APPENDIX K

Water Resources

Memo

Date: January, 27, 2020, revised May 12, 2020

Project: CLT Airport Expansion (SAW-2018-01071)

Subject: Mitigation Assessment for Proposed Impacts

Introduction

Charlotte Douglas International Airport (CLT or Airport) is a publicly-owned airport operated by the City of Charlotte and managed by the Aviation Department. CLT is located on approximately 6,000 acres of land, of which 4,652 acres are considered within a Clean Water Act (CWA) Section 404 Individual Permit Boundary. The Airport is located in the City of Charlotte, in west Mecklenburg County, North Carolina (Figure 1).

The purpose of the project is to increase airfield capacity to meet demand over the next 10 years, enhance terminal gate and ramp capacity to reduce delays, and to enhance the efficiency and operational safety of the Airport taxiway system. Due to the long term nature of the Airport's development, the impacts associated with various airport elements will not occur all at once and will be phased in multiple major phases. Ratios for all permanent impacts are proposed herein; however, impact credits will be requested in accordance with the phasing.

There are multiple projects associated with the Airport's future development; however, not all of the project elements propose impacts to jurisdictional waters (Table 1). Phase 1 includes the first two major Airport elements that propose impacts to Waters of the US (WOUS), consisting of the North End Around Taxiway (NEAT) and the Deicing Pad and South Crossfield Taxiway (SCF) (Figure 2). The NEAT element is located within Hydrologic Unit Code (HUC) 03050101 and the SCF element is located within HUC 03050103.

Phase 2 includes the next major Airport elements that propose impacts to WOUS, which consist of the South Ramp Expansion and the 4th Parallel Runway and Taxiway Enhancement (Figure 5). The South Ramp Expansion element is located within HUC 03050103, while the 4th Parallel Runway element is located across HUCs 03050101 and 03050103. The remaining phases do not necessitate impacts to WOUS. Phases 2 through 5 have yet to be approved by the Federal Aviation Administration (FAA), and are not funded or designed.

Table 1. Summary of CLT projects and phasing

Proposed CLT Projects	Impacts to Waters of the US	Phase
Long Term 1 Parking Lot Expansion	No	On Hold
Addition of a Centralized Receiving and Distribution Center (CRDC)	No	1
West Ramp and Concourse A Expansion	No	1
Joint Operations Center (JOC)	No	1
Amazon and FedEx Airport Facilities Expansion	No	1
Addition of the General Aviation Group Hangar	No	1
Charter Terminal Expansion	No	1
Deicing Pad and South Crossfield Taxiway for Existing Runway 18C/36C Includes:	Yes	1

Proposed CLT Projects	Impacts to Waters of the US	Phase
Deicing Pad and South Crossfield Taxiway (Taxiway H) Taxiway F Extension Yorkmont Road Realignment Coffey Creek Stormwater Detention		
North End Around Taxiway Project for Existing Runway 18C/36C Includes: NEAT Old Dowd Road Relocation New Utility Installation Airport Overlook Relocation Hold Pads Private Access Drive Ticer Branch Stormwater Detention	Yes	1
South Ramp Expansion	Yes	2
10,000-foot 4 th Parallel Runway and associated Taxiway Enhancement Includes: South End Around Taxiway for Existing Runway 18C/36C Hold Pad	Yes	2
Concourse C Expansion	No	3
Concourse B Expansion	No	4
Daily North Parking Expansion	No	4
Satellite Terminal	No	5

Methods

In April 2019, September 2019, and October 2019 HDR environmental scientists reviewed the project area for waters of the U.S. under Section 404/401 of the Clean Water Act (CWA). The North Carolina Stream and Wetland Assessment Methodologies (NCSAM and NCWAM) were also utilized to assess stream and wetland quality and function of the features identified for future proposed, permanent impacts. The NCSAM, NCWAM, and representative photographs are provided for Phase 1 in Appendix B and for Phase 2 in Appendix C.

A schedule of ratios was provided by the US Army Corps of Engineers (USACE) associated with NCSAM/NCWAM scores (Table 2).

Table 2. Schedule of mitigation ratios

Ratio	NCSAM/ NCWAM Feature Score		Credit Type			
0.5:1	n/a	Open Water	Wetland			
2:1	High	Wetlands	Wetland			
1.75:1	Medium	Wetlands	Wetland			
1.5:1	Low	Wetlands	Wetland			
2:1	High	Streams	Stream			
1.75:1	Medium	Streams	Stream			
1.5:1	Low	Streams	Stream			
2:1	All u	All unauthorized Impacts				

Results

Phases 1 and 2 would result in 12,057 linear feet of permanent and temporary impacts to stream channels. Permanent loss stream impacts total 11,435 linear feet, consisting of 11,117 linear feet of perennial tributary and 318 linear feet of intermittent tributary. Permanent non-loss stream impacts total 204 linear feet, consisting of 174 linear feet of perennial tributary and 30 linear feet of intermittent tributary. Temporary stream impacts total 418 linear feet, consisting of 246 linear feet of perennial tributary and 172 linear feet of intermittent tributary. Phases 1 and 2 would also result in permanent loss impacts to 5.89 acre of jurisdictional wetlands. There are no temporary impacts to wetlands proposed. Permanent non-loss and temporary impacts do not require mitigation and are therefore not assessed below. The results of NCSAM and NCWAM were used to formulate mitigation ratios for the proposed permanent impacts.

Phase 1 of the project (NEAT and SCF) proposes 3,284 linear feet of permanent loss stream impacts, 174 linear feet of permanent non-loss impacts, and 418 linear feet of temporary impacts. NEAT impacts consist of 1,302 linear feet of permanent loss of stream impacts, 174 linear feet of permanent non-loss stream impacts, and 418 linear feet of temporary stream impacts. SCF impacts consist of 1,982 linear feet of permanent loss of stream impacts and 30 linear feet of permanent non-loss stream impacts. Permanent wetland impacts associated with Phase I include 0.68 acres related to NEAT and 0.14 acres of related to SCF (Table 3 and Figures 3 and 4). Impacts to 2,614 linear feet of stream channel were previously permitted under SAW-2006-32521 (expires 12/31/2024) and are not included in the impact totals due to its previous approval, but mitigation credits are included as mitigation for this approved impact has not been paid.

Table 3. Summary of proposed permanent impacts and corresponding mitigation ratios for Phase I

Impact Number^	Feature	Project	NCWAM/ NCSAM	Ratio	Impact Amount (linear feet/acre)	Proposed Credits
			Score	Impacts	, , , , , , , , , , , , , , , , , , , ,	
D00.4	00	NIFAT			045	400
PS2-1	S2	NEAT	High	2:1	215	430
PS3-1	S2	NEAT	High	2:1	66	132
			Permanent		42	0
PS4-1	S1	NEAT	High	2:1	400	800
PS5-1	S10	NEAT	High	2:1	484	968
PS6-1	S9	NEAT	High	2:1	137	274
PS7-1	S25	SCF	Low	1.5:1	823	1,234.5
PS8-1*	S25	SCF	-	1:1	(2,614)*	2,614
PS9-1; Reach 1	S26	SCF	Low	1.5:1	91	136.5
PS9-1; Reach 2	S26	SCF	High	2:1	444	888
PS10-1	S27	SCF	Medium	1.75:1	42	73.5
PS11-1	S25	SCF	High	2:1	457	914
DC40.4	C24	COF	High	2:1	125	250
PS12-1	S34	SCF	Permanent	Non-Loss	30	0
PS13-1	S1	NEAT	Permanent	Non-Loss	63	0
PS14-1	S11	NEAT	Permanent	Non-Loss	18	0
PS15-1	S11	NEAT	Permanent	Non-Loss	51	0
Total Propos	ed Perman	ent Loss S	tream Impac	ts/Credits:	3,284 LF*	8,714.50
Total Prop	osed Pern	nanent Nor	n-Loss Strear	n Impacts:	204 LF	0.00
			Wetland	d Impacts		
PW1-1	W5	NEAT	High	2:1	0.46	1
PW2-1	W6	NEAT	Low	1.5:1	0.22	0.5
PW3-1	W15	SCF	High	2:1	0.01	0.25
PW4-1	W22	SCF	High	2:1	0.04	0.25
PW5-1	W24	SCF	High	2:1	0.09	0.25
	Total Pr	oposed W	ts/Credits:	0.82 AC	2.25	

[^] PS1-1 = Permanent Stream Impact 1 - Phase 1; PS2-1 = Permanent Stream Impact 2 - Phase 1, etc.

Phase 2 of the project (4th Parallel Runway and South Ramp Expansion) proposes 8,151 linear feet of permanent stream impacts and 5.07 acres of permanent wetlands impacts. Permanent stream and wetlands impacts related to the 4th Parallel Runway project consist of 6,431 linear feet stream impacts and 4.91 acres of wetlands impacts, respectively. Permanent stream and wetlands impacts related to the South Ramp Expansion project consist of 1,720 linear feet of stream impacts and 0.16 acres of wetland impacts, respectively (Table 4 and Figure 5). The remaining phases of the CLT development do not incur impacts to Waters of the US.

PW1-1 = Permanent Wetland Impact 1 - Phase 1; PW2-1 = Permanent Wetland Impact 2 - Phase 1, etc.

^{*} Does not include the 2,614 LF of a previous approved impact per SAW-2006-32521; however, mitigation has not been paid for and is included in the credit totals.

Table 4. Summary of proposed permanent impacts and corresponding mitigation ratios for Phase 2

Table 4. Sullilla	y or proposed	permanent mit	acts and come	sponding miti	gation ratios for Pil	use z
Impact Number*	Feature	Project	NCWAM/ NCSAM Score	Ratio	Impact Amount (linear feet/acre)	Proposed Credits
			Stream Impac	ts		
			HUC 0305010	3		
PS1-2; R1	S27	4th Parallel	High	2:1	976	1,952
PS1-2; R2	S27	4th Parallel	High	2:1	357	714
PS1-2; R3	S27	4th Parallel	High	2:1	394	788
PS1-2; R4	S27	4th Parallel	High	2:1	282	564
PS2-2	S28	4th Parallel	High	2:1	68	136
PS3-2; R1	S29	4th Parallel	High	2:1	1,293	2,586
PS3-2; R2	S29	4th Parallel	Low	1.5:1	276	414
PS3-2; R3	S29	4th Parallel	Low	1.5:1	86	129
PS3-2; R4	S29	4th Parallel	Low	1.5:1	173	259.5
PS4-2	S24	South Ramp Expansion	Low	1.5:1	193	289.5
PS5-2	S25	South Ramp Expansion	Low	1.5:1	1,527	2,290.50
PS6-2	S25	4th Parallel	High	2:1	1,175	2,350
PS7-2; R1	S30	4th Parallel	Low	1.5:1	368	552
PS7-2; R2	S30	4th Parallel	High	2:1	983	1,966
		Total Propos	sed Stream Imp	acts/Credits:	8,151 LF	14,990.5
			Wetland Impac	ts		
			HUC 0305010	1		
PW1-2	W6	4th Parallel	Low	1.5:1	0.76	1.25
			HUC 0305010	3		
PW2-2	W7	4th Parallel	Low	1.5:1	0.61	1
PW3-2	W8	4th Parallel	Low	1.5:1	1.75	2.75
PW4-2	W14	South Ramp Expansion	Low	1.5:1	0.16	0.25
PW5-2	W16	4th Parallel	Medium	1.75:1	0.14	0.25
PW6-2	W17	4th Parallel	High	2:1	0.06	0.25
PW7-2	W18	4th Parallel	Low	1.5:1	0.01	0.25
PW8-2	W20	4th Parallel	Medium	1.75:1	1.41	2.5
PW9-2	W19	4th Parallel	Low	1.5:1	0.17	0.25
		5.07 AC	8.75			

Conclusion

For Phase 1 impacts, mitigation will be requested from the City of Charlotte's Stream and Wetland Mitigation Bank for permanent stream and wetland impacts in both HUCs 03050101 and 03050103 (Table 5). All impact ratios reported herein are not considered final until the Section 404 Individual Permit approval is issued by the US Army Corps of Engineers (USACE). Credit fees are subject to change yearly. Mitigation will be requested for Phase 2 impacts at a later time when those projects move forward with FAA approval.

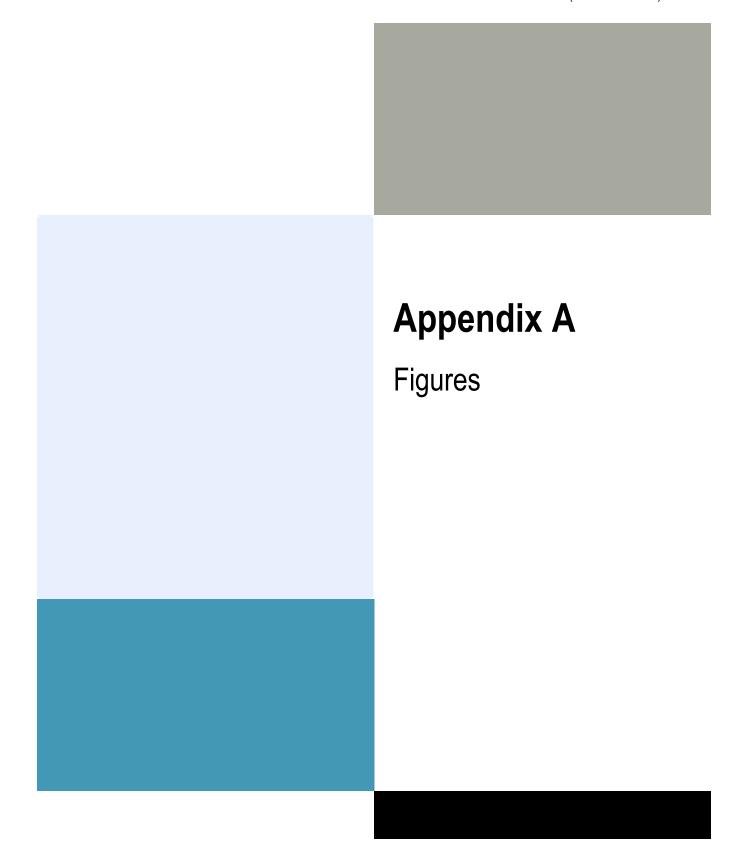
Table 5. Summary of Phase 1 permanent impacts and proposed credits per HUC

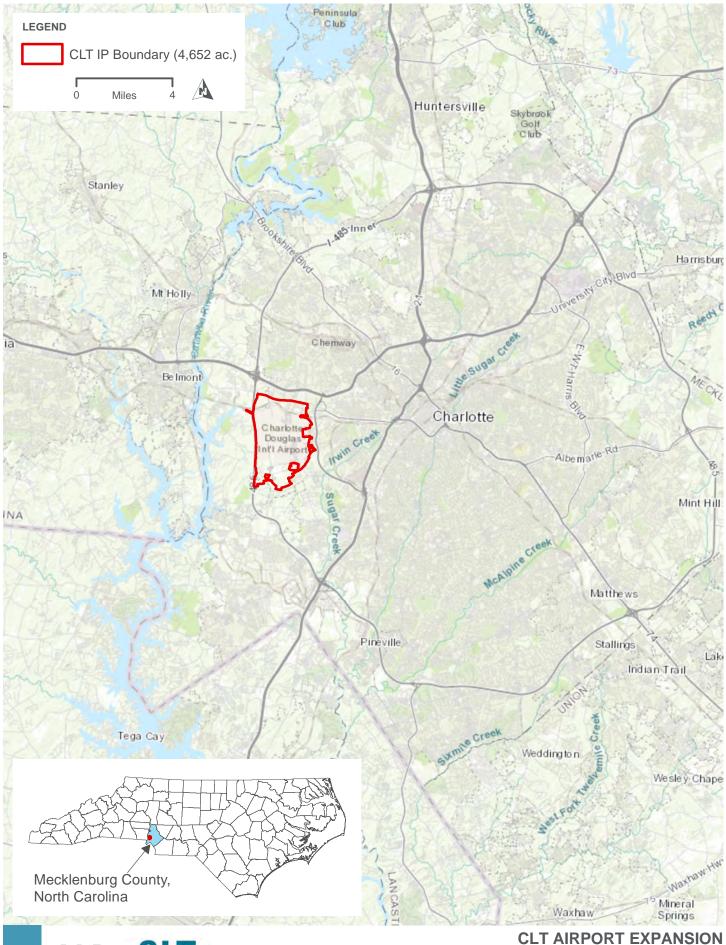
Phase 1						
Project	Feature	Feature Impact Amount (LF/AC)				
	HUC 03050101					
NEAT	Streams	1,302 LF	2,604			
	Wetlands	0.68 AC	1.50			
	HUC 03050103					
SCF	Streams 1,982LF*		6,110.5			
	Wetlands	0.14 AC	0.75			

^{*} Does not include the 2,614 LF of a previous approved impact per SAW-2006-32521; however, mitigation has not been paid for **and is** included in the credit totals

Appendices: Appendix A: Figures

Appendix B: Phase 1 – NCSAM and NCWAM Forms and Photographs Appendix C: Phase 2– NCSAM and NCWAM Forms and Photographs

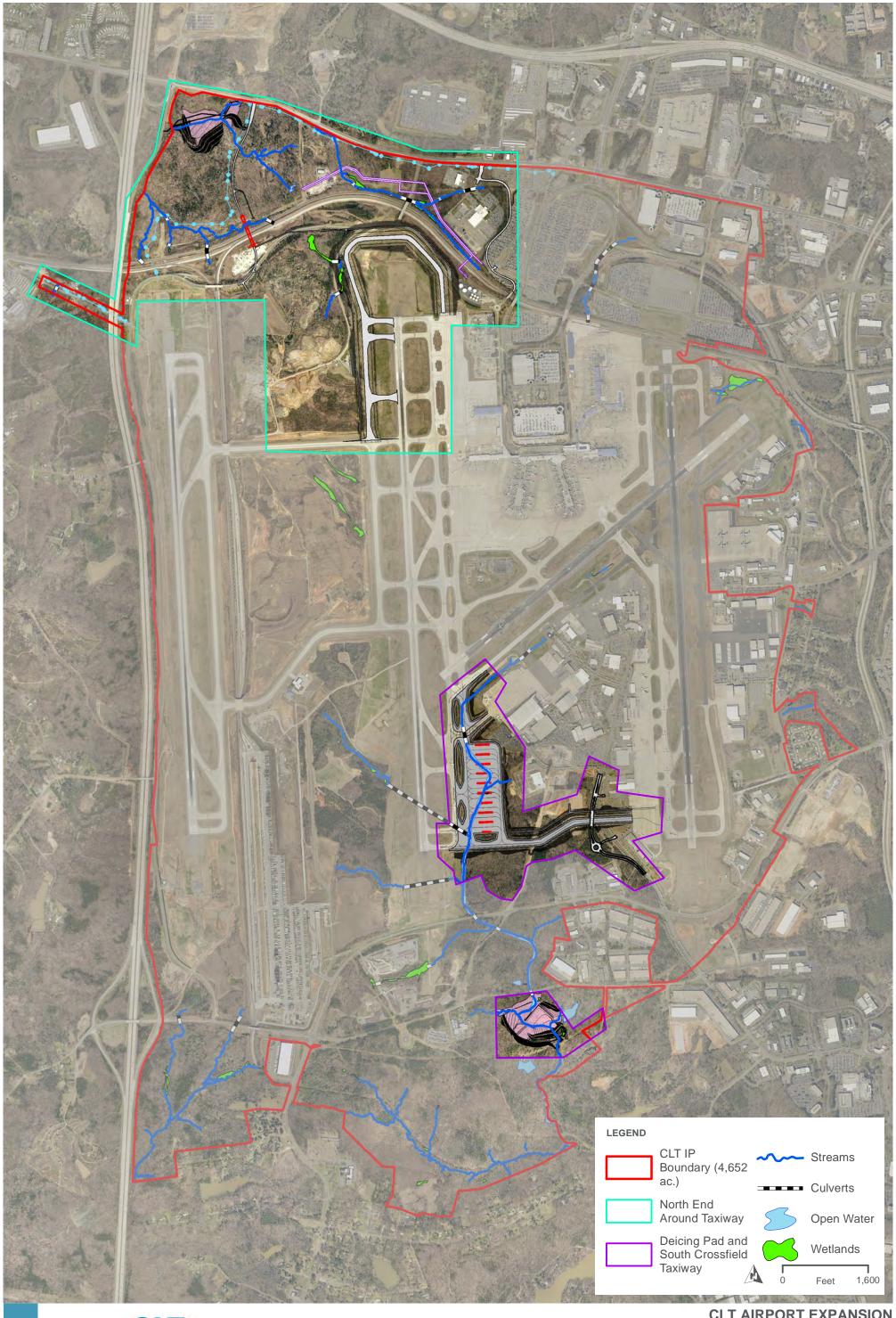






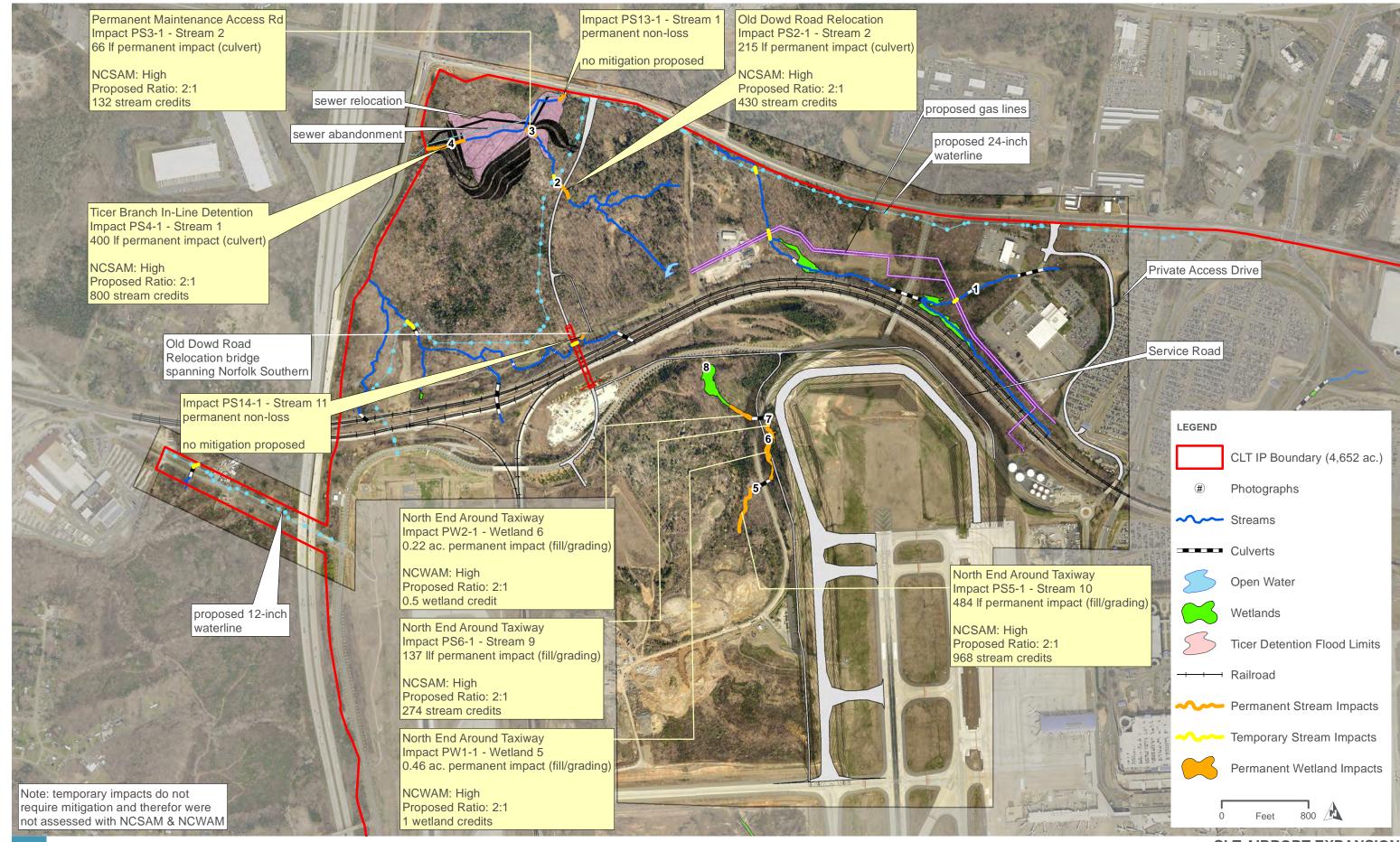
CLI AIRPORT EXPANSION
PROJECT VICINITY

FIGURE 1



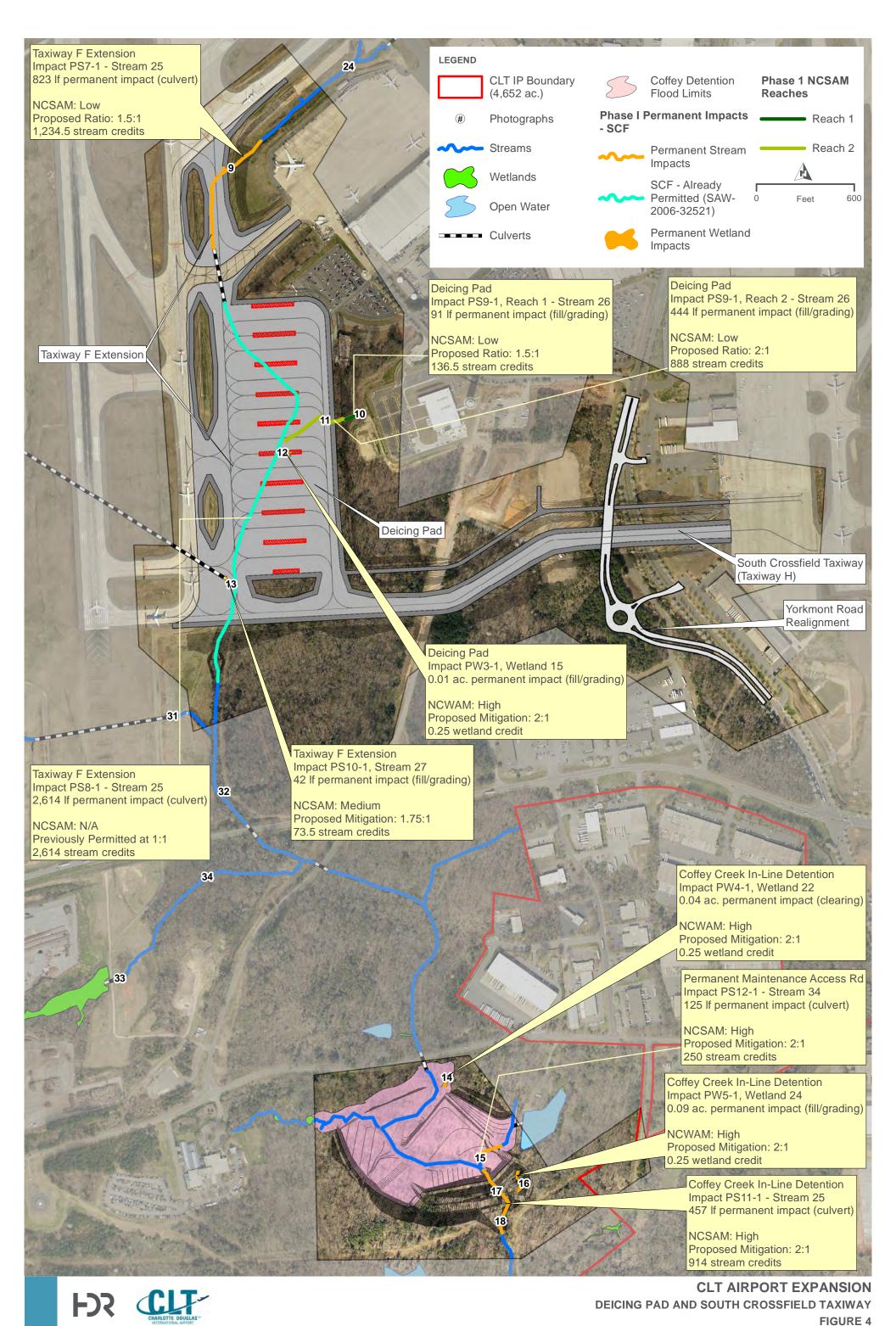
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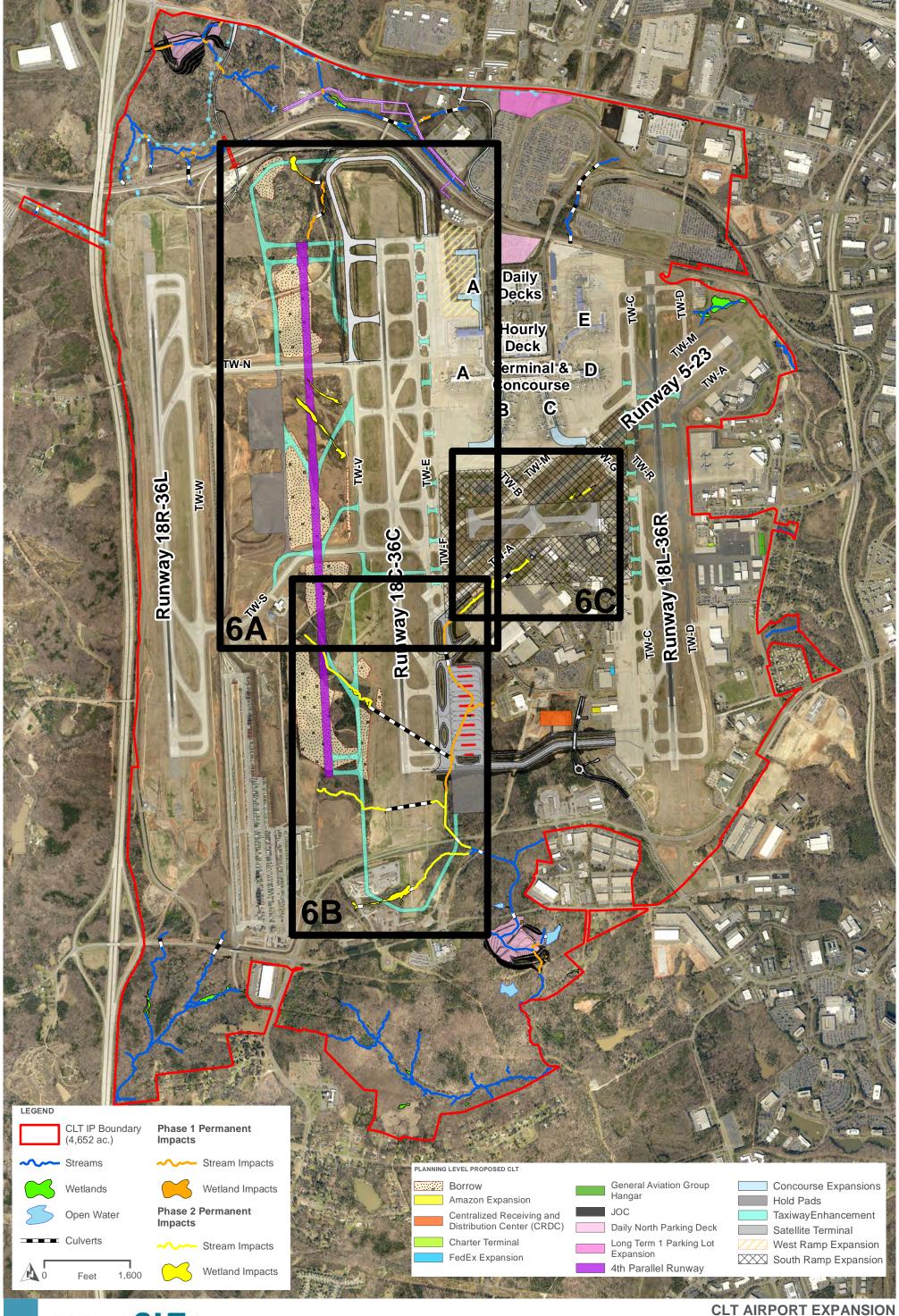
CLT AIRPORT EXPANSION
PHASE 1 OF CLT ELEMENTS
FIGURE 2

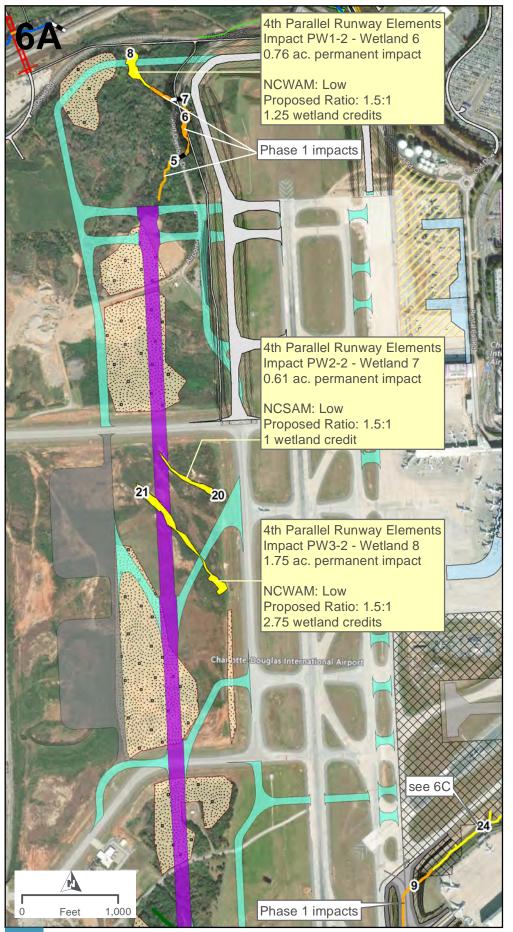


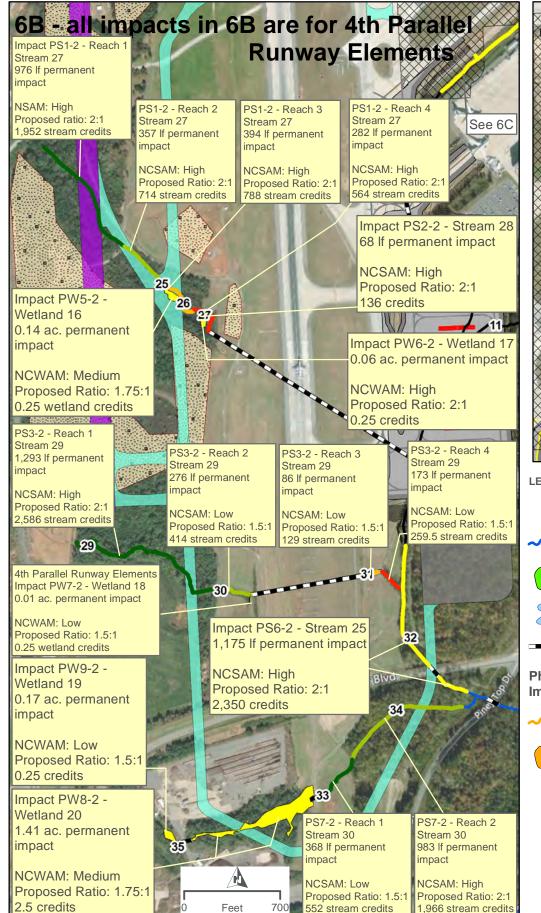


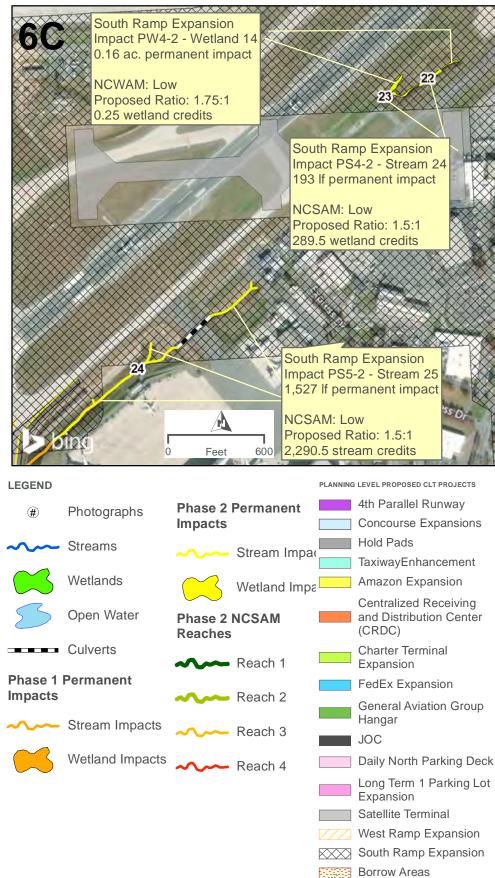
CLT AIRPORT EXPANSION NORTH END AROUND TAXIWAY













CLT AIRPORT EXPANSION
REMAINING CLT ELEMENTS

Appendix B

Phase 1: NCSAM and NCSAM Forms, and Photographs

NC SAM FIELD ASSESSMENT FORM Accompanies User Manual Version 2.1

	, , , , , , , , , , , , , , , , , , ,
USACE AID #:	NCDWR #:
	ketch of the assessment area and photographs. Attach a copy of the USGS 7.5-minute topographic quadrangle,
	stream reach under evaluation. If multiple stream reaches will be evaluated on the same property, identify and
	tached map, and include a separate form for each reach. See the NC SAM User Manual for detailed descriptions
· · · · · · · · · · · · · · · · · · ·	ed information. Record in the "Notes/Sketch" section if supplementary measurements were performed. See the
	amples of additional measurements that may be relevant.
NOTE EVIDENCE OF STRE	SSORS AFFECTING THE ASSESSMENT AREA (do not need to be within the assessment area).
PROJECT/SITE INFORMAT	ION:
1. Project name (if any):	CLT Airport Expansion 2. Date of evaluation: May 2019
Applicant/owner name:	CLT 4. Assessor name/organization: KMT, BGB/HDR
5. County:	Mecklenburg 6. Nearest named water body
7. River basin:	Catawba on USGS 7.5-minute quad: Ticer Branch
8. Site coordinates (decimal of	degrees, at lower end of assessment reach): 35.233570, -80.950471
	depth and width can be approximations)
9. Site number (show on attach	
	(in riffle, if present) to top of bank (feet): 1 Unable to assess channel depth.
12. Channel width at top of ba	
	al flow
STREAM CATEGORY INFO	
15. NC SAM Zone:	☐ Mountains (M) ☐ Piedmont (P) ☐ Inner Coastal Plain (I) ☐ Outer Coastal Plain (O)
16. Estimated geomorphic	MA TIB
valley shape (skip for	_
Tidal Marsh Stream):	(more sinuous stream, flatter valley slope) (less sinuous stream, steeper valley slope)
17. Watershed size: (skip	Size 1 (< 0.1 mi²)
for Tidal Marsh Stream)	
ADDITIONAL INFORMATION	N:
	rations evaluated? 🛛 Yes 🔲 No If Yes, check all that apply to the assessment area.
Section 10 water	☐ Classified Trout Waters ☐ Water Supply Watershed (☐ I☐ II☐ II ☐ IV☐ V)
☐Essential Fish Habitat	
☑Publicly owned propert	
☐Anadromous fish	□ 303(d) List □ CAMA Area of Environmental Concern (AEC)
-	of a federal and/or state listed protected species within the assessment area.
List species: ☐Designated Critical Hal	hitat (list aposics)
	ormation/supplementary measurements included in "Notes/Sketch" section or attached? ⊠Yes □No
19. Are additional stream line	initiation/suppliententially measurements included in Notes/Okelon Section of attached: 21es 100
1. Channel Water – assess	sment reach metric (skip for Size 1 streams and Tidal Marsh Streams)
	ut assessment reach.
☐B No flow, water ir	
☐C No water in asset	essment reach.
2. Evidence of Flow Restric	ction – assessment reach metric
	assessment reach in-stream habitat or riffle-pool sequence is severely affected by a flow restriction or fill to the
	ting flow <u>or</u> a channel choked with aquatic macrophytes <u>or</u> ponded water <u>or</u> impoundment on flood or ebb within
	reach (examples: undersized or perched culverts, causeways that constrict the channel, tidal gates, debris jams,
beaver dams).	
⊠B Not A	
3. Feature Pattern – assess	sment reach metric
	e assessment reach has altered pattern (examples: straightening, modification above or below culvert).
⊠B Not A ´	, , , , , , , , , , , , , , , , , , , ,
4. Feature Longitudinal Pro	ofile – assessment reach metric
	ssment reach has a substantially altered stream profile (examples: channel down-cutting, existing damming, over
	e aggradation, dredging, and excavation where appropriate channel profile has not reformed from any of these
disturbances).	aggranation, and aggraph of the suppropriate original profite flat for foother from any of those
⊠B Not A	
	ty accessment reach metric
_	ty - assessment reach metric
	nstability, not past events from which the stream has currently recovered. Examples of instability include channel down-cutting (head-cut), active widening, and artificial hardening (such as concrete, gabion, rip-rap).
⊠A < 10% of channe	
☐B 10 to 25% of cha	
☐C > 25% of channe	

6.				raction – s						
	LB	RB	ne Len	Bank (LB)	and the i	Right Ba	nk (RB).			
	⊠A □B	⊠A □B	Mod refe	derate evic erence inte	dence of corraction (ex	onditions amples:	limited streams	rms, levee ide area a	es, down- ccess, dis	eraction cutting, aggradation, dredging) that adversely affect ruption of flood flows through streamside area, leaky nor ditching [including mosquito ditching])
	□c	□c	Exte [exa of fl mos	ensive evic amples: ca lood flows t	dence of causeways was through str hing]) or flating]	onditions with flood eamside	that adversely lplain and chann area] <u>or</u> too mud	affect refe lel constric ch floodpla	rence inte tion, bulk ain/intertion	eraction (little to no floodplain/intertidal zone access heads, retaining walls, fill, stream incision, disruption lal zone access [examples: impoundments, intensive or assessment reach is a man-made feature on an
7.	Wate	r Quality	Stresso	ors – asse	ssment re	each/inte	ertidal zone me	tric		
		k all that								
	ΠĀ									er discoloration, oil sheen, stream foam)
	□B □C						n features or int s entering the a			nd causing a water quality problem
	\Box D	Odor	(not inc	luding natu	iral sulfide	odors)	_			
	ΠE	Curre section		ished or co	ollected da	ata indica	ting degraded	water qua	lity in the	assessment reach. Cite source in "Notes/Sketch"
	□F			h access to	o stream o	r intertida	al zone			
	□G			gae in strea				hmin.m		oving doctmation ata)
							i in "Notes/Sketo			owing, destruction, etc)
	\boxtimes J	Little	to no sti	ressors					,	
8.							al Marsh Strea	•		
	For S ☐A						sidered a drough III not exceeding			eams, D2 drought or higher is considered a drought.
	□в	Droug	ght cond	ditions <u>and</u>			1 inch within the			51 40 Hours
	⊠c	No di	rought c	onditions						
9.	Large □Ye		•	Stream – a stream is to				f Yes, skip	to Metric	13 (Streamside Area Ground Surface Condition).
10.							ach metric			
	10a.	∐Yes	□No	sedimer	ntation, mi	ning, exc	at over majority cavation, in-stre tal Plain strean	am harde	ning [for	nt reach (examples of stressors include excessive example, rip-rap], recent dredging, and snagging) to Metric 12)
	10b.									ize 4 Coastal Plain streams)
		□A		e aquatic n e liverworts			quatic mosses I mats)	idal	∐F ∐G	5% oysters or other natural hard bottoms Submerged aquatic vegetation
		⊠B	Multiple	e sticks an			d/or emergent	Check for Tidal Marsh Streams Only	□н	Low-tide refugia (pools)
		□с	vegetat Multiple	tion e snags an	d loas (inc	luding lar	p trees)	arsh o	□J	Sand bottom 5% vertical bank along the marsh
		ΠĎ	5% und	dercut ban	ks and/or	root mats	s and/or roots	ပ် 🖺	□κ	Little or no habitat
		□E		s extend to r no habita		ıal wetted	l perimeter			
					•					
****	******	******	*****	**REMAIN	ING QUES	STIONS A	ARE NOT APPI	LICABLE	FOR TID	AL MARSH STREAMS************************************
11.	Bedfe	orm and	Substra	ate – asses	ssment re	ach metr	ric (skip for Siz	e 4 Coast	tal Plain	streams and Tidal Marsh Streams)
	11a.	∐Yes	⊠No	Is assess	ment reac	h in a nat	tural sand-bed s	stream? (s	kip for C	oastal Plain streams)
	11b.	Bedform □A		ed. Check un section			oox(es).			
		⊟̂B		lide section						
		⊠c	Natural	l bedform a	absent (sk	ip to Met	tric 12, Aquatic	Life)		
	11c.	at least	one box	in each re	ow (skip f	or Size 4	Coastal Plain	streams a	and Tidal	essment reach – whether or not submerged. Check Marsh Streams) . Not Present (NP) = absent, Rare Predominant (P) = > 70%. Cumulative percentages
		should no	ot excee	ed 100% fo	r each ass	sessment		. 7	/0, 1	
		NP	R □	C	A	P	Bedrock/sapro	olite		
							Boulder (256	– 4096 mr	n)	
							Cobble (64 – 2 Gravel (2 – 64			
		\exists		H	H	\exists	Sand (.062 – 5			
							Silt/clay (< 0.0			
				\exists	\exists		Detritus Artificial (rip-ra	ap, concre	te, etc.)	
	11d.	_ ∐Yes	— □No	Are pools	filled with	sedimen	` '	• •	. ,	streams and Tidal Marsh Streams)

