:	Cherokee	County	y Pre	epared by:	Kriste	n Roop,	/ Jason	Isbanio	ly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull
 flow. If the flow is contained within the channel at two times the maximum depth, then the
 channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Chamier Conditi	on (adequate noodpinin is gene	i willy at ioust a times the t	mumics water,
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.
cutting		floodplain.	
10	7	3	1

SCORE: 4

2. Hydrology Alteration (flooding is out of bank flooding)

Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.
not incised.			-
10	7	3	1

SCORE: 4

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation includes hardwood trees, mixed shrubs, and native herbaceous species)

		====	
Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1

Moderately stable;	Moderately unstable;	Unstable; banks are high
banks are low; <33%	banks are high and	and eroding in some
of eroding banks are	flooding occurs 1 year	straight reaches and inside
on outside bends and	out of 5 or less	banks; numerous slope
are protected by roots	frequently. Outside	failures.
extending into the	banks are actively	
base flow.	eroding with some	
	slope failures.	
7	3	1
	banks are low; <33% of eroding banks are on outside bends and are protected by roots extending into the	banks are low; <33% of eroding banks are on outside bends and are protected by roots extending into the base flow. banks are high and flooding occurs 1 year out of 5 or less frequently. Outside banks are actively eroding with some

SCORE: ___5__

5. Water Appearance

5. water Appearance			
Very clear; or clear but tea colored; objects visible at depths of 3-6 feet. No noticeable film on surface or submerged objects.	Occasionally cloudy, especially after storm event; but clears rapidly; objects visible at depth of 1.5-3 feet; may have slight green color.	Considerable cloudiness most of the time; objects visible to depth of .5-1.5 feet; submerged objects with heavy green film, or moderate odor of ammonia.	Very turbid or muddy appearance most of the time; objects visible to depth <.5 feet; heavy coat of film on surface or submerged objects; strong odor of ammonia.
10	7	3	1

SCORE: 5

6. Nutrient Enrichment

o. Natifent Entitenment			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 6

7. Barriers to Fish Movement

No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

SCORE:

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover
				types present.
10	8	5	3	1

SCORE:

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

Coldwater Fishery (Pickens, Oconee, Greenville Counties above US)	Hwy 1	1)
---	-------	----

>75% of water surface shaded and upstream 2-3 miles generally	>50% shaded in reach; or >75% shaded in reach and 2-3 miles upstream poorly	20-50% shaded.	<20% shaded in reach.
shaded.	shaded.		
10 7		3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	

SCORE: 5

11. Manure Presence

No livestock accessible to stream, riparian area, or floodplain.	Evidence of livestock access to riparian area.	Occasional manure in stream; waste storage structure located in	Extensive amount of manure on banks or in stream.
Hoodplain.		floodplain.	
10	5	3	1

SCORE: 6

AVERAGE SCORE (TOTAL SCORE / 11): 4.7

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

6.0 Poor
 6.1 - 7.4 Fair
 7.5 - 8.9 Good
 > 9.0 Excellent

(Modified' from Stream Visual Assessment Protocol, December, 1998)

Landowne	r's Name: _	Duke Ener	gy Carolinas	, LLC	Date: _	4/15/2	009	Stream	CI
County: _	Cherokee	County	Prepared by: _	Kriste	n Roop/	Jason	Isbanio	oly -	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Channel Conditi	1. Channel Condition (adequate hoodplain is generally at least 2 times the channel width)						
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down				
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,				
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with				
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.				
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent				
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.				
cutting		floodplain.					
10	7	3	1				

SCORE: 8

2. Hydrology Alteration (flooding is out of bank flooding)

	(
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.	•	a 1 year rain event or less.
not incised.			
10	7	3	. 1

SCORE: 5

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 8

5. Water Appearance

or water reppearance		·	
Very clear; or clear but tea colored; objects visible at depths of 3-6 feet. No noticeable film on surface or submerged objects.	Occasionally cloudy, especially after storm event; but clears rapidly; objects visible at depth of 1.5-3 feet; may have slight green color.	Considerable cloudiness most of the time; objects visible to depth of .5-1.5 feet; submerged objects with heavy green film, or moderate odor of ammonia.	Very turbid or muddy appearance most of the time; objects visible to depth <.5 feet; heavy coat of film on surface or submerged objects; strong odor of ammonia.
10	7	3	1
			

SCORE: 8

6. Nutrient Enrichment

or reminder particulation			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 6

7. Barriers to Fish Movement

TO DUTITION TO I TOIL	77 Dutitud to I told 1/10 yourself					
No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.		
10	8	5	3	1		

SCORE:

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover
				types present.
10	8	5	3	1

SCORE:

9. Pools

>1 L 0015			
Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	2	•
10	/	J 3	1

Coldwater Fishery (Pickens, Oconee, Greenville Counties above US Hwy 11)

>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.
shaded and upstream	>75% shaded in reach and		
2-3 miles generally	2-3 miles upstream poorly		
shaded.	shaded.		
10 .	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	. 1

SCORE: 7

11. Manure Presence

No livestock	Evidence of livestock access	Occasional manure in	Extensive amount of
accessible to stream,	to riparian area.	stream; waste storage	manure on banks or in
riparian area, or		structure located in	stream.
floodplain.		floodplain.	
10	5	3	1

SCORE: 10

AVERAGE SCORE (TOTAL SCORE / 11): __7.3

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

6.0 Poor
 6.1 - 7.4 Fair
 7.5 - 8.9 Good
 > 9.0 Excellent

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner's Name:	Duke Ener	gy Carolinas	LLC	Date: _	4/15/2	009	Stream	CJ
County: Cherokee	e County	Prepared by:	Kriste	n Roop	/ Jason	Isbanio	oly -	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

	to a construct in the product is gone		
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.
cutting		floodplain.	,
10	7	3	1

SCOF	Œ:	7
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2. Hydrology Alteration (flooding is out of bank flooding)

2. Hydrology Alteratio	in (Hooding is out of Dai	ik nooding)	
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.
not incised.			
10	7	3	. 1

SCORE:		
--------	--	--

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 8

5. Water Appearance

Very clear; or clear but tea	Occasionally cloudy,	Considerable	37 4 111 11
colored; objects visible at depths of 3-6 feet. No noticeable film on surface or submerged objects.	especially after storm event; but clears rapidly; objects visible at depth of 1.5-3 feet; may have slight green color.	cloudiness most of the time; objects visible to depth of .5-1.5 feet; submerged objects with heavy green film, or moderate odor of ammonia.	Very turbid or muddy appearance most of the time; objects visible to depth <.5 feet; heavy coat of film on surface or submerged objects; strong odor of ammonia.
10	7	3	1

SCORE: 6

6. Nutrient Enrichment

o. Mutitent Emilent			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 10

7. Barriers to Fish Movement

No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

SCORE: ____

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types 6-7 cover types 4-5 cover types 2-3 cover types 1 or less cover types present.

SCORE:

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

	. 1.1	1734 . I	m· I	^	C	~			• •
L	oiuwater	risherv	Trickens.	Oconee.	Greenville	Counties	above U	3 HWV I	1)

>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.
shaded and upstream	>75% shaded in reach and		
2-3 miles generally	2-3 miles upstream poorly		
shaded.	shaded.		
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 7

11. Manure Presence

No livestock accessible to stream, riparian area, or floodplain.	Evidence of livestock access to riparian area.	Occasional manure in stream; waste storage structure located in floodplain.	Extensive amount of manure on banks or in stream.
10	5	3	1

SCORE:

AVERAGE SCORE (TOTAL SCORE / 11): __7.3

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowne	r's Name: _	Duke Ener	gy Carolina:	s, LLC	Date: _	4/16/2	2009	Stream	CK
County: _	Cherokee	County	Prepared by:	Krister	Roop/	Jason	Isbanio	ly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

	11 Charles Condition (accordant to South any at reast Defines the charles witch)					
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down			
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,			
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with			
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.			
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent			
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.			
cutting		floodplain.	•			
10	7	3	1			

SCORE: 7

2. Hydrology Alteration (flooding is out of bank flooding)

	2. Hydrology Alteratio	u (nooding is out of pai	ik noouing)	
Γ	Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
	occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
	years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
ı	water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
1	dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
	structures limiting the	although present, do	available low flow	caused severe loss of low flow
	stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
	floodplain. Channel is	habitat for biota.		a 1 year rain event or less.
L	not incised.			
	10	7	3	1

SCORE: 5

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation includes hardwood trees, mixed shrubs, and native herbaceous species)

	The state of the s						
Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <				
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.				
feet on each side.	feet on each side.	on each side.					
10	8	5	1				

low and at elevation of banks are low; <33% banks are high and and erodi	
	; banks are high
active floodplain; 33% or of eroding banks are flooding occurs 1 year straight r	ing in some
	eaches and inside
more of eroding banks are on outside bends and out of 5 or less banks; no	ımerous slope
on outside bends and are are protected by roots frequently. Outside failures.	
protected by roots extending into the banks are actively	
extending into the base base flow. eroding with some	
flow elevation. slope failures.	
10 7 3	1

SCORE: 8

5. Water Appearance

5. Water Appearance			
Very clear; or clear but tea	Occasionally cloudy,	Considerable	Very turbid or muddy
colored; objects visible at	especially after storm	cloudiness most of the	appearance most of the
depths of 3-6 feet. No	event; but clears	time; objects visible to	time; objects visible to
noticeable film on surface	rapidly; objects	depth of .5-1.5 feet;	depth <.5 feet; heavy coat
or submerged objects.	visible at depth of	submerged objects with	of film on surface or
	1.5-3 feet; may have	heavy green film, or	submerged objects; strong
	slight green color.	moderate odor of	odor of ammonia.
		ammonia.	
10	7	3	1

SCORE: __6__

6. Nutrient Enrichment

o. Nutrient Enrichment			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 10

7. Barriers to Fish Movement

No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within
10	8	5	3	reach.

SCORE: ____

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types 6-7 cover types 4-5 cover types 2-3 cover types 1 or less cover types present.

SCORE:

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
deep.	7	3	1

Coldwater Fishery (Pickens, Oconee, Greenville Counties above US Hwy 11)

>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.
shaded and upstream	>75% shaded in reach and		
2-3 miles generally	2-3 miles upstream poorly		· ·
shaded.	shaded.		
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	 <25% of surface shaded in reach.
10	7	1

SCORE: 7

11. Manure Presence

No livestock accessible to stream, riparian area, or floodplain.	Evidence of livestock access to riparian area.	Occasional manure in stream; waste storage structure located in floodplain.	Extensive amount of manure on banks or in stream.
nooupiam.		пооцыані.	
10	5	3	1

SCORE:

AVERAGE SCORE (TOTAL SCORE / 11): 6.8

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner	's Name: _	Duke Ene	ergy	Carolinas	LLC	Date: _	4/16/2	009	Stream	CL
County: _	Cherokee	County	_ Pro	epared by: _	Kriste	n Roop/	Jason	Isbanio	oly -	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull
 flow. If the flow is contained within the channel at two times the maximum depth, then the
 channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Chamber Condition (adequate moduplain is generally at least 2 times the chamber width)						
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down			
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,			
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with			
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.			
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent			
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.			
cutting		floodplain.	-			
10	7	3	1			

SCORE: 4

2. Hydrology Alteration (flooding is out of bank flooding)

Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.
not incised.			
10	7	3	1

SCORE: 5

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation includes hardwood trees, mixed shrubs, and native herbaceous species)

	T	T = =	
Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
1 . 1	1 . 1 . 1 . 25	•	ı
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
icet on each side.	reet on each side.	on each side.	
10	0	5	1
10	0	j J	1

Moderately stable;	Moderately unstable;	Unstable; banks are high
banks are low; <33%	banks are high and	and eroding in some
of eroding banks are	flooding occurs 1 year	straight reaches and inside
on outside bends and	out of 5 or less	banks; numerous slope
are protected by roots	frequently. Outside	failures.
extending into the	banks are actively	
base flow.	eroding with some	
	slope failures.	
7	3	1
	banks are low; <33% of eroding banks are on outside bends and are protected by roots extending into the	banks are low; <33% of eroding banks are on outside bends and are protected by roots extending into the base flow. banks are high and flooding occurs 1 year out of 5 or less frequently. Outside banks are actively eroding with some

SCORE: 4

5. Water Appearance

3. Water Appearance			
Very clear; or clear but tea colored; objects visible at depths of 3-6 feet. No noticeable film on surface or submerged objects.	Occasionally cloudy, especially after storm event; but clears rapidly; objects visible at depth of	Considerable cloudiness most of the time; objects visible to depth of .5-1.5 feet; submerged objects with	Very turbid or muddy appearance most of the time; objects visible to depth <.5 feet; heavy coat of film on surface or
	1.5-3 feet; may have	heavy green film, or	submerged objects; strong
	slight green color.	moderate odor of ammonia.	odor of ammonia.
10	7	3	1
L	·	<u> </u>	

SCORE: 8

6. Nutrient Enrichment

o. Nutrient Enrichment			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 9

7. Barriers to Fish Movement

7. Duillets to 1 isia	MACACHICITE			
No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

SCORE: ____

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover
	<u> </u>			types present.
10	8	5	3	1

SCORE:

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

Coldwater Fishery (Pickens, Oconee, Greenville Counties above US Hwy 11)
--

>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.
shaded and upstream	>75% shaded in reach and		
2-3 miles generally	2-3 miles upstream poorly		
shaded.	shaded.		
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 7

11. Manure Presence

No livestock	Evidence of livestock access	Occasional manure in	Extensive amount of
accessible to stream,	to riparian area.	stream; waste storage	manure on banks or in
riparian area, or		structure located in	stream.
floodplain.		floodplain.	
10	5	3	1

SCORE:

AVERAGE SCORE (TOTAL SCORE / 11): ___5.6 `

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowne	r's Name: _	Duke Ener	rgy Carolinas	, LLC	Date: _	4/16/20	009	Stream	СМ
County: _	Cherokee	County	Prepared by: _	Kriste	n Roop/	Jason	Isbanio	oly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

II CHUMMUI COMUIT	on (accounte noochmin is bene	tony at least 2 times the t	
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.
cutting	_	floodplain.	
10	7	3	1

SCORE: 10

2. Hydrology Alteration (flooding is out of bank flooding)

	_		
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.
not incised.	,		
10	7	3	1

SCORE: 7

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation includes hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1

7. Dank Stability			
Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	.3	1 /

SCORE: 7

5. Water Appearance

Very clear; or clear but tea colored; objects visible at depths of 3-6 feet. No noticeable film on surface or submerged objects.	Occasionally cloudy, especially after storm event; but clears rapidly; objects visible at depth of 1.5-3 feet; may have slight green color.	Considerable cloudiness most of the time; objects visible to depth of .5-1.5 feet; submerged objects with heavy green film, or moderate odor of ammonia.	Very turbid or muddy appearance most of the time; objects visible to depth <.5 feet; heavy coat of film on surface or submerged objects; strong odor of ammonia.
10	7	3	1

SCORE: __10

6. Nutrient Enrichment

or reactions surfacilities			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 10

7. Barriers to Fish Movement

7. Dailies to Fish	Movement			
No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

SCORE: ____

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover types present.
10	8	5	3	1

SCORE:

9. Pools

71 Z 0010			
Deep and shallow	Pools present, but not	Pools present, but	Pools absent; entire
pools abundant (>3);	abundant (<3); pools at least	shallow, <3 ft. deep.	bottom visible.
pools at least 5 ft.	3 ft. deep.		
deep.			
10	7	3	1

Coldwater Fishery (Pickens, Oconee, Greenville Counties above US Hwy 11)

>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.
shaded and upstream	>75% shaded in reach and		
2-3 miles generally	2-3 miles upstream poorly		
shaded.	shaded.		•
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 8

11. Manure Presence

No livestock	Evidence of livestock access	Occasional manure in	Extensive amount of
accessible to stream,	to riparian area.	stream; waste storage	manure on banks or in
riparian area, or		structure located in	stream.
floodplain.		floodplain.	
10	5	3	1

SCORE:

AVERAGE SCORE (TOTAL SCORE / 11): __8.3

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

< 6.0 Poor

6.1 - 7.4 Fair

7.5 - 8.9 Good

> 9.0 Excellent

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowne	r's Name: _	Duke Ene	ergy Carolinas	, LLC	Date: _	4/16/2	009	Stream	CN
County: _	Cherokee	County	Prepared by: _	Kristen	Roop/	Jason	Isbanio	ly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

11 Channel Condition (addeducte hoodplain is generally at least 2 times the channel which)						
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down			
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,			
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with			
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.			
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent			
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.			
cutting	·	floodplain.				
10	7	3	1			

SCORE: 7

2. Hydrology Alteration (flooding is out of bank flooding)

Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.
not incised.			-
10	7	3	1

SCORE: 5

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation includes hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <			
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.			
feet on each side.	feet on each side.	on each side.				
10	8	5	1			

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	:
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 10

5. Water Appearance

J. Water Appearance			
Very clear; or clear but tea	Occasionally cloudy,	Considerable	Very turbid or muddy
colored; objects visible at	especially after storm	cloudiness most of the	appearance most of the
depths of 3-6 feet. No	event; but clears	time; objects visible to	time; objects visible to
noticeable film on surface	rapidly; objects	depth of .5-1.5 feet;	depth <.5 feet; heavy coat
or submerged objects.	visible at depth of	submerged objects with	of film on surface or
	1.5-3 feet; may have	heavy green film, or	submerged objects; strong
	slight green color.	moderate odor of	odor of ammonia.
		ammonia.	-
10	7	3	1

SCORE: 6

6. Nutrient Enrichment

o. Nutrient Enrichment			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 10

7. Barriers to Fish Movement

No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within
10	8	5	3	reach.

SCORE: ____

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types 6-7 cover types 4-5 cover types 2-3 cover types 1 or less cover types present.

10 8 5 3 1

SCORE: ____

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

Coldwater Fishery (Pickens, Oconee, Greenville Counties above US Hwy 11)

>75% of water surface shaded and upstream 2-3 miles generally	>50% shaded in reach; or >75% shaded in reach and 2-3 miles upstream poorly	20-50% shaded.	<20% shaded in reach.
shaded.	shaded.		
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 7

11. Manure Presence

No livestock	Evidence of livestock access	Occasional manure in	Extensive amount of
accessible to stream,	to riparian area.	stream; waste storage	manure on banks or in
riparian area, or	_	structure located in	stream.
floodplain.		floodplain.	·
10	5	3	1

SCORE:

AVERAGE SCORE (TOTAL SCORE / 11): 7.5

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner's Name: _	Duke Ener	gy Carolinas	, LLC	Date: _	4/16/2	009	Stream	co
County: Cherokee	County	Prepared by: _	Kriste	n Roop/	Jason	Isbanio	ly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

21 Charles Condition (addeducto trocapiant is generally at least 2 times the thanker white)					
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down		
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,		
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with		
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.		
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent		
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.		
cutting		floodplain.			
10	7	3	1		

SCORE: 4

2. Hydrology Alteration (flooding is out of bank flooding)

2. Hydrology Alteratio	in (nooding is out of Dai	ik ilouding)	
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.	•	a 1 year rain event or less.
not incised.			
/ 10	7	3	1

SCORE: 3

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	•
flow elevation.		slope failures.	
10	7	3	1

SCORE: 4

5. Water Appearance

3. Water Appearance			
Very clear; or clear but tea	Occasionally cloudy,	Considerable	Very turbid or muddy
colored; objects visible at depths of 3-6 feet. No noticeable film on surface	especially after storm event; but clears rapidly; objects	cloudiness most of the time; objects visible to depth of .5-1.5 feet;	appearance most of the time; objects visible to depth <.5 feet; heavy coat
or submerged objects.	visible at depth of 1.5-3 feet; may have slight green color.	submerged objects with heavy green film, or moderate odor of ammonia.	of film on surface or submerged objects; strong odor of ammonia.
	<u></u>		
10	7	3 .	1

SCORE: <u>8</u>

6. Nutrient Enrichment

	o. Mutilent Emilentment			
1	Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
L	10	7	3	1

SCORE: 8

7. Barriers to Fish Movement

No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

DOGIGET STEODER	e, i iiiics, anaci cat bi			
>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover
				types present.
10	8	5	3	1

SCORE:

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

Coldwater Fishery (Pickens, Oconee, Greenville Counties above US Hwy 11)

>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.
shaded and upstream	>75% shaded in reach and		
2-3 miles generally	2-3 miles upstream poorly		
shaded.	shaded.		
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 6

11. Manure Presence

No livestock accessible to stream, riparian area, or floodplain.	Evidence of livestock access to riparian area.	Occasional manure in stream; waste storage structure located in floodplain.	Extensive amount of manure on banks or in stream.
10	5	3	1

SCORE: 6

AVERAGE SCORE (TOTAL SCORE / 11): ___5.3

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner	's Name: _	Duke Ener	gy Carolinas	, LLC	Date: _	4/16/2009	Stream	CP
County: _	Cherokee	County	Prepared by: _	Kriste	n Roop,	/ Jason Isbanio	oly -	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

AT CHAPTER COMMITTED (MANAGEMENT TO BENEFAMY AT TERES A CHIMES THE CHARLES WHEN					
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down		
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,		
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with		
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.		
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent		
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.		
cutting		floodplain.			
10	7	3	1		

SCORE: 7

2. Hydrology Alteration (flooding is out of bank flooding)

2. Hydrology Alteratio	m (Hooding is out of Dai	ik nooding)	
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.
not incised.			
10	7	3	1

SCORE: 7

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	15 1500 011 01011 01001
10	8	5	1

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 7

5. Water Appearance

3. Water Appearance			
Very clear; or clear but tea	Occasionally cloudy,	Considerable	Very turbid or muddy
colored; objects visible at	especially after storm	cloudiness most of the	appearance most of the
depths of 3-6 feet. No	event; but clears	time; objects visible to	time; objects visible to
noticeable film on surface	rapidly; objects	depth of .5-1.5 feet;	depth <.5 feet; heavy coat
or submerged objects.	visible at depth of	submerged objects with	of film on surface or
	1.5-3 feet; may have	heavy green film, or	submerged objects; strong
	slight green color.	moderate odor of	odor of ammonia.
		ammonia.	
10	7	3	1

SCORE: 10

6. Nutrient Enrichment

o. Nutrient Enri	Chinent		
Clear water along reach; little or no growth present.	1 2	• • •	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 10

7. Barriers to Fish Movement

ſ	No barriers;	Seasonal water	Duan structures	Dean structures	Dan structures
١		withdrawals inhibit	Drop structures,	Drop structures,	Drop structures,
١	natural drops <1		culverts (<1 foot	culverts, or dams	culverts, or dams
1	foot.	movement of fish.	drop) present	present within 3	(>1 foot drop)
١			within reach.	miles of reach.	present within
l					reach.
	10	8	5	3	1

SCORE:

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover
				types present.
10	8	5	3	1

SCORE:

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

			_				
Coldwa	iter Fishers	: (Pickens.	Oconee.	Greenville	Counties	above US Hwy	11)

>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.
shaded and upstream	>75% shaded in reach and		
2-3 miles generally	2-3 miles upstream poorly		
shaded.	shaded.		
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 8

11. Manure Presence

No livestock accessible to stream,	Evidence of livestock access to riparian area.	Occasional manure in stream; waste storage	Extensive amount of manure on banks or in
riparian area, or	-	structure located in	stream.
floodplain.		floodplain.	1
10	5	3	1

SCORE:

AVERAGE SCORE (TOTAL SCORE / 11): 7.5

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner	's Name: _	Duke E	nergy Carol	nas, LLC	Date: _	4/16/2	009	Stream	CQ
County:	Cherokee	Count	Y Prepared b	: Kristen	Roop/	Jason	Isbanio	oly -	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull
 flow. If the flow is contained within the channel at two times the maximum depth, then the
 channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Challet Condit	11 Change Condition (addeduce troodplain is generally at least 2 times the channel width)				
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down		
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,		
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with		
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.		
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent		
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.		
cutting		floodplain.			
10	7	3	1		

SCORE: 8

2. Hydrology Alteration (flooding is out of bank flooding)

Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.	i .	a 1 year rain event or less.
not incised.		<u> </u>	<u> </u>
10	7	3	1

SCORE: 6

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1

II Dudin Stubilly			
Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 4

5. Water Appearance

5. Water Appearance			
Very clear; or clear but tea colored; objects visible at depths of 3-6 feet. No noticeable film on surface or submerged objects.	Occasionally cloudy, especially after storm event; but clears rapidly; objects visible at depth of 1.5-3 feet; may have slight green color.	Considerable cloudiness most of the time; objects visible to depth of .5-1.5 feet; submerged objects with heavy green film, or moderate odor of ammonia.	Very turbid or muddy appearance most of the time; objects visible to depth <.5 feet; heavy coat of film on surface or submerged objects; strong odor of ammonia.
10	7	3	1

SCORE: 7

6. Nutrient Enrichment

o. Nutitent entichment			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1 .

SCORE: 10

7. Barriers to Fish Movement

No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

SCORE:

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types 6-7 cover types 4-5 cover types 2-3 cover types 1 or less cover types present.

SCORE:

9. Pools

71 - 11 - 11			
Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

Coldwater Fishery (Pickens, Oconee, Greenville Counties above US Hwy 11)

>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.
shaded and upstream	>75% shaded in reach and		
2-3 miles generally	2-3 miles upstream poorly		
shaded.	shaded.		
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 7

11. Manure Presence

No livestock accessible to stream, riparian area, or floodplain.	Evidence of livestock access to riparian area.	Occasional manure in stream; waste storage structure located in floodplain.	Extensive amount of manure on banks or in stream.
10	5	3	1

SCORE:

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner's Name:	Duke Ene	ergy Carolinas	, LLC	Date: _	4/16/2	009	Stream	CR
County:Cherokee	e County	_ Prepared by: _	Krister	Roop/	Jason	Isbanio	oly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

11 Channel Condition (adequate notapian is generally at least 2 times the channel width)					
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down		
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,		
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with		
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.		
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent		
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.		
cutting		floodplain.			
10	7	3	1		

SCORE: 6

2. Hydrology Alteration (flooding is out of bank flooding)

2. Hydrology Alteratio	u (mooding is out of bar	ik ilooulig)	
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.
not incised.			
10	7	3	1

SCORE: 7

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation includes hardwood trees, mixed shrubs, and native herbaceous species)

	, , , , , , , , , , , , , , , , , , , ,						
Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <				
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.				
feet on each side.	feet on each side.	on each side.					
10	8	5	1				

To Dunk Stubility			
Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	,
10	7	3	1

SCORE: 7

5. Water Appearance

3. Water Appearance			
Very clear; or clear but tea	Occasionally cloudy,	Considerable	Very turbid or muddy
colored; objects visible at	especially after storm	cloudiness most of the	appearance most of the
depths of 3-6 feet. No	event; but clears	time; objects visible to	time; objects visible to
noticeable film on surface	rapidly; objects	depth of .5-1.5 feet;	depth <.5 feet; heavy coat
or submerged objects.	visible at depth of	submerged objects with	of film on surface or
1	1.5-3 feet; may have	heavy green film, or	submerged objects; strong
İ	slight green color.	moderate odor of	odor of ammonia.
		ammonia.	
10	7	3	1

SCORE: 8

6. Nutrient Enrichment

0. I diffent Emilement			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 7

7. Barriers to Fish Movement

77 Duilliels to 1 15H	17XO 7 CHICHE			
No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

SCORE: ____

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover
				types present.
10	8	5	3	1

SCORE:

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

Coldwater Fishery (Pickens, Oconee, Greenville Counties above US Hwy 11)

shaded and upstream 2-3 miles generally	>50% shaded in reach; or >75% shaded in reach and 2-3 miles upstream poorly	20-50% shaded.	<20% shaded in reach.
shaded.	shaded.		
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.	
10	7	1	

SCORE: 7

11. Manure Presence

No livestock accessible to stream, riparian area, or floodplain.	Evidence of livestock access to riparian area.	Occasional manure in stream; waste storage structure located in floodplain.	Extensive amount of manure on banks or in stream.
10	5	3	1

SCORE: 3

AVERAGE SCORE (TOTAL SCORE / 11): 6.1

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner	's Name: _	Duke Ener	gy Carolinas	, LLC	Date: _	4/16/20	009	Stream	CS
County:	Cherokee	County	Prepared by: _	Kriste	n Roop,	/ Jason	Isbanio	oly -	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull
 flow. If the flow is contained within the channel at two times the maximum depth, then the
 channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

21 OMMENT COMMIT	At Change Condition (adequate noodplain is generally at least 2 times the change within				
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down		
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,		
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with		
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.		
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent		
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.		
cutting		floodplain.			
10	7	3	1		

SCORE: 5

2. Hydrology Alteration (flooding is out of bank flooding)

	2. 22jan orogj i mooratot (moorateg is dat or ballit moorateg)					
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply			
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent			
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam			
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood			
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have			
structures limiting the	although present, do	available low flow	caused severe loss of low flow			
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on			
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.			
not incised.						
10	7	3	1			

SCORE: 3

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation includes hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1

T. Dank Stability			
Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 5

5. Water Appearance

or mater rippearance			
Very clear; or clear but tea colored; objects visible at depths of 3-6 feet. No noticeable film on surface or submerged objects.	Occasionally cloudy, especially after storm event; but clears rapidly; objects visible at depth of 1.5-3 feet; may have slight green color.	Considerable cloudiness most of the time; objects visible to depth of .5-1.5 feet; submerged objects with heavy green film, or moderate odor of ammonia.	Very turbid or muddy appearance most of the time; objects visible to depth <.5 feet; heavy coat of film on surface or submerged objects; strong odor of ammonia.
10	7	3	1

SCORE: 8

6. Nutrient Enrichment

V. I WEI ICHE EMILICAL			· ·
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: ______

7. Barriers to Fish Movement

/ Dailiels to a isin	Movement			
No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

SCORE:

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover
				types present.
10	8	5	3	1

SCORE:

9. Pools

71 X 0013			
Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

Coldwater Fishery (Pickens, Oconee, Greenville Counties above US Hwy 11)

		1111100 1100 11 00 11 11 11 11 11	
>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.
shaded and upstream	>75% shaded in reach and		
2-3 miles generally	2-3 miles upstream poorly		
shaded.	shaded.	:	
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 8

11. Manure Presence

No livestock accessible to stream, riparian area, or floodplain.	to riparian area.	Occasional manure in stream; waste storage structure located in floodplain.	Extensive amount of manure on banks or in stream.
10	5	3	1

SCORE: 6

AVERAGE SCORE (TOTAL SCORE / 11): 5.6

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

< 6.0 Poor
6.1 – 7.4 Fair
7.5 – 8.9 Good
> 9.0 Excellent

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landown	er's Name: _	Duke Ene	rgy Carolinas	, LLC	Date: _	4/16/2	009	Stream	CT
County:	Cherokee	County	_ Prepared by: _	Kriste	n Roop/	Jason	Isbanio	ly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

	27 O Daniel Committee (many anto incomplaint in Bolletining an items 2 times the charmet whiteh)					
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down			
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,			
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with			
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.			
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent			
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.			
cutting		floodplain.	-			
10	7	3	1			

SCORE: ___7

2. Hydrology Alteration (flooding is out of bank flooding)

Flooding occurs only	Flooding occurs only	No flooding; channel deeply
once every 3-5 years;	once every 6-10 years;	incised or structures prevent
limited channel	channel deeply incised.	access to floodplain or dam
incision. Or	Or withdrawals	operations prevent flood
withdrawals, although present, do not affect available habitat for biota.	significantly affect available low flow habitat for biota.	flows. Or withdrawals have caused severe loss of low flow habitat. Or flooding occurs on a 1 year rain event or less.
7	3	1
	Flooding occurs only once every 3-5 years; limited channel incision. Or withdrawals, although present, do not affect available	once every 3-5 years; limited channel channel incision. Or withdrawals, although present, do not affect available once every 6-10 years; channel deeply incised. Or withdrawals significantly affect available low flow habitat for biota.

SCORE: 3

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation includes hardwood trees, mixed shrubs, and native herbaceous species)

marawood trees, m	marawood trees, mixed shrubs, and native herbaccous species,					
Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <			
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.			
feet on each side.	feet on each side.	on each side.				
10	8	5	1			

7. Dank Staumity			
Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	-
flow elevation.		slope failures.	
10	7	3	1

SCORE: 7

5. Water Appearance

5. Water Appearance		· · · · · · · · · · · · · · · · · · ·	
Very clear; or clear but tea	Occasionally cloudy,	Considerable	Very turbid or muddy
colored; objects visible at	especially after storm	cloudiness most of the	appearance most of the
depths of 3-6 feet. No	event; but clears	time; objects visible to	time; objects visible to
noticeable film on surface	rapidly; objects	depth of .5-1.5 feet;	depth <.5 feet; heavy coat
or submerged objects.	visible at depth of	submerged objects with	of film on surface or
	1.5-3 feet; may have	heavy green film, or	submerged objects; strong
	slight green color.	moderate odor of	odor of ammonia.
·		ammonia.	`
10	7	3	1

SCORE: 5

6. Nutrient Enrichment

o. Manient Emilentent			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 8

7. Barriers to Fish Movement

No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8 .	5	3	1

SCORE: ____

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

	-,,	mile, children 1000 miles		
>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover
	•			types present.
10	8	5	3	1

SCORE:

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	. 7	3	1

Coldwater Fishery (Pickens, Oconee, Greenville Counties above US Hwy 11)

>75% of water surface	>75% of water surface >50% shaded in reach; or		<20% shaded in reach.		
shaded and upstream	shaded and upstream >75% shaded in reach and				
2-3 miles generally 2-3 miles upstream poorly		1			
shaded.	shaded.				
10	7	3	1		

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 5

11. Manure Presence

No livestock accessible to stream, riparian area, or floodplain.	Evidence of livestock access to riparian area.	Occasional manure in stream; waste storage structure located in floodplain.	Extensive amount of manure on banks or in stream.
10	5	3	1

SCORE:

AVERAGE SCORE (TOTAL SCORE / 11): 5.9

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

6.0 Poor
 6.1 - 7.4 Fair
 7.5 - 8.9 Good
 > 9.0 Excellent

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landown	er's Name: _	Duke Ener	gy Carolinas	, LLC	Date: _	4/16/2	009	Stream	CU
County:	Cherokee	County	Prepared by: _	Kriste	n Roop/	Jason	Isbani	oly -	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Chamnel Condit	1. Channel Condition (adequate hoodplain is generally at least 2 times the channel width)					
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down			
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,			
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with			
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.			
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent			
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.			
cutting		floodplain.				
10	7	3	1			

SCORE: 7

2. Hydrology Alteration (flooding is out of bank flooding)

2. Hydrology Mittatio	m (mooding is out or bar	ik nooding)	
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.
not incised.			_
10	7	3	1

SCORE: 3

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1

" Dank Stability	Y		
Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	.]
10	7	3	1

SCORE: 7

5. Water Appearance

5. Water Appearance			
Very clear; or clear but tea colored; objects visible at depths of 3-6 feet. No noticeable film on surface or submerged objects.	Occasionally cloudy, especially after storm event; but clears rapidly; objects visible at depth of 1.5-3 feet; may have slight green color.	Considerable cloudiness most of the time; objects visible to depth of .5-1.5 feet; submerged objects with heavy green film, or moderate odor of ammonia.	Very turbid or muddy appearance most of the time; objects visible to depth <.5 feet; heavy coat of film on surface or submerged objects; strong odor of ammonia.
10	7	3	1

SCORE: 5

6. Nutrient Enrichment

o. Patricht Entichment			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 8

7. Barriers to Fish Movement

No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

SCORE:

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover types present.
10	8	5	3	1

SCORE:

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

Coldwater Fishery (Pickens, Oconee, Greenville Counties above US Hwy 11)
--

>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.
shaded and upstream	>75% shaded in reach and		
2-3 miles generally	2-3 miles upstream poorly		
shaded.	shaded.		
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 5

11. Manure Presence

No livestock	Evidence of livestock access	Occasional manure in	Extensive amount of
accessible to stream,	to riparian area.	stream; waste storage	manure on banks or in
riparian area, or	İ	structure located in	stream.
floodplain.		floodplain.	
10	5	3	1

SCORE:

AVERAGE SCORE (TOTAL SCORE / 11): 5.9

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

< 6.0 Poor

6.1 - 7.4 Fair

7.5 - 8.9 Good

>9.0 Excellent

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner	's Name: _	Duke En	ergy Carolinas	, LLC	Date: _	4/16/2	009	Stream	cv
County:	Cherokee	County	Prepared by:	Kristen	Roop/	Jason	Isbaniol	У	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Chamici Conditi	ion (aucquate noouplain is gene	rang at icast & times the t	Haunci Width
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.
cutting		floodplain.	
10	7	3	1

SCORE: 2

2. Hydrology Alteration (flooding is out of bank flooding)

2. Hydrology Anteration (nooding is out of bank nooding)						
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply			
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent			
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam			
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood			
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have			
structures limiting the	although present, do	available low flow	caused severe loss of low flow			
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on			
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.			
not incised.						
10	7	3	1			

SCORE: 2

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation includes hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	·
10	8	5	1

T. Dank Stability			
Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: ____

5. Water Appearance

3. Water Appearance			
Very clear; or clear but tea	Occasionally cloudy,	Considerable	Very turbid or muddy
colored; objects visible at	especially after storm	cloudiness most of the	appearance most of the
depths of 3-6 feet. No	event; but clears	time; objects visible to	time; objects visible to
noticeable film on surface	rapidly; objects	depth of .5-1.5 feet;	depth <.5 feet; heavy coat
or submerged objects.	visible at depth of	submerged objects with	of film on surface or
	1.5-3 feet; may have	heavy green film, or	submergéd objects; strong
	slight green color.	moderate odor of-	odor of ammonia.
		ammonia.	
10	7	3	1

SCORE: 4

6. Nutrient Enrichment

o. I differ Enfichment			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 3

7. Barriers to Fish Movement

No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within
		within reach.	innes of reach.	reach.
10	8	5	3	1

SCORE:

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover types present.
10	8	5	3	1

SCORE: ____

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

Coldwater Fishery	(Pickens.	Oconee.	Greenville	Counties a	above U	JS Hwv	11)

>750/ -6	>500/ alas de d'in mas alas an	20 500/ -1-1-1	<200/ -1-1-1-11-
>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.
shaded and upstream	>75% shaded in reach and		
2-3 miles generally	2-3 miles upstream poorly		
shaded.	shaded.		
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 2

11. Manure Presence

No livestock	Evidence of livestock access	Occasional manure in	Extensive amount of
accessible to stream,	to riparian area.	stream; waste storage	manure on banks or in
riparian area, or		structure located in	stream.
floodplain.		floodplain.	
10 .	5	3	1

SCORE: 1

AVERAGE SCORE (TOTAL SCORE / 11): ____2.1

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

< 6.0 Poor 6.1 – 7.4 Fair 7.5 – 8.9 Good

> 9.0 Excellent

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowr	ner's Name: _	Duke Ene	ergy Carolinas	LLC	Date: _	4/16/2	2009	Stream	CW
County:	Cherokee	County	_ Prepared by: _	Kriste	n Roop/	Jason	Isbanio	oly -	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull
 flow. If the flow is contained within the channel at two times the maximum depth, then the
 channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Channel Condition (adequate noodplain is generally at least 2 times the channel width)					
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down		
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,		
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with		
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.		
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent		
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.		
cutting		floodplain.			
10	7 .	3	1		

SCORE: 8

2. Hydrology Alteration (flooding is out of bank flooding)

Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.
not incised.			
10	7	. 3	1

SCORE: 7

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation extends more than 50	Natural vegetation extends at least 35		Natural vegetation extends < 15 feet on each side.
feet on each side.	feet on each side.	on each side.	13 feet on each side.
10	8	5	1,

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 6

5. Water Appearance

3. Water Appearance			
Very clear; or clear but tea	Occasionally cloudy,	Considerable	Very turbid or muddy
colored; objects visible at depths of 3-6 feet. No noticeable film on surface or submerged objects.	especially after storm event; but clears rapidly; objects visible at depth of	cloudiness most of the time; objects visible to depth of .5-1.5 feet; submerged objects with	appearance most of the time; objects visible to depth <.5 feet; heavy coat of film on surface or
	1.5-3 feet; may have slight green color.	heavy green film, or moderate odor of ammonia.	submerged objects; strong odor of ammonia.
10	7	3	1

SCORE: 6

6. Nutrient Enrichment

o. Nuti lent Enitchment			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 5

7. Barriers to Fish Movement

No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

SCORE: 10

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover
·				types present.
10	8	5	3	1

SCORE: __7___

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

Coldwater Fishery (Pickens, Oconee, Greenville Counties above US Hwy 11)

>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.
shaded and upstream	>75% shaded in reach and		
2-3 miles generally	2-3 miles upstream poorly		
shaded.	shaded.		
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 10

11. Manure Presence

	T		
No livestock	Evidence of livestock access	Occasional manure in	Extensive amount of
accessible to stream,	to riparian area.	stream; waste storage	manure on banks or in
riparian area, or		structure located in	stream.
floodplain.		floodplain.	
10	5	3	1

SCORE: 4

AVERAGE SCORE (TOTAL SCORE / 11): ___7.1

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

< 6.0 Poor 6.1 – 7.4 Fair 7.5 – 8.9 Good

> 9.0 Excellent

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner's Name:	Duke Ener	gy Carolinas	, LLC	Date: _	4/16/2	009	Stream	CX
County: Cherokee	County	Prepared by: _	Kriste	n Roop/	Jason	Isbanio	ly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1: Chainer Condition (adequate noodplain is generally at least 2 times the chainer wid					
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down		
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,		
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with		
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.		
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent		
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.		
cutting		floodplain.			
10	7	3	1		

SCORE: __3___

2. Hydrology Alteration (flooding is out of bank flooding)

El-+3:	T1 1:	[C] J	NT. Cl 1
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.
not incised.			
10	7	3	1

SCORE: 2

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation includes hardwood trees, mixed shrubs, and native herbaceous species)

		mor succous species,	
Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.	,	slope failures.	
10	7	3	1

SCORE: 4

5. Water Appearance

5. Water Appearance			
Very clear; or clear but tea colored; objects visible at depths of 3-6 feet. No noticeable film on surface or submerged objects.	Occasionally cloudy, especially after storm event; but clears rapidly; objects visible at depth of 1.5-3 feet; may have slight green color.	Considerable cloudiness most of the time; objects visible to depth of .5-1.5 feet; submerged objects with heavy green film, or moderate odor of ammonia.	Very turbid or muddy appearance most of the time; objects visible to depth <.5 feet; heavy coat of film on surface or submerged objects; strong odor of ammonia.
10	7	3	1

SCORE: 6

6. Nutrient Enrichment

o. Mutitut Entitument			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	. 3	1

SCORE: 4

7. Barriers to Fish Movement

// DWITTED TO I ION 1/10 / TIMENO							
No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.			
10	8	5	-3	1			

SCORE:

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover types present.
10	8	5	3	1

SCORE: ____

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.		Pools absent; entire bottom visible.
10	7	3	1.

C-13 Et-1	(D) - 1	A	C	~		TIC TT 4	4.
Coldwater Fisherv	(Pickens. '	Oconee.	Greenville	Counties	above	US HWV I	.1)

>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.
shaded and upstream	>75% shaded in reach and		
2-3 miles generally	2-3 miles upstream poorly		
shaded.	shaded.		
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.	
10	7	1	

SCORE: 3

11. Manure Presence

No livestock accessible to stream, riparian area, or floodplain.	Evidence of livestock access to riparian area.	Occasional manure in stream; waste storage structure located in floodplain.	Extensive amount of manure on banks or in stream.
Hoodplain.		Hoodpiain.	
10	5	3	1

SCORE: 3

AVERAGE SCORE (TOTAL SCORE / 11): __3.2

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

< 6.0 Poor 6.1 – 7.4 Fair

7.5 - 8.9 Good

> 9.0 Excellent

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landown	er's Name: _	Duke E	nergy Carolinas	, LLC	Date:	4/17/2	009	Stream	CY
County:	Cherokee	County	Prepared by: _	Krister	n Roop/	Jason	Isbanio	ly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

	on (accedance neceptain is Bene	twing me reast 2 times the t	
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.
cutting		floodplain.	
10	7	3	1

SCORE: 8

2. Hydrology Alteration (flooding is out of bank flooding)

	2. Hydrology interaction (modern's to out or bunk modern's)							
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply					
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent					
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam					
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood					
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have					
structures limiting the	although present, do	available low flow	caused severe loss of low flow					
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on					
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.					
not incised.								
10 .	7	3	1					

SCORE: 7

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation includes hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	. 8	5	1

11 Dunk Stubility			
Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.	and the second second	slope failures.	
10	7	3	1

SCORE: 8

5. Water Appearance

e Very turbid or muddy
nost of the appearance most of the
s visible to time; objects visible to
1.5 feet; depth <.5 feet; heavy coat
objects with of film on surface or
film, or submerged objects; strong
or of odor of ammonia.
1

SCORE: 7

6. Nutrient Enrichment

Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 7

7. Barriers to Fish Movement

/. Daili	cis to rish	MOVCHICHT			
No barrie natural d foot.	,	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
	.0	8	5	3	1

SCORE: 10

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover
,				types present.
10	8	5	3	1

SCORE: 10

9. Pools

77 T 0015			
Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
[10	7	3	1

Coldwater Fishery (Pickens, Oconee, Greenville Counties above US Hwy 11)

COLUMN A ROLLET J (I	enems, sconce, steem ime so	andes above ob in , in,	
>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.
shaded and upstream	>75% shaded in reach and		
2-3 miles generally	2-3 miles upstream poorly		
shaded.	shaded.		
10	7	3	, 1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 9

11. Manure Presence

No livestock accessible to stream, riparian area, or floodplain.	Evidence of livestock access to riparian area.	Occasional manure in stream; waste storage structure located in floodplain.	Extensive amount of manure on banks or in stream.
10	5	3	1

SCORE: 8

AVERAGE SCORE (TOTAL SCORE / 11): 8.3

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

< 6.0 Poor 6.1 – 7.4 Fair 7.5 – 8.9 Good > 9.0 Excellent

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner'	s Name: _	Duke Ener	gy Carolinas	LLC	Date: _	4/17/2	009	Stream	CZ
County:	Cherokee	County	Prepared by: _	Kriste	n Roop	/ Jason	Isbanio	oly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. CHAUDEI CODUIT	1. Channel Condition (adequate hoodplain is generally at least 2 times the channel width)						
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down				
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,				
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with				
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.				
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent				
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.				
cutting		floodplain.					
10	7	3	1				

SCORE: 6

2. Hydrology Alteration (flooding is out of bank flooding)

2. Hydrology Alteratio	2. Hydrology Alteration (nooding is out or bank mooding)						
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply				
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent				
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam				
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood				
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have				
structures limiting the	although present, do	available low flow	caused severe loss of low flow				
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on				
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.				
not incised.							
10	7	3	1				

SCORE: 6

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation includes hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1

Banks are stable; banks are	Moderately stable:	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	. 1

SCORE: 5

5. Water Appearance

5. water Appearance			
Very clear; or clear but tea colored; objects visible at depths of 3-6 feet. No noticeable film on surface or submerged objects.	Occasionally cloudy, especially after storm event; but clears rapidly; objects visible at depth of 1.5-3 feet; may have slight green color.	Considerable cloudiness most of the time; objects visible to depth of .5-1.5 feet; submerged objects with heavy green film, or moderate odor of ammonia.	Very turbid or muddy appearance most of the time; objects visible to depth <.5 feet; heavy coat of film on surface or submerged objects; strong odor of ammonia.
10	7	3	1

SCORE: 9

6. Nutrient Enrichment

_	o. Mutrient Enrichment			
	Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
L	10	7	3	1

SCORE: 10

7. Barriers to Fish Movement

No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

SCORE: __/__

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation,

boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover types present.
10	8	5	3	1

SCORE:

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

~	(D)	_	~	~	-		
Coldwater Fishery	(Pickens.	()conee.	(Jreenville	Counties	ahove	IIS Hwv	111

>75% of water surface shaded and upstream	>50% shaded in reach; or >75% shaded in reach and	20-50% shaded.	<20% shaded in reach.
2-3 miles generally shaded.	2-3 miles upstream poorly shaded.		
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 7

11. Manure Presence

No livestock accessible to stream, riparian area, or floodplain.	Evidence of livestock access to riparian area.	Occasional manure in stream; waste storage structure located in floodplain.	Extensive amount of manure on banks or in stream.
nooupiani.		moodpiain.	
10	5	3	1

SCORE:

AVERAGE SCORE (TOTAL SCORE / 11): 6.8

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

< 6.0 Poor

6.1 - 7.4 Fair

7.5 - 8.9 Good

> 9.0 Excellent

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner	's Name:	Duke	Energy	Carolinas,	LLC	Date: _	3/30/2	009	Stream	D
County: _	Union C	ounty	Pro	epared by:	Krister	n Roop/	Jason	Isbanio]	Ly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Channel Condition (adequate hoodplain is generally at least 2 times the channel which)				
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down	
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,	
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with	
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.	
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent	
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.	
cutting		floodplain.	_	
10	7	3	1	

SCORE: 10

2. Hydrology Alteration (flooding is out of bank flooding)

Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.
not incised.			
10	7	3	1

SCORE: 7

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation includes hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 9

5. Water Appearance

J. Water Appearance		·	The state of the s
Very clear; or clear but tea	Occasionally cloudy,	Considerable	Very turbid or muddy
colored; objects visible at	especially after storm	cloudiness most of the	appearance most of the
depths of 3-6 feet. No	event; but clears	time; objects visible to	time; objects visible to
noticeable film on surface	rapidly; objects	depth of .5-1.5 feet;	depth <.5 feet; heavy coat
or submerged objects.	visible at depth of	submerged objects with	of film on surface or
	1.5-3 feet; may have	heavy green film, or	submerged objects; strong
	slight green color.	moderate odor of	odor of ammonia.
		ammonia.	
10	7	3	1

SCORE: 10

6. Nutrient Enrichment

o. Mathem Emplement			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 10

7. Barriers to Fish Movement

No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	. 3	· 1

SCORE: N/A

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types 6-7 cover types 4-5 cover types 2-3 cover types 1 or less cover types present.

SCORE: N/A

9. Pools

7. I 0013			
Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

Coldwater Fishery (Pickens, Oconee, Greenville Counties above US Hwy 11)

	Continuous and a second of the					
>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.			
shaded and upstream	>75% shaded in reach and					
2-3 miles generally	2-3 miles upstream poorly					
shaded.	shaded.					
10	7	3	1			

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 7

11. Manure Presence

No livestock	Evidence of livestock access	Occasional manure in	Extensive amount of
accessible to stream,	to riparian area.	stream; waste storage	manure on banks or in
riparian area, or		structure located in	stream.
floodplain.		floodplain.	
10	5	3	1

SCORE: N/A

AVERAGE SCORE (TOTAL SCORE / 11): 8 · 8

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

< 6.0 Poor 6.1 – 7.4 Fair 7.5 – 8.9 Good > 9.0 Excellent

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner	's Name: _	Duke E	nergy Carolina	s, LLC	Date: _	4/17/2	009	Stream	DA
County: _	Cherokee	County	Prepared by:	Kriste	n Roop/	Jason	Isbanio	ly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Channel Condi	1. Channel Condition (adequate hoodplain is generally at least 2 times the channel width)							
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down					
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,					
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with					
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.					
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent					
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.					
cutting		floodplain.						
10	7	3	1					

SCORE: 3

2. Hydrology Alteration (flooding is out of bank flooding)

Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply					
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent					
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam					
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood					
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have					
structures limiting the	although present, do	available low flow	caused severe loss of low flow					
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on					
floodplain. Channel is	habitat for biota.	•	a 1 year rain event or less.					
not incised.								
10	7	3	1					

SCORE: 3

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation includes hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <					
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.					
feet on each side.	feet on each side.	on each side.						
10 '	8	5	1					

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 7

5. Water Appearance

5. Water Appearance			
Very clear; or clear but tea colored; objects visible at depths of 3-6 feet. No noticeable film on surface or submerged objects.	Occasionally cloudy, especially after storm event; but clears rapidly; objects visible at depth of 1.5-3 feet; may have slight green color.	Considerable cloudiness most of the time; objects visible to depth of .5-1.5 feet; submerged objects with heavy green film, or moderate odor of ammonia.	Very turbid or muddy appearance most of the time; objects visible to depth <.5 feet; heavy coat of film on surface or submerged objects; strong odor of ammonia.
10	7	3	1

SCORE: 7

6. Nutrient Enrichment

OF ITALIFEDE EMITEMENT			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 7

7. Barriers to Fish Movement

/ Duilles to I isi	1 TO T CHICK			·!
No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

SCORE:

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover types present.
10	8	5	3	1

SCORE: ____

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

Coldwater Fishery	(Pickens,	Oconee.	Greenville	Counties	above	US Hwy	11)

>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.
shaded and upstream	>75% shaded in reach and		
2-3 miles generally	2-3 miles upstream poorly	1	
shaded.	shaded.		
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 6

11. Manure Presence

No livestock	Evidence of livestock access	Occasional manure in	Extensive amount of
accessible to stream,	to riparian area.	stream; waste storage	manure on banks or in
riparian area, or		structure located in	stream.
floodplain.		floodplain.	
10	5	3	1

SCORE: ____

AVERAGE SCORE (TOTAL SCORE / 11): 5.1

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

< 6.0 Poor 6.1 – 7.4 Fair

7.5 - 8.9 Good

> 9.0 Excellent

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landown	er's Name:	Duke E	Energy Carolinas	, LLC	Date: _	4/17/2	009	Stream	DB
County:	Cherokee	County	Prepared by: _	Kriste	n Roop/	Jason	Isbanio	oly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Chambel Condit	1. Channel Condition (adequate hoodplain is generally at least 2 times the channel width)						
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down				
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,				
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with				
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.				
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent				
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.				
cutting		floodplain.	_				
10	7	3	1				

SCORE: 7

2. Hydrology Alteration (flooding is out of bank flooding)

	m (mooning to out or our		
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.
not incised.			_
10	7	3	1

SCORE: <u>6</u>

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 8

5. Water Appearance

3. Water Appearance			
Very clear; or clear but tea colored; objects visible at depths of 3-6 feet. No noticeable film on surface or submerged objects.	Occasionally cloudy, especially after storm event; but clears rapidly; objects visible at depth of 1.5-3 feet; may have slight green color.	Considerable cloudiness most of the time; objects visible to depth of .5-1.5 feet; submerged objects with heavy green film, or moderate odor of ammonia.	Very turbid or muddy appearance most of the time; objects visible to depth <.5 feet; heavy coat of film on surface or submerged objects; strong odor of ammonia.
10	7	3	1

SCORE: ___9__

6. Nutrient Enrichment

o. Municin Emplement			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 8

7. Barriers to Fish Movement

7. Dailleis to Fish	Movement			
No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

SCORE: __

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	l or less cover
				types present.
10	8	5	3	1
SCORE:				

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

Coldwater Fishery	(Pickens.	Oconee.	Greenville	Counties	above I	JS Hwy 1	11)

	Columnator I tout (/ tottomb) Colorest, Critical Columnator and the C						
>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.				
shaded and upstream	>75% shaded in reach and						
2-3 miles generally	2-3 miles upstream poorly						
shaded.	shaded.						
10	7	3	1				

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.	
10	7	1	

SCORE: 9

11. Manure Presence

No livestock	Evidence of livestock access	Occasional manure in	Extensive amount of
accessible to stream,	to riparian area.	stream; waste storage	manure on banks or in
riparian area, or		structure located in	stream.
floodplain.		floodplain.	
10	5	3	1

SCORE:

AVERAGE SCORE (TOTAL SCORE / 11): __7.8_

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

< 6.0 Poor 6.1 – 7.4 Fair 7.5 – 8.9 Good > 9.0 Excellent

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner's Name:	Duke	Energy Carolina	s, LLC	Date:	4/17/20	009	Stream	DC
County: Cherokee	County	Prepared by:	Kriste	n Roop	/ Jason	Isbanio	ly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull
 flow. If the flow is contained within the channel at two times the maximum depth, then the
 channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Channel Conditi	1. Channel Condition (adequate noodplain is generally at least 2 times the channel width)						
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down				
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,				
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with				
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.				
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent				
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.				
cutting		floodplain.					
10	7	3	1				

SCORE: __5_

2. Hydrology Alteration (flooding is out of bank flooding)

Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.
not incised.			_
10	7	3	1

SCORE: 3

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation includes hardwood trees, mixed shrubs, and native herbaceous species)

	narawood trees, mixed shrubs, and native herbaceous species,							
Natural vegetation Natural vegetation		Natural vegetation	Natural vegetation extends <					
	extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.				
	feet on each side.	feet on each side.	on each side.					
	10	8	5	1				

	· · · · · · · · · · · · · · · · · · ·	,	
Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 5

5. Water Appearance

5. Water Appearance			
Very clear; or clear but tea	Occasionally cloudy,	Considerable	Very turbid or muddy
colored; objects visible at	especially after storm	cloudiness most of the	appearance most of the
depths of 3-6 feet. No	event; but clears	time; objects visible to	time; objects visible to
noticeable film on surface	rapidly; objects	depth of .5-1.5 feet;	depth <.5 feet; heavy coat
or submerged objects.	visible at depth of	submerged objects with	of film on surface or
	1.5-3 feet; may have	heavy green film, or	submerged objects; strong
ł	slight green color.	moderate odor of	odor of ammonia.
		ammonia.	
10	7	3	1

SCORE: __6_

6. Nutrient Enrichment

o. Indifficult Entitenment			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 3

7. Barriers to Fish Movement

No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

SCORE: ____

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	l or less cover types present.
10	8	5	3	1

SCORE:

9. Pools

<i>y,</i> 1 0 10				
Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.	
10	7	3	1	

Coldwater Fishery	(Pickens, Oconee.	Greenville Counties	above US Hwv 11)

>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.	
shaded and upstream	>75% shaded in reach and			
2-3 miles generally	2-3 miles upstream poorly			
shaded.	shaded.			
10	7	3	1	

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.		
10	7	1		

SCORE: 3

11. Manure Presence

No livestock accessible to stream, riparian area, or floodplain.	Evidence of livestock access to riparian area.	Occasional manure in stream; waste storage structure located in floodplain.	Extensive amount of manure on banks or in stream.
10	5	3	1

SCORE: 5

AVERAGE SCORE (TOTAL SCORE / 11): ___3.9

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

< 6.0 Poor

6.1 - 7.4 Fair

7.5 - 8.9 Good

> 9.0 Excellent

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowne	er's Name: _	Duke	Energy	Carolinas	, LLC	Date: _	4/17/20)09	Stream	DD
County: _	Union Co	ounty	Pro	epared by: _	Krister	n Roop,	/ Jason	Isbaniol	ГĀ	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Chamici Condit	1. Channel Condition (adequate hoodplain is generally at least 2 times the channel width)							
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down					
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,					
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with					
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.					
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent					
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.					
cutting		floodplain.	-					
10	7	3	1					

SCORE: 4

2. Hydrology Alteration (flooding is out of bank flooding)

Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.
not incised.			·
10	7	3	1

SCORE: 3

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1 .

ii Dank Stability			, , , , , , , , , , , , , , , , , , ,
Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1
			

SCORE: 7

5. Water Appearance

5. Water Appearance			
Very clear; or clear but tea	Occasionally cloudy,	Considerable	Very turbid or muddy
colored; objects visible at	especially after storm	cloudiness most of the	appearance most of the
depths of 3-6 feet. No	event; but clears	time; objects visible to	time; objects visible to
noticeable film on surface	rapidly; objects	depth of .5-1.5 feet;	depth <.5 feet; heavy coat
or submerged objects.	visible at depth of	submerged objects with	of film on surface or
	1.5-3 feet; may have	heavy green film, or	submerged objects; strong
	slight green color.	moderate odor of	odor of ammonia.
		ammonia.	
10	7	3	1

SCORE: 8

6. Nutrient Enrichment

o. Mullicht Entichment			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: __7___

7. Barriers to Fish Movement

No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

SCORE:

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover
				types present.
10	8	5	3	1

SCORE:

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	, ,	Pools absent; entire bottom visible.
10	7	3	• 1

1 0	•			,		,	
Coldwater Fishery	(Pickens.	Oconee.	Greenville	Counties	above	US Hwv	11)

>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.
shaded and upstream	>75% shaded in reach and		
2-3 miles generally	2-3 miles upstream poorly		
shaded.	shaded.		
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.	
10	7	1	

SCORE: 7

11. Manure Presence

No livestoc	k -	Evidence of livestock access	Occasional manure in	Extensive amount of
accessible t	o stream,	to riparian area.	stream; waste storage	manure on banks or in
riparian are	a, or		structure located in	stream.
floodplain.			floodplain.	·
1	0	5	3	1

SCORE:

AVERAGE SCORE (TOTAL SCORE / 11): 5.1

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner	's Name	: Duke	Energy	Carolinas,	LLC	Date:	4/28/2	009	Stream	DE
County:	Union	County	Pro	epared by:	Krister	Roop/	Jason	Isbanio	ly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

At Chimmer Commen	1. Channel Condition (adequate noouplain to generally at least 2 times the channel water)					
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down			
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,			
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with			
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.			
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent			
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.			
cutting		floodplain.				
10	7	3	1			

SCORE: 4

2. Hydrology Alteration (flooding is out of bank flooding)

2. Hydrology Amerano	2. Hydrology Arteration (nooding is out or bank nooding)							
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply					
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent					
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam					
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood					
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have					
structures limiting the	although present, do	available low flow	caused severe loss of low flow					
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on					
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.					
not incised.								
10	7	3	1					

SCORE: 3

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation includes hardwood trees, mixed shrubs, and native herbaceous species)

harawood trees, mixed shrubs, and harive herbaceous species,							
Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <				
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.				
feet on each side.	feet on each side.	on each side.					
10	8	5	1				

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 7

5. Water Appearance

3. Water Appearance			
Very clear; or clear but tea	Occasionally cloudy,	Considerable	Very turbid or muddy
colored; objects visible at	especially after storm	cloudiness most of the	appearance most of the
depths of 3-6 feet. No	event; but clears	time; objects visible to	time; objects visible to
noticeable film on surface	rapidly; objects	depth of .5-1.5 feet;	depth <.5 feet; heavy coat
or submerged objects.	visible at depth of	submerged objects with	of film on surface or
	1.5-3 feet; may have	heavy green film, or	submerged objects; strong
	slight green color.	moderate odor of	odor of ammonia.
		ammonia.	•
10	7	3	1

SCORE: 8

6. Nutrient Enrichment

o. Mutitent Entichment			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 7

7. Barriers to Fish Movement

7. Dailiels to Fish Movement						
No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.		
10	. 8	5	3	1		

SCORE: ____

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

 >7 cover types
 6-7 cover types
 4-5 cover types
 2-3 cover types
 1 or less cover types present.

 10
 8
 5
 3
 1

SCORE:

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
deep.			
10	7	3	<u>l</u>

200 Ounopy Out to (000 Outon to the control of the						
Coldwater Fishery (Pickens, Oconee, Greenville Counties above US Hwy 11)						
>75% of water surface	<20% shaded in reach.					
shaded and upstream	>75% shaded in reach and	:				
2-3 miles generally	2-3 miles upstream poorly					
shaded.	shaded.					
10	7	3	1			

warm water fishery (all area	of S.C. except as noted above)	
25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 7

11. Manure Presence

No livestock	Evidence of livestock access	Occasional manure in	Extensive amount of
accessible to stream,	to riparian area.	stream; waste storage	manure on banks or in
riparian area, or		structure located in	stream.
floodplain.		floodplain.	
10	5	3	1

SCORE:

AVERAGE SCORE (TOTAL SCORE / 11): 5.1

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner	's Name:	Duke	Energy	Carolinas,	LLC	Date: _	4/28/2	009	Stream	DF
County: _	Union C	ounty	Pr	epared by:	Krister	n Roop/	Jason	Isbanio	oly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Channel Condition (adequate noodplain is generally at least 2 times the channel width)						
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down			
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,			
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with			
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.			
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent			
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.			
cutting		floodplain.				
10	7	3	1			

SCORE: 8

2. Hydrology Alteration (flooding is out of bank flooding)

2. Hydrology Attention (novemb is out of bank novemb)					
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply		
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent		
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam		
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood		
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have		
structures limiting the	although present, do	available low flow	caused severe loss of low flow		
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on		
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.		
not incised.					
10	7	3	1		

SCORE: 7

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation extends more than 50	Natural vegetation extends at least 35		Natural vegetation extends < 15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 7

5. Water Appearance

3. Water Appearance			
Very clear; or clear but tea	Occasionally cloudy,	Considerable	Very turbid or muddy
colored; objects visible at	especially after storm	cloudiness most of the	appearance most of the
depths of 3-6 feet. No	event; but clears	time; objects visible to	time; objects visible to
noticeable film on surface	rapidly; objects	depth of .5-1.5 feet;	depth <.5 feet; heavy coat
or submerged objects.	visible at depth of	submerged objects with	of film on surface or
	1.5-3 feet; may have	heavy green film, or	submerged objects; strong
	slight green color.	moderate odor of	odor of ammonia.
		ammonia.	
10	7	3	1

SCORE: 8

6. Nutrient Enrichment

o. Mutrient Enrichment	*		
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	_ 7	3	1

SCORE: 9

7. Barriers to Fish Movement

/ Dailies to I	7. Dailies to I ish 1/10/cment					
No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.		
10	8	5	3	1		

SCORE: 6

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover
				types present.
10	8	5	3	1

SCORE: 3

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

Coldwater Fishery	(Pickens.	Oconee.	Greenville	Counties	above U	S Hwv 11	ı١

CO10	mens, seemer, seement see	1000 00000 00 12117 127	
>75% of water surface >50% shaded in reach; or		20-50% shaded.	<20% shaded in reach.
shaded and upstream >75% shaded in reach and		*	
2-3 miles generally 2-3 miles upstream poorly			
shaded.	shaded.		
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 6

11. Manure Presence

No livestock	Evidence of livestock access	Occasional manure in	Extensive amount of
accessible to stream,	to riparian area.	stream; waste storage	manure on banks or in
riparian area, or		structure located in	stream.
floodplain.		floodplain.	
10	5	3	1

SCORE:

AVERAGE SCORE (TOTAL SCORE / 11): 6.3

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner's Name: _	Duke En	ergy Carolinas	s, LLC	Date: _	4/28/2009	Stream	DG
County: Union Co	unty	Prepared by: _	Kriste	n Roop	/ Jason Isbanio	oly -	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Channel Conditi	1. Channel Condition (adequate noodplain is generally at least 2 times the channel width)						
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down				
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,				
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with				
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.				
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent				
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.				
cutting		floodplain.					
10	7	3	1				

SCORE: 3

2. Hydrology Alteration (flooding is out of bank flooding)

Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.
not incised.			
10	7	3	1

SCORE: 4

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	. 8	5	1

7. Dank Stability			
Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 2

5. Water Appearance

3. Water Appearance			
Very clear; or clear but tea	Occasionally cloudy,	Considerable	Very turbid or muddy
colored; objects visible at	especially after storm	cloudiness most of the	appearance most of the
depths of 3-6 feet. No	event; but clears	time; objects visible to	time; objects visible to
noticeable film on surface	rapidly; objects	depth of .5-1.5 feet;	depth <.5 feet; heavy coat
or submerged objects.	visible at depth of	submerged objects with	of film on surface or
	1.5-3 feet; may have	heavy green film, or	submerged objects; strong
	slight green color.	moderate odor of	odor of ammonia.
		ammonia.	
10	7	3	1

SCORE: 6

6. Nutrient Enrichment

o. Ivatitent Emilenticit			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 3

7. Barriers to Fish Movement

No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

SCORE:

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover
				types present.
10	8	5	3	1

SCORE:

9. Pools

71 X 0013			
Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

C-11 to Et 1	(D) - 1 O	\	111 - C 41 1	TIO TT 11\
Coldwater Fishery	(Pickens, U)conee. Greenvi	ille Counties abo	ve US HWV II)

>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.
shaded and upstream	>75% shaded in reach and		4 14
2-3 miles generally	2-3 miles upstream poorly		!
shaded.	shaded.		
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 4

11. Manure Presence

No livestock accessible to stream,	Evidence of livestock access to riparian area.	Occasional manure in stream; waste storage	Extensive amount of manure on banks or in
riparian area, or		structure located in	stream.
floodplain.	·	floodplain.	
10	5 .	3	1

SCORE: 5

AVERAGE SCORE (TOTAL SCORE / 11): 3.7

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner	's Name	:	Energy Carolinas	, LLC	Date: _	4/28/2	009	Stream	DH
County:	Union	County	Prepared by: _	Kriste	n Roop/	Jason	Isbanio	ly	•

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Challet Collait	ion (adequate noodplain is gene	Tally at least a times the t	manner mach
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.
cutting		floodplain.	
. 10	7	3	1

SCORE: 8

2. Hydrology Alteration (flooding is out of bank flooding)

Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.	•	a 1 year rain event or less.
not incised.		,	
10	7	3	1

SCORE: ___7__

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation includes hardwood trees, mixed shrubs, and native herbaceous species)

	narawood trees, m	narawood trees, mixed shrubs, and native herbaceous species)						
i	Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <				
	extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.				
	feet on each side.	feet on each side.	on each side.					
	10	8	5	1.				

Ti Dank Stability			
Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 8

5. Water Appearance

5. Water Appearance			(
Very clear; or clear but tea	Occasionally cloudy,	Considerable	Very turbid or muddy
colored; objects visible at	especially after storm	cloudiness most of the	appearance most of the
depths of 3-6 feet. No	event; but clears	time; objects visible to	time; objects visible to
noticeable film on surface	rapidly; objects	depth of .5-1.5 feet;	depth <.5 feet; heavy coat
or submerged objects.	visible at depth of	submerged objects with	of film on surface or
	1.5-3 feet; may have	heavy green film, or	submerged objects; strong
	slight green color.	moderate odor of	odor of ammonia.
		ammonia.	
10	7	3	1

SCORE: 9

6. Nutrient Enrichment

o. Nutricut Enricument	<u> </u>		
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 9

7. Barriers to Fish Movement

7. Dailiels to Fish Movement						
No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.		
10	. 8	5	3	1		

SCORE: 7

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

DOUIGET STEED DO	o, i iiiiioo, amadi dat bi	mins, chieff 1 ove mans		
>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover
				types present.
10	8	5	3	1

SCORE: 4

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

Callera Fr. L. (D.)		e Counties above US Hwv 11	4 \
t ninwater Richery (Pickens	i ijennee tyreenviii	e i onbries above us HWV i	

- 750/ C · C	500/ 1 1 11: 1	20 500/ 1 1 1	-0.00/ 1 1 1 1
>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.
shaded and upstream	>75% shaded in reach and		
2-3 miles generally	2-3 miles upstream poorly		
shaded.	shaded.		
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

(
25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.	
10	7	1	i

SCORE: 7

11. Manure Presence

No livestock	Evidence of livestock access	Occasional manure in	Extensive amount of
accessible to stream,	to riparian area.	stream; waste storage	manure on banks or in
riparian area, or		structure located in	stream.
floodplain.		floodplain.	
10	5	3	1

SCORE: 1

AVERAGE SCORE (TOTAL SCORE / 11): 6.4

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

< 6.0 Poor 6.1 – 7.4 Fair 7.5 – 8.9 Good

> 9.0 Excellent

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner	's Name:	Duke	Energy	Carolinas	, LLC	Date:	4/28/2	009	Stream	DI
County:	Union Co	ounty	Pr	epared by: _	Kriste	n Roop/	Jason	Isbanio	oly -	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Channel Condition (adequate hoodplain is generally at least 2 times the channel width)						
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down			
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,			
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with			
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.			
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent			
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.			
cutting		floodplain.				
10	7	3	1			

SCORE: 7

2. Hydrology Alteration (flooding is out of bank flooding)

2. Hydrology Alteratio	2. Hydrology Arteration (mooding is out or bank mooding)							
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply					
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent					
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam					
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood					
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have					
structures limiting the	although present, do	available low flow	caused severe loss of low flow					
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on					
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.					
not incised.								
10	7	3	1					

SCORE: 6

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1

T. Bunk Stubility			
Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	<u></u>
10	7	3	11

SCORE: 8

5. Water Appearance

5. Water Appearance			
Very clear; or clear but tea	Occasionally cloudy,	Considerable	Very turbid or muddy
colored; objects visible at	especially after storm	cloudiness most of the	appearance most of the
depths of 3-6 feet. No	event; but clears	time; objects visible to	time; objects visible to
noticeable film on surface	rapidly; objects	depth of .5-1.5 feet;	depth <.5 feet; heavy coat
or submerged objects.	visible at depth of	submerged objects with	of film on surface or
	1.5-3 feet; may have	heavy green film, or	submerged objects; strong
	slight green color.	moderate odor of	odor of ammonia.
		ammonia.	
10	7	3	1

SCORE: 7

6. Nutrient Enrichment

o. Nutrient Enrichment			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 7

7. Barriers to Fish Movement

/. Darriers to Fis	ii Movement			
No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

SCORE:

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types 6-7 cover types 4-5 cover types 2-3 cover types 1 or less cover types present.

SCORE:

9. Pools

71 I OUIS		· ·	
Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	.3	1

SCORE: ____3__

Coldwater Fishery	(Pickens.)	Oconee.	Greenville	Counties abo	ive US Hwy 11)

>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.
shaded and upstream	>75% shaded in reach and		
2-3 miles generally	2-3 miles upstream poorly		
shaded.	shaded.		
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 7

11. Manure Presence

111 Manual C I 1 Cochec			
No livestock	Evidence of livestock access	Occasional manure in	Extensive amount of
accessible to stream,	to riparian area.	stream; waste storage	manure on banks or in
riparian area, or		structure located in	stream.
floodplain.		floodplain.	
10	5	3	1

SCORE:

AVERAGE SCORE (TOTAL SCORE / 11): 6.4

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beçk's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner	's Name:	Duke	Energy	Carolinas,	LLC	Date: _	4/29/2	009	Stream	DJ
County: _	Union (County	Pre	pared by:	Kriste	n Roop/	Jason	Isbanio	ly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Chamici Condi	1. Channel Condition (adequate hoodplain is generally at least 2 times the channel wittin)							
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down					
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,					
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with					
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.					
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent					
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.					
cutting		floodplain.	_					
10	7	3	1					

SCORE: 10

2. Hydrology Alteration (flooding is out of bank flooding)

Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.
not incised.			
10	7	3	1

SCORE: 9

3. Riparian Zone (evaluate general conditions along entire reach; natural vegetation includes hardwood trees, mixed shrubs, and native herbaceous species)

maraood trees, mixed sin abs, and native herbaceous species,									
Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <						
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.						
feet on each side.	feet on each side.	on each side.							
10	8	5	1						

4. Dank Stability			
Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 9

5. Water Appearance

5. Water Appearance			
Very clear; or clear but tea	Occasionally cloudy,	Considerable	Very turbid or muddy
colored; objects visible at	especially after storm	cloudiness most of the	appearance most of the
depths of 3-6 feet. No	event; but clears	time; objects visible to	time; objects visible to
noticeable film on surface	rapidly; objects	depth of .5-1.5 feet;	depth <.5 feet; heavy coat
or submerged objects.	visible at depth of	submerged objects with	of film on surface or
	1.5-3 feet; may have	heavy green film, or	submerged objects; strong
	slight green color.	moderate odor of	odor of ammonia.
		ammonia.	,
10	7	3	1

SCORE: 8

6. Nutrient Enrichment

o. Manient Emilentent			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	. 1

SCORE: 8

7. Barriers to Fish Movement

/. Dailleis to Fish	MOVEMENT	The second secon	the state of the s	
No barriers;	Seasonal water	Drop structures,	Drop structures,	Drop structures,
natural drops <1	withdrawals inhibit	culverts (<1 foot	culverts, or dams	culverts, or dams
foot.	movement of fish.	drop) present	present within 3	(>1 foot drop)
		within reach.	miles of reach.	present within
				reach.
10	8	5	3	1

SCORE: 8

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

Doulder 3/ CODDI	e, illines, unuel cut be	/			
>7 cover types 6-7 cover types		4-5 cover types	2-3 cover types	1 or less cover	
			,	types present.	
10	8	5	3	1	

SCORE: 7

9. Pools

71 T 0013			
Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

Cold	lwater Fishery	(Pickens.	Oconee.	Greenville	Counties :	above US 1	Hwv 11)

>7	75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.
sh	aded and upstream	>75% shaded in reach and		
2-3	3 miles generally	2-3 miles upstream poorly		
sh	aded.	shaded.		· ·
	10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

	25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.			
ſ	10	7	1			

SCORE: 8

11. Manure Presence

No livestock	Evidence of livestock access	Occasional manure in	Extensive amount of
accessible to stream,	to riparian area.	stream; waste storage	manure on banks or in
riparian area, or		structure located in	stream.
floodplain.		floodplain.	
10	. 5	3 .	1

SCORE:

AVERAGE SCORE (TOTAL SCORE / 11): 8.4

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

< 6.0 **Poor**

6.1 - 7.4 Fair

7.5 - 8.9 Good

> 9.0 Excellent

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner	's Name:	Duke	Energy	Carolinas,	LLC	Date:	4/29/20	009	Stream	DK
County:	Union	County	Pro	epared by:	Kriste	n Roop/	Jason	Isbanio	ly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Channel Condit	ion (aucquate nooupiam is gene	t. Channel Condition (adequate hoodplain is generally at least 2 times the channel width)			
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down		
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,		
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with		
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.		
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent		
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.		
cutting		floodplain.			
10	7	3	1		

SCORE: 8

2. Hydrology Alteration (flooding is out of bank flooding)

Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.
not incised.			-
10	7	3	1 .