12.	-		sessment reach metric (skip for Tidal Marsh Streams)
	12a. ⊠ If N		No Was an in-stream aquatic life assessment performed as described in the User Manual? one of the following reasons and skip to Metric 13. No Water Other:
	12b. □	Yes 🛭	No Are aquatic organisms present in the assessment reach (look in riffles, pools, then snags)? If Yes, check all the apply. If No, skip to Metric 13.
	1		Numbers over columns refer to "individuals" for Size 1 and 2 streams and "taxa" for Size 3 and 4 streams. Adult frogs Aquatic reptiles
			Aquatic replies Aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats) Beetles
			Caddisfly larvae (T) Asian clam (<i>Corbicula</i>)
	H		Crustacean (isopod/amphipod/crayfish/shrimp) Damselfly and dragonfly larvae Dipterans
	Ä		Mayfly larvae (E) Megaloptera (alderfly, fishfly, dobsonfly larvae)
			Midges/mosquito larvae Mosquito fish (<i>Gambusia</i>) or mud minnows (<i>Umbra pygmaea</i>)
			Mussels/Clams (not <i>Corbicula</i>) Other fish
	H		Salamanders/tadpoles Snails Stonefly larvae (P)
			Fipulid larvae Norms/leeches
13.			Ground Surface Condition – streamside area metric (skip for Tidal Marsh Streams and B valley types) Left Bank (LB) and the Right Bank (RB). Consider storage capacity with regard to both overbank flow and upland runo
	⊠a □B	⊠a ⊟B	Little or no alteration to water storage capacity over a majority of the streamside area Moderate alteration to water storage capacity over a majority of the streamside area
	С	□с	Severe alteration to water storage capacity over a majority of the streamside area (examples: ditches, fill, soil compactic livestock disturbance, buildings, man-made levees, drainage pipes)
14.	Conside LB	r for the RB	Water Storage – streamside area metric (skip for Size 1 streams, Tidal Marsh Streams, and B valley types) Left Bank (LB) and the Right Bank (RB) of the streamside area.
	□A □B □C	□A □B □C	Majority of streamside area with depressions able to pond water ≥ 6 inches deep Majority of streamside area with depressions able to pond water 3 to 6 inches deep Majority of streamside area with depressions able to pond water < 3 inches deep
15.	Conside wetted po	r for the erimeter	e – streamside area metric (skip for Tidal Marsh Streams) Left Bank (LB) and the Right Bank (RB). Do not consider wetlands outside of the streamside area or within the norm f assessment reach.
	LB □Y ⊠N	RB □Y ⊠N	Are wetlands present in the streamside area?
16.		w Contri	utors – assessment reach metric (skip for Size 4 streams and Tidal Marsh Streams) utors within the assessment reach or within view of and draining to the assessment reach.
	□A □B	Streams	and/or springs (jurisdictional discharges) aclude wet detention basins; do not include sediment basins or dry detention basins)
	□C □D □E	Obstruc Evidenc Stream	on passing flow during low-flow periods within the assessment area (beaver dam, leaky dam, bottom-release dam, wei of bank seepage or sweating (iron in water indicates seepage) ed or bank soil reduced (dig through deposited sediment if present)
17.	⊠F Baseflow		he above ors – assessment area metric (skip for Tidal Marsh Streams)
	Check a ☐A ☐B ☐C	Evidend Obstruc	oly. of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation) on not passing flow during low-flow periods affecting the assessment reach (ex: watertight dam, sediment deposit) ream (≥ 24% impervious surface for watershed)
	□D □E □F	Evidend Assess	that the streamside area has been modified resulting in accelerated drainage into the assessment reach ent reach relocated to valley edge he above
18.			ment reach metric (skip for Tidal Marsh Streams) Consider "leaf-on" condition.
	⊠A □B □C	Stream Degrad	hading is appropriate for stream category (may include gaps associated with natural processes) d (example: scattered trees) hading is gone or largely absent

	Consider "vegetated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top of bank out to the first break. Vegetated Wooded LB RB LB RB □ A □ A □ A ≥ 100 feet wide or extends to the edge of the watershed □ B □ B □ B □ B □ B □ From 50 to < 100 feet wide □ C □ C □ C □ C □ C From 30 to < 50 feet wide □ D □ D □ D □ D □ D From 10 to < 30 feet wide □ E □ E □ E □ E □ C 10 feet wide or no trees
20.	Buffer Structure – streamside area metric (skip for Tidal Marsh Streams) Consider for left bank (LB) and right bank (RB) for Metric 19 ("Vegetated" Buffer Width). LB RB A Mature forest B Non-mature woody vegetation or modified vegetation structure C C Herbaceous vegetation with or without a strip of trees < 10 feet wide D D Maintained shrubs E E Little or no vegetation
21.	Buffer Stressors – streamside area metric (skip for Tidal Marsh Streams) Check all appropriate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but is within 30 feet of stream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet). If none of the following stressors occurs on either bank, check here and skip to Metric 22: Abuts < 30 feet 30-50 feet LB RB LB RB LB RB A A A A A A A A A A A A A A A A A A A
22.	Stem Density – streamside area metric (skip for Tidal Marsh Streams) Consider for left bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width). LB RB A Medium to high stem density B B Low stem density C C No wooded riparian buffer or predominantly herbaceous species or bare ground
23.	Continuity of Vegetated Buffer – streamside area metric (skip for Tidal Marsh Streams) Consider whether vegetated buffer is continuous along stream (parallel). Breaks are areas lacking vegetation > 10 feet wide. LB RB A The total length of buffer breaks is < 25 percent. B B B The total length of buffer breaks is between 25 and 50 percent. C C The total length of buffer breaks is > 50 percent.
24.	Vegetative Composition – streamside area metric (skip for Tidal Marsh Streams) Evaluate the dominant vegetation within 100 feet of each bank or to the edge of the watershed (whichever comes first) as it contributes to assessment reach habitat. LB RB ☑A ✓ Yegetation is close to undisturbed in species present and their proportions. Lower strata composed of native species, with non-native invasive species absent or sparse. □B □B Vegetation indicates disturbance in terms of species diversity or proportions, but is still largely composed of native species. This may include communities of weedy native species that develop after clear-cutting or clearing or communities with non-native invasive species present, but not dominant, over a large portion of the expected strata or communities missing understory but retaining canopy trees. □C □C Vegetation is severely disturbed in terms of species diversity or proportions. Mature canopy is absent or communities with non-native invasive species dominant over a large portion of expected strata or communities composed of planted stands of non-characteristic species or communities inappropriately composed of a single species or no vegetation.
25.	Conductivity – assessment reach metric (skip for all Coastal Plain streams) 25a. ☐ Yes ☐ No Was conductivity measurement recorded? If No, select one of the following reasons. ☐ No Water ☐ Other: 25b. Check the box corresponding to the conductivity measurement (units of microsiemens per centimeter). ☐ A < 46 ☐ B 46 to < 67 ☐ C 67 to < 79 ☐ D 79 to < 230 ☐ E ≥ 230
	es/Sketch: vert and instream riprap creating flow restriction.

19. Buffer Width – streamside area metric (skip for Tidal Marsh Streams)

Draft NC SAM Stream Rating Sheet Accompanies User Manual Version 2.1

Stream Site Name	CLT Airport Expansion	Date of Assessmen	t May 2019	
Stream Category	Pa1	Assessor Name/Organization	n KMT, BGB	/HDR
Natas of Field Asses	raine ant Faure (V/NI)		VEC	
Notes of Field Asses	` ,		YES	
Presence of regulatory considerations (Y/N)				
Additional stream information/supplementary measurements included (Y/N)			YES	
NC SAM feature type (perennial, intermittent, Tidal Marsh Stream)			Perennial	_
	Function Class Beting Cump		USACE/	NCDWR

Function Class Rating Summary	USACE/ All Streams	NCDWR Intermittent
(1) Hydrology	HIGH	
(2) Baseflow	MEDIUM	
(2) Flood Flow	HIGH	
(3) Streamside Area Attenuation	HIGH	
(4) Floodplain Access	HIGH	
(4) Wooded Riparian Buffer	HIGH	
(4) Microtopography	HIGH	
(3) Stream Stability	HIGH	
(4) Channel Stability	HIGH	
(4) Sediment Transport	LOW	
(4) Stream Geomorphology	HIGH	
(2) Stream/Intertidal Zone Interaction	NA	
(2) Longitudinal Tidal Flow	NA	
(2) Tidal Marsh Stream Stability	NA	
(3) Tidal Marsh Channel Stability	NA	
(3) Tidal Marsh Stream Geomorphology	NA	
(1) Water Quality	MEDIUM	
(2) Baseflow	MEDIUM	
(2) Streamside Area Vegetation	HIGH	
(3) Upland Pollutant Filtration	HIGH	
(3) Thermoregulation	HIGH	
(2) Indicators of Stressors	NO	
(2) Aquatic Life Tolerance	LOW	
(2) Intertidal Zone Filtration	NA	
(1) Habitat	LOW	
(2) In-stream Habitat	LOW	
(3) Baseflow	MEDIUM	
(3) Substrate	LOW	
(3) Stream Stability	HIGH	
(3) In-stream Habitat	LOW	
(2) Stream-side Habitat	HIGH	
(3) Stream-side Habitat	HIGH	
(3) Thermoregulation	HIGH	
(2) Tidal Marsh In-stream Habitat	NA	
(3) Flow Restriction	NA	
(3) Tidal Marsh Stream Stability	NA	
(4) Tidal Marsh Channel Stability	NA	
(4) Tidal Marsh Stream Geomorphology	NA	
(3) Tidal Marsh In-stream Habitat	NA	
(2) Intertidal Zone	NA	
Overall	MEDIUM	

NC SAM FIELD ASSESSMENT FORM Accompanies User Manual Version 2.1

	/
USACE AID #:	NCDWR #:
	ketch of the assessment area and photographs. Attach a copy of the USGS 7.5-minute topographic quadrangle,
	stream reach under evaluation. If multiple stream reaches will be evaluated on the same property, identify and
	tached map, and include a separate form for each reach. See the NC SAM User Manual for detailed descriptions
	ed information. Record in the "Notes/Sketch" section if supplementary measurements were performed. See the
	amples of additional measurements that may be relevant.
NOTE EVIDENCE OF STRE	SSORS AFFECTING THE ASSESSMENT AREA (do not need to be within the assessment area).
PROJECT/SITE INFORMAT	
1. Project name (if any):	CLT Airport Expansion 2. Date of evaluation: April 2019
3. Applicant/owner name:	CLT 4. Assessor name/organization: KMT, BGB/HDR
5. County:	Mecklenburg 6. Nearest named water body
7. River basin:	Catawba on USGS 7.5-minute quad: Ticer Branch
·	degrees, at lower end of assessment reach): 35.236184, -80.963544
9. Site number (show on atta	depth and width can be approximations) ched map): PS2-1 - Stream 2 10. Length of assessment reach evaluated (feet): 250.0
	ched map): PS2-1 - Stream 2 10. Length of assessment reach evaluated (feet): 250.0 (in riffle, if present) to top of bank (feet): 4 Unable to assess channel depth.
12. Channel width at top of b	
	al flow Intermittent flow ITidal Marsh Stream
STREAM CATEGORY INFO	
15. NC SAM Zone:	☐ Mountains (M) ☐ Piedmont (P) ☐ Inner Coastal Plain (I) ☐ Outer Coastal Plain (O)
16. 146 6/ 11/1 26/16.	I wountains (iii) I rounton (i) I mile obastain tain (i)
16 Fatimated geometric	
16. Estimated geomorphic valley shape (skip for	⊠A □B
Tidal Marsh Stream):	(more sinuous stream, flatter valley slope) (less sinuous stream, steeper valley slope)
17. Watershed size: (skip	Size 1 (< 0.1 mi²)
for Tidal Marsh Stream)	
ADDITIONAL INFORMATIO	
18. Were regulatory consider	rations evaluated? XYes \(\subseteq No \) If Yes, check all that apply to the assessment area.
☐Section 10 water	☐ Classified Trout Waters ☐ Water Supply Watershed (☐ I ☐ II ☐ II ☐ IV ☐ V)
☐Essential Fish Habitat	☐ Primary Nursery Area ☐ High Quality Waters/Outstanding Resource Waters
⊠Publicly owned proper	
Anadromous fish	□303(d) List □CAMA Area of Environmental Concern (AEC)
-	e of a federal and/or state listed protected species within the assessment area.
List species:	
Designated Critical Ha	
19. Are additional stream into	ormation/supplementary measurements included in "Notes/Sketch" section or attached? ☐Yes ☒No
1. Channel Water – assess	sment reach metric (skip for Size 1 streams and Tidal Marsh Streams)
	ut assessment reach.
☐B No flow, water in	
☐C No water in asset	essment reach.
2. Evidence of Flow Restri	ction – assessment reach metric
	assessment reach in-stream habitat or riffle-pool sequence is severely affected by a flow restriction or fill to the
	ting flow or a channel choked with aquatic macrophytes or ponded water or impoundment on flood or ebb within
	reach (examples: undersized or perched culverts, causeways that constrict the channel, tidal gates, debris jams,
beaver dams).	
⊠B Not A	
3. Feature Pattern – asses	sment reach metric
	e assessment reach has altered pattern (examples: straightening, modification above or below culvert).
⊠B Not A	
4. Feature Longitudinal Pr	ofile – assessment reach metric
	ssment reach has a substantially altered stream profile (examples: channel down-cutting, existing damming, over
	e aggradation, dredging, and excavation where appropriate channel profile has not reformed from any of these
disturbances).	
⊠B Not A	
5. Signs of Active Instabili	ty – assessment reach metric
Consider only current i	nstability, not past events from which the stream has currently recovered. Examples of instability include
	channel down-cutting (head-cut), active widening, and artificial hardening (such as concrete, gabion, rip-rap).
☐A < 10% of chann	
☐B 10 to 25% of ch ☐C > 25% of chann	
	or anotable

6.				raction – s						
			he Left	Bank (LB)	and the	Right Bai	nk (RB).			
	LB ⊠A □B	RB ⊠A □B	Mod refe	derate evid erence inter	ence of cation (ex	onditions amples:	limited streams	rms, levee ide area a	es, down- ccess, dis	eraction cutting, aggradation, dredging) that adversely affect ruption of flood flows through streamside area, leaky nor ditching [including mosquito ditching])
	□c	□c	[exa of flo mos	amples: ca ood flows t	useways v hrough str ning]) <u>or</u> fl	with flood eamside	plain and chann area] <u>or</u> too mu	nel constric	ction, bulk ain/intertid	eraction (little to no floodplain/intertidal zone access heads, retaining walls, fill, stream incision, disruption lal zone access [examples: impoundments, intensive or assessment reach is a man-made feature on an
7.	Wate	r Quality	Stresso	ors – asse	ssment re	each/inte	rtidal zone me	tric		
		k all that								
	ΠĀ									er discoloration, oil sheen, stream foam)
	□B □C						n features or int			nd causing a water quality problem
	∐ŏ			luding natu			s critering the d	00000111011	t rodon <u>di</u>	to busing a water quality problem
	□E			shed or co	llected da	ata indica	ting degraded	water qua	lity in the	assessment reach. Cite source in "Notes/Sketch"
	□F	section Lives		h access to	stream o	r intertida	ıl zone			
	□G			gae in strea						
							I zone (removal in "Notes/Sketo			owing, destruction, etc)
	⊠j		to no str			(охріант	iii ivotoo/Okot	511 0001101	'/	
8.	Rece	nt Weath	er – wat	tershed m	etric (skij	o for Tida	al Marsh Strea	ms)		
										eams, D2 drought or higher is considered a drought.
	□A □B						II not exceeding I inch within the			st 48 hours
	⊠c			onditions					J G. 1 G	
9.	Large	e or Dang	gerous S	Stream – a	ssessme	nt reach	metric			
	□Ye	s ⊠No) Is st	tream is to	o large or	dangerou	us to assess? I	f Yes, skip	to Metric	13 (Streamside Area Ground Surface Condition).
10.							ach metric	of the e		at reach (examples of atrespers include examples
	iua.	∐Yes	□No	sedimen	tation, mi	ning, exc	at over majority avation, in-stre al Plain strean	am harde	ning [for	nt reach (examples of stressors include excessive example, rip-rap], recent dredging, and snagging) to Metric 12)
	10b.	Check a ☐A					e of assessmen Juatic mosses			ize 4 Coastal Plain streams) 5% oysters or other natural hard bottoms
		ШΑ		e liverworts				Check for Tidal Marsh Streams Only	□F □G	Submerged aquatic vegetation
		⊠в			d/or leaf p	acks and	d/or emergent	k for T h Stre Only	□H.	Low-tide refugia (pools) Sand bottom
		⊠c	vegetat Multiple	e snags an	d logs (inc	luding lap	trees)	heck arsh	□J	5% vertical bank along the marsh
		□D	5% unc	dercut banl	ks and/or	root mats	and/or roots	סֿ≥	□K	Little or no habitat
		□E		s extend to no habitat		al wetted	perimeter			
		_								
****	******	*******	******	**REMAIN	ING QUES	STIONS A	ARE NOT APP	LICABLE	FOR TID	AL MARSH STREAMS************************************
11.	Bedf	orm and	Substra	ite – asses	sment re	ach metr	ic (skip for Siz	e 4 Coas	tal Plain s	streams and Tidal Marsh Streams)
	11a.	□Yes	⊠No	Is assess	ment read	h in a nat	tural sand-bed	stream? (s	kip for C	oastal Plain streams)
	11b.	Bedform ⊠A		ed. Check un section			ox(es).			
		□B		ide section						
		□с	Natural	bedform a	bsent (sk	ip to Met	ric 12, Aquatic	: Life)		
	11c.	at least	one box	in each ro	ow (skip f	or Size 4	Coastal Plain	streams a	and Tidal	essment reach – whether or not submerged. Check Marsh Streams) . Not Present (NP) = absent, Rare Predominant (P) = > 70%. Cumulative percentages
		should n	ot excee	ed 100% fo	r each ass	sessment		(-)		ger
		NP ⊠	R □	C	A	P	Bedrock/sapro	olite		
			Ħ				Boulder (256		n)	
							Cobble (64 –			
		H		H		H	Gravel (2 – 64 Sand (.062 – 1			
			፱		\boxtimes		Silt/clay (< 0.0	,		
			H	\vdash	\exists		Detritus Artificial (rip-ra	an, concre	te. etc.)	
	11d.	□Yes	□No	Are pools	 filled with	_		-		streams and Tidal Marsh Streams)
							,			-,

12.	-		sessment reach metric (skip for Tidal Marsh Streams)
	12a. ⊠ If N		No Was an in-stream aquatic life assessment performed as described in the User Manual? one of the following reasons and skip to Metric 13. ☐No Water ☐Other:
	12b. 🛚	Yes	No Are aquatic organisms present in the assessment reach (look in riffles, pools, then snags)? If Yes, check all that apply. If No, skip to Metric 13.
	1 		Numbers over columns refer to "individuals" for Size 1 and 2 streams and "taxa" for Size 3 and 4 streams. Adult frogs Aquatic reptiles
			Aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats) Beetles Caddisfly larvae (T)
			Asian clam (<i>Corbicula</i>) Crustacean (isopod/amphipod/crayfish/shrimp)
	H		Damselfly and dragonfly larvae Dipterans Mayfly larvae (E)
			Megaloptera (alderfly, fishfly, dobsonfly larvae) Midges/mosquito larvae
			Mosquito fish (<i>Gambusia</i>) or mud minnows (<i>Umbra pygmaea)</i> Mussels/Clams (not <i>Corbicula</i>) Other fish
			Salamanders/tadpoles Snails Stonefly larvae (P)
			Tipulid larvae Worms/leeches
13.			Ground Surface Condition – streamside area metric (skip for Tidal Marsh Streams and B valley types) Left Bank (LB) and the Right Bank (RB). Consider storage capacity with regard to both overbank flow and upland runoff.
	⊠a □B	⊠a □B	Little or no alteration to water storage capacity over a majority of the streamside area Moderate alteration to water storage capacity over a majority of the streamside area
	□C	С	Severe alteration to water storage capacity over a majority of the streamside area (examples: ditches, fill, soil compaction livestock disturbance, buildings, man-made levees, drainage pipes)
14.	Conside LB	r for the RB	Water Storage – streamside area metric (skip for Size 1 streams, Tidal Marsh Streams, and B valley types) Left Bank (LB) and the Right Bank (RB) of the streamside area.
	□A □B □C	□A □B □C	Majority of streamside area with depressions able to pond water ≥ 6 inches deep Majority of streamside area with depressions able to pond water 3 to 6 inches deep Majority of streamside area with depressions able to pond water < 3 inches deep
15.	Conside wetted p	r for the	 e – streamside area metric (skip for Tidal Marsh Streams) Left Bank (LB) and the Right Bank (RB). Do not consider wetlands outside of the streamside area or within the normal of assessment reach.
	□Y ⊠N	∐Y ⊠N	Are wetlands present in the streamside area?
16.	Check a ☐A	II contrib Streams	butors – assessment reach metric (skip for Size 4 streams and Tidal Marsh Streams) utors within the assessment reach or within view of <u>and</u> draining to the assessment reach. and/or springs (jurisdictional discharges)
	□B □C □D □E □F	Obstruct Evidence Stream	nclude wet detention basins; do not include sediment basins or dry detention basins) ion passing flow during low-flow periods within the assessment area (beaver dam, leaky dam, bottom-release dam, weir) e of bank seepage or sweating (iron in water indicates seepage) ped or bank soil reduced (dig through deposited sediment if present) the above
17.		w Detrac	ors – assessment area metric (skip for Tidal Marsh Streams)
	□A □B □C □D	Evidence Obstruct Urban st	e of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation) ion not passing flow during low-flow periods affecting the assessment reach (ex: watertight dam, sediment deposit) ream (≥ 24% impervious surface for watershed) that the streamside area has been modified resulting in accelerated drainage into the assessment reach
	□E □F	Assessn	that the streamside area has been modified resulting in accelerated drainage into the assessment reach nent reach relocated to valley edge the above
18.	-		sment reach metric (skip for Tidal Marsh Streams) Consider "leaf-on" condition.
	⊠A □B □C	Stream : Degrade	shading is appropriate for stream category (may include gaps associated with natural processes) d (example: scattered trees) shading is gone or largely absent

19.	Buffer Width – streamside area metric (skip for Tidal Marsh Streams) Consider "vegetated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top of bank out to the first break. Vegetated Wooded LB RB LB RB $A A A A A A A A A A A A A A A A A A A$
20.	Buffer Structure – streamside area metric (skip for Tidal Marsh Streams) Consider for left bank (LB) and right bank (RB) for Metric 19 ("Vegetated" Buffer Width). LB RB □A □A Mature forest □B □B Non-mature woody vegetation or modified vegetation structure □C □C Herbaceous vegetation with or without a strip of trees < 10 feet wide
21.	□D □D Maintained shrubs □E □E Little or no vegetation Buffer Stressors – streamside area metric (skip for Tidal Marsh Streams) Check all appropriate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but is within 30 feet of stream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet). If none of the following stressors occurs on either bank, check here and skip to Metric 22: Abuts < 30 feet 30-50 feet
	LB RB LB RB LB RB A A A A A A A A A A Row crops B B B B B B Maintained turf C C C C C C C Pasture (no livestock)/commercial horticulture D D D D D D Pasture (active livestock use)
22.	Stem Density – streamside area metric (skip for Tidal Marsh Streams) Consider for left bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width). LB RB A Medium to high stem density B B B Low stem density C C C No wooded riparian buffer or predominantly herbaceous species or bare ground
23.	Continuity of Vegetated Buffer – streamside area metric (skip for Tidal Marsh Streams) Consider whether vegetated buffer is continuous along stream (parallel). Breaks are areas lacking vegetation > 10 feet wide. LB RB \[\text{A} \text{N} \text{A} \text{The total length of buffer breaks is < 25 percent.} \] \[\text{D} \text{B} \text{B} \text{The total length of buffer breaks is between 25 and 50 percent.} \] \[\text{C} \text{C} \text{The total length of buffer breaks is > 50 percent.} \]
24.	Vegetative Composition – streamside area metric (skip for Tidal Marsh Streams) Evaluate the dominant vegetation within 100 feet of each bank or to the edge of the watershed (whichever comes first) as it contributes to assessment reach habitat. LB RB ⊠A Vegetation is close to undisturbed in species present and their proportions. Lower strata composed of native species, with non-native invasive species absent or sparse. □B B Vegetation indicates disturbance in terms of species diversity or proportions, but is still largely composed of native species. This may include communities of weedy native species that develop after clear-cutting or clearing or communities with non-native invasive species present, but not dominant, over a large portion of the expected strata or communities missing understory but retaining canopy trees. □C □C Vegetation is severely disturbed in terms of species diversity or proportions. Mature canopy is absent or communities with non-native invasive species dominant over a large portion of expected strata or communities composed of planted stands of non-characteristic species or communities inappropriately composed of a single species or no vegetation.
25.	Conductivity – assessment reach metric (skip for all Coastal Plain streams) 25a. ☐ Yes ☐ No Was conductivity measurement recorded? If No, select one of the following reasons. ☐ No Water ☐ Other: 25b. Check the box corresponding to the conductivity measurement (units of microsiemens per centimeter). ☐ A < 46 ☐ B 46 to < 67 ☐ C 67 to < 79 ☐ D 79 to < 230 ☐ E ≥ 230
Note	es/Sketch:

Draft NC SAM Stream Rating Sheet Accompanies User Manual Version 2.1

Stream Site Name	CLT Airport Expansion	Date of Assessment	April 2019	
Stream Category	Pa1	Assessor Name/Organization	KMT, BGB/HDR	
Notes of Field Asses	sment Form (Y/N)		NO	
Presence of regulator	ory considerations (Y/N)		NO	
Additional stream inf	ormation/supplementary measu	urements included (Y/N)	NO	
NC SAM feature type	e (perennial, intermittent, Tidal	Marsh Stream)	Perennial	

Aporoninal, intornittorit, Tradi Maron Ctrodiny	T OTOTIMA	<u>. </u>
Function Class Rating Summary	USACE/ All Streams	NCDWR Intermittent
(1) Hydrology	HIGH	
(2) Baseflow	HIGH	
(2) Flood Flow	HIGH	
(3) Streamside Area Attenuation	HIGH	
(4) Floodplain Access	HIGH	
(4) Wooded Riparian Buffer	HIGH	
(4) Microtopography	HIGH	
(3) Stream Stability	HIGH	
•	HIGH	
(4) Channel Stability		
(4) Sediment Transport	LOW	
(4) Stream Geomorphology	HIGH	
(2) Stream/Intertidal Zone Interaction	NA NA	
(2) Longitudinal Tidal Flow	NA	
(2) Tidal Marsh Stream Stability	NA	
(3) Tidal Marsh Channel Stability	NA	
(3) Tidal Marsh Stream Geomorphology	NA	
(1) Water Quality	HIGH	
(2) Baseflow	HIGH	
(2) Streamside Area Vegetation	HIGH	
(3) Upland Pollutant Filtration	HIGH	
(3) Thermoregulation	HIGH	
(2) Indicators of Stressors	NO	
(2) Aquatic Life Tolerance	MEDIUM	
(2) Intertidal Zone Filtration	NA	
(1) Habitat	LOW	
(2) In-stream Habitat	LOW	
(3) Baseflow	HIGH	
(3) Substrate	LOW	
(3) Stream Stability	HIGH	
(3) In-stream Habitat	MEDIUM	
(2) Stream-side Habitat	HIGH	
(3) Stream-side Habitat	HIGH	
(3) Thermoregulation	HIGH	
(2) Tidal Marsh In-stream Habitat	NA NA	
	NA NA	
(3) Flow Restriction	-	
(3) Tidal March Channel Stability	NA NA	
(4) Tidal Marsh Channel Stability	NA NA	
(4) Tidal Marsh Stream Geomorphology	NA NA	
(3) Tidal Marsh In-stream Habitat	NA NA	
(2) Intertidal Zone	NA	
Overall	HIGH	

NC SAM FIELD ASSESSMENT FORM Accompanies User Manual Version 2.1

		Acce	Jilipailles User i	vialiuai veisioli 2. i	
USACE AID	#:			NCDWR #:	
					7.5-minute topographic quadrangle,
			•		d on the same property, identify and
					Jser Manual for detailed descriptions
	•			• • • • •	surements were performed. See the
		mples of additional meas			
			E ASSESSMENT	AREA (do not need to be with	n the assessment area).
	ITE INFORMATION				
Project na		CLT Airport Expansion		2. Date of evaluation: April 2	
3. Applicant/o	owner name:	CLT		4. Assessor name/organization:	KMT, BGB/HDR
5. County:		Mecklenburg		6. Nearest named water body	
7. River basii		Catawba		on USGS 7.5-minute quad:	Ticer Branch
		egrees, at lower end of a		•	
		epth and width can be a			21.1 ((2.21)
	er (show on attac			Length of assessment reach evaluation	` '
		n riffle, if present) to top			Jnable to assess channel depth.
	width at top of ba			assessment reach a swamp stear	n? ∐Yes ∐No
		I flow Intermittent flow	v ∐ i idai iviarsh :	Suealli	
15. NC SAM	TEGORY INFOR	MATION:	□ Piedmont (Piedmont)	P) Inner Coastal Plain (I)	☐ Outer Coastal Plain (O)
15. NC SAIVI	Zone.	☐ IVIOUITIAITIS (IVI)	☑ Fleumont (F	inner Coastal Flain (I)	U Outer Coastal Flail (O)
	d geomorphic	\bowtie A	$\overline{}$	□в	حر
	ape (skip for r sh Stream):	(more sinuous stream	n flattor vallov ek		tream, steeper valley slope)
	,		=		
17. Watershe	٠.	\square Size 1 (< 0.1 mi ²)	∐Size 2 (0.11	to $< 0.5 \text{ mi}^2$) Size 3 (0.5 to $<$	< 5 mi²)
	Marsh Stream) L INFORMATION	l•			
			□No If Vos. ch	neck all that apply to the assessm	ont area
	n 10 water	Classified Tr			rshed (I I II III IV V)
	tial Fish Habitat	☐Primary Nurs			rs/Outstanding Resource Waters
_	ly owned property		parian buffer rule		=
	omous fish	☐303(d) List			ronmental Concern (AEC)
			listed protected s	pecies within the assessment are	` '
List sp			·	•	
□Desigr	nated Critical Hab	oitat (list species)			
19. Are addit	ional stream infor	rmation/supplementary m	neasurements inc	luded in "Notes/Sketch" section o	r attached? ☐Yes ⊠No
				.=	
		· •	for Size 1 strea	ms and Tidal Marsh Streams)	
	No flow, water in	t assessment reach.			
	No water in asse	, ,			
_		ction – assessment read		g	and all have a flavor managinations are fill to the
					ected by a flow restriction or fill to the rimpoundment on flood or ebb within
					the channel, tidal gates, debris jams,
	beaver dams).	odon (oxampioo: dildore	sized of perofical	ourono, oudoowayo mat conome	tine charmer, tidal gates, debne jame,
	Not A				
3. Feature F	Pattern – assess	ment reach metric			
			ltered pattern (ex	amples: straightening, modification	on above or below culvert)
	Not A	accoontine readin nas a	morod pattorn (ox	ampioo. on aiginoimig, moamoan	and a solution of the solution
	anaitudinal Dra	file accessment recol	h		
	•	ofile – assessment reach		room profile (evemples), channel	down outting existing domming ever
					down-cutting, existing damming, over has not reformed from any of these
	disturbances).	aggradation, drouging, c	and onouvation w	more appropriate originior profile	nac not referrible from any of these
_	Not A				
		v accomment reach	motrio		
		y – assessment reach n estability, not nast even		he stream has currently recov	ered. Examples of instability include
					such as concrete, gabion, rip-rap).
	< 10% of channe		,, ac		, , , , , , , , , , , , , , , , , , ,
□В	10 to 25% of cha				
□c	> 25% of channe	l unstable			

6.					streamsic					
			the Left	Bank (LB) and the	Right Ba	nk (RB).			
	LB ⊠A □B	RB ⊠A □B	Mod refe or in	derate evi erence inte ntermitten	dence of ceraction (ex t bulkhead	conditions xamples: ls, causev	limited streams vays with floodp	rms, levee ide area a lain const	es, down- ccess, dis riction, mi	cutting, aggradation, dredging) that adversely affect ruption of flood flows through streamside area, leaky nor ditching [including mosquito ditching])
	□c	□c	[exa of flo mos	amples: canonical canonica	auseways through st :hing]) <u>or</u> f	with flood reamside	plain and chanr area] <u>or</u> too mu	nel constric ch floodpla	ction, bulk ain/intertic	eraction (little to no floodplain/intertidal zone access heads, retaining walls, fill, stream incision, disruption lal zone access [examples: impoundments, intensive or assessment reach is a man-made feature on an
7.	Wate	r Quality	Stresso	ors – asse	essment r	each/inte	rtidal zone me	tric		
		k all that								
										er discoloration, oil sheen, stream foam)
	□B □C						n features or int s entering the a			nd causing a water quality problem
	\Box D	Odor	(not incl	luding nat	ural sulfide	e odors)	_			
	□E	Curre section		shed or c	ollected d	ata indica	ting degraded	water qua	lity in the	assessment reach. Cite source in "Notes/Sketch"
	□F			n access t	o stream o	or intertida	al zone			
	□G				am or inte			به منصب ا		outing doctruction ato)
							in "Notes/Sket			nowing, destruction, etc)
	⊠J		to no str			_ (-			,	
8.					•	•	al Marsh Strea	•		
	For S ☐A									eams, D2 drought or higher is considered a drought.
	⊟B						II not exceeding 1 inch within the			St 46 flours
	⊠c			onditions	-"	J				
9.	Large □Ye		-		assessme oo large or			f Yes, skip	to Metric	13 (Streamside Area Ground Surface Condition).
10.							ach metric			
	10a.	∐Yes	□No	sedime	ntation, m	ining, exc	at over majority cavation, in-stre tal Plain strean	eam harde	ening [for	nt reach (examples of stressors include excessive example, rip-rap], recent dredging, and snagging) to Metric 12)
	10b.	Check a □A					e of assessmen quatic mosses			ize 4 Coastal Plain streams) 5% oysters or other natural hard bottoms
					s, lichens,			Check for Tidal Marsh Streams Only	□F □G	Submerged aquatic vegetation
		⊠в	Multiple vegetat		nd/or leaf _l	packs and	d/or emergent	k for T h Stre Only	□H □I	Low-tide refugia (pools) Sand bottom
		□с			nd logs (in	cluding la	p trees)	heck larsh	∐'j	5% vertical bank along the marsh
		□D					and/or roots	ი ≥	□ĸ	Little or no habitat
		□E		s exterio t		nai welled	I perimeter			
****	******	*******	******	**REMAIN	IING QUE	STIONS	ARE NOT APP	LICABLE	FOR TID	AL MARSH STREAMS************************************
11.	Bedf	orm and	Substra	te – asse	ssment re	each meti	ric (skip for Siz	ze 4 Coas	tal Plain	streams and Tidal Marsh Streams)
	11a.	□Yes	⊠No	Is asses	sment read	ch in a na	tural sand-bed	stream? (s	skip for C	oastal Plain streams)
	11b.				k the app		oox(es).			
		⊠A □B			(evaluate ∩ (evaluat					
		□с					ric 12, Aquatio	: Life)		
	11c.	at least	one box	in each r	ow (skip	for Size 4	Coastal Plain	streams a	and Tidal	essment reach – whether or not submerged. Check Marsh Streams). Not Present (NP) = absent, Rare Predominant (P) = > 70%. Cumulative percentages
					or each as			II (A) – > ·	40-7076, 1	redominant (F) = > 70%. Cumulative percentages
		NP ⊠	R □	С	A	P	Podrook/oopr	olito		
			百	H	H		Bedrock/sapre Boulder (256		m)	
			\boxtimes				Cobble (64 –	256 mm)	,	
		님	H		H	님	Gravel (2 – 64 Sand (.062 –			
						Ĭ	Silt/clay (< 0.0	,		
			H	H	H	\mathbb{R}	Detritus Artificial (rip-ra	ap, concre	ete, etc.)	
	11d.	□Yes	□No	Are pool	 s filled witl			•		streams and Tidal Marsh Streams)
							,			-,

12.	•		sessment reach metric (skip for Tidal Marsh Streams)
	12a. ⊠ If N		No Was an in-stream aquatic life assessment performed as described in the User Manual? one of the following reasons and skip to Metric 13. ☐No Water ☐Other:
	12b. 🛛	Yes	No Are aquatic organisms present in the assessment reach (look in riffles, pools, then snags)? If Yes, check all that apply. If No, skip to Metric 13.
	1		Numbers over columns refer to "individuals" for Size 1 and 2 streams and "taxa" for Size 3 and 4 streams. Adult frogs Aquatic reptiles
			Aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats) Beetles
			Caddisfly larvae (T) Asian clam (<i>Corbicula</i>)
	H		Crustacean (isopod/amphipod/crayfish/shrimp) Damselfly and dragonfly larvae Dipterans
			Mayfly larvae (E) Megaloptera (alderfly, fishfly, dobsonfly larvae)
			Midges/mosquito larvae Mosquito fish (<i>Gambusia</i>) or mud minnows (<i>Umbra pygmaea)</i> Mussels/Clams (not <i>Corbicula</i>)
			Other fish Salamanders/tadpoles
			Snails Stonefly larvae (P)
			Tipulid larvae Worms/leeches
13.			Ground Surface Condition – streamside area metric (skip for Tidal Marsh Streams and B valley types) Left Bank (LB) and the Right Bank (RB). Consider storage capacity with regard to both overbank flow and upland runoff.
	⊠a □B	⊠a □B	Little or no alteration to water storage capacity over a majority of the streamside area Moderate alteration to water storage capacity over a majority of the streamside area
	□с	□с	Severe alteration to water storage capacity over a majority of the streamside area (examples: ditches, fill, soil compaction, livestock disturbance, buildings, man-made levees, drainage pipes)
14.	Conside LB	r for the RB	Water Storage – streamside area metric (skip for Size 1 streams, Tidal Marsh Streams, and B valley types) Left Bank (LB) and the Right Bank (RB) of the streamside area.
	□A □B □C	□A □B □C	Majority of streamside area with depressions able to pond water ≥ 6 inches deep Majority of streamside area with depressions able to pond water 3 to 6 inches deep Majority of streamside area with depressions able to pond water < 3 inches deep
15.	Conside wetted p	r for the	 e – streamside area metric (skip for Tidal Marsh Streams) Left Bank (LB) and the Right Bank (RB). Do not consider wetlands outside of the streamside area or within the normal of assessment reach.
	□Y ⊠N	∐Y ⊠N	Are wetlands present in the streamside area?
16.			outors – assessment reach metric (skip for Size 4 streams and Tidal Marsh Streams) utors within the assessment reach or within view of <u>and</u> draining to the assessment reach.
	□A □B □C	Ponds (i	and/or springs (jurisdictional discharges) nclude wet detention basins; do not include sediment basins or dry detention basins) ion passing flow during low-flow periods within the assessment area (beaver dam, leaky dam, bottom-release dam, weir)
	□D ⊠E □F	Evidence Stream	e of bank seepage or sweating (iron in water indicates seepage) bed or bank soil reduced (dig through deposited sediment if present) the above
17.	Baseflov Check a		ors – assessment area metric (skip for Tidal Marsh Streams) ply.
	□A □B □C	Obstruct	e of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation) ion not passing flow during low-flow periods affecting the assessment reach (ex: watertight dam, sediment deposit) ream (≥ 24% impervious surface for watershed)
	□D □E ⊠F	Evidence Assessn	e that the streamside area has been modified resulting in accelerated drainage into the assessment reach nent reach relocated to valley edge the above
18.	Shading		sment reach metric (skip for Tidal Marsh Streams)
	⊠a □B	Stream : Degrade	Consider "leaf-on" condition. shading is appropriate for stream category (may include gaps associated with natural processes) d (example: scattered trees)
	□С	Stream	shading is gone or largely absent

19.	Buffer Width – streamside area metric (skip for Tidal Marsh Streams) Consider "vegetated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top of bank out to the first break. Vegetated Wooded LB RB LB RB $A A A A A A A A A A A A A A A A A A A$
20.	Buffer Structure – streamside area metric (skip for Tidal Marsh Streams) Consider for left bank (LB) and right bank (RB) for Metric 19 ("Vegetated" Buffer Width). LB RB □A □A Mature forest □B □B Non-mature woody vegetation or modified vegetation structure □C □C Herbaceous vegetation with or without a strip of trees < 10 feet wide
21.	□D □D Maintained shrubs □E □E Little or no vegetation Buffer Stressors – streamside area metric (skip for Tidal Marsh Streams) Check all appropriate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but is within 30 feet of stream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet). If none of the following stressors occurs on either bank, check here and skip to Metric 22: Abuts < 30 feet 30-50 feet
	LB RB LB RB LB RB A A A A A A A A A A Row crops B B B B B B Maintained turf C C C C C C C Pasture (no livestock)/commercial horticulture D D D D D D Pasture (active livestock use)
22.	Stem Density – streamside area metric (skip for Tidal Marsh Streams) Consider for left bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width). LB RB A Medium to high stem density B B B Low stem density C C C No wooded riparian buffer or predominantly herbaceous species or bare ground
23.	Continuity of Vegetated Buffer – streamside area metric (skip for Tidal Marsh Streams) Consider whether vegetated buffer is continuous along stream (parallel). Breaks are areas lacking vegetation > 10 feet wide. LB RB \[\text{A} \text{N} \text{A} \text{The total length of buffer breaks is < 25 percent.} \] \[\text{D} \text{B} \text{B} \text{The total length of buffer breaks is between 25 and 50 percent.} \] \[\text{C} \text{C} \text{The total length of buffer breaks is > 50 percent.} \]
24.	Vegetative Composition – streamside area metric (skip for Tidal Marsh Streams) Evaluate the dominant vegetation within 100 feet of each bank or to the edge of the watershed (whichever comes first) as it contributes to assessment reach habitat. LB RB ⊠A Vegetation is close to undisturbed in species present and their proportions. Lower strata composed of native species, with non-native invasive species absent or sparse. □B B Vegetation indicates disturbance in terms of species diversity or proportions, but is still largely composed of native species. This may include communities of weedy native species that develop after clear-cutting or clearing or communities with non-native invasive species present, but not dominant, over a large portion of the expected strata or communities missing understory but retaining canopy trees. □C □C Vegetation is severely disturbed in terms of species diversity or proportions. Mature canopy is absent or communities with non-native invasive species dominant over a large portion of expected strata or communities composed of planted stands of non-characteristic species or communities inappropriately composed of a single species or no vegetation.
25.	Conductivity – assessment reach metric (skip for all Coastal Plain streams) 25a. ☐ Yes ☐ No Was conductivity measurement recorded? If No, select one of the following reasons. ☐ No Water ☐ Other: 25b. Check the box corresponding to the conductivity measurement (units of microsiemens per centimeter). ☐ A < 46 ☐ B 46 to < 67 ☐ C 67 to < 79 ☐ D 79 to < 230 ☐ E ≥ 230
Note	es/Sketch:

Draft NC SAM Stream Rating Sheet Accompanies User Manual Version 2.1

Stream Site Name	CLT Airport Expansion	Date of Assessment	April 2019	
Stream Category	Pa1	Assessor Name/Organization	KMT, BGB/HDR	
Notes of Field Asses	sment Form (Y/N)		NO	
Presence of regulator	ory considerations (Y/N)		NO	
Additional stream inf	ormation/supplementary measu	urements included (Y/N)	NO	
NC SAM feature type	e (perennial, intermittent, Tidal	Marsh Stream)	Perennial	

, , , , , , , , , , , , , , , , , , , ,	-	
	USACE/	NCDWR
Function Class Rating Summary	All Streams	Intermittent
(1) Hydrology	HIGH	
(2) Baseflow	HIGH	
(2) Flood Flow	HIGH	
(3) Streamside Area Attenuation	HIGH	
(4) Floodplain Access	HIGH	
(4) Wooded Riparian Buffer	HIGH	
(4) Microtopography	HIGH	
(3) Stream Stability	HIGH	
(4) Channel Stability	HIGH	
(4) Sediment Transport	HIGH	
(4) Stream Geomorphology	HIGH	
(2) Stream/Intertidal Zone Interaction	NA	
(2) Longitudinal Tidal Flow	NA	
(2) Tidal Marsh Stream Stability	NA	
(3) Tidal Marsh Channel Stability	NA	
(3) Tidal Marsh Stream Geomorphology	NA	
(1) Water Quality	HIGH	
(2) Baseflow	HIGH	
(2) Streamside Area Vegetation	HIGH	
(3) Upland Pollutant Filtration	HIGH	
(3) Thermoregulation	HIGH	
(2) Indicators of Stressors	NO	
(2) Aquatic Life Tolerance	MEDIUM	
(2) Intertidal Zone Filtration	NA NA	
(1) Habitat	HIGH	
• •	HIGH	
(2) In-stream Habitat	HIGH	
(3) Substate		
(3) Substrate	HIGH	
(3) Stream Stability	HIGH	
(3) In-stream Habitat	HIGH	
(2) Stream-side Habitat	HIGH	
(3) Stream-side Habitat	HIGH	
(3) Thermoregulation	HIGH	
(2) Tidal Marsh In-stream Habitat	NA	
(3) Flow Restriction	NA	
(3) Tidal Marsh Stream Stability	NA	
(4) Tidal Marsh Channel Stability	NA	
(4) Tidal Marsh Stream Geomorphology	NA	
(3) Tidal Marsh In-stream Habitat	NA	
(2) Intertidal Zone	NA	
Overall	HIGH	

NC SAM FIELD ASSESSMENT FORM Accompanies User Manual Version 2.1

USACE AID #:	NCDWR #:
	ketch of the assessment area and photographs. Attach a copy of the USGS 7.5-minute topographic quadrangle,
	stream reach under evaluation. If multiple stream reaches will be evaluated on the same property, identify and
	ached map, and include a separate form for each reach. See the NC SAM User Manual for detailed descriptions
	d information. Record in the "Notes/Sketch" section if supplementary measurements were performed. See the
	amples of additional measurements that may be relevant.
NOTE EVIDENCE OF STRES	SSORS AFFECTING THE ASSESSMENT AREA (do not need to be within the assessment area).
PROJECT/SITE INFORMATI	ON:
1. Project name (if any):	CLT Airport Expansion 2. Date of evaluation: April 2019
3. Applicant/owner name:	CLT 4. Assessor name/organization: Benjamin Burdette/HDR
5. County:	Mecklenburg 6. Nearest named water body
7. River basin:	Catawba on USGS 7.5-minute quad: Ticer Branch
8. Site coordinates (decimal of	degrees, at lower end of assessment reach): 35.236870, -80.967351
	lepth and width can be approximations)
9. Site number (show on attac	
	in riffle, if present) to top of bank (feet): 4 Unable to assess channel depth.
12. Channel width at top of ba	
	al flow Intermittent flow ITidal Marsh Stream
STREAM CATEGORY INFO	
15. NC SAM Zone:	☐ Mountains (M) ☐ Piedmont (P) ☐ Inner Coastal Plain (I) ☐ Outer Coastal Plain (O)
16. Estimated geomorphic	NA ☐B
valley shape (skip for	_
Tidal Marsh Stream):	(more sinuous stream, flatter valley slope) (less sinuous stream, steeper valley slope)
17. Watershed size: (skip	\square Size 1 (< 0.1 mi ²) \square Size 2 (0.1 to < 0.5 mi ²) \square Size 3 (0.5 to < 5 mi ²) \square Size 4 (≥ 5 mi ²)
for Tidal Marsh Stream)	
ADDITIONAL INFORMATION	N:
	ations evaluated? ⊠Yes □No If Yes, check all that apply to the assessment area.
Section 10 water	☐Classified Trout Waters ☐Water Supply Watershed (☐I ☐II ☐IV ☐V)
☐Essential Fish Habitat	☐ Primary Nursery Area ☐ High Quality Waters/Outstanding Resource Waters
☐ Publicly owned propert	
☐Anadromous fish	□ 303(d) List □ CAMA Area of Environmental Concern (AEC)
-	of a federal and/or state listed protected species within the assessment area.
List species: ☐Designated Critical Hal	hitat (list angeles)
	rmation/supplementary measurements included in "Notes/Sketch" section or attached? ☐Yes ☒No
19. Are additional stream into	iniation/supplementary measurements included in Notes/Oketon Section of attached: Tes 2140
1. Channel Water – assess	ment reach metric (skip for Size 1 streams and Tidal Marsh Streams)
	ut assessment reach.
☐B No flow, water in	
☐C No water in asset	essment reach.
2. Evidence of Flow Restric	ction – assessment reach metric
	assessment reach in-stream habitat or riffle-pool sequence is severely affected by a flow restriction <u>or</u> fill to the
	ing flow \underline{or} a channel choked with aquatic macrophytes \underline{or} ponded water \underline{or} impoundment on flood or ebb within
	reach (examples: undersized or perched culverts, causeways that constrict the channel, tidal gates, debris jams,
beaver dams).	
⊠B Not A	
3. Feature Pattern – assess	sment reach metric
	assessment reach has altered pattern (examples: straightening, modification above or below culvert).
⊠B Not A	g,
	ofilo – assessment reach metric
	ofile – assessment reach metric
	ssment reach has a substantially altered stream profile (examples: channel down-cutting, existing damming, over aggradation, dredging, and excavation where appropriate channel profile has not reformed from any of these
disturbances).	aggradation, drouging, and oxogration where appropriate chainer profile has not reformed from any of these
⊠B Not A	
	transport week week wet it
=	ty – assessment reach metric
	nstability, not past events from which the stream has currently recovered. Examples of instability include channel down-cutting (head-cut), active widening, and artificial hardening (such as concrete, gabion, rip-rap).
⊠A < 10% of channe	
☐B 10 to 25% of cha	
☐C > 25% of channe	

6.	Streamside Area Interaction – streamside area metric Consider for the Left Bank (LB) and the Right Bank (RB).									
	LB	RB	ne Len	Dank (LD) and the	Right Ba	nk (RB).			
	Little or no evidence of conditions that adversely affect reference interaction B									
	□C	□c	Ext [ex: of f mo	ensive evi amples: ca lood flows	idence of c auseways through st ching]) <u>or</u> f	conditions with flood reamside	that adversely lplain and chann area] <u>or</u> too mud	affect refe lel constric ch floodpla	erence inte ction, bulk ain/intertio	eraction (little room on floodplain/intertidal zone access heads, retaining walls, fill, stream incision, disruption lal zone access [examples: impoundments, intensive or assessment reach is a man-made feature on an
7.	Wate	r Quality	Stress	ors – asse	essment r	each/inte	ertidal zone me	tric		
		k all that								
										er discoloration, oil sheen, stream foam)
	□B □C						n features or int s entering the a			nd causing a water quality problem
	\Box D	Odor	(not inc	luding nat	ural sulfide	e odors)	_			
	□E	Curre section		ished or c	ollected da	ata indica	ting degraded v	water qua	lity in the	assessment reach. Cite source in "Notes/Sketch"
	□F			h access t	to stream o	or intertida	al zone			
	□G				eam or inte			hurning	rogular m	couring destruction etc)
							i in "Notes/Sketo			owing, destruction, etc)
	\boxtimes J	Little	to no st	ressors					,	
8.					•	•	al Marsh Stream	•		
	For S						sidered a drough III not exceeding			eams, D2 drought or higher is considered a drought.
	⊟в						1 inch within the			3. 40 110013
	⊠c	No d	rought c	onditions						
9.	Larg e □Ye	`	-		assessme oo large or			f Yes, skip	to Metric	13 (Streamside Area Ground Surface Condition).
10.							ach metric			
	10a.	∐Yes	□No	sedime	ntation, m	ining, exc	at over majority cavation, in-stre tal Plain strean	am harde	ning [for	nt reach (examples of stressors include excessive example, rip-rap], recent dredging, and snagging) to Metric 12)
	10b.									ize 4 Coastal Plain streams)
		□A			macrophyte ts, lichens,		quatic mosses I mats)	Check for Tidal Marsh Streams Only	□F □G	5% oysters or other natural hard bottoms Submerged aquatic vegetation
		⊠B	Multiple	e sticks ar			d/or emergent	k for T h Strea Only	□н	Low-tide refugia (pools)
		⊠c	vegeta Multiple		nd logs (ind	cluding la	p trees)	arsh o	□J	Sand bottom 5% vertical bank along the marsh
		ΠĎ	5% un	dercut bar	nks and/or	root mats	s and/or roots	ပ် 🖺	□κ	Little or no habitat
		□E		ເຣ extend t r no habita		nal wetted	l perimeter			
					-					
****	*****	******	******	**REMAIN	IING QUE	STIONS	ARE NOT APPI	LICABLE	FOR TID	AL MARSH STREAMS************************************
11.			_							streams and Tidal Marsh Streams)
		∐Yes						stream? (s	skip for C	oastal Plain streams)
	11b.	Bedform ⊠A			k the appi (evaluate		ox(es).			
		□в	Pool-gl	lide sectio	n (evaluat	e 11d)				
		□с	Natura	l bedform	absent (sk	tip to Met	tric 12, Aquatic	Life)		
	11c.	at least	one box	c in each r	row (skip 1	for Size 4	Coastal Plain	streams a	and Tidal	essment reach – whether or not submerged. Check Marsh Streams) . Not Present (NP) = absent, Rare Predominant (P) = > 70%. Cumulative percentages
		should n	ot excee	ed 100% fo	or each as	sessment		. ,	,	
		NP ⊠	R □	C □	A	P	Bedrock/sapro	olite		
							Boulder (256 -	– 4096 mr	n)	
		H			H	H	Cobble (64 – 2 Gravel (2 – 64			
			፱				Sand (.062 – 2	2 mm)		
			님		H	H	Silt/clay (< 0.0 Detritus	062 mm)		
							Artificial (rip-ra	ap, concre	te, etc.)	
	11d.	∐Yes	□No	Are pool	s filled with	n sedimer	nt? (skip for Siz	e 4 Coast	tal Plain s	streams and Tidal Marsh Streams)

12.	-		sessment reach metric (skip for Tidal Marsh Streams)
	12a. ⊠` If N		No Was an in-stream aquatic life assessment performed as described in the User Manual? cone of the following reasons and skip to Metric 13. ☐No Water ☐Other:
	12b. ⊠'	Yes [No Are aquatic organisms present in the assessment reach (look in riffles, pools, then snags)? If Yes, check all that apply. If No, skip to Metric 13.
	1 		Numbers over columns refer to "individuals" for Size 1 and 2 streams and "taxa" for Size 3 and 4 streams. Adult frogs Aquatic reptiles
		\boxtimes	Aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats) Beetles Caddisfly larvae (T)
			Asian clam (<i>Corbicula</i>) Crustacean (isopod/amphipod/crayfish/shrimp) Damselfly and dragonfly larvae
			Dipterans Mayfly larvae (E) Megaloptera (alderfly, fishfly, dobsonfly larvae)
			Midges/mosquito larvae Mosquito fish (<i>Gambusia</i>) or mud minnows (<i>Umbra pygmaea</i>)
			Mussels/Clams (not <i>Corbicula</i>) Other fish Salamanders/tadpoles
			Snails Stonefly larvae (P) Tipulid larvae
13.	Streams	ide Area	Worms/leeches Ground Surface Condition – streamside area metric (skip for Tidal Marsh Streams and B valley types)
	LB ⊠A	RB ⊠A	Left Bank (LB) and the Right Bank (RB). Consider storage capacity with regard to both overbank flow and upland runoff. Little or no alteration to water storage capacity over a majority of the streamside area
	□B □C	□B	Moderate alteration to water storage capacity over a majority of the streamside area Severe alteration to water storage capacity over a majority of the streamside area (examples: ditches, fill, soil compaction livestock disturbance, buildings, man-made levees, drainage pipes)
14.			Water Storage – streamside area metric (skip for Size 1 streams, Tidal Marsh Streams, and B valley types) Left Bank (LB) and the Right Bank (RB) of the streamside area.
	□A ⊠B □C	□a ⊠b □C	Majority of streamside area with depressions able to pond water ≥ 6 inches deep Majority of streamside area with depressions able to pond water 3 to 6 inches deep Majority of streamside area with depressions able to pond water < 3 inches deep
15.	Conside wetted pe	ee – streamside area metric (skip for Tidal Marsh Streams) Left Bank (LB) and the Right Bank (RB). Do not consider wetlands outside of the streamside area or within the normal of assessment reach.	
	LB □Y ⊠N	RB □Y ⊠N	Are wetlands present in the streamside area?
16.	Check a	II contrib	outors – assessment reach metric (skip for Size 4 streams and Tidal Marsh Streams) outors within the assessment reach or within view of <u>and</u> draining to the assessment reach.
	□A □B □C □D □E □F	Ponds (Obstruction of the Control o	and/or springs (jurisdictional discharges) nclude wet detention basins; do not include sediment basins or dry detention basins) tion passing flow during low-flow periods within the assessment area (beaver dam, leaky dam, bottom-release dam, weir) e of bank seepage or sweating (iron in water indicates seepage) bed or bank soil reduced (dig through deposited sediment if present) the above
17.		v Detrac	tors – assessment area metric (skip for Tidal Marsh Streams)
	□A □B □C □D	Evidence Obstructure Urban s	e of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation) tion not passing flow during low-flow periods affecting the assessment reach (ex: watertight dam, sediment deposit) tream (≥ 24% impervious surface for watershed) e that the streamside area has been modified resulting in accelerated drainage into the assessment reach
	□E ⊠F	Assessr None of	nent reach relocated to valley edge the above
18.			sment reach metric (skip for Tidal Marsh Streams) Consider "leaf-on" condition.
	⊠A □B □C	Stream Degrade	shading is appropriate for stream category (may include gaps associated with natural processes) d (example: scattered trees) shading is gone or largely absent

	Consider "vegetated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top of bank out to the first break. Vegetated Wooded						
	B RB LB RB □ B □ B □ B From 50 to < 100 feet wide □ C □ C □ C □ C From 30 to < 50 feet wide □ D □ D □ D □ D From 10 to < 30 feet wide □ E □ E □ E □ E < 10 feet wide or no trees						
20.	Buffer Structure – streamside area metric (skip for Tidal Marsh Streams)						
	Consider for left bank (LB) and right bank (RB) for Metric 19 ("Vegetated" Buffer Width). LB RB						
	☑A ☑A Mature forest ☐B ☐B Non-mature woody vegetation or modified vegetation structure ☐C ☐C Herbaceous vegetation with or without a strip of trees < 10 feet wide						
	□C Herbaceous vegetation with or without a strip of trees < 10 feet wide □D □D Maintained shrubs □E Little or no vegetation						
21.	Buffer Stressors – streamside area metric (skip for Tidal Marsh Streams)						
	Check all appropriate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but is within 30 feet of stream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet).						
	If none of the following stressors occurs on either bank, check here and skip to Metric 22: Abuts < 30 feet 30-50 feet						
	LB RB LB RB \[\text{A} \text{A} \text{A} \text{A} \text{A} \text{A} \text{A} \text{A} \text{Row crops} \]						
	□B □B □B □B □B Maintained turf □C □C □C □C □C Pasture (no livestock)/commercial horticulture □D □D □D □D □D □D □D □D Pasture (active livestock use)						
22.	Stem Density – streamside area metric (skip for Tidal Marsh Streams)						
	Consider for left bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width). LB RB						
	☑A ☑A Medium to high stem density☐B ☐B Low stem density						
22	Continuity of Vogotated Buffer of predominantly herbaceous species or bare ground						
23.	Continuity of Vegetated Buffer – streamside area metric (skip for Tidal Marsh Streams) Consider whether vegetated buffer is continuous along stream (parallel). Breaks are areas lacking vegetation > 10 feet wide. LB RB						
	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐						
	☐C ☐C The total length of buffer breaks is > 50 percent.						
24.	Vegetative Composition – streamside area metric (skip for Tidal Marsh Streams) Evaluate the dominant vegetation within 100 feet of each bank or to the edge of the watershed (whichever comes first) as it contributes to assessment reach habitat. LB RB						
	□A ☑A Vegetation is close to undisturbed in species present and their proportions. Lower strata composed of native species, with non-native invasive species absent or sparse.						
	communities missing understory but retaining canopy trees. Vegetation is severely disturbed in terms of species diversity or proportions. Mature canopy is absent <u>or</u> communities with non-native invasive species dominant over a large portion of expected strata <u>or</u> communities composed of planted stands of non-characteristic species <u>or</u> communities inappropriately composed of a single species <u>or</u> no vegetation.						
25.	Conductivity – assessment reach metric (skip for all Coastal Plain streams) 25a. Yes No Was conductivity measurement recorded? If No, select one of the following reasons. No Water Other:						
	25b. Check the box corresponding to the conductivity measurement (units of microsiemens per centimeter). □A < 46 □B 46 to < 67 □C 67 to < 79 □D 79 to < 230 □E ≥ 230						
	es/Sketch:						
larg	e amounts of privet in streamside area						

19. Buffer Width – streamside area metric (skip for Tidal Marsh Streams)

Draft NC SAM Stream Rating Sheet Accompanies User Manual Version 2.1

Stream Site Name	CLT Airport Expansion	Date of Assessment	April 2019	
Stream Category	Pa2	Assessor Name/Organization	Benjamin Bur	dette/HDR
Notes of Field Asses	YES			
Presence of regulator	NO			
Additional stream inf	NO			
NC SAM feature type	e (perennial, intermittent, Tidal	Marsh Stream)	Perennial	

o (poroninal, intermittent, fraai maren etream)		<u>. </u>
Function Class Bating Summany	USACE/	NCDWR Intermittent
Function Class Rating Summary (1) Hydrology	All Streams HIGH	memmuem
(2) Baseflow	HIGH	
` '	HIGH	
(2) Flood Flow		
(3) Streamside Area Attenuation	HIGH	
(4) Floodplain Access	HIGH	
(4) Wooded Riparian Buffer	HIGH	
(4) Microtopography	MEDIUM	
(3) Stream Stability	HIGH	
(4) Channel Stability	HIGH	
(4) Sediment Transport	MEDIUM	
(4) Stream Geomorphology	HIGH	
(2) Stream/Intertidal Zone Interaction	NA	
(2) Longitudinal Tidal Flow	NA	
(2) Tidal Marsh Stream Stability	NA	
(3) Tidal Marsh Channel Stability	NA	
(3) Tidal Marsh Stream Geomorphology	NA	
(1) Water Quality	HIGH	
(2) Baseflow	HIGH	
(2) Streamside Area Vegetation	HIGH	
(3) Upland Pollutant Filtration	HIGH	
(3) Thermoregulation	HIGH	
(2) Indicators of Stressors	NO	
(2) Aquatic Life Tolerance	HIGH	
(2) Intertidal Zone Filtration	NA	
(1) Habitat	HIGH	
(2) In-stream Habitat	MEDIUM	
(3) Baseflow	HIGH	
(3) Substrate	MEDIUM	
(3) Stream Stability	HIGH	
(3) In-stream Habitat	MEDIUM	
(2) Stream-side Habitat	HIGH	
(3) Stream-side Habitat	HIGH	
(3) Thermoregulation	HIGH	
(2) Tidal Marsh In-stream Habitat	NA NA	
(3) Flow Restriction	NA NA	
	-	
(3) Tidal Marsh Stream Stability (4) Tidal Marsh Channel Stability	NA NA	
. ,	NA NA	
(4) Tidal Marsh Stream Geomorphology	NA NA	
(3) Tidal Marsh In-stream Habitat	NA NA	
(2) Intertidal Zone	NA	
Overall	HIGH	

NC SAM FIELD ASSESSMENT FORM Accompanies User Manual Version 2.1

		ACC	onipanies oser wa	alluai veisioli 2. i	
	ACE AID #:			NCDWR #:	
					7.5-minute topographic quadrangle,
					I on the same property, identify and
					ser Manual for detailed descriptions
					urements were performed. See the
		examples of additional mea			
NO	TE EVIDENCE OF ST	RESSORS AFFECTING TH	IE ASSESSMENT A	AREA (do not need to be within	n the assessment area).
	OJECT/SITE INFORM	-			
	Project name (if any):	CLT Airport Expansion		2. Date of evaluation: April 20	
	Applicant/owner name:	CLT		. Assessor name/organization:	KMT,BGB/HDR
	County:	Mecklenburg	6	6. Nearest named water body	
	River basin:	Catawba		on USGS 7.5-minute quad:	Ticer Branch
	•	al degrees, at lower end of	•	35.228427, -80.957136	
		(depth and width can be		wath of accomment reach evel-	ated (foot). AOA!
	Site number (show on a	ed (in riffle, if present) to top		ength of assessment reach evalu 1	` '
	Channel width at top o			sessment reach a swamp steam	Jnable to assess channel depth.
		nnial flow Intermittent flo			i! Lites Livo
	REAM CATEGORY IN		w 🔲 i idai iviaisii Si	licaili	
	NC SAM Zone:	☐ Mountains (M)	☑ Piedmont (P)	☐ Inner Coastal Plain (I)	☐ Outer Coastal Plain (O)
10.	TVO O/ IVI ZOITC.			Inner Coastair Iain (I)	Guter Goastar Flam (G)
		V.			
	Estimated geomorphic valley shape (skip for		\sim	⊠B	
	Tidal Marsh Stream):	(more sinuous strea	m. flatter valley slor	oe) (less sinuous st	ream, steeper valley slope)
	Watershed size: (skip	⊠Size 1 (< 0.1 mi²)	- · · ·		
	for Tidal Marsh Strea			(0.5 to 4	
	DITIONAL INFORMAT	,			
			s □No If Yes, che	ck all that apply to the assessme	ent area.
	☐Section 10 water	☐Classified T			rshed (□I □II □III □IV □V)
	☐Essential Fish Habit	at □Primary Nu	rsery Area	☐ High Quality Water	s/Outstanding Resource Waters
	⊠Publicly owned prop		parian buffer rule in	effect Nutrient Sensitive W	/aters
	Anadromous fish	☐303(d) List			ronmental Concern (AEC)
	-	ice of a federal and/or state	listed protected spe	ecies within the assessment area	а.
	List species:	11.1.26.4 (12.4			
	Designated Critical			adad in "Nataa/Chatah" agatian ay	attached 2 DVcc MNc
19.	Are additional stream i	niormation/supplementary r	neasurements inclu	ded in "Notes/Sketch" section or	attached? Tes No
1. (Channel Water - asse	essment reach metric (ski	n for Size 1 stream	s and Tidal Marsh Streams)	
		hout assessment reach.	p 101 0120 1 011 0411	is and main march on same,	
	☐B No flow, water	r in pools only.			
	☐C No water in a	ssessment reach.			
2 .	Evidence of Flow Res	triction – assessment rea	ch metric		
				e-pool sequence is severely affe	cted by a flow restriction or fill to the
					impoundment on flood or ebb within
		` .	sized or perched cu	ılverts, causeways that constrict	the channel, tidal gates, debris jams,
i	beaver dams).			
	⊠B Not A				
3.	Feature Pattern – ass	essment reach metric			
	☐A A majority of	the assessment reach has a	altered pattern (exa	mples: straightening, modificatio	n above or below culvert).
	⊠B Not A				
4 .	Feature Longitudinal	Profile – assessment read	ch metric		
					down-cutting, existing damming, over
			and excavation wh	ere appropriate channel profile	has not reformed from any of these
1	disturbances)				
	⊠B Not A				
		oility – assessment reach			
					ered. Examples of instability include
			ead-cut), active wid	ening, and artificial hardening (s	uch as concrete, gabion, rip-rap).
	_	nnei unstable channel unstable			
	☐C > 25% of cha				

6.					streamsid					
	LB	RB	ne Len	Bank (LB	B) and the	Right Ba	nk (RB).			
	⊠a □B	⊠A □B	Mo refe	derate evi erence inte	dence of ceraction (ex	conditions xamples:	limited streams	rms, leve ide area a	es, down- ccess, dis	cutting, aggradation, dredging) that adversely affect ruption of flood flows through streamside area, leaky
	□c	□c	Ext [exa of fl mos	ensive evi amples: ca lood flows	idence of c auseways through st ching]) <u>or</u> f	conditions with flood reamside	that adversely lplain and chann area] <u>or</u> too mud	affect refe nel constric ch floodpla	erence inte ction, bulk ain/intertio	nor ditching [including mosquito ditching]) eraction (little to no floodplain/intertidal zone access heads, retaining walls, fill, stream incision, disruption lal zone access [examples: impoundments, intensive or assessment reach is a man-made feature on an
7.	Wate	r Quality	Stress	ors – asse	essment r	each/inte	ertidal zone me	tric		
		k all that								
	ΠA									er discoloration, oil sheen, stream foam)
	□B □C						n features or int s entering the a			nd causing a water quality problem
	\Box D	Odor	(not inc	cluding nat	ural sulfide	e odors)	_			
	□E	Curre section		ished or c	ollected da	ata indica	iting degraded v	water qua	lity in the	assessment reach. Cite source in "Notes/Sketch"
	□F			th access t	to stream o	or intertida	al zone			
	□G				eam or inte			Lhurning	rogular m	couring destruction etc)
							ii zone (removai i in "Notes/Sketo			owing, destruction, etc)
	\boxtimes J	Little	to no st	ressors					,	
8.					•	•	al Marsh Strea	•		
	For S ☐A						sidered a drough III not exceeding			eams, D2 drought or higher is considered a drought.
	⊟в						1 inch within the			3. 40 110013
	⊠c	No d	rought c	onditions						
9.	Larg e □Ye	`	-		assessme oo large or			f Yes, skip	to Metric	13 (Streamside Area Ground Surface Condition).
10.							ach metric			
	10a.	∐Yes	⊠No	sedime	ntation, m	ining, exc	at over majority cavation, in-stre tal Plain strean	eam harde	ning [for	nt reach (examples of stressors include excessive example, rip-rap], recent dredging, and snagging) to Metric 12)
	10b.									ize 4 Coastal Plain streams)
		□A			macrophyte ts, lichens,		quatic mosses I mats)	Check for Tidal Marsh Streams Only	□F □G	5% oysters or other natural hard bottoms Submerged aquatic vegetation
		⊠B	Multiple	e sticks ar			d/or emergent	k for T h Strea Only	⊟н	Low-tide refugia (pools)
		⊠c	vegeta Multiple		nd logs (ind	cluding la	p trees)	arsh O	□J	Sand bottom 5% vertical bank along the marsh
		ΠĎ	5% un	dercut bar	nks and/or	root mats	s and/or roots	ວ ຊັ	□κ	Little or no habitat
		□E		κs extend t r no habita		nal wetted	l perimeter			
		Ш-								
****	******	******	******	**REMAIN	IING QUE	STIONS	ARE NOT APPI	LICABLE	FOR TID	AL MARSH STREAMS************************************
11.			_							streams and Tidal Marsh Streams)
		∐Yes						stream? (s	skip for C	oastal Plain streams)
	11b.	Bedform ⊠A			k the appi (evaluate		ox(es).			
		□в	Pool-gl	lide sectio	n (evaluat	e 11d)				
		□с	Natura	l bedform	absent (sk	tip to Met	tric 12, Aquatic	: Life)		
	11c.	at least	one box	k in each r	row (skip 1	for Size 4	Coastal Plain	streams a	and Tidal	essment reach – whether or not submerged. Check Marsh Streams) . Not Present (NP) = absent, Rare Predominant (P) = > 70%. Cumulative percentages
		should n	ot excee	ed 100% fo	or each as	sessment		. ,	,	
		NP ⊠	R □	C □	A	P	Bedrock/sapro	olite		
							Boulder (256	– 4096 mr	n)	
		H			H	H	Cobble (64 – 2 Gravel (2 – 64			
			፱				Sand (.062 – :	2 mm)		
		H			H	H	Silt/clay (< 0.0 Detritus	062 mm)		
			\boxtimes				Artificial (rip-ra	ap, concre	te, etc.)	
	11d.	∐Yes	□No	Are pool	s filled with	n sedimer	nt? (skip for Siz	e 4 Coas	tal Plain s	streams and Tidal Marsh Streams)

12.	-		sessment reach metric (skip for Tidal Marsh Streams)	
	12a. ⊠ If N	_	No Was an in-stream aquatic life assessment performed as described in the User Manual? one of the following reasons and skip to Metric 13. ☐No Water ☐Other:	
	12b. 🛛	Yes [No Are aquatic organisms present in the assessment reach (look in riffles, pools, then snags)? If Yes, check all the apply. If No, skip to Metric 13.	าล
	1 		Adult frogs Aquatic reptiles Aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats)	
			Beetles Caddisfly larvae (T) Asian clam (<i>Corbicula</i>) Crustacean (isopod/amphipod/crayfish/shrimp) Damselfly and dragonfly larvae	
			Daniselly and dragoliny larvae Dipterans Mayfly larvae (E) Megaloptera (alderfly, fishfly, dobsonfly larvae) Midges/mosquito larvae	
			Mosquito fish (<i>Gambusia</i>) or mud minnows (<i>Umbra pygmaea</i>) Mussels/Clams (not <i>Corbicula</i>) Other fish Salamanders/tadpoles	
			Snails Stonefly larvae (P) Tipulid larvae Worms/leeches	
13.			Ground Surface Condition – streamside area metric (skip for Tidal Marsh Streams and B valley types) Left Bank (LB) and the Right Bank (RB). Consider storage capacity with regard to both overbank flow and upland runc	off.
	⊠A □B □C	⊠A □B □C	Little or no alteration to water storage capacity over a majority of the streamside area Moderate alteration to water storage capacity over a majority of the streamside area Severe alteration to water storage capacity over a majority of the streamside area (examples: ditches, fill, soil compaction livestock disturbance, buildings, man-made levees, drainage pipes)	on,
14.			Water Storage – streamside area metric (skip for Size 1 streams, Tidal Marsh Streams, and B valley types) Left Bank (LB) and the Right Bank (RB) of the streamside area.	
	□A □B ⊠C	□A □B ⊠C	Majority of streamside area with depressions able to pond water ≥ 6 inches deep Majority of streamside area with depressions able to pond water 3 to 6 inches deep Majority of streamside area with depressions able to pond water < 3 inches deep	
15.	Conside wetted p	r for the	e – streamside area metric (skip for Tidal Marsh Streams) Left Bank (LB) and the Right Bank (RB). Do not consider wetlands outside of the streamside area or within the norm of assessment reach.	ıal
	□Y ⊠N	□Y ⊠N	Are wetlands present in the streamside area?	
16.	Check a A B C D D	II contri Stream Ponds Obstruc Evidence	butors – assessment reach metric (skip for Size 4 streams and Tidal Marsh Streams) butors within the assessment reach or within view of and draining to the assessment reach. and/or springs (jurisdictional discharges) nclude wet detention basins; do not include sediment basins or dry detention basins) tion passing flow during low-flow periods within the assessment area (beaver dam, leaky dam, bottom-release dam, we e of bank seepage or sweating (iron in water indicates seepage)	ir)
	⊠E □F	None o	bed or bank soil reduced (dig through deposited sediment if present) the above	
17.	Check a A B C D D	II that a Evidend Obstruct Urban s Evidend	e of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation) tion not passing flow during low-flow periods affecting the assessment reach (ex: watertight dam, sediment deposit) tream (≥ 24% impervious surface for watershed) that the streamside area has been modified resulting in accelerated drainage into the assessment reach	
	□E ⊠F		nent reach relocated to valley edge the above	
18.		aspect. Stream Degrad	sment reach metric (skip for Tidal Marsh Streams) Consider "leaf-on" condition. shading is appropriate for stream category (may include gaps associated with natural processes) ed (example: scattered trees) shading is gone or largely absent	

19.	Buffer Width – streamside area metric (skip for Tidal Marsh Streams) Consider "vegetated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top of bank out to the first break. Vegetated Wooded LB RB LB RB						
20.	Buffer Structure – streamside area metric (skip for Tidal Marsh Streams) Consider for left bank (LB) and right bank (RB) for Metric 19 ("Vegetated" Buffer Width). LB RB						
	⊠A MA Mature forest □B □B Non-mature woody vegetation or modified vegetation structure □C □C Herbaceous vegetation with or without a strip of trees < 10 feet wide □D □D Maintained shrubs □E □E Little or no vegetation						
21.	Buffer Stressors – streamside area metric (skip for Tidal Marsh Streams) Check all appropriate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but is within 30 feet of stream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet). If none of the following stressors occurs on either bank, check here and skip to Metric 22:						
	Abuts < 30 feet 30-50 feet LB RB LB RB □A □A □A □A □A □B □B						
22.	Stem Density – streamside area metric (skip for Tidal Marsh Streams) Consider for left bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width). LB RB						
	 ☑A						
23.	Continuity of Vegetated Buffer – streamside area metric (skip for Tidal Marsh Streams) Consider whether vegetated buffer is continuous along stream (parallel). Breaks are areas lacking vegetation > 10 feet wide. LB RB						
	 □A □A The total length of buffer breaks is < 25 percent. □B □B The total length of buffer breaks is between 25 and 50 percent. □C □C The total length of buffer breaks is > 50 percent. 						
24.	Vegetative Composition – streamside area metric (skip for Tidal Marsh Streams) Evaluate the dominant vegetation within 100 feet of each bank or to the edge of the watershed (whichever comes first) as it contributes to assessment reach habitat. LB RB						
	☑A Vegetation is close to undisturbed in species present and their proportions. Lower strata composed of native species, with non-native invasive species absent or sparse.						
	□B Vegetation indicates disturbance in terms of species diversity or proportions, but is still largely composed of native species. This may include communities of weedy native species that develop after clear-cutting or clearing or communities with non-native invasive species present, but not dominant, over a large portion of the expected strata or communities missing understory but retaining canopy trees.						
	UC Vegetation is severely disturbed in terms of species diversity or proportions. Mature canopy is absent <u>or</u> communities with non-native invasive species dominant over a large portion of expected strata <u>or</u> communities composed of planted stands of non-characteristic species <u>or</u> communities inappropriately composed of a single species <u>or</u> no vegetation.						
25.	Conductivity – assessment reach metric (skip for all Coastal Plain streams) 25a.						
	25b. Check the box corresponding to the conductivity measurement (units of microsiemens per centimeter). □ A < 46 □ B 46 to < 67 □ C 67 to < 79 □ D 79 to < 230 □ E ≥ 230						
Note	es/Sketch:						

Stream Site Name	CLT Airport Expansion	Date of Assessment	April 2019				
Stream Category	Pb1	Assessor Name/Organization	KMT,BGB/HDR	₹			
		_					
Notes of Field Asses	NO						
Presence of regulator	NO						
Additional stream inf	urements included (Y/N)	NO					
NC SAM feature type	C SAM feature type (perennial, intermittent, Tidal Marsh Stream) Perennial						

, (poronnial, intermittent, fradi Maren Stream)	1 Oronnia	<u>. </u>
F Charles B. Charles C.	USACE/	NCDWR
Function Class Rating Summary	All Streams	Intermittent
(1) Hydrology	HIGH	
(2) Baseflow	HIGH	
(2) Flood Flow	HIGH	
(3) Streamside Area Attenuation	HIGH	
(4) Floodplain Access	HIGH	
(4) Wooded Riparian Buffer	HIGH	
(4) Microtopography	NA	
(3) Stream Stability	HIGH	
(4) Channel Stability	HIGH	
(4) Sediment Transport	MEDIUM	
(4) Stream Geomorphology	HIGH	
(2) Stream/Intertidal Zone Interaction	NA	
(2) Longitudinal Tidal Flow	NA	
(2) Tidal Marsh Stream Stability	NA	
(3) Tidal Marsh Channel Stability	NA	
(3) Tidal Marsh Stream Geomorphology	NA	
(1) Water Quality	HIGH	
(2) Baseflow	HIGH	
(2) Streamside Area Vegetation	HIGH	
(3) Upland Pollutant Filtration	HIGH	
(3) Thermoregulation	HIGH	
(2) Indicators of Stressors	NO	
(2) Aquatic Life Tolerance	HIGH	
(2) Intertidal Zone Filtration	NA NA	
(1) Habitat	HIGH	
(2) In-stream Habitat	MEDIUM	
(3) Baseflow	HIGH	
• •		
(3) Substrate	MEDIUM	
(3) Stream Stability	HIGH	
(3) In-stream Habitat	MEDIUM	
(2) Stream-side Habitat	HIGH	
(3) Stream-side Habitat	HIGH	
(3) Thermoregulation	HIGH	
(2) Tidal Marsh In-stream Habitat	NA NA	
(3) Flow Restriction	NA NA	
(3) Tidal Marsh Stream Stability	NA	
(4) Tidal Marsh Channel Stability	NA	
(4) Tidal Marsh Stream Geomorphology	NA	
(3) Tidal Marsh In-stream Habitat	NA	
(2) Intertidal Zone	NA	
Overall	HIGH	

		ACC	Unipanies User iv	iailuai veisioii 2. i	
USACE /	AID #:			NCDWR #:	
					7.5-minute topographic quadrangle,
					d on the same property, identify and
					ser Manual for detailed descriptions
					urements were performed. See the
		amples of additional meas			
NOTE EV	IDENCE OF STRE	SSORS AFFECTING TH	E ASSESSMENT	AREA (do not need to be within	n the assessment area).
	T/SITE INFORMAT				
-	t name (if any):	CLT Airport Expansion		2. Date of evaluation: April 20	
	ant/owner name:	CLT		4. Assessor name/organization:	KMT,BGB/HDR
5. County		Mecklenburg		6. Nearest named water body	The Dread
7. River b		Catawba		on USGS 7.5-minute quad:	Ticer Branch
	•	degrees, at lower end of a		·	
	imber (show on atta	depth and width can be a ched map): PS5-1 - S		ength of assessment reach evalu	lated (feet): 136.5'
		(in riffle, if present) to top			Jnable to assess channel depth.
	nel width at top of b			issessment reach a swamp steam	
		al flow Intermittent flow			
	CATEGORY INFO				
_	AM Zone:	☐ Mountains (M)	□ Piedmont (P) Inner Coastal Plain (I)	Outer Coastal Plain (O)
		_	_ `	, –	
16 Estim	ated geomorphic				
	shape (skip for	\boxtimes A	$\overline{}$	□В	
	Marsh Stream):	(more sinuous strear	m, flatter valley slo	ope) (less sinuous st	ream, steeper valley slope)
17. Water	rshed size: (skip	Size 1 (< 0.1 mi²)	☐Size 2 (0.1 to	o < 0.5 mi ²) Size 3 (0.5 to <	5 mi²)
	dal Marsh Stream)		_ `	, _ `	, _ ,
ADDITIO	NAL INFORMATIO	N:			
		rations evaluated? \Begin{aligned} \text{TYes}	s □No If Yes, ch	eck all that apply to the assessme	ent area.
	ction 10 water	☐Classified Ti			rshed (I I II III IV V)
_	sential Fish Habitat	_ ,	•		s/Outstanding Resource Waters
	blicly owned proper	-	parian buffer rule i		
_	adromous fish	□303(d) List	lieted protected er	Decies within the assessment area	ronmental Concern (AEC)
	st species:	on a rederal and/or state	iistea protectea sp	Decies within the assessment area	a.
	signated Critical Ha	hitat (list species)			
			neasurements incl	luded in "Notes/Sketch" section or	rattached? ⊠Yes □No
		, , , , , , , , , , , , , , , , , , , ,			
		` .	o for Size 1 strea	ms and Tidal Marsh Streams)	
		ut assessment reach.			
□В	No flow, water in				
⊔с	No water in asse	essment reach.			
		ction – assessment read			
□A					cted by a flow restriction or fill to the
					impoundment on flood or ebb within the channel, tidal gates, debris jams,
	beaver dams).	reacti (examples, under	sized of perched t	curverts, causeways that constrict	the charmer, tidal gates, debits jams,
⊠в	Not A				
		sment reach metric			
J. Featu			altored pattern (ex	amples: straightening, modificatio	n above or holow culvert
⊠ß	Not A	assessifient reacti has a	allered pallerii (ex	ampies. straigntening, modificatio	if above of below curvert).
	_	ofile – assessment reac			
□A					down-cutting, existing damming, over has not reformed from any of these
	disturbances).	, aggradation, dredging, i	and GACAVALION W	nore appropriate challier profile	has not reformed from any of these
⊠в	Not A				
		tu accessment result :	matria		
		ty – assessment reach r		he stream has currently recove	ered. Examples of instability include
					uch as concrete, gabion, rip-rap).
⊠A	< 10% of chann		Jan, Golivo Wi	g, and armidia hardering (3	and the state of gallon, he rap.
⊟в	10 to 25% of ch				
□с	> 25% of chann	el unstable			

6.					streams (
	LB	RB	ne Len	Dalik (LL	and the	Kigiit Da	ilik (ND).				
	⊠A □B	⊠A □B	Mod refe or in	derate evi rence intenter ntermitten	idence of o eraction (e nt bulkhead	conditions xamples: ds, causev	limited stream ways with flood	erms, leve side area a plain const	es, down- iccess, dis triction, mi	cutting, aggradation, dredging) that ac truption of flood flows through streams nor ditching [including mosquito ditchi	ide area, leaky ng])
	□c	□с	[exa of flo mos	amples: c	causeways through st ching]) <u>or</u> t	with flood treamside	dplain and chan area] <u>or</u> too m	nel constri	ction, bulk ain/intertic	eraction (little to no floodplain/intertida heads, retaining walls, fill, stream incis lal zone access [examples: impoundm or assessment reach is a man-made	sion, disruption ents, intensive
7.	Wate	r Quality	Stresso	ors – ass	essment i	reach/inte	ertidal zone m	etric			
	_	k all that					/ 91 1.90 .			Parada artis a statut a sa artis a sa fara	
	∐A □B						me (milky white) m features or it			er discoloration, oil sheen, stream foar	11)
							s entering the	assessmer	nt reach <u>a</u>	nd causing a water quality problem	
	E	Curre	nt publi		tural sulfid collected d		ating degraded	water qua	ality in the	assessment reach. Cite source in "	Notes/Sketch"
	□F	section Lives		n access	to stream	or intertida	al zone				
	□G	Exce	ssive alg	gae in stre	eam or inte	ertidal zon	ne	al burning	rogulor m	nowing, destruction, etc)	
		Othe	r:				n in "Notes/Ske			iowing, destruction, etc)	
•	⊠J		to no str			: f T : -!	lal Manah Ctua				
8.	For Si	ize 1 or 2	streams	s, D1 drou	ight or high	ner is cons		ght; for Size		eams, D2 drought or higher is conside	red a drought.
	□A □B						all not exceedin 1 inch within th			st 48 hours	
	⊠c			onditions	<u>-</u>				00.0		
9.	Large ☐Yes	-			assessme oo large o			If Yes, skip	o to Metric	: 13 (Streamside Area Ground Surface	Condition).
10.							each metric			at reach (averagles of atreacers incl	uda avaaaaiya
	iua.	∐Yes	⊠No	sedime	entation, m	nining, ex		eam harde	ening [for	nt reach (examples of stressors inclues example, rip-rap], recent dredging, at to Metric 12)	
	10b.	Check a ☐A					e of assessme quatic mosses		skip for S □F	ize 4 Coastal Plain streams) 5% oysters or other natural hard bot	toms
			(include	e liverwor	ts, lichens	, and alga	ıl mats)	Check for Tidal Marsh Streams Only	□G	Submerged aquatic vegetation	101110
		⊠В	vegetat		nd/or leal	packs an	d/or emergent	ck for ⁻ sh Stre Only		Low-tide refugia (pools) Sand bottom	
		⊠C ∏D			nd logs (in		ip trees) s and/or roots	Chec	□K	5% vertical bank along the marsh Little or no habitat	
			in bank	s extend	to the norr		d perimeter	'	<u> П</u> ,	Entito of the Habitat	
		□E	Little or	no habita	at						
****	*****	******	******	**REMAII	NING QUE	STIONS	ARE NOT APP	PLICABLE	FOR TID	AL MARSH STREAMS***********	*****
11.	Bedfo	orm and	Substra	te – asse	ssment r	each met	ric (skip for S	ize 4 Coas	tal Plain	streams and Tidal Marsh Streams)	
		□Yes	⊠No					stream? (s	skip for C	oastal Plain streams)	
		Bedform ⊠A			k the app		box(es).				
		□B □C	Pool-gli	ide sectio	n (evaluat	te 11d)	tric 12, Aquati	c Lifo)			
	11c.	_							of the ass	essment reach – whether or not subm	eraed. Check
		at least of	one box	in each	row (skip	for Size 4	4 Coastal Plair	streams	and Tidal	Marsh Streams). Not Present (NP) =	= absent, Rare
		should no			or each as			ini (A) = >	40-70%, 1	Predominant (P) = > 70%. Cumulative	e percentages
		NP ⊠	R □	C	A	P □	Bedrock/sap	rolite			
				Ī	Ħ		Boulder (256	5 – 4096 mi	m)		
				H	H	H	Cobble (64 - Gravel (2 - 6				
							Sand (.062 -	- 2 mm)			
				\exists			Silt/clay (< 0 Detritus				
							Artificial (rip-	•			
	11d.	□Yes	□No	Are poo	ls filled wit	h sedimer	nt? (skip for S	ize 4 Coas	tal Plain	streams and Tidal Marsh Streams)	

12.	-		sessment reach metric (skip for Tidal Marsh Streams)
	12a. ⊠ If N		No Was an in-stream aquatic life assessment performed as described in the User Manual? one of the following reasons and skip to Metric 13. ☐No Water ☐Other:
	12b. 🛚	Yes	No Are aquatic organisms present in the assessment reach (look in riffles, pools, then snags)? If Yes, check all that apply. If No, skip to Metric 13.
	1 		Numbers over columns refer to "individuals" for Size 1 and 2 streams and "taxa" for Size 3 and 4 streams. Adult frogs Aquatic reptiles
			Aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats) Beetles Caddisfly larvae (T)
			Asian clam (<i>Corbicula</i>) Crustacean (isopod/amphipod/crayfish/shrimp)
			Damselfly and dragonfly larvae Dipterans Mayfly larvae (E)
			Megaloptera (alderfly, fishfly, dobsonfly larvae) Midges/mosquito larvae
			Mosquito fish (<i>Gambusia</i>) or mud minnows (<i>Umbra pygmaea</i>) Mussels/Clams (not <i>Corbicula</i>) Other fish
			Salamanders/tadpoles Snails Stonefly larvae (P)
			Tipulid larvae Worms/leeches
13.			Ground Surface Condition – streamside area metric (skip for Tidal Marsh Streams and B valley types) Left Bank (LB) and the Right Bank (RB). Consider storage capacity with regard to both overbank flow and upland runoff.
	⊠A □B □C	⊠A □B □C	Little or no alteration to water storage capacity over a majority of the streamside area Moderate alteration to water storage capacity over a majority of the streamside area Severe alteration to water storage capacity over a majority of the streamside area (examples: ditches, fill, soil compaction,
			livestock disturbance, buildings, man-made levees, drainage pipes)
14.	Conside LB	r for the RB	Water Storage – streamside area metric (skip for Size 1 streams, Tidal Marsh Streams, and B valley types) Left Bank (LB) and the Right Bank (RB) of the streamside area.
	□A □B ⊠C	□A □B ⊠C	Majority of streamside area with depressions able to pond water ≥ 6 inches deep Majority of streamside area with depressions able to pond water 3 to 6 inches deep Majority of streamside area with depressions able to pond water < 3 inches deep
15.	Conside wetted p	r for the	e – streamside area metric (skip for Tidal Marsh Streams) Left Bank (LB) and the Right Bank (RB). Do not consider wetlands outside of the streamside area or within the norma of assessment reach.
	∐Y ⊠N	∏Υ ⊠N	Are wetlands present in the streamside area?
16.		II contrib Streams	outors – assessment reach metric (skip for Size 4 streams and Tidal Marsh Streams) outors within the assessment reach or within view of and draining to the assessment reach. and/or springs (jurisdictional discharges) nclude wet detention basins; do not include sediment basins or dry detention basins)
	□C □D □E □F	Obstruc Evidenc Stream	icion passing flow during low-flow periods within the assessment area (beaver dam, leaky dam, bottom-release dam, weir) e of bank seepage or sweating (iron in water indicates seepage) ped or bank soil reduced (dig through deposited sediment if present) the above
17.			tors – assessment area metric (skip for Tidal Marsh Streams) ply.
	□A □B □C □D	Evidenc Obstruc Urban s	e of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation) tion not passing flow during low-flow periods affecting the assessment reach (ex: watertight dam, sediment deposit) tream (≥ 24% impervious surface for watershed) that the streamside area has been modified resulting in accelerated drainage into the assessment reach
	□E □F	Assessr	nent reach relocated to valley edge the above
18.	-		sment reach metric (skip for Tidal Marsh Streams) Consider "leaf-on" condition.
	⊠A □B □C	Stream : Degrade	shading is appropriate for stream category (may include gaps associated with natural processes) d (example: scattered trees) shading is gone or largely absent

	Consider "vegetated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top of bank out to the first break. Vegetated Wooded
	LB RB LB RB \square A \square A \square A \square A \square A ≥ 100 feet wide \underline{or} extends to the edge of the watershed \square B \square B \square B \square B From 50 to < 100 feet wide \square C \square C \square C \square C \square C From 30 to < 50 feet wide \square D \square D \square D \square D \square D \square D From 10 to < 30 feet wide \square E \square E \square E \square E \square E \square E < 10 feet wide \underline{or} no trees
20.	Buffer Structure – streamside area metric (skip for Tidal Marsh Streams)
	Consider for left bank (LB) and right bank (RB) for Metric 19 ("Vegetated" Buffer Width). LB RB □ A □ A Mature forest □ B □ B Non-mature woody vegetation or modified vegetation structure □ C □ C Herbaceous vegetation with or without a strip of trees < 10 feet wide □ D □ D Maintained shrubs □ E □ E Little or no vegetation
21.	Buffer Stressors – streamside area metric (skip for Tidal Marsh Streams) Check all appropriate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but is within 30 feet of stream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet). If none of the following stressors occurs on either bank, check here and skip to Metric 22: Abuts < 30 feet 30-50 feet LB RB LB RB LB RB A A A A A A A A A A A A A B A B A B A
00	□D □D □D □D □D Pasture (active livestock use)
22.	Stem Density – streamside area metric (skip for Tidal Marsh Streams) Consider for left bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width). LB RB A A Medium to high stem density B B B Low stem density C C C No wooded riparian buffer or predominantly herbaceous species or bare ground
23.	Continuity of Vegetated Buffer – streamside area metric (skip for Tidal Marsh Streams)
	Consider whether vegetated buffer is continuous along stream (parallel). Breaks are areas lacking vegetation > 10 feet wide. LB RB
	 ☑A ☑A The total length of buffer breaks is < 25 percent. ☐B ☐B The total length of buffer breaks is between 25 and 50 percent. ☐C ☐C The total length of buffer breaks is > 50 percent.
24.	Vegetative Composition – streamside area metric (skip for Tidal Marsh Streams) Evaluate the dominant vegetation within 100 feet of each bank or to the edge of the watershed (whichever comes first) as it contributes to assessment reach habitat.
	LB RB ☐A Vegetation is close to undisturbed in species present and their proportions. Lower strata composed of native species with non-native invasive species absent or sparse.
	communities missing understory but retaining canopy trees. Vegetation is severely disturbed in terms of species diversity or proportions. Mature canopy is absent <u>or</u> communities with non-native invasive species dominant over a large portion of expected strata <u>or</u> communities composed of planted stands of non-characteristic species <u>or</u> communities inappropriately composed of a single species <u>or</u> no vegetation.
25.	Conductivity – assessment reach metric (skip for all Coastal Plain streams) 25a. Yes No Was conductivity measurement recorded? If No, select one of the following reasons. No Water Other:
	25b. Check the box corresponding to the conductivity measurement (units of microsiemens per centimeter). $\Box A < 46 \qquad \Box B 46 \text{ to } < 67 \qquad \Box C 67 \text{ to } < 79 \qquad \Box D 79 \text{ to } < 230 \qquad \Box E \geq 230$
	es/Sketch: and draining to stream, privet stands in streamside area

19. Buffer Width – streamside area metric (skip for Tidal Marsh Streams)

Stream Site Name	CL1 Airport Expansion	Date of Assessment	April 2019				
Stream Category	Pa1	Assessor Name/Organization	KMT,BGB/HDR				
Notes of Field Asses	sment Form (Y/N)		YES				
Presence of regulator	NO						
Additional stream inf	YES						
NC SAM feature type	C SAM feature type (perennial, intermittent, Tidal Marsh Stream) Perennial Perennial						

Aporoninal, intornittorit, Tradi Maron Ctrodiny	T OTOTIMA	<u>. </u>
Function Class Rating Summary	USACE/ All Streams	NCDWR Intermittent
(1) Hydrology	HIGH	
(2) Baseflow	HIGH	
(2) Flood Flow	HIGH	
(3) Streamside Area Attenuation	HIGH	
(4) Floodplain Access	HIGH	
(4) Wooded Riparian Buffer	HIGH	
(4) Microtopography	HIGH	
(3) Stream Stability	HIGH	
•	HIGH	
(4) Channel Stability		
(4) Sediment Transport	LOW	
(4) Stream Geomorphology	HIGH	
(2) Stream/Intertidal Zone Interaction	NA NA	
(2) Longitudinal Tidal Flow	NA	
(2) Tidal Marsh Stream Stability	NA	
(3) Tidal Marsh Channel Stability	NA	
(3) Tidal Marsh Stream Geomorphology	NA	
(1) Water Quality	HIGH	
(2) Baseflow	HIGH	
(2) Streamside Area Vegetation	HIGH	
(3) Upland Pollutant Filtration	HIGH	
(3) Thermoregulation	HIGH	
(2) Indicators of Stressors	NO	
(2) Aquatic Life Tolerance	MEDIUM	
(2) Intertidal Zone Filtration	NA	
(1) Habitat	LOW	
(2) In-stream Habitat	LOW	
(3) Baseflow	HIGH	
(3) Substrate	LOW	
(3) Stream Stability	HIGH	
(3) In-stream Habitat	MEDIUM	
(2) Stream-side Habitat	HIGH	
(3) Stream-side Habitat	HIGH	
(3) Thermoregulation	HIGH	
(2) Tidal Marsh In-stream Habitat	NA NA	
	NA NA	
(3) Flow Restriction	-	
(3) Tidal March Channel Stability	NA NA	
(4) Tidal Marsh Channel Stability	NA NA	
(4) Tidal Marsh Stream Geomorphology	NA NA	
(3) Tidal Marsh In-stream Habitat	NA NA	
(2) Intertidal Zone	NA	
Overall	HIGH	

		ACC	Ullipailles Usel	Mailuai Veisioli 2. i	
USACE AI	ID #:			NCDWR #:	
INSTRUCT	rions: Attach a sl	ketch of the assessment	area and photogr	aphs. Attach a copy of the USGS	7.5-minute topographic quadrangle,
and circle t	the location of the	stream reach under evalu	uation. If multiple	e stream reaches will be evaluate	d on the same property, identify and
					Jser Manual for detailed descriptions
					surements were performed. See the
		amples of additional meas		•	
NOTE EVI	DENCE OF STRES	SSORS AFFECTING TH	E ASSESSMEN	Γ AREA (do not need to be withi	n the assessment area).
PROJECT	SITE INFORMATI	ION:			
_	name (if any):	CLT Airport Expansion		2. Date of evaluation: April 2	
	nt/owner name:	CLT		4. Assessor name/organization:	KMT,BGB/HDR
5. County:		Mecklenburg		6. Nearest named water body	
7. River ba		Catawba		on USGS 7.5-minute quad:	Coffey Creek
	•	degrees, at lower end of a		· -	
		lepth and width can be			
	nber (show on attac			Length of assessment reach evalu	
		in riffle, if present) to top			Jnable to assess channel depth.
	el width at top of ba			assessment reach a swamp stear	n? ∐Yes ∐No
		al flow Intermittent flow	w ∐ i idai Marsh	oueam	
_	CATEGORY INFO	-	☑ Diadmont /	D)	☐ Outer Coastal Plain (O)
15. NC SA	w zone:	☐ Mountains (M)	⊠ Piedmont (F	P) Inner Coastal Plain (I)	U Outer Coastal Plain (O)
				\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	
	ted geomorphic			/ ⊠B →	
	shape (skip for	(mara sinusus atrasr	es flattar vallav al		trans atomor valley alone)
	Marsh Stream):	(more sinuous strear	=		tream, steeper valley slope)
	shed size: (skip	\square Size 1 (< 0.1 mi ²)	∐Size 2 (0.1	to < 0.5 mi^2) \square Size 3 (0.5 to <	< 5 mi²)
	lal Marsh Stream)				
	IAL INFORMATION		No If Voc. o	heck all that apply to the assessm	ont area
	tion 10 water	ations evaluated : ⊠ res Classified Ti			erit area. ershed (
	ential Fish Habitat	☐Primary Nur			rs/Outstanding Resource Waters
_	licly owned propert		parian buffer rule		_
	dromous fish	☐303(d) List			ronmental Concern (AEC)
			listed protected s	species within the assessment are	
List	species:		•		
	ignated Critical Hal				
19. Are add	ditional stream info	rmation/supplementary m	neasurements inc	cluded in "Notes/Sketch" section o	r attached? ⊠Yes □No
			o for Size 1 strea	ams and Tidal Marsh Streams)	
⊠A □B	No flow, water in	ut assessment reach.			
□C	No water in asse				
_					
		ction – assessment read		file meal common is according offi	acted by a flavy reatriction on fill to the
□A					ected by a flow restriction or fill to the rimpoundment on flood or ebb within
					the channel, tidal gates, debris jams,
	beaver dams).				, , , , , , ,
⊠B	Not A				
3. Feature	e Pattern – asses:	sment reach metric			
⊠A			altered pattern (e)	xamples: straightening, modificatio	on above or below culvert).
⊟В	Not A		pa (o.	g,g,	
	o Longitudinal De	ofila — accocoment ross	h motric		
4. Feature	_	ofile – assessment reac		tream profile (examples: channel	down-cutting, existing damming, over
					has not reformed from any of these
	disturbances).		Choaradon (app. spilate sharmer profile	
⊠B	Not A				
	of Active Instabili	ty _ accoccment reach :	motric		
		ty – assessment reach i netability not nast ever		the stream has currently recov	ered. Examples of instability include
				ridening, and artificial hardening (s	
⊠A	< 10% of channe		,, w	g,g (c	, gaz.e.,,p (ap).
⊟в	10 to 25% of cha				
□с	> 25% of channe	el unstable			

6.					streamsid					
	LB	RB	tne Lett	вапк (св) and the	Right Ba	nk (RB).			
	□A □B	□A □B	Mod refe	derate eviderence inte	dence of c eraction (ex	onditions camples:	limited streams	rms, levee ide area a	es, down- ccess, dis	cutting, aggradation, dredging) that adversely affect ruption of flood flows through streamside area, leaky
	⊠c	⊠c	Exte [exa of flo mos	ensive evi amples: ca ood flows	dence of causeways through str hing]) <u>or</u> fl	conditions with flood reamside	that adversely Iplain and chanr area] <u>or</u> too mu	affect refe nel constric ch floodpla	erence inte ction, bulk ain/intertio	nor ditching [including mosquito ditching]) eraction (little to no floodplain/intertidal zone access heads, retaining walls, fill, stream incision, disruption lal zone access [examples: impoundments, intensive or assessment reach is a man-made feature on an
7.	Wate	r Quality	Stresso	ors – asse	essment r	each/inte	ertidal zone me	tric		
		k all that								
	ΠA									er discoloration, oil sheen, stream foam)
	□B □C						m features or int s entering the a			nd causing a water quality problem
	\Box D	Odor	not incl	luding nati	ural sulfide	e odors)	_			
	□E	Curre section		shed or c	ollected da	ata indica	iting degraded	water qua	lity in the	assessment reach. Cite source in "Notes/Sketch"
	□F			n access t	o stream o	or intertida	al zone			
	□G □H				am or inter			Lhurning	rogular m	touring destruction etc)
							i in "Notes/Sket			nowing, destruction, etc)
	□J	Little	to no str	ressors					•	
8.						•	al Marsh Strea	•		
	For S ☐A						sidered a drough Ill not exceeding			eams, D2 drought or higher is considered a drought.
	⊟в						1 inch within the			31 40 110013
	⊠c	No di	rought co	onditions						
9.	Larg e □Ye		-		assessme oo large or			f Yes, skip	to Metric	13 (Streamside Area Ground Surface Condition).
10.							each metric			
	10a.	∐Yes	⊠No	sedime	ntation, mi	ining, exc	at over majority cavation, in-stre tal Plain strean	eam harde	ening [for	nt reach (examples of stressors include excessive example, rip-rap], recent dredging, and snagging) to Metric 12)
	10b.									ize 4 Coastal Plain streams)
		□A			macrophyte s, lichens,		quatic mosses I mats)	idal	□F □G	5% oysters or other natural hard bottoms Submerged aquatic vegetation
		⊠B	Multiple	e sticks ar			d/or emergent	Check for Tidal Marsh Streams Only	□н	Low-tide refugia (pools)
		□с	vegetat Multiple		nd logs (inc	cluding la	p trees)	arsh O	□J	Sand bottom 5% vertical bank along the marsh
		ΒĎ	5% unc	dercut ban	iks and/or	root mats	s and/or roots	ວ່ ຊຶ່	□ĸ	Little or no habitat
		□E		s extend t no habita		nal wetted	d perimeter			
		Ш-	Little of	no nabita						
****	*****	*****	******	**REMAIN	IING QUE	STIONS	ARE NOT APP	LICABLE	FOR TID	AL MARSH STREAMS************************************
11.										streams and Tidal Marsh Streams)
	11a.	∐Yes	⊠No	ls assess	sment read	ch in a na	tural sand-bed	stream? (s	skip for C	oastal Plain streams)
	11b.	Bedform ⊠A			k the appr (evaluate)		ox(es).			
		□B			1 (evaluate					
		□с	Natural	bedform a	absent (sk	ip to Met	tric 12, Aquatio	: Life)		
	11c.	at least	one box	in each r	ow (skip f	for Size 4	Coastal Plain	streams a	and Tidal	essment reach – whether or not submerged. Check Marsh Streams) . Not Present (NP) = absent, Rare Predominant (P) = > 70%. Cumulative percentages
		should no	ot excee	d 100% fc	or each as	sessment		. ,	, -	()
		NP ⊠	R □	C	A	P	Bedrock/sapro	olite		
			百				Boulder (256	– 4096 mr	m)	
		H	\square		님	H	Cobble (64 – Gravel (2 – 64			
		H				H	Sand (.062 -	2 mm)		
					\square	日	Silt/clay (< 0.0 Detritus	062 mm)		
				\boxtimes	H		Artificial (rip-ra	ap, concre	ete, etc.)	
	11d.	□Yes	□No	Are pools	s filled with	n sedimen	nt? (skip for Siz	ze 4 Coast	tal Plain s	streams and Tidal Marsh Streams)

12.			sessment reach metric (skip for Tidal Marsh Streams)
	12a. ⊠ If N		No Was an in-stream aquatic life assessment performed as described in the User Manual? cone of the following reasons and skip to Metric 13. ☐No Water ☐Other:
	12b. 🛚	Yes [No Are aquatic organisms present in the assessment reach (look in riffles, pools, then snags)? If Yes, check all that apply. If No, skip to Metric 13.
	1		Adult frogs
			Aquatic reptiles Aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats)
			Beetles Caddisfly larvae (T)
			Asian clam (<i>Corbicula</i>) Crustacean (isopod/amphipod/crayfish/shrimp)
			Damselfly and dragonfly larvae
			Dipterans Mayfly larvae (E)
	Ē		Megaloptera (alderfly, fishfly, dobsonfly larvae)
			Midges/mosquito larvae Mosquito fish (<i>Gambusia</i>) or mud minnows (<i>Umbra pygmaea</i>)
			Mussels/Clams (not <i>Corbicula</i>) Other fish
	ğ		Salamanders/tadpoles
			Snails Stonefly larvae (P)
			Tipulid larvae Worms/leeches
13.	Streams Conside	ide Area er for the	Ground Surface Condition – streamside area metric (skip for Tidal Marsh Streams and B valley types) Left Bank (LB) and the Right Bank (RB). Consider storage capacity with regard to both overbank flow and upland runoff.
	LB □A	RB □A	Little or no alteration to water storage capacity over a majority of the streamside area
	⊟B ⊠C	∏в ⊠С	Moderate alteration to water storage capacity over a majority of the streamside area Severe alteration to water storage capacity over a majority of the streamside area (examples: ditches, fill, soil compaction)
			livestock disturbance, buildings, man-made levees, drainage pipes)
14.		er for the RB	Water Storage – streamside area metric (skip for Size 1 streams, Tidal Marsh Streams, and B valley types) Left Bank (LB) and the Right Bank (RB) of the streamside area.
	□A □B ⊠C	□а □в ⊠С	Majority of streamside area with depressions able to pond water ≥ 6 inches deep Majority of streamside area with depressions able to pond water 3 to 6 inches deep Majority of streamside area with depressions able to pond water < 3 inches deep
15.	Conside wetted p	er for the erimeter	ce – streamside area metric (skip for Tidal Marsh Streams) Left Bank (LB) and the Right Bank (RB). Do not consider wetlands outside of the streamside area or within the normal of assessment reach.
	LB □Y ⊠N	RB □Y ⊠N	Are wetlands present in the streamside area?
16.			outors – assessment reach metric (skip for Size 4 streams and Tidal Marsh Streams)
	Check a	II contril	outors within the assessment reach or within view of <u>and</u> draining to the assessment reach.
	□A □B		and/or springs (jurisdictional discharges) nclude wet detention basins; do not include sediment basins or dry detention basins)
	□c ⊠d		tion passing flow during low-flow periods within the assessment area (beaver dam, leaky dam, bottom-release dam, weir) e of bank seepage or sweating (iron in water indicates seepage)
	⊠E □F	Stream	bed or bank soil reduced (dig through deposited sediment if present) the above
17.			tors – assessment area metric (skip for Tidal Marsh Streams)
	Check a ☐A		ply. e of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation)
	□в ⊠c	Obstruc	tion not passing flow during low-flow periods affecting the assessment reach (ex: watertight dam, sediment deposit) tream (≥ 24% impervious surface for watershed)
	\Box D	Evidend	e that the streamside area has been modified resulting in accelerated drainage into the assessment reach
	□E □F		nent reach relocated to valley edge the above
18.	_		sment reach metric (skip for Tidal Marsh Streams)
	Consider A		Consider "leaf-on" condition. shading is appropriate for stream category (may include gaps associated with natural processes)
	□B ⊠C	Degrade	ed (example: scattered trees) shading is gone or largely absent
		Cacam	snaamy to gono or largory abount

19.	 Buffer Width – streamside area metric (skip for Tidal Marsh Streams) Consider "vegetated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top of bank out to the first break. 						
	LB RB LB	rooded RB A					
20.		 streamside area metric (skip for Tidal Marsh Streams) bank (LB) and right bank (RB) for Metric 19 ("Vegetated" Buffer Width). 					
	LB RB □ A □ A □ B □ B □ C □ C □ D □ D □ E □ E	Mature forest Non-mature woody vegetation or modified vegetation structure Herbaceous vegetation with or without a strip of trees < 10 feet wide Maintained shrubs Little or no vegetation					
21.	Check all appropriate within 30 feet of some of the following the follow	s – streamside area metric (skip for Tidal Marsh Streams) priate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but is tream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet). lowing stressors occurs on either bank, check here and skip to Metric 22:					
22.	_	bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width). Medium to high stem density Low stem density No wooded riparian buffer or predominantly herbaceous species or bare ground					
23.	Consider whether LB RB ⊠A ⊠A B B	getated Buffer – streamside area metric (skip for Tidal Marsh Streams) r vegetated buffer is continuous along stream (parallel). Breaks are areas lacking vegetation > 10 feet wide. The total length of buffer breaks is < 25 percent. The total length of buffer breaks is steepen 25 and 50 percent.					
24.	Evaluate the dom assessment reacl	The total length of buffer breaks is > 50 percent. position – streamside area metric (skip for Tidal Marsh Streams) inant vegetation within 100 feet of each bank or to the edge of the watershed (whichever comes first) as it contributes to a habitat.					
	LB RB □A □A	Vegetation is close to undisturbed in species present and their proportions. Lower strata composed of native species, with non-native invasive species absent or sparse.					
	□в □в	Vegetation indicates disturbance in terms of species diversity or proportions, but is still largely composed of native species. This may include communities of weedy native species that develop after clear-cutting or clearing or communities with non-native invasive species present, but not dominant, over a large portion of the expected strata or communities missing understory but retaining canopy trees.					
	⊠c ⊠c	Vegetation is severely disturbed in terms of species diversity or proportions. Mature canopy is absent <u>or</u> communities with non-native invasive species dominant over a large portion of expected strata <u>or</u> communities composed of planted stands of non-characteristic species <u>or</u> communities inappropriately composed of a single species <u>or</u> no vegetation.					
25.	5. Conductivity – assessment reach metric (skip for all Coastal Plain streams) 25a. Yes No Was conductivity measurement recorded? If No, select one of the following reasons. No Water Other:						
	25b. Check the b ☐A < 46	pox corresponding to the conductivity measurement (units of microsiemens per centimeter). □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □					
	es/Sketch:						
Stre	am is located in th	e middle of an airport airfield,					

Stream Site Name	CLT Airport Expansion	Date of Assessment	April 2019				
Stream Category	Pb3	Assessor Name/Organization	KMT,BGB/HD	R			
Notes of Field Asses	sment Form (Y/N)		YES				
Presence of regulator	NO						
Additional stream information/supplementary measurements included (Y/N) YES							
NC SAM feature type (perennial, intermittent, Tidal Marsh Stream) Perennial							

o (porolimal, intolimatoric, ridal Maroli Guodili)	- 1 010111110	<u>·</u>
Function Class Rating Summary	USACE/ All Streams	NCDWR Intermittent
(1) Hydrology	LOW	
(2) Baseflow	HIGH	
(2) Flood Flow	LOW	
(3) Streamside Area Attenuation	LOW	
(4) Floodplain Access	LOW	
(4) Wooded Riparian Buffer	LOW	
(4) Microtopography	NA	
(3) Stream Stability	MEDIUM	
(4) Channel Stability	HIGH	
(4) Sediment Transport	LOW	
(4) Stream Geomorphology	MEDIUM	
(2) Stream/Intertidal Zone Interaction	NA	
(2) Longitudinal Tidal Flow	NA NA	
(2) Tidal Marsh Stream Stability	NA NA	
(3) Tidal Marsh Channel Stability	NA NA	
	NA NA	
(3) Tidal Marsh Stream Geomorphology (1) Water Quality	MEDIUM	
• •	HIGH	
(2) Baseflow		
(2) Streamside Area Vegetation	LOW	
(3) Upland Pollutant Filtration	MEDIUM	
(3) Thermoregulation	LOW	
(2) Indicators of Stressors	NO	
(2) Aquatic Life Tolerance	HIGH	
(2) Intertidal Zone Filtration	NA	
(1) Habitat	LOW	
(2) In-stream Habitat	LOW	
(3) Baseflow	HIGH	
(3) Substrate	LOW	
(3) Stream Stability	HIGH	
(3) In-stream Habitat	LOW	
(2) Stream-side Habitat	LOW	
(3) Stream-side Habitat	LOW	
(3) Thermoregulation	LOW	
(2) Tidal Marsh In-stream Habitat	NA	
(3) Flow Restriction	NA	
(3) Tidal Marsh Stream Stability	NA	
(4) Tidal Marsh Channel Stability	NA	
(4) Tidal Marsh Stream Geomorphology	NA	
(3) Tidal Marsh In-stream Habitat	NA	
(2) Intertidal Zone	NA	
Overall	LOW	

USACE AID #:		NCDWR #:					
and circle the location of the str number all reaches on the attac and explanations of requested NC SAM User Manual for exam	ream reach under evaluation. If method map, and include a separate for information. Record in the "Notes/aples of additional measurements the second in the		on the same property, identify and ser Manual for detailed descriptions rements were performed. See the				
		MENT AREA (do not need to be within	n the assessment area).				
PROJECT/SITE INFORMATIO 1. Project name (if any):	N: CLT Airport Expansion	2. Date of evaluation: April 20	19				
	CLT	4. Assessor name/organization:	KMT,BGB/HDR				
	Mecklenburg	6. Nearest named water body					
	Catawba grees, at lower end of assessment	on USGS 7.5-minute quad: reach): 35.203621, -80.945763	Coffey Creek				
	pth and width can be approxima	·					
9. Site number (show on attach11. Channel depth from bed (in12. Channel width at top of ban	PS9-1 - Stream led map): 26, R1 riffle, if present) to top of bank (feet): 4 1	10. Length of assessment reach evaluated): 1 Ur 3. Is assessment reach a swamp steam?	nable to assess channel depth.				
• •	flow ☐Intermittent flow ☐Tidal M	larsh Stream					
STREAM CATEGORY INFORI 15. NC SAM Zone:	MATION: ☐ Mountains (M) ☐ Piedmo	ont (P)	Outer Coastal Plain (O)				
13. NO SAW Zone.	☐ Mountains (M) ☐ Fleding		Utier Coastai Fiairi (O)				
16. Estimated geomorphic		<i></i> ⊠ _B					
valley shape (skip for Tidal Marsh Stream):	(more sinuous stream, flatter val	lley slope) (less sinuous str	eam, steeper valley slope)				
17. Watershed size: (skip		$(0.1 \text{ to} < 0.5 \text{ mi}^2)$ Size 3 (0.5 to < 9)	· <u> </u>				
for Tidal Marsh Stream)							
☐ Section 10 water ☐ Essential Fish Habitat ☑ Publicly owned property ☐ Anadromous fish ☐ Documented presence of List species:	□ Essential Fish Habitat □ Primary Nursery Area □ High Quality Waters/Outstanding Resource Waters □ Publicly owned property □ NCDWR Riparian buffer rule in effect □ Nutrient Sensitive Waters □ Anadromous fish □ 303(d) List □ CAMA Area of Environmental Concern (AEC) □ Documented presence of a federal and/or state listed protected species within the assessment area. □ List species: □ Designated Critical Habitat (list species)						
_	assessment reach.	1 streams and Tidal Marsh Streams)					
	g flow or a channel choked with ac	or riffle-pool sequence is severely affect quatic macrophytes or ponded water or ched culverts, causeways that constrict t	impoundment on flood or ebb within				
3. Feature Pattern – assess ☐ A A majority of the a ☐ B Not A		ern (examples: straightening, modification	n above or below culvert).				
☐ A Majority of assess		red stream profile (examples: channel d tion where appropriate channel profile h					
Consider only current ins	nannel down-cutting (head-cut), ac unstable inel unstable	hich the stream has currently recove tive widening, and artificial hardening (su					

6.	Strea	amside Are	ea Interaction	- streamside	e area metric					
	Cons LB	sider for th RB	ne Left Bank (LB) and the F	Right Bank (RB).				
	□A ⊠B	□a ⊠B	Moderate ev reference in	vidence of con teraction (exar	mples: limited st	es: berr reamsid	ns, levee e area ad	es, down- ccess, dis	teraction cutting, aggradation, dredging) that adversely ruption of flood flows through streamside area nor ditching [including mosquito ditching])	
	□с	□c	[examples: of flood flow	causeways wit s through strea tching]) <u>or</u> floo	th floodplain and amside area] <u>or</u> t	channe oo much	el constric n floodpla	tion, bulk iin/intertic	eraction (little to no floodplain/intertidal zone a heads, retaining walls, fill, stream incision, disr dal zone access [examples: impoundments, into or assessment reach is a man-made feature	ruption ensive
7.	Wate	r Quality S	Stressors – as	sessment re	ach/intertidal z	one m	etric			
	□A □B □C	Excess Noticea	ored water in st sive sedimentat able evidence o	ion (burying o of pollutant dis	of stream feature scharges enterin	s or inte	ertidal zor	ne)	er discoloration, oil sheen, stream foam) nd causing a water quality problem	
	□D □E		not including na It published or			aded w	ater qua	ity in the	assessment reach. Cite source in "Notes/S	Sketch"
	□F □G	section Livesto Excess	n. ock with access sive algae in sti	to stream or i	ntertidal zone dal zone		-			
	□H □I ⊠J	Other:			ntertidal zone (re explain in "Notes				nowing, destruction, etc)	
8.	Recent Weather – watershed metric (skip for Tidal Marsh Streams) For Size 1 or 2 streams, D1 drought or higher is considered a drought; for Size 3 or 4 streams, D2 drought or higher is considered a drought. Drought conditions and no rainfall or rainfall not exceeding 1 inch within the last 48 hours Drought conditions and rainfall exceeding 1 inch within the last 48 hours No drought conditions									
9.	Larg e				nt reach metric angerous to ass		Yes, skip	to Metric	: 13 (Streamside Area Ground Surface Condit	tion).
10.	10. Natural In-stream Habitat Types – assessment reach metric 10a. ☐ Yes ☐ No Degraded in-stream habitat over majority of the assessment reach (examples of stressors include excessed sedimentation, mining, excavation, in-stream hardening [for example, rip-rap], recent dredging, and snage (evaluate for Size 4 Coastal Plain streams only, then skip to Metric 12)									
	10b.	⊠A M	Multiple aquation include liverwo	: macrophytes rts, lichens, ar	and aquatic mo	sses		skip for S	Size 4 Coastal Plain streams) 5% oysters or other natural hard bottoms Submerged aquatic vegetation Low-tide refugia (pools)	
			vegetation Multiple snags a 5% undercut ba	and logs (incluants and/or ro	ıding lap trees) oot mats and/or ı	oots	Check for Tidal Marsh Streams Only	□I □J □K	Sand bottom 5% vertical bank along the marsh Little or no habitat	
			n banks extend ∟ittle or no habi		l wetted perimete	er				
****	******								AL MARSH STREAMS************************************	**
• • •			_			-			Coastal Plain streams)	
					priate box(es)			, , , , , , , , , , , , , , , , , , ,	ouciai i iaiii cii caiiic,	
		□A F	Riffle-run sectio Pool-glide secti	n (evaluate 1 on (evaluate	11c)		Life)			
	11c.	at least or (R) = pres	ne box in each	row (skip fo Common (C)	r Size 4 Coastal = > 10-40%, Ab	Plain s	treams a	and Tidal	essment reach – whether or not submerged. (Marsh Streams). Not Present (NP) = absent Predominant (P) = $> 70\%$. Cumulative percent	t, Rare
			R C			r (256 –	4096 mr	n)		
					Cobble Gravel	`	,			
					☐ Sand (. ☐ Silt/clay	062 – 2	mm)			
					☐ Detritus	·	p, concre	ete, etc.)		
	11d.	□Yes [□No Are poo	ols filled with s					streams and Tidal Marsh Streams)	

12.			essment reach metric (skip for Tidal Marsh Streams)
	12a. ⊠ If N		Was an in-stream aquatic life assessment performed as described in the User Manual? The of the following reasons and skip to Metric 13. ☐ No Water ☐ Other:
	12b. 🛚	Yes □No	Are aquatic organisms present in the assessment reach (look in riffles, pools, then snags)? If Yes, check all tha apply. If No, skip to Metric 13.
	1 		Numbers over columns refer to "individuals" for Size 1 and 2 streams and "taxa" for Size 3 and 4 streams. dult frogs quatic reptiles
		⊠Ad	quatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats) setles
		□As	addisfly larvae (T) sian clam (<i>Corbicula</i>)
			rustacean (isopod/amphipod/crayfish/shrimp) amselfly and dragonfly larvae pterans
	Ä	□м	pterans ayfly larvae (E) egaloptera (alderfly, fishfly, dobsonfly larvae)
		⊠M	dges/mosquito larvae osquito fish (<i>Gambusia</i>) or mud minnows (<i>Umbra pygmaea</i>)
		\square M	ussels/Clams (not <i>Corbicula</i>) ther fish
		□Sı	
		□Ti	onefly larvae (P) pulid larvae orms/leeches
13.	Streams	side Area G	ornis/reecries Fround Surface Condition – streamside area metric (skip for Tidal Marsh Streams and B valley types) Fft Bank (LB) and the Right Bank (RB). Consider storage capacity with regard to both overbank flow and upland runoff
	LB □A □B ⊠C	□B N ⊠C S	ittle or no alteration to water storage capacity over a majority of the streamside area Moderate alteration to water storage capacity over a majority of the streamside area Severe alteration to water storage capacity over a majority of the streamside area (examples: ditches, fill, soil compaction, vestock disturbance, buildings, man-made levees, drainage pipes)
14.		side Area V	Vater Storage – streamside area metric (skip for Size 1 streams, Tidal Marsh Streams, and B valley types)
	LB	RB	eft Bank (LB) and the Right Bank (RB) of the streamside area. ### ################################
	□B ⊠C	_B N	Majority of streamside area with depressions able to pond water 3 to 6 inches deep Majority of streamside area with depressions able to pond water 3 inches deep Majority of streamside area with depressions able to pond water < 3 inches deep
15.	Conside wetted p	er for the Le	 streamside area metric (skip for Tidal Marsh Streams) ft Bank (LB) and the Right Bank (RB). Do not consider wetlands outside of the streamside area or within the norma assessment reach.
	□Y ⊠N		are wetlands present in the streamside area?
16.			tors – assessment reach metric (skip for Size 4 streams and Tidal Marsh Streams) tors within the assessment reach or within view of <u>and</u> draining to the assessment reach.
	□A ⊠B	Streams a	nd/or springs (jurisdictional discharges) lude wet detention basins; do not include sediment basins or dry detention basins)
	□c ⊠d	Evidence of	n passing flow during low-flow periods within the assessment area (beaver dam, leaky dam, bottom-release dam, weir) of bank seepage or sweating (iron in water indicates seepage)
	⊠e □F	Stream be None of th	d or bank soil reduced (dig through deposited sediment if present) e above
17.		w Detracto III that app	rs – assessment area metric (skip for Tidal Marsh Streams) ly.
	□A □B □C	Obstructio	of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation) n not passing flow during low-flow periods affecting the assessment reach (ex: watertight dam, sediment deposit) am (≥ 24% impervious surface for watershed)
	⊠D □E □F		hat the streamside area has been modified resulting in accelerated drainage into the assessment reach nt reach relocated to valley edge e above
18.	_		nent reach metric (skip for Tidal Marsh Streams) onsider "leaf-on" condition.
	□A □B ⊠C	Stream sh Degraded	ading is appropriate for stream category (may include gaps associated with natural processes) (example: scattered trees) ading is gone or largely absent

	Consider "vegetated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top of bank out to the first break. Vegetated Wooded LB RB LB RB □ A □ A □ A □ A ≥ 100 feet wide or extends to the edge of the watershed □ B □ B □ B □ B From 50 to < 100 feet wide						
	□ C □ C □ C □ C From 30 to < 50 feet wide □ D <						
20.	Buffer Structure – streamside area metric (skip for Tidal Marsh Streams) Consider for left bank (LB) and right bank (RB) for Metric 19 ("Vegetated" Buffer Width).						
	LB RB □ A □ A Mature forest □ B □ B Non-mature woody vegetation or modified vegetation structure □ C □ C Herbaceous vegetation with or without a strip of trees < 10 feet wide □ D □ D Maintained shrubs □ E □ E Little or no vegetation						
21.	Buffer Stressors – streamside area metric (skip for Tidal Marsh Streams) Check all appropriate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but is within 30 feet of stream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet). If none of the following stressors occurs on either bank, check here and skip to Metric 22: Abuts < 30 feet 30-50 feet						
	LB RB LB RB LB RB \[\begin{array}{c c c c c c c c c c c c c c c c c c c						
22.	Stem Density – streamside area metric (skip for Tidal Marsh Streams) Consider for left bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width). LB RB A A Medium to high stem density B B Low stem density C C C No wooded riparian buffer or predominantly herbaceous species or bare ground						
23.	Continuity of Vegetated Buffer – streamside area metric (skip for Tidal Marsh Streams) Consider whether vegetated buffer is continuous along stream (parallel). Breaks are areas lacking vegetation > 10 feet wide. LB RB A A The total length of buffer breaks is < 25 percent. B B The total length of buffer breaks is between 25 and 50 percent. C C The total length of buffer breaks is > 50 percent.						
24.	Vegetative Composition – streamside area metric (skip for Tidal Marsh Streams) Evaluate the dominant vegetation within 100 feet of each bank or to the edge of the watershed (whichever comes first) as it contributes to assessment reach habitat. LB RB ☐ A Vegetation is close to undisturbed in species present and their proportions. Lower strata composed of native species, with non-native invasive species absent or sparse. ☐ B ☐ B Vegetation indicates disturbance in terms of species diversity or proportions, but is still largely composed of native species. This may include communities of weedy native species that develop after clear-cutting or clearing or communities with non-native invasive species present, but not dominant, over a large portion of the expected strata or communities missing understory but retaining canopy trees.						
	Vegetation is severely disturbed in terms of species diversity or proportions. Mature canopy is absent <u>or</u> communities with non-native invasive species dominant over a large portion of expected strata <u>or</u> communities composed of planted stands of non-characteristic species <u>or</u> communities inappropriately composed of a single species <u>or</u> no vegetation.						
25.	Conductivity – assessment reach metric (skip for all Coastal Plain streams) 25a. □Yes ⊠No Was conductivity measurement recorded? If No, select one of the following reasons. □No Water □Other:						
	25b. Check the box corresponding to the conductivity measurement (units of microsiemens per centimeter). \Box A < 46 \Box B 46 to < 67 \Box C 67 to < 79 \Box D 79 to < 230 \Box E ≥ 230						
	es/Sketch:						
Sue	eam contains riprap throughout. Is surrounded by fill slopes.						