SCORE: 7

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8 .	5	1

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 6

5. Water Appearance

5. water Appearance			
Very clear; or clear but tea colored; objects visible at depths of 3-6 feet. No noticeable film on surface or submerged objects.	Occasionally cloudy, especially after storm event; but clears rapidly; objects visible at depth of 1.5-3 feet; may have slight green color.	Considerable cloudiness most of the time; objects visible to depth of .5-1.5 feet; submerged objects with heavy green film, or moderate odor of ammonia.	Very turbid or muddy appearance most of the time; objects visible to depth <.5 feet; heavy coat of film on surface or submerged objects; strong odor of ammonia.
10	7	3	1

SCORE: 9

6. Nutrient Enrichment

o. Nutricht Emilemit	це		
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 10

7. Barriers to Fish Movement

No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

SCORE:

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover types present.
10	8	5	3	1

SCORE:

9. Pools

/· 1 0010			
Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

Coldwater Fishery	(Pickens, Oconee,	Greenville Coun	ties above	US Hwv 11)

>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.
shaded and upstream	>75% shaded in reach and		
2-3 miles generally	2-3 miles upstream poorly		
shaded.	shaded.		
10	7	3	, 1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.	
10	7	1	

SCORE: 7

11. Manure Presence

No livestock accessible to stream, riparian area, or floodplain.	Evidence of livestock access to riparian area.	Occasional manure in stream; waste storage structure located in floodplain.	Extensive amount of manure on banks or in stream.
пооцрани.		Hoouplain.	
10	5	3	1

SCORE: ____

AVERAGE SCORE (TOTAL SCORE / 11): 7.8

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landown	er's Name:	Duke	Energy	Carolinas	, LLC	Date: _	4/29/2	009	Stream	DL
County:	Union C	ounty	Pro	epared by: _	Kriste	n Roop/	Jason	Isbanio	ly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull
 flow. If the flow is contained within the channel at two times the maximum depth, then the
 channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Challmer Condit	ion (aucquate nooupiam is gene	iany at icast 2 times the c	Haunci William
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.
cutting	<u></u>	floodplain.	·
10	7	3	1

SCORE: 8

2. Hydrology Alteration (flooding is out of bank flooding)

Z. Ilyurology rincoratio	m (moduling is out or but	11 1100uing)	
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.
not incised.			-
10	7	3	1

SCORE: 5

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	1
flow elevation.		slope failures.	
10	7	3	. 1
	•		

SCORE: 7

5. Water Appearance

3. Water Appearance			
Very clear; or clear but tea	Occasionally cloudy,	Considerable	Very turbid or muddy
colored; objects visible at depths of 3-6 feet. No noticeable film on surface or submerged objects.	especially after storm event; but clears rapidly; objects visible at depth of	cloudiness most of the time; objects visible to depth of .5-1.5 feet; submerged objects with	appearance most of the time; objects visible to depth <.5 feet; heavy coat of film on surface or
of suprinciped objects.	1.5-3 feet; may have slight green color.	heavy green film, or moderate odor of ammonia.	submerged objects; strong odor of ammonia.
10	7	3	1

SCORE: 7

6. Nutrient Enrichment

o. Nutrient Enrichment			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 8

7. Barriers to Fish Movement

/. Dailiels to Pish	MICHELLE			
No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

SCORE:

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover
				types present.
10	8	5	3	1

SCORE:

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
deep.			
10	7	3	1

Coldwater Fishery (Pickens	. Oconee. Greenville C	Counties above US Hwy 11)

>75% of water surface >50% shaded in reach; or		20-50% shaded.	<20% shaded in reach.
shaded and upstream >75% shaded in reach and		·	
2-3 miles generally 2-3 miles upstream poorly			
shaded.	shaded.		
10	.7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 7

11. Manure Presence

No livestock accessible to stream, riparian area, or	Evidence of livestock access to riparian area.	Occasional manure in stream; waste storage structure located in	Extensive amount of manure on banks or in stream.
floodplain.		floodplain.	
10	5	3	1

SCORE:

AVERAGE SCORE (TOTAL SCORE / 11): 6.6

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner's Name:	Duke	Energy	Carolinas	, LLC	Date:	4/29/2	009	Stream	DM
County:Union C	ounty	Pr	epared by: _	Kriste	n Roop	/ Jason	Isbanio	oly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Chamber Conditi	1. Channel Condition (adequate noodplain is generally at least 2 times the channel width)					
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down			
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,			
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with			
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.			
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent			
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.			
cutting		floodplain.				
10	7	3	1			

SCORE: __8___

2. Hydrology Alteration (flooding is out of bank flooding)

Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.
not incised.			
10	7	3	1

SCORE: 5

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	1
flow elevation.		slope failures.	
10	7	3	1

SCORE: 7

5. Water Appearance

and the second s		
Occasionally cloudy, especially after storm event; but clears rapidly; objects visible at depth of 1.5-3 feet; may have slight green color.	Considerable cloudiness most of the time; objects visible to depth of .5-1.5 feet; submerged objects with heavy green film, or moderate odor of ammonia	Very turbid or muddy appearance most of the time; objects visible to depth < .5 feet; heavy coat of film on surface or submerged objects; strong odor of ammonia.
7	3	1
	especially after storm event; but clears rapidly; objects visible at depth of 1.5-3 feet; may have	especially after storm event; but clears rapidly; objects visible at depth of 1.5-3 feet; may have cloudiness most of the time; objects visible to depth of .5-1.5 feet; submerged objects with heavy green film, or

SCORE: 7

6. Nutrient Enrichment

o. Patricut Emilicument			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 8

7. Barriers to Fish Movement

TO DESCRIBE TO A ROLL THOU THINK					
No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.	
10	8	5	3	1	

SCORE:

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover
				types present.
10	8	5	3	1

SCORE: __

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3 "	1

• •	`			,	
Coldwater Fishery	(Pickens, Oc	conee. Greeny	zille Counties	above US	Hwv 11)

>75% of water surface shaded and upstream	>50% shaded in reach; or >75% shaded in reach and	20-50% shaded.	<20% shaded in reach.
2-3 miles generally shaded.	2-3 miles upstream poorly shaded.		
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 7

11. Manure Presence

No livestock	Evidence of livestock access	Occasional manure in	Extensive amount of
accessible to stream,	to riparian area.	stream; waste storage	manure on banks or in
riparian area, or		structure located in	stream.
floodplain.		floodplain.	, '
10	5	3	1

SCORE:

AVERAGE SCORE (TOTAL SCORE / 11): 6.5

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner'	s Name:	Duke	Energy	Carolinas	s, LLC	Date:	3/30/2	009	Stream	Ε
County:	Union	County	Pr	epared by:	Kriste	n Roop) Jason	Isbanio	ly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Channel Condition (adequate nodeplain is generally at least 2 times the channel width)							
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down				
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,				
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with				
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.				
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent				
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.				
cutting		floodplain.					
10	7	3	1				

SCORE: 10

2. Hydrology Alteration (flooding is out of bank flooding)

Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.
not incised.			-
10	7	3	1

SCORE: 10

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	·
10	8	5	1

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 10

5. Water Appearance

3. Water Appearance		·	
Very clear; or clear but tea colored; objects visible at depths of 3-6 feet. No noticeable film on surface or submerged objects.	Occasionally cloudy, especially after storm event; but clears rapidly; objects visible at depth of 1.5-3 feet; may have slight green color.	Considerable cloudiness most of the time; objects visible to depth of .5-1.5 feet; submerged objects with heavy green film, or moderate odor of ammonia.	Very turbid or muddy appearance most of the time; objects visible to depth <.5 feet; heavy coat of film on surface or submerged objects; strong odor of ammonia.
10	7	3	1

SCORE: 7

6. Nutrient Enrichment

o. Mutitent Entichment			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 9

7. Barriers to Fish Movement

7. Dailieis to Fish	MOVEINENT			
No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

SCORE: 9

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

DOUIGEIS/CODDI	c, illines, unacicut ba	inks, thick root mats	/	
>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover
				types present.
10	8	5	3	1

SCORE: 8

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

- v	•			•		
Coldwater Fishery	(Pickens (Oconee. (Greenville (Counties	above US	Hwv 11)

>75% of water surface shaded and upstream	>50% shaded in reach; or >75% shaded in reach; and	20-50% shaded.	<20% shaded in reach.
2-3 miles generally shaded.	2-3 miles upstream poorly shaded.		
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
. 10	.7.	1

SCORE: 10

11. Manure Presence

No livestock	Evidence of livestock access	Occasional manure in	Extensive amount of
accessible to stream,	to riparian area.	stream; waste storage	manure on banks or in
riparian area, or		structure located in	stream.
floodplain.		floodplain.	
10	5	3	1

SCORE: N/A

AVERAGE SCORE (TOTAL SCORE / 11): 9.2

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner	's Name:	Duke	Energy	Carolinas,	LLC	Date: _	3/30/2	009	Stream	F
County: _	Union C	County	Pro	epared by:	Kriste	n Roop,	Jason	Isbanio	ly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Chamner Condit	1. Channel Condition (adequate hoodplain is generally at least 2 times the channel width)						
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down				
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,				
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with				
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.				
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent				
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.				
cutting		floodplain.	_				
10	7	3	1				

SCORE: 6

2. Hydrology Alteration (flooding is out of bank flooding)

22 Mydrology Anteraction (nooding is out or bank nooding)							
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply				
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent				
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam				
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood				
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have				
structures limiting the	although present, do	available low flow	caused severe loss of low flow				
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on				
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.				
not incised.		·	·				
10	7	3	1				

SCORE: 3

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively]
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 7

5. Water Appearance

3. Water Appearance			
Very clear; or clear but tea	Occasionally cloudy,	Considerable	Very turbid or muddy
colored; objects visible at	especially after storm	cloudiness most of the	appearance most of the
depths of 3-6 feet. No	event; but clears	time; objects visible to	time; objects visible to
noticeable film on surface	rapidly; objects	depth of .5-1.5 feet;	depth <.5 feet; heavy coat
or submerged objects.	visible at depth of	submerged objects with	of film on surface or
	1.5-3 feet; may have	heavy green film, or	submerged objects; strong
1	slight green color.	moderate odor of	odor of ammonia.
		ammonia.	
10	7	3	1

SCORE: __7___

6. Nutrient Enrichment

o. Matricat Entitament			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 9

7. Barriers to Fish Movement

7. Dailiers to Fish Movement				
No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

SCORE:

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover types present.
10	8	-5	3	1 .

SCORE:

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

Coldwater Fishery ((Pickens, Oconee, 6	Greenville Countie	s above US Hwy 11)

Cola valor Tibliory (Tiellolls, Council, Steen ville Counciles above CD 1111/11)			
>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.
shaded and upstream	>75% shaded in reach and		
2-3 miles generally	2-3 miles upstream poorly		
shaded.	shaded.		
10	7	3	. 1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 7

11. Manure Presence

No livestock accessible to stream, riparian area, or	Evidence of livestock access to riparian area.	stream; waste storage structure located in	Extensive amount of manure on banks or in stream.
floodplain.		floodplain.	
10	5	3	1

SCORE: N/A

AVERAGE SCORE (TOTAL SCORE / 11): 6.9

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowne	r's Name:	Duke	Energy	Carolinas,	LLC	Date: _	3/30/2	009	Stream	G
County: _	Union (County	Pro	epared by:	Kriste	n Roop/	Jason	Isbanio	ly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull
 flow. If the flow is contained within the channel at two times the maximum depth, then the
 channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Channel Condition (adequate modupum is generally at least 2 times the channel width)							
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down				
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,				
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with				
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.				
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent				
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.				
cutting		floodplain.					
10	7	3	1				

SCORE: 4

2. Hydrology Alteration (flooding is out of bank flooding)

	m (mooding to out of but	20 My droid j Theoration (moderning to out of bulling moderning)							
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply						
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent						
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam						
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood						
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have						
structures limiting the	although present, do	available low flow	caused severe loss of low flow						
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on						
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.						
not incised.									
10	7	3	1						

SCORE: 3

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	•
flow elevation.		slope failures.	
10	7	3	1

SCORE: 6

5. Water Appearance

3. Water Appearance			· ·
Very clear; or clear but tea	Occasionally cloudy,	Considerable	Very turbid or muddy
colored; objects visible at	especially after storm	cloudiness most of the	appearance most of the
depths of 3-6 feet. No	event; but clears	time; objects visible to	time; objects visible to
noticeable film on surface	rapidly; objects	depth of .5-1.5 feet;	depth <.5 feet; heavy coat
or submerged objects.	visible at depth of	submerged objects with	of film on surface or
	1.5-3 feet; may have	heavy green film, or	submerged objects; strong
	slight green color.	moderate odor of	odor of ammonia.
		ammonia.	
10	7	. 3	1

SCORE: 9

6. Nutrient Enrichment

v. Nutrient Enrichment			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 10

7. Barriers to Fish Movement

7. Dairiers to Fish	Movement			,
No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

SCORE: _

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover
10	8	5	3	types present.

SCORE:

9. Pools

		·	· ·
Deep and shallow	Pools present, but not	Pools present, but	Pools absent; entire
pools abundant (>3);	abundant (<3); pools at least	shallow, <3 ft. deep.	bottom visible.
pools at least 5 ft.	3 ft. deep.		
deep.			•
10	7	3	1

	10	`			,	,	
Cal	dwater Fishery	(Pickens	Oconee	Greenville	Counties a	have US Hwy	z 11)

>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.			
shaded and upstream	>75% shaded in reach and					
2-3 miles generally	2-3 miles upstream poorly					
shaded.	shaded.	,				
10	7	3	1			

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 7

11. Manure Presence

No	livestock	Evidence of livestock access	Occasional manure in	Extensive amount of
acce	essible to stream,	to riparian area.	stream; waste storage	manure on banks or in
ripa	rian area, or		structure located in	stream.
floo	dplain.		floodplain.	
	10	5	3	1

SCORE: N/A

AVERAGE SCORE (TOTAL SCORE / 11): 6.9

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner	's Name:	Duke	Energy	Carolina	s, LLC	Date:	3/30/20	09	Stream	Н
County:	Union C	ounty	Pr	epared by:	Kriste	n Roop	/ Jason	Isbanio	ly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Channel Condition (adequate noodplant is generally at least 2 times the channel width)					
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down		
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,		
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with		
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.		
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent		
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.		
cutting		floodplain.			
10	7	3	1		

SCORE: 3

2. Hydrology Alteration (flooding is out of bank flooding)

2. Hydrology Micration (modding is out of bank modding)						
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply			
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent			
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam			
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood			
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have			
structures limiting the	although present, do	available low flow	caused severe loss of low flow			
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on			
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.			
not incised.			-			
10	7	3	1			

SCORE: 3

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	· ·
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 7

5. Water Appearance

	5. water Appearance			
	Very clear; or clear but tea	Occasionally cloudy,	Considerable	Very turbid or muddy
	colored; objects visible at	especially after storm	cloudiness most of the	appearance most of the
	depths of 3-6 feet. No	event; but clears	time; objects visible to	time; objects visible to
	noticeable film on surface	rapidly; objects	depth of .5-1.5 feet;	depth <.5 feet; heavy coat
١	or submerged objects.	visible at depth of	submerged objects with	of film on surface or
		1.5-3 feet; may have	heavy green film, or	submerged objects; strong
		slight green color.	moderate odor of	odor of ammonia.
			ammonia.	
	10	7	3	. 1

SCORE: 7

6. Nutrient Enrichment

0. I utilent Emilenment			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 10

7. Barriers to Fish Movement

No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	. 5	3	1 ,

SCORE:

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

DOULGEL ST CODD	o, illinoo, amadi dat bu	ming thier root met,		
>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover
	-			types present.
10	8	5	. 3	1

SCORE: _

9. Pools

/1 2 0020			
Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

Coldwater Fishery (Pickens, Oconee, Greenville Counties above US Hwy 11)

Cold the state of						
>75% of water surface >50% shaded in reach; or		20-50% shaded.	<20% shaded in reach.			
shaded and upstream	>75% shaded in reach and					
2-3 miles generally	2-3 miles upstream poorly					
shaded.	shaded.					
10	7	3	1			

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 7

11. Manure Presence

No livestock accessible to stream, riparian area, or floodplain.	Evidence of livestock access to riparian area.	Occasional manure in stream; waste storage structure located in floodplain.	Extensive amount of manure on banks or in stream.
10	5	3	1

SCORE: N/A

AVERAGE SCORE (TOTAL SCORE / 11): 6.7

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner	's Name:	Duke	Energy	Carolinas	s, LLC	Date: _	3/31/2	009	Stream	I
County: _	Union C	County	Pro	epared by:	Kriste	n Roop,	/ Jason	Isbanio	ly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Channel Conditi	1. Channel Condition (adequate noodplain is generally at least 2 times the channel width)						
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down				
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,				
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with				
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.				
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent				
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.				
cutting		floodplain.					
10	7	3	1				

SCORE: 6

2. Hydrology Alteration (flooding is out of bank flooding)

Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.	·	a 1 year rain event or less.
not incised.		l	
10	7	3	1

SCORE: 6

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation includes hardwood trees, mixed shrubs, and native herbaceous species)

narawood trees, mixed shi dos, and native herbaccous species)							
Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <				
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.				
feet on each side.	feet on each side.	on each side.					
10	8	5	1				

" Dull Deadling			
Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	,
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	11

SCORE: 5

5. Water Appearance

3. Water Appearance			
Very clear; or clear but tea	Occasionally cloudy,	Considerable	Very turbid or muddy
colored; objects visible at especially after storm		cloudiness most of the	appearance most of the
depths of 3-6 feet. No	event; but clears	time; objects visible to	time; objects visible to
noticeable film on surface	rapidly; objects	depth of .5-1.5 feet;	depth <.5 feet; heavy coat
or submerged objects.	visible at depth of	submerged objects with	of film on surface or
	1.5-3 feet; may have	heavy green film, or	submerged objects; strong
	slight green color.	moderate odor of	odor of ammonia.
		ammonia.	
10	7	3	1

SCORE: 7

6. Nutrient Enrichment

or reactions burient			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 7

7. Barriers to Fish Movement

/. Dalliels to Fish	7. Daillels to Fish Movement						
No barriers; natural drops <1	Seasonal water withdrawals inhibit	Drop structures, culverts (<1 foot	Drop structures, culverts, or dams	Drop structures, culverts, or dams			
foot.	movement of fish.	drop) present within reach.	present within 3 miles of reach.	(>1 foot drop) present within reach.			
10	8	5	3	1			

SCORE:

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover
				types present.
10	8	5	3	1

SCORE: ____

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1
10	<i>,</i>)	l l

Coldwater Fishery	(Pickens, C	Oconee. (Greenville (Counties :	above US	Hwv 11)

>75% of water surface shaded and upstream 2-3 miles generally shaded.	>50% shaded in reach; or >75% shaded in reach and 2-3 miles upstream poorly shaded.	20-50% shaded.	<20% shaded in reach.
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 7

11. Manure Presence

No livestock accessible to stream, riparian area, or floodplain.	Evidence of livestock access to riparian area.	Occasional manure in stream; waste storage structure located in floodplain.	Extensive amount of manure on banks or in stream.
10	5	3	1

SCORE: ____

AVERAGE SCORE (TOTAL SCORE / 11): 6.4

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

< 6.0 **Poor**

6.1 - 7.4 Fair

7.5 – 8.9 Good

> 9.0 Excellent

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner	's Name:	Duke	Energy	Carolinas,	LLC	Date: _	3/31/2	009	Stream	J
County:	Union (County	Pre	epared by:	Krister	Roop/	Jason	Isbanio	ply	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Chadher Condit	ion (adequate noodpidin is Sene	tuny at reast a times the t	manuci wiath,
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.
cutting		floodplain.	
10	7	3	1

SCORE: 5

2. Hydrology Alteration (flooding is out of bank flooding)

Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.	·	a 1 year rain event or less.
not incised.			
10	7	3	1

SCORE: 6

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation includes hardwood trees, mixed shrubs, and native herbaceous species)

mai a wood ti ccs, mi	nai a wood ii ees, niixea siii abs, ana native nei baeebas species)							
Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <					
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.					
feet on each side.	feet on each side.	on each side.						
10	8	5	1					

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	with the second
10	7	3	1

SCORE: 5

5. Water Appearance

5. Water Appearance			
Very clear; or clear but tea colored; objects visible at depths of 3-6 feet. No noticeable film on surface or submerged objects.	Occasionally cloudy, especially after storm event; but clears rapidly; objects visible at depth of 1.5-3 feet; may have slight green color.	Considerable cloudiness most of the time; objects visible to depth of .5-1.5 feet; submerged objects with heavy green film, or moderate odor of ammonia.	Very turbid or muddy appearance most of the time; objects visible to depth <.5 feet; heavy coat of film on surface or submerged objects; strong odor of ammonia.
10	7	3	1

SCORE: 7

6. Nutrient Enrichment

0. I different Emilentement			•
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 1

7. Barriers to Fish Movement

r	No barriers; natural drops <1 oot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
	10	8	5	3	1

SCORE: ____

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover
•				types present.
10	8	5	3	1

SCORE:

9. Pools

D1-1-11	D - 1	D 1	D 1 1 4
Deep and shallow	Pools present, but not	Pools present, but	Pools absent; entire
pools abundant (>3);	abundant (<3); pools at least	shallow, <3 ft. deep.	bottom visible.
pools at least 5 ft.	3 ft. deep.	, 1	*
1 '.	3 n. deep.		
deep.		•	
10	7	3	1
10	7	3	1

Coldwater Fishery	(Pickens.	Oconee.	Greenville (Counties above	US Hwy 11)

Coldinatel Fibriely (Fie	mens, sconce, sicentine cou	meres above ob ming my	
>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.
shaded and upstream	>75% shaded in reach and		
2-3 miles generally	2-3 miles upstream poorly		
shaded.	shaded.		
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	. 7	. 1

SCORE: 6

11. Manure Presence

No livestock	Evidence of livestock access	Occasional manure in	Extensive amount of
accessible to stream,	to riparian area.	stream; waste storage	manure on banks or in
riparian area, or		structure located in	stream.
floodplain.		floodplain.	•
10	5	3	1

SCORE:

AVERAGE SCORE (TOTAL SCORE / 11): ____5.3

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner	's Name:	Duke	Energy	Carolinas,	LLC	Date: _	3/31/20	09	Stream	K
County:	Union C	County	Pre	epared by:	Krister	Roop,	/ Jason	Isbanio	ly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Channel Condition (adequate moodplain is generally at least 2 times the channel width)					
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down		
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,		
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with		
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.		
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent		
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.		
cutting		floodplain.			
10	7	3	1		

SCORE: 4

2. Hydrology Alteration (flooding is out of bank flooding)

2. Hydrology mittiatio	in (mooding is out or but	ik nooding/	
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.
not incised.			_
10	7	3	1

SCORE: 2

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation includes hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1

		A CONTRACTOR OF THE CONTRACTOR	
Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1
CCODE 6	777		

SCORE: 6

5. Water Appearance

5. water Appearance			
Very clear; or clear but tea colored; objects visible at depths of 3-6 feet. No noticeable film on surface or submerged objects.	Occasionally cloudy, especially after storm event; but clears rapidly; objects visible at depth of 1.5-3 feet; may have slight green color.	Considerable cloudiness most of the time; objects visible to depth of .5-1.5 feet; submerged objects with heavy green film, or moderate odor of ammonia.	Very turbid or muddy appearance most of the time; objects visible to depth <.5 feet; heavy coat of film on surface or submerged objects; strong odor of ammonia.
10	7	3	1

SCORE: 6

6. Nutrient Enrichment

o. Puttient Entichment			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 7

7. Barriers to Fish Movement

/. Dailiels to Fish	7. Daillets to Fish Movement									
No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.						
10	8	5	3	1						

SCORE: ____

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

	>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover
1					types present.
	10	.8	5	3	· 1

SCORE:

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

Coldwater Fishery ((Pickens, Oconee,	Greenville Counti	ies above l	US Hwv 11)

>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.
shaded and upstream	>75% shaded in reach and	·	
2-3 miles generally	2-3 miles upstream poorly		
shaded.	shaded.		
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 3

11. Manure Presence

No livestock accessible to stream, riparian area, or floodplain.	Evidence of livestock access to riparian area.	Occasional manure in stream; waste storage structure located in floodplain.	Extensive amount of manure on banks or in stream.
10	5	3	1

SCORE:

AVERAGE SCORE (TOTAL SCORE / 11): 4.9

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner's	Name:	Duke	Energy	Carolinas,	LLC	Date:	3/31/2	009	Stream	L
County:	nion C	ounty	Pr	epared by:	Krister	n Roop	/ Jason	Isbanio	ply	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Channel Condition (adequate moduplain is generally at least 2 times the channel which)								
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down					
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,					
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with					
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.					
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent					
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.					
cutting		floodplain.						
10	7	3	1					

SCORE: 10

2. Hydrology Alteration (flooding is out of bank flooding)

Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.
not incised.	•		
10	7	3	1

SCORE: 7

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation includes hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation extends more than 50	Natural vegetation extends at least 35	Natural vegetation extends at least 15 feet	Natural vegetation extends < 15 feet on each side.
feet on each side.	feet on each side.	on each side.	13 feet off each side.
10	8	. 5	1

W Dunie Denomity			
Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 8

5. Water Appearance

5. Water Appearance			
Very clear; or clear but tea colored; objects visible at depths of 3-6 feet. No noticeable film on surface or submerged objects.	Occasionally cloudy, especially after storm event; but clears rapidly; objects visible at depth of 1.5-3 feet; may have slight green color.	Considerable cloudiness most of the time; objects visible to depth of .5-1.5 feet; submerged objects with heavy green film, or moderate odor of	Very turbid or muddy appearance most of the time; objects visible to depth <.5 feet; heavy coat of film on surface or submerged objects; strong odor of ammonia.
	Singlif green color.	ammonia.	odor or animoma.
10	7	3	1

SCORE: 9

6. Nutrient Enrichment

o. Nutricut Enrichment			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 9

7. Barriers to Fish Movement

7. Dairiers to Fish	Movement			
No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

SCORE:

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

 >7 cover types
 6-7 cover types
 4-5 cover types
 2-3 cover types
 1 or less cover types present.

 10
 8
 5
 3
 1

SCORE:

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

Coldwater Fishery	(Pickons	Ocones	Croonville	Counties	above HS	Hwy 11)
Columnier rishery	(Fickens.	Ocunee.	Greenvine	Counties	above us	nwviii

	Columnter Tishery (Tiekens, October, Greenvine Countries above OS 1111/11)								
	>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.					
ł	shaded and upstream	>75% shaded in reach and							
	2-3 miles generally	2-3 miles upstream poorly							
	shaded.	shaded.							
	10	7	3	1					

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 7

11. Manure Presence

III MIMMUTO I TOUGHOU			
No livestock	Evidence of livestock access	Occasional manure in	Extensive amount of
accessible to stream,	to riparian area.	stream; waste storage	manure on banks or in
riparian area, or		structure located in	stream.
floodplain.		floodplain.	
10	5	3	1

SCORE:

AVERAGE SCORE (TOTAL SCORE / 11): 8 · 4

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner's	Name:	Duke	Energy	Carolinas,	LLC	Date: _	3/31/2	009	Stream	M
County:	nion C	ounty	Pro	epared by:	Krister	Roop	/ Jason	Isbanio	ply	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

11. Chamber Condition (adequate hoodplain is generally at lease 2 times the chamber width)					
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down		
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,		
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with		
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.		
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent		
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.		
cutting		floodplain.			
10	7	3	1		

SCORE: 7

2. Hydrology Alteration (flooding is out of bank flooding)

2. Hydrology mitting	2. Hydrology interaction (modding is out or bank modding)						
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply				
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent				
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam				
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood				
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have				
structures limiting the	although present, do	available low flow	caused severe loss of low flow				
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on				
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.				
not incised.							
10	7	3	1				

SCORE: 6

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	<u></u>
10	8	5	1

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	·
extending into the base	base flow.	eroding with some	•
flow elevation.		slope failures.	
10	7	3	1

SCORE: 5

5. Water Appearance

. 3. Water Appearance			
Very clear; or clear but tea	Occasionally cloudy,	Considerable	Very turbid or muddy
colored; objects visible at depths of 3-6 feet. No	especially after storm event; but clears	cloudiness most of the time; objects visible to	appearance most of the time; objects visible to
noticeable film on surface or submerged objects.	rapidly; objects visible at depth of	depth of .5-1.5 feet; submerged objects with	depth <.5 feet; heavy coat of film on surface or
or such english to specific	1.5-3 feet; may have	heavy green film, or	submerged objects; strong
	slight green color.	moderate odor of ammonia.	odor of ammonia.
10	7	3	· 1

SCORE: 9

6. Nutrient Enrichment

o. Nutrient Enrichment			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 8

7. Barriers to Fish Movement

7. Daillets to Fish Movement						
No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.		
10	8	5	3	1		

SCORE: ____

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types 6-7 cover types 4-5 cover types 2-3 cover types 1 or less cover types present.

SCORE:

9. Pools

Deep and shallow	Pools present, but not	Pools present, but	Pools absent; entire
pools abundant (>3);	abundant (<3); pools at least	shallow, <3 ft. deep.	bottom visible.
pools at least 5 ft.	3 ft. deep.	· -	
deep.	_		
10	7	3	1

	(,		, .	
Coldwater Fishery	(Pickens, Oco	nee, Greeny	ville Counties	above	US Hwv	(11)

	>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.
٠	shaded and upstream	>75% shaded in reach and		,
	2-3 miles generally	2-3 miles upstream poorly		
	shaded.	shaded.		
	10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 6

11. Manure Presence

No livestock accessible to stream, riparian area, or floodplain.	Evidence of livestock access to riparian area.	Occasional manure in stream; waste storage structure located in floodplain.	Extensive amount of manure on banks or in stream.
10	5	3	1

SCORE:

AVERAGE SCORE (TOTAL SCORE / 11): 6.9

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowne	r's Name:	Duke	Energy	Carolina	s, LLC	Date:	3/31/2	2009	Stream	N
County: _	Union C	ounty	Pr	epared by:	Kriste	n Roop	Jason	Isbanio	oly -	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Channel Condition (adequate noodplain is generally at least 2 times the channel width)						
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down			
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,			
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with			
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.			
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent			
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.			
cutting		floodplain.				
10	7	3	1			

SCORE: 10

2. Hydrology Alteration (flooding is out of bank flooding)

Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.
not incised.			-
10	7	3	1

SCORE: 9

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation includes hardwood trees, mixed shrubs, and native herbaceous species)

hard wood trees, infact our abs, and harive her baccous species,							
Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <				
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.				
feet on each side.	feet on each side.	on each side.					
10	8	5	1				

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 8

5. Water Appearance

_	3. Water Appearance		The second secon	
	Very clear; or clear but tea colored; objects visible at depths of 3-6 feet. No noticeable film on surface or submerged objects.	Occasionally cloudy, especially after storm event; but clears rapidly; objects visible at depth of 1.5-3 feet; may have slight green color.	Considerable cloudiness most of the time; objects visible to depth of .5-1.5 feet; submerged objects with heavy green film, or moderate odor of ammonia.	Very turbid or muddy appearance most of the time; objects visible to depth <.5 feet; heavy coat of film on surface or submerged objects; strong odor of ammonia.
	10	7	3	1

SCORE: 7

6. Nutrient Enrichment

o. Puttient Emilement			_
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 7

7. Barriers to Fish Movement

,. Duilleld to I loll	1,10,4114114			
No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5 .	3	1

SCORE: 8

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

DOMESTIC TODAY	, , , , , , , , , , , , , , , , , , ,			
>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover
				types present.
10	8	5	3	1

SCORE: __7

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft. deep. Pools present, but of abundant (<3); pools at least 3 ft. deep. Pools present, but shallow, <3 ft. deep. Pools absent; entire bottom visible.	71 T 0010			
10 7 2 1	pools abundant (>3); pools at least 5 ft.	abundant (<3); pools at least		,
	10	7	3	1

Coldwater Fishery	(Pickens.	Oconee.	Greenville	Counties	above US	Hwv 11)

>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.
shaded and upstream	>75% shaded in reach and		
2-3 miles generally	2-3 miles upstream poorly		
shaded.	shaded.		
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 10

11. Manure Presence

No livestock	Evidence of livestock access	Occasional manure in	Extensive amount of
accessible to stream,	to riparian area.	stream; waste storage	manure on banks or in
riparian area, or		structure located in	stream.
floodplain.		floodplain.	
10	5	3	1

SCORE: ____

AVERAGE SCORE (TOTAL SCORE / 11): 8.4

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner	's Name:	Duke ———	Energy	Carolinas	s, LLC	Date: _	3/31/2	009	Stream	0
County:	Union C	ounty	Pr	epared by: _	Kriste	n Roop/	Jason	Isbanio	ly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull
 flow. If the flow is contained within the channel at two times the maximum depth, then the
 channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Channel Condit	1. Channel Condition (adequate noodplain is generally at least 2 times the channel width)					
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down			
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,			
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with			
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.			
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent			
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.			
cutting		floodplain.				
10	7	3	1			

SCORE: 7

2. Hydrology Alteration (flooding is out of bank flooding)

2. Hydrology Mitchallo	2. Hydrology Alteration (nooding is out of bank nooding)						
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply				
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent				
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam				
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood				
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have				
structures limiting the	although present, do	available low flow	caused severe loss of low flow				
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on				
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.				
not incised.							
10	7	3	1				

SCORE: 6

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation extends more than 50 feet on each side.	Natural vegetation extends at least 35 feet on each side.	_	Natural vegetation extends < 15 feet on each side.
10	8	5	1

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	·
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 6

5. Water Appearance

3. Water Appearance			
Very clear; or clear but tea	Occasionally cloudy,	Considerable	Very turbid or muddy
colored; objects visible at depths of 3-6 feet. No	especially after storm event; but clears	cloudiness most of the time; objects visible to	appearance most of the time; objects visible to
noticeable film on surface or submerged objects.	rapidly; objects visible at depth of 1.5-3 feet; may have slight green color.	depth of .5-1.5 feet; submerged objects with heavy green film, or moderate odor of ammonia.	depth <.5 feet; heavy coat of film on surface or submerged objects; strong odor of ammonia.
10	7	3	1

SCORE: __7___

6. Nutrient Enrichment

o. Nutrient Enrichment			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 8

7. Barriers to Fish Movement

/. Dailleis to rish	Movement			
No barriers;	Seasonal water	Drop structures,	Drop structures,	Drop structures,
natural drops <1	withdrawals inhibit	culverts (<1 foot	culverts, or dams	culverts, or dams
foot.	movement of fish.	drop) present	present within 3	(>1 foot drop)
		within reach.	miles of reach.	present within
				reach.
10	8	5	3	1

SCORE:

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover
-		•		types present.
10	8	5	3	. 1

SCORE:

9. Pools

71 Z 0010			
Deep and shallow pools abundant (>3);	Pools present, but not abundant (<3); pools at least	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
pools at least 5 ft.	3 ft. deep.		
deep.		, * ,	, , , , , , , , , , , , , , , , , , ,
10	7	3	1

Coldwater Fishery	(Pickens, Oconee.	Greenville Cou	inties above US	S Hwv 11)

>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.
shaded and upstream	>75% shaded in reach and	· ·	
2-3 miles generally	2-3 miles upstream poorly		
shaded.	shaded.		
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.	
10	7	1	

SCORE: __7___

11. Manure Presence

No livestock	Evidence of livestock access	Occasional manure in	Extensive amount of
accessible to stream,	to riparian area.	stream; waste storage	manure on banks or in
riparian area, or		structure located in	stream.
floodplain.		floodplain.	
10	5	3	1

SCORE: ____

AVERAGE SCORE (TOTAL SCORE / 11): 7.0

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner	's Name:	Duke	Energy	Carolinas	, LLC	Date: _	3/31/2	009	Stream	P
County: _	Union (County	Pro	epared by: _	Kriste	n Roop/	Jason	Isbanio	oly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull
 flow. If the flow is contained within the channel at two times the maximum depth, then the
 channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Channel Condit	1. Channel Condition (adequate noodplain is generally at least 2 times the channel width)						
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down				
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,				
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with				
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.				
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent				
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.				
cutting		floodplain.					
10	7	3	1				

SCORE: 6

2. Hydrology Alteration (flooding is out of bank flooding)

2. Hydrology Alteratio	2. Hydrology Alteration (modding is out or bank modding)						
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply				
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent				
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam				
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood				
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have				
structures limiting the	although present, do	available low flow	caused severe loss of low flow				
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on				
floodplain. Channel is	habitat for biota.	·	a 1 year rain event or less.				
not incised.							
10	7	3	1				

SCORE: 8

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation includes hardwood trees, mixed shrubs, and native herbaceous species)

Hai a 11 oba ti etti immed sii abbi alia Haii e Hei baccous species)								
Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <					
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.					
feet on each side.	feet on each side.	on each side.						
10	8.	5	. 1					

11 Dunie Studinty			
Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1
~ ~ ~ ~ ~			

SCORE: 9

5. Water Appearance

5. Water Appearance			
Very clear; or clear but tea colored; objects visible at depths of 3-6 feet. No noticeable film on surface or submerged objects.	Occasionally cloudy, especially after storm event; but clears rapidly; objects visible at depth of 1.5-3 feet; may have slight green color.	Considerable cloudiness most of the time; objects visible to depth of .5-1.5 feet; submerged objects with heavy green film, or moderate odor of ammonia.	Very turbid or muddy appearance most of the time; objects visible to depth <.5 feet; heavy coat of film on surface or submerged objects; strong odor of ammonia.
10	7	3	1

SCORE: __7___

6. Nutrient Enrichment

o. Nutrient Emilennent			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 8

7. Barriers to Fish Movement

No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

SCORE:

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover types present.
10	8	5	3	1

SCORE:

9. Pools

77 I 0010			
Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

Coldwater Fishery (Pickens, Oconee, Greenville Counties above US Hwy 11)						
>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.			
shaded and upstream	>75% shaded in reach and					
2-3 miles generally	2-3 miles upstream poorly					
shaded.	shaded.					

Warm water	· fishery ((all	area of S.C. except as noted above)	

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 10

11. Manure Presence

No livestock	Evidence of livestock access	Occasional manure in	Extensive amount of
accessible to stream,	to riparian area.	stream; waste storage	manure on banks or in
riparian area, or		structure located in	stream.
floodplain.		floodplain.	
10	5	3	1

SCORE:

AVERAGE SCORE (TOTAL SCORE / 11): 7.6

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner's	Name:	Duke Ener	gy Carolina	s, LLC	Date: _	3/31/20	009	Stream	Q
County:C	herokee	County	Prepared by:	Kriste	n Roop/	Jason	Isbaniol	У	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Channel Conditi	1. Channel Condition (adequate noodplain is generally at least 2 times the channel width)					
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down			
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,			
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with			
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.			
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent			
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.			
cutting		floodplain.				
10	7	3	1			

SCORE: 6

2. Hydrology Alteration (flooding is out of bank flooding)

z. Hydrology interaction	m (mooding is out of bai	in nooding)	
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.	`	a 1 year rain event or less.
not incised.			
10	7	3	1

SCORE: 8

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1

7. Dank Stability			The state of the s
Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 9

5. Water Appearance

5. Water Appearance			
Very clear; or clear but tea	Occasionally cloudy,	Considerable	Very turbid or muddy
colored; objects visible at	especially after storm	cloudiness most of the	appearance most of the
depths of 3-6 feet. No	event; but clears	time; objects visible to	time; objects visible to
noticeable film on surface	rapidly; objects	depth of .5-1.5 feet;	depth <.5 feet; heavy coat
or submerged objects.	visible at depth of	submerged objects with	of film on surface or
	1.5-3 feet; may have	heavy green film, or	submerged objects; strong
	slight green color.	moderate odor of	odor of ammonia.
		ammonia.	
10	7	3	1

SCORE: __7___

6. Nutrient Enrichment

o. Patricht Enrichment			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 8

7. Barriers to Fish Movement

/. Dairiels to risu	7. Dairiels to rish Movement						
No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.			
10	8	5	3	1			

SCORE:

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover
				types present.
10	8	5	3	1

SCORE:

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

A 11 / 171 1	CTA: 1	^	~ "	~		TO TT 4	4 1
Coldwater Fishery	(Pickone	I ICANAA	(_roonville	LAUDITIAG	anava I	HWW	

>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.
shaded and upstream	>75% shaded in reach and		
2-3 miles generally	2-3 miles upstream poorly		,
shaded.	shaded.		
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.		>90% shaded; full canopy.	<25% of surface shaded in reach.		
ĺ	10	. 7	1		

SCORE: 10

11. Manure Presence

No livestock	Evidence of livestock access	Occasional manure in	Extensive amount of
accessible to stream,	to riparian area.	stream; waste storage	manure on banks or in
riparian area, or		structure located in	stream.
floodplain.		floodplain.	
10	5 .	3	1

SCORE:

AVERAGE SCORE (TOTAL SCORE / 11): 7.6

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowne	r's Name: _	Duke Ener	gy Carolina	s, LLC	Date: _	3/31/2	009	Stream	R
County: _	Cherokee	County	Prepared by:	Kriste	n Roop/	Jason	Isbanio]	Ly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Chamber Condition (adequate noouplain is generally at least 2 times the channel which)						
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down			
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,			
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with			
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.			
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent			
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.			
cutting		floodplain.				
10	7	3	1			

SCORE: 4

2. Hydrology Alteration (flooding is out of bank flooding)

2. Hydrology rineration (moderns is out of bunk moderns)					
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply		
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent		
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam		
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood		
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have		
structures limiting the	although present, do	available low flow	caused severe loss of low flow		
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on		
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.		
not incised.					
10	7	3	1		

SCORE: 4

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation includes hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1

11 Dullie Stubility			
Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	·
flow elevation.		slope failures.	
10	7	3	1

SCORE: 3

5. Water Appearance

colored; objects visible at depths of 3-6 feet. No noticeable film on surface or submerged objects. especially after storm event; but clears rapidly; objects visible to depth of .5-1.5 feet; of submerged objects visible at depth of submerged objects with of	
	Very turbid or muddy appearance most of the ime; objects visible to depth <.5 feet; heavy coat of film on surface or submerged objects; strong odor of ammonia.
10 7 ammonia.	1

SCORE: 5

6. Nutrient Enrichment

o. Nutrent Entitudent	·		
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 6

7. Barriers to Fish Movement

7. Darriers to Fish Movement				
No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

SCORE:

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

boulders, coobie, times, undereut banks, timek root mats,					
>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover	
				types present.	
10	8	5	3	1	

SCORE:

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
deep.	•	,	
10	7	3	1

Coldwater Fishery (Pickens, Oconee, Greenville Counties above US Hwy 11)

	, , <u></u>		
>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.
shaded and upstream	>75% shaded in reach and		
2-3 miles generally	2-3 miles upstream poorly		
shaded.	shaded.	_	
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7.	1

SCORE: 4

11. Manure Presence

No livestock	Evidence of livestock access	Occasional manure in	Extensive amount of
accessible to stream,	to riparian area.	stream; waste storage	manure on banks or in
riparian area, or		structure located in	stream.
floodplain.		floodplain.	
10	5	3	1

SCORE: 7

AVERAGE SCORE (TOTAL SCORE / 11): 4.6

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowne	r's Name: _	Duke E	nergy	Carolina	s, LLC	_ Date: _	3/31/2	009	Stream	s
County: _	Cherokee	County	Pre	epared by:	Kriste	n Roop,	Jason	Isbaniol	У	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Channel Condit	1. Channel Condition (adequate noodplain is generally at least 2 times the channel width)				
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down		
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,		
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with		
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.		
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent		
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.		
cutting		floodplain.			
10	7	3	1		

SCORE: 10

2. Hydrology Alteration (flooding is out of bank flooding)

Z. II di di di di di di di di di di di di di	2. Hydrology theeration (nooding is out of bank nooding)					
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply			
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent			
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam			
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood			
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have			
structures limiting the	although present, do	available low flow	caused severe loss of low flow			
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on			
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.			
not incised.						
10	7	3	1			

SCORE: 9

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 9

5. Water Appearance

5. Water Appearance			
Very clear; or clear but tea	Occasionally cloudy,	Considerable	Very turbid or muddy
colored; objects visible at depths of 3-6 feet. No noticeable film on surface or submerged objects.	especially after storm event; but clears rapidly; objects visible at depth of 1.5-3 feet; may have	cloudiness most of the time; objects visible to depth of .5-1.5 feet; submerged objects with heavy green film, or	appearance most of the time; objects visible to depth <.5 feet; heavy coat of film on surface or submerged objects; strong
	slight green color.	moderate odor of ammonia.	odor of ammonia.
10	7	3	1

SCORE: _8___

6. Nutrient Enrichment

o. Nutrient Enrichment			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 7

7. Barriers to Fish Movement

No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

SCORE: 9

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover
				types present.
10	8	5	3	1

SCORE: 9

9. Pools

71 I OOID			
Deep and shallow pools abundant (>3); pools at least 5 ft.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
deep.	3 it. deep.		
10	7	3	1

Coldwater Fishery (Pickens, Oconee, Greenville Counties above US Hwy 11)

Coldinates a solicity (a re	Coldward Tishery (Tickens, October, Greenville Countries above es 1111/11)				
>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.		
shaded and upstream	>75% shaded in reach and				
2-3 miles generally	2-3 miles upstream poorly				
shaded.	shaded.				
10	7	3	1		

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	<u> </u>

SCORE: 10

11. Manure Presence

No livestock	Evidence of livestock access	Occasional manure in	Extensive amount of
accessible to stream,	to riparian area.	stream; waste storage	manure on banks or in
riparian area, or		structure located in	stream.
floodplain.		floodplain.	
10	5	3	1

SCORE: 8

AVERAGE SCORE (TOTAL SCORE / 11): 9.0

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner's Name:	Duke	Energy Carolinas,	LLC	Date:	3/31/2009	Stream T
County: Cherokee	County	Prepared by:	Kriste	n Roop	/ Jason Isbanic	oly -

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Channel Condition (adequate hoodplain is generally at least 2 times the channel width)				
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down	
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,	
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with	
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.	
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent	
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.	
cutting		floodplain.		
10	7	3	. 1	

SCORE: 8

2. Hydrology Alteration (flooding is out of bank flooding)

Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other structures limiting the stream's access to the floodplain. Channel is	withdrawals, although present, do not affect available habitat for biota.	significantly affect available low flow habitat for biota.	flows. Or withdrawals have caused severe loss of low flow habitat. Or flooding occurs on a 1 year rain event or less.
not incised.			
10	7	3	1

SCORE: 8

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1 '

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	*
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7.	3	1

SCORE: 7

5. Water Appearance

3. Water Appearance			
Very clear; or clear but tea colored; objects visible at depths of 3-6 feet. No noticeable film on surface or submerged objects.	Occasionally cloudy, especially after storm event; but clears rapidly; objects visible at depth of 1.5-3 feet; may have slight green color.	Considerable cloudiness most of the time; objects visible to depth of .5-1.5 feet; submerged objects with heavy green film, or moderate odor of ammonia.	Very turbid or muddy appearance most of the time; objects visible to depth <.5 feet; heavy coat of film on surface or submerged objects; strong odor of ammonia.
		ammonia.	
10	7	3	1

SCORE: 8

6. Nutrient Enrichment

0. Nutrient Entitenment			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 9

7. Barriers to Fish Movement

No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3 .	1

SCORE: 8

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover
		L		types present.
10	8	5	3	1

SCORE: 6

9. Pools

7. I VVI3			
Deep and shallow pools abundant (>3);	Pools present, but not abundant (<3); pools at least	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
pools at least 5 ft. deep.	3 ft. deep.		
10	7	3	1

Coldwater Fishery (Pickens, Oconee, Greenville Counties above	US Hwv 11 ع	1)
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>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.
shaded and upstream	>75% shaded in reach and		
2-3 miles generally	2-3 miles upstream poorly		
shaded.	shaded.		
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 9

11. Manure Presence

No livestock	Evidence of livestock access	Occasional manure in	Extensive amount of
accessible to stream,	to riparian area.	stream; waste storage	manure on banks or in
riparian area, or		structure located in	stream.
floodplain.		floodplain.	
10	5	3	1

SCORE:

AVERAGE SCORE (TOTAL SCORE / 11): 8.1

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

< 6.0 Poor 6.1 – 7.4 Fair 7.5 – 8.9 Good

> 9.0 Excellent

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowne	r's Name: _	Duke Ener	gy Carolinas,	LLC	Date: _	4/01/2	009	Stream	U
County: _	Cherokee	County	Prepared by:	Krister	n Roop/	Jason	Isbanio	oly -	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Channel Condit	1. Channel Condition (adequate noodplain is generally at least 2 times the channel width)					
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down			
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,			
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with			
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.			
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent			
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.			
cutting		floodplain.				
10	7	3	1			

SCORE: 7

2. Hydrology Alteration (flooding is out of bank flooding)

2. Hydrology interaction (nooding is out or bank nooding)					
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply		
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent		
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam		
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood		
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have		
structures limiting the	although present, do	available low flow	caused severe loss of low flow		
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on		
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.		
not incised.					
10	7	3	1		

SCORE: 4

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	<u>.</u>
10	7	3	1

SCORE: 6

5. Water Appearance

3. Water Appearance			
Very clear; or clear but tea	Occasionally cloudy,	Considerable	Very turbid or muddy
colored; objects visible at	especially after storm	cloudiness most of the	appearance most of the
depths of 3-6 feet. No	event; but clears	time; objects visible to	time; objects visible to
noticeable film on surface	rapidly; objects	depth of .5-1.5 feet;	depth <.5 feet; heavy coat
or submerged objects.	visible at depth of	submerged objects with	of film on surface or
1	1.5-3 feet; may have	heavy green film, or	submerged objects; strong
	slight green color.	moderate odor of	odor of ammonia.
		ammonia.	
10	7	3	1

SCORE: 6

6. Nutrient Enrichment

Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 8

7. Barriers to Fish Movement

/. Dailiels to Fish	MOVEMENT			
No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

SCORE:

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types 6-7 cover types 4-5 cover types 2-3 cover types 1 or less cover types present.

SCORE:

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

10. Canopy Cover (Use coldwater or warm water below, not both)
Coldwater Fishery (Pickens, Oconee, Greenville Counties above US Hwy 11)

>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.
shaded and upstream	>75% shaded in reach and		
2-3 miles generally	2-3 miles upstream poorly		
shaded.	shaded.		

Warm water fishery (all area of S.C. except as noted above)	Warm wat	er fishery (all	area of S.C.	except as noted above
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25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 7

11. Manure Presence

No livestock	Evidence of livestock access	Occasional manure in	Extensive amount of
accessible to stream,	to riparian area.	stream; waste storage	manure on banks or in
riparian area, or		structure located in	stream.
floodplain.		floodplain.	
10	5	3	1

SCORE:

AVERAGE SCORE (TOTAL SCORE / 11): 6.6

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner's Name: _	Duke Ene	ergy Carolinas	, LLC	Date: _	4/01/2	009	Stream	V
County: Cherokee	County	Prepared by: _	Kriste	n Roop/	Jason	Isbanio	oly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Channel Condition (adequate hoodplain is generally at least 2 times the channel width)						
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down			
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,			
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with			
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.			
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent			
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.			
cutting	<u></u>	floodplain.				
10	7	3	1			

SCORE: 8

2. Hydrology Alteration (flooding is out of bank flooding)

Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.
not incised.			
10	7	3	1

SCORE: 7

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation includes hardwood trees, mixed shrubs, and native herbaceous species)

	narawood trees, inixed shi dos, and native neroaccous species,							
	Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <				
	extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.				
	feet on each side.	feet on each side.	on each side.					
į	10	8	5	1				

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	-
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 6

5. Water Appearance

5. Water Appearance			
Very clear; or clear but tea	Occasionally cloudy,	Considerable	Very turbid or muddy
colored; objects visible at	especially after storm	cloudiness most of the	appearance most of the
depths of 3-6 feet. No	event; but clears	time; objects visible to	time; objects visible to
noticeable film on surface	rapidly; objects	depth of .5-1.5 feet;	depth <.5 feet; heavy coat
or submerged objects.	visible at depth of	submerged objects with	of film on surface or
	1.5-3 feet; may have	heavy green film, or	submerged objects; strong
	slight green color.	moderate odor of	odor of ammonia.
		ammonia.	
10	7	3	. 1

SCORE: __7___

6. Nutrient Enrichment

o. Nutitent Entitenment			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 8

7. Barriers to Fish Movement

TO ADMITTAL OF A TOTAL	I'IO' VIIIOII			
No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

SCORE: ____

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover
1	•••	ļ , , , , , , , , , , , , , , , , , , ,	1	types present.
10	8	5	3	1

SCORE: ____

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

Coldwater Fishery	(Pickens, 6	Oconee. (Greenville	Counties :	above US Hwy	11)

Cold water I isher j (I tellens) Colones, Creen vine Countries above Co 22/1/2/2/					
>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.		
shaded and upstream	>75% shaded in reach and				
2-3 miles generally	2-3 miles upstream poorly				
shaded.	shaded.				
10	7	3	1		

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 8

11. Manure Presence

No livestock	Evidence of livestock access	Occasional manure in	Extensive amount of
accessible to stream,	to riparian area.	stream; waste storage	manure on banks or in
riparian area, or		structure located in	stream.
floodplain.		floodplain.	
10	5	3	1

SCORE:

AVERAGE SCORE (TOTAL SCORE / 11): 7.5

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner	's Name: _	Duke Ener	gy Carolinas	s, LLC	Date:	4/01/2	009	Stream	W
County:	Cheroke	e County	Prepared by: _	Kriste	n Roop	Jason	Isbanio	ply	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Channel Condit.	1. Channel Condition (adequate noodplain is generally at least 2 times the channel width)					
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down			
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,			
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with			
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.			
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent			
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.			
cutting	·	floodplain.				
10	7	3	1			

SCORE: __7___

2. Hydrology Alteration (flooding is out of bank flooding)

Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.
not incised.			
10	7	3	1

SCORE: 6

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.	j	slope failures.	
10	7	3	1

SCORE: 8

5. Water Appearance

5. Water Appearance			
Very clear; or clear but tea	Occasionally cloudy,	Considerable	Very turbid or muddy
colored; objects visible at depths of 3-6 feet. No	especially after storm event; but clears	cloudiness most of the time; objects visible to	appearance most of the time; objects visible to
noticeable film on surface	rapidly; objects	depth of .5-1.5 feet;	depth <.5 feet; heavy coat
or submerged objects.	visible at depth of	submerged objects with	of film on surface or
	1.5-3 feet; may have	heavy green film, or	submerged objects; strong
	slight green color.	moderate odor of	odor of ammonia.
		ammonia.	
10	7	3	1

SCORE: 8

6. Nutrient Enrichment

o. Matricut Emilenment			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 9

7. Barriers to Fish Movement

No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

SCORE: 8

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

Dourage 5, copps	e, unider ear bi	thing thirtie 1000 mass,		
>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover
				types present.
10	8	5	3	1

SCORE: 6

9. Pools

Deep and shallow	Pools present, but not	Pools present, but	Pools absent; entire
pools abundant (>3);	abundant (<3); pools at least	shallow, <3 ft. deep.	bottom visible.
pools at least 5 ft.	3 ft. deep.		
deep.			
10	7	3	1

Coldwater Fishery (Pickens,	Oconee.	Greenville	Counties abov	e US Hwy	<i>i</i> 11)
-----------------------------	---------	------------	---------------	----------	--------------

>75% of water surface shaded and upstream 2-3 miles generally shaded.	>50% shaded in reach; or >75% shaded in reach and 2-3 miles upstream poorly shaded.	20-50% shaded.	<20% shaded in reach.
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.	
10	7	1	

SCORE: 8

11. Manure Presence

No livestock	Evidence of livestock access	Occasional manure in	Extensive amount of
accessible to stream,	to riparian area.	stream; waste storage	manure on banks or in
riparian area, or		structure located in	stream.
floodplain.		floodplain.	
10	5	3	1

SCORE:

AVERAGE SCORE (TOTAL SCORE / 11): __7.6

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner's Name:	Duke Ener	rgy Carolinas	, LLC	Date: _	4/01/2	009	Stream	Х
County: Cheroke	e County	Prepared by: _	Krister	n Roop/	Jason	Isbanio	ly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Chamnel Conun	1. Chaunel Condition (adequate noodplain is generally at least 2 times the channel which)						
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down				
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,				
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with				
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.				
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent				
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.				
cutting		floodplain.					
10	7	3	1				

SCORE: 4

2. Hydrology Alteration (flooding is out of bank flooding)

Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.
not incised.			_
10	7	3	1

SCORE: 3

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1

7. Dank Stability			
Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.	_	slope failures.	
10	7	3	1

SCORE: 5

5. water Appearance			
Very clear; or clear but tea colored; objects visible at depths of 3-6 feet. No noticeable film on surface or submerged objects.	Occasionally cloudy, especially after storm event; but clears rapidly; objects visible at depth of 1.5-3 feet; may have slight green color.	Considerable cloudiness most of the time; objects visible to depth of .5-1.5 feet; submerged objects with heavy green film, or moderate odor of ammonia.	Very turbid or muddy appearance most of the time; objects visible to depth <.5 feet; heavy coat of film on surface or submerged objects; strong odor of ammonia.
10	_ 7	3	1

SCORE: 6

6. Nutrient Enrichment

o. Nutifent Entienment			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 7

7. Barriers to Fish Movement

No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

SCORE: ____

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

l	>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover
L		,			types present.
	10	8	5	3	1

SCORE:

9. Pools

pools at least 5 ft. 3 f	oundant (<3); pools at least ft. deep.	shallow, <3 ft. deep.	bottom visible.
deep.			i
10	7	3	1

Coldwater Fishery	(Pickens	Oconee	Greenville	Counties	above US Hy	vv 11)

>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.				
shaded and upstream	>75% shaded in reach and		1				
2-3 miles generally	2-3 miles upstream poorly		· :				
shaded.	shaded.						
10	7	3	1				

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 7

11. Manure Presence

No livestock	Evidence of livestock access	Occasional manure in	Extensive amount of
accessible to stream,	to riparian area.	stream; waste storage	manure on banks or in
riparian area, or		structure located in	stream.
floodplain.		floodplain.	
10	5	3	1

SCORE: 6

AVERAGE SCORE (TOTAL SCORE / 11): _5.8

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner's Name	:Duke Ene	rgy Carolina	s, LLC	Date: _	4/01/2	009	Stream	Y
County:Cherok	ee County	Prepared by:	Kristen	Roop	/ Jason	Isbanic	oly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Channel Condit.	1. Channel Condition (adequate noodplain is generally at least 2 times the channel width)						
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down				
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,				
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with				
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.				
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent				
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.				
cutting		floodplain.					
10	7	3	1				

SCORE: 7

2. Hydrology Alteration (flooding is out of bank flooding)

Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.
not incised.			
10	7	3	1

SCORE: 5

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation Natural vegetation		Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1

11 Dunk Stubility			
Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1
	 		

SCORE: 7

5. Water Appearance

5. Water Appearance			
Very clear; or clear but tea colored; objects visible at depths of 3-6 feet. No noticeable film on surface or submerged objects.	Occasionally cloudy, especially after storm event; but clears rapidly; objects visible at depth of 1.5-3 feet; may have slight green color.	Considerable cloudiness most of the time; objects visible to depth of .5-1.5 feet; submerged objects with heavy green film, or moderate odor of	Very turbid or muddy appearance most of the time; objects visible to depth <.5 feet; heavy coat of film on surface or submerged objects; strong odor of ammonia.
		ammonia.	
10	7	3	1

SCORE: 8

6. Nutrient Enrichment

o. Nutrient Enrichment			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 6

7. Barriers to Fish Movement

7. Barriers to Fish Movement						
No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.		
10	8	5	3	1		

SCORE: 8

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover types present.
10	8	5	3	1

SCORE: 6

9. Pools

	71 I 0010			
	Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
i	10	7	3	1

Coldwater Fishery	(Pickens.	Oconee.	Greenville	Counties	above US	Hwv 11)

	0014			
>75% of water surface		>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.
	shaded and upstream	>75% shaded in reach and	İ	
	2-3 miles generally	2-3 miles upstream poorly		
	shaded.	shaded.		
	10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 8

11. Manure Presence

111 1:1000000			
No livestock	Evidence of livestock access	Occasional manure in	Extensive amount of
accessible to stream,	to riparian area.	stream; waste storage	manure on banks or in
riparian area, or		structure located in	stream.
floodplain.		floodplain.	
10	5	3	1

SCORE: 4

AVERAGE SCORE (TOTAL SCORE / 11): 6.8

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner	's Name: _	Duke E	Energy	Carolinas	, LLC	Date:	4/01/2	009	Stream	Z
County: _	Cherokee	County	y Pre	epared by: _	Kriste	n Roop/	Jason	Isbanio	oly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull
 flow. If the flow is contained within the channel at two times the maximum depth, then the
 channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Chamici Condit.	1. Channel Condition (adequate hoodplain is generally at least 2 times the channel width)					
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down			
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,			
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with			
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.			
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent			
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.			
cutting		floodplain.				
10	7	3	1			

SCORE: __6___

2. Hydrology Alteration (flooding is out of bank flooding)

2. Hydrology Mitchatto	2. Hydrology fateration (modding is out or bank modding)							
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply					
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent					
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam					
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood					
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have					
structures limiting the	although present, do	available low flow	caused severe loss of low flow					
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on					
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.					
not incised.								
10	7	3	1					

SCORE: 6

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <				
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.				
feet on each side.	feet on each side.	on each side.					
10	8	5	, 1				

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7.	3	1

SCORE: 4

5. Water Appearance

5. Water Appearance			
Very clear; or clear but tea colored; objects visible at depths of 3-6 feet. No noticeable film on surface or submerged objects.	Occasionally cloudy, especially after storm event; but clears rapidly; objects visible at depth of 1.5-3 feet; may have slight green color.	Considerable cloudiness most of the time; objects visible to depth of .5-1.5 feet; submerged objects with heavy green film, or moderate odor of ammonia.	Very turbid or muddy appearance most of the time; objects visible to depth <.5 feet; heavy coat of film on surface or submerged objects; strong odor of ammonia.
10	7	3	1

SCORE: 7

6. Nutrient Enrichment

O. Ivatilent Emilenment			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 8

7. Barriers to Fish Movement

	During to I but 1/20 (ement					
No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.		
10	8	5	3	1		

SCORE: 4

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

O O GATGET OF COUDE	o, i iiiico, unaci cut be			
>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types .	1 or less cover
				types present.
10	8	5	3	1

SCORE: 3

9. Pools

71 I OOL	The second secon		
Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

Coldwater Fishery (Pickens, Oconee, Greenville Counties above US Hwy 11)

>75% of water surface shaded and upstream 2-3 miles generally	>50% shaded in reach; or >75% shaded in reach and 2-3 miles upstream poorly	20-50% shaded.	<20% shaded in reach.
shaded.	shaded.		
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.	ĺ
10	7	1	ĺ

SCORE: 4

11. Manure Presence

No livestock accessible to stream, riparian area, or floodplain.	Evidence of livestock access to riparian area.	Occasional manure in stream; waste storage structure located in floodplain.	Extensive amount of manure on banks or in stream.
10	5	3	1

SCORE: 4

AVERAGE SCORE (TOTAL SCORE / 11): 4 · 8

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner'	s Name:	Duke	Energy	Carolinas,	LLC	Date: _	3/30/2009	_Stream	A
County:	Union	County	Pr	epared by:	Kristen	Roop/	Jason Isbanio	oly —	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Channel Condition (adequate noodplain is generally at least 2 times the channel width)					
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down		
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,		
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with		
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.		
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent		
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.		
cutting		floodplain.			
10	7	3	1		

SCORE: 7

2. Hydrology Alteration (flooding is out of bank flooding)

zi iljaiology iliteratio	in (mooding to out or but		
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.
not incised.			I
10	7	3	1

SCORE: 1

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation includes hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 5

5. Water Appearance

5. Water Appearance			
Very clear; or clear but tea	Occasionally cloudy,	Considerable	Very turbid or muddy
colored; objects visible at	especially after storm	cloudiness most of the	appearance most of the
depths of 3-6 feet. No	event; but clears	time; objects visible to	time; objects visible to
noticeable film on surface	rapidly; objects	depth of .5-1.5 feet;	depth <.5 feet; heavy coat
or submerged objects.	visible at depth of	submerged objects with	of film on surface or
	1.5-3 feet; may have	heavy green film, or	submerged objects; strong
	slight green color.	moderate odor of	odor of ammonia.
		ammonia.	
10	7	3	1

SCORE: __7___

6. Nutrient Enrichment

o. Patricut Entremune			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 10

7. Barriers to Fish Movement

No barrier natural dro foot.	,	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10)	8	5	3	1

SCORE: N/A

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover types present.
10	8	5	3	1

SCORE: N/A

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
deep.			
10	7	3	1

Coldwater Fishery (Pickens, Oconee, Greenville Counties above US Hwy 11)

>75% of water surface shaded and upstream	>50% shaded in reach; or >75% shaded in reach and	20-50% shaded.	<20% shaded in reach.
2-3 miles generally shaded.	2-3 miles upstream poorly shaded.		
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 7

11. Manure Presence

No livestock	Evidence of livestock access	Occasional manure in	Extensive amount of
accessible to stream,	to riparian area.	stream; waste storage	manure on banks or in
riparian area, or		structure located in	stream.
floodplain.		floodplain.	
10	5	3	1

SCORE: 11

AVERAGE SCORE (TOTAL SCORE / 11): 6.7

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner	's Name: _	Duke Ener	gy Carolina	s,	Date:	4/01/20	09	Stream	AA
County: _	Cherokee	County	Prepared by:	Krister	n Roop	/ Jason	Isbanio	oly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Channel Condit	1. Channel Condition (adequate noodplain is generally at least 2 times the channel width)							
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down					
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,					
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with					
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.					
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent					
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.					
cutting		floodplain.						
10	7	3	1					

SCORE: 10

2. Hydrology Alteration (flooding is out of bank flooding)

2. Hydrology Axteratio	2. Hydrology Attended (Hooding is out of bank Hooding)								
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply						
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent						
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam						
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood						
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have						
structures limiting the	although present, do	available low flow	caused severe loss of low flow						
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on						
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.						
not incised.		,							
10	7	3	1						

SCORE: 7

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation hardwood trees, mixed shrubs, and native herbaceous species)

ı	Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
	extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
	feet on each side.	feet on each side.	on each side.	
	10	8	5	1

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 6

5. Water Appearance

3. Water Appearance			
Very clear; or clear but tea	Occasionally cloudy,	Considerable	Very turbid or muddy
colored; objects visible at	especially after storm	cloudiness most of the	appearance most of the
depths of 3-6 feet. No	event; but clears	time; objects visible to	time; objects visible to
noticeable film on surface	rapidly; objects	depth of .5-1.5 feet;	depth <.5 feet; heavy coat
or submerged objects.	visible at depth of	submerged objects with	of film on surface or
	1.5-3 feet; may have	heavy green film, or	submerged objects; strong
	slight green color.	moderate odor of	odor of ammonia.
		ammonia.	
10	7	3	1

SCORE: 7

6. Nutrient Enrichment

o. I willicht Emilicht			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	. 7	3	1

SCORE: 7

7. Barriers to Fish Movement

No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

SCORE: 6

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types 6-7 cover types 4-5 cover types 2-3 cover types 1 or less cover types present.

SCORE: 5

9. Pools

77 2 0010	The second secon		
Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	1 1	Pools absent; entire bottom visible.
10	7	3	1

		`			,	,	
•	Coldwater Fishery	(Pickens	Oconee	Greenville	Counties	above US	Hwv 11)

>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.	
shaded and upstream	>75% shaded in reach and			
2-3 miles generally	2-3 miles upstream poorly			
shaded.	shaded.			
10	7	3 -	1	

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 9

11. Manure Presence

No livestock	Evidence of livestock access	Occasional manure in	Extensive amount of
accessible to stream,	to riparian area.	stream; waste storage	manure on banks or in
riparian area, or		structure located in	stream.
floodplain.	· _	floodplain.	
10	5	3	1

SCORE:

AVERAGE SCORE (TOTAL SCORE / 11): __7.4

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowne	r's Name: _	Duke Ener	gy Carolinas	, LLC	Date: _	4/01/20		_Stream	AB
County: _	Cherokee	County	Prepared by:	Kriste	n Roop/	/ Jason	Isbanio	oly -	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Channel Condition (adequate noodplain is generally at least 2 times the channel width)						
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down			
no structures,	alteration, but with significant of the reach with rip		cutting or widening,			
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with			
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.			
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent			
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.			
cutting		floodplain.				
10	7	3	1			

SCORE: 2

2. Hydrology Alteration (flooding is out of bank flooding)

2. Hydrology fateration (moduling is out of bank moduling)					
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply		
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent		
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam		
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood		
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have		
structures limiting the	although present, do	available low flow	caused severe loss of low flow		
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on		
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.		
not incised.					
10	7	.3	1		

S	C	o	RE:	3

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1

SCORE: __5

Banks are stable; banks are	Moderately stable;	Moderately unstable:	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
	1		
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 4

5. Water Appearance

3. Water Appearance			
Very clear; or clear but tea	Occasionally cloudy,	Considerable	Very turbid or muddy
colored; objects visible at	especially after storm	cloudiness most of the	appearance most of the
depths of 3-6 feet. No	event; but clears	time; objects visible to	time; objects visible to
noticeable film on surface	rapidly; objects	depth of .5-1.5 feet;	depth <.5 feet; heavy coat
or submerged objects.	visible at depth of	submerged objects with	of film on surface or
	1.5-3 feet; may have	heavy green film, or	submerged objects; strong
	slight green color.	moderate odor of	odor of ammonia.
		ammonia.	
10	7	3	1

SCORE: 7

6. Nutrient Enrichment

o. Nutrient Enrichment			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 8

7. Barriers to Fish Movement

/. Dalitiels to Fish	Movement			
No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

SCORE:

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover
				types present.
10	8	5	3	1

SCORE: ____

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

Coldwater Fishery (Pic	kens, Oconee, Gree	enville Counties abor	ve US Hwv 11)

	Total Tiber J (Tiber) (Tiber) Tiber (Tiber) Tiber (Tiber)				
>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.		
shaded and upstream	>75% shaded in reach and				
2-3 miles generally	2-3 miles upstream poorly				
shaded.	shaded.				
10	7	3	1		

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 7

11. Manure Presence

No livestock accessible to stream, riparian area, or floodplain.	Evidence of livestock access to riparian area.	Occasional manure in stream; waste storage structure located in floodplain.	Extensive amount of manure on banks or in stream.
100dpiani.	5	3	1

SCORE: ____

AVERAGE SCORE (TOTAL SCORE / 11): __4.9

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowne	r's Name: _	Duke En	ergy Carolinas	, LLC	Date: _	4/01/2	009	Stream	AC
County: _	Cherokee	County	Prepared by: _	Krister	Roop/	Jason	Isbanio	oly -	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

TO CHARMET COMMIT	on (nucquate nootpitin is gene	Turing at reast I times the t	mammer winding
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.
cutting		floodplain.	
10	7	3	1 .

SCORE: 6

2. Hydrology Alteration (flooding is out of bank flooding)

Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.
not incised.			
10	7	3	1

SCORE: 8

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation includes hardwood trees, mixed shrubs, and native herbaceous species)

marawood erees, mi	iaca shi abs, ana nacive	ner baccous species,	and the second s
Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 10

5. Water Appearance

5. Water Appearance		•	
Very clear; or clear but tea	Occasionally cloudy,	Considerable	Very turbid or muddy
colored; objects visible at	especially after storm	cloudiness most of the	appearance most of the
depths of 3-6 feet. No	event; but clears	time; objects visible to	time; objects visible to
noticeable film on surface	rapidly; objects	depth of .5-1.5 feet;	depth <.5 feet; heavy coat
or submerged objects.	visible at depth of	submerged objects with	of film on surface or
	1.5-3 feet; may have	heavy green film, or	submerged objects; strong
	slight green color.	moderate odor of	odor of ammonia.
		ammonia.	
10	7	3	1

SCORE: 7

6. Nutrient Enrichment

or reactions Buriemment			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 8

7. Barriers to Fish Movement

No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

SCORE:

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover
				types present.
10	8	5	3	1

SCORE:

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
deep.	<u> </u>		
10	7	3	1

Coldwater Fishery (Pickens, Oconee, Greenville Counties above US Hwy 11)					
>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% sh		
-11-11	S 750/ alored and the manufactured				

>75% of water surface shaded and upstream 2-3 miles generally shaded.	>50% shaded in reach; or >75% shaded in reach and 2-3 miles upstream poorly shaded.	20-50% shaded.	<20% shaded in reach.		
Silaucu.	Silaucu.				
10	7	3	1		

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 7

11. Manure Presence

No livestock	Evidence of livestock access	Occasional manure in	Extensive amount of
accessible to stream,	to riparian area.	stream; waste storage	manure on banks or in
riparian area, or		structure located in	stream.
floodplain.		floodplain.	
10	5	3	1

SCORE:

AVERAGE SCORE (TOTAL SCORE / 11): 8.0

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

STREAM ASSESSMENT PROCEDURE

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner's N	ame:Duke	Energy Carolir	as, LLC	Date: _	4/06/2	009	Stream	AD
County: Che	rokee Count	Prepared by	Kriste	n Roop/	Jason	Isbanio	oly -	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Chamic Condit	ion faucdauc Hoodbiain is gene	rany at icast 2 times the t	Hannel Width)
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.
cutting		floodplain.	
10	7	3	1

SCORE: 7

2. Hydrology Alteration (flooding is out of bank flooding)

zi myarotogy miceracio	H (HOUGHE IS OUT OF DE	in nooung)	
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.
not incised.			
10	7	3	1

SCORE: 6

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1

SCORE: 4

4. Bank Stability

4. Dank Stability			
Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 6

5. Water Appearance

5. Water Appearance			
Very clear; or clear but tea colored; objects visible at depths of 3-6 feet. No noticeable film on surface or submerged objects.	Occasionally cloudy, especially after storm event; but clears rapidly; objects visible at depth of 1.5-3 feet; may have slight green color.	Considerable cloudiness most of the time; objects visible to depth of .5-1.5 feet; submerged objects with heavy green film, or moderate odor of ammonia.	Very turbid or muddy, appearance most of the time; objects visible to depth <.5 feet; heavy coat of film on surface or submerged objects; strong odor of ammonia.
10	7	2	1
10	. /]3	1

SCORE: 6

6. Nutrient Enrichment

o. Mutitent Entichment			
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 4

7. Barriers to Fish Movement

/. Dailiels to Fish	MOVEMENT	4		
No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

SCORE:

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types 6-7 cover types 4-5 cover types 2-3 cover types 1 or less cover types present.

SCORE: ____

9. Pools

	•		
Deep and shallow	Pools present, but not	Pools present, but	Pools absent; entire
pools abundant (>3);	abundant (<3); pools at least	shallow, <3 ft. deep.	bottom visible.
pools at least 5 ft.	3 ft. deep.	•	
deep.	_		
10	7	3	1

SCORE: 4

10. Canopy Cover (Use coldwater or warm water below, not both)

A-11	T7° . L	/D' - L	A		Counties above	- TIC II 11\
COMWAR	PP HIGHPRY	i Pickens.	t Jeanee.	t-reenville	Complex anova	e us mwv i i i

>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.
shaded and upstream	>75% shaded in reach and		
2-3 miles generally	2-3 miles upstream poorly		
shaded.	shaded.		
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 4

11. Manure Presence

No livestock	Evidence of livestock access	Occasional manure in	Extensive amount of
accessible to stream,	to riparian area.	stream; waste storage	manure on banks or in
riparian area, or		structure located in	stream.
floodplain.		floodplain.	
10	5	3	1

SCORE: 6

AVERAGE SCORE (TOTAL SCORE / 11): 5.2

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

< 6.0 Poor 6.1 – 7.4 Fair 7.5 – 8.9 Good > 9.0 Excellent

STREAM ASSESSMENT PROCEDURE

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner	's Name: _	Duke Ener	gy Carolinas	, LLC	Date: _	4/06/2	009	Stream	ΑE
County:	Cherokee	County	Prepared by: _	Kriste	n Roop,	/ Jason	Isbani	oly -	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- *** Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull
 flow. If the flow is contained within the channel at two times the maximum depth, then the
 channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Challet Condition (adequate noodplain is generally at least 2 times the challet wittin)				
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down	
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,	
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with	
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.	
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent	
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.	
cutting		floodplain.		
10	7	3	1	

SCORE: 7

2. Hydrology Alteration (flooding is out of bank flooding)

2. Hydrology Mitthatio	in (moduling is out or but	in nooding,	
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.
not incised.			_
10	7	3	1

SCORE: 6

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1

SCORE: 5

4. Bank Stability

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 7

5. Water Appearance

5. Water Appearance	*		
Very clear; or clear but tea	Occasionally cloudy,	Considerable	Very turbid or muddy
colored; objects visible at depths of 3-6 feet. No	especially after storm event; but clears	cloudiness most of the time; objects visible to	appearance most of the time; objects visible to
noticeable film on surface	rapidly; objects	depth of .5-1.5 feet;	depth <.5 feet; heavy coat
or submerged objects.	visible at depth of 1.5-3 feet; may have	submerged objects with heavy green film, or	of film on surface or submerged objects; strong
	slight green color.	moderate odor of	odor of ammonia.
	`	ammonia.	
10	7	3	1

SCORE: 7

6. Nutrient Enrichment

	o. Nutrent Emilient			
,	Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
	10	7	3	1

SCORE: 6

7. Barriers to Fish Movement

/. Darriers to Fish.	MOVEMENT			
No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	. 1

SCORE: ⁷

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover types present.
10	8	5	3	1

SCORE: 8

9. Pools

7.7 - 7.7 - 7.7			
Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	. 7	3	1

SCORE: 7

10. Canopy Cover (Use coldwater or warm water below, not both)

Coldwater Fishery (F	Pickens, Oconee, Greenville Cou	inties above US Hwy 11)

>75% of water surface shaded and upstream	>50% shaded in reach; or >75% shaded in reach and	20-50% shaded.	<20% shaded in reach.
2-3 miles generally	2-3 miles upstream poorly		
shaded.	shaded.		
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.	
10	7	1	

SCORE: 3

11. Manure Presence

		-	
No livestock	Evidence of livestock access	Occasional manure in	Extensive amount of
accessible to stream,	to riparian area.	stream; waste storage	manure on banks or in
riparian area, or	·	structure located in	stream.
floodplain.		floodplain.	
10	5	3	1

SCORE: 8

AVERAGE SCORE (TOTAL SCORE / 11): 6.5

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

< 6.0 Poor 6.1 – 7.4 Fair 7.5 – 8.9 Good > 9.0 Excellent

STREAM ASSESSMENT PROCEDURE

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landown	er's Name: _	Duke	Energy	Carolinas	LLC	Date: _	4/06/2	009	Stream	AF
County:	Cherokee	Count	y Pro	epared by:	Kriste	n Roop,	/ Jason	Isbanio	oly	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull
 flow. If the flow is contained within the channel at two times the maximum depth, then the
 channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Channel Condition (adequate hoodplain is generally at least 2 times the channel width)						
Natural channel; Evidence of past channel		Altered channel; <50%	Channel is actively down			
no structures, alteration, but with significant		of the reach with riprap	cutting or widening,			
dikes. No	dikes. No recovery of channel and		>50% of the reach with			
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.			
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent			
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.			
cutting		floodplain.				
10	7	3	1			

SCORE: 10

2. Hydrology Alteration (flooding is out of bank flooding)

2: Hydrology Theer actor (modding is due of bank modding)							
Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply				
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent				
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam				
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood				
dikes or other structures limiting the stream's access to the floodplain. Channel is not incised.	withdrawals, although present, do not affect available habitat for biota.	significantly affect available low flow habitat for biota.	flows. Or withdrawals have caused severe loss of low flow habitat. Or flooding occurs on a 1 year rain event or less.				
10	7	3 .	1				

SCORE: 6

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.
feet on each side.	feet on each side.	on each side.	
10	8	5	1

SCORE: 10

4. Bank Stability

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 8

5. Water Appearance

5. Water Appearance			
Very clear; or clear but tea	Occasionally cloudy,	Considerable	Very turbid or muddy
colored; objects visible at	especially after storm	cloudiness most of the	appearance most of the
depths of 3-6 feet. No	event; but clears	time; objects visible to	time; objects visible to
noticeable film on surface	rapidly; objects	depth of .5-1.5 feet;	depth <.5 feet; heavy coat
or submerged objects.	visible at depth of	submerged objects with	of film on surface or
	1.5-3 feet; may have	heavy green film, or	submerged objects; strong
	slight green color.	moderate odor of	odor of ammonia.
		ammonia.	
10	7	3	1

SCORE: 7

6. Nutrient Enrichment

	v. Municut Emilentent			
	Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
Γ	10	7	3	1

SCORE: 7

7. Barriers to Fish Movement

No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

SCORE:

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

	DOMINGE OF CODDI	e, i iiiioo, anaaci cac be	many thick root much	<u> </u>	·
>	7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover
					types present.
	10	8	5	3	1

SCORE:

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

SCORE: 6

10. Canopy Cover (Use coldwater or warm water below, not both)

	•					
Coldwater Fishery	(Pickens	Oconee	Greenville	Counties	above IIS	Hwv 11)

>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.
shaded and upstream	>75% shaded in reach and		
2-3 miles generally	2-3 miles upstream poorly		
shaded.	shaded.		
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 7

11. Manure Presence

No livestock	Evidence of livestock access	Occasional manure in	Extensive amount of
accessible to stream,	to riparian area.	stream; waste storage	manure on banks or in
riparian area, or		structure located in	stream.
floodplain.		floodplain.	
10	5	3	1

SCORE: ____

AVERAGE SCORE (TOTAL SCORE / 11): __7.6

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

< 6.0 Poor 6.1 – 7.4 Fair 7.5 – 8.9 Good > 9.0 Excellent

STREAM ASSESSMENT PROCEDURE

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landown	er's Name: _	Duke Ener	gy Carolinas	, LLC	Date:	4/06/200	09St	ream	AG
County:	Cherokee	County	Prepared by: _	Kriste	n Roop	Jason	Isbaniol	У	

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- ••• Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

1. Channel Condit	1. Channel Condition (adequate noodplain is generally at least 2 times the channel width)							
Natural channel;	Evidence of past channel	Altered channel; <50%	Channel is actively down					
no structures,	alteration, but with significant	of the reach with riprap	cutting or widening,					
dikes. No	recovery of channel and	and/or channelization.	>50% of the reach with					
evidence of down	banks. Any dikes or levees	Excess aggradation;	riprap or channelization.					
cutting or	are set back to provide access	braided channel. Dikes	Dikes or levees prevent					
excessive lateral	to an adequate floodplain.	or levees restrict	access to the floodplain.					
cutting		floodplain.						
10	7	3	1					

SCORE: 7

2. Hydrology Alteration (flooding is out of bank flooding)

Flooding out of bank	Flooding occurs only	Flooding occurs only	No flooding; channel deeply
occurs every 1.5 or 2.0	once every 3-5 years;	once every 6-10 years;	incised or structures prevent
years. No dams, no	limited channel	channel deeply incised.	access to floodplain or dam
water withdrawals, no	incision. Or	Or withdrawals	operations prevent flood
dikes or other	withdrawals,	significantly affect	flows. Or withdrawals have
structures limiting the	although present, do	available low flow	caused severe loss of low flow
stream's access to the	not affect available	habitat for biota.	habitat. Or flooding occurs on
floodplain. Channel is	habitat for biota.		a 1 year rain event or less.
not incised.			-
10	7	3	1

SCORE: 6

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation includes hardwood trees, mixed shrubs, and native herbaceous species)

nur a oou er ees, mineu onr uos, una nuer re ner ouecous species,						
Natural vegetation	Natural vegetation	Natural vegetation	Natural vegetation extends <			
extends more than 50	extends at least 35	extends at least 15 feet	15 feet on each side.			
feet on each side.	feet on each side.	on each side.				
10	8	5	1			