19. Buffer Width – streamside area metric (skip for Tidal Marsh Streams)

Stream Site Name	CLT Airport Expansion	Date of Assessment	April 2019				
Stream Category Pb1 Asse		Assessor Name/Organization	KMT,BGB/HDR				
Notes of Field Asses	sment Form (Y/N)		YES				
Presence of regulato	Presence of regulatory considerations (Y/N) NO						
Additional stream information/supplementary measurements included (Y/N) YES							
IC SAM feature type (perennial, intermittent, Tidal Marsh Stream) Perennial Perennial							

Function Class Rating Summary	USACE/ All Streams	NCDWR Intermittent
(1) Hydrology	LOW	
(2) Baseflow	MEDIUM	
(2) Flood Flow	LOW	
(3) Streamside Area Attenuation	LOW	
(4) Floodplain Access	MEDIUM	
(4) Wooded Riparian Buffer	LOW	
(4) Microtopography	NA	
(3) Stream Stability	LOW	
(4) Channel Stability	LOW	
(4) Sediment Transport	LOW	
(4) Stream Geomorphology	MEDIUM	
(2) Stream/Intertidal Zone Interaction	NA	
(2) Longitudinal Tidal Flow	NA	
(2) Tidal Marsh Stream Stability	NA	
(3) Tidal Marsh Channel Stability	NA	
(3) Tidal Marsh Stream Geomorphology	NA	
(1) Water Quality	LOW	
(2) Baseflow	MEDIUM	
(2) Streamside Area Vegetation	MEDIUM	
(3) Upland Pollutant Filtration	HIGH	
(3) Thermoregulation	LOW	
(2) Indicators of Stressors	NO	
(2) Aquatic Life Tolerance	LOW	
(2) Intertidal Zone Filtration	NA	
(1) Habitat	LOW	
(2) In-stream Habitat	LOW	
(3) Baseflow	MEDIUM	
(3) Substrate	LOW	
(3) Stream Stability	LOW	
(3) In-stream Habitat	MEDIUM	
(2) Stream-side Habitat	LOW	
(3) Stream-side Habitat	LOW	
(3) Thermoregulation	LOW	
(2) Tidal Marsh In-stream Habitat	NA NA	
(3) Flow Restriction	NA NA	
(3) Tidal Marsh Stream Stability	NA NA	
(4) Tidal Marsh Channel Stability	NA NA	
(4) Tidal Marsh Stream Geomorphology	NA NA	
(3) Tidal Marsh In-stream Habitat	NA NA	
(2) Intertidal Zone	NA NA	
Overall	LOW	

USACE AID #:		NCDWR #:					
and circle the location of the s number all reaches on the atta and explanations of requeste NC SAM User Manual for exa	stream reach under evaluation ached map, and include a sep d information. Record in the ' imples of additional measuren		on the same property, identify and ser Manual for detailed descriptions arements were performed. See the				
		SESSMENT AREA (do not need to be within	n the assessment area).				
PROJECT/SITE INFORMATI 1. Project name (if any):	CLT Airport Expansion	2. Date of evaluation: April 20	19				
3. Applicant/owner name:	CLT	4. Assessor name/organization:	KMT,BGB/HDR				
5. County:	Mecklenburg	6. Nearest named water body					
7. River basin:	Catawba degrees, at lower end of asses	on USGS 7.5-minute quad: 35.203227, -80.947018	Coffey Creek				
	lepth and width can be appr						
9. Site number (show on attact 11. Channel depth from bed (12. Channel width at top of base)	PS9-1 - Streat ched map): 26, R2 in riffle, if present) to top of batank (feet): 4	am 10. Length of assessment reach evaluank (feet): 1 U 13. Is assessment reach a swamp steam	nable to assess channel depth.				
14. Feature type: ☑ Perennia STREAM CATEGORY INFO	al flow Intermittent flow I	I idal Marsh Stream					
15. NC SAM Zone:	_	Piedmont (P)	☐ Outer Coastal Plain (O)				
	()						
16. Estimated geomorphic	\bowtie_{A}						
valley shape (skip for Tidal Marsh Stream):	(more sinuous stream, fla		ream, steeper valley slope)				
17. Watershed size: (skip		Size 2 (0.1 to < 0.5 mi ²) Size 3 (0.5 to <	<u> </u>				
for Tidal Marsh Stream)			,				
ADDITIONAL INFORMATION		No. If Vas. chack all that apply to the assessme	nt area				
☐ Section 10 water ☐ Essential Fish Habitat ☑ Publicly owned propert ☐ Anadromous fish ☐ Documented presence List species:	□ Essential Fish Habitat □ Primary Nursery Area □ High Quality Waters/Outstanding Resource Waters □ Publicly owned property □ NCDWR Riparian buffer rule in effect □ Nutrient Sensitive Waters □ Anadromous fish □ 303(d) List □ CAMA Area of Environmental Concern (AEC) □ Documented presence of a federal and/or state listed protected species within the assessment area. List species: □ Designated Critical Habitat (list species)						
-	ut assessment reach. a pools only.	or Size 1 streams and Tidal Marsh Streams					
☐A At least 10% of point of obstruct	ing flow <u>or</u> a channel choked	metric habitat or riffle-pool sequence is severely afferwith aquatic macrophytes or ponded water or lor perched culverts, causeways that constrict	impoundment on flood or ebb within				
Feature Pattern – asses□ A		ed pattern (examples: straightening, modificatio	n above or below culvert).				
☐A Majority of asses		metric ally altered stream profile (examples: channel of excavation where appropriate channel profile					
Consider only current in	channel down-cutting (head-cel unstable annel unstable	tric rom which the stream has currently recove cut), active widening, and artificial hardening (s					

б.		amside Ar									
	Cons LB	ider for t RB	he Left	Bank (L	B) and th	e Right I	Bank (RB).				
	⊠a □B	⊠A □B	Mod refe	lerate evi rence inte	dence of eraction (e	conditions examples:	limited streams	erms, leve ide areaa	es, down- access, dis	teraction cutting, aggradation, dredging) that adversely sruption of flood flows through streamside area nor ditching [including mosquito ditching])	
	□с	□с	[exa of flo mos	mples: c	auseways through s ching]) <u>or</u>	with flood treamside	dplain and chanr e area] <u>or</u> too mu	nel constri ch floodp	ction, bulk ain/intertio	eraction (little to no floodplain/intertidal zone a heads, retaining walls, fill, stream incision, disr dal zone access [examples: impoundments, int or assessment reach is a man-made feature	ruption ensive
7.	Wate	r Quality	Stress	ors – ass	sessment	t reach/ir	ntertidal zone ı	metric			
	□A □B □C	Exces	lored wa sive se	dimentation	on (buryin	g of strea	am features or in	itertidal zo	ne)	er discoloration, oil sheen, stream foam) und causing a water quality problem	
	□D □E				tural sulfic collected c			water qua	ality in the	assessment reach. Cite source in "Notes/S	sketch'
	□F □G	sectio Livest	n. ock with	access t	to stream eam or into	or intertid	dal zone	·	•		
	□H □I ⊠J	Degra Other	ided ma	rsh vege		ne intertid				nowing, destruction, etc)	
8.		ize 1 or 2 Droug Droug	streams tht cond tht cond	, D1 drou litions <u>and</u>	ight or hig <u>d</u> no rainfa	her is con all or rainf	Tidal Marsh Str nsidered a droug fall not exceeding 11 inch within the	ht; for Size g 1 inch w	ithin the la	eams, D2 drought or higher is considered a dr ast 48 hours	ought.
9.	Larg e		•				ch metric ous to assess?	lf Yes, ski	p to Metric	c 13 (Streamside Area Ground Surface Condit	tion).
10.	Natu	ral In-stre	am Ha	bitat Typ	es – asse	essment	reach metric				
	10a.	□Yes	□No	sedime	ntation, n	nining, ex	cavation, in-stre	eam hard	ening [for	nt reach (examples of stressors include exc example, rip-rap], recent dredging, and sna p to Metric 12)	
	10b.		Multiple	aquatic		rtes and a	quatic mosses		(skip for □F □G	Size 4 Coastal Plain streams) 5% oysters or other natural hard bottoms Submerged aquatic vegetation	
				sticks a			nd/or emergent	k for T h Strea	□H □I	Low-tide refugia (pools) Sand bottom	
			Multiple	snags a	nd logs (ir			Check for Tidal Marsh Streams Only	∐j □ĸ	5% vertical bank along the marsh	
			in bank		to the nor		ts and/or roots d perimeter	02	ШK	Little or no habitat	
****	*****									AL MARSH STREAMS************************************	**
11.										in streams and Tidal Marsh Streams)	
			⊠No					stream?	(skip for (Coastal Plain streams)	
	11b.	⊠a □B	Riffle-ru Pool-gli	ın sectior de sectio	n (evalua n (evalua	te 11c) ate 11d)	e box(es). etric 12, Aquat	ic Life)			
	11c.	at least of (R) = preshould no NP	ne box sent but	in each : <u><</u> 10%, (row (skip Common	for Size (C) = > 1	4 Coastal Plain 0-40%, Abundar	streams nt (A) = >	and Tida	essment reach – whether or not submerged. (I Marsh Streams) . Not Present (NP) = absent Predominant (P) = > 70%. Cumulative percent	t, Rare
							Boulder (256 Cobble (64 – Gravel (2 – 6	– 4096 m 256 mm) 4 mm)	nm)		
							Sand (.062 – Silt/clay (< 0. Detritus Artificial (rip-ı	062 mm)	ete, etc.)		
	11d.		□No	_	_	_		-		streams and Tidal Marsh Streams)	

12.	Aquatic	Life – a	ssessment reach metric (skip for Tidal Marsh Streams)
	12a. ⊠ If N		No Was an in-stream aquatic life assessment performed as described in the User Manual? tone of the following reasons and skip to Metric 13. \(\subseteq \text{No Water } \subseteq \text{Other: } \)
	12b. 🛚	Yes 🗆	No Are aquatic organisms present in the assessment reach (look in riffles, pools, then snags)? If Yes, check all tha apply. If No, skip to Metric 13.
	1		Adult frogs
	H		Aquatic reptiles Aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats)
		lacktriangle	Beetles
	H		Caddisfly larvae (T) Asian clam (<i>Corbicula</i>)
			Crustacean (isopod/amphipod/crayfish/shrimp)
			Damselfly and dragonfly larvae
	H]Dipterans]Mayfly larvae (E)
			Megaloptera (alderfly, fishfly, dobsonfly larvae)
	님		Midges/mosquito larvae
	H]Mosquito fish (<i>Gambusia</i>) or mud minnows (<i>Umbra pygmaea)</i>]Mussels/Clams (not <i>Corbicula</i>)
			Other fish
	H		Salamanders/tadpoles Snails
			Stonefly larvae (P)
			Tipulid larvae
13.	Streams	ide Are	a Ground Surface Condition – streamside area metric (skip for Tidal Marsh Streams and B valley types) Left Bank (LB) and the Right Bank (RB). Consider storage capacity with regard to both overbank flow and upland runoff
	LB ⊠a	RB ⊠a	Little or no alteration to water storage capacity over a majority of the streamside area
	□в	□в	Moderate alteration to water storage capacity over a majority of the streamside area
	□с	□с	Severe alteration to water storage capacity over a majority of the streamside area (examples: ditches, fill, soil compaction livestock disturbance, buildings, man-made levees, drainage pipes)
14.			a Water Storage – streamside area metric (skip for Size 1 streams, Tidal Marsh Streams, and B valley types)
	Conside LB	r for the RB	e Left Bank (LB) and the Right Bank (RB) of the streamside area.
	□A	\Box A	Majority of streamside area with depressions able to pond water ≥ 6 inches deep
	□в ⊠с	□в ⊠с	Majority of streamside area with depressions able to pond water 3 to 6 inches deep Majority of streamside area with depressions able to pond water < 3 inches deep
15.			ce – streamside area metric (skip for Tidal Marsh Streams)
			Left Bank (LB) and the Right Bank (RB). Do not consider wetlands outside of the streamside area or within the norma of assessment reach.
		RB	or assessment reach.
	□Y ⊠N	□Y ⊠N	Are wetlands present in the streamside area?
16			ibutors – assessment reach metric (skip for Size 4 streams and Tidal Marsh Streams)
			butors within the assessment reach or within view of <u>and</u> draining to the assessment reach.
	ΠA		s and/or springs (jurisdictional discharges)
	□в □С		include wet detention basins; do not include sediment basins or dry detention basins) tion passing flow during low-flow periods within the assessment area (beaver dam, leaky dam, bottom-release dam, weir)
	\Box D	Evidend	e of bank seepage or sweating (iron in water indicates seepage)
	⊠E □F		bed or bank soil reduced (dig through deposited sediment if present)
17.		w Detra	ctors – assessment area metric (skip for Tidal Marsh Streams)
	Check a		
	□a □B		e of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation) tion not passing flow during low-flow periods affecting the assessment reach (ex: watertight dam, sediment deposit)
	□c		tream (> 24% impervious surface for watershed)
			that the streamside area has been modified resulting in accelerated drainage into the assessment reach
	□E ⊠F		nent reach relocated to valley edge the above
18.	Shading	– asse	ssment reach metric (skip for Tidal Marsh Streams)
			Consider "leaf-on" condition.
	⊠a □B		shading is appropriate for stream category (may include gaps associated with natural processes) ed (example: scattered trees)
	□c		shading is gone or largely absent

19.	Buffer Width - 9	streamside area metric (skip for Tidal Marsh Streams)
	Consider "vege to the first brea	tated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top of bank out lk.
	0	poded
	LB RB LB	
		A
		C □C From 30 to < 50 feet wide
		D □D From 10 to < 30 feet wide
		E □E < 10 feet wide <u>or</u> no trees
20.	Buffer Structure	e – streamside area metric (skip for Tidal Marsh Streams)
		ft bank (LB) and right bank (RB) for Metric 19 ("Vegetated" Buffer Width).
	LB RB ⊠A ⊠A	Mature forest
	\Box B \Box B	Non-mature woody vegetation <u>or</u> modified vegetation structure
	$\Box c$ $\Box c$	Herbaceous vegetation with or without a strip of trees < 10 feet wide
	\Box D \Box D	Maintained shrubs
		Little or no vegetation
21.		s – streamside area metric (skip for Tidal Marsh Streams)
		priate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but is
		stream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet). bllowing stressors occurs on either bank, check here and skip to Metric 22:
		30 feet 30-50 feet
	LB RB LB	
		A □A □A Row crops B □B 図B Maintained turf
		B □B ☑B ☑B Maintained turf C □C □C Pasture (no livestock)/commercial horticulture
		D D D Pasture (active livestock use)
22.	Stem Density -	streamside area metric (skip for Tidal Marsh Streams)
	_	ft bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width).
	LB RB	
	⊠a ⊠a	Medium to high stem density
	□в	Low stem density No wooded riparian buffer <u>or</u> predominantly herbaceous species <u>or</u> bare ground
22		
23.	=	egetated Buffer – streamside area metric (skip for Tidal Marsh Streams) r vegetated buffer is continuous along stream (parallel). Breaks are areas lacking vegetation > 10 feet wide.
	LB RB	r vegetated buller is continuous along stream (parallel). Dreaks are areas lacking vegetation > 10 reet wide.
	$\boxtimes A$ $\boxtimes A$	The total length of buffer breaks is < 25 percent.
	□в □в	The total length of buffer breaks is between 25 and 50 percent.
	□с □с	The total length of buffer breaks is > 50 percent.
24.		position – streamside area metric (skip for Tidal Marsh Streams)
	Evaluate the don assessment reac	ninant vegetation within 100 feet of each bank or to the edge of the watershed (whichever comes first) as it contributes to
	LB RB	ii ilabitat.
	$\boxtimes A$ $\boxtimes A$	Vegetation is close to undisturbed in species present and their proportions. Lower strata composed of native species,
		with non-native invasive species absent or sparse.
	□в □в	Vegetation indicates disturbance in terms of species diversity or proportions, but is still largely composed of native species. This may include communities of weedy native species that develop after clear-cutting or clearing or
		communities with non-native invasive species present, but not dominant, over a large portion of the expected strata or
		communities missing understory but retaining canopy trees.
	□с □с	Vegetation is severely disturbed in terms of species diversity or proportions. Mature canopy is absent <u>or</u> communities
		with non-native invasive species dominant over a large portion of expected strata <u>or</u> communities composed of planted stands of non-characteristic species <u>or</u> communities inappropriately composed of a single species <u>or</u> no vegetation.
25	Conductivity -	assessment reach metric (skip for all Coastal Plain streams)
25.		No Was conductivity measurement recorded?
		et one of the following reasons. No Water Other:
	25h Check the	box corresponding to the conductivity measurement (units of microsiemens per centimeter).
	\Box A < 46	
Note	es/Sketch:	

Stream Site Name	CLT Airport Expansion	Date of Assessment	April 2019	
Stream Category	Pa1	Assessor Name/Organization	KMT,BGB/HDR	
		_		
Notes of Field Asses	sment Form (Y/N)		NO	
Presence of regulato		NO		
Additional stream inf	ormation/supplementary measu	rements included (Y/N)	NO	
NC SAM feature type	e (perennial, intermittent, Tidal I	Marsh Stream)	Perennial	

(perennial, intermittent, Tidal Marsh Stream)	Perennia	<u> </u>
Function Class Rating Summary	USACE/ All Streams	NCDWR Intermittent
(1) Hydrology	HIGH	
(2) Baseflow	HIGH	
(2) Flood Flow	HIGH	
(3) Streamside Area Attenuation	HIGH	
(4) Floodplain Access	HIGH	
(4) Wooded Riparian Buffer	HIGH	
(4) Microtopography	HIGH	
(3) Stream Stability	MEDIUM	
(4) Channel Stability	MEDIUM	
(4) Sediment Transport	MEDIUM	
(4) Stream Geomorphology	HIGH	
(2) Stream/Intertidal Zone Interaction	NA	
(2) Longitudinal Tidal Flow	NA	
(2) Tidal Marsh Stream Stability	NA	
(3) Tidal Marsh Channel Stability	NA	
(3) Tidal Marsh Stream Geomorphology	NA	
(1) Water Quality	HIGH	
(2) Baseflow	HIGH	
(2) Streamside Area Vegetation	HIGH	
(3) Upland Pollutant Filtration	HIGH	
(3) Thermoregulation	HIGH	
(2) Indicators of Stressors	NO	
(2) Aquatic Life Tolerance	HIGH	
(2) Intertidal Zone Filtration	NA NA	
(1) Habitat	HIGH	
(2) In-stream Habitat	MEDIUM	
(3) Baseflow	HIGH	
(3) Substrate	MEDIUM	
(3) Stream Stability	MEDIUM	
(3) In-stream Habitat	MEDIUM	
(2) Stream-side Habitat	HIGH	
(3) Stream-side Habitat	HIGH	
(3) Thermoregulation	HIGH	
(2) Tidal Marsh In-stream Habitat	NA	
(3) Flow Restriction	NA NA	
(3) Tidal Marsh Stream Stability	NA NA	
(4) Tidal Marsh Channel Stability	NA	
(4) Tidal Marsh Stream Geomorphology	NA NA	
(3) Tidal Marsh In-stream Habitat	NA NA	
(2) Intertidal Zone	NA NA	
Overall	HIGH	

		Accol	iipailies osei wi	andar version	1 2.1	
	AID #:			NCDWR		
						7.5-minute topographic quadrangle,
						on the same property, identify and
						ser Manual for detailed descriptions irements were performed. See the
		nples of additional meas			plementary meast	irements were performed. See the
					need to be within	n the assessment area).
PROJE	CT/SITE INFORMATIO	N:				·
-	ct name (if any):	CLT Airport Expansion		2. Date of evalu		ber 2019
	cant/owner name:	CLT			me/organization:	KMT,BGB/HDR
CounRiver	_	Mecklenburg Catawba	6		ed water body	Coffoy Crook
		egrees, at lower end of a	ssessment reach)		5-minute quad: 4; -80.948082	Coffey Creek
	,	pth and width can be a	,	- 00.20000	4, 00.040002	
OTTLA	ii iiii OkiiiAiiOii. (de	PS10-1 -				
	number (show on attach			ength of assess	sment reach evalua	ated (feet): 41.5'
		riffle, if present) to top of		1		nable to assess channel depth.
	nnel width at top of bar	, ,			ch a swamp steam	? ∐Yes ∐No
		flow Intermittent flow	☐ Tidal Marsh St	ream		
-	W CATEGORY INFOR	-	☑ D:!(D)	П I	Dt- D -:- (I)	Outer Coastal Plain (O)
15. NC	SAM Zone:	☐ Mountains (M)	□ Piedmont (P)		Coastal Plain (I)	Outer Coastal Plain (O)
40 Fati		V				
	mated geomorphic ey shape (skip for	\Box A			⊠в	<i></i>
	al Marsh Stream):	(more sinuous stream	n, flatter valley slop	pe)	(less sinuous str	eam, steeper valley slope)
17. Wat	ershed size: (skip	Size 1 (< 0.1 mi²)	☐Size 2 (0.1 to	< 0.5 mi ²)	☐ Size 3 (0.5 to <	5 mi²) ☐ Size 4 (≥ 5 mi²)
for	Tidal Marsh Stream)	,	,	,	,	, , ,
	ONAL INFORMATION:					
		ions evaluated? XYes				
	ection 10 water ssential Fish Habitat	☐ Classified Tr ☐ Primary Nurs		_		shed(□I □II □III □IV □V) /Outstanding Resource Waters
	ublicly owned property		arian buffer rule in		utrient Sensitive W	•
	nadromous fish	☐303(d) List				onmental Concern (AEC)
	ocumented presence o	f a federal and/or state I	isted protected sp			
	ist species:					
	esignated Critical Habi			1 1: "11	01	
19. Are	additional stream inforr	mation/supplementary m	easurements inclu	ided in "Notes/	Sketch" section or	attached? ☐Yes ☒No
1. Cha	nnel Water – assessı	nent reach metric (ski	p for Size 1 stre	ams and Tida	l Marsh Streams)	
⊠A	Water throughout	assessment reach.			•	
□в						
□с	No water in asses	sment reach.				
		ction – assessment re				
⊠A						eted by a flow restriction or fill to the
						impoundment on flood or ebb within the channel, tidal gates, debris jams,
	beaver dams).	zacii (cxampics: unacis	ized of percifica of	aiverts, causev	ays that constitut	ine chamier, tidal gates, debris jams,
□в	Not A					
3. Fea	ture Pattern – assess	sment reach metric				
⊠A		assessment reach has al	tered pattern (exa	mples: straight	tening, modification	n above or below culvert).
□в	Not A					
4. Fea	ture Longitudinal Pro	ofile – assessment rea	ch metric			
□А	Majority of assess	ment reach has a substa	antially altered stre	eam profile (ex	amples: channel c	lown-cutting, existing damming, over
		aggradation, dredging, a	and excavation wh	ere appropriat	te channel profile l	has not reformed from any of these
⊠в	disturbances).					
		-				
_		y – assessment reach				and Francisco of Section 1997
						red. Examples of instability include uch as concrete, gabion, rip-rap).
			aa oat, aotive wid	omig, and all	Jai Harderinig (5	ao., ao oonoroto, gabion, np-rap).
□в	10 to 25% of char	nnel unstable				
⊠c	> 25% of channel	unstable				

6.					– stream						
			the Lef	t Bank (L	₋B) and tl	he Right	Bank (RB).				
	LB ⊠A □B	RB □A □B	Mod refe or in Exte [exa of fl mod	derate everence intermitter ensive everence ensive everence ensive everence ensive everence ensive e	ridence of eraction (on the bulkheat ridence of causeways through s ching]) or	conditions examples: ads, cause condition s with floo streamside	limited streamsi eways with floodp is that adversely idplain and chann e area] or too mud	rms, leve de area a lain consi affect refe el constri ch floodpl	es, down- ccess, dis triction, mi erence int ction, bulk ain/intertion	teraction cutting, aggradation, dredging) that adversely affective flows through streamside area, leak inor ditching [including mosquito ditching]) eraction (little to no floodplain/intertidal zone access theads, retaining walls, fill, stream incision, disruptional zone access [examples: impoundments, intensivor assessment reach is a man-made feature on a	ss on ve
7.	Wate	r Quality	Stress	ors – as	sessmen	t reach/ii	ntertidal zone n	netric			
	Check all that apply. ☐ A Discolored water in stream or intertidal zone (milky white, blue, unnatural water discoloration, oil sheen, stream foam) ☐ B Excessive sedimentation (burying of stream features or intertidal zone) ☐ C Noticeable evidence of pollutant discharges entering the assessment reach and causing a water quality problem ☐ D Odor (not including natural sulfide odors) ☐ E Current published or collected data indicating degraded water quality in the assessment reach. Cite source in "Notes/Sketch section. ☐ F Livestock with access to stream or intertidal zone						า"				
	□G					or intertic tertidal zoi					
	□H ⊠I □J	Othe					dal zone (removal n in "Notes/Sketo			mowing, destruction, etc)	
8.	 Recent Weather – watershed metric (skip for Tidal Marsh Streams) For Size 1 or 2 streams, D1 drought or higher is considered a drought; for Size 3 or 4 streams, D2 drought or higher is considered a drought □ A Drought conditions and no rainfall or rainfall not exceeding 1 inch within the last 48 hours □ B Drought conditions and rainfall exceeding 1 inch within the last 48 hours □ C No drought conditions 						ıt.				
9.	Large □Yes	_	-				ch metric ous to assess? I	f Yes, ski _l	p to Metric	c 13 (Streamside Area Ground Surface Condition).	
10.		r al In-str □Yes		Degrae sedime	ded in-str entation, r	eam habi mining, ex		am hard	ening [for	nt reach (examples of stressors include excessive example, rip-rap], recent dredging, and snagging to Metric 12)	
	10b.	Check a A B C D C D M E	Multiple (include Multiple vegeta Multiple 5% und in bank	e aquatic e liverwor e sticks a tion e snags a dercut ba	macrophyrts, lichens and/or leaf and logs (inks and/or to the no	ytes and a s, and alga f packs ar ncluding la or root ma	aquatic mosses al mats) nd/or emergent	Check for Tidal and Marsh Streams Check for Tidal ()	(skip for F G H I J K	Size 4 Coastal Plain streams) 5% oysters or other natural hard bottoms Submerged aquatic vegetation Low-tide refugia (pools) Sand bottom 5% vertical bank along the marsh Little or no habitat	
****										AL MARSH STREAMS************************************	
11.		orm and □Yes	Substra ⊠No							in streams and Tidal Marsh Streams) Coastal Plain streams)	
								stream: (SKIP IOI V	oustai i iaili streams)	
	11b.	Bedform □ A □ B □ C	Riffle-r Pool-gl	un section lide section	n (evalua on (evalu	ite 11c) ate 11d)	e box(es). etric 12, Aquati	c Life)			
		at least (R) = pre	one box esent bu	x in each It <u><</u> 10%,	row (ski) Common	o for Size	4 Coastal Plain 0-40%, Abundan	streams t (A) = > blite - 4096 m 256 mm) 4 mm) 2 mm) 062 mm)	and Tida 40-70%, I m)	sessment reach – whether or not submerged. Chec I Marsh Streams) . Not Present (NP) = absent, Rar Predominant (P) = > 70%. Cumulative percentage	re
	11d.	□Yes	□No	Are poo	ls filled wi	th sedime	nt? (skip for Siz	e 4 Coas	stal Plain	streams and Tidal Marsh Streams)	

12.	Aquatic	Life – asse	essment reach metric (skip for Tidal Marsh Streams)
	12a. ⊠` If N		Was an in-stream aquatic life assessment performed as described in the User Manual? ne of the following reasons and skip to Metric 13. ☐ No Water ☐ Other:
	12b. □	Yes ⊠No	Are aquatic organisms present in the assessment reach (look in riffles, pools, then snags)? If Yes, check all tha apply. If No, skip to Metric 13.
	1		Numbers over columns refer to "individuals" for Size 1 and 2 streams and "taxa" for Size 3 and 4 streams.
			quatic reptiles quatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats)
		□Ве	petles
	H	⊔Ca □ As	addisfly larvae (T) sian clam (<i>Corbicula</i>)
		□Cr	rustacean (isopod/amphipod/crayfish/shrimp)
			amselfly and dragonfly larvae pterans
		□Ma	ayfly larvae (E)
			egaloptera (alderfly, fishfly, dobsonfly larvae) dges/mosquito larvae
			osquito fish (<i>Gambusia</i>) or mud minnows (<i>Umbra pygmaea</i>)
			ussels/Clams (not Corbicula)
			rher fish alamanders/tadpoles
		□Sr	nails
			onefly larvae (P) pulid larvae
			orms/leeches
13.	Conside	r for the Le	round Surface Condition – streamside area metric (skip for Tidal Marsh Streams and B valley types) ft Bank (LB) and the Right Bank (RB). Consider storage capacity with regard to both overbank flow and upland runoff
	LB □A	RB □A L	ittle or no alteration to water storage capacity over a majority of the streamside area
	⊠B	⊠B M	oderate alteration to water storage capacity over a majority of the streamside area
	□с		severe alteration to water storage capacity over a majority of the streamside area (examples: ditches, fill, soil compaction vestock disturbance, buildings, man-made levees, drainage pipes)
14.	Streams	ide Area W	/ater Storage – streamside area metric (skip for Size 1 streams, Tidal Marsh Streams, and B valley types)
			eft Bank (LB) and the Right Bank (RB) of the streamside area.
	LB □A	RB □A M	lajority of streamside area with depressions able to pond water ≥ 6 inches deep
	□B ⊠C	□B M	fajority of streamside area with depressions able to pond water 3 to 6 inches deep fajority of streamside area with depressions able to pond water < 3 inches deep
15.			- streamside area metric (skip for Tidal Marsh Streams)
			eft Bank (LB) and the Right Bank (RB). Do not consider wetlands outside of the streamside area or within the normatessessment reach.
		RB	
	□y ⊠n	□Y A ⊠N	re wetlands present in the streamside area?
16.	Baseflo	w Contribu	tors – assessment reach metric (skip for Size 4 streams and Tidal Marsh Streams)
	_		tors within the assessment reach or within view of <u>and</u> draining to the assessment reach.
	∐A □B		nd/or springs (jurisdictional discharges) lude wet detention basins; do not include sediment basins or dry detention basins)
	□с	Obstruction	n passing flow during low-flow periods within the assessment area (beaver dam, leaky dam, bottom-release dam, weir)
	□D □E		of bank seepage or sweating (iron in water indicates seepage) d or bank soil reduced (dig through deposited sediment if present)
	⊠F	None of the	e above
17.			rs – assessment area metric (skip for Tidal Marsh Streams)
	Check a □ A	III that appl Evidence c	y. If substantial water withdrawals from the assessment reach (includes areas excavated for pump installation)
	□в	Obstruction	n not passing flow during low-flow periods affecting the assessment reach (ex: watertight dam, sediment deposit)
	⊠c □d		am (≥ 24% impervious surface for watershed) hat the streamside area has been modified resulting in accelerated drainage into the assessment reach
	□E		nat the streamside area has been modified resulting in accelerated drainage into the assessment reach nt reach relocated to valley edge
	□F	None of the	
18.	_		nent reach metric (skip for Tidal Marsh Streams)
	Consider A		onsider "leaf-on" condition. ading is appropriate for stream category (may include gaps associated with natural processes)
	⊠в	Degraded	(example: scattered trees)
	□с	Stream sha	ading is gone or largely absent

	Consider "vegeta to the first break Vegetated Woo	
	\Box B \Box B \Box B \Box C	RB □ A ≥ 100 feet wide or extends to the edge of the watershed □ B From 50 to < 100 feet wide □ C From 30 to < 50 feet wide □ D From 10 to < 30 feet wide
		☐ E < 10 feet wide or no trees
20.		– streamside area metric (skip for Tidal Marsh Streams) bank (LB) and right bank (RB) for Metric 19 ("Vegetated" Buffer Width).
	□A □A □B □C □C □D □D	Mature forest Non-mature woody vegetation <u>or</u> modified vegetation structure Herbaceous vegetation with or without a strip of trees < 10 feet wide Maintained shrubs Little or no vegetation
21.	Check all approp	 streamside area metric (skip for Tidal Marsh Streams) riate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but is ream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet).
		lowing stressors occurs on either bank, check here and skip to Metric 22: 🛭 feet 30-50 feet
	□в □в □в	RB LB RB A A A Row crops B B B Maintained turf C C C Pasture (no livestock)/commercial horticulture
		□D □D Pasture (active livestock use)
22.		reamside area metric (skip for Tidal Marsh Streams) bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width).
		Medium to high stem density Low stem density No wooded riparian buffer <u>or</u> predominantly herbaceous species <u>or</u> bare ground
23.		etated Buffer – streamside area metric (skip for Tidal Marsh Streams)
	Consider whether v	vegetated buffer is continuous along stream (parallel). Breaks are areas lacking vegetation > 10 feet wide.
	□в ⊠в	The total length of buffer breaks is < 25 percent. The total length of buffer breaks is between 25 and 50 percent. The total length of buffer breaks is > 50 percent.
24.	Evaluate the domin	osition – streamside area metric (skip for Tidal Marsh Streams) nant vegetation within 100 feet of each bank or to the edge of the watershed (whichever comes first) as it contributes to
	assessment reach LB RB	
	□A □A	Vegetation is close to undisturbed in species present and their proportions. Lower strata composed of native species with non-native invasive species absent or sparse.
	⊠в ⊠в	Vegetation indicates disturbance in terms of species diversity or proportions, but is still largely composed of native species. This may include communities of weedy native species that develop after clear-cutting or clearing or communities with non-native invasive species present, but not dominant, over a large portion of the expected strata or
	□с □с	communities missing understory but retaining canopy trees. Vegetation is severely disturbed in terms of species diversity or proportions. Mature canopy is absent <u>or</u> communities with non-native invasive species dominant over a large portion of expected strata <u>or</u> communities composed of planted stands of non-characteristic species <u>or</u> communities inappropriately composed of a single species <u>or</u> no vegetation.
25.	25a. □Yes ⊠I	sessment reach metric (skip for all Coastal Plain streams) No Was conductivity measurement recorded? one of the following reasons. □No Water □Other:
	25b. Check the bo ☐A < 46	ox corresponding to the conductivity measurement (units of microsiemens per centimeter). □B 46 to < 67 □C 67 to < 79 □D 79 to < 230 □E ≥ 230
Note	es/Sketch:	
		ncrete flume. Surrounding stream are fill slopes up to airfield.

19. Buffer Width – streamside area metric (skip for Tidal Marsh Streams)

CLI Airport Expansion	Date of Assessment	September 20	019
Pb1	Assessor Name/Organization	KMT,BGB/HD	R
sment Form (Y/N)		YES	
ry considerations (Y/N)		NO	
ormation/supplementary measu	rements included (Y/N)	NO	
e (perennial, intermittent, Tidal M	Narsh Stream)	Perennial	
	Pb1 sment Form (Y/N) ry considerations (Y/N) ormation/supplementary measu	Pb1 Assessor Name/Organization sment Form (Y/N)	Pb1 Assessor Name/Organization KMT,BGB/HD sment Form (Y/N) YES ry considerations (Y/N) NO ormation/supplementary measurements included (Y/N) NO

e (perennial, intermittent, Tidal Marsh Stream)	Perennial	<u> </u>
	USACE/	NCDWR
Function Class Rating Summary	All Streams	Intermittent
(1) Hydrology	LOW	
(2) Baseflow	MEDIUM	
(2) Flood Flow	LOW	
(3) Streamside Area Attenuation	MEDIUM	
(4) Floodplain Access	MEDIUM	
(4) Wooded Riparian Buffer	MEDIUM	
(4) Microtopography	NA	
(3) Stream Stability	LOW	
(4) Channel Stability	LOW	
(4) Sediment Transport	LOW	
(4) Stream Geomorphology	MEDIUM	
(2) Stream/Intertidal Zone Interaction	NA	
(2) Longitudinal Tidal Flow	NA NA	
(2) Tidal Marsh Stream Stability	NA NA	
(3) Tidal Marsh Channel Stability	NA	
(3) Tidal Marsh Stream Geomorphology	NA	
(1) Water Quality	MEDIUM	
(2) Baseflow	MEDIUM	
(2) Streamside Area Vegetation	HIGH	
(3) Upland Pollutant Filtration	HIGH	
(3) Thermoregulation	MEDIUM	
(2) Indicators of Stressors	YES	
(2) Aquatic Life Tolerance	HIGH	
(2) Intertidal Zone Filtration	NA	
(1) Habitat	MEDIUM	
(2) In-stream Habitat	LOW	
(3) Baseflow	MEDIUM	
(3) Substrate	LOW	
(3) Stream Stability	LOW	
(3) In-stream Habitat	LOW	
(2) Stream-side Habitat	HIGH	
(3) Stream-side Habitat	HIGH	
(3) Thermoregulation	MEDIUM	
(2) Tidal Marsh In-stream Habitat	NA	
(3) Flow Restriction	NA	
(3) Tidal Marsh Stream Stability	NA	
(4) Tidal Marsh Channel Stability	NA NA	
(4) Tidal Marsh Stream Geomorphology	NA NA	
(3) Tidal Marsh In-stream Habitat	NA NA	
(2) Intertidal Zone	NA NA	
Overall	MEDIUM	

		Acco	inpanies osci me	ilidai VCI 31011 2	• •	
USACE A				NCDWR #:		
						7.5-minute topographic quadrangle
						on the same property, identify and
						ser Manual for detailed descriptions rements were performed. See the
		nples of additional meas			ementary measu	mements were performed. See the
					eed to be withir	n the assessment area).
PROJECT	SITE INFORMATIO	N:		. Date of evalua		·
•		CLT Airport Expansion CLT		. Assessor name		KMT,BGB/HDR
5. County:		Mecklenburg		. Nearest named	-	TOTT, DOB/TIDIT
7. River ba	_	Catawba		on USGS 7.5-	-	Coffey Creek
	_	grees, at lower end of a	ssessment reach):		-80.942270	
STREAM	INFORMATION: (de	pth and width can be a PS11-1 -				
9. Site nur	nber (show on attach	ned map): 25	10. Le	ength of assessm	nent reach evalua	ated (feet): 390.5'
11. Chann	el depth from bed (in	riffle, if present) to top	of bank (feet):	15	□Uı	nable to assess channel depth.
	el width at top of ban				a swamp steam	? □Yes □No
14. Featur	e type: Perennial	flow Intermittent flow	/ □Tidal Marsh St	ream		
_	CATEGORY INFOR	-	5 7			
15. NC SA	M Zone:	☐ Mountains (M)	□ Piedmont (P)	☐ Inner Co	astal Plain (I)	Outer Coastal Plain (O)
						/
			_		1	
	ted geomorphic	\bowtie_{A}	بـــــــر		□в 🥄	
	shape (skip for Vlarsh Stream):	(more sinuous stream	n flatter valley slor			eam, steeper valley slope)
	shed size: (skip	☐ Size 1 (< 0.1 mi²)			Size 3 (0.5 to <	
	lal Marsh Stream)		□ Size 2 (0.1 to	< 0.5 m²)	1312e 3 (0.5 to <	
	IAL INFORMATION:					
		ions evaluated? ⊠Yes	☐ No If Yes, che	ck all that apply	to the assessme	nt area.
☐ Sec	tion 10 water	☐ Classified Tr		□Wat	er Supply Waters	shed (□I □II □III □IV □V)
	ential Fish Habitat	☐ Primary Nurs			•	Outstanding Resource Waters
	licly owned property		arian buffer rule in		ient Sensitive W	
	dromous fish	☐303(d) List f a federal and/or state I	listed protected an			onmental Concern (AEC)
	species:	i a lederarand/or state i	iistea protectea spi	cies within the a	assessifierit area	
	ignated Critical Habit	tat (list species)				
			neasurements inclu	ded in "Notes/Sk	etch" section or	attached? ⊠Yes □No
		ment reach metric (sk	ip for Size 1 strea	ams and Tidal N	//arsh Streams)	
⊠a □b	No flow, water in p	assessment reach.				
□c	No water in asses					
2. Evider	nce of Flow Restric	tion – assessment re	ach metric			
				-pool sequence	is severely affect	cted by a flow restriction or fill to the
						impoundment on flood or ebb with
		each (examples: unders	sized or perched cu	ılverts, causeway	ys that constrict t	the channel, tidal gates, debris jam
⊠в	beaver dams).					
	Not A					
		sment reach metric				
⊠A □¤		issessment reach has a	itered pattern (exa	mples: straighte	nıng, modificatior	n above or below culvert).
□в	Not A		_			
	_	file – assessment rea		 (
⊠A						lown-cutting, existing damming, over
	disturbances).	aggradation, dredging, a	and excavation Wil	ere appropriate	channel prome i	has not reformed from any of thes
□в	Not A					
		y – assessment reach	metric			
_	-			e stream has c	urrently recove	red. Examples of instability include
						uch as concrete, gabion, rip-rap).
□A	< 10% of channel	unstable			2 (
□в Мо	10 to 25% of chan					
⊠c	> 25% of channel	uristable				

6.	Strea	amside Ar	ea Interac	ction – stre	amside area	i metric				
	Cons LB	sider for tl RB	ne Left Ba	ank (LB) and	d the Right	Bank (RB).				
	□A ⊠B	□а ⊠в	Modera referer	ate evidence nce interactio	of conditions of camples:	limited streamsi	rms, levee ide area ac	es, down- ccess, dis	teraction cutting, aggradation, dredging) that adversely affor ruption of flood flows through streamside area, lea nor ditching [including mosquito ditching])	
	□с	□с	[examp of flood mosqui	les: causew I flows throug	ays with floo ghstreamside	dplain and chann e area] <u>or</u> too mud	el constric ch floodpla	tion, bulk iin/intertic	eraction (little to no floodplain/intertidal zone acce heads, retaining walls, fill, stream incision, disrupti lal zone access [examples: impoundments, intensi or assessment reach is a man-made feature on	on ive
7.	Wate	r Quality	Stressors	– assessm	ent reach/ir	ntertidal zone n	netric			
	Check all that apply. ☐ A Discolored water in stream or intertidal zone (milky white, blue, unnatural water discoloration, oil sheen, stream foam) ☐ B Excessive sedimentation (burying of stream features or intertidal zone) ☐ C Noticeable evidence of pollutant discharges entering the assessment reach and causing a water quality problem									
	□D □E				ulfide odors) ed data indic		water qual	ity in the	assessment reach. Cite source in "Notes/Sketo	ch"
	□F □G	section Livesto	n. ock with ac	ccess to stre	am or intertio	dal zone	·	,		
	□H □I ⊠J	Other:				lal zone (remova n in "Notes/Sketo			nowing, destruction, etc)	
8.		B Drought conditions and rainfall exceeding 1 inch within the last 48 hours								
9.	Larg e				ssment rea		f Yes, skip	to Metric	: 13 (Streamside Area Ground Surface Condition)	
10.		ral In-stre □Yes [□No □	Degraded in- sedimentation	-stream habi n, mining, ex		am harde	ning [for	nt reach (examples of stressors include excessi example, rip-rap], recent dredging, and snaggir p to Metric 12)	
	10b.	⊠A I	Multiple ad (include liv	quatic macro erworts, lich	phytes and a ens, and alga	quatic mosses		skip for S	Size 4 Coastal Plain streams) 5% oysters or other natural hard bottoms Submerged aquatic vegetation Low-tide refugia (pools)	
		⊠c ⊠D	vegetation Multiple sr 5% underd	nags and log cut banks an	s (including land) ad/or root ma	ap trees) ts and/or roots	Check for Tidal Marsh Streams Only	□i □j □K	Sand bottom 5% vertical bank along the marsh Little or no habitat	
			n banks e Little or no		normal wette	d perimeter				
**** [*]	****** Bedf								AL MARSH STREAMS************************************	
			_			• •			Coastal Plain streams)	
	11b.	⊠a I □B I	evaluated. Riffle-run s Pool-glide	Check the section (eva	appropriate luate 11c) aluate 11d)	e box(es).		·		
	11c.	In riffle sec	ctions, che	eck all that oc	cur below the	4 Coastal Plain	perimeter of streams a	and Tidal	essment reach – whether or not submerged. Che Marsh Streams) . Not Present (NP) = absent, Ra Predominant (P) = > 70%. Cumulative percentage	are
		should no	t exceed 1 R (00% for eac	h assessmen P				Todominan (i) Todo Candidato porconag	
						Boulder (256 Cobble (64 – Gravel (2 – 64	– 4096 mr 256 mm)	n)		
						Sand (.062 -	2 mm)			
			\boxtimes			Silt/clay (< 0.0 Detritus Artificial (rip-r	,	ete, etc.)		
	11d.	□Yes [□No Ar	e pools filled	with sedime	nt? (skip for Siz	ze 4 Coas	tal Plain	streams and Tidal Marsh Streams)	

12.	Aquatic	Life – a	sessment reach metric (skip for Tidal Marsh Streams)	
	12a. ⊠ If N		No Was an in-stream aquatic life assessment performed as described in the User Manual? one of the following reasons and skip to Metric 13. \Bigci No Water \Bigci Other:	
	12b. 🛚	Yes [No Are aquatic organisms present in the assessment reach (look in riffles, pools, then snags)? If Yes, check all the apply. If No, skip to Metric 13.	ıai
	1		Numbers over columns refer to "individuals" for Size 1 and 2 streams and "taxa" for Size 3 and 4 streams. Adult frogs Aquatic reptiles	
	ä	Σ	Aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats)	
	H		Beetles Caddisfly larvae (T)	
			Asian clam (Corbicula)	
	\vdash		Crustacean (isopod/amphipod/crayfish/shrimp) Damselfly and dragonfly larvae	
	日		Dipterans Mayfly larvae (E)	
			Megaloptera (alderfly, fishfly, dobsonfly larvae)	
			Midges/mosquito larvae Mosquito fish (<i>Gambusia</i>) or mud minnows (<i>Umbra pygmaea</i>)	
			Mussels/Clams (not Corbicula)	
	H	_	Other fish Salamanders/tadpoles	
		\triangleright	Snails Stonefly larvae (P)	
			Tipulid larvae	
			Worms/leeches	
13.			Ground Surface Condition – streamside area metric (skip for Tidal Marsh Streams and B valley types) Left Bank (LB) and the Right Bank (RB). Consider storage capacity with regard to both overbank flow and upland runce	off.
	\boxtimes A	\boxtimes A	Little or no alteration to water storage capacity over a majority of the streamside area	
	□в □С	□в □С	Moderate alteration to water storage capacity over a majority of the streamside area Severe alteration to water storage capacity over a majority of the streamside area (examples: ditches, fill, soil compactic livestock disturbance, buildings, man-made levees, drainage pipes)	'n,
14.	Streams	ide Are	Water Storage – streamside area metric (skip for Size 1 streams, Tidal Marsh Streams, and B valley types)	
	Conside LB	r for th RB	Left Bank (LB) and the Right Bank (RB) of the streamside area.	
	\square A	\square A	Majority of streamside area with depressions able to pond water ≥ 6 inches deep	
	⊠в □c	⊠в □c	Majority of streamside area with depressions able to pond water 3 to 6 inches deep Majority of streamside area with depressions able to pond water < 3 inches deep	
15.			ce – streamside area metric (skip for Tidal Marsh Streams)	
			Left Bank (LB) and the Right Bank (RB). Do not consider wetlands outside of the streamside area or within the norm of assessment reach.	na
	LB □Y	RB ⊠Y	Are wetlands present in the streamside area?	
	⊠n	□N	Are wettands present in the streamside area?	
16.			butors – assessment reach metric (skip for Size 4 streams and Tidal Marsh Streams)	
	Check a □A		putors within the assessment reach or within view of <u>and</u> draining to the assessment reach. and/or springs (jurisdictional discharges)	
	□в □С	Ponds (nclude wet detention basins; do not include sediment basins or dry detention basins) ion passing flow during low-flow periods within the assessment area (beaver dam, leaky dam, bottom-release dam, we	ir۱
	$\boxtimes D$		e of bank seepage or sweating (iron in water indicates seepage)	11 <i>)</i>
	⊠E □F		ped or bank soil reduced (dig through deposited sediment if present) the above	
17.		w Detra	tors – assessment area metric (skip for Tidal Marsh Streams)	
	Check a □ A		ply. e of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation)	
	□в	Obstruc	ion not passing flow during low-flow periods affecting the assessment reach (ex. watertight dam, sediment deposit)	
	⊠c □d		ream (≥ 24% impervious surface for watershed) ethat the streamside area has been modified resulting in accelerated drainage into the assessment reach	
	□E □F	Assess	nent reach relocated to valley edge the above	
18.			sment reach metric (skip for Tidal Marsh Streams)	
			Consider "leaf-on" condition.	
	⊠a □B	Degrad	shading is appropriate for stream category (may include gaps associated with natural processes) d (example: scattered trees)	
	□с	Stream	shading is gone or largely absent	

19.	Buffer Width – streamside area metric (skip for Tidal Marsh Streams)								
	Consider "vegetated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top of bank ou to the first break. Vegetated Wooded								
	LB RB LB RB								
	□C □C □C From 30 to < 50 feet wide								
	D D D From 10 to < 30 feet wide								
	□E □E □E < 10 feet wide <u>or</u> no trees								
 Buffer Structure – streamside area metric (skip for Tidal Marsh Streams) Consider for left bank (LB) and right bank (RB) for Metric 19 ("Vegetated" Buffer Width). 									
	LB RB ⊠A Mature forest								
	B Non-mature woody vegetation or modified vegetation structure								
	C C Herbaceous vegetation with or without a strip of trees < 10 feet wide								
	□ D								
21.	Buffer Stressors – streamside area metric (skip for Tidal Marsh Streams)								
	Check all appropriate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but is								
	within 30 feet of stream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet). If none of the following stressors occurs on either bank, check here and skip to Metric 22:								
	Abuts < 30 feet 30-50 feet								
	LB RB LB RB □A □A □A □A □A Row crops								
	□A □A □A □A □A Row crops □B □B □B □B ⊠B Maintained turf								
	□ C □ C □ C □ C □ C Pasture (no livestock)/commercial horticulture								
	□ D □ D □ D □ D □ D Pasture (active livestock use)								
22.	Stem Density – streamside area metric (skip for Tidal Marsh Streams) Consider for left bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width).								
	LB RB								
	✓ A Medium to high stem density✓ B ☐ B Low stem density								
	□ C □ C No wooded riparian buffer or predominantly herbaceous species or bare ground								
23.	Continuity of Vegetated Buffer – streamside area metric (skip for Tidal Marsh Streams)								
	Consider whether vegetated buffer is continuous along stream (parallel). Breaks are areas lacking vegetation > 10 feet wide. LB RB								
	□B □B The total length of buffer breaks is between 25 and 50 percent. □C □C The total length of buffer breaks is > 50 percent.								
	· ·								
24.	Vegetative Composition – streamside area metric (skip for Tidal Marsh Streams) Evaluate the dominant vegetation within 100 feet of each bank or to the edge of the watershed (whichever comes first) as it contributes to								
	assessment reach habitat.								
	LB RB								
	□ A Vegetation is close to undisturbed in species present and their proportions. Lower strata composed of native species, with non-native invasive species absent or sparse.								
	☑B Vegetation indicates disturbance in terms of species diversity or proportions, but is still largely composed of native species. This may include communities of weedy native species that develop after clear-cutting or clearing or								
	communities with non-native invasive species present, but not dominant, over a large portion of the expected strata or								
	communities missing understory but retaining canopy trees.								
	UC Vegetation is severely disturbed in terms of species diversity or proportions. Mature canopy is absent <u>or</u> communities with non-native invasive species dominant over a large portion of expected strata or communities composed of planted								
	stands of non-characteristic species or communities inappropriately composed of a single species or no vegetation.								
25.	Conductivity – assessment reach metric (skip for all Coastal Plain streams)								
	25a. Tyes No Was conductivity measurement recorded?								
	If No, select one of the following reasons. No Water Other:								
	25b. Check the box corresponding to the conductivity measurement (units of microsiemens per centimeter). □ A < 46 □ B 46 to < 67 □ C 67 to < 79 □ D 79 to < 230 □ E ≥ 230								

Notes/Sketch:

Coffey Creek is extrememly incised with failing banks. Many trees are in the stream damming up the stream in places. Abundant privet and autumn olive in streamside area.