SCORE: 10

4. Bank Stability

Banks are stable; banks are	Moderately stable;	Moderately unstable;	Unstable; banks are high
low and at elevation of	banks are low; <33%	banks are high and	and eroding in some
active floodplain; 33% or	of eroding banks are	flooding occurs 1 year	straight reaches and inside
more of eroding banks are	on outside bends and	out of 5 or less	banks; numerous slope
on outside bends and are	are protected by roots	frequently. Outside	failures.
protected by roots	extending into the	banks are actively	
extending into the base	base flow.	eroding with some	
flow elevation.		slope failures.	
10	7	3	1

SCORE: 7

5. Water Appearance

5. water Appearance		· · · · · · · · · · · · · · · · · · ·	
Very clear; or clear but tea colored; objects visible at depths of 3-6 feet. No noticeable film on surface or submerged objects.	Occasionally cloudy, especially after storm event; but clears rapidly; objects visible at depth of 1.5-3 feet; may have slight green color.	Considerable cloudiness most of the time; objects visible to depth of .5-1.5 feet; submerged objects with heavy green film, or moderate odor of ammonia.	Very turbid or muddy appearance most of the time; objects visible to depth <.5 feet; heavy coat of film on surface or submerged objects; strong odor of ammonia.
10	7	3	1

SCORE: 6

6. Nutrient Enrichment

O. Maniche Different			The state of the s
Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: 7

7. Barriers to Fish Movement

No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

SCORE: ____

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

	e, illies, andereaction	initio, children i oct mate		
>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover
,		,		types present.
10	8	5	. 3	1

SCORE: ____

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

SCORE: __7

10. Canopy Cover (Use coldwater or warm water below, not both)

Coldwater Fishery (Pickens, Oconee, Greenville Counties above US Hwy 11)

>75% of water surface	>50% shaded in reach; or	20-50% shaded.	<20% shaded in reach.
shaded and upstream	>75% shaded in reach and		
2-3 miles generally	2-3 miles upstream poorly		
shaded.	shaded.		
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: 6

11. Manure Presence

No livestock	Evidence of livestock access	Occasional manure in	Extensive amount of
accessible to stream,	to riparian area.	stream; waste storage	manure on banks or in
riparian area, or		structure located in	stream.
floodplain.		floodplain.	
10	5	3	1

SCORE:

AVERAGE SCORE (TOTAL SCORE / 11): __7.0

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

< 6.0 Poor 6.1 – 7.4 Fair 7.5 – 8.9 Good > 9.0 Excellent

Project Site:	William S. Lee III Nucle	ar Station T	ransmission	Line		Date:	04/16/09	
Applicant/Owner:	Duke Energy Carolinas,	LLC				County:	Cherokee	
Investigator:	Jason Isbanioly/Kristen l	Roop				State:	SC	
8	The second second second	•						
Do normal circumstan	ices exist on the site?	13.	Yes⊠	No□		Community ID:	PFO	٠٠ - و المراجع المراجع المراجع المراجع المراجع المراجع المراجع المراجع المراجع المراجع المراجع المراجع المراجع
Is the site significantly	disturbed (Atypical Situat	ion)?	Yes□	No⊠		Transect ID:	Line M	
Is the area a potential (if needed, explain on			Yes□	No⊠		Plot ID:	Wetland M	
		4						
VEGETATION (In C	Order of Stratum) Note th		observed to	have m	orphological adaptat	ions to wetlands w	ith an *	
Dominant Pl	ant Species S	tratum	Indicator		Dominant Plant S	Inecies	Stratum	Indicator
1. Platanus occide		Tree	FACW-	9.	Sambucus canadensi		erbaceous	FACW-
2. Acer rubrum		Tree	FAC	10.	Carex lurida		erbaceous	OBL
3. Fraxinus pennsy	vlvanica	Tree	FACW	11.	Lycopus uniflorus	H	erbaceous	OBL
4. Acer rubrum		Sapling	FAC	12.	Microstegium vimine	rum H	erbaceous	FAC+
5. Fraxinus pennsy	vlvanica	Sapling	FACW	13.	Onoclea sensibilis		erbaceous	FACW
6. Ilex opaca		Sapling	FAC-	14.				
7. Fraxinus pennsy	vlvanica	Shrub	FACW	15.				
8. Liriodendron tu	lipifera	Shrub	FAC	Ī				
Include species noted Describe Morphologic	Species that are OBL, FAC (*) as showing morphological Adaptations: n 50% of vegetation is FAC	cal adaptati	ons to wetlar	ids.				
HYDROLOGY								
	DED DATA be in Remarks)	PRIMAI INDICA		(1 o	r more required)			
☐ Stream,	Lake or Tide Gage		X	Inur	dated			
	hotograph		\boxtimes		rated in Upper 12 Incl	nes		
Other					er Marks			
☐ No Reco	orded Data Available				t Lines			
		1	\boxtimes		nage Patterns in Wetla	inas		
FIELD OBSERVATION					ment deposits		·	
Depth of Surface Water	er: 0-2 (in.)	SECONI INDICA		(2 o	r more required)			
Depth to Free Water in	n Pit: 0 (in.)			Oxi	lized Root Channels in	Upper 12 Inches		
, ·			Ħ		er-Stained Leaves	FP-: - 2 memes		
Depth to Saturated So	il: 0 (in.)		ī		al Soil Survey Data			
			Ħ		er (Explain in Remarks	s)		
					-Neutral Test	,		
Remarks: Hydrologica	al indicators are present. Pa	rameter is n				· · · · · · · · · · · · · · · · · · ·	·	

SOILS Map Unit Name Unknown (Series and Phrase): **Drainage Class:** Unknown Field Observations \boxtimes Taxonomy (Subgroup): Confirm Mapped Type? Yes No PROFILE DESCRIPTION <u>Depth</u> Matrix Color Redoximorphic Redoximorphic Texture, Concretions, (Inches) **Horizon** (Munsell Moist) Features Colors **Features** Rhizospheres, etc. (Munsell Moist) Abundance/Contrast 0-4" 10yr 4/1 Loam Course, Common, 4-15"+ В 10yr 5/1 10yr 6/6 Loamy Clay **Prominent** Hydric Soil Indicators: Histosol Concretions Histic Epipedon High Organic Content in Surface Layer in Sandy Soils Sulfide Odor Organic Streaking in Sandy Soils Aquic Moisture Regime Listed on Local Hydric Soils List **Reducing Conditions** Listed on National Hydric Soils List Ø Gleyed or Low-Chroma Colors Other (Explain in Remarks) **Hydric Soil Present?** Yes 🛛 No 🔲 Remarks: Hydric soil indicators present. Wetland parameters met. WETLAND DETERMINATION Hydrophytic Vegetation Present? Yes⊠ Yes⊠ No 🗌 Wetland Hydrology Present? Yes⊠ No Yes Hydric Soils Present? No Is this Sampling Point Within A Wetland? No□

Remarks:

All wetland parameters met.

Project Site:	William S. Lee III	Nuclear Station	Transmission	Line	Date:	04/16/09	4
Applicant/Owner:	Duke Energy Caro	linas, LLC			County:	Cherokee	
Investigator:	Jason Isbanioly/Kr	isten Roop			State:	SC	· · · · · · · · · · · · · · · · · · ·
	·						
Do normal circumstan	nces exist on the site?		Yes⊠	No□	Community ID:	PEM	
Is the site significantly	v disturbed (Atynical	Situation)?	Yes□	No⊠	Transect ID:	Line N	
Is the area a potential		Situation):	Yes□	No 🖾	Plot ID:	Wetland N	
(if needed, explain on			163[]	1102	, riot ib.	Wettand IV	
						and the same of th	en teu .
ATECOPIE ATECON (I. A	0.1.004						14 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
		ote those species		have morphological adap	-	ith an *	
<u>Dominant Pl</u> 1. Peltandra virgin		Stratum Herbaceous	Indicator OBL	Dominant Plar	nt Species	Stratum Ind	<u>licator</u>
2. Juncus effusus		Herbaceous	FACW+				····
3. Lemna minor		Herbaceous	OBL				
4. Justicia america	ana	Herbaceous	OBL				
5.	-		 				
6.							
6.							
6. 7.						7	_
6. 7. 8. Percent of Dominant S	Species that are OBL,					7	
6. 7. 8.	Species that are OBL,					7	
6. 7. 8. Percent of Dominant S	Species that are OBL, (*) as showing morph						
6. 7. 8. Percent of Dominant S Include species noted Describe Morphologic	Species that are OBL, (*) as showing morph	nological adaptati	ions to wetlar				
6. 7. 8. Percent of Dominant S Include species noted	Species that are OBL, (*) as showing morph	nological adaptati	ions to wetlar				7
6. 7. 8. Percent of Dominant S Include species noted Describe Morphologic Remarks: Greater that	Species that are OBL, (*) as showing morph cal Adaptations: n 50% of vegetation i	nological adaptati	Wetland par	ameter is met.			
6. 7. 8. Percent of Dominant S Include species noted Describe Morphologic Remarks: Greater that HYDROLOGY RECOR	Species that are OBL, (*) as showing morph cal Adaptations: n 50% of vegetation in	is FAC or wetter.	Wetland par				
6. 7. 8. Percent of Dominant S Include species noted Describe Morphologic Remarks: Greater tha HYDROLOGY RECOR (Descrit	Species that are OBL, (*) as showing morph cal Adaptations: n 50% of vegetation in DED DATA be in Remarks)	nological adaptati	Wetland part	ameter is met. (1 or more required)			
6. 7. 8. Percent of Dominant S Include species noted Describe Morphologic Remarks: Greater that HYDROLOGY RECOR (Descrit Stream,	Species that are OBL, (*) as showing morph cal Adaptations: n 50% of vegetation in	is FAC or wetter.	Wetland part	ameter is met.	nches		
6. 7. 8. Percent of Dominant S Include species noted Describe Morphologic Remarks: Greater that HYDROLOGY RECOR (Descrit Stream, Aerial P Other	Species that are OBL, (*) as showing morphical Adaptations: n 50% of vegetation in the company of the company	is FAC or wetter. PRIMAL INDICA	Wetland part	(1 or more required) Inundated Saturated in Upper 12 I Water Marks	nches		
Percent of Dominant S Include species noted Describe Morphologic Remarks: Greater that HYDROLOGY RECOR (Descrit Stream, Aerial P Other	Species that are OBL, (*) as showing morph cal Adaptations: n 50% of vegetation in DED DATA be in Remarks) Lake or Tide Gage	is FAC or wetter. PRIMAL INDICA	Wetland part	(1 or more required) Inundated Saturated in Upper 12 I Water Marks Drift Lines			· · · · · · · · · · · · · · · · · · ·
Percent of Dominant S Include species noted Describe Morphologic Remarks: Greater that HYDROLOGY RECOR (Descril Stream, Aerial P Other No Record	Species that are OBL, (*) as showing morph cal Adaptations: n 50% of vegetation in DED DATA be in Remarks) Lake or Tide Gage Photograph orded Data Available	is FAC or wetter. PRIMAL INDICA	Wetland part	(1 or more required) Inundated Saturated in Upper 12 I Water Marks Drift Lines Drainage Patterns in We			
Percent of Dominant S Include species noted Describe Morphologic Remarks: Greater that HYDROLOGY RECOR (Descrit Stream, Aerial P Other No Record	Species that are OBL, (*) as showing morph cal Adaptations: n 50% of vegetation in RDED DATA be in Remarks) Lake or Tide Gage Photograph orded Data Available ONS:	is FAC or wetter. PRIMAL INDICA	Wetland par	Inundated Saturated in Upper 12 I Water Marks Drift Lines Drainage Patterns in Wo			
Percent of Dominant S Include species noted Describe Morphologic Remarks: Greater that HYDROLOGY RECOR (Descril Stream, Aerial P Other No Record	Species that are OBL, (*) as showing morph cal Adaptations: n 50% of vegetation in RDED DATA be in Remarks) Lake or Tide Gage Photograph orded Data Available ONS:	is FAC or wetter. PRIMAL INDICA	Wetland part RY TORS	(1 or more required) Inundated Saturated in Upper 12 I Water Marks Drift Lines Drainage Patterns in We			
Percent of Dominant S Include species noted Describe Morphologic Remarks: Greater that HYDROLOGY RECOR (Descrit Stream, Aerial P Other No Record	Species that are OBL, (*) as showing morph cal Adaptations: n 50% of vegetation in DED DATA be in Remarks) Lake or Tide Gage Photograph orded Data Available ONS: er: 2-4 (in.)	PRIMAL INDICA	Wetland part RY TORS	Inundated Saturated in Upper 12 I Water Marks Drift Lines Drainage Patterns in Wo	etlands		
Percent of Dominant S Include species noted Describe Morphologic Remarks: Greater that HYDROLOGY RECOR (Descrit Stream, Aerial P Other No Record FIELD OBSERVATIO Depth of Surface Water in	Species that are OBL, (*) as showing morph cal Adaptations: n 50% of vegetation in DED DATA be in Remarks) Lake or Tide Gage Photograph orded Data Available ONS: er: 2-4 (in.) n Pit: 0 (in.)	PRIMAL INDICA	Wetland part RY TORS	Inundated Saturated in Upper 12 I Water Marks Drift Lines Drainage Patterns in Western deposits (2 or more required)	etlands		
Percent of Dominant S Include species noted Describe Morphologic Remarks: Greater that HYDROLOGY RECOR (Descril Stream, Aerial P Other No Record FIELD OBSERVATIO Depth of Surface Water	Species that are OBL, (*) as showing morph cal Adaptations: n 50% of vegetation in DED DATA be in Remarks) Lake or Tide Gage Photograph orded Data Available ONS: er: 2-4 (in.) n Pit: 0 (in.)	PRIMAL INDICA	Wetland part RY TORS	Inundated Saturated in Upper 12 I Water Marks Drift Lines Drainage Patterns in Westernest deposits (2 or more required) Oxidized Root Channel Water-Stained Leaves Local Soil Survey Data	s in Upper 12 Inches		
Percent of Dominant S Include species noted Describe Morphologic Remarks: Greater that HYDROLOGY RECOR (Descrit Stream, Aerial P Other No Record FIELD OBSERVATIO Depth of Surface Water in	Species that are OBL, (*) as showing morph cal Adaptations: n 50% of vegetation in DED DATA be in Remarks) Lake or Tide Gage Photograph orded Data Available ONS: er: 2-4 (in.) n Pit: 0 (in.)	PRIMAL INDICA	Wetland part RY TORS	Inundated Saturated in Upper 12 I Water Marks Drift Lines Drainage Patterns in Woods Sediment deposits (2 or more required) Oxidized Root Channel Water-Stained Leaves	s in Upper 12 Inches		

SOILS Map Unit Name Unknown (Series and Phrase): Drainage Class: Unknown **Field Observations** Ø Taxonomy (Subgroup): Confirm Mapped Type? Yes No PROFILE DESCRIPTION Redoximorphic Features Colors **Depth** Matrix Color Redoximorphic Texture, Concretions, (Munsell Moist) (Inches) **Horizon** <u>Features</u> Rhizospheres, etc. (Munsell Moist) Abundance/Contrast 0-4" 10yr 5/3 Silt, Clay 4-18"+ В 10yr 5/3 2.5yr 3/6 Fine, Many, Silt, Clay **Prominent Hydric Soil Indicators:** Histosol Concretions Histic Epipedon High Organic Content in Surface Layer in Sandy Soils Sulfide Odor Organic Streaking in Sandy Soils Aquic Moisture Regime Listed on Local Hydric Soils List **Reducing Conditions** Listed on National Hydric Soils List \boxtimes Gleyed or Low-Chroma Colors Other (Explain in Remarks) **Hydric Soil Present?** No 🛛 Remarks: Soil meets the criteria for NRCS hydric soil test indicator F.19 Piedmont Flood Plain Soils. However, this indicator has not been approved as a primary indicator and cannot be used to determine whether or not a wetland is jurisdictional.

WETLAND DETERMINATION Hydrophytic Vegetation Present? Yes⊠ No□ Wetland Hydrology Present? Yes⊠ No□ Hydric Soils Present? Yes□ No⊠ Is this Sampling Point Within A Wetland? Yes□ No⊠ Remarks: Hydric soils parameter is not met. Although area provides wetland functions it cannot be considered jurisdictional

Remarks: Hydric soils parameter is not met. Although area provides wetland functions it cannot be considered jurisdictiona under the 1987 Delineation Manual.

Project Site:	William S. Lee III Nuc	lear Station T	ransmission	Line	Date:	04/16/09
Applicant/Owner:	Duke Energy Carolinas	, LLC			County:	Cherokee
Investigator:	Jason Isbanioly/Kristen	,			State:	sc
		Теор				
Do normal circumstan	ces exist on the site?		Yes⊠	No	Community ID:	PSS
Is the site significantly	disturbed (Atypical Situa	ation)?	Yes 🗌	No⊠	Transect ID:	Line P
Is the area a potential			Yes□	No⊠	Plot ID:	Wetland P
(if needed, explain on	reverse)			•		
and the second second second second						
ATE OF THE ONLY				· · · · · · · · · · · · · · · · · · ·		
VEGETATION (In C	Order of Stratum) Note i	those species	observed to	have morphological adaptat	tions to wetlands wi	th an *
Dominant Pl	ant Species	Stratum	Indicator	Dominant Plant S	Species	Stratum Indicator
Salix nigra Pinus taeda	una di Lagra r, I	Tree Tree	FAC FAC			· · · · · · · · · · · · · · · · · · ·
3. Salix nigra		Sapling	OBL			· · · · · · · · · · · · · · · · · · ·
4. Acer rubrum		Sapling	FAC			
5. Liquidambar sty		Sapling	FAC+		·	
6. Acer rubrum	•	Shrub	FAC	•		· · · · · · · · · · · · · · · · · · ·
7. Juncus effusus	H	erbaceous	FACW+			
8. Carex lurida	H	erbaceous	OBL			
	Species that are OBL, FAG (*) as showing morphological Adaptations:					
Remarks: Greater that	n 50% of vegetation is FA	C or wetter	Wetland nar	ameter is met		
HYDROLOGY	· ·	e or wetter.	weciana pan	aneter is met.		
	DED DATA	PRIMAI	₽Ý	(1 or more required)		
•	be in Remarks)	INDICA		(1 or more required)		
☐ Stream,	Lake or Tide Gage		\boxtimes	Inundated		
	hotograph	.	\boxtimes	Saturated in Upper 12 Incl	nes	
Other				Water Marks		
☐ No Reco	orded Data Available		빌	Drift Lines	•	
			Li .	Drainage Patterns in Wetla	ands	
FIELD OBSERVATION				Sediment deposits		
Depth of Surface Water	er: 1-6 (in.)	SECONI INDICA		(2 or more required)		
Depth to Free Water in	n Pit: 0 (in.)			Oxidized Root Channels in	n Upper 12 Inches	
			Ī	Water-Stained Leaves	••	
Depth to Saturated Soi	il: 0 (in.)	1	$\bar{\Box}$	Local Soil Survey Data		
				Other (Explain in Remark	s)	
		<u> </u>	\boxtimes	FAC-Neutral Test		
Remarks: Hydrologica	l indicators are present. P	arameter is n	net.			
			 			

SOILS Map Unit Name Unknown (Series and Phrase): Drainage Class: Unknown Field Observations X Taxonomy (Subgroup): Confirm Mapped Type? Yes No PROFILE DESCRIPTION **Depth** Matrix Color Redoximorphic Redoximorphic Texture, Concretions, Features Colors (Munsell Moist) Features
Abundance/Contrast **Horizon** (Munsell Moist) Rhizospheres, etc. (Inches) 0-2" 10yr 3/1 Silt, Clay 5yr 4/6 2-18"+ В 10yr 5/3 Course, Common, Silt, Clay Prominent **Hydric Soil Indicators:** Histosol \boxtimes Concretions Histic Epipedon High Organic Content in Surface Layer in Sandy Soils Sulfide Odor Organic Streaking in Sandy Soils Aquic Moisture Regime Listed on Local Hydric Soils List **Reducing Conditions** Listed on National Hydric Soils List Gleyed or Low-Chroma Colors \boxtimes Other (Explain in Remarks) **Hydric Soil Present?** No 🗌 Yes 🛛 Remarks: Soil meets the criteria for NRCS hydric soil test indicator F.19 Piedmont Flood Plain Soils. However, the presence of ironmanganese concretions make the wetland jurisdictional. Parameter is met.

Hydrophytic Vegetation Present?	Yes⊠	No□	Wetland Hydrology Present? Is this Sampling Point Within A Wetland?	Yes⊠	No□
Hydric Soils Present?	Yes⊠	No□		Yes⊠	No□

Project Site:	William S. Lee III Nucle	ar Station T	Transmission	Line	Date:	04/17/09	
Applicant/Owner:	Duke Energy Carolinas,	LLC			County:	Cherokee	
Investigator:	Jason Isbanioly/Kristen I				State:	sc	
					1		
Do normal circumstar	ances exist on the site?		Yes⊠	No	Community ID:	PSS/PEM	
Is the site significantl	ly disturbed (Atypical Situat	tion)?	Yes□	No	Transect ID:	Line Q	
Is the area a potential (if needed, explain on			Yes□	No⊠	Plot ID:	Wetland Q	
	——————————————————————————————————————						
VEGETATION (In	Order of Stratum) Note th	iose species	observed to	o have morphological adaptat	tions to wetlands wi	th an *	
		Stratum	Indicator	Dominant Plant S	<u>Species</u>	Stratum Ind	<u>dicator</u>
1. Platanus occide 2. Fraxinus penns		Sapling Sapling	FACW- FACW	<u> </u>			
3. Juncus effusus		Herb	FACW+				
4. Carex lurida		Herb	OBL				
6							
7.							
8				 			
Include species noted Describe Morphologic		ical adaptation	ions to wetlan	nds.			
Remarks: Greater tha	an 50% of vegetation is FAC	or wetter.	Wetland para	ameter is met.			
HYDROLOGY							
(Descri	RDED DATA ribe in Remarks)	PRIMAF INDICA	TORS	(1 or more required)			
	, Lake or Tide Gage		\boxtimes	Inundated			-
│ │ │ Aerial I │ │ Other	Photograph		\boxtimes	Saturated in Upper 12 Inch Water Marks	hes		*
	corded Data Available		H	Water Marks Drift Lines			
	Olded Data / Wallacit		H	Drainage Patterns in Wetla	iands		
FIELD OBSERVATI	IONS:	1		Sediment deposits			
Depth of Surface Wat		SECONI INDICA		(2 or more required)			
Depth to Free Water i	in Pit: 0 (in.)			Oxidized Root Channels in	in Upper 12 Inches		
	- · ·			Water-Stained Leaves			
Depth to Saturated So	oil: 0 (in.)			Local Soil Survey Data			
				Other (Explain in Remarks	(s)		
	· <u>-</u>			FAC-Neutral Test			
Remarks: Hydrologic	cal indicators are present. Par	rameter is n	net.				

SOILS Map Unit Name Unknown (Series and Phrase): Drainage Class: Unknown **Field Observations** \boxtimes Taxonomy (Subgroup): Confirm Mapped Type? Yes No PROFILE DESCRIPTION Depth Matrix Color Redoximorphic Redoximorphic Texture, Concretions, (Inches) **Horizon** (Munsell Moist) Features Colors **Features** Rhizospheres, etc. (Munsell Moist) Abundance/Contrast 0-6" 7.5yr 5/4 Clay 6-18"+ В 7.5yr 5/3 2.5yr 4/8 Fine, Common. Silty Clay **Prominent** Hydric Soil Indicators: Histosol Concretions Histic Epipedon High Organic Content in Surface Layer in Sandy Soils Sulfide Odor Organic Streaking in Sandy Soils Aquic Moisture Regime П Listed on Local Hydric Soils List **Reducing Conditions** Listed on National Hydric Soils List \boxtimes Gleyed or Low-Chroma Colors Other (Explain in Remarks) **Hydric Soil Present?** No 🖂 Yes Remarks: Soil meets the criteria for NRCS hydric soil test indicator F.19 Piedmont Flood Plain Soils. However, this indicator has not been approved as a primary indicator and cannot be used to determine whether or not a wetland is jurisdictional.

WETLAND DETERMINATION Hydrophytic Vegetation Present? Yes⊠ No□ Wetland Hydrology Present? Yes⊠ No□ Is this Sampling Point Within A Wetland? Yes□ No⊠ Remarks: Hydric soils parameter is not met. Although area provides wetland functions it cannot be considered jurisdictional under the 1987 Delineation Manual.

Project Site:	William S. Lee III Nuclea	ar Station Transmi	ission L	ine		Date:	04/17/09	or englishmen is
Applicant/Owner:	Duke Energy Carolinas, I	LLC				County:	Cherokee	
Investigator:	Jason Isbanioly/Kristen F	Roop				State:	SC	
						}		
Do normal circumstan	ces exist on the site?	Yes		No	٠ ,	Community ID:	PFO	
Is the site significantly	disturbed (Atypical Situati	on)? Yes		No⊠		Transect ID:	Line R	· · · · · · · · · · · · · · · · · · ·
Is the area a potential (if needed, explain on		Yes		No⊠		Plot ID:	Wetland R	
								প্ৰত্যালয় কি
 .		a la constante de la constante	111	J	1		[
VEGETATION (In C	Order of Stratum) Note th	ose species observ	ved to h	have mor	phological adapta	tions to wetlands wi	ith an *	
<u>Dominant Pl</u>		tratum Indic			Dominant Plant	<u>Species</u>	Stratum .	Indicator
Liquidambar sty Fraxinus pennsy		Shrub FAC		_				
2. Fraxinus pennsy 3. Carex scoparia		Herb FAC						
4		1710				 		
				_				
0				_				
								
	Species that are OBL, FACV (*) as showing morphologic				,			
_			wettand					
Describe Morphologic	al Adaptations:							
Remarks: Greater than	n 50% of vegetation is FAC	or wetter. Wetlan	ıd paran	neter is me	et. Unknown butt	ercup species (Ranun	culus sp.) were	observed.
HYDROLOGY								
RECOR	DED DATA	PRIMARY		(1 or n	ore required)			
.	be in Remarks)	INDICATORS		· ·				
	Lake or Tide Gage hotograph			Inundat Saturate	tea ed in Upper 12 Inc	rhes		
Other	notograph			Water I		anes .		
☐ No Reco	orded Data Available			Drift Li		_		
				•	ge Patterns in Wet	lands		
FIELD OBSERVATION					ent deposits			
Depth of Surface Water	er: 0-2 (in.)	SECONDARY INDICATORS		(2 or m	ore required)			
Depth to Free Water in	n Pit: 0 (in.)			Oxidize	ed Root Channels	in Upper 12 Inches		
Depth to Saturated Soi	il: (in)	l □			Stained Leaves			
Depth to Saturated 501	n. <i>o</i> (m. <i>)</i>				Soil Survey Data			
					Explain in Remarl	(S)		
Remarks: Hydrologica	al indicators are present. Par			rac-n	eutral Test			

SOILS Map Unit Name Unknown (Series and Phrase): Drainage Class: Unknown **Field Observations** Ø Taxonomy (Subgroup): Confirm Mapped Type? Yes No PROFILE DESCRIPTION <u>Depth</u> Matrix Color Redoximorphic Redoximorphic Texture, Concretions, Features (Inches) **Horizon** (Munsell Moist) Features Colors Rhizospheres, etc. (Munsell Moist) Abundance/Contrast 0-18" В 10yr 3/1 Silt Hydric Soil Indicators: Histosol П Concretions Histic Epipedon High Organic Content in Surface Layer in Sandy Soils Sulfide Odor Organic Streaking in Sandy Soils \Box Aquic Moisture Regime Listed on Local Hydric Soils List **Reducing Conditions** Listed on National Hydric Soils List \boxtimes Gleyed or Low-Chroma Colors Other (Explain in Remarks) **Hydric Soil Present?** Yes 🖂 No 🔲 Remarks: Hydric soil indicators present. Wetland parameters met. Horizon 'A' either thin or non-existent.

WETLAND DETERMINATION Hydrophytic Vegetation Present? Yes⊠ No□ Wetland Hydrology Present? Yes⊠ No□ Is this Sampling Point Within A Wetland? Yes⊠ No□ Remarks: All wetland parameters met.

Project Site:	William S. Lee III Nucle	ar Station Tr	ansmission	Line		Date:	04/17/09
Applicant/Owner:	Duke Energy Carolinas,	LLC				County:	Cherokee
Investigator:	Jason Isbanioly/Kristen F	Roop				State:	SC
					•		
Do normal circumstan	ces exist on the site?		Yes⊠	No□		Community ID:	PFO
Is the site significantly	disturbed (Atypical Situat	ion)?	Yes□	No	Carlo	Transect ID:	Line S
Is the area a potential (if needed, explain on			Yes□	No⊠		Plot ID:	Wetland S
a na sideba ka wata wa							
			programme and the	· · · · · · · · · · · · · · · · · · ·		•	
VEGETATION (In C	Order of Stratum) Note th	ose species o	bserved to	have mo	rphological adapta	tions to wetlands wi	th an *
Dominant Pl		<u>tratum</u>	Indicator		Dominant Plant	Species 5	Stratum Indicator
1. Acer rubrum			FAC	∤ –			
Carpinus carolii Alnus serrulata			FAC FACW+	├ -			
4. Carpinus caroli			FAC	1 -	•		
5. Juncus effuses		Herb	FACW+	1 -	•		
6.] _			
7						 	
.8							
	Species that are OBL, FAC' (*) as showing morphological Adaptations:				% 		
Describe Morphologic	ai Adaptations.						
Remarks: Greater than	n 50% of vegetation is FAC	or wetter. W	Vetland para	ameter is n	net.		
HYDROLOGY							
	DED DATA	PRIMAR		(1 or	more required)		
,	be in Remarks) Lake or Tide Gage	INDICAT		Inund	ntad		
	hotograph	1	X X		ated ited in Upper 12 Inc	ches	
Other	<i>6</i> F	ĺ	<u> </u>		Marks		
☐ No Reco	orded Data Available			Drift I			
] [Draina	age Patterns in Wetl	lands	
FIELD OBSERVATION					ent deposits		······································
Depth of Surface Water	er: 2-4 (in.)	SECONDA INDICAT		(2 or 1	more required)		
Depth to Free Water in	n Pit: 0 (in.)	[Oxidia	zed Root Channels i	in Upper 12 Inches	
Donth to Cotton of Cot	ii. 0 (in)	[Water	-Stained Leaves		
Depth to Saturated Soi	ii: U (in.)	[_		Soil Survey Data		
] [(Explain in Remark	cs)	
			X	FAC-1	Neutral Test		
Remarks: Hydrologica	al indicators are present. Par	rameter is me	et.				

SOILS Map Unit Name Unknown (Series and Phrase): Drainage Class: Unknown Field Observations M Taxonomy (Subgroup): Confirm Mapped Type? Yes No PROFILE DESCRIPTION <u>Depth</u> Matrix Color Redoximorphic Redoximorphic Texture, Concretions, **Horizon** Features Colors (Inches) (Munsell Moist) **Features** Rhizospheres, etc. (Munsell Moist) Abundance/Contrast 0-2" 7.5yr 3/2 A 7.5yr 5/6 Few, Course, Silt, Clay **Prominent** 2-18"+ В 7.5yr 3/1 Silt, Clay Hydric Soil Indicators: Histosol Concretions Histic Epipedon High Organic Content in Surface Layer in Sandy Soils Sulfide Odor Organic Streaking in Sandy Soils П Aquic Moisture Regime Listed on Local Hydric Soils List **Reducing Conditions** Listed on National Hydric Soils List Gleyed or Low-Chroma Colors Other (Explain in Remarks) **Hydric Soil Present?** Yes 🛛 No 🗌 Remarks: Hydric soil indicators present. Wetland parameters met. WETLAND DETERMINATION Hydrophytic Vegetation Present? Yes⊠ Yes⊠ No 🗌 Wetland Hydrology Present? Yes⊠ No□ Hydric Soils Present? No□ Yes Is this Sampling Point Within A Wetland? No□

Remarks:

All wetland parameters met.

Project Site:	William S. Lee III Nucle	ar Station Transmis	sion Line		Date:	04/17/09
Applicant/Owner:	Duke Energy Carolinas,	LLC		e de la companya del companya de la	County:	Union
Investigator:	Jason Isbanioly/Kristen	Roop			State:	SC
Do normal circumstar	nces exist on the site?	Yes	⊠ No[]	Community ID:	PEM
		_	_	_		
Is the site significantly	y disturbed (Atypical Situat	ion)? Yes[-	Transect ID:	Line T
Is the area a potential		Yes[☐ No[2	steer is	Plot ID:	Wetland T
(if needed, explain on	reverse)					
VEGETATION (In	Order of Stratum) Note th	ose species observe	ed to have	morphological adapta	tions to wetlands w	th an *
Dominant Pl	lant Species S	tratum Indica	ator	Dominant Plant	Species	Stratum Indicate
1. Platanus occide	entalis	Shrub FAC	W-			
2. Acorus calamus		rbaceous OBL				
3. <i>Iris virginica</i> 4. <i>Polygonum pers</i>		erbaceous OBL erbaceous FAC				
5. Carex lurida		rbaceous OBL				
6.						
8						
Paraent of Dominant	Species that are OBL, FAC	W or EAC (avaludir	, na EAC): 1	00%		•
	(*) as showing morphologi			00 %		
D	1 A J A	···				
Describe Morphologic	car Adaptations:					
Remarks: Greater tha	n 50% of vegetation is FAC	or wetter. Wetland	i parameter	is met.		
HYDROLOGY						
	DED DATA	PRIMARY	(1	or more required)		,
· _ `	be in Remarks)	INDICATORS				
	Lake or Tide Gage Photograph			indated turated in Upper 12 Inc	shaa	
Other	notograpn			ater Marks	ines	
	orded Data Available		Di	ift Lines		
] 🗆		ainage Patterns in Wet	lands	
FIELD OBSERVATION				diment deposits	•	
Depth of Surface Wat	er: 0.5-1.5 (in.)	SECONDARY INDICATORS	(2	or more required)		
Depth to Free Water i	n Pit: 0 (in.)		O	idized Root Channels	in Upper 12 Inches	
'				ater-Stained Leaves	the	
Depth to Saturated So	il: 0 (in.)			cal Soil Survey Data		
			Ot	her (Explain in Remark	(s)	
		☒	FA	.C-Neutral Test		
Remarks: Hydrologica	al indicators are present. Pa	rameter is met.		<u> </u>	•	

SOILS

Map Unit Name	Unknown					11 1 197 Ve alpi 197 1 13	
(Series and Phrase):	:	. N. sasa <u></u>	·		Drainage Class:		·
	Unknown				Field Observations		Ø
Taxonomy (Subgrou					Confirm Mapped Type?	Yes	No
PROFILE DESCR	IPTION						
<u>Depth</u>	, <u>.</u> .	Matrix Cole		Redoximorphic	Redoximorphic		Concretions,
(Inches)	<u>Horizon</u>	(Munsell Mo	<u>pist)</u>	Features Colors (Munsell Moist)	<u>Features</u> <u>Abundance/Contrast</u>	<u>Khizosp</u>	oheres, etc.
0-3"	A	7.5yr 4/2	<i>i</i> ?			. S	and
-		. The second of the second	ACAMON CONT.				
3-18"+	В	7.5yr 6/2	2	5yr 4/6	Many, Course, Distinct	Silty	y Clay
		,			Distinct	N. S. C. C. C. C. C. C. C. C. C. C. C. C. C.	
	·				· · · · · · · · · · · · · · · · · · ·	ese 	المراجعة المستحدث
							
				· · ·			
Hydric Soil Indicato	ors:						
	Histosol			Conc	cretions		
	Histic Epipedon				Organic Content in Surface	Laver in Sar	ndv Soils
	Sulfide Odor			Orga	=	, ~ -	
	Aquic Moisture Regi	ime			ed on Local Hydric Soils List		
	Reducing Conditions				ed on National Hydric Soils I		
	Gleyed or Low-Chro				r (Explain in Remarks)		٠
Hydric Soil Presen	nt?					Yes 🛛 N	lo 🗌
Remarks: Hydric so	oil indicators present.	. Wetland par	ameters me	et.			
		٠					
WETLAND DETE	ERMINATION						
		[2]		TT due le	- ^	[7]	
Hydrophytic Vegeta Hydric Soils Present		Yes⊠ Yes⊠	No□ No□	Wetland Hydrolog	gy Present? Point Within A Wetland?	Yes⊠ Yes⊠	No∐ No∏
•				15 tino bamping	Olit Wittin 11 Would.	1 COE2	
Remarks: All wetlar	nd parameters met.						

Project Site:	William S. Lee III N	uclear Station T	ransmission	Line	Date:	04/28/09
Applicant/Owner:	Duke Energy Carolin	nas, LLC			County:	Union
Investigator:	Jason Isbanioly/Kris	ten Roop			State:	sc
Do normal circumstand	ces exist on the site?		Yes⊠	No	Community ID:	PFO/PEM
Is the site significantly	disturbed (Atypical S	tuation)?	Yes□	No⊠	Transect ID:	Line U
Is the area a potential p			Yes□	No 🔀 🚉 💮	Plot ID:	Wetland U
(if needed, explain on	reverse)					
VEGETATION (In C	Order of Stratum) No	te those species	observed to	have morphological adaptat	tions to wetlands wi	th an *
Dominant Pla		Stratum	Indicator	Dominant Plant S		Stratum Indicator
1. Liquidambar sty		Shrub	FAC+			- Indiana
2. Microstegium vii		Herbaceous	FAC+			
3. <u>Boehmeria cylin</u>		Herbaceous	FACW+			
4. Onoclea sensibil		Herbaceous	FACW	 	;	
5. <u>Campsis radican</u>	<u></u>	Vine	FAC	•		
6. 7.				•		· · · · · · · · · · · · · · · · · · ·
8.						
<u> </u>						
D		ACW FAC		AG > 1000		
Percent of Dominant S Include species noted (
_						
Describe Morphologica	al Adaptations:					
Remarks: Greater than	1 50% of vegetation is	FAC or wetter.	Wetland para	imeter is met.		
			•		,	
HYDROLOGY	DED DATA	PRIMA) V	(1 au mana naguinad)		
	be in Remarks)	INDICA		(1 or more required)		
`	Lake or Tide Gage	2220.2	\boxtimes	Inundated		,
	notograph		$\overline{\boxtimes}$	Saturated in Upper 12 Incl	nes	
Other				Water Marks		
☐ No Reco	rded Data Available			Drift Lines	_	
				Drainage Patterns in Wetla	ands	
FIELD OBSERVATION				Sediment deposits		
Depth of Surface Wate	r: 3 (in.)	SECONI INDICA		(2 or more required)		
Depth to Free Water in	Pit: 0 (in.)	INDICA		Oxidized Root Channels in	n Upper 12 Inches	
		·	Ħ	Water-Stained Leaves	- FF	
Depth to Saturated Soi	l: 0 (in.)		ĭ	Local Soil Survey Data		
			Ĭ	Other (Explain in Remarks	s)	
		1	$\overline{\boxtimes}$	FAC-Neutral Test		
Remarks: Hydrologica	l indicators are present	. Parameter is n				
						·

SOILS

NA TENT	***						
Map Unit Name	Unknown						
(Series and Phrase):					Drainage Class:		·
T(S	Unknown				Field Observations	Ļ	\boxtimes
Taxonomy (Subgro					Confirm Mapped Type?	Yes	No
PROFILE DESCR	RIPTION				and a survival and a		
<u>Depth</u>		Matrix Co	<u>olor</u>	Redoximorphic	Redoximorphic	Texture,	Concretions,
(Inches)	<u>Horizon</u>	(Munsell M	<u>loist)</u>	Features Colors	<u>Features</u>	Rhizos	pheres, etc.
				(Munsell Moist)	Abundance/Contrast		
0-2"	A	10yr 3/	/3		and the second second	N	/luck

2-11"	В	10yr 3/	<u>′1</u>		······································	San	dy Clay
						_	
11-18"+	B2	10yr 5/	<u>/3</u>		· 		Sand
 					•		
4							
	·						
	(1., 1						•
Hydric Soil Indicate	ors:					,	
_				_			
Ш	Histosol		<u> </u>	Concre	etions		
	Histic Epipedon			High C	Organic Content in Surface	e Layer in Sa	indy Soils
	Sulfide Odor			Organi	c Streaking in Sandy Soil	s	
	Aquic Moisture Reg	gime		Listed	on Local Hydric Soils Lis	st	
	Reducing Condition	=			on National Hydric Soils		
	_				•		
│ └─│ │ Hydric Soil Presen	Gleyed or Low-Chr	onia Colors		Other (Explain in Remarks)	Yes 🛛 🕺	No 🗌
Remarks: Hydric so		t. Wetland pa	rameters n	net		103 23 ,1	то <u> </u>
- Tromains Try ario st	on maronioro process	a. Wolland pa	i amotoro n				
			,				
				(,			
WETLAND DETE	ERMINATION						
Hydrophytic Vegeta		Yes⊠	No□	Wetland Hydrology		Yes⊠	No□
Hydric Soils Presen	t?	Yes⊠	No.	Is this Sampling Poi	nt Within A Wetland?	Yes⊠	No
Remarks: All w	vetland parameters i	met.					