Stream Site Name	CLT Airport Expansion	Date of Assessment	October 2019						
Stream Category	on KMT,BGB/HDR								
Notes of Field Assessment Form (Y/N) YES									
Presence of regulato	NO								
Additional stream information/supplementary measurements included (Y/N) YES									
NC SAM feature type (perennial, intermittent, Tidal Marsh Stream) Perennial Perennial									

(perennial, intermittent, Tidal Marsh Stream)	Perennia	<u> </u>
Function Class Rating Summary	USACE/ All Streams	NCDWR Intermittent
(1) Hydrology	MEDIUM	
(2) Baseflow	HIGH	
(2) Flood Flow	MEDIUM	
(3) Streamside Area Attenuation	HIGH	
(4) Floodplain Access	MEDIUM	
(4) Wooded Riparian Buffer	HIGH	
(4) Microtopography	MEDIUM	
(3) Stream Stability	LOW	
(4) Channel Stability	LOW	
(4) Sediment Transport	MEDIUM	
(4) Stream Geomorphology	LOW	
(2) Stream/Intertidal Zone Interaction	NA	
(2) Longitudinal Tidal Flow	NA	
(2) Tidal Marsh Stream Stability	NA	
(3) Tidal Marsh Channel Stability	NA	
(3) Tidal Marsh Stream Geomorphology	NA	
(1) Water Quality	HIGH	
(2) Baseflow	HIGH	
(2) Streamside Area Vegetation	HIGH	
(3) Upland Pollutant Filtration	HIGH	
(3) Thermoregulation	HIGH	
(2) Indicators of Stressors	NO	
(2) Aquatic Life Tolerance	HIGH	
(2) Intertidal Zone Filtration	NA	
(1) Habitat	HIGH	
(2) In-stream Habitat	MEDIUM	
(3) Baseflow	HIGH	
(3) Substrate	MEDIUM	
(3) Stream Stability	LOW	
(3) In-stream Habitat	HIGH	
(2) Stream-side Habitat	HIGH	
(3) Stream-side Habitat	HIGH	
(3) Thermoregulation	HIGH	
(2) Tidal Marsh In-stream Habitat	NA	
(3) Flow Restriction	NA	
(3) Tidal Marsh Stream Stability	NA NA	
(4) Tidal Marsh Channel Stability	NA	
(4) Tidal Marsh Stream Geomorphology	NA NA	
(3) Tidal Marsh In-stream Habitat	NA NA	
(2) Intertidal Zone	NA NA	
Overall	HIGH	

		Acco	impanies osci ii	ianuai vers	1011 2.1			
USACE AID				NCDW				
						7.5-minute topographic quadrangle,		
						on the same property, identify and		
						ser Manual for detailed descriptions urements were performed. See the		
		nples of additional meas				aremente were performed. Gee the		
						n the assessment area).		
	ITE INFORMATIO							
Project na Annliagna		CLT Airport Expansion		2. Date of ev		r 2019 KMT,BGB/HDR		
5. County:		CLT Mecklenburg			name/organization: amed water body	KIVI I ,BGB/ NDK		
7. River bas	_	Catawba			7.5-minute quad:	Coffey Creek		
	_	grees, at lower end of a	assessment reach		197, -80.942730			
	,	pth and width can be PS12-1 -	approximations		·			
9. Site numb	er (show on attach			ength of ass	essment reach evalu	ated (feet): 35'		
11. Channel	depth from bed (in	riffle, if present) to top		3		Inable to assess channel depth.		
	width at top of ban				each a swamp steam	n? □Yes □No		
		flow ⊠Intermittent flow	w □Tidal Marsh \$	Stream				
_	ATEGORY INFORM		-					
15. NC SAM	Zone:	☐ Mountains (M)	□ Piedmont (P □ P □ Piedmont (P □ P □ P □ Piedmont (P □ P) \square Inne	er Coastal Plain (I)	Outer Coastal Plain (O)		
						/		
40 5-1:1-	d	V		,				
	ed geomorphic nape (skip for	\boxtimes A	$\overline{}$	•	□в			
	arsh Stream):	(more sinuous strear	m, flatter valley slo	pe)	(less sinuous st	ream, steeper valley slope)		
17. Watersh	ed size: (skip	Size 1 (< 0.1 mi²)	☐Size 2 (0.1 t	$0 < 0.5 \text{mi}^2$	☐ Size 3 (0.5 to <	5 mi²) ☐ Size 4 (≥ 5 mi²)		
for Tida	l Marsh Stream)	,	,	,	,	, , , , ,		
	L INFORMATION:							
	gulatory considerati on 10 water	ions evaluated? ⊠Yes						
	ntial Fish Habitat	□Classified Ti □Primary Nur				shed (□I □II □III □IV □V) s/Outstanding Resource Waters		
	ly owned property		parian buffer rule		Nutrient Sensitive W	<u> </u>		
□Anadr	omous fish	☐303(d) List				onmental Concern (AEC)		
		f a federal and/or state	listed protected s	pecies within	the assessment area	а.		
	pecies:	tot (list appaiss)						
	nated Critical Habit		neasurements inc	luded in "Not	es/Sketch" section or	attached? XYes No		
10.7110 addi	donar ou cam imorn	nation/supplementary in	neasarements inc	14004 111 1400	os, Citatori Godiori Gi	attached. 2700 1140		
		nent reach metric (sk	cip for Size 1 stre	eams and Ti	dal Marsh Streams)		
□A	•	assessment reach.						
□в ⊠c	No flow, water in p No water in assess							
		ction – assessment re	ach matric					
Z. EVIGETIC				le-nool segui	ence is severely affe	cted by a flow restriction or fill to the		
						impoundment on flood or ebb within		
		each (examples: under	sized or perched	culverts, caus	seways that constrict	the channel, tidal gates, debris jams		
⊠в	beaver dams).							
	Not A							
		sment reach metric	-14 /					
∐A ⊠B	Not A	ssessment reach has a	aitered pattern (ex	ampies: strai	igntening, modificatio	n above or below culvert).		
		C 1.						
4. Feature □A	_	file – assessment rea		room profile /	(avamples: channel	down outting existing domming ever		
⊔A						down-cutting, existing damming, over has not reformed from any of these		
	widening, active aggradation, dredging, and excavation where appropriate channel profile has not reformed from any of these disturbances).							
⊠в	Not A							
5. Signs of	Active Instability	y – assessment reach	metric					
						ered. Examples of instability include		
active ba ⊠A			ead-cut), active w	dening, and	artificial hardening (s	such as concrete, gabion, rip-rap).		
□B	< 10% of channel 10 to 25% of chan							
	> 25% of channel							

ο.					eamside area				
	LB	RB	tne Len	Bank (LB) ar	nd the Right E	sank (RB).			
	⊠a □B	⊠a □B	Mod refe or in	derate evidenc rence interacti ntermittent bull	e of conditions on (examples: kheads, cause	limited streamsion	rms, leve de area a lain const	es, down- ccess, dis riction, mi	cutting, aggradation, dredging) that adversely affect ruption of flood flows through streamside area, leaky nor ditching [including mosquito ditching])
	□с	□с	[exa of fl mos	emples: cause ood flows throu	ways with flood ugh streamside]) <u>or</u> floodplain	dplain and chann area] <u>or</u> too mud	el constri ch floodpla	ction, bulk ain/intertio	eraction (little to no floodplain/intertidal zone access neads, retaining walls, fill, stream incision, disruption al zone access [examples: impoundments, intensive or assessment reach is a man-made feature on ar
7.	Wate	r Quality	Stress	ors – assessi	ment reach/in	itertidal zone m	netric		
	Chec □A	k all that		ator in stroom	or intertidal zer	aa (millay whita k	ممير مياه	stural wate	er discoloration, oil sheen, stream foam)
	□в □с	Exce: Notic	<u>ssive</u> se eable ev	dimentation (b	urying of strea utant discharge	m features or int	tertidal zo	ne)	nd causing a water quality problem
	□D □E		ent publi	luding natural shed or collec		ating degraded v	water qua	lity in the	assessment reach. Cite source in "Notes/Sketch"
	□F □G				eam or intertid or intertidal zon				
	□H □H	Degr Othe	aded ma	rsh vegetation	n in the intertida				nowing, destruction, etc)
В.					ric (skin for T	idal Marsh Str	ame)		
		Drought conditions and rainfall exceeding 1 inch within the last 48 hours							
9.	Larg ∘	e or <u>D</u> an	gerous	Stream – ass	essment read		f Yes, skip	o to Metric	13 (Streamside Area Ground Surface Condition).
10.					assessment				
	10a.	□Yes	∐No	sedimentation	on, mining, ex		am harde	ening [for	t reach (examples of stressors include excessive example, rip-rap], recent dredging, and snagging) to Metric 12)
	10b.	Check a ⊠A	Multiple	aquatic macr	if > 5% coverage ophytes and a hens, and alga	quatic mosses		skip for S	Size 4 Coastal Plain streams) 5% oysters or other natural hard bottoms Submerged aquatic vegetation
		⊠в	Multiple	sticks and/or		d/or emergent	ok for Ti h Strea Only	□H □I	Low-tide refugia (pools)
		⊠c		snags and lo	gs (including la		Check for Tidal Marsh Streams Only	□J	Sand bottom 5% vertical bank along the marsh
		⊠D □E	in bank		nd/or root mat e normal wetted	s and/or roots d perimeter	02	□к	Little or no habitat
****	****	******	****	*R FM AINING	QUESTIONS	ARE NOT APPI	ICABI E	FOR TIDA	AL MARSH STREAMS************************************
11.	Bedf								n streams and Tidal Marsh Streams)
	11a.	□Yes	⊠No	ls assessmer	nt reach in a na	atural sand-bed	stream? (skip for C	coastal Plain streams)
	11b.	⊠a □b	Riffle-ru Pool-gli	un section (ev ide section (ev	(aluate 11d)				
	11-	□C			• •	etric 12, Aquatio	•	of the coo	Charles
	TTC.	at least (R) = pre	one box esent but	t in each row (t <u><</u> 10%, Comr	(skip for Size	4 Coastal Plain 0-40%, Abundan	streams	and Tidal	essment reach – whether or not submerged. Check Marsh Streams) . Not Present (NP) = absent, Rare Predominant (P) = > 70%. Cumulative percentages
		NP ⊠	R □	C A	P	Bedrock/sapro	olite		
						Boulder (256 -	– 4096 m	m)	
						Cobble (64 – 2 Gravel (2 – 64	1 mm)		
						Sand (.062 – 2 Silt/clay (< 0.0	,		
			\square			Detritus Artificial (rip-ra		ete, etc.)	
	11d.	_ □Yes	_ □No		ed with sedimer	` '	•	,	streams and Tidal Marsh Streams)

12.			ssment reach metric (skip for Tidal Marsh Streams)
	12a. ⊠` If N		Was an in-stream aquatic life assessment performed as described in the User Manual? se of the following reasons and skip to Metric 13. ☐ No Water ☐ Other:
	12b. 🗆	Yes ⊠No	Are aquatic organisms present in the assessment reach (look in riffles, pools, then snags)? If Yes, check all tha apply. If No, skip to Metric 13.
	1		Numbers over columns refer to "individuals" for Size 1 and 2 streams and "taxa" for Size 3 and 4 streams.
			uatic reptiles uatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats)
			etles
		□Ca	ddisfly larvae (T) ian clam (<i>Corbicula</i>)
			ustacean (isopod/amphipod/crayfish/shrimp) mselfly and dragonfly larvae
		□Dip	oterans
			nyfly larvae (E) egaloptera (alderfly, fishfly, dobsonfly larvae)
			dges/mosquito larvae
			esquito fish (<i>Gambusia</i>) or mud minnows (<i>Umbra pygmaea)</i> essels/Clams (not <i>Corbicula</i>)
			her fish
		□Sa □Sn	lamanders/tadpoles
		□Sto	onefly larvae (P)
			oulid larvae orms/leeches
13.	Conside	ide Area G	round Surface Condition – streamside area metric (skip for Tidal Marsh Streams and B valley types) ft Bank (LB) and the Right Bank (RB). Consider storage capacity with regard to both overbank flow and upland runoff
	LB ⊠a	RB ⊠A Li	ttle or no alteration to water storage capacity over a majority of the streamside area
	□в	□B M	oderate alteration to water storage capacity over a majority of the streamside area
	□с		evere alteration to water storage capacity over a majority of the streamside area (examples: ditches, fill, soil compaction restock disturbance, buildings, man-made levees, drainage pipes)
14.	Streams	ide Area W	ater Storage – streamside area metric (skip for Size 1 streams, Tidal Marsh Streams, and B valley types)
	Conside LB	r for the Le RB	eft Bank (LB) and the Right Bank (RB) of the streamside area.
	\Box A	\Box A M	ajority of streamside area with depressions able to pond water ≥ 6 inches deep
	⊠B □C		ajority of streamside area with depressions able to pond water 3 to 6 inches deep ajority of streamside area with depressions able to pond water < 3 inches deep
15.	Conside wetted po	e r for the Le erimeter of a	 streamside area metric (skip for Tidal Marsh Streams) ft Bank (LB) and the Right Bank (RB). Do not consider wetlands outside of the streamside area or within the normal assessment reach.
	LB □Y ⊠N	RB □Y A ⊠N	re wetlands present in the streamside area?
16.			tors – assessment reach metric (skip for Size 4 streams and Tidal Marsh Streams)
	_		ors within the assessment reach or within view of <u>and</u> draining to the assessment reach.
	∐A ⊠B		id/or springs (jurisdictional discharges) ude wet detention basins; do not include sediment basins or dry detention basins)
	□с	Obstruction	passing flow during low-flow periods within the assessment area (beaver dam, leaky dam, bottom-release dam, weir)
	□d ⊠e		f bank seepage or sweating (iron in water indicates seepage) I or bank soil reduced (dig through deposited sediment if present)
	□F	None of the	
17.		w Detractor II that appl	rs – assessment area metric (skip for Tidal Marsh Streams)
	\square A		f substantial water withdrawals from the assessment reach (includes areas excavated for pump installation)
	□B □C		not passing flow during low-flow periods affecting the assessment reach (ex: watertight dam, sediment deposit) am (≥ 24% impervious surface for watershed)
	\Box D		nat the streamside area has been modified resulting in accelerated drainage into the assessment reach
	□E ⊠F	Assessmen None of the	t reach relocated to valley edge above
18.		– assessm	nent reach metric (skip for Tidal Marsh Streams)
	Consider ⊠A		ensider "leaf-on" condition.
	□в	Degraded (ding is appropriate for stream category (may include gaps associated with natural processes) example: scattered trees)
	□с		ding is gone or largely absent

19.	Buffer Width -	streamside area metric (skip for Tidal Marsh Streams)
	Consider "vege to the first brea	tated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top of bank out lk.
	0	poded
	LB RB LB	
		A
		C □C From 30 to < 50 feet wide
		D □D From 10 to < 30 feet wide
		E □E < 10 feet wide <u>or</u> no trees
20.	Buffer Structure	e – streamside area metric (skip for Tidal Marsh Streams)
		ft bank (LB) and right bank (RB) for Metric 19 ("Vegetated" Buffer Width).
	LB RB ⊠A ⊠A	Mature forest
	\Box B \Box B	Non-mature woody vegetation <u>or</u> modified vegetation structure
	$\Box c$ $\Box c$	Herbaceous vegetation with or without a strip of trees < 10 feet wide
	\Box D \Box D	Maintained shrubs
		Little or no vegetation
21.		s – streamside area metric (skip for Tidal Marsh Streams)
		priate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but is
		stream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet). bllowing stressors occurs on either bank, check here and skip to Metric 22:
		30 feet 30-50 feet
	LB RB LB	
		A □A □A Row crops B □B 図B Maintained turf
		B □B ☑B ☑B Maintained turf C □C □C Pasture (no livestock)/commercial horticulture
		D D D Pasture (active livestock use)
22.	Stem Density -	streamside area metric (skip for Tidal Marsh Streams)
	_	ft bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width).
	LB RB	
	⊠a ⊠a	Medium to high stem density
	□в	Low stem density No wooded riparian buffer <u>or</u> predominantly herbaceous species <u>or</u> bare ground
22		
23.	=	egetated Buffer – streamside area metric (skip for Tidal Marsh Streams) r vegetated buffer is continuous along stream (parallel). Breaks are areas lacking vegetation > 10 feet wide.
	LB RB	r vegetated buller is continuous along stream (parallel). Dreaks are areas lacking vegetation > 10 reet wide.
	$\boxtimes A$ $\boxtimes A$	The total length of buffer breaks is < 25 percent.
	□в □в	The total length of buffer breaks is between 25 and 50 percent.
	□с □с	The total length of buffer breaks is > 50 percent.
24.		position – streamside area metric (skip for Tidal Marsh Streams)
	Evaluate the don assessment reac	ninant vegetation within 100 feet of each bank or to the edge of the watershed (whichever comes first) as it contributes to
	LB RB	ii ilabitat.
	$\boxtimes A$ $\boxtimes A$	Vegetation is close to undisturbed in species present and their proportions. Lower strata composed of native species,
		with non-native invasive species absent or sparse.
	□в □в	Vegetation indicates disturbance in terms of species diversity or proportions, but is still largely composed of native species. This may include communities of weedy native species that develop after clear-cutting or clearing or
		communities with non-native invasive species present, but not dominant, over a large portion of the expected strata or
		communities missing understory but retaining canopy trees.
	□с □с	Vegetation is severely disturbed in terms of species diversity or proportions. Mature canopy is absent <u>or</u> communities
		with non-native invasive species dominant over a large portion of expected strata <u>or</u> communities composed of planted stands of non-characteristic species <u>or</u> communities inappropriately composed of a single species <u>or</u> no vegetation.
25	Conductivity -	assessment reach metric (skip for all Coastal Plain streams)
25.		No Was conductivity measurement recorded?
		et one of the following reasons. No Water Other:
	25h Check the	box corresponding to the conductivity measurement (units of microsiemens per centimeter).
	\Box A < 46	
Note	es/Sketch:	

Draft NC SAM Stream Rating Sheet Accompanies User Manual Version 2.1

Stream Site Name	CLT Airport Expansion	Date of Assessment	October 2019		
Stream Category	Pa1	Assessor Name/Organization	KMT,BGB/HDR		
					
Notes of Field Asses	ssment Form (Y/N)		NO		
Presence of regulato	ory considerations (Y/N)		NO		
Additional stream inf	YES				
IC SAM feature type (perennial, intermittent, Tidal Marsh Stream)					

e (perennial, intermittent, Tidal Marsh Stream)	Intermitter	<u>nt</u>
Function Class Rating Summary	USACE/ All Streams	NCDWR Intermittent
(1) Hydrology	HIGH	HIGH
(2) Baseflow	HIGH	HIGH
(2) Flood Flow	HIGH	HIGH
(3) Streamside Area Attenuation	HIGH	HIGH
(4) Floodplain Access	HIGH	HIGH
(4) Wooded Riparian Buffer	HIGH	HIGH
(4) Microtopography	HIGH	HIGH
(3) Stream Stability	HIGH	HIGH
(4) Channel Stability	HIGH	HIGH
(4) Sediment Transport	LOW	LOW
(4) Stream Geomorphology	HIGH	HIGH
(2) Stream/Intertidal Zone Interaction	NA	NA
(2) Longitudinal Tidal Flow	NA	NA
(2) Tidal Marsh Stream Stability	NA	NA
(3) Tidal Marsh Channel Stability	NA	NA
(3) Tidal Marsh Stream Geomorphology	NA	NA
(1) Water Quality	HIGH	HIGH
(2) Baseflow	HIGH	HIGH
(2) Streamside Area Vegetation	HIGH	HIGH
(3) Upland Pollutant Filtration	HIGH	HIGH
(3) Thermoregulation	HIGH	HIGH
(2) Indicators of Stressors	NO	NO
(2) Aquatic Life Tolerance	OMITTED	NA
(2) Intertidal Zone Filtration	NA NA	NA NA
(1) Habitat	HIGH	HIGH
(2) In-stream Habitat	MEDIUM	MEDIUM
(3) Baseflow	HIGH	HIGH
(3) Substrate	LOW	LOW
(3) Stream Stability	HIGH	HIGH
(3) In-stream Habitat	HIGH	HIGH
(2) Stream-side Habitat	HIGH	HIGH
(3) Stream-side Habitat	HIGH	HIGH
(3) Thermoregulation	HIGH	HIGH
(2) Tidal Marsh In-stream Habitat	NA NA	NA NA
(3) Flow Restriction		
. ,	NA NA	NA NA
(3) Tidal Marsh Stream Stability (4) Tidal Marsh Channel Stability		
	NA NA	NA NA
(4) Tidal Marsh Stream Geomorphology (3) Tidal Marsh In-stream Habitat	NA NA	NA NA
(2) Intertidal Zone	NA NA	NA NA
()	NA NA	NA
Overall	HIGH	HIGH

110	SACE AID 7	#	Accompanies	NCDWP#	
08			o CLT Airport Expansion	NCDWR#	April 2010
		oject Nam		Date of Evaluation	April 2019
l A	pplicant/O			Wetland Site Name	PW1-1 - Wetland 5
		etland Typ		Assessor Name/Organization	KMT, BGB/HDR
		Ecoregio		Nearest Named Water Body	Ticer Branch
	ı	River Basi		USGS 8-Digit Catalogue Unit	03050101
		Count		NCDWR Region	Mooresville
-	∐ Ye	s 🛛 N	o Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees)	35.229386; -80.956805
Is Re	ease circle cent past (f	and/or m for instance drological face and s ks, underg ns of vege bitat/plant sment are Considera adromous lerally pro DWR ripa uts a Prim	e, within 10 years). Noteworthy stressors is modifications (examples: ditches, dams, be sub-surface discharges into the wetland (examples into the wetland (examples) tation stress (examples: vegetation mortal community alteration (examples: mowing, ea intensively managed? Yes Attions - Were regulatory considerations evaluations.	tressors is apparent. Consider departure finclude, but are not limited to the following. eaver dams, dikes, berms, ponds, etc.) amples: discharges containing obvious polluetc.) ity, insect damage, disease, storm damage clear-cutting, exotics, etc.) No aluated? Yes No If Yes, check all the	utants, presence of nearby septic , salt intrusion, etc.)
	Des Abu	c. Division its a strea signated N its a 303(d	of Coastal Management Area of Environment of SA or sum with a NCDWQ classification of SA or sum CNHP reference community of the stream or a tributary to a 303(d)-listed stream or a tributary	replemental classifications of HQW, ORW, or ted stream	or Trout
	Blad Bro Tida	ckwater wnwater al (if tidal,	check one of the following boxes) check on a coastal island? Yes N	ınar 🗌 Wind 🔲 Both	
					□ Vaa
			ea's surface water storage capacity or di	ing normal rainfall conditions? Yes	☐ Yes No
<u> </u>					
1.	Check a lassessment area base	box in ea ent area.		ment area condition metric und surface (GS) in the assessment area ar (see User Manual). If a reference is not app	
	$\boxtimes A$	⊠A □B	sedimentation, fire-plow lanes, skidder tra	essment area (ground surface alteration exacks, bedding, fill, soil compaction, obvious ce, herbicides, salt intrusion [where appropron)	s pollutants) (vegetation structure
2.			Surface Storage Capacity and Duration -		
	Consider deep is ex Surf ⊠A □B	both incre cpected to Sub ⊠A □B	ease and decrease in hydrology. A ditch see affect both surface and sub-surface water. Water storage capacity and duration are now water storage capacity or duration are alternation.	red, but not substantially (typically, not suffic	water only, while a ditch > 1 foot le. cient to change vegetation).
3.	_		(examples: draining, flooding, soil compacti	stantially altered (typically, alteration sufficiention, indergion, filling, excessive sedimentation, undergiver condition metric (skip for all marshe	round utility lines).
J.		_			·
	AA		on column. Select the appropriate storage	e for the assessment area (AA) and the wetl	and type (vv i).
	3a.	□A □B □C ⊠D	Majority of wetland with depressions able to Majority of wetland with depressions able to Majority of wetland with depressions able to Depressions able to pond water < 3 inches	p pond water 6 inches to 1 foot deep p pond water 3 to 6 inches deep deep	
	□В	Evidence	that maximum depth of inundation is greate that maximum depth of inundation is betwe that maximum depth of inundation is less tl	en 1 and 2 feet	

	Check a box from each of the three soil property groups below. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for regional indicators. 4a. A Sandy soil B Loamy or clayey soils exhibiting redoximorphic features (concentrations, depletions, or rhizospheres) C Loamy or clayey soils not exhibiting redoximorphic features D Loamy or clayey gleyed soil Histosol or histic epipedon
	4b. ⊠A Soil ribbon < 1 inch □B Soil ribbon ≥ 1 inch
	4c. ⊠A No peat or muck presence ☐B A peat or muck presence
5.	Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). Examples of sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc. Surf Sub A A Little or no evidence of pollutants or discharges entering the assessment area B B Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area C C C Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation, odor)
6.	Land Use – opportunity metric (skip for non-riparian wetlands) Check all that apply (at least one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources draining to assessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), and within 2 miles and within the watershed draining to the assessment area (2M). WS 5M 2M A A A S 10% impervious surfaces B B B Confined animal operations (or other local, concentrated source of pollutants C C C C C ≥ 20% coverage of pasture D D D D D ≥ 20% coverage of agricultural land (regularly plowed land) E E E E E S 20% coverage of maintained grass/herb F F F F F ≥ 20% coverage of clear-cut land G G G G G G Little or no opportunity to improve water quality. Lack of opportunity may result from little or no disturbance in the watershed or hydrologic alterations that prevent drainage and/or overbank flow from affecting the assessment area.
7.	Wetland Acting as Vegetated Buffer – assessment area/wetland complex condition metric (skip for non-riparian wetlands)
	 7a. Is assessment area within 50 feet of a tributary or other open water?
8.	Exposed – adjacent open water with width ≥ 2500 feet or regular boat traffic. Wetland Width at the Assessment Area – wetland type/wetland complex condition metric (evaluate WT for all marshes and
	Estuarine Woody Wetland only; evaluate WC for Bottomland Hardwood Forest, Headwater Forest, and Riverine Swamp Forest only) Check a box in each column for riverine wetlands only. Select the average width for the wetland type at the assessment area (WT) and the wetland complex at the assessment area (WC). See User Manual for WT and WC boundaries. WT WC A A ≥ 100 feet B B From 80 to < 100 feet C C From 50 to < 80 feet D D From 40 to < 50 feet E F From 30 to < 40 feet F F From 15 to < 30 feet G G G From 5 to < 15 feet H H H < 5 feet

9.	Inundation Duration – assessment area condition metric (skip for non-riparian wetlands)
	Answer for assessment area dominant landform. □ A Evidence of short-duration inundation (< 7 consecutive days) □ B Evidence of saturation, without evidence of inundation □ C Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)
10.	Indicators of Deposition – assessment area condition metric (skip for non-riparian wetlands and all marshes)
	Consider recent deposition only (no plant growth since deposition). \[\begin{align*} \text{Sediment deposition is not excessive, but at approximately natural levels.} \] \[\begin{align*} \text{Sediment deposition is excessive, but not overwhelming the wetland.} \] \[\begin{align*} \text{Sediment deposition is excessive and is overwhelming the wetland.} \]
11.	Wetland Size – wetland type/wetland complex condition metric
	Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column. WT WC FW (if applicable) A A A S 500 acres B B B From 100 to < 500 acres C C C From 50 to < 100 acres D D D From 25 to < 50 acres F F F From 10 to < 25 acres F F F From 5 to < 10 acres G G G G From 1 to < 5 acres H H H From 0.5 to < 1 acre X I X I From 0.01 to < 0.5 acre
	☐K ☐K < 0.01 acre or assessment area is clear-cut
12.	Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)
	□A Pocosin is the full extent (≥ 90%) of its natural landscape size. □B Pocosin type is < 90% of the full extent of its natural landscape size.
13.	Connectivity to Other Natural Areas – landscape condition metric
	13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This metric evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly maintained utility line corridors the width of a four-lane road or wider, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Well Loosely A A ≥ 500 acres B B From 100 to < 500 acres C C From 50 to < 100 acres D D From 10 to < 50 acres E C C To acres F C Wetland type has a poor or no connection to other natural habitats
	13b. Evaluate for marshes only.
	Yes No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.
14.	Edge Effect – wetland type condition metric (skip for all marshes and Estuarine Woody Wetland) May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors, and clear-cuts. Consider the eight main points of the compass. Artificial edge occurs within 150 feet in how many directions? If the assessment area is clear cut, select option "C." □ A 0 □ B 1 to 4 □ C 5 to 8
15.	Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)
	 ☐A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area. ☐B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata. ☐C Vegetation severely altered from reference in composition, or expected species are unnaturally absent (planted stands of non-characteristic species or at least one stratum inappropriately composed of a single species), or exotic species are dominant in at least one stratum.
16.	Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)
	 □A Vegetation diversity is high and is composed primarily of native species (< 10% cover of exotics). □B Vegetation diversity is low or has > 10% to 50% cover of exotics. □C Vegetation is dominated by exotic species (> 50 % cover of exotics).

17.	Vege	tative St	ructure –	assessment area/wetland type condition metric	
	17a.		ation pres		
		⊠Yes	∐No	If Yes, continue to 17b. If No, skip to Metric 18.	
	17b.	Evaluat □A □B	≥ 25% c	coverage of assessment area vegetation for all marshes only . Skip to 17c for non-marsh wetlands. overage of vegetation overage of vegetation	
	17c.	structur	e in airsp	each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider above the assessment area (AA) and the wetland type (WT) separately.	ide
		AA ⊠A □B □C	WT ⊠A □B □C	Canopy closed, or nearly closed, with natural gaps associated with natural processes Canopy present, but opened more than natural gaps Canopy sparse or absent	
	Mid-Story	□A ⊠B □C	□A ⊠B □C	Dense mid-story/sapling layer Moderate density mid-story/sapling layer Mid-story/sapling layer sparse or absent	
	Shrub	B □A B □C	□A □B ⊠C	Dense shrub layer Moderate density shrub layer Shrub layer sparse or absent	
	Herb	A ⊠B □C	□A □B ⊠C	Dense herb layer Moderate density herb layer Herb layer sparse or absent	
18.	Snag	ıs – wetla	and type	ondition metric (skip for all marshes)	
	□a ⊠B	Larg Not <i>i</i>		nore than one) are visible (> 12 inches DBH, or large relative to species present and landscape stability).	
19.	Diam	neter Clas	ss Distrib	ution – wetland type condition metric (skip for all marshes)	
	□A			opy trees have stems > 6 inches in diameter at breast height (DBH); many large trees (> 12 inches DBH) are	
	⊠B □C		rity of car	opy trees have stems between 6 and 12 inches DBH, few are > 12 inch DBH. opy trees are < 6 inches DBH or no trees.	
20.	Larg	e Woody	Debris -	wetland type condition metric (skip for all marshes)	
	Includ □A ⊠B		e logs (mo	ris and man-placed natural debris. re than one) are visible (> 12 inches in diameter, or large relative to species present and landscape stability).	
21.	Vege	tation/O	oen Wate	Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only))
				st describes the amount of interspersion between vegetation and open water in the growing season. Patter areas, while solid white areas indicate open water. □B □C □D	nec
		0	S. S		
22.	-	_		y – assessment area condition metric (evaluate for riparian wetlands and Salt/Brackish Marsh only)	
				at may severely alter hydrologic connectivity include intensive ditching, fill, sedimentation, channelization, divers	ion
	man- ⊠A			er dams, and stream incision. Documentation required if evaluated as B, C, or D. overland flow are not severely altered in the assessment area.	
	□в	Over	bank flow	is severely altered in the assessment area.	
				s severely altered in the assessment area. and overland flow are severely altered in the assessment area.	

Wetland Site Name _	PW1-1 - Wetland 5	Date of Assessment April 2	2019		
Wetland Type _	Headwater Forest A	Assessor Name/Organization KMT,	BGB/HDR		
Notes on Field Assess	ment Form (Y/N)		NO		
Presence of regulatory	considerations (Y/N)		YES		
	etland is intensively managed (Y/N)				
Assessment area is loc	cated within 50 feet of a natural tributary	y or other open water (Y/N)	YES		
Assessment area is su	bstantially altered by beaver (Y/N)		NO		
Assessment area expe	riences overbank flooding during norm	al rainfall conditions (Y/N)	NO		
Assessment area is on	a coastal island (Y/N)		NO		
Sub-function Rating S	ummary				
Function	Sub-function	Metrics	Rating		
Hydrology	Surface Storage and Retention	Condition	HIGH		
, 3,	Sub-surface Storage and				
	Retention	Condition	HIGH		
Water Quality	Pathogen Change	Condition	HIGH		
		Condition/Opportunity	HIGH		
	5 " 1 4 9	Opportunity Presence (Y/N)	NO		
	Particulate Change	Condition	HIGH		
		Condition/Opportunity	NA		
	0.1.1.01	Opportunity Presence (Y/N)	NA		
	Soluble Change	Condition	MEDIUM		
		Condition/Opportunity	MEDIUM		
	DI : 101	Opportunity Presence (Y/N)	NO NO		
	Physical Change	Condition	LOW		
		Condition/Opportunity	LOW		
	D. II. 17. OI	Opportunity Presence (Y/N)	YES		
	Pollution Change	Condition	NA		
		Condition/Opportunity	NA NA		
Habitat	Physical Structure	Opportunity Presence (Y/N) Condition	NA MEDIUM		
Habitat	Landscape Patch Structure	Condition	MEDIUM LOW		
	Vegetation Composition	Condition	MEDIUM		
	<u>-</u>	Condition	WILDIOW		
unction Rating Sumn	nary				
Function		Metrics	Rating		
Hydrology		Condition	HIGH		
Water Quality		Condition	HIGH		
		Condition/Opportunity	HIGH		
		Opportunity Presence (Y/N)	YES		
Habitat		Condition	LOW		

			Accompanies	User Manual Version 5.0	
U:	SACE AID #			NCDWR#	
	Pro	ject Name	CLT Airport Expansion	Date of Evaluation	April 2019
Α.	applicant/Ow	ner Name	CLT	Wetland Site Name	PW2-1 - Wetland 6
	Wet	land Type	Headwater Forest	Assessor Name/Organization	KMT, BGB/HDR
	Level III	Ecoregion	Piedmont	Nearest Named Water Body	Ticer Branch
		iver Basin		USGS 8-Digit Catalogue Unit	03050101
	•	County	·	NCDWR Region	Mooresville
	☐ Yes			Latitude/Longitude (deci-degrees)	35.230325, -80.957650
—		, <u> </u>	1 Toolphadon Within 40 mo.	Editidad/Editigitado (addi adgi addi	00.200020, 00.007000
PI re	ease circle cent past (for	and/or ma or instance rological m ace and su s, undergre s of vegeta itat/plant or ment area onsiderat dromous fi erally prote bWR riparia is a Primar icly owned	within 10 years). Noteworthy stressors odifications (examples: ditches, dams, blb-surface discharges into the wetland (exound storage tanks (USTs), hog lagoons, ation stress (examples: vegetation mortal ommunity alteration (examples: mowing, a intensively managed? Yes Sions - Were regulatory considerations evish exted species or State endangered or threan buffer rule in effect y Nursery Area (PNA)	etressors is apparent. Consider departure finclude, but are not limited to the following eaver dams, dikes, berms, ponds, etc.) camples: discharges containing obvious polluetc.) lity, insect damage, disease, storm damage clear-cutting, exotics, etc.) No aluated? Yes No If Yes, check all the eatened species	utants, presence of nearby septic , salt intrusion, etc.)
] Desi	s a stream gnated NC		upplemental classifications of HQW, ORW,	or Trout
1/1	hat type of	natural et	ream is associated with the wetland, if	fany? (check all that annly)	
		kwater	reall is associated with the wettand, in	any: (check an that apply)	
×] Brow	vnwater			
	Tida		heck one of the following boxes)	unar □ Wind □ Both	
	_	•	3 , —		
Is	the assess	ment area	i on a coastal island? 🔲 Yes 🛛 🗎	No	
lo.	the access	mont area	's surface water storage canacity or d	uration substantially altered by beaver?	☐ Yes ☒ No
				-	_
D	oes the ass	essment a	area experience overbank flooding dur	ing normal rainfall conditions? U Yes	⊠ No
1.	Ground S	urface Co	ndition/Vegetation Condition – assess	ment area condition metric	
	Check a b assessme area based	ox in eacl nt area. C	n column. Consider alteration to the gro	und surface (GS) in the assessment area ar (see User Manual). If a reference is not app	
		⊠B S se al	edimentation, fire-plow lanes, skidder tra	essment area (ground surface alteration exacks, bedding, fill, soil compaction, obvious ce, herbicides, salt intrusion [where appropron)	s pollutants) (vegetation structure
2.	Surface a	nd Sub-Sเ	rface Storage Capacity and Duration -	- assessment area condition metric	
	Consider bedeep is ex	ooth increa pected to a Sub	se and decrease in hydrology. A ditch ≤	acity and duration (Surf) and sub-surface sto s 1 foot deep is considered to affect surface c. Consider tidal flooding regime, if applicab	water only, while a ditch > 1 foot
	□B [⊒B W ⊠C W	ater storage capacity or duration are sub	ot altered. Fred, but not substantially (typically, not sufficentially altered (typically, alteration sufficientially altered), alteration, undergion, filling, excessive sedimentation, underg	ent to result in vegetation change)
3.	Water Sto	rage/Surfa	ace Relief – assessment area/wetland	type condition metric (skip for all marshe	es)
	Check a b	ox in eacl	n column. Select the appropriate storage	e for the assessment area (AA) and the wetl	and type (WT).
	AA V			,	· · · ·
	3a.	□A M □B M □C M	ajority of wetland with depressions able t ajority of wetland with depressions able t ajority of wetland with depressions able t epressions able to pond water < 3 inches	o pond water 6 inches to 1 foot deep o pond water 3 to 6 inches deep	
	⊠B E	Evidence th	nat maximum depth of inundation is great nat maximum depth of inundation is between the maximum depth of inundation is less t	een 1 and 2 feet	

	Make soil	ox from each of the three soil property groups below. Dig soil profile in the dominant assessment area landscape feature observations within the top 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for regiona
	indicators. 4a. □A □B □C □D □D □E	Sandy soil Loamy or clayey soils exhibiting redoximorphic features (concentrations, depletions, or rhizospheres) Loamy or clayey soils not exhibiting redoximorphic features Loamy or clayey gleyed soil Histosol or histic epipedon
	4b. ⊠A □B	Soil ribbon < 1 inch Soil ribbon ≥ 1 inch
	4c. ⊠A □B	No peat or muck presence A peat or muck presence
5.	Discharge	into Wetland – opportunity metric
	of sub-surf Surf S	ox in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). Examples ace discharges include presence of nearby septic tank, underground storage tank (UST), etc.
	□В □	A Little or no evidence of pollutants or discharges entering the assessment area Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area
	□c □	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation, odor)
6.	Land Use	- opportunity metric (skip for non-riparian wetlands)
	to assessm and within	hat apply (at least one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources draining tent area within entire upstream watershed (WS), within 5 miles <u>and</u> within the watershed draining to the assessment area (5M) miles and within the watershed draining to the assessment area (2M). M 2M
	□A]A
	□D □ ⊠E □	D D ≥ 20% coverage of agricultural land (regularly plowed land) E ⊠E ≥ 20% coverage of maintained grass/herb F ⊠F ≥ 20% coverage of clear-cut land
		Little or no opportunity to improve water quality. Lack of opportunity may result from little or no disturbance in the watershed <u>or</u> hydrologic alterations that prevent drainage <u>and/or</u> overbank flow from affecting the assessment area.
7.	Wetland A	cting as Vegetated Buffer – assessment area/wetland complex condition metric (skip for non-riparian wetlands)
	□Y€	sessment area within 50 feet of a tributary or other open water? s ⊠No If Yes, continue to 7b. If No, skip to Metric 8. and buffer need only be present on one side of the water body. Make buffer judgment based on the average width of wetland
	7b. How	rd a note if a portion of the buffer has been removed or disturbed. much of the first 50 feet from the bank is wetland? (Wetland buffer need only be present on one side of the .water body. Make r judgment based on the average width of wetland. Record a note if a portion of the buffer has been removed or disturbed.)
	□A □B □C	≥ 50 feet From 30 to < 50 feet From 15 to < 30 feet
	□D □E	From 5 to < 15 feet < 5 feet <u>or</u> buffer bypassed by ditches
	7c. Tribu	tary width. If the tributary is anastomosed, combine widths of channels/braids for a total width.
		l5-feet wide
	☐Y∈ 7e. Is str	s
	□Sh	eltered – adjac ['] ent open water with width < 2500 feet <u>and</u> no regular boat traffic. posed – adjacent open water with width ≥ 2500 feet <u>or</u> regular boat traffic.
8.		lidth at the Assessment Area – wetland type/wetland complex condition metric (evaluate WT for all marshes and Woody Wetland only; evaluate WC for Bottomland Hardwood Forest, Headwater Forest, and Riverine Swamp Forest
	the wetland	ox in each column for riverine wetlands only. Select the average width for the wetland type at the assessment area (WT) and complex at the assessment area (WC). See User Manual for WT and WC boundaries. /C
]A ≥ 100 feet
]B From 80 to < 100 feet]C From 50 to < 80 feet
	⊠D ∑	ID From 40 to < 50 feet
	□E [E From 30 to < 40 feet
]F From 15 to < 30 feet]G From 5 to < 15 feet
		7H < 5 feet

9.	Inundation Duration – assessment area condition metric (skip for non-riparian wetlands)
	Answer for assessment area dominant landform. Answer for assessment area dominant landform. Evidence of short-duration inundation (< 7 consecutive days) Evidence of saturation, without evidence of inundation Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)
10.	Indicators of Deposition – assessment area condition metric (skip for non-riparian wetlands and all marshes)
	Consider recent deposition only (no plant growth since deposition). □ A Sediment deposition is not excessive, but at approximately natural levels. □ B Sediment deposition is excessive, but not overwhelming the wetland. □ C Sediment deposition is excessive and is overwhelming the wetland.
11.	Wetland Size – wetland type/wetland complex condition metric
	Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column. WT WC FW (if applicable) A A A ≥ 500 acres B B B From 100 to < 500 acres C C C From 50 to < 100 acres D D D From 25 to < 50 acres E E From 10 to < 25 acres F F F From 5 to < 10 acres G G G From 1 to < 5 acres H A H H From 0.5 to < 1 acre I I I From 0.1 to < 0.5 acre J J J J From 0.01 to < 0.1 acre K K K K K K K C N.01 acre or assessment area is clear-cut
12.	Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)
	□A Pocosin is the full extent (≥ 90%) of its natural landscape size. □B Pocosin type is < 90% of the full extent of its natural landscape size.
12	Connectivity to Other Natural Areas – landscape condition metric
	13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This metric evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly maintained utility line corridors the width of a four-lane road or wider, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Well Loosely A A ≥ 500 acres B B From 100 to < 500 acres C From 50 to < 100 acres D D From 10 to < 50 acres E = E < 10 acres F Wetland type has a poor or no connection to other natural habitats 13b. Evaluate for marshes only.
	Yes No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.
14.	Edge Effect – wetland type condition metric (skip for all marshes and Estuarine Woody Wetland) May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors, and clear-cuts. Consider the eight main points of the compass. Artificial edge occurs within 150 feet in how many directions? If the assessment area is clear cut, select option "C." □ A 0 □ B 1 to 4 □ C 5 to 8
15.	Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)
	 □A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area. □B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata. □C Vegetation severely altered from reference in composition, or expected species are unnaturally absent (planted stands of non-characteristic species or at least one stratum inappropriately composed of a single species), or exotic species are dominant in at least one stratum.
16.	Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)
	 □A Vegetation diversity is high and is composed primarily of native species (< 10% cover of exotics). □B Vegetation diversity is low or has > 10% to 50% cover of exotics. □C Vegetation is dominated by exotic species (> 50 % cover of exotics).

17.	_	/e Structure -	- assessment area/wetland type condition metric esent?	
	⊠Y	∕es □No	If Yes, continue to 17b. If No, skip to Metric 18.	
	17b. Eva □ <i>A</i> □E	A ≥ 25% c	nt coverage of assessment area vegetation for all marshes only . Skip to 17c for coverage of vegetation coverage of vegetation	non-marsh wetlands.
	stru	ucture in airsp	n each column for each stratum. Evaluate this portion of the metric for non-space above the assessment area (AA) and the wetland type (WT) separately.	marsh wetlands. Consider
	Canopy □□ □□	A ⊠A B □B C □C	Canopy closed, or nearly closed, with natural gaps associated with natural processe Canopy present, but opened more than natural gaps Canopy sparse or absent	S
	Mid-Story	A □A B ⊠B C □C	Dense mid-story/sapling layer Moderate density mid-story/sapling layer Mid-story/sapling layer sparse or absent	
	Shrub □ □	A □A B □B C ⊠C	Dense shrub layer Moderate density shrub layer Shrub layer sparse or absent	
	H B B B B B B B B B B B B B B B B B B B	A □A B □B C ⊠C	Dense herb layer Moderate density herb layer Herb layer sparse or absent	
18.	Snags -	wetland type	e condition metric (skip for all marshes)	
	⊠В	Not A	(more than one) are visible (> 12 inches DBH, or large relative to species present and I	andscape stability).
19.			ibution – wetland type condition metric (skip for all marshes)	- /- 40 in ab DDLI)
		present.	anopy trees have stems > 6 inches in diameter at breast height (DBH); many large trees	3 (> 12 inches DBH) are
			anopy trees have stems between 6 and 12 inches DBH, few are > 12 inch DBH. anopy trees are < 6 inches DBH or no trees.	
20.	_	=	- wetland type condition metric (skip for all marshes)	
	$\square A$		ebris and man-placed natural debris. more than one) are visible (> 12 inches in diameter, or large relative to species present :	and landscape stability).
21.	Vegetatio	on/Open Wate	ter Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal	Freshwater Marsh only)
			best describes the amount of interspersion between vegetation and open water in the ed areas, while solid white areas indicate open water.	growing season. Patterned
	0			
22.			vity – assessment area condition metric (evaluate for riparian wetlands and Salt/E	= :
	man-mad ⊠A □B □C	e berms, beav Overbank <u>and</u> Overbank flow Overland flow	that may severely alter hydrologic connectivity include intensive ditching, fill, sedimentate aver dams, and stream incision. Documentation required if evaluated as B, C, or D. and overland flow are not severely altered in the assessment area. It is and overland flow are severely altered in the assessment area.	ion, channelization, diversion,

wetland created by road construction and culvert downstream. Canopy trees dead.

Wetland Site Name _		Date of Assessment April 2				
Wetland Type _	Headwater Forest A	ssessor Name/Organization <u>KMT,</u>	BGB/HDR			
Notes on Field Assess	ment Form (Y/N)		YES			
Presence of regulatory	considerations (Y/N)		YES			
Wetland is intensively managed (Y/N)						
Assessment area is loo	Assessment area is located within 50 feet of a natural tributary or other open water (Y/N)					
Assessment area is substantially altered by beaver (Y/N)						
Assessment area expe	riences overbank flooding during norma	al rainfall conditions (Y/N)	NO			
Assessment area is on	a coastal island (Y/N)		NO			
Sub-function Rating S	ummarv					
Function	Sub-function	Metrics	Rating			
Hydrology	Surface Storage and Retention	Condition	LOW			
	Sub-surface Storage and	Condition	1.00			
Motor Quality	Retention Rethogon Change	Condition Condition	LOW			
Water Quality	Pathogen Change		LOW LOW			
		Condition/Opportunity	NO			
	Particulate Change	Opportunity Presence (Y/N) Condition	LOW			
	Faiticulate Change	Condition/Opportunity	NA			
		Opportunity Presence (Y/N)	NA NA			
	Soluble Change	Condition	MEDIUM			
	Colubic Change	Condition/Opportunity	MEDIUM			
		Opportunity Presence (Y/N)	NO			
	Physical Change	Condition	LOW			
	, c.ca. c.agc	Condition/Opportunity	LOW			
		Opportunity Presence (Y/N)	YES			
	Pollution Change	Condition	NA			
	Ü	Condition/Opportunity	NA			
		Opportunity Presence (Y/N)	NA			
Habitat	Physical Structure	Condition	LOW			
	Landscape Patch Structure	Condition	LOW			
	Vegetation Composition	Condition	MEDIUM			
unction Rating Sumn	narv					
Function	···· <i>j</i>	Metrics	Rating			
Hydrology		Condition	LOW			
Water Quality		Condition	LOW			
··- ·		Condition/Opportunity	LOW			
		Opportunity Presence (Y/N)	YES			
Habitat		Condition	LOW			

110	SACE AID 7	#	Accompanies	NCDWP#	1
108			CLT Aimport Companies	NCDWR#	Contambox 2040
١.		oject Nam		Date of Evaluation	September 2019
ΙΑ	pplicant/Ov			Wetland Site Name	PW3-1 - Wetland 15
		etland Typ		Assessor Name/Organization	KMT, BGB/HDR
		Ecoregio		Nearest Named Water Body	Coffey Creek
	F	River Basi	n Catawba	USGS 8-Digit Catalogue Unit	03050103
		Count	y Mecklenburg	NCDWR Region	Mooresville
L	☐ Ye			Latitude/Longitude (deci-degrees)	35.203001, -80.946993
_		-4		4 h 24h 4 h	
Is Re	ease circle cent past (f	and/or m for instance drological face and s ks, underg ns of vege bitat/plant sment are Considera adromous lerally pro DWR ripa uts a Prim	e, within 10 years). Noteworthy stressors is modifications (examples: ditches, dams, be sub-surface discharges into the wetland (examples into the wetland (examples) tation stress (examples: vegetation mortal community alteration (examples: mowing, ea intensively managed? Ations - Were regulatory considerations evaluations.	tressors is apparent. Consider departure finclude, but are not limited to the following. eaver dams, dikes, berms, ponds, etc.) amples: discharges containing obvious polluetc.) lity, insect damage, disease, storm damage clear-cutting, exotics, etc.) No aluated? Yes No If Yes, check all the	utants, presence of nearby septic , salt intrusion, etc.)
	Des Abu	c. Division its a strea signated N its a 303(d	of Coastal Management Area of Environment method of SA or sull CNHP reference community d)-listed stream or a tributary to a 303(d)-listed stream.	upplemental classifications of HQW, ORW, of ted stream	or Trout
	Blad Bro Tida	ckwater wnwater al (if tidal,	check one of the following boxes) check one coastal island?	unar □ Wind □ Both	
			ea's surface water storage capacity or du area experience overbank flooding duri	uration substantially altered by beaver? ing normal rainfall conditions? Yes	☐ Yes No
1	Ground 9	Surface C	ondition/Vegetation Condition – assessi	mont area condition metric	
1.	Check a lassessment area base	box in ea ent area.	ch column. Consider alteration to the grou	und surface (GS) in the assessment area ar (see User Manual). If a reference is not app	
	$\boxtimes A$	⊠A □B	sedimentation, fire-plow lanes, skidder tra	essment area (ground surface alteration exa icks, bedding, fill, soil compaction, obvious ce, herbicides, salt intrusion [where appropr on)	pollutants) (vegetation structure
2.	Surface a	and Sub-	Surface Storage Capacity and Duration -	- assessment area condition metric	
	Consider deep is ex Surf	both incre cpected to Sub ⊠A	ease and decrease in hydrology. A ditch set affect both surface and sub-surface water. Water storage capacity and duration are no	acity and duration (Surf) and sub-surface sto 1 foot deep is considered to affect surface . Consider tidal flooding regime, if applicabl of altered. red, but not substantially (typically, not suffice	water only, while a ditch > 1 foot le.
2	□с	□C	Water storage capacity or duration are sub- (examples: draining, flooding, soil compacti	stantially altered (typically, alteration sufficiention, filling, excessive sedimentation, underg	ent to result in vegetation change) round utility lines).
3.		_		type condition metric (skip for all marshe	
			ch column . Select the appropriate storage	e for the assessment area (AA) and the wetl	and type (WT).
	AA				
	□c ⊠d	□B □C ⊠D	Majority of wetland with depressions able to Majority of wetland with depressions able to Majority of wetland with depressions able to Depressions able to pond water < 3 inches	o pond water 6 inches to 1 foot deep o pond water 3 to 6 inches deep deep	
	□В	Evidence	that maximum depth of inundation is greate that maximum depth of inundation is betwe that maximum depth of inundation is less th	een 1 and 2 feet	

	Make soil o	x from each of the three soil property groups below. Dig soil profile in the dominant assessment area landscape feature. Oservations within the top 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for regional
	indicators. 4a. □A □B □C □D □D	Sandy soil Loamy or clayey soils exhibiting redoximorphic features (concentrations, depletions, or rhizospheres) Loamy or clayey soils not exhibiting redoximorphic features Loamy or clayey gleyed soil Histosol or histic epipedon
	4b. ⊠A □B	Soil ribbon < 1 inch
	4c. ⊠A □B	No peat or muck presence A peat or muck presence
5.	Discharge i	nto Wetland – opportunity metric
	of sub-surfa Surf Su	
	⊠A ⊠ □B □	
	□c □	
6.	Land Use -	opportunity metric (skip for non-riparian wetlands)
	to assessme	at apply (at least one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources draining and area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), miles and within the watershed draining to the assessment area (2M). 1 2M
	□A □ □B □ □C □	B ☐B Confined animal operations (or other local, concentrated source of pollutants
	□D □	D □D ≥ 20% coverage of agricultural land (regularly plowed land) E □E ≥ 20% coverage of maintained grass/herb
	□F □ ⊠G ⊠	
7.	Wetland Ac	ting as Vegetated Buffer – assessment area/wetland complex condition metric (skip for non-riparian wetlands)
	⊠Yes	essment area within 50 feet of a tributary or other open water? □No If Yes, continue to 7b. If No, skip to Metric 8. nd buffer need only be present on one side of the water body. Make buffer judgment based on the average width of wetland.
	Recor 7b. How n	d a note if a portion of the buffer has been removed or disturbed. nuch of the first 50 feet from the bank is wetland? (Wetland buffer need only be present on one side of the .water body. Make
	□A □B	judgment based on the average width of wetland. Record a note if a portion of the buffer has been removed or disturbed.) ≥ 50 feet From 30 to < 50 feet
	□c ⊠d □e	From 15 to < 30 feet From 5 to < 15 feet < 5 feet or buffer bypassed by ditches
	<u></u> ≤ 1	ary width. If the tributary is anastomosed, combine widths of channels/braids for a total width. 5-feet wide > 15-feet wide Other open water (no tributary present)
	☐Yes 7e. Is stre	am or other open water sheltered or exposed?
•	□Exp	eltered – adjacent open water with width < 2500 feet <u>and</u> no regular boat traffic. sosed – adjacent open water with width ≥ 2500 feet <u>or</u> regular boat traffic.
8.		dth at the Assessment Area – wetland type/wetland complex condition metric (evaluate WT for all marshes and Voody Wetland only; evaluate WC for Bottomland Hardwood Forest, Headwater Forest, and Riverine Swamp Forest
		x in each column for riverine wetlands only. Select the average width for the wetland type at the assessment area (WT) and complex at the assessment area (WC). See User Manual for WT and WC boundaries.
	□A □	
	□F □	F From 15 to < 30 feet
	⊠G ⊠	

9.	Inundation Duration – assessment area condition metric (skip for non-riparian wetlands)
	Answer for assessment area dominant landform. Answer for assessment area dominant landform. Evidence of short-duration inundation (< 7 consecutive days) Evidence of saturation, without evidence of inundation Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)
40	Indicators of Deposition – assessment area condition metric (skip for non-riparian wetlands and all marshes)
10.	Consider recent deposition only (no plant growth since deposition). A Sediment deposition is not excessive, but at approximately natural levels. B Sediment deposition is excessive, but not overwhelming the wetland. C Sediment deposition is excessive and is overwhelming the wetland.
11.	Wetland Size – wetland type/wetland complex condition metric
	Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column. WT WC FW (if applicable) $A A A A S S S S S S S S S S S S S S S S$
12.	Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)
	□A Pocosin is the full extent (≥ 90%) of its natural landscape size.
	B Pocosin type is < 90% of the full extent of its natural landscape size. Connectivity to Other Natural Areas – landscape condition metric
	13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This metric evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly maintained utility line corridors the width of a four-lane road or wider, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Well Loosely A A ≥ 500 acres B B From 100 to < 500 acres C C From 50 to < 100 acres D D From 10 to < 50 acres E E < 10 acres F Wetland type has a poor or no connection to other natural habitats 13b. Evaluate for marshes only.
	Yes No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.
14.	Edge Effect – wetland type condition metric (skip for all marshes and Estuarine Woody Wetland) May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors, and clear-cuts. Consider the eight main points of the compass. Artificial edge occurs within 150 feet in how many directions? If the assessment area is clear cut, select option "C." □A 0 □B 1 to 4 □C 5 to 8
15.	Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)
	 ✓A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area. ✓B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata. ✓C Vegetation severely altered from reference in composition, or expected species are unnaturally absent (planted stands of non-characteristic species or at least one stratum inappropriately composed of a single species), or exotic species are dominant in at least one stratum.
16.	Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)
	 ✓A Vegetation diversity is high and is composed primarily of native species (< 10% cover of exotics). ✓B Vegetation diversity is low or has > 10% to 50% cover of exotics. ✓C Vegetation is dominated by exotic species (> 50 % cover of exotics).

17.	Vege	tative St	ructure –	assessment area/wetland type condition metric	
	17a.		ation pres		
		⊠Yes	∐No	If Yes, continue to 17b. If No, skip to Metric 18.	
	17b.	Evaluat □A □B	≥ 25% c	coverage of assessment area vegetation for all marshes only . Skip to 17c for non-marsh wetlands. overage of vegetation overage of vegetation	
	17c.	structur		each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider above the assessment area (AA) and the wetland type (WT) separately.	de
		AA ⊠A □B □C	⊠A □B □C	Canopy closed, or nearly closed, with natural gaps associated with natural processes Canopy present, but opened more than natural gaps Canopy sparse or absent	
	Mid-Story	□A ⊠B □C	□A ⊠B □C	Dense mid-story/sapling layer Moderate density mid-story/sapling layer Mid-story/sapling layer sparse or absent	
	Shrub	B B ⊠C	□A □B ⊠C	Dense shrub layer Moderate density shrub layer Shrub layer sparse or absent	
	Herb	a □A i □B i ⊠C	□A □B ⊠C	Dense herb layer Moderate density herb layer Herb layer sparse or absent	
18.	Snag	ıs – wetla	and type	condition metric (skip for all marshes)	
	□A ⊠B		e snags (r	nore than one) are visible (> 12 inches DBH, or large relative to species present and landscape stability).	
19.	Diam	neter Clas	ss Distrib	ution – wetland type condition metric (skip for all marshes)	
	□A			opy trees have stems > 6 inches in diameter at breast height (DBH); many large trees (> 12 inches DBH) are	
	□в ⊠с		rity of car	opy trees have stems between 6 and 12 inches DBH, few are > 12 inch DBH. opy trees are < 6 inches DBH or no trees.	
20.	Larg	e Woody	Debris -	wetland type condition metric (skip for all marshes)	
	Includ □A ⊠B		e logs (mo	ris and man-placed natural debris. re than one) are visible (> 12 inches in diameter, or large relative to species present and landscape stability).	
21.	Vege	tation/O	pen Wate	Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)	i
				st describes the amount of interspersion between vegetation and open water in the growing season. Pattern areas, while solid white areas indicate open water. □B □C □D	nec
		0	S.		
22.	-	_		y – assessment area condition metric (evaluate for riparian wetlands and Salt/Brackish Marsh only)	
				at may severely alter hydrologic connectivity include intensive ditching, fill, sedimentation, channelization, diversi	ion
	man- ⊠A			er dams, and stream incision. Documentation required if evaluated as B, C, or D. overland flow are not severely altered in the assessment area.	
	□в	Over	bank flow	is severely altered in the assessment area.	
				s severely altered in the assessment area. and overland flow are severely altered in the assessment area.	

Wetland Site Name PV		Date of Assessment Sep	
vvetland Type Bo	ottomland Hardwood Forest A	ssessor Name/Organization KM	I, BGB/HDR
Notes on Field Assessme	ent Form (Y/N)		NO
Presence of regulatory c	onsiderations (Y/N)		YES
Wetland is intensively ma	anaged (Y/N)		NO
Assessment area is loca	ted within 50 feet of a natural tributary	or other open water (Y/N)	YES
Assessment area is subs	stantially altered by beaver (Y/N)		NO
Assessment area experie	ences overbank flooding during norma	al rainfall conditions (Y/N)	NO
Assessment area is on a	coastal island (Y/N)		NO
Sub-function Rating Sur	nmary		
Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention Sub-surface Storage and	Condition	HIGH
	Retention	Condition	MEDIUM
Water Quality	Pathogen Change	Condition	HIGH
		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	NO
	Particulate Change	Condition	HIGH
		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	NO
	Soluble Change	Condition	HIGH
		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	NO
	Physical Change	Condition	MEDIUM
		Condition/Opportunity	MEDIUM
		Opportunity Presence (Y/N)	NO
	Pollution Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence (Y/N)	NA
Habitat	Physical Structure	Condition	LOW
	Landscape Patch Structure	Condition	MEDIUM
	Vegetation Composition	Condition	HIGH
unction Rating Summa	rv		
Function	-	Metrics	Rating
Hydrology		Condition	HIGH
Water Quality		Condition	HIGH
•		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	NO
Habitat		Condition	MEDIUM

USACE AID #	7.000 	NCDWR#	
Project Nan	ne CLT Airport Expansion	Date of Evaluation	October 2019
Applicant/Owner Nan	ne CLT	Wetland Site Name	PW4-1 - Wetland 22
Wetland Ty		Assessor Name/Organization	KMT, BGB/HDR
Level III Ecoregie		Nearest Named Water Body	Coffey Creek
River Bas		USGS 8-Digit Catalogue Unit	03050103
Cour		NCDWR Region	Mooresville
☐ Yes 🖾 l	No Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees)	35.192488, -80.943445
Please circle and/or necent past (for instane Hydrologicale Surface and tanks, under Signs of veg Habitat/plant Is the assessment and Regulatory Consider Anadromous Federally pro NCDWR ripa Abuts a Prin Publicly own N.C. Division	ce, within 10 years). Noteworthy stressors modifications (examples: ditches, dams, b sub-surface discharges into the wetland (ex ground storage tanks (USTs), hog lagoons, etation stress (examples: vegetation mortal community alteration (examples: mowing, rea intensively managed? Yes rations - Were regulatory considerations ever in the stress of t	extressors is apparent. Consider departure frinclude, but are not limited to the following. Seaver dams, dikes, berms, ponds, etc.) (camples: discharges containing obvious pollutetc.) (lity, insect damage, disease, storm damage, clear-cutting, exotics, etc.) (1) No (2) No (3) raluated? (2) Yes \(\sum \)No If Yes, check all that exatened species	ntants, presence of nearby septic , salt intrusion, etc.) nt apply to the assessment area.
Abuts a 303	am with a NCDWQ classification of SA or si NCNHP reference community (d)-listed stream or a tributary to a 303(d)-listed stream is associated with the wetland, in	sted stream	or Trout
Blackwater Brownwater Tidal (if tidal	, check one of the following boxes) Lurea on a coastal island? Yes	unar □ Wind □ Both No	
		uration substantially altered by beaver? ring normal rainfall conditions?	☐ Yes
Check a box in ea	Compare to reference wetland if applicable	ment area condition metric und surface (GS) in the assessment area an (see User Manual). If a reference is not app	
	sedimentation, fire-plow lanes, skidder tra	essment area (ground surface alteration exa acks, bedding, fill, soil compaction, obvious ace, herbicides, salt intrusion [where approprion]	pollutants) (vegetation structure
Check a box in ea Consider both incr	ease and decrease in hydrology. A ditch ≤	 assessment area condition metric acity and duration (Surf) and sub-surface sto 1 foot deep is considered to affect surface c. Consider tidal flooding regime, if applicable 	water only, while a ditch > 1 foot
⊠A ⊠A □B □B □C □C	Water storage capacity or duration are sub	ot altered. ered, but not substantially (typically, not suffice estantially altered (typically, alteration sufficie tion, filling, excessive sedimentation, underg	ent to result in vegetation change)
3. Water Storage/Su	rface Relief - assessment area/wetland	type condition metric (skip for all marshe	es)
Check a box in ea	ach column. Select the appropriate storage	e for the assessment area (AA) and the wetl	and type (WT).
AA WT	-		,
3a.	Majority of wetland with depressions able t Majority of wetland with depressions able t Majority of wetland with depressions able t Depressions able to pond water < 3 inches	o pond water 6 inches to 1 foot deep o pond water 3 to 6 inches deep s deep	
□B Evidence	e that maximum depth of inundation is great that maximum depth of inundation is betwo that maximum depth of inundation is less t	een 1 and 2 feet	

	Make soil o	x from each of the three soil property groups below. Dig soil profile in the dominant assessment area landscape feature. Oservations within the top 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for regional
	indicators. 4a. □A □B □C □D □D	Sandy soil Loamy or clayey soils exhibiting redoximorphic features (concentrations, depletions, or rhizospheres) Loamy or clayey soils not exhibiting redoximorphic features Loamy or clayey gleyed soil Histosol or histic epipedon
	4b. ⊠A □B	Soil ribbon < 1 inch
	4c. ⊠A □B	No peat or muck presence A peat or muck presence
5.	Discharge i	nto Wetland – opportunity metric
	of sub-surfa Surf Su	
	⊠A ⊠ □B □	
	□c □	
6.	Land Use -	opportunity metric (skip for non-riparian wetlands)
	to assessme	at apply (at least one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources draining and area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), miles and within the watershed draining to the assessment area (2M). 1 2M
	□A □ □B □ □C □	B ☐B Confined animal operations (or other local, concentrated source of pollutants
	□D □	D □D ≥ 20% coverage of agricultural land (regularly plowed land) E □E ≥ 20% coverage of maintained grass/herb
	□F □ ⊠G ⊠	
7.	Wetland Ac	ting as Vegetated Buffer – assessment area/wetland complex condition metric (skip for non-riparian wetlands)
	⊠Yes	essment area within 50 feet of a tributary or other open water? □No If Yes, continue to 7b. If No, skip to Metric 8. nd buffer need only be present on one side of the water body. Make buffer judgment based on the average width of wetland.
	Recor 7b. How n	d a note if a portion of the buffer has been removed or disturbed. nuch of the first 50 feet from the bank is wetland? (Wetland buffer need only be present on one side of the .water body. Make
	□A □B	judgment based on the average width of wetland. Record a note if a portion of the buffer has been removed or disturbed.) ≥ 50 feet From 30 to < 50 feet
	□c ⊠d □e	From 15 to < 30 feet From 5 to < 15 feet < 5 feet or buffer bypassed by ditches
	<u></u> ≤ 1	ary width. If the tributary is anastomosed, combine widths of channels/braids for a total width. 5-feet wide > 15-feet wide Other open water (no tributary present)
	☐Yes 7e. Is stre	am or other open water sheltered or exposed?
•	□Exp	eltered – adjacent open water with width < 2500 feet <u>and</u> no regular boat traffic. sosed – adjacent open water with width ≥ 2500 feet <u>or</u> regular boat traffic.
8.		dth at the Assessment Area – wetland type/wetland complex condition metric (evaluate WT for all marshes and Voody Wetland only; evaluate WC for Bottomland Hardwood Forest, Headwater Forest, and Riverine Swamp Forest
		x in each column for riverine wetlands only. Select the average width for the wetland type at the assessment area (WT) and complex at the assessment area (WC). See User Manual for WT and WC boundaries.
	□A □	
	□F □	F From 15 to < 30 feet
	⊠G ⊠	

9.	Inundation Duration – assessment area condition metric (skip for non-riparian wetlands)
	Answer for assessment area dominant landform. Answer for assessment area dominant landform. By Evidence of short-duration inundation (< 7 consecutive days) By Evidence of saturation, without evidence of inundation Cycle Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)
10.	Indicators of Deposition – assessment area condition metric (skip for non-riparian wetlands and all marshes)
	Consider recent deposition only (no plant growth since deposition). A Sediment deposition is not excessive, but at approximately natural levels. B Sediment deposition is excessive, but not overwhelming the wetland. C Sediment deposition is excessive and is overwhelming the wetland.
11.	Wetland Size – wetland type/wetland complex condition metric
	Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column. WT WC FW (if applicable) A A A ≥ 500 acres B B B From 100 to < 500 acres C C From 50 to < 100 acres D D D From 25 to < 50 acres F F F From 10 to < 25 acres F F F From 5 to < 10 acres G G G G From 1 to < 5 acres H H H From 0.5 to < 1 acre X I X I X I X I X I X I X I X I X I X
12	Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)
	□ A Pocosin is the full extent (≥ 90%) of its natural landscape size. □ B Pocosin type is < 90% of the full extent of its natural landscape size.
13.	Connectivity to Other Natural Areas – landscape condition metric
	13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This metric evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly maintained utility line corridors the width of a four-lane road or wider, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide.
	Well Loosely □ A □ A ≥ 500 acres □ B □ B From 100 to < 500 acres □ C □ C From 50 to < 100 acres □ D □ D From 10 to < 50 acres □ E □ E < 10 acres □ F □ F Wetland type has a poor or no connection to other natural habitats
	13b. Evaluate for marshes only.
	☐Yes ☐No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.
14.	Edge Effect – wetland type condition metric (skip for all marshes and Estuarine Woody Wetland) May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors, and clear-cuts. Consider the eight main points of the compass. Artificial edge occurs within 150 feet in how many directions? If the assessment area is clear cut select option "C." □ A 0 □ B 1 to 4 □ C 5 to 8
15.	Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)
	 ✓A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area. ✓B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing It also includes communities with exotics present, but not dominant, over a large portion of the expected strata. ✓C Vegetation severely altered from reference in composition, or expected species are unnaturally absent (planted stands of non-characteristic species or at least one stratum inappropriately composed of a single species), or exotic species are dominant in a least one stratum.
16.	Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)
	 ✓A Vegetation diversity is high and is composed primarily of native species (< 10% cover of exotics). ✓B Vegetation diversity is low or has > 10% to 50% cover of exotics. ✓C Vegetation is dominated by exotic species (> 50 % cover of exotics).

17.	Vege	tative St	ructure –	assessment area/wetland type condition metric	
	17a.		ation pres		
		⊠Yes	∐No	If Yes, continue to 17b. If No, skip to Metric 18.	
	17b.	Evaluat □A □B	≥ 25% c	coverage of assessment area vegetation for all marshes only . Skip to 17c for non-marsh wetlands. overage of vegetation overage of vegetation	
	17c.	structur		each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider above the assessment area (AA) and the wetland type (WT) separately.	de
		AA ⊠A □B □C	⊠A □B □C	Canopy closed, or nearly closed, with natural gaps associated with natural processes Canopy present, but opened more than natural gaps Canopy sparse or absent	
	Mid-Story	□A ⊠B □C	□A ⊠B □C	Dense mid-story/sapling layer Moderate density mid-story/sapling layer Mid-story/sapling layer sparse or absent	
	Shrub	B B ⊠C	□A □B ⊠C	Dense shrub layer Moderate density shrub layer Shrub layer sparse or absent	
	Herb	a □A i □B i ⊠C	□A □B ⊠C	Dense herb layer Moderate density herb layer Herb layer sparse or absent	
18.	Snag	ıs – wetla	and type	condition metric (skip for all marshes)	
	□A ⊠B		e snags (r	nore than one) are visible (> 12 inches DBH, or large relative to species present and landscape stability).	
19.	Diam	neter Clas	ss Distrib	ution – wetland type condition metric (skip for all marshes)	
	□A			opy trees have stems > 6 inches in diameter at breast height (DBH); many large trees (> 12 inches DBH) are	
	□в ⊠с		rity of car	opy trees have stems between 6 and 12 inches DBH, few are > 12 inch DBH. opy trees are < 6 inches DBH or no trees.	
20.	Larg	e Woody	Debris -	wetland type condition metric (skip for all marshes)	
	Includ □A ⊠B		e logs (mo	ris and man-placed natural debris. re than one) are visible (> 12 inches in diameter, or large relative to species present and landscape stability).	
21.	Vege	tation/O	pen Wate	Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)	i
				st describes the amount of interspersion between vegetation and open water in the growing season. Pattern areas, while solid white areas indicate open water. □B □C □D	nec
		0	S.		
22.	-	_		y – assessment area condition metric (evaluate for riparian wetlands and Salt/Brackish Marsh only)	
				at may severely alter hydrologic connectivity include intensive ditching, fill, sedimentation, channelization, diversi	ion
	man- ⊠A			er dams, and stream incision. Documentation required if evaluated as B, C, or D. overland flow are not severely altered in the assessment area.	
	□в	Over	bank flow	is severely altered in the assessment area.	
				s severely altered in the assessment area. and overland flow are severely altered in the assessment area.	

Wetland Site Name P			ber 2019			
Wetland Type B	ottomland Hardwood Forest As	sessor Name/Organization <u>KMT</u>	, BGB/HDR			
Notes on Field Assessm	ent Form (Y/N)		NO			
Presence of regulatory of	considerations (Y/N)		YES			
Wetland is intensively m	anaged (Y/N)		NO			
Assessment area is loca	ssessment area is located within 50 feet of a natural tributary or other open water (Y/N)					
Assessment area is sub	ssessment area is substantially altered by beaver (Y/N)					
Assessment area experi	ences overbank flooding during normal	rainfall conditions (Y/N)	NO			
Assessment area is on a	a coastal island (Y/N)		NO			
sub-function Rating Su	mmarv					
Function	Sub-function	Metrics	Rating			
Hydrology	Surface Storage and Retention	Condition	HIGH			
, 0,	Sub-surface Storage and					
	Retention	Condition	MEDIUM			
Water Quality	Pathogen Change	Condition	HIGH			
		Condition/Opportunity	HIGH			
		Opportunity Presence (Y/N)	NO NO			
	Particulate Change	Condition	HIGH			
		Condition/Opportunity	HIGH			
		Opportunity Presence (Y/N)	NO NO			
	Soluble Change	Condition	HIGH			
		Condition/Opportunity	HIGH			
	5	Opportunity Presence (Y/N)	NO NO			
	Physical Change	Condition	MEDIUM			
		Condition/Opportunity	MEDIUM			
	5 11 11 5 1	Opportunity Presence (Y/N)	NO			
	Pollution Change	Condition	NA NA			
		Condition/Opportunity	NA NA			
	DI : 10:	Opportunity Presence (Y/N)	NA NA			
Habitat	Physical Structure	Condition	LOW			
	Landscape Patch Structure	Condition	LOW			
	Vegetation Composition	Condition	HIGH			
unction Rating Summa	nry					
Function		Metrics	Rating			
Hydrology		Condition	HIGH			
Water Quality		Condition	HIGH			
		Condition/Opportunity	HIGH			
		Opportunity Presence (Y/N)	NO			
Habitat		Condition	LOW			

USACE AID #	7.000	NCDWR#	
Project Name	CLT Airport Expansion	Date of Evaluation	October 2019
Applicant/Owner Name	CLT	Wetland Site Name	PW5-1 - Wetland 24
Wetland Type	Bottomland Hardwood Forest	Assessor Name/Organization	KMT, BGB/HDR
Level III Ecoregion		Nearest Named Water Body	Coffey Creek
River Basin		USGS 8-Digit Catalogue Unit	03050103
County		NCDWR Region	Mooresville
☐ Yes 🛛 No	Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees)	35.190762, -80.941877
Please circle and/or mal recent past (for instance,	within 10 years). Noteworthy stressors is odifications (examples: ditches, dams, beb-surface discharges into the wetland (expound storage tanks (USTs), hog lagoons, ation stress (examples: vegetation mortal ommunity alteration (examples: mowing, intensively managed? Yes ons - Were regulatory considerations evists of the constant	tressors is apparent. Consider departure finclude, but are not limited to the following. eaver dams, dikes, berms, ponds, etc.) amples: discharges containing obvious polluetc.) lity, insect damage, disease, storm damage, clear-cutting, exotics, etc.) No aluated? Yes No If Yes, check all that atened species	tants, presence of nearby septic salt intrusion, etc.)
Abuts a 303(d)	with a NCDWQ classification of SA or su NHP reference community -listed stream or a tributary to a 303(d)-lis ream is associated with the wetland, if		or Irout
☐ Blackwater ☐ Brownwater ☐ Tidal (if tidal, cl	neck one of the following boxes)	unar ☐ Wind ☐ Both No	
		uration substantially altered by beaver? ing normal rainfall conditions? Yes	☐ Yes
Check a box in each	ompare to reference wetland if applicable	ment area condition metric und surface (GS) in the assessment area an (see User Manual). If a reference is not app	
⊠A ⊠A No □B □B So se al	edimentation, fire-plow lanes, skidder tra	essment area (ground surface alteration exa cks, bedding, fill, soil compaction, obvious ce, herbicides, salt intrusion [where appropri on)	pollutants) (vegetation structure
Check a box in each Consider both increa deep is expected to a Surf Sub	se and decrease in hydrology. A ditch ≤ ffect both surface and sub-surface water	acity and duration (Surf) and sub-surface sto 1 foot deep is considered to affect surface . Consider tidal flooding regime, if applicabl	water only, while a ditch > 1 foot
□B □B W	ater storage capacity or duration are sub	ot altered. red, but not substantially (typically, not suffic stantially altered (typically, alteration sufficie ion, filling, excessive sedimentation, underg	ent to result in vegetation change)
3. Water Storage/Surfa	ace Relief – assessment area/wetland t	ype condition metric (skip for all marshe	es)
	column . Select the appropriate storage	e for the assessment area (AA) and the wetl	and type (WT).
□B □B M □C □C M ☑D ☑D D	ajority of wetland with depressions able to ajority of wetland with depressions able to ajority of wetland with depressions able to epressions able to pond water < 3 inches	o pond water 6 inches to 1 foot deep o pond water 3 to 6 inches deep deep	
☐B Evidence the second control of the s	at maximum depth of inundation is greate at maximum depth of inundation is betwe at maximum depth of inundation is less t	een 1 and 2 feet	

	Make soil o	x from each of the three soil property groups below. Dig soil profile in the dominant assessment area landscape feature. Oservations within the top 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for regional
	indicators. 4a. □A □B □C □D □D	Sandy soil Loamy or clayey soils exhibiting redoximorphic features (concentrations, depletions, or rhizospheres) Loamy or clayey soils not exhibiting redoximorphic features Loamy or clayey gleyed soil Histosol or histic epipedon
	4b. ⊠A □B	Soil ribbon < 1 inch
	4c. ⊠A □B	No peat or muck presence A peat or muck presence
5.	Discharge i	nto Wetland – opportunity metric
	of sub-surfa Surf Su	
	⊠A ⊠ □B □	
	□c □	
6.	Land Use -	opportunity metric (skip for non-riparian wetlands)
	to assessme	at apply (at least one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources draining and area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), miles and within the watershed draining to the assessment area (2M). 1 2M
	□A □ □B □ □C □	B ☐B Confined animal operations (or other local, concentrated source of pollutants
	□D □	D □D ≥ 20% coverage of agricultural land (regularly plowed land) E □E ≥ 20% coverage of maintained grass/herb
	□F □ ⊠G ⊠	
7.	Wetland Ac	ting as Vegetated Buffer – assessment area/wetland complex condition metric (skip for non-riparian wetlands)
	⊠Yes	essment area within 50 feet of a tributary or other open water? □No If Yes, continue to 7b. If No, skip to Metric 8. nd buffer need only be present on one side of the water body. Make buffer judgment based on the average width of wetland.
	Recor 7b. How n	d a note if a portion of the buffer has been removed or disturbed. nuch of the first 50 feet from the bank is wetland? (Wetland buffer need only be present on one side of the .water body. Make
	□A □B	judgment based on the average width of wetland. Record a note if a portion of the buffer has been removed or disturbed.) ≥ 50 feet From 30 to < 50 feet
	□c ⊠d □e	From 15 to < 30 feet From 5 to < 15 feet < 5 feet or buffer bypassed by ditches
	<u></u> ≤ 1	ary width. If the tributary is anastomosed, combine widths of channels/braids for a total width. 5-feet wide > 15-feet wide Other open water (no tributary present)
	☐Yes 7e. Is stre	am or other open water sheltered or exposed?
•	□Exp	eltered – adjacent open water with width < 2500 feet <u>and</u> no regular boat traffic. sosed – adjacent open water with width ≥ 2500 feet <u>or</u> regular boat traffic.
8.		dth at the Assessment Area – wetland type/wetland complex condition metric (evaluate WT for all marshes and Voody Wetland only; evaluate WC for Bottomland Hardwood Forest, Headwater Forest, and Riverine Swamp Forest
		x in each column for riverine wetlands only. Select the average width for the wetland type at the assessment area (WT) and complex at the assessment area (WC). See User Manual for WT and WC boundaries.
	□A □	
	□F □	F From 15 to < 30 feet
	⊠G ⊠	

9.	Inundation Duration – assessment area condition metric (skip for non-riparian wetlands)			
	Answer for assessment area dominant landform. Answer for assessment area dominant landform. By Evidence of short-duration inundation (< 7 consecutive days) By Evidence of saturation, without evidence of inundation Cycle Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)			
10.	Indicators of Deposition – assessment area condition metric (skip for non-riparian wetlands and all marshes)			
	Consider recent deposition only (no plant growth since deposition). A Sediment deposition is not excessive, but at approximately natural levels. B Sediment deposition is excessive, but not overwhelming the wetland. C Sediment deposition is excessive and is overwhelming the wetland.			
11.	Wetland Size – wetland type/wetland complex condition metric			
	Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column. WT WC FW (if applicable) A A A ≥ 500 acres B B B From 100 to < 500 acres C C From 50 to < 100 acres D D D From 25 to < 50 acres F F F From 10 to < 25 acres F F F From 5 to < 10 acres G G G G From 1 to < 5 acres H H H From 0.5 to < 1 acre X I X I X I X I X I X I X I X I X I X			
12	Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)			
	□ A Pocosin is the full extent (≥ 90%) of its natural landscape size. □ B Pocosin type is < 90% of the full extent of its natural landscape size.			
13.	Connectivity to Other Natural Areas – landscape condition metric			
	13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This mevaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguaturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly maintained utility corridors the width of a four-lane road or wider, urban landscapes, maintained fields (pasture and agriculture), or open water > feet wide.			
	Well Loosely □ A □ A ≥ 500 acres □ B □ B From 100 to < 500 acres □ C □ C From 50 to < 100 acres □ D □ D From 10 to < 50 acres □ E □ E < 10 acres □ F □ F Wetland type has a poor or no connection to other natural habitats			
	13b. Evaluate for marshes only.			
	☐Yes ☐No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.			
14.	Edge Effect – wetland type condition metric (skip for all marshes and Estuarine Woody Wetland) May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors, and clear-cuts. Consider the eight main points of the compass. Artificial edge occurs within 150 feet in how many directions? If the assessment area is clear cut select option "C." □ A 0 □ B 1 to 4 □ C 5 to 8			
15.	Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)			
	 ✓A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area. ✓B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing It also includes communities with exotics present, but not dominant, over a large portion of the expected strata. ✓C Vegetation severely altered from reference in composition, or expected species are unnaturally absent (planted stands of non-characteristic species or at least one stratum inappropriately composed of a single species), or exotic species are dominant in a least one stratum. 			
16.	Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)			
	 ✓A Vegetation diversity is high and is composed primarily of native species (< 10% cover of exotics). ✓B Vegetation diversity is low or has > 10% to 50% cover of exotics. ✓C Vegetation is dominated by exotic species (> 50 % cover of exotics). 			