Project Site:	William S. Lee III Nucl	ear Station 7	ransmission	Line		Date:	04/28/09	adde to a second
Applicant/Owner:	Duke Energy Carolinas,	LLC				County:	Union	
Investigator:	Jason Isbanioly/Kristen	Roop				State:	SC	
Do normal circumstar	nces exist on the site?		Yes⊠	No		Community ID:	PEM	
Is the site significantly	normal circumstances exist on the site? the site significantly disturbed (Atypical Situation)? the area a potential problem area? the eded, explain on reverse) Common to Plant Species Stratum		Yes□	No⊠		Transect ID:	Line X	
			Yes□	No 🖾 🔒		Plot ID:	Wetland X	·
(if needed, explain on	reverse)							
			mana and any l					
VEGETATION (In	Order of Stratum) Note t	hose species	observed to	have mor	phological adaptat	ions to wetlands wi	th an *	eries (N. S.), de la Si
Dominant P	lant Species	Stratum	Indicator		Dominant Plant S	pecies	Stratum	Indicator
			FACW-	↓ _				
			OBL OBL	∤ —				
			FACW					
			FAC-	1 -				
6.] =				
					<u> </u>			
8				- 1				
Percent of Dominant	Species that are OBL, FAC	W or FAC (excluding F	AC-): 80%		•		
Include species noted	(*) as showing morpholog	ical adaptati	ons to wetlar	ıds.			····	
Describe Morphologic	cal Adaptations:		<u>- '</u>					
Remarks: Greater tha	in 50% of vegetation is FA	C or wetter	Wetland par	ameter is m	et .		· · · · · · · · · · · · · · · · · · ·	
			27.7					
HYDROLOGY	RDED DATA	PRIMAI	ov.	(1 or n	nore required)			
	be in Remarks)	INDICA		(1011)	note requirea)			
	Lake or Tide Gage		\boxtimes	Inunda				717
	Photograph		\boxtimes		ed in Upper 12 Inch	nes		
Other	orded Data Available	1	H	Water Drift L				
l lio need	orded Data Avanable	1	i		ge Patterns in Wetla	ands	,	
FIELD OBSERVATION	ONS:	1		Sedime	ent deposits		•	
Depth of Surface Wat	er: 3-4 (in.)	SECONI INDICA			nore required)	,		
Depth to Free Water i	n Pit: 0 (in.)	I TOTON		Oxidiz	ed Root Channels in	Upper 12 Inches		
			Ī		Stained Leaves			
Depth to Saturated So	od: 0 (in.)			Local S	Soil Survey Data			
					Explain in Remarks	s)		
		<u> </u>	\boxtimes	FAC-N	leutral Test			
Remarks: Hydrologica	al indicators are present. Pa	arameter is n	net.					

SOILS

SOILS							
Map Unit Name	Unknown						
(Series and Phrase):					Drainage Class:		
	Unknown			•	Field Observations		\boxtimes
Taxonomy (Subgrou	ıp):				Confirm Mapped Type?	Yes	No
PROFILE DESCR	IPTION						
I KOTTEL DESCR	11 11011						
<u>Depth</u>		Matrix Co		Redoximorphic	Redoximorphic	Texture,	Concretions,
(Inches)	<u>Horizon</u>	(Munsell M	loist)	Features Colors	<u>Features</u>	Rhizos	oheres, etc.
				(Munsell Moist)	Abundance/Contrast		
0-11"	Δ	10yr 4/	/1			9	and
O-11	- And And Property of the		<u> </u>		And the state of t	« — <u> </u>	and
11-18"+	В .	10yr 4/	/2			S	and
		10)1 11	-		- Trans is (27-1 1) - Transis (27-11-11) - Transis (27-11-11)		<u>uru</u>
 					1 1 1	-	
		•					

		1					
Hydric Soil Indicato	rs:						
- -							
<u> </u>	Histosol			Con	cretions		
	Histic Epipedon			——— Hiol	n Organic Content in Surface	e Laver in Sa	ndy Soils
					_	-	nay bons
	Sulfide Odor			Orga	anic Streaking in Sandy Soil	S	
	Aquic Moisture Re	gime		Liste	ed on Local Hydric Soils Lis	st	
	_	_			•		
-	Reducing Conditio	ns	_Ц_	Liste	ed on National Hydric Soils	List	
\boxtimes	Gleyed or Low-Ch	roma Colors		Othe	er (Explain in Remarks)		
Hydric Soil Present						Yes 🛛 N	lo 🗌
Remarks: Hydric so	oil indicators presen	nt. Wetland pa	rameters n	net.			
							
WETLAND DETE	DMINATION .						
WEILAND DEIE	KWIIIWATION			I			
Hydrophytic Vegeta	tion Present?	Yes⊠	No	Wetland Hydrolo	ay Dracant?	Yes⊠	No□
Hydric Soils Present		Yes⊠ Yes⊠	No□		Point Within A Wetland?	r es⊠ Yes⊠	No.
Trydric Sons Fresch	. :	169[МОШ	is this Sampling I	Ont Whim A Wendhu!	1 62	NOL
Remarks: All w	etland parameters	met		1			.

Project Site: William S. Lee III Nuclear Sta	ation Transmission	Line	Date:	3/31/2009
Applicant/Owner: Duke Energy Carolinas, LLC			County:	Cherokee
Investigator: Jason Isbanioly/Kristen Roop			State:	SC
Do normal circumstances exist on the site?	Yes⊠	No 🔲	Community ID:	Upland
		N. 57	T	<u></u>
Is the site significantly disturbed (Atypical Situation)?		No 🖾	Transect ID:	
Is the area a potential problem area? (if needed, explain on reverse)	Yes□	No⊠	Plot ID:	Upland B
VEGETATION (In Order of Stratum) Note those s	pecies observed to	have morphological adap	tations to wetlands wi	th an *
Dominant Plant Species Stratus		Dominant Plan	nt Species	Stratum Indicator
1. Pinus echinata Tree 2. Ulmus alata Saplii		9	· —	
3. Vaccinium arboreum Shru		11.		
4. Festuca rubra Herbacc		11. 12. 13.	,	 ,
5.		13.		
6.				
7. 8.		15		
8		16.		
Percent of Dominant Species that are OBL, FACW or				
Include species noted (*) as showing morphological ac	daptations to wetlan	ds.		
Describe Morphological Adaptations:				
Remarks: Less than 50% of vegetation is FAC or wet	ter. Wetland parame	eter is not met.	·	
8				
HYDROLOGY				
	RIMARY DICATORS	(1 or more required)		
Stream, Lake or Tide Gage		Inundated	. 1	
Aerial Photograph	₫	Saturated in Upper 12 Is	nches	
Other		Water Marks		
☐ No Recorded Data Available	Ц	Drift Lines	.1 1	·
		Drainage Patterns in We	etiands	
FIELD OBSERVATIONS:		Sediment deposits		
	CONDARY DICATORS	(2 or more required)		
Depth to Free Water in Pit: (in.)		Oxidized Root Channel	s in Upper 12 Inches	
		Water-Stained Leaves		
Depth to Saturated Soil: (in.)	▤	Local Soil Survey Data		
	ā	Other (Explain in Rema		
1	П	FAC-Neutral Test		

SOILS Map Unit Name Unknown (Series and Phrase): **Drainage Class:** Unknown Field Observations \boxtimes Taxonomy (Subgroup): Confirm Mapped Type? Yes No PROFILE DESCRIPTION <u>Depth</u> Matrix Color Redoximorphic Redoximorphic Texture, Concretions, **Horizon** (Inches) (Munsell Moist) Features Colors **Features** Rhizospheres, etc. (Munsell Moist) Abundance/Contrast 0-18"+ 7.5yr 6/6 Silty Clay Hydric Soil Indicators: Histosol Concretions Histic Epipedon High Organic Content in Surface Layer in Sandy Soils Sulfide Odor Organic Streaking in Sandy Soils Aquic Moisture Regime Listed on Local Hydric Soils List **Reducing Conditions** Listed on National Hydric Soils List Gleyed or Low-Chroma Colors Other (Explain in Remarks) **Hydric Soil Present?** Yes 🗌 No 🛛 Remarks: Wetland parameters are not met.

WETLAND DETERMINATION Hydrophytic Vegetation Present? Yes No⊠ Wetland Hydrology Present? Yes No⊠ Is this Sampling Point Within A Wetland? Yes No⊠ Remarks: No wetland parameters are met.

Project Site:	William S. Lee III Nucl	ear Station Trans	smission	Line	Date:	04/6/09
Applicant/Owner:	Duke Energy Carolinas,	, LLC			County:	Cherokee
Investigator:	Jason Isbanioly/Kristen		<u></u>		State:	SC
Do normal circumstar	inces exist on the site?	٦	Yes⊠	No□	Community ID:	Upland
1	Pinus taeda Tree			No 🖾	Transect ID:	
		Y	Yes∏.	, No⊠ _{s sy}	Plot ID:	Upland C
· · ·		· <u> </u>	- <u>1-280</u>	e <u>a marie Marie de la companya del companya de la companya del companya de la co</u>		
VEGETATION (In	Order of Stratum) Note to	nose species obs	served to	have morphological adaptat	tions to wetlands wi	th an *
	'lant Species		ndicator	Dominant Plant S		Stratum Indicator
			FAC	9.		
Quercus velutin Quercus alba	<u>1a</u>		UPL FACU	10.		
4. Quercus alba			FACU	11.		
5. Juniperus virgin			FACU-	12.		
6. Ilex opaca			FAC-	14.		
7. Vaccinium cor	ymbosum		FACW] 15		
8.				16.		
Include species noted Describe Morphologic	Species that are OBL, FAC d (*) as showing morphological Adaptations:	gical adaptations t	to wetlan	nds		
HYDROLOGY			-, .			
RECOR	RDED DATA ribe in Remarks)	PRIMARY INDICATOR	RS	(1 or more required)		
☐ Stream,	, Lake or Tide Gage		<u>:</u>	Inundated		
Aerial F	Photograph		į	Saturated in Upper 12 Inch	hes	
Other	t the Audiens	님	i	Water Marks		
☐ No Keco	corded Data Available	一 片	1	Drift Lines Drainage Patterns in Wetla	da	
ETEL D ODGEDVATI				<u>-</u>	anus	
FIELD OBSERVATION		SECONDAR	O. 8.7	Sediment deposits		
Depth of Surface Wat	ter: (in.)	SECONDAR INDICATOR		(2 or more required)		
Depth to Free Water i	in Pit: (in.)		<u> </u>	Oxidized Root Channels in	n Upper 12 Inches	
			i	Water-Stained Leaves		
Depth to Saturated So	oil: (in.)		i	Local Soil Survey Data		
ĺ			ı	Other (Explain in Remarks	s)	
				FAC-Neutral Test		
Remarks: Parameter i	is not met. Wetland hydrole	ogy indicators ar	re not pre	esent.		

SOILS Map Unit Name Unknown (Series and Phrase): Drainage Class: Unknown Field Observations \boxtimes Taxonomy (Subgroup): Confirm Mapped Type? Yes No PROFILE DESCRIPTION <u>Depth</u> Matrix Color Redoximorphic Redoximorphic Texture, Concretions, **Horizon** Features Colors (Inches) (Munsell Moist) **Features** Rhizospheres, etc. (Munsell Moist) Abundance/Contrast 0-18"+10yr 4/3 Silt Hydric Soil Indicators: Histosol Concretions Histic Epipedon High Organic Content in Surface Layer in Sandy Soils Sulfide Odor Organic Streaking in Sandy Soils П Aquic Moisture Regime Listed on Local Hydric Soils List **Reducing Conditions** Listed on National Hydric Soils List Gleyed or Low-Chroma Colors Other (Explain in Remarks) **Hydric Soil Present?** Yes 🔲 No 🛛 Remarks: Wetland parameter is not met.

WETLAND DETERMINATION Hydrophytic Vegetation Present? Yes No⊠ Wetland Hydrology Present? Yes No⊠ Is this Sampling Point Within A Wetland? Yes No⊠ No⊠ Remarks: No wetland parameters are met.

Project Site:	William S. Lee III Nucl	ear Station T	ransmission	Line		Date:	04/7/09
Applicant/Owner:	Duke Energy Carolinas	LLC				County:	Cherokee
Investigator:	Jason Isbanioly/Kristen	Roop				State:	SC
Do normal circumstan	ces exist on the site?		Yes⊠	No□		Community ID:	Upland
				🖘			· · · · · · · · · · · · · · · · · · ·
	disturbed (Atypical Situa	tion)?	Yes□ —	No⊠ —		Transect ID:	
Is the area a potential in (if needed, explain on			Yes ☐	No⊠		Plot ID:	Upland E
(ii needed, explain on	icverse)						
					,		
VEGETATION (In C	Order of Stratum) Note t	hose species	observed to	have mo	rphological adaptat	ions to wetlands wi	th an *
Dominant Pl	ant Species	Stratum	Indicator		Dominant Plant S	Species S	Stratum Indicator
1. Quercus laurifoi		Tree	FACW	9			
Liquidambar sty Ulmus American		Tree Tree	FAC+ FACW	10			
4. Carpinus American		Tree	FACW	1			
5. Smilax rotundifo		Vine	FAC				
			-	14.			
7.				15			
8				16			
	Species that are OBL, FAC (*) as showing morphological Adaptations:				% 		
Remarks: 50% of veg	etation is FAC or wetter.	Wetland para	meter is me	t.	A. M. C. C. C. C. C. C. C. C. C. C. C. C. C.		
HADDOI OCA							
HYDROLOGY RECOR	DED DATA	PRIMAR	RY	(1 or	more required)		
	be in Remarks)	INDICA'	TORS			,	
	Lake or Tide Gage			Inund			
Aerial P.	hotograph		H		ated in Upper 12 Incl Marks	nes	•
_	orded Data Available		H	Drift			
			Ħ		age Patterns in Wetla	ands	
FIELD OBSERVATION	ONS:	1		Sedin	nent deposits		
Depth of Surface Water	er: (in.)	SECONI		(2 or	more required)		
Depth to Free Water in	n Pit: (in.)	INDICA'	TORS	Oxidi	zed Root Channels in	Unner 12 Inches	
		1	Ħ		-Stained Leaves	. Oppor 12 mones	
Depth to Saturated Soi	il: (in.)		Ĭ		Soil Survey Data	•	
,			Ī		(Explain in Remarks	s)	
					Neutral Test	· .	
Remarks: Parameter is	not met. Wetland hydrol	ogy indicator	rs are not pre	esent.			
			*				

SOILS

Map Unit Name	Unknown				Designan Class		
(Series and Phrase):	Unknown				Drainage Class: Field Observations	- 	
Taxonomy (Subgroup)					Confirm Mapped Type?		No
PROFILE DESCRIP	TION						
Depth (Inches)	<u>Horizon</u>	Matrix Col (Munsell Mo		Redoximorphic Features Colors (Munsell Moist)	<u>Redoximorphic</u> <u>Features</u> <u>Abundance/Contrast</u>	Texture, Concr Rhizospheres	
0-18"+	A	7.5yr 5/	6	7.5yr 4/3	Many, Common, Distinct	Silty Loa	am
		agaar te gaaraan			· · · · · · · · · · · · · · · · · · ·	ne s y se greet and a state of the	
·			 .				
	No.					M Assacratic	
Hydric Soil Indicators:	ş:		·				
□ Hi	istosol			Conc	eretions		
<u></u> Ні	istic Epipedon			High	Organic Content in Surfac	ce Layer in Sandy S	Soils
Su Su	ulfide Odor			Orgai	nic Streaking in Sandy Soi	ils	
Ac	quic Moisture Reg	gime		Lister	d on Local Hydric Soils Li	ist	
	educing Condition	ıs		Lister	d on National Hydric Soils	s List	
Hydric Soil Present?	•				r (Explain in Remarks)	Yes No 🗵	<u> </u>
Remarks: Wetland par	rameter is not met	t.					
		<u> </u>					
WETLAND DETER	MINATION						
Hydrophytic Vegetation	•	Yes⊠	No□	Wetland Hydrolog		Yes□ N	No X

Project Site:	William S. Lee III	Nuclear Station	n Transmissior	Line	Date:	4/7/09
Applicant/Owner:	Duke Energy Caro	linas, LLC			County:	Cherokee
Investigator:	Jason Isbanioly/Kr				State:	SC
Do normal circumstar	nces exist on the site?		Yes⊠	No	Community ID:	Upland
Is the site significantly	y disturbed (Atypical	Situation)?	Yes□	No 🖾	Transect ID:	
Is the area a potential		•	— Yes□	No⊠	Plot ID:	Upland F
(if needed, explain on					1	
المعرية النفي العجر الأمل إلى يتكال في والسريان.						
VEGETATION (In	Order of Stratum) N	ote those spec	ies observed t	o have morphological ad	ptations to wetlands wi	ith an *
Dominant P		Stratum	Indicator	Dominant P		Stratum Indicator
 Liriodendron tu Juniperus virgir 		Tree Tree	FAC FACU-	9.		
3. Liquidambar st		Tree	FAC+	111.		
4. Asimina triloba		Sapling	FAC	12.		
5. Juniperus virgir		Sapling	FACU-	13.		
6. Carpinus caroli		Sapling	FAC	1 14.		
		Herb	FAC	15.		
7. Polystichum act 8. Percent of Dominant 3	Species that are OBL,	FACW or FA	FAC C (excluding F	15. 16. AC-): 71%		
7. Polystichum act 8. Percent of Dominant S include species noted Describe Morphologic	Species that are OBL, (*) as showing morph cal Adaptations:	FACW or FA	FAC C (excluding Fations to wetla	15. 16. AC-): 71% nds.		
7. Polystichum act 8. Percent of Dominant S Include species noted Describe Morphologic Remarks: Wetland pa	Species that are OBL, (*) as showing morph cal Adaptations:	FACW or FA	FAC C (excluding Fations to wetla	15. 16. AC-): 71%		
7. Polystichum act 8. Percent of Dominant S nclude species noted Describe Morphologic Remarks: Wetland pa	Species that are OBL, (*) as showing morph cal Adaptations: arameter is met. Grea	FACW or FAC hological adapt ter than 50% o	FAC C (excluding F ations to wetla	AC-): 71% nds.		
7. Polystichum act 8. Percent of Dominant S Include species noted Describe Morphologie Remarks: Wetland pa HYDROLOGY RECOR	Species that are OBL, (*) as showing morph cal Adaptations:	FACW or FAC hological adapt ter than 50% o	FAC C (excluding F ations to wetla	15. 16. AC-): 71% nds.		
7. Polystichum act 8. Percent of Dominant S nclude species noted Describe Morphologic Remarks: Wetland pa HYDROLOGY RECOR (Descri	Species that are OBL, (*) as showing morphical Adaptations: arameter is met. Grea	FACW or FAC hological adapt ter than 50% o	FAC C (excluding F ations to wetland f dominant vegos)	AC-): 71% nds.		
7. Polystichum act 8. ercent of Dominant S nelude species noted Describe Morphologic demarks: Wetland pa IYDROLOGY RECOR (Descri Stream,	Species that are OBL, (*) as showing morph cal Adaptations: arameter is met. Grea	FACW or FAC hological adapt ter than 50% o	FAC C (excluding F ations to wetland f dominant vegos)	AC-): 71% nds		
7. Polystichum act 8. ercent of Dominant S nelude species noted Describe Morphologic Describe Wetland pa IYDROLOGY RECOR (Descri Stream, Aerial F Other	Species that are OBL, (*) as showing morph cal Adaptations: arameter is met. Grea RDED DATA ibe in Remarks) Lake or Tide Gage Photograph	FACW or FAC hological adapt ter than 50% o	FAC C (excluding F ations to wetland f dominant vegos)	15. 16. AC-): 71% nds. getation is FAC or wetter. (1 or more required Inundated Saturated in Upper 12 Water Marks		
7. Polystichum act 8. ercent of Dominant S nelude species noted Describe Morphologic Ermarks: Wetland pa IYDROLOGY RECOR (Descri Stream, Aerial F Other	Species that are OBL, (*) as showing morph cal Adaptations: arameter is met. Grea RDED DATA ibe in Remarks) Lake or Tide Gage	FACW or FAC hological adapt ter than 50% o	FAC C (excluding F ations to wetland f dominant vegos)	15. 16. AC-): 71% nds. (1 or more required Inundated Saturated in Upper 12 Water Marks Drift Lines	2 Inches	
7. Polystichum act 8. Percent of Dominant S nelude species noted Describe Morphologie Remarks: Wetland pa IYDROLOGY RECOR (Descri Stream, Aerial F Other No Reco	Species that are OBL, (*) as showing morph cal Adaptations: arameter is met. Grea RDED DATA ibe in Remarks) Lake or Tide Gage Photograph orded Data Available	FACW or FAC hological adapt ter than 50% o	FAC C (excluding F ations to wetland f dominant vegos)	15. 16. AC-): 71% nds. getation is FAC or wetter. (1 or more required Inundated Saturated in Upper 12 Water Marks	2 Inches	
7. Polystichum act 8. Percent of Dominant S nelude species noted Describe Morphologie Remarks: Wetland pa IYDROLOGY RECOR (Descri Stream, Aerial F Other No Reco	Species that are OBL, (*) as showing morph cal Adaptations: arameter is met. Grea RDED DATA ibe in Remarks) Lake or Tide Gage Photograph orded Data Available	FACW or FAchological adapteter than 50% o	FAC C (excluding Fations to wetland fations to wetland fations) ARY CATORS	15. 16. AC-): 71% nds. (1 or more required Inundated Saturated in Upper 12 Water Marks Drift Lines	2 Inches	
7. Polystichum act 8. Percent of Dominant S nclude species noted Describe Morphologic Remarks: Wetland pa HYDROLOGY RECOR (Descri Stream, Aerial F Other No Record	Species that are OBL, (*) as showing morph cal Adaptations: arameter is met. Grea RDED DATA ibe in Remarks) Lake or Tide Gage Photograph orded Data Available ONS:	FACW or FAchological adapted ter than 50% o	FAC C (excluding Fations to wetland fations to wetland fations) ARY CATORS COMMENT	Inundated Saturated in Upper 12 Water Marks Drift Lines Drainage Patterns in	? Inches	
7. Polystichum act 8. Percent of Dominant S nclude species noted Describe Morphologie Remarks: Wetland pa HYDROLOGY RECOR (Descri Stream, Aerial F Other No Record FIELD OBSERVATI Depth of Surface Wat	Species that are OBL, (*) as showing morph cal Adaptations: arameter is met. Grea RDED DATA ibe in Remarks) Lake or Tide Gage Photograph orded Data Available ONS: ter: (in.)	FACW or FAchological adapted ter than 50% o	FAC C (excluding Fations to wetland fations to wetland fations) ARY CATORS	Inundated Saturated in Upper 12 Water Marks Drift Lines Drainage Patterns in Sediment deposits (2 or more required	2 Inches Wetlands	
7. Polystichum act 8. Percent of Dominant Sinclude species noted Describe Morphologie Remarks: Wetland pa HYDROLOGY RECOR (Descri Stream, Aerial F Other No Record FIELD OBSERVATI Depth of Surface Water in	Species that are OBL, (*) as showing morph cal Adaptations: arameter is met. Grea RDED DATA ibe in Remarks) Lake or Tide Gage Photograph orded Data Available ONS: ter: (in.)	FACW or FAchological adapted ter than 50% o	FAC C (excluding Fations to wetland fations to wetland fations) ARY CATORS COMMENT	Inundated Saturated in Upper 12 Water Marks Drift Lines Drainage Patterns in Sediment deposits (2 or more required Oxidized Root Change	Unches Wetlands els in Upper 12 Inches	
7. Polystichum act 8. Percent of Dominant Sinclude species noted Describe Morphologie Remarks: Wetland pa HYDROLOGY RECOR (Descri Stream, Aerial F Other No Record FIELD OBSERVATI Depth of Surface Water in	Species that are OBL, (*) as showing morph cal Adaptations: arameter is met. Grea RDED DATA ibe in Remarks) Lake or Tide Gage Photograph orded Data Available ONS: ter: (in.)	FACW or FAchological adapted ter than 50% o	FAC C (excluding Fations to wetland fations to wetland fations) ARY CATORS COMMENT	Inundated Saturated in Upper 12 Water Marks Drift Lines Drainage Patterns in Sediment deposits (2 or more required Oxidized Root Change Water-Stained Leave	Unches Wetlands els in Upper 12 Inches	
7. Polystichum act 8. Percent of Dominant S Include species noted Describe Morphologie Remarks: Wetland pa HYDROLOGY RECOR (Descri Stream, Aerial F Other	Species that are OBL, (*) as showing morph cal Adaptations: arameter is met. Grea RDED DATA ibe in Remarks) Lake or Tide Gage Photograph orded Data Available ONS: ter: (in.)	FACW or FAchological adapted ter than 50% o	FAC C (excluding Fations to wetland fations to wetland fations) ARY CATORS COMMENT	Inundated Saturated in Upper 12 Water Marks Drift Lines Drainage Patterns in Sediment deposits (2 or more required Oxidized Root Change Water-Stained Leave Local Soil Survey Da	Unches Wetlands els in Upper 12 Inches	
7. Polystichum act 8. Percent of Dominant S nclude species noted Describe Morphologie Remarks: Wetland pa HYDROLOGY RECOR (Descri Stream, Aerial F Other No Record FIELD OBSERVATI Depth of Surface Water in	Species that are OBL, (*) as showing morph cal Adaptations: arameter is met. Grea RDED DATA ibe in Remarks) Lake or Tide Gage Photograph orded Data Available ONS: ter: (in.)	FACW or FAchological adapted ter than 50% o	FAC C (excluding Fations to wetland fations to wetland fations) ARY CATORS COMMENT	Inundated Saturated in Upper 12 Water Marks Drift Lines Drainage Patterns in Sediment deposits (2 or more required Oxidized Root Change Water-Stained Leave	Unches Wetlands els in Upper 12 Inches	

SOILS Map Unit Name Unknown (Series and Phrase): Drainage Class: Unknown **Field Observations** \boxtimes Taxonomy (Subgroup): Confirm Mapped Type? Yes No PROFILE DESCRIPTION Texture, Concretions, Depth Matrix Color Redoximorphic Redoximorphic Features Colors (Munsell Moist) Features
Abundance/Contrast (Inches) **Horizon** (Munsell Moist) Rhizospheres, etc. 0-3 10 YR 2/2 Silty Loam В 3-18+ 5 YR 4/6 Silty Loam **Hydric Soil Indicators:** Histosol Concretions Histic Epipedon High Organic Content in Surface Layer in Sandy Soils Sulfide Odor Organic Streaking in Sandy Soils Aquic Moisture Regime Listed on Local Hydric Soils List **Reducing Conditions** Listed on National Hydric Soils List Gleyed or Low-Chroma Colors Other (Explain in Remarks) **Hydric Soil Present?** No 🛛 Yes 🗌 Remarks: Parameter is not met. No hydric soil indicators are present.

WETLAND DETERMINATION					
Hydrophytic Vegetation Present? Hydric Soils Present?	Yes⊠ Yes□	No∐ No⊠	Wetland Hydrology Present? Is this Sampling Point Within A Wetland?	Yes□ Yes□	No⊠ No⊠
Remarks: Hydric soils and wetland hy	drology para	meters not	met. Data collected within in an upland.		
		·			

Project Site:	William S. Lee III Nucl	ear Station T	ransmission	Line		Date:	04/08/09	
Applicant/Owner:	Duke Energy Carolinas,	LLC				County:	Cherokee	
Investigator:	Jason Isbanioly/Kristen	Roop				State:	SC	
Do normal circumstan	ices exist on the site?		Yes⊠	No□		Community ID:	Upland	
Is the site significantly	y disturbed (Atypical Situa	tion)?	Yes 🗌	No⊠	/	Transect ID:		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	Is the area a potential problem area? (if needed, explain on reverse)			No⊠	wy it	Plot ID:	Upland G	
				and the	or a constant of the constant			
				1990	to the same state of the same			
VEGETATION (In C	Order of Stratum) Note t	hose species	observed to	have mo	rphological adaptat	tions to wetlands wi	ith an *	
Dominant Pl		Stratum .	Indicator		Dominant Plant S		Stratum	Indicator
1. Platanus occide	ntalis	Tree	FACW-	9				
2. <u>Betula nigra</u>	./7	Tree	FACW	, ,,, =				
 Liquidambar sty Carpinus caroli 		Tree	FAC+ FAC	11				
5. Cornus florida	niana	Sapling Sapling	FACU	1 12				
6. Microstegium vi	imineum ——	Herb	FAC+	13				•
7. Podophyllum pe		Herb	FACU	15.				
8. Lonicera japoni		Herb	FAC-	16.				
	Species that are OBL, FAC (*) as showing morpholog cal Adaptations:							
Remarks: Greater tha	n 50% of vegetation is FA	C or wetter.	Wetland para	ameter is	met.			
HADDOI OCA								
HYDROLOGY RECOR	DED DATA	PRIMA	av .	(1 or	more required)			
	be in Remarks)	INDICA		(101	more required,			
1 <u> </u>	Lake or Tide Gage			Inunc	lated			
	hotograph	1			ated in Upper 12 Inch	nes		
Other		1	Н		r Marks			
☐ No Reco	orded Data Available				Lines age Patterns in Wetla	anda		
EIELD ODGEDVAM	ONIG	4				anus		
FIELD OBSERVATION		GEGON			nent deposits			
Depth of Surface Water		SECONI INDICA			more required)			
Depth to Free Water in	n Pit: (in.)				zed Root Channels in	n Upper 12 Inches		
Depth to Saturated So	il: (in.)		님		r-Stained Leaves			
	\ - y	ľ	\exists		Soil Survey Data	~)		
					· (Explain in Remarks Neutral Test	s)		1
Remarks: Parameter is	not met. Wetland hydrol	ngy indicator	rs are not pre		redutal Test			
Remarks. Farameter is	s not met. Wettand flydfor	ogy muicato	is are not pre	sent.				

SOILS Map Unit Name Unknown (Series and Phrase): Drainage Class: Unknown Field Observations \boxtimes Taxonomy (Subgroup): Confirm Mapped Type? Yes No PROFILE DESCRIPTION Depth Matrix Color Redoximorphic Redoximorphic Texture, Concretions, (Inches) Features Colors (Munsell Moist) Features Abundance/Contrast **Horizon** (Munsell Moist) Rhizospheres, etc. 0-18"+ 2.5yr4/8 Clayey Silt **Hydric Soil Indicators:** Histosol Concretions Histic Epipedon High Organic Content in Surface Layer in Sandy Soils Sulfide Odor Organic Streaking in Sandy Soils Aquic Moisture Regime Listed on Local Hydric Soils List **Reducing Conditions** Listed on National Hydric Soils List Gleyed or Low-Chroma Colors Other (Explain in Remarks) **Hydric Soil Present?** No 🛛 Yes 🗌 Remarks: Wetland parameter is not met. WETLAND DETERMINATION Hydrophytic Vegetation Present? Yes⊠ No[Wetland Hydrology Present? Yes 🗌 No⊠

No

Remarks: Hydric soils and wetland hydrology parameters are not met. Data collected within an upland.

Is this Sampling Point Within A Wetland?

No

Yes 🗌

Hydric Soils Present?

Project Site:	William S. Lee III Nucl	ear Station Tr	ansmission	Line	Date:	04/15/09	
Applicant/Owner:	Duke Energy Carolinas	LLC			County:	Cherokee	
Investigator:	Jason Isbanioly/Kristen	Roop		·	State:	SC	
Do normal circumstan	ces exist on the site?		Yes⊠	No	Community ID:	Upland	
Is the site significantly	disturbed (Atypical Situa	tion)?	Yes□	No⊠	Transect ID:		
Is the area a potential problem area? (if needed, explain on reverse)			Yes□	No.	Plot ID:	Upland H	
VECETATION (In C	order of Stratum) Note t	hose species c	bserved to	have morphological adaptat	ions to wetlands wi	th an *	
Dominant Pla		Dominant Plant S	Species S	Stratum Indicator			
Pinus taeda Aesculus flava		Tree Sapling	FAC UPL	9.			
3. Ulmus alata		Sapling	FACU+	11.			
4. Lonicera japonio	са Н	erbaceous	FAC-	12.			
5				13.			
6. 7.				14			
				15 16			
	pecies that are OBL, FAC (*) as showing morpholog						
Describe Morphologic	al Adaptations:						
Remarks: Less than or	equal to 50% of domina	nt vegetation is	s FAC or w	etter. Wetland parameter is no	ot met.		
HYDROLOGY							
	DED DATA be in Remarks)	PRIMAR' INDICAT		(1 or more required)			
	Lake or Tide Gage			Inundated			
	notograph		╡	Saturated in Upper 12 Inch	nes		
Other	rded Data Available		_	Water Marks Drift Lines			
110 1100	roco Data Arvandolo	l	╡	Drainage Patterns in Wetla	ands		
FIELD OBSERVATION	ONS:	1 7	_	Sediment deposits			
Depth of Surface Wate		SECONDA	ARY	(2 or more required)			
•		INDICAT		(
Depth to Free Water in	Pit: (in.)			Oxidized Root Channels in	Upper 12 Inches		
Depth to Saturated Soi	l: (in.)			Water-Stained Leaves			
20pm to buttarated 501	()		╡	Local Soil Survey Data	. \		
			╡	Other (Explain in Remarks FAC-Neutral Test	S)		
Remarks: Parameter is	not met. Wetland hydrol	ogy indicators	are not pre				

SOILS Map Unit Name Unknown (Series and Phrase): Drainage Class: Field Observations Unknown \boxtimes Taxonomy (Subgroup): Confirm Mapped Type? Yes No PROFILE DESCRIPTION <u>Depth</u> Matrix Color Redoximorphic Redoximorphic Texture, Concretions, Features Colors (Inches) **Horizon** (Munsell Moist) **Features** Rhizospheres, etc. (Munsell Moist) Abundance/Contrast 0-3" 7.5yr 4/3 Silty loam В 3-18"+ 7.5yr 5/6 Sandy loam Hydric Soil Indicators: Histosol Concretions Histic Epipedon High Organic Content in Surface Layer in Sandy Soils Sulfide Odor Organic Streaking in Sandy Soils Listed on Local Hydric Soils List Aquic Moisture Regime **Reducing Conditions** Listed on National Hydric Soils List Gleyed or Low-Chroma Colors Other (Explain in Remarks) **Hydric Soil Present?** Yes 🔲 No 🛛 Remarks: Wetland parameter is not met. WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes 🗌 No⊠ Wetland Hydrology Present? Yes 🗌 No⊠ No No Hydric Soils Present? Yes□ Is this Sampling Point Within A Wetland? Yes□ Remarks: No wetland parameters are met.

Project Site:	William S. Lee III Nuc	lear Station Transmis	ssion Line		Date:	04/15/09
Applicant/Owner:	Duke Energy Carolinas	, LLC			- County:	Cherokee
Investigator:	Jason Isbanioly/Kristen	Roop	•		State:	SC
Do normal circumstan	nces exist on the site?	Yes	⊠ No□		Community ID:	Upland
_	y distur be d (Atypical Situa	ation)? Yes	□ No⊠	santa da j	Transect ID:	
Is the area a potential (if needed, explain on		Yes	□ No⊠		Plot ID:	Upland I
VEGETATION (In 0	Order of Stratum) Note	hose species observ	ed to have r	orphological adapta	tions to wetlands w	ith an *
Dominant Pl		Stratum Indic		Dominant Plant		Stratum <u>Indicator</u>
1. Juniperus virgir 2. Pinus virginiana		Sapling FAC Sapling UPL	10-			
3. Festuca rubra		Ierbaceous FAC	U+ 11.		a a in	
4. Trifolium preter	ise I	lerbaceous FAC	12.			
5			15.			
6			14.			
8.			16.			
·			─ ```			
Parcent of Dominant	Species that are OBL, FAG	TW or EAC (evoludi	ng EAC): 0	7		
	(*) as showing morpholog			0		
Describe Morphologic	cal Adaptations:					
Remarks: Less than o	or equal to 50% of domina	nt vegetation is FAC	or wetter.	Vetland parameter is no	ot met.	
HYDROLOGY	RDED DATA	PRIMARY	(1.	or more required)		
	be in Remarks)	INDICATORS	(1)	r more requireu)		
,	Lake or Tide Gage		Inu	ndated		
	hotograph			urated in Upper 12 Inc	hes	
Other	1.10 . 4 . 2.11.			ter Marks		
No Reco	orded Data Available			ft Lines inage Patterns in Wetl	lands	
FIELD OBSERVATION	ONIC	႕ 片		iment deposits		
Depth of Surface Wat		SECONDARY		or more required)		
Deput of Surface wat	ci. (iii.)	INDICATORS	(2)	more required)		
Depth to Free Water i	n Pit: (in.)		Ox	dized Root Channels i	in Upper 12 Inches	
D 4 4 6 4 4 4 5	'1			ter-Stained Leaves		
Depth to Saturated So	il: (in.)			al Soil Survey Data		
		□		er (Explain in Remark	(s)	
				C-Neutral Test		
Remarks: Parameter is	s not met. Wetland hydro	logy indicators are n	ot present.			

SOILS	445	toriation in the patential about	and the Species in	av.			e me e santitue de la seco
Map Unit Name (Series and Phrase)		mily see in the order	e y regio per e e e e e e e e e e e e e e e e e e		Drainage Class:	सन्दर्भावतं स्वरं स्वरं । 	
Taxonomy (Subgro	Unknown		, –		Field Observations Confirm Mapped Type?	Yes	No
PROFILE DESCI		· · · · · · · · · · · · · · · · · · ·			FF		
Depth (Inches)	<u>Horizon</u>	Matrix Co (Munsell M		Redoximorphic Features Colors (Munsell Moist)	<u>Redoximorphic</u> <u>Features</u> <u>Abundance/Contrast</u>		re, Concretions, zospheres, etc.
0-3"	A	5yr 3/3	3 .	<u> </u>		Cl _i	ayey Loam
3-18"+	B	7yr 5/8	3				Clay Silt
		ووائن روييسوني					
		_					
Hydric Soil Indicat	ors: Histosol		П	Conc	cretions		
	Histic Epipedon				n Organic Content in Surfac	e Layer in	Sandy Soils
	Sulfide Odor			Orga	nnic Streaking in Sandy Soi	ls	
	Aquic Moisture Regi	me		Liste	ed on Local Hydric Soils Li	ist	
	Reducing Conditions			Liste	ed on National Hydric Soils	List	
☐ Hydric Soil Preser	Gleyed or Low-Chron	na Colors		Othe	er (Explain in Remarks)	Yes 🗌	No 🛛
	parameter is not met.						200
	·						
WETLAND DETI	ERMINATION						
Hydrophytic Vegeta Hydric Soils Presen		Yes□ Yes□	No⊠ No⊠	Wetland Hydrolog Is this Sampling F	gy Present? Point Within A Wetland?	Yes□ Yes□	
Remarks: No v	wetland parameters are	e met.		<u> </u>			

William S. Lee III Nucle	ear Station Transmission	on Line		Date:	04/15/09	
Duke Energy Carolinas,	LLC		-	County:	Cherokee	
Jason Isbanioly/Kristen	Roop			State:	SC	
	a.					
nces exist on the site?	Yes⊠	No□		Community ID:	Upland	
	tion)? Yes 🗌	No⊠		Transect ID:		
Is the area a potential problem area? (if needed, explain on reverse)		No⊠.	· 1.	Plot ID:	Upland K	-
	•					
Order of Stratum) Note tl	ose species observed	to have mo	rphological adapta	tions to wetlands w	ith an *	
Species that are OBL, FAC (*) as showing morphological Adaptations:	Tree UPL Sapling FAC Sapling FAC Shrub FACU- Shrub FACU- W or FAC (excluding cal adaptations to wetl	9				Indicator
or equal to 50% of dominan	t vegetation is FAC or	wetter. We	land parameter is no	ot met.		
be in Remarks) Lake or Tide Gage Photograph orded Data Available ONS: er: (in.) n Pit: (in.)	PRIMARY INDICATORS SECONDARY INDICATORS	Inund Satura Water Drift Drain Sedim (2 or Oxidi) Water Local Other FAC-	ated ated in Upper 12 Incl Marks Lines age Patterns in Wetle more required) zed Root Channels in -Stained Leaves Soil Survey Data (Explain in Remark	n Upper 12 Inches		
	Duke Energy Carolinas, Jason Isbanioly/Kristen Inces exist on the site? Inces exist on the site. Inces exist on the site. Inces exist on the site. Inces exist on the site. Inces exist on the site. Inces exist on the site. Inces exist on the site. Inces exist on the site. Inces exist on the site. Inces exist on the site. Inces exist on the sit	Duke Energy Carolinas, LLC Jason Isbanioly/Kristen Roop nees exist on the site? Yes y disturbed (Atypical Situation)? y disturbed (Atypical Situation)? Yes problem area? Yes Order of Stratum) Note those species observed lant Species Tree UPL Sapling FAC Shrub FACU- Shrub Shrub FACU- Shrub FACU- Shrub FACU- Shrub FACU- Shrub FACU- Shrub FACU- Shrub FACU- Shrub FACU- Shrub FACU- Shrub FACU- Shrub FACU- Shrub FACU- Shrub FACU- Shrub FACU- Shrub FACU- Shrub FACU- Shrub FACU- SHRUB	Jason Isbanioly/Kristen Roop Yes No No Yes No No Yes No No Yes Yes No Yes Yes No Yes Yes Yes No Yes	Duke Energy Carolinas, LLC Jason Isbanioly/Kristen Roop	Duke Energy Carolinas, LLC	Duke Energy Carolinas, LLC Jason Isbanioly/Kristen Roop State: SC County: Cherokee State: SC Community ID: Upland y disturbed (Atypical Situation)? Yes No No Transect ID: problem area? Yes No No Dominant Plant Secies Stratum Indicator Tree UPL Sapling FAC Sapling FAC Sapling FAC Shrub FAC-1 Shrub FAC-1 Shrub FAC-1 Shrub FAC-1 Shrub FAC-1 Shrub FAC-1 Shrub FAC-1 Shrub FAC-1 Shrub FAC-1 Shrub FAC-1 Shrub FAC-1 Shrub FAC-1 Species that are OBL, FACW or FAC (excluding FAC-): 40% (*) as showing morphological adaptations to wetlands. Sapling FAC II. Species that are OBL, FACW or FAC (excluding FAC-): 40% (*) as showing morphological adaptations to wetlands. Sapling FAC III. Species that are OBL, FACW or FAC (excluding FAC-): 40% (*) as showing morphological adaptations to wetlands. Sapling FAC III. Species that are OBL, FACW or FAC (excluding FAC-): 40% (*) as showing morphological adaptations to wetlands. Sapling FAC III. Inundated Saturated in Upper 12 Inches Water Marks Drift Lines Drainage Patterns in Wetlands ONNS: er: (in.) SECONDARY (2 or more required) INDICATORS Water-Stained Leaves Local Soil Survey Data Other (Explain in Remarks) FAC-Neutral Test

SOILS Map Unit Name Unknown (Series and Phrase): Drainage Class: Unknown Field Observations \boxtimes Taxonomy (Subgroup): Confirm Mapped Type? Yes No PROFILE DESCRIPTION <u>Depth</u> Matrix Color Redoximorphic Redoximorphic Texture, Concretions, **Horizon** (Inches) (Munsell Moist) Features Colors **Features** Rhizospheres, etc. (Munsell Moist) Abundance/Contrast 0-18"+ 5yr 5/8 Clay, loam Hydric Soil Indicators: Histosol П Concretions Histic Epipedon High Organic Content in Surface Layer in Sandy Soils Sulfide Odor Organic Streaking in Sandy Soils Aquic Moisture Regime Listed on Local Hydric Soils List **Reducing Conditions** Listed on National Hydric Soils List Gleyed or Low-Chroma Colors Other (Explain in Remarks) **Hydric Soil Present?** Yes 🔲 No 🛛 Remarks: Wetland parameter is not met. WETLAND DETERMINATION

Hydrophytic Vegetation Present?

No wetland parameters are met.

Hydric Soils Present?

Remarks:

Yes [

Yes

No⊠

No⊠

Wetland Hydrology Present?

Is this Sampling Point Within A Wetland?

Yes 🗌

Yes

No⊠

No

Project Site:	William S. Lee III Nuc	ear Station T	ransmission	Line		Date:	04/15/09	
Applicant/Owner:	Duke Energy Carolinas	, LLC				County:	Cherokee	
Investigator:	Jason Isbanioly/Kristen	Roop				State:	SC	
1								
Do normal circumstar	ices exist on the site?		Yes⊠	No□		Community ID:	Upland	
Is the site significantly	disturbed (Atypical Situa	ition)?	Yes□	No⊠		Transect ID:		
Is the area a potential (if needed, explain on		Yes□	No⊠		Plot ID:	Upland L		
						ر المحادية المحادث الم		
						eng andres ingeneral graph pe		
VEGETATION (In	Order of Stratum) Note t	hose species	observed to	have mo	rphological adaptat	ions to wetlands wi	th an *	
<u>Dominant Pl</u>	ant Species	Stratum	<u>Indicator</u>		Dominant Plant S		<u>Stratum</u>	Indicator
1. Pinus taeda		Tree	FAC	9				
2. <u>Liquidambar st</u>		Sapling	FAC+	J 10		<u> </u>		
3. Prunus serotina		Sapling	FACU	J 11				
4. <u>Liquidambar sty</u>		Shrub Shrub	FAC+	12. –				
5. <u>Ligustrum sinen</u> 6. Lonicera japoni		Vine	FAC-	13				
7		Vinc	TAC-	15 -	·····			
				16.				
				1 -				
	Species that are OBL, FAC (*) as showing morpholog							
Describe Morphologic	cal Adaptations:	i		***				
Remarks: Greater tha	n 50% of dominant vegeta	tion is FAC	or wetter. W	etland par	imeter is met.			
HYDROLOGY								
	DED DATA	PRIMAR	RY	(1 or	more required)			
(Descri	be in Remarks)	INDICA						
	Lake or Tide Gage			Inund	ated			
	hotograph				ited in Upper 12 Inch	nes		
Other	1.15 / 1.71		님		Marks			
☐ No Reco	orded Data Available		님	Drift I		and a		
		_			age Patterns in Wetla	anus		
FIELD OBSERVATION			<u> </u>		ent deposits			
Depth of Surface Water	er: (in.)	SECOND INDICAT		(2 or	more required)			
Depth to Free Water in	n Pit: (in.)	INDICA		Oxidi	zed Root Channels in	1 Unner 12 Inches	·····	
	, ,		Ħ		-Stained Leaves	. oppor 12 mones		
Depth to Saturated So	il: (in.)		Ħ		Soil Survey Data			
			Ħ		(Explain in Remarks	()		
		1			Neutral Test	-,		
Remarks: Parameter is	not met. Wetland hydrol	ogy indicator	s are not pre					· · · · · ·

SOILS

(Series and Phrase):					Drainage Class: Field Observations			
Taxonomy (Subgroup):	Unknown	•			Confirm Mapped Type? Yes No			
PROFILE DESCRIPT	ION				· · · · · · · · · · · · · · · · · · ·			
<u>Depth</u> (<u>Inches)</u>	<u>Horizon</u>	Matrix Co (Munsell M		Redoximorphic Features Colors (Munsell Moist)	Redoximorphic Features Abundance/Contrast		, Concretions, spheres, etc.	
0-2"	A	10yr 5/	3 	in the second second	.		Loam	
2-12"	В	7.5yr 5/	<u>/8</u>			Cla	y, Loam	
12-18"	<u> </u>	7.5yr 5/	<u>/8</u>	10yr 6/8	Few, Coarse, Faint	Cla	y, Loam	
					<u> </u>			
			 + ₁ ,					
Hydric Soil Indicators:								
Hist	osol			Conc	cretions			
☐ Hist	ic Epipedon			High	Organic Content in Surface	ce Layer in S	andy Soils	
Sulf	ide Odor			Orga	nic Streaking in Sandy So	ils		
Aqu Aqu	ic Moisture Regin	ne		Liste	d on Local Hydric Soils L	ist		
Red	ucing Conditions			Liste	d on National Hydric Soils	s List		
Gley Hydric Soil Present?	ed or Low-Chron	na Colors		Othe	r (Explain in Remarks)	Yes 🔲	No 🛛	
Remarks: Wetland para	meter is not met.	·	75-17 Per					
					•			
				•				
-								
WETLAND DETERM	INATION				·	**		
Hydrophytic Vegetation Hydric Soils Present?	Present?	Yes⊠ Yes□	No□ No⊠	Wetland Hydrolog Is this Sampling P	gy Present? Point Within A Wetland?	Yes Yes	No⊠ No⊠	
Remarks: Hydric soils a	and wetland hydro	logy param	eters are n	ot present. Data col	llected within an upland.			

Project Site:	William S. Lee III Nucl	ear Station Tr	ansmission	Line		Date:	4/16/09	
Applicant/Owner:	Duke Energy Carolinas.	LLC				County:	Cherokee	
Investigator:	Jason Isbanioly/Kristen	Roop				State:	SC	
		•						
Do normal circumstar	nces exist on the site?		Yes⊠	No□		Community ID:	Upland	
Is the site significantly	y disturbed (Atypical Situa	tion)?	Yes□	No⊠		Transect ID:		·
Is the area a potential (if needed, explain on			Yes□	No⊠		Plot ID:	Upland M	
		hose species o	observed to	have m	orphological adaptat	tions to wetlands wi	th an *	
								Indicator FAC-
HYDROLOGY								
	DED DATA	PRIMAR		(1 o	r more required)			
Stream, Aerial F	be in Remarks) Lake or Tide Gage Photograph orded Data Available	INDICAT		Satu Wat Drif	dated rated in Upper 12 Incl er Marks t Lines nage Patterns in Wetla			
FIELD OBSERVATI			<u></u>		ment deposits			
Depth of Surface Wat	er: (in.)	SECOND INDICAT		(2 o	r more required)			
Depth to Free Water i	il: (in.)			Wat Loc Othe FAC	dized Root Channels in er-Stained Leaves al Soil Survey Data er (Explain in Remarks C-Neutral Test	••		
Kemarks: No wetland	hydrology indicators are p	resent. Paran	neter is not	met.				

SOILS Map Unit Name Unknown (Series and Phrase): Drainage Class: Unknown Field Observations X Taxonomy (Subgroup): Confirm Mapped Type? Yes No PROFILE DESCRIPTION Texture, Concretions, Depth Matrix Color Redoximorphic Redoximorphic Features Colors (Munsell Moist) Features
Abundance/Contrast (Inches) **Horizon** (Munsell Moist) Rhizospheres, etc. 0-18+A 2.5 YR 4/4 7.5 YR 5/3 Fine, Common, Silt Prominent **Hydric Soil Indicators:** Histosol Concretions Histic Epipedon High Organic Content in Surface Layer in Sandy Soils Sulfide Odor Organic Streaking in Sandy Soils Aquic Moisture Regime Listed on Local Hydric Soils List **Reducing Conditions** Listed on National Hydric Soils List Gleyed or Low-Chroma Colors Other (Explain in Remarks) **Hydric Soil Present?** No 🛛 Yes 🗌 Remarks: No hydric soil indicators are present. Parameter is not met.

			. \		
WETLAND DETERMINATION					
Hydrophytic Vegetation Present? Hydric Soils Present?	Yes Yes	No⊠ No⊠	Wetland Hydrology Present? Is this Sampling Point Within A Wetland?	Yes Yes	No⊠ No⊠
Remarks: No wetland parameters are me	t. Data wa	s collected	within an upland.		

Project Site:	William S. Lee III Nucle	ear Station T	ransmission	Line	Date:	04/16/09
Applicant/Owner:	Duke Energy Carolinas,	LLC			County:	Cherokee
Investigator:	Jason Isbanioly/Kristen	Roop			State:	SC
					1	
Do normal circumstan	ices exist on the site?		Yes⊠	No□	Community ID:	Upland
	y disturbed (Atypical Situal	tion)?	Yes□	No⊠	Transect ID:	
	Is the area a potential problem area? (if needed, explain on reverse)		Yes□	No⊠	Plot ID:	Upland P
	and the state of t				d	
VEGETATION (In	Order of Stratum) Note t	nose species	observed to	have morphological adapta	tions to wetlands wi	ith an *
Dominant Pl	lant Species 5	Stratum_	Indicator	Dominant Plant S	Species	Stratum Indicator
1. Pinus taeda	and the second s	Tree	FAC	 		
2. Pinus taeda 3. Acer rubrum		Sapling Sapling	FAC FAC	· · · · · · · · · · · · · · · · · · ·		
4. Betula nigra		Sapling	FACW			
5. Parthenocissus		erbaceous	FAC			
6. Allium sp.	He	erbaceous	FACU			
7. Lonicera japoni	ica He	erbaceous	FAC-			
8. Stellaria media		erbaceous	FACU			
Include species noted Describe Morphologic	Species that are OBL, FAC (*) as showing morphological Adaptations: an 50% of dominant vegetat	ical adaptatio	ons to wetlan	nds.		
HYDROLOGY						
(Descri	RDED DATA ibe in Remarks)	PRIMAR INDICAT		(1 or more required)		
	Lake or Tide Gage			Inundated	· · · · · · · · · · · · · · · · · · ·	
	Photograph			Saturated in Upper 12 Incl	hes	
Other No Reco	orded Data Available		님	Water Marks Drift Lines		I
170 1000	Micu Data Avanabic			Drainage Patterns in Wetl	ands	
FIELD OBSERVATION	ONS:	1	<u> </u>	Sediment deposits		
Depth of Surface Water	, ,	SECOND INDICAT		(2 or more required)	- <u> </u>	
Depth to Free Water in	n Pit: (in.)			Oxidized Root Channels in	n Upper 12 Inches	
Danth to Saturated So	.:). /im \			Water-Stained Leaves	•	
Depth to Saturated So	il: (in.)			Local Soil Survey Data		
				Other (Explain in Remark	.s)	
				FAC-Neutral Test		
Remarks: Parameter is	s not met. Wetland hydrolo	ogy indicator	s are not pre	esent.		

SOILS

Map Unit Name (Series and Phrase):	Unknown				Dra	inage Class:		
	Unknown		 	The second second	Fiel	ld Observations		\boxtimes
Taxonomy (Subgroup						nfirm Mapped Type?	Yes	No
PROFILE DESCRI	PTION	-	Parameter Control			,		
<u>Depth</u> (Inches)	<u>Horizon</u>	Matrix Col (Munsell Mo		Redoximorph Features Cole (Munsell Moi	lors	Redoximorphic Features Abundance/Contrast		re, Concretions, zospheres, etc.
0-2"	Α	10yr 3/2	<u>} </u>	<u> La company dipanghabana</u>	Alaman , Fr	<u> </u>		Loam
2-18"+	В	7.5yr 5 f.	3	5yr 5/8		Fine, Common, Prominent		Silt, Clay
						-	·	
·								
					 	· · · · · · · · · · · · · · · · · · ·		
					<u></u>			
Hydric Soil Indicator	:s:					•		
H H	Histosol			. (Concretion	ns		
П Н	Histic Epipedon			<u> </u>	High Orga	nic Content in Surfac	e Layer in	Sandy Soils
S	Sulfide Odor				Organic St	treaking in Sandy Soi	ls	
A	Aquic Moisture Regi	ime			Listed on I	Local Hydric Soils Li	ist	
R	Reducing Conditions	S			Listed on I	National Hydric Soils	List	
G	Gleyed or Low-Chro	oma Colors				plain in Remarks)	·	
Hydric Soil Present	?				, .	,	Yes 🗌	No 🛛
Remarks: Wetland pa	arameter is not met	•						
		-						
WETLAND DETER	RMINATION							
Hydrophytic Vegetati Hydric Soils Present?		Yes⊠ Yes□	No□ No⊠	Wetland Hydi Is this Sampli		esent? Within A Wetland?	Yes Yes	No⊠ No⊠
Demarks Hydrid		1. 1. 1			4114-	ad within on unland		

								A 10 10 10 10 10 10 10 10 10 10 10 10 10		
Project Site:	William S. Lee III Nucle	ear Station Tr	ransmissior	Line		Date:	04/17/09	18 48 40 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
Applicant/Owner:	Duke Energy Carolinas,	LLC				County:	Cherokee			
Investigator:	Jason Isbanioly/Kristen I					State:	SC			
				***************************************		<u> </u>				
Do normal circumsta	nces exist on the site?		Yes⊠	No□		Community ID:	Upland			
Is the site significantl	ly disturbed (Atypical Situat	tion)?	Yes□	No⊠		Transect ID:				
Is the area a potential (if needed, explain or			Yes□	No⊠		Plot ID:	Upland R			
					,					
VEGETATION (In	VEGETATION (In Order of Stratum) Note those species observed to have morphological adaptations to wetlands with an *									
Dominant P	Plant Species S	Stratum	Indicator		Dominant Plant S	Species	Stratum	Indicator		
1. Acer rubrum		Tree	FAC							
2. Fraxinus penns		Tree	FACW] _						
3. Fagus grandifo		Tree	FACU	↓ _	.	<u> </u>				
4. <u>Liquidambar st</u>		Sapling	FAC+	┦ _						
5. Polystichum ac		Herb	FAC				 			
6. <u>Lonicera japon</u> 7. Stellaria media		Vine Herb	FAC- FACU							
8.		Heio	FACO			<u> </u>				
Include species noted Describe Morphologi	Species that are OBL, FAC (*) as showing morphological Adaptations: an 50% of vegetation is FAC	ical adaptation	ons to wetlar	nds.	·					
HYDROLOGY										
RECO	RDED DATA ibe in Remarks)	PRIMAR' INDICAT		(1 or	more required)					
	, Lake or Tide Gage			Inund						
	Photograph	'			ated in Upper 12 Inch	hes				
Other	anded Data Available	'	H		r Marks			.		
☐ No Kec	corded Data Available	'		Drift I Drain	Lines lage Patterns in Wetla	ands		•		
FIELD OBSERVATI	ions:	1 '			nent deposits					
Depth of Surface War		SECOND INDICAT			more required)					
Depth to Free Water	in Pit: (in.)			Oxidi	zed Root Channels in	n Upper 12 Inches				
		· '			r-Stained Leaves	• •				
Depth to Saturated So	oil: (in.)	1		Local	Soil Survey Data					
		'		Other	(Explain in Remarks	s)				
		'			Neutral Test					
Remarks: Parameter i	is not met. Wetland hydrolo	gy indicators	s are not pro	esent.						

SOILS sakapit. Map Unit Name Unknown (Series and Phrase): Drainage Class: Unknown Field Observations \boxtimes Taxonomy (Subgroup): Yes Confirm Mapped Type? No PROFILE DESCRIPTION Depth Matrix Color Redoximorphic Redoximorphic Texture, Concretions, **Horizon** (Inches) (Munsell Moist) Features Colors **Features** Rhizospheres, etc. (Munsell Moist) Abundance/Contrast 0-12" 10yr 3/2 Sand 12-18" В 10yr 3/1 Sand Hydric Soil Indicators: Histosol Concretions Histic Epipedon High Organic Content in Surface Layer in Sandy Soils Sulfide Odor Organic Streaking in Sandy Soils Aquic Moisture Regime Listed on Local Hydric Soils List **Reducing Conditions** Listed on National Hydric Soils List Gleyed or Low-Chroma Colors Other (Explain in Remarks) **Hydric Soil Present?** No 🛛 Yes 🗌 Remarks: Indicators do not meet standards for hydric soil. Wetland parameter is not met. WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes⊠ No 🗌 Wetland Hydrology Present? Yes 🗌 No⊠ Hydric Soils Present? No⊠ Is this Sampling Point Within A Wetland? No🏻 Yes 🗌 Yes□ Hydric soil and wetland hydrology parameters are not met. Remarks:

Project Site:	William S. Lee III Nucle	ear Station Ti	ransmission	Line	Date:	04/17/09				
Applicant/Owner:	Duke Energy Carolinas,	LLC			County:	Cherokee				
Investigator:	Jason Isbanioly/Kristen	Roop			State:	SC				
										
Do normal circumstan	ces exist on the site?		Yes⊠	No	Community ID:	Upland				
Is the site significantly	disturbed (Atypical Situa	tion)?	Yes□	No⊠	Transect ID:					
Is the area a potential			Yes□	No⊠	Plot ID:	Upland S				
(if needed, explain on	No.		I CS	1401	riorio.	Opiana 3				
	ا المرافية المرافية ال	activity								
VEGETATION (In C	Order of Stratum) Note the	hose species	observed to	have morphological adaptat	tions to wetlands wi	th an *				
Dominant Pl	ant Species S	Stratum Trac	Indicator	Dominant Plant S	Species 9	Stratum Indicator				
Quercus alba Fagus grandifol	in	Tree Tree	FACU FACU							
3. Liriodendron tui		Sapling	FAC			· · · · · · · · · · · · · · · · · · ·				
4. Fagus grandifol		Sapling	FACU							
5. Rosa multiflora		Shrub	UPL							
6. Pinus taeda		Shrub	FAC							
7. Lonicera japoni	<u>2a Ho</u>	erbaceous	FAC-							
8										
Include species noted	Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 29% Include species noted (*) as showing morphological adaptations to wetlands.									
Describe Morphologic	al Adaptations:									
Remarks: Less than 5	0% of dominant vegetation	is FAC or w	vetter. Para	meter is not met.						
HYDROLOGY	DED DATA	PRIMAR	v	(1 on more required)						
	be in Remarks)	INDICAT		(1 or more required)						
· ·	Lake or Tide Gage			Inundated						
	hotograph			Saturated in Upper 12 Incl	hes					
Other				Water Marks						
☐ No Reco	orded Data Available		片	Drift Lines Drainage Patterns in Wetla	anda					
FIELD ODGEDVATO	ovid:	4	님	•	anus	·				
FIELD OBSERVATION		SECOND	ADV	Sediment deposits						
Depth of Surface Water	er: (in.)	SECOND INDICAT		(2 or more required)						
Depth to Free Water in	n Pit: (in.)			Oxidized Root Channels in	n Upper 12 Inches					
Danish to Catalogue d Cal	d. C. Y			Water-Stained Leaves		•				
Depth to Saturated Soi	il: (in.)			Local Soil Survey Data						
				Other (Explain in Remarks	s)					
	,			FAC-Neutral Test						
Remarks: Parameter is	not met. Wetland hydrolo	ogy indicator	s are not pre	esent.						

SOILS Map Unit Name Unknown (Series and Phrase): Drainage Class: Field Observations Unknown \boxtimes Taxonomy (Subgroup): Confirm Mapped Type? Yes No PROFILE DESCRIPTION Depth Matrix Color Redoximorphic Redoximorphic Texture, Concretions, (Inches) **Horizon** (Munsell Moist) Features Colors <u>Features</u> Rhizospheres, etc. (Munsell Moist) Abundance/Contrast 0-3" 10yr 5/3 Loam 3-18"+ В 2.5yr 6/4 Clayey Sand **Hydric Soil Indicators:** Histosol Concretions Histic Epipedon High Organic Content in Surface Layer in Sandy Soils Sulfide Odor Organic Streaking in Sandy Soils Aquic Moisture Regime Listed on Local Hydric Soils List **Reducing Conditions** Listed on National Hydric Soils List Gleyed or Low-Chroma Colors Other (Explain in Remarks) **Hydric Soil Present?** No 🛛 Yes 🖸 Remarks: Indicators do not meet standards for hydric soil. Wetland parameter is not met. WETLAND DETERMINATION Hydrophytic Vegetation Present? No⊠ Wetland Hydrology Present? Yes _ No⊠ Yes Hydric Soils Present? No Is this Sampling Point Within A Wetland? No Yes□ Yes 🗌

No wetland parameters are met. Data collected within an upland.

Remarks:

Project Site:	William S. Lee III Nucle	ar Station Ti	ransmission	Line		Date:	04/17/09	
Applicant/Owner:	Duke Energy Carolinas,	LLC				County:	Union	
Investigator:	Jason Isbanioly/Kristen I	Roop				State:	SC	
								*
Do normal circumstan	nces exist on the site?		Yes⊠	No□		Community ID:	Upland	erina area da esta esta esta esta esta esta esta est
Is the site significantly	y disturbed (Atypical Situat	ion)?	Yes□	No⊠	·	Transect ID:		
	Is the area a potential problem area? (if needed, explain on reverse)		Yes□	No⊠		Plot ID:	Upland T	e e e e e e e e e e e e e e e e e e e
						الشفادية والسارا	()	
				_	/		The second second	
VEGETATION (In C	Order of Stratum) Note th	ose species	observed to	have mo	rphological adaptat	ions to wetlands wi	th an *	Not top
Dominant Pl		tratum	Indicator		Dominant Plant S	pecies	<u>Stratum</u>	<u>Indicator</u>
1. Liriodendron tu 2. Liquidambar sty		Tree Tree	FAC+					·
3. Liquidambar sty		Sapling .	FAC+	 				
4. Cornus florida		Sapling	FACU	1 -				•
5. Liquidambar sty		Shrub	FAC+	1 -				
6. Ligustrum sinen		Shrub	FAC	1 _				
7. Lonicera japoni	ica He	rbaceous	FAC-] _				
8. <u>Rubus allegheni</u>	iensis He	rbaceous	UPL	_				
Include species noted Describe Morphologic	Species that are OBL, FAC' (*) as showing morphological Adaptations:	cal adaptatio	ons to wetlar	nds.				
HYDROLOGY								
RECOR	RDED DATA be in Remarks)	PRIMAR INDICAT		(1 or	more required)			
	Lake or Tide Gage			Inund				
	Photograph				ted in Upper 12 Incl	nes		1
Other	orded Data Available		片	Water Drift I	Marks			
No Rect	orded Data Available				age Patterns in Wetla	ands		
FIELD OBSERVATION	ONS:	1			ent deposits			
Depth of Surface Water	er: (in.)	SECOND INDICAT		(2 or 1	nore required)			
Depth to Free Water in	n Pit: (in.)			Oxidi	red Root Channels is	Upper 12 Inches		
Danth to Saturated Sa	il· (in)	1			-Stained Leaves			1
Depth to Saturated So	il: (in.)				Soil Survey Data			
Į					(Explain in Remarks	s)		
D 1 D		1	<u> </u>		Neutral Test			
Kemarks: Parameter is	s not met. Wetland hydrolo	gy indicator	s are not pre	esent.				

SOILS Map Unit Name Unknown (Series and Phrase): Drainage Class: Unknown Field Observations \boxtimes Taxonomy (Subgroup): Confirm Mapped Type? Yes No PROFILE DESCRIPTION **Depth** Matrix Color Redoximorphic Redoximorphic Texture, Concretions, **Horizon** (Inches) (Munsell Moist) Features Colors **Features** Rhizospheres, etc. Abundance/Contrast (Munsell Moist) 0-11" 5yr 4/6 Silt, Clay 11-18"+ В 7.5yr 5/3 5yr 4/6 Fine, Common, Silt, Clay **Prominent** Hydric Soil Indicators: Histosol Concretions Histic Epipedon High Organic Content in Surface Layer in Sandy Soils Sulfide Odor Organic Streaking in Sandy Soils Aquic Moisture Regime Listed on Local Hydric Soils List **Reducing Conditions** Listed on National Hydric Soils List Gleyed or Low-Chroma Colors Other (Explain in Remarks) **Hydric Soil Present?** Yes No 🛛 Remarks: Indicators do not meet standards for hydric soil. Wetland parameter is not met.

WETLAND DETERMINATION Hydrophytic Vegetation Present? Yes⊠ No□ Wetland Hydrology Present? Yes□ No⊠ Is this Sampling Point Within A Wetland? Yes□ No⊠ Remarks: Hydric soils and wetland hydrology parameters are not present. Data collected within an upland.

Project Site:	William S. Lee III N	uclear Station T	ransmission	Line		Date:	04/28/09	er grand promote delegation			
Applicant/Owner:	Duke Energy Carolin	nas, LLC				County:	Union				
Investigator:	Jason Isbanioly/Kris	ten Roop				State:	SC				
						5 14.151					
Do normal circumstan	ces exist on the site?		Yes⊠	No□		Community ID:	Upland	. ,			
Is the site significantly	disturbed (Atypical Si	tuation)?	Yes□	No⊠		Transect ID:					
Is the area a potential (if needed, explain on			Yes□	No⊠		Plot ID:	Upland U				
			TO STATE OF THE ST				l				
VEGETATION (In Order of Stratum) Note those species observed to have morphological adaptations to wetlands with an *											
<u>Dominant Pl</u> 1. Pinus taeda	ant Species	Stratum Tree	Indicator FAC		<u>Dominant Plant S</u> Lonicera japonica		Stratum erbaceous	Indicator FAC-			
2. Platanus occides	ntalis	Tree	FACW-	-	Ботсега јаротса		Toaccous	TAC			
3. Liriodendron tui		Sapling	FAC	-							
4. Prunus serotina		Sapling	FACU								
5. Prunus serotina		Shrub	FACU	_							
6. <u>Liquidambar sty</u>	raciflua	Shrub	FAC+	-							
7. Rubus argutus		Herbaceous	FACU+	-							
8. <i>Polystichum acr</i>	osticnotaes	Herbaceous	FAC	-				****			
	Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 55% Include species noted (*) as showing morphological adaptations to wetlands.										
Remarks: Greater than	n 50% of dominant veg	etation is FAC	or wetter. W	etland pa	rameter is met.						
HYDROLOGY											
RECOR	DED DATA be in Remarks)	PRIMAR INDICA		(1 or	more required)						
	Lake or Tide Gage			Inunc							
	hotograph		H		ated in Upper 12 Inch	ies					
Other	orded Data Available		H	wate Drift	r Marks Lines						
	nded Data Avanable		H		age Patterns in Wetla	ınds					
FIELD OBSERVATION	ONS:		\Box		nent deposits						
Depth of Surface Water		SECONI	DARY		more required)						
		INDICA'		(•				
Depth to Free Water in	n Pit: (in.)			Oxid	zed Root Channels ir	Upper 12 Inches					
Depth to Saturated Soi	il: (in.)	İ		Wate	r-Stained Leaves						
Depui io Saintaien 301	ii. (iii. <i>)</i>	1			Soil Survey Data			l			
	•		Ц		(Explain in Remarks	3)		ł			
December 5		<u> </u>	Ц		Neutral Test						
Remarks: Parameter is	not met. Wetland hyd	rology indicator	rs are not pre	sent.	•						
											

SOILS Map Unit Name Unknown (Series and Phrase): Drainage Class: Unknown Field Observations X No Taxonomy (Subgroup): Confirm Mapped Type? Yes PROFILE DESCRIPTION <u>Depth</u> Matrix Color Redoximorphic Redoximorphic Texture, Concretions, **Horizon** (Inches) (Munsell Moist) Features Colors **Features** Rhizospheres, etc. (Munsell Moist) Abundance/Contrast 0-6" 7.5yr 5/6 Silt, Loamy В 6-18"+ 7.5yr 5/3 Silt, Loamy **Hydric Soil Indicators:** Histosol Concretions Histic Epipedon High Organic Content in Surface Layer in Sandy Soils Sulfide Odor Organic Streaking in Sandy Soils Aquic Moisture Regime Listed on Local Hydric Soils List **Reducing Conditions** Listed on National Hydric Soils List Gleyed or Low-Chroma Colors Other (Explain in Remarks) **Hydric Soil Present?** Yes 🗌 No 🛛 Remarks: Indicators do not meet standards for hydric soil. Wetland parameter is not met.

WETLAND DETERMINATION					
Hydrophytic Vegetation Present? Hydric Soils Present?	Yes⊠ Yes□	No□ No⊠	Wetland Hydrology Present? Is this Sampling Point Within A Wetland?	Yes□ Yes□	No⊠ No⊠
Remarks: Hydric soils and wetland	i hydrology p	arameters	I are not present. Data collected within an upland	l.	
•			•		

Project Site:	William S. Lee III Nucl	lear Station Trans	smission	ı Line		Date:	04/28/09
Applicant/Owner:	Duke Energy Carolinas	, LLC				County:	Union
Investigator:	Jason Isbanioly/Kristen					State:	SC
		<u> </u>				1	
Do normal circumstan	ices exist on the site?	Y	Yes⊠	No□		Community ID:	Upland
Is the site significantly	y disturbed (Atypical Situa	ation)?	Yes□	No⊠	ı	Transect ID:	
	Is the area a potential problem area? (if needed, explain on reverse)		Yes□	No⊠		Plot ID:	Upland X
		ere war in the second	5e., e * e				
VECETATION (In (Order of Stratum) Note t	those species abs	t hower	o hove me	etable legipolodes	tions to watlands wi	ith on *
			,	have mo			
<u>Dominant Pl</u> 1. Pinus taeda	ant Species		ndicator FAC		Dominant Plant S	<u>Species</u>	Stratum Indicator
2. Quercus laurifo	olia —		FACW	1 -			
3. Acer rubrum	Jitt.		FAC	1 -			
4. Juniperus virgir	 niana		FACU-	1 -			
5. Quercus laurifo			FACW	1 -			
6. Lonicera japoni		łerbaceous F	FAC-	1 _			
7. Vitis rotundifoli		Herbaceous F	FAC	1 _			
8.] _			
(ı			
	Species that are OBL, FAC				2		
Include species noted	(*) as showing morpholog	gical adaptations t	to wetlar	nds.			
D	1 4 1		<u> </u>				
Describe Morphologic	cal Adaptations:						
Remarks: Greater tha	an 50% of dominant vegeta	ation is FAC or w	etter. P	arameter is	s met.		
HYDROLOGY							
	RDED DATA	PRIMARY		(1 or	more required)		<u> </u>
	ibe in Remarks)	INDICATOR	RS		,		
	Lake or Tide Gage			Inund			
Aerial P	Photograph				ated in Upper 12 Incl	hes	
Other					r Marks		
☐ No Reco	orded Data Available			Drift I			
		- -			age Patterns in Wetla	ands	
FIELD OBSERVATION		Ш			nent deposits		
Depth of Surface Water	er: (in.)	SECONDAR INDICATOR		(2 or	more required)		
Depth to Free Water is	n Pit: (in.)			Oxidi	zed Root Channels in	n Upper 12 Inches	
l					r-Stained Leaves		
Depth to Saturated So	oil: (in.)				Soil Survey Data		•
					(Explain in Remark:	:s)	
					Neutral Test		
Remarks: Parameter is	s not met. Wetland hydrol	ogy indicators ar	e not pro	esent.			

SOILS Map Unit Name Unknown (Series and Phrase): Drainage Class: Unknown Field Observations \boxtimes Taxonomy (Subgroup): Confirm Mapped Type? Yes No PROFILE DESCRIPTION **Depth** Matrix Color Redoximorphic Redoximorphic Texture, Concretions, Features Colors (Munsell Moist) Features
Abundance/Contrast (Inches) **Horizon** (Munsell Moist) Rhizospheres, etc. 0-6" 7.5yr 4/6 Sand **Hydric Soil Indicators:** Histosol Concretions Histic Epipedon High Organic Content in Surface Layer in Sandy Soils Sulfide Odor Organic Streaking in Sandy Soils Aquic Moisture Regime Listed on Local Hydric Soils List **Reducing Conditions** Listed on National Hydric Soils List Gleyed or Low-Chroma Colors Other (Explain in Remarks) **Hydric Soil Present?** Yes 🗌 No 🖂 Remarks: Indicators do not meet standards for hydric soil. Wetland parameter is not met. Refusal at 6 inches.

					
WETLAND DETERMINATION					
Hydrophytic Vegetation Present? Hydric Soils Present?	Yes⊠ Yes□	No∐ No⊠	Wetland Hydrology Present? Is this Sampling Point Within A Wetland?	Yes Yes	No⊠ No⊠
Remarks: Hydric soils and wetlan	d hydrology p	arameters	are not met. Data collected within an upland.		

Project Site:	William S. Lee III Nucle	ar Station Transmission	ı Line	Date:	4/6/2009						
Applicant/Owner:	Duke Energy Carolinas,	LLC		County:	Cherokee						
Investigator:	Jason Isbanioly/Kristen	Roop		State:	sc						
Do normal circumstar	nces exist on the site?	Yes⊠	No .	Community ID:	PSS/PEM						
Is the site significantl	y disturbed (Atypical Situat	ion)? Yes□	No⊠	Transect ID:	Line B						
Is the area a potential problem area? (if needed, explain on reverse)			No⊠ [*]	Plot ID:	Wetland B						
					and the state of t						
	VEGETATION (In Order of Stratum) Note those species observed to have morphological adaptations to wetlands with an *										
VEGETATION (In	Order of Stratum) Note th	iose species observed t	o have morphological adapta	tions to wetlands wi	ith an *						
<u>Dominant P</u> 1. Salix discolor		tratum Indicator Sapling FACW	Dominant Plant	<u>Species</u>	Stratum Indicator						
2. Typha latifolia		Herb OBL	9		 						
3. Juncus effusus		Herb FACW	11.								
4.			12. 13.								
5.			13.								
7.			14.								
8.			16.								
	Species that are OBL, FAC (*) as showing morphologi										
Describe Morphologie	cal Adaptations:										
	•										
Remarks: Greater tha	n 50% of vegetation is FAC	or wetter. Wetland par	rameter is met. Unknown sedg	es (Carex sp.) were o	bserved.						
HYDROLOGY			•								
RECOR	DED DATA be in Remarks)	PRIMARY INDICATORS	(1 or more required)								
	Lake or Tide Gage	Ø	Inundated								
Aerial F	hotograph		Saturated in Upper 12 Inc Water Marks	ches							
	orded Data Available	I H	Drift Lines								
		l	Drainage Patterns in Wetl	lands							
FIELD OBSERVATION	ONS:		Sediment deposits								
Depth of Surface Wat	er: 3 (in.)	SECONDARY INDICATORS	(2 or more required)								
Depth to Free Water i	n Pit: 0 (in.)		Oxidized Root Channels i	in Upper 12 Inches							
Domith to Comment 1.5	:1. 0 (:-)		Water-Stained Leaves	• •							
Depth to Saturated So	11: U (I n .)	/ 📙	Local Soil Survey Data								
			Other (Explain in Remark	is)							
Pamarka: Paramatar is	mat Watland hudeala av	ndicators are present	FAC-Neutral Test								
Nemaiks. Parameter is	s met. Wetland hydrology	norcators are present.									

SOILS

Map Unit Name	Unknown			,		
(Series and Phrase):					Drainage Class:	
(Series and i mase).	Unknown				Field Observations	
Taxonomy (Subgrou					Confirm Mapped Type?	Yes No
PROFILE DESCR	IPTION	· · · · · · · · · · · · · · · · · · ·				
<u>Depth</u>		Matrix Co	olor	Redoximorphic	Redoximorphic	Texture, Concretions,
(Inches)	<u>Horizon</u>	(Munsell M		Features Colors	Features	Rhizospheres, etc.
				(Munsell Moist)	Abundance/Contrast	-
0-3"	Α	10yr 4/	/2	<u></u>	·	Silt
**************************************	_					
3-18+	В	7.5yr 5 <i>i</i>	/1	7.5yr 5/6	Course, Common,	Clay/silt
					Prominent	
						•
						
Hydric Soil Indicato	rs:					
· ,	Histosol			Con		
					cretions	
<u> </u>	Histic Epipedon		<u>Ш</u>	High	h Organic Content in Surfac	e Layer in Sandy Soils
	Sulfide Odor			Orge	anic Streaking in Sandy Soil	ls
7	Aquic Moisture Reg	gime		Liste	ed on Local Hydric Soils Lis	st
	Reducing Condition	-	$\overline{\Box}$		ed on National Hydric Soils	
			<u> </u>		•	List
⊠ (Hydric Soil Present	Gleyed or Low-Chro	oma Colors	لــا	Otne	er (Explain in Remarks)	Yes No 🗌
Remarks: Indicators		low chroma	colors, Wr	etland parameters ar	re met.	163 KN 140 L
				1		
					,	
	<u> </u>				·	
WETLAND DETE	DAGNA TION					
WEILAND DEIE	RMINATION			T		
Hydrophytic Vegetat	tion Present?	Yes⊠	No	Wetland Hydrolog	gv Present?	Yes⊠ No□
Hydric Soils Present		Yes⊠	No 🗌		Point Within A Wetland?	Yes⊠ No□
				1.		
Remarks: All w	etland parameters	are met Wet!	land is hyd	trologically isolated	and annears to be a relic bo	orrow nit

Project Site:	William S. Lee III Nuc	ear Station T	ransmission	Line		Date:	4/7/2009	erzege in de ny jegyne,				
Applicant/Owner:	Duke Energy Carolinas	, LLC				County:	Cherokee					
Investigator:	Jason Isbanioly/Kristen	Roop				State:	SC					
Do normal circumsta	nces exist on the site?		Yes⊠	No		Community ID:	PFO					
Is the site significant	hy disturbed (Atomical Situa	ution\?	Yes□	No⊠.		Transect ID:	Line C	<u>عملین شیخ و سان فادو د هوس</u>				
ľ	Is the site significantly disturbed (Atypical Situation)? Yes Is the area a potential problem area? Yes						Wetland C					
(if needed, explain or		i es[_]	No⊠		Plot ID:	wettand C						
	VEGETATION (In Order of Stratum) Note those species observed to have morphological adaptations to wetlands with an *											
VEGETATION (In	Order of Stratum) Note t	hose species	observed to	have mo	rphological adaptat	ions to wetlands wi	th an *	e in die die die die die die die die die die				
	Plant Species	Stratum Tree	Indicator FACW	9.	Dominant Plant S		Stratum .	Indicator				
Quercus laurifo Ulmus america		Tree	FACW									
3. Liquidambar st		Tree	FAC+	11.								
4. Liquidambar st	tyraciflua	Sapling	FAC+] 12								
5. Acer rubrum		Sapling	FAC] 13				<u> </u>				
6. Polystichum ac 7. Lonicera japon		Herb Vine	FAC-	14. —								
7. <u>Lonicera japon</u> 8.	<u> </u>	ville	FAC-	16.								
	Species that are OBL, FAG I (*) as showing morphological Adaptations:											
Remarks: Greater tha	an 50% of vegetation is FA	C or wetter.	Wetland par	ameter is r	net.		······································					
Remarks. Greater the	un 50% of vegetation is the	e or wetter.	vectario par	unicter 15 i								
HYDROLOGY	RDED DATA	PRIMA	DV	(1 on	more required)							
	ribe in Remarks)	INDICA		(1 OF	more requireu)							
	, Lake or Tide Gage		\boxtimes	Inund								
	Photograph		⊠ □		ated in Upper 12 Inch	nes.						
Other	corded Data Available		H	Water Drift	Marks							
☐ No Rec	Corded Data Available				age Patterns in Wetla	ands						
FIELD OBSERVATI	IONS:			Sedin	ent deposits							
Depth of Surface Wa	ter: 1 (in.)	SECONI		(2 or	more required)							
Depth to Free Water	in Pit: 0 (in.)	INDICA		Oxidi	zed Root Channels in	Upper 12 Inches						
		1	П		-Stained Leaves	bb m manag						
Depth to Saturated So	oil: 0 (in.)	1	ā		Soil Survey Data							
		1			(Explain in Remarks	3)						
			X	FAC-	Neutral Test							
Remarks: Parameter	is met. Wetland hydrology	indicators a	re present.									

SOILS Map Unit Name Unknown (Series and Phrase): Drainage Class: Unknown Field Observations Ø Taxonomy (Subgroup): Confirm Mapped Type? Yes PROFILE DESCRIPTION Redoximorphic Features Abundance/Contrast Matrix Color (Munsell Moist) Redoximorphic Features Colors <u>Depth</u> Texture, Concretions, Rhizospheres, etc. **Horizon** (Inches) (Munsell Moist) 0-2" 2/1 Silty loam 2-7" В 10yr 5/1 7.5yr 4/6 Fine, Common, Clay/silt **Prominent** C 7-18+" 10yr 4/1 7.5yr 3/3 Many, Common, Clay/silt/ gravel Distinct **Hydric Soil Indicators:** Concretions Histosol Histic Epipedon High Organic Content in Surface Layer in Sandy Soils Sulfide Odor Organic Streaking in Sandy Soils Listed on Local Hydric Soils List Aquic Moisture Regime П Listed on National Hydric Soils List **Reducing Conditions** Gleyed or Low-Chroma Colors Other (Explain in Remarks) **Hydric Soil Present?** Yes 🖂 No 🗌 Remarks: Indicators meet standards for low chroma colors. Wetland parameters are met.

WETLAND DETERMINATION					
Hydrophytic Vegetation Present? Hydric Soils Present?	Yes⊠ Yes⊠	No□ No□	Wetland Hydrology Present? Is this Sampling Point Within A Wetland?	Yes⊠ Yes⊠	No⊡ No⊡
Remarks: All wetland parameters a	are met.				
		,			

Project Site:	William S. Lee III Nucl	ear Station	Transmission	Line			ľ	Date:	04/07/09	1 fig. kbetin
Applicant/Owner:	Duke Energy Carolinas,	, LLC					Cou	unty:	Cherokee	:
Investigator:	Jason Isbanioly/Kristen	Roop					S	State:	·SC	
Do normal circumstance	ces exist on the site?	3 .	Yes⊠	No□	*		Community	y ID:	PFO	-
Is the site significantly	disturbed (Atypical Situa	ition)?	Yes□	No⊠	•		Transec	t ID:	Line E	
Is the area a potential p			Yes□	No⊠			Plo	t ID:	Wetland	Е
(Il needed, explain on a	,everse)	•	te de l'organista de la							
VECETATION (In C	Andrew of Streetum) Note (Lace aposio	= absorped to	hara ma			to wetlen	- do wit	ıL *	
Dominant Pla		Stratum	Indicator		Dominant	Plant Spe	ecies	S	Stratum	Indicator
1. <u>Carpinus carolin</u>		Shrub	FAC	9	-					
 Viburnum dentat Carex sp. 	um	Shrub Herb	FAC FACW	10						-
4. Galium asprellur		Herb	FACW	12.						
5. Lonicera japonio	ca	Vine	FAC-	13						-
· · · · · · · · · · · · · · · · · · ·			·] 14						
6										
6. 7.	 			13						
6				13						
6. 7. 8. Percent of Dominant S	 	CW or FAC	(excluding F	15. — 16. — AC-): 80%						
6. 7. 8. Percent of Dominant S	Species that are OBL, FAC (*) as showing morpholog	CW or FAC	(excluding F	15. — 16. — AC-): 80%						
6. 7. 8. Percent of Dominant S Include species noted (Describe Morphologica	Species that are OBL, FAC (*) as showing morpholog	CW or FAC	(excluding Fa	16 16 AC-): 80% ads.						
6. 7. 8. Percent of Dominant S Include species noted (Describe Morphologica Remarks: Greater than	Species that are OBL, FAC *) as showing morpholog al Adaptations:	CW or FAC	(excluding Fa	16 16 AC-): 80% ads.						
6. 7. 8. Percent of Dominant S Include species noted (Describe Morphologica Remarks: Greater than HYDROLOGY RECORI	Species that are OBL, FAC (*) as showing morpholog al Adaptations: in 50% of vegetation is FA	CW or FAC gical adaptat	(excluding Fations to wetlar . Wetland para	15						
6. 7. 8. Percent of Dominant S Include species noted (Describe Morphologica Remarks: Greater than HYDROLOGY RECORI (Describ	Species that are OBL, FAC (*) as showing morpholog al Adaptations: in 50% of vegetation is FA	CW or FAC gical adaptat C or wetter.	(excluding Fations to wetlar . Wetland para	15	net. more require					
6	Species that are OBL, FAC (*) as showing morpholog al Adaptations: 150% of vegetation is FA DED DATA be in Remarks)	CW or FAC gical adaptat	(excluding Fations to wetlar . Wetland para	AC-): 80% ads. ameter is r (1 or Inund Satura	net. more require ated ated in Upper	ed)				
6. 7. 8. Percent of Dominant S Include species noted (Describe Morphologica Remarks: Greater than HYDROLOGY RECORI (Describ Stream, I Aerial Ph Other	opecies that are OBL, FAC (*) as showing morphological Adaptations: 10.50% of vegetation is FAC DED DATA Dee in Remarks) Lake or Tide Gage hotograph	CW or FAC gical adaptat	(excluding Fations to wetlar . Wetland para	AC-): 80% ads. ameter is r (1 or Inund Satura Water	more require ated ated in Upper	ed)				
6. 7. 8. Percent of Dominant S Include species noted (Describe Morphologica Remarks: Greater than HYDROLOGY RECORI (Describ Stream, I Aerial Ph Other	Species that are OBL, FAC (*) as showing morpholog al Adaptations: 150% of vegetation is FA DED DATA be in Remarks) Lake or Tide Gage	CW or FAC gical adaptat	(excluding Fations to wetland). Wetland para	AC-): 80% ads. ameter is r (1 or Inund Satura Water Drift)	more require ated ated in Upper Marks Lines	ed)	s			
6. 7. 8. Percent of Dominant S Include species noted (Describe Morphologica Remarks: Greater than HYDROLOGY RECORI (Describ Stream, I Aerial Ph Other	Species that are OBL, FAC (*) as showing morpholog al Adaptations: n 50% of vegetation is FA DED DATA pe in Remarks) Lake or Tide Gage hotograph orded Data Available	CW or FAC gical adaptat	(excluding Fations to wetlar . Wetland para	AC-): 80% ameter is r (1 or Inund Satura Water Drift I	more require ated in Upper Marks Lines age Patterns i	ed)	s			
Percent of Dominant S Include species noted (Describe Morphologica Remarks: Greater than HYDROLOGY RECORI (Describ Stream, I Aerial Pr Other No Reco	Species that are OBL, FAC (*) as showing morpholog al Adaptations: n 50% of vegetation is FA DED DATA De in Remarks) Lake or Tide Gage hotograph orded Data Available DNS:	C or wetter. PRIMA INDICA SECON	(excluding Fations to wetland). Wetland para	AC-): 80% ameter is r (1 or Inund Satura Water Drift I Drain Sedim	more require ated ated in Upper Marks Lines	ed)	s			
Percent of Dominant S Include species noted (Describe Morphologica Remarks: Greater than HYDROLOGY RECORI (Describ Stream, I Aerial Pr Other No Reco	Species that are OBL, FAC (*) as showing morpholog al Adaptations: n 50% of vegetation is FA DED DATA De in Remarks) Lake or Tide Gage hotograph orded Data Available DNS: er: 1 (in.)	C or wetter. PRIMA INDICA	(excluding Fations to wetland). Wetland para	AC-): 80% ameter is r (1 or Inund Satura Water Drift I Drain Sedim (2 or	more require ated ated in Upper Marks Lines age Patterns i	ed) 12 Inches	s			
Percent of Dominant S Include species noted (Describe Morphologica Remarks: Greater than HYDROLOGY RECORI (Describ Stream, I Aerial Pr Other No Reco FIELD OBSERVATIO Depth of Surface Water in	Species that are OBL, FAC (*) as showing morpholog al Adaptations: n 50% of vegetation is FA DED DATA	C or wetter. PRIMA INDICA SECON	(excluding Fations to wetland). Wetland para	AC-): 80% ameter is r (1 or Inund Satura Water Drift Drain Sedim (2 or	more required ated ated in Upper Marks Lines age Patterns in a more required more required	ed) 12 Inches in Wetland	s			
Percent of Dominant S Include species noted (Describe Morphologica Remarks: Greater than HYDROLOGY RECORI (Describ Stream, I Aerial Pr Other No Reco FIELD OBSERVATIO Depth of Surface Wate	Species that are OBL, FAC (*) as showing morpholog al Adaptations: n 50% of vegetation is FA DED DATA	C or wetter. PRIMA INDICA SECON	(excluding Fations to wetland). Wetland para	AC-): 80% ameter is r (1 or Inund Satura Water Drift Drain Sedim (2 or Oxidi Water Local	more required ated ated in Upper Marks Lines age Patterns in the deposits more required zed Root Char-Stained Leav Soil Survey I	ed) 12 Inches in Wetland ed) unnels in U	s			
Percent of Dominant S Include species noted (Describe Morphologica Remarks: Greater than HYDROLOGY RECORI (Describ Stream, I Aerial Pr Other No Reco FIELD OBSERVATIO Depth of Surface Water in	Species that are OBL, FAC (*) as showing morpholog al Adaptations: n 50% of vegetation is FA DED DATA	C or wetter. PRIMA INDICA SECON	(excluding Fations to wetland). Wetland para	AC-): 80% ads. (1 or Inund Satura Water Drift Drain Sedim (2 or Oxidi Water Local Other	more require ated ated in Upper Marks Lines age Patterns i ment deposits more require	ed) 12 Inches in Wetland ed) unnels in U	s			

SOILS Map Unit Name Unknown (Series and Phrase): Drainage Class: Unknown Field Observations \boxtimes Taxonomy (Subgroup): Confirm Mapped Type? Yes No PROFILE DESCRIPTION Depth Matrix Color Redoximorphic Redoximorphic Texture, Concretions, Features Colors (Munsell Moist) Features
Abundance/Contrast (Inches) **Horizon** (Munsell Moist) Rhizospheres, etc. 0-5" 10yr 4/1 Sand **Hydric Soil Indicators:** Concretions Histosol High Organic Content in Surface Layer in Sandy Soils Histic Epipedon Sulfide Odor Organic Streaking in Sandy Soils Aquic Moisture Regime Listed on Local Hydric Soils List П **Reducing Conditions** Listed on National Hydric Soils List \boxtimes Gleyed or Low-Chroma Colors Other (Explain in Remarks) **Hydric Soil Present?** Yes 🛛 No 🗌 Remarks: Indicators meet standards for low chroma colors. Wetland parameters are met. Refusal at 5 inches.

WETLAND DETERMINATION					
Hydrophytic Vegetation Present? Hydric Soils Present?	Yes⊠ Yes⊠	No□ No□	Wetland Hydrology Present? Is this Sampling Point Within A Wetland?	Yes⊠ Yes⊠	No□ No□
Remarks: All wetland parameters	are met.				
Remarks: All wetland parameters	are met.				

Project Site: William S. Lee III Nuc	lear Station Trans	mission	Line	Date:	04/08/09
Applicant/Owner: Duke Energy Carolina	s, LLC			County:	Cherokee
Investigator: Jason Isbanioly/Kriste	n Roop			State:	SC
Do normal circumstances exist on the site?	Y	es⊠	No	Community ID:	PFO
Is the site significantly disturbed (Atypical Situ	ation)?	es 🗌	No⊠	Transect ID:	Line F
Is the area a potential problem area? (if needed, explain on reverse)	Y	es 🗌	No 🔀 🚎 💸	Plot ID:	Wetland F
(it needed, explain on reverse)					
		Const.			
VEGETATION (In Order of Stratum) Note	those species obs	erved to	have morphological adaptat	ions to wetlands wi	th an *
<u>Dominant Plant Species</u> 1. Platanus occidentalis		dicator ACW-	<u>Dominant Plant S</u> 9. <i>Arundinaria gigante</i>		Stratum Indicator Herb FACW
2. Carpinus caroliniana	Sapling F	AC	10.		
3. Acer rubrum		AC	11		
4. <u>Liquidambar styraciflua</u>		AC+	12.		
Asimina triloba Arisaema triphyllum		ACW-	13. 14.		
7. Polygonum persicaria		ACW	14 15		3
8. Juncus effusus		ACW	16.		
					<u> </u>
Percent of Dominant Species that are OBL, FA Include species noted (*) as showing morpholo Describe Morphological Adaptations:					· - · · · · · · · · · · · · · · · · · ·
Remarks: Greater than 50% of vegetation is F.	AC or wetter. Wet	and para	meter is met.		
WIDDOX OGV	74				
HYDROLOGY RECORDED DATA	PRIMARY		(1 or more required)		
(Describe in Remarks)	INDICATOR	RS	(1 or more requires)		· · ·
Stream, Lake or Tide Gage	\boxtimes		Inundated		
☐ Aerial Photograph ☐ Other			Saturated in Upper 12 Incl Water Marks	nes	•
No Recorded Data Available			Drift Lines		
The Recorded Para Tivaniae is			Drainage Patterns in Wetla	ands	
FIELD OBSERVATIONS:	- -		Sediment deposits		
Depth of Surface Water: 1-2 (in.)	SECONDAR INDICATOR		(2 or more required)		
Depth to Free Water in Pit: 0 (in.)			Oxidized Root Channels in	Upper 12 Inches	
Death of the state			Water-Stained Leaves		
Depth to Saturated Soil: 0 (in.)			Local Soil Survey Data		
			Other (Explain in Remarks	s)	
			FAC-Neutral Test		
Remarks: Parameter is met. Wetland hydrolog	· · · · ·				

SOILS Map Unit Name Unknown (Series and Phrase): Drainage Class: Unknown Field Observations \boxtimes Taxonomy (Subgroup): Confirm Mapped Type? Yes No PROFILE DESCRIPTION Redoximorphic Features Colors <u>Depth</u> Matrix Color Redoximorphic Texture, Concretions, (Munsell Moist) Rhizospheres, etc. (Inches) **Horizon** Features | Abundance/Contrast (Munsell Moist) 0-18"+ В 10yr 6/1 5yr 5/6 Course, Common, Silt, Clay **Prominent Hydric Soil Indicators:** Concretions Histosol High Organic Content in Surface Layer in Sandy Soils Histic Epipedon \boxtimes Sulfide Odor Organic Streaking in Sandy Soils Aquic Moisture Regime Listed on Local Hydric Soils List **Reducing Conditions** Listed on National Hydric Soils List \boxtimes Gleyed or Low-Chroma Colors Other (Explain in Remarks) **Hydric Soil Present?** Yes 🖂 No 🗌 Remarks: Indicators meet standards for low chroma colors. Wetland parameters are met. A horizon thin to non-existent, less than 1 inch.

		,			
WETLAND DETERMINATION					
Hydrophytic Vegetation Present? Hydric Soils Present?	Yes⊠ Yes⊠	No□ No□	Wetland Hydrology Present? Is this Sampling Point Within A Wetland?	Yes⊠ Yes⊠	No□ No□
Remarks: All wetland parameters ar	e met.				

Project Site:	William S. Lee III Nucle	ar Station T	ransmission	Line		Date:	04/08/09	The second second second second second second second second second second second second second second second se
Applicant/Owner:	Duke Energy Carolinas,	LLC				County:	Cherokee	
Investigator:	Jason Isbanioly/Kristen	Roop				State:	SC	
Do normal circumstar	nces exist on the site?		Yes⊠	No□		Community ID:	PFO	
			w .	N 57	47.	T	116	•
1	y disturbed (Atypical Situat	ion)?	Yes□	No⊠	•	Transect ID:		
Is the area a potential (if needed, explain on			Yes□	No⊠		Plot ID:	Wetland G	
(ir needed, empiain on	. 10 (0.00)							
VEGETATION (In	Order of Stratum) Note th	ose species	observed to	have mo	orphological adapta	tions to wetlands wi	th an *	
Dominant P	lant Species S	tratum	Indicator		Dominant Plant S	Species	Stratum	Indicator
1. Platanus occide		Tree	FACW-	9				
2. <u>Betula nigra</u>	• /7	Tree	FACW	1 10				
3. Liquidambar st 4. Carpinus caroli		Tree Sapling	FAC+	11.				
5. Platanus occide		Sapling	FACW-	13.			<u> </u>	-
6. Ulmus americai		Shrub	FACW	14.				
7. Sambucus nigra	1	Herb	FACW-	15.				
8				-			· · · · · · · · · · · · · · · · · · ·	
				t				
	Species that are OBL, FAC (*) as showing morphologi) %			
·		cai adaptati	ons to wettar	ius.				
Describe Morphologic	cal Adaptations:							
Remarks: Greater tha	n 50% of vegetation is FAC	or wetter.	Wetland par	ameter is	met. Unknown sedge	es (Carex sp.) observ	/ed.	
	8		F			(
HYDROLOGY		I						
	RDED DATA ibe in Remarks)	PRIMAR INDICA		(1 or	more required)			
	Lake or Tide Gage	INDICA		Inun	dated			
	Photograph	1	\boxtimes		ated in Upper 12 Inc	hes		
Other					r Marks			
│ │ │ No Rec	orded Data Available				Lines	anda		
	0.10	4			nage Patterns in Wetl	anus		
FIELD OBSERVATI		SECONI	L DV		nent deposits			
Depth of Surface Wat	er: 2-3 (in.)	INDICA'		(2 or	more required)			
Depth to Free Water i	n Pit: 0 (in.)	1	⊠.	Oxid	ized Root Channels i	n Upper 12 Inches		
<u>_</u>					r-Stained Leaves	• •		
Depth to Saturated So	oil: 0 (in.)				l Soil Survey Data		•	
				Othe	r (Explain in Remark	s)		
				FAC	-Neutral Test		****	
Remarks: Parameter i	s met. Wetland hydrology	indicators ar	e present.					

SOILS

Map Unit Name (Series and Phrase)	Unknown				Drainage Class:	-	
(Series and Timase)	Unknown				Field Observations		
Taxonomy (Subgro	up):				Confirm Mapped Type?	Yes	No
PROFILE DESCR	RIPTION						
Depth (Inches)	<u>Horizon</u>	Matrix Color (Munsell Moist)		Redoximorphic Features Colors (Munsell Moist)	Redoximorphic Features Abundance/Contrast		Concretions, oheres, etc.
0-3"	A (set	7.5yr 4/3	nam ovij.		، ئىرىدىن ئىسىدىن ئىلىدىن del>	Silt Silt	, Clay
3-18"+	В	7.5yr 5/3		2.5yr 3/6	Course, Common, Distinct	Silt	,Clay
					•	.,	v
· ·						 	
<u> </u>			,			erit et et ege ogse en	
Hydric Soil Indicate	ors:	•			***************************************		
	Histosol			Conci	retions		
	Histic Epipedon			High	Organic Content in Surface	Layer in Sa	ndy Soils
\boxtimes	Sulfide Odor	· ·	<u>, </u>	Organ	nic Streaking in Sandy Soils	3	
	Aquic Moisture Re	-		Listed	d on Local Hydric Soils List	t	
	Reducing Condition	ns		Listed	l on National Hydric Soils I	List	
Hydric Soil Preser	Gleyed or Low-Chi	oma Colors	\boxtimes	Other	(Explain in Remarks)	Yes ⊠ N	lo 🗆 📗
Remarks: Soil mee			st indic	eator F.19 Piedmont	Flood Plain Soils. Sulfidic		
indicator. Wettand	parameters are met.						
					•		
					,		
•				•			
WETLAND DETI	ERMINATION						
Hydrophytic Veget Hydric Soils Preser			o□ o□	Wetland Hydrolog Is this Sampling Po	y Present? pint Within A Wetland?	Yes⊠ Yes⊠	No□ No□
Remarks: All	wetland parameters	are met.					

Project Site:	William S. Lee III Nucle	ear Station Transmissic	n Line		Date:	04/15/09	,
Applicant/Owner:	Duke Energy Carolinas,	LLC			County:	Cherokee	
Investigator:	Jason Isbanioly/Kristen	Roop			State:	SC	
Do normal circumstar	nces exist on the site?	Yes⊠	No□	,	Community ID:	PFO	
Is the site significantl	y disturbed (Atypical Situat	tion)? Yes 🗌	No⊠	,	Transect ID:	Line H	
Is the area a potential (if needed, explain or	Yes□	No⊠		Plot ID:	Wetland H		
<u> </u>	\$ <u></u>		<u>,,,, ,, ,, ,, ,, ,, ,, ,, ,, ,, ,, ,, ,</u>	·			
VEGETATION (In	Order of Stratum) Note th	ose species observed	to have m	orphological adapt	ations to wetlands w	ith an *	
1. Betula nigra 2. Ulmus america 3. Liquidambar st 4. Acer negundo 5. Sambucus cana 6. Campsis radica 7. 8. Percent of Dominant Include species noted Describe Morphologi Remarks: Greater tha	na Tyraciflua Idensis Ins Species that are OBL, FAC I (*) as showing morphological Adaptations: an 50% of vegetation is FAC	cal adaptations to wetl	9. 10. 11. 12. 13. 14. 15. 15. FAC-): 100 ands.)% met. Unknown sed			Indicator
RECOR (Descr Stream, Aerial I Other	RDED DAȚA ibe in Remarks) , Lake or Tide Gage Photograph corded Data Available	PRIMARY INDICATORS	Inun Satu Wate Drift Drai	dated rated in Upper 12 In er Marks Lines nage Patterns in Wet			
Depth of Surface Wat		SECONDARY		more required)			
Depth to Free Water in Depth to Saturated So		INDICATORS □ □ □ □ □ □ indicators are present.	Wate Loca Othe	lized Root Channels er-Stained Leaves Il Soil Survey Data r (Explain in Remar -Neutral Test			1

SOILS Map Unit Name Unknown (Series and Phrase): Drainage Class: Field Observations \boxtimes Unknown Confirm Mapped Type? Taxonomy (Subgroup): Yes No PROFILE DESCRIPTION Matrix Color Depth Redoximorphic Redoximorphic Texture, Concretions, Features Colors (Munsell Moist) Features Abundance/Contrast Rhizospheres, etc. (Inches) **Horizon** (Munsell Moist) 0-18"+ В 7.5yr 5/2 5yr 5/8 Silt, Clay Course, Common, Prominent Hydric Soil Indicators: Histosol Concretions High Organic Content in Surface Layer in Sandy Soils Histic Epipedon Sulfide Odor Organic Streaking in Sandy Soils Aquic Moisture Regime Listed on Local Hydric Soils List **Reducing Conditions** Listed on National Hydric Soils List Gleyed or Low-Chroma Colors Other (Explain in Remarks) **Hydric Soil Present?** No 🗌 Yes 🔯 Remarks: Indicators meet standards for low chroma colors. Wetland parameters are met. Horizon A either thin or non-existent, less than 1 inch.

WETLAND DETERMINATION			· · ·		
Hydrophytic Vegetation Present? Hydric Soils Present?	Yes⊠ Yes⊠	No No	Wetland Hydrology Present? Is this Sampling Point Within A Wetland?	Yes⊠ Yes⊠	No No
Remarks: All wetland parameters	are met.				

Project Site:	William S. Lee III Nucle	ar Station Transmission	Line	Date:	04/15/09
Applicant/Owner:	Duke Energy Carolinas,	LLC		County:	Cherokee
Investigator:	Jason Isbanioly/Kristen I	Roop		State:	SC
Do normal circumstar	nces exist on the site?	Yes⊠	No	Community ID:	PSS/ Open Water
Is the site significantly	y disturbed (Atypical Situat	ion)? Yes□	No⊠	Transect ID:	Line I
Is the area a potential problem area? Ye (if needed, explain on reverse)			No.	Plot ID:	Wetland I
VEGETATION (In	Order of Stratum) Note th	ose species observed to	have morphological adapta	tions to wetlands wi	ith an *
Dominant P	lant Species S	tratum Indicator	Dominant Plant S		Stratum Indicator
1. Alnus serrulata		Shrub FACW+	9.		
2. Salix nigra		Shrub OBL Herb FACW+	10		
3. Juncus effuses 4. Sambucus cana		Herb FACW+ Herb FACW-	11.		
5. Carex lurida		Herb OBL	12.		
6. Polygonum per.	scaria	Herb FACW	14.		
7.			15.		
8		· · · · · · · · · · · · · · · · · · ·			
Include species noted Describe Morphologic	Species that are OBL, FAC (*) as showing morphological Adaptations: In 50% of vegetation is FAC	cal adaptations to wetlar			
HYDROLOGY				•	
	RDED DATA	PRIMARY	(1 or more required)	,	
•	ibe in Remarks)	INDICATORS			
	Lake or Tide Gage Photograph		Inundated Saturated in Upper 12 Inc	hae	
Other	-notograph	l ∺	Water Marks	iles	
	orded Data Available		Drift Lines		
			Drainage Patterns in Wetl	ands	
FIELD OBSERVATI	ONS:		Sediment deposits		
Depth of Surface Wat		SECONDARY INDICATORS	(2 or more required)		
Depth to Free Water i	n Pit: 0 (in.)	. 🔲	Oxidized Root Channels i	n Upper 12 Inches	
Depth to Saturated So	oil: 0 (in.)		Water-Stained Leaves		
Depui to Saturated Se	,,,, (iii.)	I	Local Soil Survey Data		
			Other (Explain in Remark	(S)	
Remarks: Fringe wetl	and of an open water impor		FAC-Neutral Test		
	or an open nater impot				

SOILS Map Unit Name Unknown (Series and Phrase): Drainage Class: Unknown Field Observations \boxtimes Confirm Mapped Type? Taxonomy (Subgroup): Yes No PROFILE DESCRIPTION Texture, Concretions, Depth Matrix Color Redoximorphic Redoximorphic Features Abundance/Contrast Rhizospheres, etc. (Inches) **Horizon** (Munsell Moist) Features Colors (Munsell Moist) 0-18+В 7.5 YR 4/2 2.5 YR 4/6 Fine, Common, Clayey Silt **Prominent Hydric Soil Indicators:** Concretions Histosol High Organic Content in Surface Layer in Sandy Soils Histic Epipedon Sulfide Odor Organic Streaking in Sandy Soils Aquic Moisture Regime Listed on Local Hydric Soils List **Reducing Conditions** Listed on National Hydric Soils List Gleyed or Low-Chroma Colors Other (Explain in Remarks) No 🔲 **Hydric Soil Present?** Remarks: Soils impacted by clearing. Wetland parameter met. WETLAND DETERMINATION Hydrophytic Vegetation Present? Yes⊠ No. Wetland Hydrology Present? Yes⊠ No□ Yes⊠ Yes⊠ No Hydric Soils Present? No□ Is this Sampling Point Within A Wetland?

All wetland parameters met. Wetland located within active livestock pasture and hunting area.

Remarks:

Project Site:	William S. Lee III Nucle	ear Station Transmissio	n Line	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Date:	04/15/09
Applicant/Owner:	Duke Energy Carolinas, I				County:	Cherokee
						SC
Investigator:	Jason Isbanioly/Kristen F	СООР			State:	SC
Do normal circumstan	ices exist on the site?	Yes⊠	No□		Community ID:	PFO
Is the site significantly	y disturbed (Atypical Situati	tion)? Yes	No⊠		Transect ID:	Line J
Is the area a potential (if needed, explain on		Yes□	No 🔼		Plot ID:	Wetland J
(II liceucu, expiani on	(everse)				^	·
VEGETATION (In (Order of Stratum) Note th	nose species observed	o have morpholo	ogical adaptati	ions to wetlands wi	th an *
Dominant Pl 1. Salix nigra 2. Nyssa sylvatica	lant Species S	Stratum Indicator Tree OBL Tree FAC	Do	ominant Plant S	pecies	Stratum Indicato
3. Sambucus canad	densis S	Shrub FACW-				
4. <u>Carex lurida</u> 5. Polygonum pund		Herb OBL Herb FACW+	12.			
6. Microstegium vi		Herb FAC+	13. ——			
7.			15.			
8			┦ ——			
Include species noted	Species that are OBL, FACV	W or FAC (excluding F cal adaptations to wetla	FAC-): 100%			
Describe Morphologic						
Remarks: Greater that	in 50% of vegetation is FAC	or wetter. Wetland pa	rameter is met.			
HYDROLOGY						
RECOR (Descri	RDED DATA be in Remarks)	PRIMARY INDICATORS	(1 or more	required)		
	Lake or Tide Gage		Inundated	- U-man 12 Inab		
Aeriai P	Photograph		Water Mark	າ Upper 12 Inch ເຮ	es	
	orded Data Available		Drift Lines			
			Drainage Pa	atterns in Wetla	nds	•
FIELD OBSERVATION			Sediment de			
Depth of Surface Water		SECONDARY INDICATORS	(2 or more	required)		
Depth to Free Water in	n Pit: 0 (in.)				Upper 12 Inches	
Depth to Saturated So	oil: 0 (in.)		Water-Stain	· ·		
	,		Local Soil S	-	\	
			FAC-Neutra	lain in Remarks al Test)	
Remarks: Hydrologica	al indicators are present. Par			41 1 100	·	

SOILS

Map Unit Name (Series and Phrase):	Unknown			a	Drainage Class:	
Taxonomy (Subgrou	Unknown				Field Observations Confirm Mapped Type?	Yes No
PROFILE DESCRI	IPTION	<u> </u>				
Depth (Inches)	<u>Horizon</u>	Matrix Co (Munsell M		Redoximorphic Features Colors (Munsell Moist)	Redoximorphic Features Abundance/Contrast	Texture, Concretion Rhizospheres, etc.
0-4"	A	7.5yr 4/4		·		Clay, Silt
4-18"+	В	7.5yr 4/1		7.5yr 4/4	Course, Common, Distinct	Clay, Silt
	==					
		,				
	*.	: 		.		
Hydric Soil Indicator	rs: Histosol			Come	cretions	•
	listic Epipedon				Organic Content in Surfac	e Laver in Sandy Soil
	Sulfide Odor				nic Streaking in Sandy Soil	
	Aquic Moisture Ro	egime			d on Local Hydric Soils Lis	
F	Reducing Condition	ons		Liste	d on National Hydric Soils	List
Hydric Soil Present					r (Explain in Remarks)	Yes No 🗌
Remarks: Hydric so	il indicators prese	nt. Wetland pa	rameters i	met.		
WETLAND DETE	RMINATION			<u>.</u>		
Hydrophytic Vegetal Hydric Soils Present		Yes⊠ Yes⊠	No 🗌 No 🗌	Wetland Hydrolog Is this Sampling P	gy Present? Point Within A Wetland?	Yes⊠ No Yes⊠ No
Remarks: All w	etland parameters	met		1	· · · · · · · · · · · · · · · · · · ·	

7

Project Site:	William S. Lee III Nucle	ar Station Transmission	Line	Date:	04/15/09	কিন্তা কার্কারকার
Applicant/Owner:	Duke Energy Carolinas,	LLC	•	County:	Cherokee	
Investigator:	Jason Isbanioly/Kristen I	Roop		State:	SC	
						
Do normal circumstar	nces exist on the site?	Yes⊠	No	Community ID:	PSS	
Is the site significantly	y disturbed (Atypical Situat	ion)? Yes□	No	Transect ID:	Line K	taran iliye
Is the area a potential (if needed, explain on		Yes 🗌	No⊠	Plot ID:	Wetland K	
		200				
VEGETATION (In	Order of Stratum) Note th	ose species observed to	have morphological adaptat	tions to wetlands wi	th an *	
Dominant P		tratum Indicator	Dominant Plant S		Stratum	Indicator
1. Salix nigra 2. Juncus effusus		Shrub OBL Herb FACW+	9.			
3. Sambucus cana		Herb FACW-	10.			
4.			12.			
5			13.			
6			14. 15.			
/. 		•				
0.						
	Species that are OBL, FAC					
Include species noted	(*) as showing morphologi	cal adaptations to wetlar	nds			
Describe Morphologie	cal Adaptations:					
Remarks: Greater tha	un 50% of vegetation is FAC	or wetter Wetland par	ameter is met			<u></u>
	ui 50% of vegetation is t Ac	of wetter. Wettand par	ameter is met.			
HYDROLOGY	RDED DATA	I PRIMARY	(1 1)			
	ibe in Remarks)	INDICATORS	(1 or more required)			
	Lake or Tide Gage		Inundated			
	Photograph		Saturated in Upper 12 Incl	hes		
Other			Water Marks			
☐ No Rec	orded Data Available		Drift Lines			
	-		Drainage Patterns in Wetl	anus	ر	
FIELD OBSERVATI		CECONDARY	Sediment deposits			
Depth of Surface Wat	er: 2-3 (in.)	SECONDARY INDICATORS	(2 or more required)]
Depth to Free Water i	n Pit: 0 (in.)		Oxidized Root Channels in	n Upper 12 Inches		
		1 5	Water-Stained Leaves			
Depth to Saturated Sc	oil: 0 (in.)		Local Soil Survey Data			
			Other (Explain in Remark	s)		
	4		FAC-Neutral Test			
Remarks: Hydrologic	al indicators are present. Pa	rameter is met.			.,	

SOILS Map Unit Name Unknown (Series and Phrase): Drainage Class: Field Observations Ø Unknown Confirm Mapped Type? Taxonomy (Subgroup): Yes No PROFILE DESCRIPTION **Depth** Matrix Color Redoximorphic Redoximorphic Texture, Concretions, **Horizon** Features Colors (Inches) (Munsell Moist) Features | Rhizospheres, etc. (Munsell Moist) Abundance/Contrast 0-9" 7.5yr 4/2 Α 5yr 5/6 Course, Few, Clay, Loam **Prominent** 9-18"+ В 7.5yr 5/8 7.5yr 5/2 Fine, Common, Silt, Clay **Prominent Hydric Soil Indicators:** Histosol Concretions Histic Epipedon High Organic Content in Surface Layer in Sandy Soils Sulfide Odor Organic Streaking in Sandy Soils Aquic Moisture Regime Listed on Local Hydric Soils List Listed on National Hydric Soils List **Reducing Conditions** \boxtimes Gleyed or Low-Chroma Colors Other (Explain in Remarks) **Hydric Soil Present?** Yes 🛛 No 🗌 Remarks: Hydric soil indicators present. Wetland parameters met.

WETLAND DETERMINATION					
Hydrophytic Vegetation Present? Hydric Soils Present?	Yes⊠ Yes⊠			Yes⊠ Yes⊠	No 🗌 No 🗌
Remarks: All wetland parameters me	et.				

Project Site:	William S. Lee III Nu	clear Station	Date:	04/15/09				
Applicant/Owner:	Duke Energy Carolin	as, LLC	County:	Cherokee				
Investigator:	Jason Isbanioly/Krist	en Roop			State:	SC		
Do normal circumstances exist on the site? Yes⊠		No□	Community ID:	PFO				
		N. 57	T	· · · · · ·				
<u> </u>			Yes□	No⊠	Transect ID:	Line L		
Is the area a potential problem area? (if needed, explain on reverse)		Yes□	No 🖾 👾 🗥	Plot ID:	Wetland L			
(ii needed, explain of								
VEGETATION (In	Order of Stratum) Not	e those specie	s observed to	have morphological adapta	tions to wetlands wi	th an *		
Dominant P	Plant Species	Stratum	Indicator	Dominant Plant S	Species :	Stratum Indicator		
1. Acer rubrum		Tree	FAC	9. 10.				
2. Liquidambar si 3. Acer rubrum	tyracifua	Tree Sapling	FAC+ FAC	10.				
4. Liquidambar si	tyracifua —	Sapling	FAC+	12.				
5. Impatiens cape	ensis	Herb	FACW	13.				
6. Microstegium		Herb	FAC+	14				
7. Juncus effuses		Herb	FACW+	15.				
8								
Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100% Include species noted (*) as showing morphological adaptations to wetlands. Describe Morphological Adaptations: Remarks: Greater than 50% of vegetation is FAC or wetter. Wetland parameter is met.								
HYDROLOGY								
	RDED DATA	PRIMA		(1 or more required)				
	ibe in Remarks)	INDICA	TORS	Inundated				
	, Lake or Tide Gage Photograph		\boxtimes	Saturated in Upper 12 Inc	hes			
Other				Water Marks				
☐ No Red	corded Data Available			Drift Lines				
			\boxtimes	Drainage Patterns in Wetl	ands			
FIELD OBSERVAT				Sediment deposits				
Depth of Surface Wa	ter: (in.)	SECON INDICA		(2 or more required)				
Depth to Free Water	in Pit: 0 (in.)	I TOTOL		Oxidized Root Channels i	n Upper 12 Inches			
	H : 6 - 7 - 5		$\bar{\Box}$	Water-Stained Leaves	• •			
Depth to Saturated So	011: U (1n.)			Local Soil Survey Data				
				Other (Explain in Remark	s)	* ,		
				FAC-Neutral Test				
Remarks: Hydrologic	cal indicators are present.	Parameter is	met.					

SOILS Map Unit Name Unknown Drainage Class: (Series and Phrase): Unknown **Field Observations** X Confirm Mapped Type? Yes No Taxonomy (Subgroup): PROFILE DESCRIPTION Redoximorphic Features Colors (Munsell Moist) Depth Matrix Color Redoximorphic Texture, Concretions, **Horizon** (Munsell Moist) (Inches) **Features** Rhizospheres, etc. Abundance/Contrast 0-1" 7.5yr 5/3 Silt, Loam В Silt, Clay 1-18"+ 5yr 6/8 7.5yr 6/2 Coarse, Many, **Prominent Hydric Soil Indicators:** Histosol Concretions High Organic Content in Surface Layer in Sandy Soils Histic Epipedon Sulfide Odor Organic Streaking in Sandy Soils Aquic Moisture Regime Listed on Local Hydric Soils List **Reducing Conditions** Listed on National Hydric Soils List \boxtimes Gleyed or Low-Chroma Colors Other (Explain in Remarks) **Hydric Soil Present?** Yes 🛛 No 🗌 Remarks: Hydric soil indicators present. Wetland parameters met.

WETLAND DETERMINATION					
Hydrophytic Vegetation Present? Hydric Soils Present?	Yes⊠ Yes⊠	No□ No□	Wetland Hydrology Present? Is this Sampling Point Within A Wetland?	Yes⊠ Yes⊠	No□ No□
Remarks: All wetland parameters	met.				

APPENDIX C

VERIFICATION AND VALIDATION PACKAGE

(Not provided in NRC package)