17. Vegetative Structure – assessm			ructure –	assessment area/wetland type condition metric	
	17a.		ation pres		
		⊠Yes	∐No	If Yes, continue to 17b. If No, skip to Metric 18.	
	17b.	Evaluat □A □B	≥ 25% c	coverage of assessment area vegetation for all marshes only . Skip to 17c for non-marsh wetlands. overage of vegetation overage of vegetation	
	17c.	structur		each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider above the assessment area (AA) and the wetland type (WT) separately.	de
		AA ⊠A □B □C	⊠A □B □C	Canopy closed, or nearly closed, with natural gaps associated with natural processes Canopy present, but opened more than natural gaps Canopy sparse or absent	
	Mid-Story	□A ⊠B □C	□A ⊠B □C	Dense mid-story/sapling layer Moderate density mid-story/sapling layer Mid-story/sapling layer sparse or absent	
	Shrub	B B ⊠C	□A □B ⊠C	Dense shrub layer Moderate density shrub layer Shrub layer sparse or absent	
	Herb	a □A i □B i ⊠C	□A □B ⊠C	Dense herb layer Moderate density herb layer Herb layer sparse or absent	
18.	Snag	ıs – wetla	and type	condition metric (skip for all marshes)	
	□A ⊠B		e snags (r	nore than one) are visible (> 12 inches DBH, or large relative to species present and landscape stability).	
19.	Diam	neter Clas	ss Distrib	ution – wetland type condition metric (skip for all marshes)	
	□A			opy trees have stems > 6 inches in diameter at breast height (DBH); many large trees (> 12 inches DBH) are	
	□в ⊠с		rity of car	opy trees have stems between 6 and 12 inches DBH, few are > 12 inch DBH. opy trees are < 6 inches DBH or no trees.	
20.	Larg	e Woody	Debris -	wetland type condition metric (skip for all marshes)	
	Includ □A ⊠B		e logs (mo	ris and man-placed natural debris. re than one) are visible (> 12 inches in diameter, or large relative to species present and landscape stability).	
21.	Vege	tation/O	pen Wate	Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)	i
				st describes the amount of interspersion between vegetation and open water in the growing season. Pattern areas, while solid white areas indicate open water. □B □C □D	nec
		0	S.		
22.	-	_		y – assessment area condition metric (evaluate for riparian wetlands and Salt/Brackish Marsh only)	
				at may severely alter hydrologic connectivity include intensive ditching, fill, sedimentation, channelization, diversi	ion
	man- ⊠A			er dams, and stream incision. Documentation required if evaluated as B, C, or D. overland flow are not severely altered in the assessment area.	
	□в	Over	bank flow	is severely altered in the assessment area.	
				s severely altered in the assessment area. and overland flow are severely altered in the assessment area.	

Wetland Site Name P\		Date of Assessment Octob	
Wetland Type <u>Bo</u>	ottomland Hardwood Forest	Assessor Name/Organization KMT,	BGB/HDR
Notes on Field Assessme	ent Form (Y/N)		NO
Presence of regulatory c	onsiderations (Y/N)		YES
Wetland is intensively ma	anaged (Y/N)		NO
Assessment area is loca	ted within 50 feet of a natural tributa	ary or other open water (Y/N)	YES
Assessment area is subs	stantially altered by beaver (Y/N)		NO
Assessment area experie	ences overbank flooding during nor	mal rainfall conditions (Y/N)	NO
Assessment area is on a	coastal island (Y/N)		NO
Sub-function Rating Sur	nmarv		
Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention Sub-surface Storage and	n Condition	HIGH
	Retention	Condition	MEDIUM
Water Quality	Pathogen Change	Condition	HIGH
		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	NO
	Particulate Change	Condition	HIGH
		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	NO
	Soluble Change	Condition	HIGH
		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	NO
	Physical Change	Condition	MEDIUM
		Condition/Opportunity	MEDIUM
		Opportunity Presence (Y/N)	NO
	Pollution Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence (Y/N)	NA
Habitat	Physical Structure	Condition	LOW
	Landscape Patch Structure	Condition	LOW
	Vegetation Composition	Condition	HIGH
unction Rating Summa	ry		
Function	-	Metrics	Rating
Hydrology		Condition	HIGH
Water Quality		Condition	HIGH
-		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	NO
Habitat		Condition	LOW

110	SACE AID 7	#	Accompanies	NCDWP#	
08			o CLT Airport Expansion	NCDWR#	April 2010
		oject Nam		Date of Evaluation	April 2019
l A	pplicant/O			Wetland Site Name	PW1-1 - Wetland 5
		etland Typ		Assessor Name/Organization	KMT, BGB/HDR
		Ecoregio		Nearest Named Water Body	Ticer Branch
	ı	River Basi		USGS 8-Digit Catalogue Unit	03050101
		Count		NCDWR Region	Mooresville
-	∐ Ye	s 🛛 N	o Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees)	35.229386; -80.956805
Is Re	ease circle cent past (f	and/or m for instance drological face and s ks, underg ns of vege bitat/plant sment are Considera adromous lerally pro DWR ripa uts a Prim	e, within 10 years). Noteworthy stressors is modifications (examples: ditches, dams, be sub-surface discharges into the wetland (examples into the wetland (examples) tation stress (examples: vegetation mortal community alteration (examples: mowing, ea intensively managed? Yes Attions - Were regulatory considerations evaluations.	tressors is apparent. Consider departure finclude, but are not limited to the following. eaver dams, dikes, berms, ponds, etc.) amples: discharges containing obvious polluetc.) ity, insect damage, disease, storm damage clear-cutting, exotics, etc.) No aluated? Yes No If Yes, check all the	utants, presence of nearby septic , salt intrusion, etc.)
	Des Abu	c. Division its a strea signated N its a 303(d	of Coastal Management Area of Environment of SA or sum with a NCDWQ classification of SA or sum CNHP reference community of the stream or a tributary to a 303(d)-listed stream or a tributary	replemental classifications of HQW, ORW, or ted stream	or Trout
	Blad Bro Tida	ckwater wnwater al (if tidal,	check one of the following boxes) check on a coastal island? Yes N	ınar 🗌 Wind 🔲 Both	
					□ Vaa
			ea's surface water storage capacity or di	ing normal rainfall conditions? Yes	☐ Yes No
<u> </u>					
1.	Check a lassessment area base	box in ea ent area.		ment area condition metric und surface (GS) in the assessment area ar (see User Manual). If a reference is not app	
	$\boxtimes A$	⊠A □B	sedimentation, fire-plow lanes, skidder tra	essment area (ground surface alteration exacks, bedding, fill, soil compaction, obvious ce, herbicides, salt intrusion [where appropron)	s pollutants) (vegetation structure
2.			Surface Storage Capacity and Duration -		
	Consider deep is ex Surf ⊠A □B	both incre cpected to Sub ⊠A □B	ease and decrease in hydrology. A ditch see affect both surface and sub-surface water. Water storage capacity and duration are now water storage capacity or duration are alternation.	red, but not substantially (typically, not suffic	water only, while a ditch > 1 foot le. cient to change vegetation).
3.	_		(examples: draining, flooding, soil compacti	stantially altered (typically, alteration sufficiention, indergion, filling, excessive sedimentation, undergiver condition metric (skip for all marshe	round utility lines).
J.		_			·
	AA		on column. Select the appropriate storage	e for the assessment area (AA) and the wetl	and type (vv i).
	3a.	□A □B □C ⊠D	Majority of wetland with depressions able to Majority of wetland with depressions able to Majority of wetland with depressions able to Depressions able to pond water < 3 inches	p pond water 6 inches to 1 foot deep p pond water 3 to 6 inches deep deep	
	□В	Evidence	that maximum depth of inundation is greate that maximum depth of inundation is betwe that maximum depth of inundation is less tl	en 1 and 2 feet	

	Check a box from each of the three soil property groups below. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for regional indicators. 4a. A Sandy soil B Loamy or clayey soils exhibiting redoximorphic features (concentrations, depletions, or rhizospheres) C Loamy or clayey soils not exhibiting redoximorphic features D Loamy or clayey gleyed soil Histosol or histic epipedon
	4b. ⊠A Soil ribbon < 1 inch □B Soil ribbon ≥ 1 inch
	4c. ⊠A No peat or muck presence ☐B A peat or muck presence
5.	Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). Examples of sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc. Surf Sub A A Little or no evidence of pollutants or discharges entering the assessment area B B Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area C C C Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation, odor)
6.	Land Use – opportunity metric (skip for non-riparian wetlands) Check all that apply (at least one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources draining to assessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), and within 2 miles and within the watershed draining to the assessment area (2M). WS 5M 2M A A A S 10% impervious surfaces B B B Confined animal operations (or other local, concentrated source of pollutants C C C C C ≥ 20% coverage of pasture D D D D D ≥ 20% coverage of agricultural land (regularly plowed land) E E E E E S 20% coverage of maintained grass/herb F F F F F ≥ 20% coverage of clear-cut land G G G G G G Little or no opportunity to improve water quality. Lack of opportunity may result from little or no disturbance in the watershed or hydrologic alterations that prevent drainage and/or overbank flow from affecting the assessment area.
7.	Wetland Acting as Vegetated Buffer – assessment area/wetland complex condition metric (skip for non-riparian wetlands)
	 7a. Is assessment area within 50 feet of a tributary or other open water?
8.	Exposed – adjacent open water with width ≥ 2500 feet or regular boat traffic. Wetland Width at the Assessment Area – wetland type/wetland complex condition metric (evaluate WT for all marshes and
	Estuarine Woody Wetland only; evaluate WC for Bottomland Hardwood Forest, Headwater Forest, and Riverine Swamp Forest only) Check a box in each column for riverine wetlands only. Select the average width for the wetland type at the assessment area (WT) and the wetland complex at the assessment area (WC). See User Manual for WT and WC boundaries. WT WC A A ≥ 100 feet B B From 80 to < 100 feet C C From 50 to < 80 feet D D From 40 to < 50 feet E F From 30 to < 40 feet F F From 15 to < 30 feet G G G From 5 to < 15 feet H H H < 5 feet

9.	Inundation Duration – assessment area condition metric (skip for non-riparian wetlands)
	Answer for assessment area dominant landform. □ A Evidence of short-duration inundation (< 7 consecutive days) □ B Evidence of saturation, without evidence of inundation □ C Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)
10.	Indicators of Deposition – assessment area condition metric (skip for non-riparian wetlands and all marshes)
	Consider recent deposition only (no plant growth since deposition). \[\begin{align*} \text{Sediment deposition is not excessive, but at approximately natural levels.} \] \[\begin{align*} \text{Sediment deposition is excessive, but not overwhelming the wetland.} \] \[\begin{align*} \text{Sediment deposition is excessive and is overwhelming the wetland.} \]
11.	Wetland Size – wetland type/wetland complex condition metric
	Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column. WT WC FW (if applicable) A A A S 500 acres B B B From 100 to < 500 acres C C C From 50 to < 100 acres D D D From 25 to < 50 acres F F F From 10 to < 25 acres F F F From 5 to < 10 acres G G G G From 1 to < 5 acres H H H From 0.5 to < 1 acre X I X I From 0.01 to < 0.5 acre
	☐K ☐K < 0.01 acre or assessment area is clear-cut
12.	Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)
	□A Pocosin is the full extent (≥ 90%) of its natural landscape size. □B Pocosin type is < 90% of the full extent of its natural landscape size.
13.	Connectivity to Other Natural Areas – landscape condition metric
	13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This metric evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly maintained utility line corridors the width of a four-lane road or wider, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Well Loosely A A ≥ 500 acres B B From 100 to < 500 acres C C From 50 to < 100 acres D D From 10 to < 50 acres E C C To acres F C Wetland type has a poor or no connection to other natural habitats
	13b. Evaluate for marshes only.
	Yes No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.
14.	Edge Effect – wetland type condition metric (skip for all marshes and Estuarine Woody Wetland) May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors, and clear-cuts. Consider the eight main points of the compass. Artificial edge occurs within 150 feet in how many directions? If the assessment area is clear cut, select option "C." □ A 0 □ B 1 to 4 □ C 5 to 8
15.	Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)
	 ☐A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area. ☐B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata. ☐C Vegetation severely altered from reference in composition, or expected species are unnaturally absent (planted stands of non-characteristic species or at least one stratum inappropriately composed of a single species), or exotic species are dominant in at least one stratum.
16.	Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)
	 □A Vegetation diversity is high and is composed primarily of native species (< 10% cover of exotics). □B Vegetation diversity is low or has > 10% to 50% cover of exotics. □C Vegetation is dominated by exotic species (> 50 % cover of exotics).

17. Vegetative Structure – assessment area/wetland type condition metric			ructure –	assessment area/wetland type condition metric	
	17a.		ation pres		
		⊠Yes	∐No	If Yes, continue to 17b. If No, skip to Metric 18.	
	17b.	Evaluat □A □B	≥ 25% c	coverage of assessment area vegetation for all marshes only . Skip to 17c for non-marsh wetlands. overage of vegetation overage of vegetation	
	17c.	structur	e in airsp	each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider above the assessment area (AA) and the wetland type (WT) separately.	ide
		AA ⊠A □B □C	WT ⊠A □B □C	Canopy closed, or nearly closed, with natural gaps associated with natural processes Canopy present, but opened more than natural gaps Canopy sparse or absent	
	Mid-Story	□A ⊠B □C	□A ⊠B □C	Dense mid-story/sapling layer Moderate density mid-story/sapling layer Mid-story/sapling layer sparse or absent	
	Shrub	B □A B □C	□A □B ⊠C	Dense shrub layer Moderate density shrub layer Shrub layer sparse or absent	
	Herb	A ⊠B □C	□A □B ⊠C	Dense herb layer Moderate density herb layer Herb layer sparse or absent	
18.	Snag	ıs – wetla	and type	ondition metric (skip for all marshes)	
	□a ⊠B	Larg Not <i>i</i>		nore than one) are visible (> 12 inches DBH, or large relative to species present and landscape stability).	
19.	Diam	neter Clas	ss Distrib	ution – wetland type condition metric (skip for all marshes)	
	□A			opy trees have stems > 6 inches in diameter at breast height (DBH); many large trees (> 12 inches DBH) are	
	⊠B □C		rity of car	opy trees have stems between 6 and 12 inches DBH, few are > 12 inch DBH. opy trees are < 6 inches DBH or no trees.	
20.	Larg	e Woody	Debris -	wetland type condition metric (skip for all marshes)	
	Includ □A ⊠B		e logs (mo	ris and man-placed natural debris. re than one) are visible (> 12 inches in diameter, or large relative to species present and landscape stability).	
21.	Vege	tation/O	oen Wate	Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only))
				st describes the amount of interspersion between vegetation and open water in the growing season. Patter areas, while solid white areas indicate open water. □B □C □D	nec
		0	S. S		
22.	-	_		y – assessment area condition metric (evaluate for riparian wetlands and Salt/Brackish Marsh only)	
				at may severely alter hydrologic connectivity include intensive ditching, fill, sedimentation, channelization, divers	ion
	man- ⊠A			er dams, and stream incision. Documentation required if evaluated as B, C, or D. overland flow are not severely altered in the assessment area.	
	□в	Over	bank flow	is severely altered in the assessment area.	
				s severely altered in the assessment area. and overland flow are severely altered in the assessment area.	

Wetland Site Name _	PW1-1 - Wetland 5	Date of Assessment April 2	2019
Wetland Type _	Headwater Forest A	Assessor Name/Organization KMT,	BGB/HDR
Notes on Field Assess	ment Form (Y/N)		NO
Presence of regulatory	considerations (Y/N)		YES
Wetland is intensively		NO	
Assessment area is loc	cated within 50 feet of a natural tributary	y or other open water (Y/N)	YES
Assessment area is su	bstantially altered by beaver (Y/N)		NO
Assessment area expe	riences overbank flooding during norm	al rainfall conditions (Y/N)	NO
Assessment area is on	a coastal island (Y/N)		NO
Sub-function Rating S	ummary		
Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	HIGH
, 3,	Sub-surface Storage and		
	Retention	Condition	HIGH
Water Quality	Pathogen Change	Condition	HIGH
		Condition/Opportunity	HIGH
	5 " 1 4 9	Opportunity Presence (Y/N)	NO
	Particulate Change	Condition	HIGH
		Condition/Opportunity	NA
	0.1.1.01	Opportunity Presence (Y/N)	NA
	Soluble Change	Condition	MEDIUM
		Condition/Opportunity	MEDIUM
	DI : 101	Opportunity Presence (Y/N)	NO NO
	Physical Change	Condition	LOW
		Condition/Opportunity	LOW
	D. II. 17. OI	Opportunity Presence (Y/N)	YES
	Pollution Change	Condition	NA
		Condition/Opportunity	NA NA
Habitat	Physical Structure	Opportunity Presence (Y/N) Condition	NA MEDIUM
Habitat	Landscape Patch Structure	Condition	MEDIUM LOW
	Vegetation Composition	Condition	MEDIUM
	<u>-</u>	Condition	WILDIOW
unction Rating Sumn	nary		
Function		Metrics	Rating
Hydrology		Condition	HIGH
Water Quality		Condition	HIGH
		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	YES
Habitat		Condition	LOW

			Accompanies	User Manual Version 5.0	
U:	SACE AID #			NCDWR#	
	Pro	ject Name	CLT Airport Expansion	Date of Evaluation	April 2019
Α.	applicant/Ow	ner Name	CLT	Wetland Site Name	PW2-1 - Wetland 6
	Wet	land Type	Headwater Forest	Assessor Name/Organization	KMT, BGB/HDR
	Level III	Ecoregion	Piedmont	Nearest Named Water Body	Ticer Branch
		iver Basin		USGS 8-Digit Catalogue Unit	03050101
	•	County	·	NCDWR Region	Mooresville
	☐ Yes			Latitude/Longitude (deci-degrees)	35.230325, -80.957650
—		, <u> </u>	1 Toolphadon Within 40 mo.	Editidad/Editigitado (addi adgi addi	00.200020, 00.007000
PI re	ease circle cent past (for	and/or ma or instance rological m ace and su s, undergre s of vegeta itat/plant or ment area onsiderat dromous fi erally prote bWR riparia is a Primar icly owned	within 10 years). Noteworthy stressors odifications (examples: ditches, dams, blb-surface discharges into the wetland (exound storage tanks (USTs), hog lagoons, ation stress (examples: vegetation mortal ommunity alteration (examples: mowing, a intensively managed? Yes Sions - Were regulatory considerations evish exted species or State endangered or threan buffer rule in effect y Nursery Area (PNA)	etressors is apparent. Consider departure finclude, but are not limited to the following eaver dams, dikes, berms, ponds, etc.) camples: discharges containing obvious polluetc.) lity, insect damage, disease, storm damage clear-cutting, exotics, etc.) No aluated? Yes No If Yes, check all the eatened species	utants, presence of nearby septic , salt intrusion, etc.)
] Desi	s a stream gnated NC		upplemental classifications of HQW, ORW,	or Trout
1/1	hat type of	natural et	ream is associated with the wetland, if	fany? (check all that annly)	
		kwater	reall is associated with the wettand, in	any: (check an that apply)	
×] Brow	vnwater			
	Tida		heck one of the following boxes)	unar □ Wind □ Both	
	_	•	3 , —		
Is	the assess	ment area	i on a coastal island? 🔲 Yes 🛛 🗎	No	
lo.	the access	mont area	's surface water storage canacity or d	uration substantially altered by beaver?	☐ Yes ☒ No
				-	_
D	oes the ass	essment a	area experience overbank flooding dur	ing normal rainfall conditions? U Yes	⊠ No
1.	Ground S	urface Co	ndition/Vegetation Condition – assess	ment area condition metric	
	Check a b assessme area based	ox in eacl nt area. C	n column. Consider alteration to the gro	und surface (GS) in the assessment area ar (see User Manual). If a reference is not app	
		⊠B S se al	edimentation, fire-plow lanes, skidder tra	essment area (ground surface alteration exacks, bedding, fill, soil compaction, obvious ce, herbicides, salt intrusion [where appropron)	s pollutants) (vegetation structure
2.	Surface a	nd Sub-Sเ	rface Storage Capacity and Duration -	- assessment area condition metric	
	Consider bedeep is ex	ooth increa pected to a Sub	se and decrease in hydrology. A ditch ≤	acity and duration (Surf) and sub-surface sto s 1 foot deep is considered to affect surface c. Consider tidal flooding regime, if applicab	water only, while a ditch > 1 foot
	□B [⊒B W ⊠C W	ater storage capacity or duration are sub	ot altered. Fred, but not substantially (typically, not sufficentially altered (typically, alteration sufficientially altered), alteration, undergion, filling, excessive sedimentation, underg	ent to result in vegetation change)
3.	Water Sto	rage/Surfa	ace Relief – assessment area/wetland	type condition metric (skip for all marshe	es)
	Check a b	ox in eacl	n column. Select the appropriate storage	e for the assessment area (AA) and the wetl	and type (WT).
	AA V			,	· · · ·
	3a.	□A M □B M □C M	ajority of wetland with depressions able t ajority of wetland with depressions able t ajority of wetland with depressions able t epressions able to pond water < 3 inches	o pond water 6 inches to 1 foot deep o pond water 3 to 6 inches deep	
	⊠B E	Evidence th	nat maximum depth of inundation is great nat maximum depth of inundation is between the maximum depth of inundation is less t	een 1 and 2 feet	

	Make soil	ox from each of the three soil property groups below. Dig soil profile in the dominant assessment area landscape feature observations within the top 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for regiona
	indicators. 4a. □A □B □C □D □D □E	Sandy soil Loamy or clayey soils exhibiting redoximorphic features (concentrations, depletions, or rhizospheres) Loamy or clayey soils not exhibiting redoximorphic features Loamy or clayey gleyed soil Histosol or histic epipedon
	4b. ⊠A □B	Soil ribbon < 1 inch Soil ribbon ≥ 1 inch
	4c. ⊠A □B	No peat or muck presence A peat or muck presence
5.	Discharge	into Wetland – opportunity metric
	of sub-surf Surf S	ox in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). Examples ace discharges include presence of nearby septic tank, underground storage tank (UST), etc.
	□В □	A Little or no evidence of pollutants or discharges entering the assessment area Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area
	□c □	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation, odor)
6.	Land Use	- opportunity metric (skip for non-riparian wetlands)
	to assessm and within	hat apply (at least one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources draining tent area within entire upstream watershed (WS), within 5 miles <u>and</u> within the watershed draining to the assessment area (5M) miles and within the watershed draining to the assessment area (2M). M 2M
	□A]A
	□D □ ⊠E □	D D ≥ 20% coverage of agricultural land (regularly plowed land) E ⊠E ≥ 20% coverage of maintained grass/herb F ⊠F ≥ 20% coverage of clear-cut land
		Little or no opportunity to improve water quality. Lack of opportunity may result from little or no disturbance in the watershed <u>or</u> hydrologic alterations that prevent drainage <u>and/or</u> overbank flow from affecting the assessment area.
7.	Wetland A	cting as Vegetated Buffer – assessment area/wetland complex condition metric (skip for non-riparian wetlands)
	□Y€	sessment area within 50 feet of a tributary or other open water? s ⊠No If Yes, continue to 7b. If No, skip to Metric 8. and buffer need only be present on one side of the water body. Make buffer judgment based on the average width of wetland
	7b. How	rd a note if a portion of the buffer has been removed or disturbed. much of the first 50 feet from the bank is wetland? (Wetland buffer need only be present on one side of the .water body. Make r judgment based on the average width of wetland. Record a note if a portion of the buffer has been removed or disturbed.)
	□A □B □C	≥ 50 feet From 30 to < 50 feet From 15 to < 30 feet
	□D □E	From 5 to < 15 feet < 5 feet <u>or</u> buffer bypassed by ditches
	7c. Tribu	tary width. If the tributary is anastomosed, combine widths of channels/braids for a total width.
		l5-feet wide
	☐Y∈ 7e. Is str	s
	□Sh	eltered – adjac ['] ent open water with width < 2500 feet <u>and</u> no regular boat traffic. posed – adjacent open water with width ≥ 2500 feet <u>or</u> regular boat traffic.
8.		lidth at the Assessment Area – wetland type/wetland complex condition metric (evaluate WT for all marshes and Woody Wetland only; evaluate WC for Bottomland Hardwood Forest, Headwater Forest, and Riverine Swamp Forest
	the wetland	ox in each column for riverine wetlands only. Select the average width for the wetland type at the assessment area (WT) and complex at the assessment area (WC). See User Manual for WT and WC boundaries. /C
]A ≥ 100 feet
]B From 80 to < 100 feet]C From 50 to < 80 feet
	⊠D ∑	ID From 40 to < 50 feet
	□E [E From 30 to < 40 feet
]F From 15 to < 30 feet]G From 5 to < 15 feet
		7H < 5 feet

9.	Inundation Duration – assessment area condition metric (skip for non-riparian wetlands)
	Answer for assessment area dominant landform. Answer for assessment area dominant landform. Evidence of short-duration inundation (< 7 consecutive days) Evidence of saturation, without evidence of inundation Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)
10.	Indicators of Deposition – assessment area condition metric (skip for non-riparian wetlands and all marshes)
	Consider recent deposition only (no plant growth since deposition). □ A Sediment deposition is not excessive, but at approximately natural levels. □ B Sediment deposition is excessive, but not overwhelming the wetland. □ C Sediment deposition is excessive and is overwhelming the wetland.
11.	Wetland Size – wetland type/wetland complex condition metric
	Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column. WT WC FW (if applicable) A A A ≥ 500 acres B B B From 100 to < 500 acres C C C From 50 to < 100 acres D D D From 25 to < 50 acres E E From 10 to < 25 acres F F F From 5 to < 10 acres G G G From 1 to < 5 acres H A H H From 0.5 to < 1 acre I I I From 0.1 to < 0.5 acre J J J J From 0.01 to < 0.1 acre K K K K K K K C N.01 acre or assessment area is clear-cut
12.	Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)
	□A Pocosin is the full extent (≥ 90%) of its natural landscape size. □B Pocosin type is < 90% of the full extent of its natural landscape size.
12	Connectivity to Other Natural Areas – landscape condition metric
	13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This metric evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly maintained utility line corridors the width of a four-lane road or wider, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Well Loosely A A ≥ 500 acres B B From 100 to < 500 acres C From 50 to < 100 acres D D From 10 to < 50 acres E = E < 10 acres F Wetland type has a poor or no connection to other natural habitats 13b. Evaluate for marshes only.
	☐Yes ☐No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.
14.	Edge Effect – wetland type condition metric (skip for all marshes and Estuarine Woody Wetland) May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors, and clear-cuts. Consider the eight main points of the compass. Artificial edge occurs within 150 feet in how many directions? If the assessment area is clear cut, select option "C." □ A 0 □ B 1 to 4 □ C 5 to 8
15.	Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)
	 □A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area. □B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata. □C Vegetation severely altered from reference in composition, or expected species are unnaturally absent (planted stands of non-characteristic species or at least one stratum inappropriately composed of a single species), or exotic species are dominant in at least one stratum.
16.	Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)
	 □A Vegetation diversity is high and is composed primarily of native species (< 10% cover of exotics). □B Vegetation diversity is low or has > 10% to 50% cover of exotics. □C Vegetation is dominated by exotic species (> 50 % cover of exotics).

17.	_	/e Structure -	- assessment area/wetland type condition metric esent?	
	⊠Y	∕es □No	If Yes, continue to 17b. If No, skip to Metric 18.	
	17b. Eva □ <i>A</i> □E	A ≥ 25% c	nt coverage of assessment area vegetation for all marshes only . Skip to 17c for coverage of vegetation coverage of vegetation	non-marsh wetlands.
	stru	ucture in airsp	n each column for each stratum. Evaluate this portion of the metric for non-space above the assessment area (AA) and the wetland type (WT) separately.	marsh wetlands. Consider
	Canopy □□ □□	A ⊠A B □B C □C	Canopy closed, or nearly closed, with natural gaps associated with natural processe. Canopy present, but opened more than natural gaps Canopy sparse or absent	S
	Mid-Story	A □A B ⊠B C □C	Dense mid-story/sapling layer Moderate density mid-story/sapling layer Mid-story/sapling layer sparse or absent	
	Shrub □ □	A □A B □B C ⊠C	Dense shrub layer Moderate density shrub layer Shrub layer sparse or absent	
	H B B B B B B B B B B B B B B B B B B B	A □A B □B C ⊠C	Dense herb layer Moderate density herb layer Herb layer sparse or absent	
18.	Snags -	wetland type	e condition metric (skip for all marshes)	
	⊠В	Not A	(more than one) are visible (> 12 inches DBH, or large relative to species present and I	andscape stability).
19.			ibution – wetland type condition metric (skip for all marshes)	- /- 40 in ab DDLI)
		present.	anopy trees have stems > 6 inches in diameter at breast height (DBH); many large trees	3 (> 12 inches DBH) are
			anopy trees have stems between 6 and 12 inches DBH, few are > 12 inch DBH. anopy trees are < 6 inches DBH or no trees.	
20.	_	=	- wetland type condition metric (skip for all marshes)	
	$\square A$		ebris and man-placed natural debris. more than one) are visible (> 12 inches in diameter, or large relative to species present :	and landscape stability).
21.	Vegetatio	on/Open Wate	ter Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal	Freshwater Marsh only)
			best describes the amount of interspersion between vegetation and open water in the ed areas, while solid white areas indicate open water.	growing season. Patterned
	0			
22.			vity – assessment area condition metric (evaluate for riparian wetlands and Salt/E	= :
	man-mad ⊠A □B □C	e berms, beav Overbank <u>and</u> Overbank flow Overland flow	that may severely alter hydrologic connectivity include intensive ditching, fill, sedimentate aver dams, and stream incision. Documentation required if evaluated as B, C, or D. and overland flow are not severely altered in the assessment area. It is and overland flow are severely altered in the assessment area.	ion, channelization, diversion,

wetland created by road construction and culvert downstream. Canopy trees dead.

Wetland Site Name _		Date of Assessment April 2			
Wetland Type _	Headwater Forest A	ssessor Name/Organization <u>KMT,</u>	BGB/HDR		
Notes on Field Assess	ment Form (Y/N)		YES		
Presence of regulatory	considerations (Y/N)		YES		
Wetland is intensively	managed (Y/N)		NO		
Assessment area is located within 50 feet of a natural tributary or other open water (Y/N)					
assessment area is substantially altered by beaver (Y/N)					
Assessment area expe	riences overbank flooding during norma	al rainfall conditions (Y/N)	NO		
Assessment area is on	a coastal island (Y/N)		NO		
Sub-function Rating S	ummarv				
Function	Sub-function	Metrics	Rating		
Hydrology	Surface Storage and Retention	Condition	LOW		
	Sub-surface Storage and	Condition	1.00		
Motor Quality	Retention Rethogon Change	Condition Condition	LOW		
Water Quality	Pathogen Change		LOW LOW		
		Condition/Opportunity	NO		
	Particulate Change	Opportunity Presence (Y/N) Condition	LOW		
	Faiticulate Change	Condition/Opportunity	NA		
		Opportunity Presence (Y/N)	NA NA		
	Soluble Change	Condition	MEDIUM		
	Colubic Change	Condition/Opportunity	MEDIUM		
		Opportunity Presence (Y/N)	NO		
	Physical Change	Condition	LOW		
	, c.ca. c.agc	Condition/Opportunity	LOW		
		Opportunity Presence (Y/N)	YES		
	Pollution Change	Condition	NA		
	Ü	Condition/Opportunity	NA		
		Opportunity Presence (Y/N)	NA		
Habitat	Physical Structure	Condition	LOW		
	Landscape Patch Structure	Condition	LOW		
	Vegetation Composition	Condition	MEDIUM		
unction Rating Sumn	narv				
Function	···· <i>j</i>	Metrics	Rating		
Hydrology		Condition	LOW		
Water Quality		Condition	LOW		
··- ·		Condition/Opportunity	LOW		
		Opportunity Presence (Y/N)	YES		
Habitat		Condition	LOW		

NC WAM FIELD ASSESSMENT RESULTS Accompanies User Manual Version 5.0

110	SACE AID 7	#	Accompanies	NCDWP#	1
108			CLT Aimport Companies	NCDWR#	Contambox 2040
١.		oject Nam		Date of Evaluation	September 2019
ΙΑ	pplicant/Ov			Wetland Site Name	PW3-1 - Wetland 15
		etland Typ		Assessor Name/Organization	KMT, BGB/HDR
		Ecoregio		Nearest Named Water Body	Coffey Creek
	F	River Basi	n Catawba	USGS 8-Digit Catalogue Unit	03050103
		Count	y Mecklenburg	NCDWR Region	Mooresville
L	☐ Ye			Latitude/Longitude (deci-degrees)	35.203001, -80.946993
_		-4		4 h 24h 4 h	
Is Re	ease circle cent past (f	and/or m for instance drological face and s ks, underg ns of vege bitat/plant sment are Considera adromous lerally pro DWR ripa uts a Prim	e, within 10 years). Noteworthy stressors is modifications (examples: ditches, dams, be sub-surface discharges into the wetland (examples into the wetland (examples) attains stress (examples: vegetation mortal community alteration (examples: mowing, ea intensively managed? Yes attions - Were regulatory considerations evaluations.	tressors is apparent. Consider departure finclude, but are not limited to the following. eaver dams, dikes, berms, ponds, etc.) amples: discharges containing obvious polluetc.) lity, insect damage, disease, storm damage clear-cutting, exotics, etc.) No aluated? Yes No If Yes, check all the	utants, presence of nearby septic , salt intrusion, etc.)
	Des Abu	c. Division its a strea signated N its a 303(d	of Coastal Management Area of Environment method of SA or sull CNHP reference community d)-listed stream or a tributary to a 303(d)-listed stream.	upplemental classifications of HQW, ORW, of ted stream	or Trout
	Blad Bro Tida	ckwater wnwater al (if tidal,	check one of the following boxes) check one coastal island?	unar □ Wind □ Both	
			ea's surface water storage capacity or du area experience overbank flooding duri	uration substantially altered by beaver? ing normal rainfall conditions? Yes	☐ Yes No
1	Ground 9	Surface C	ondition/Vegetation Condition – assessi	mont area condition metric	
1.	Check a lassessment area base	box in ea ent area.	ch column. Consider alteration to the grou	und surface (GS) in the assessment area ar (see User Manual). If a reference is not app	
	$\boxtimes A$	⊠A □B	sedimentation, fire-plow lanes, skidder tra	essment area (ground surface alteration exa icks, bedding, fill, soil compaction, obvious ce, herbicides, salt intrusion [where appropr on)	pollutants) (vegetation structure
2.	Surface a	and Sub-	Surface Storage Capacity and Duration -	- assessment area condition metric	
	Consider deep is ex Surf	both incre cpected to Sub ⊠A	ease and decrease in hydrology. A ditch set affect both surface and sub-surface water. Water storage capacity and duration are no	acity and duration (Surf) and sub-surface sto 1 foot deep is considered to affect surface . Consider tidal flooding regime, if applicabl of altered. red, but not substantially (typically, not suffice	water only, while a ditch > 1 foot le.
2	□с	□C	Water storage capacity or duration are sub- (examples: draining, flooding, soil compacti	stantially altered (typically, alteration sufficiention, filling, excessive sedimentation, underg	ent to result in vegetation change) round utility lines).
3.		_		type condition metric (skip for all marshe	
			ch column . Select the appropriate storage	e for the assessment area (AA) and the wetl	and type (WT).
	AA				
	□c ⊠d	□B □C ⊠D	Majority of wetland with depressions able to Majority of wetland with depressions able to Majority of wetland with depressions able to Depressions able to pond water < 3 inches	o pond water 6 inches to 1 foot deep o pond water 3 to 6 inches deep deep	
	□В	Evidence	that maximum depth of inundation is greate that maximum depth of inundation is betwe that maximum depth of inundation is less th	een 1 and 2 feet	

	Make soil o	x from each of the three soil property groups below. Dig soil profile in the dominant assessment area landscape feature. Oservations within the top 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for regional
	indicators. 4a. □A □B □C □D □D	Sandy soil Loamy or clayey soils exhibiting redoximorphic features (concentrations, depletions, or rhizospheres) Loamy or clayey soils not exhibiting redoximorphic features Loamy or clayey gleyed soil Histosol or histic epipedon
	4b. ⊠A □B	Soil ribbon < 1 inch
	4c. ⊠A □B	No peat or muck presence A peat or muck presence
5.	Discharge i	nto Wetland – opportunity metric
	of sub-surfa Surf Su	
	⊠A ⊠ □B □	
	□c □	
6.	Land Use -	opportunity metric (skip for non-riparian wetlands)
	to assessme	at apply (at least one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources draining and area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), miles and within the watershed draining to the assessment area (2M). 1 2M
	□A □ □B □ □C □	B ☐B Confined animal operations (or other local, concentrated source of pollutants
	□D □	D □D ≥ 20% coverage of agricultural land (regularly plowed land) E □E ≥ 20% coverage of maintained grass/herb
	□F □ ⊠G ⊠	
7.	Wetland Ac	ting as Vegetated Buffer – assessment area/wetland complex condition metric (skip for non-riparian wetlands)
	⊠Yes	essment area within 50 feet of a tributary or other open water? □No If Yes, continue to 7b. If No, skip to Metric 8. nd buffer need only be present on one side of the water body. Make buffer judgment based on the average width of wetland.
	Recor 7b. How n	d a note if a portion of the buffer has been removed or disturbed. nuch of the first 50 feet from the bank is wetland? (Wetland buffer need only be present on one side of the .water body. Make
	□A □B	judgment based on the average width of wetland. Record a note if a portion of the buffer has been removed or disturbed.) ≥ 50 feet From 30 to < 50 feet
	□c ⊠d □e	From 15 to < 30 feet From 5 to < 15 feet < 5 feet or buffer bypassed by ditches
	<u></u> ≤ 1	ary width. If the tributary is anastomosed, combine widths of channels/braids for a total width. 5-feet wide > 15-feet wide Other open water (no tributary present)
	☐Yes 7e. Is stre	am or other open water sheltered or exposed?
•	□Exp	eltered – adjacent open water with width < 2500 feet <u>and</u> no regular boat traffic. sosed – adjacent open water with width ≥ 2500 feet <u>or</u> regular boat traffic.
8.		dth at the Assessment Area – wetland type/wetland complex condition metric (evaluate WT for all marshes and Voody Wetland only; evaluate WC for Bottomland Hardwood Forest, Headwater Forest, and Riverine Swamp Forest
		x in each column for riverine wetlands only. Select the average width for the wetland type at the assessment area (WT) and complex at the assessment area (WC). See User Manual for WT and WC boundaries.
	□A □	
	□F □	F From 15 to < 30 feet
	⊠G ⊠	

4. Soil Texture/Structure – assessment area condition metric (skip for all marshes)

9.	Inundation Duration – assessment area condition metric (skip for non-riparian wetlands)
	Answer for assessment area dominant landform. Answer for assessment area dominant landform. Evidence of short-duration inundation (< 7 consecutive days) Evidence of saturation, without evidence of inundation Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)
40	Indicators of Deposition – assessment area condition metric (skip for non-riparian wetlands and all marshes)
10.	Consider recent deposition only (no plant growth since deposition). A Sediment deposition is not excessive, but at approximately natural levels. B Sediment deposition is excessive, but not overwhelming the wetland. C Sediment deposition is excessive and is overwhelming the wetland.
11.	Wetland Size – wetland type/wetland complex condition metric
	Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column. WT WC FW (if applicable) $A A A A S S S S S S S S S S S S S S S S$
12.	Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)
	□A Pocosin is the full extent (≥ 90%) of its natural landscape size.
	B Pocosin type is < 90% of the full extent of its natural landscape size. Connectivity to Other Natural Areas – landscape condition metric
	13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This metric evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly maintained utility line corridors the width of a four-lane road or wider, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Well Loosely A A ≥ 500 acres B B From 100 to < 500 acres C C From 50 to < 100 acres D D From 10 to < 50 acres E E < 10 acres F Wetland type has a poor or no connection to other natural habitats 13b. Evaluate for marshes only.
	Yes No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.
14.	Edge Effect – wetland type condition metric (skip for all marshes and Estuarine Woody Wetland) May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors, and clear-cuts. Consider the eight main points of the compass. Artificial edge occurs within 150 feet in how many directions? If the assessment area is clear cut, select option "C." □A 0 □B 1 to 4 □C 5 to 8
15.	Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)
	 ✓A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area. ✓B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata. ✓C Vegetation severely altered from reference in composition, or expected species are unnaturally absent (planted stands of non-characteristic species or at least one stratum inappropriately composed of a single species), or exotic species are dominant in at least one stratum.
16.	Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)
	 ✓A Vegetation diversity is high and is composed primarily of native species (< 10% cover of exotics). ✓B Vegetation diversity is low or has > 10% to 50% cover of exotics. ✓C Vegetation is dominated by exotic species (> 50 % cover of exotics).

17.	Vege	tative St	ructure –	assessment area/wetland type condition metric	
	17a.		ation pres		
		⊠Yes	∐No	If Yes, continue to 17b. If No, skip to Metric 18.	
	17b.	Evaluat □A □B	≥ 25% c	coverage of assessment area vegetation for all marshes only . Skip to 17c for non-marsh wetlands. overage of vegetation overage of vegetation	
	17c.	structur		each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider above the assessment area (AA) and the wetland type (WT) separately.	de
		AA ⊠A □B □C	⊠A □B □C	Canopy closed, or nearly closed, with natural gaps associated with natural processes Canopy present, but opened more than natural gaps Canopy sparse or absent	
	Mid-Story	□A ⊠B □C	□A ⊠B □C	Dense mid-story/sapling layer Moderate density mid-story/sapling layer Mid-story/sapling layer sparse or absent	
	Shrub	B B ⊠C	□A □B ⊠C	Dense shrub layer Moderate density shrub layer Shrub layer sparse or absent	
	Herb	a □A i □B i ⊠C	□A □B ⊠C	Dense herb layer Moderate density herb layer Herb layer sparse or absent	
18.	Snag	ıs – wetla	and type	condition metric (skip for all marshes)	
	□A ⊠B		e snags (r	nore than one) are visible (> 12 inches DBH, or large relative to species present and landscape stability).	
19.	Diam	neter Clas	ss Distrib	ution – wetland type condition metric (skip for all marshes)	
	□A			opy trees have stems > 6 inches in diameter at breast height (DBH); many large trees (> 12 inches DBH) are	
	□в ⊠с		rity of car	opy trees have stems between 6 and 12 inches DBH, few are > 12 inch DBH. opy trees are < 6 inches DBH or no trees.	
20.	Larg	e Woody	Debris -	wetland type condition metric (skip for all marshes)	
	Includ □A ⊠B		e logs (mo	ris and man-placed natural debris. re than one) are visible (> 12 inches in diameter, or large relative to species present and landscape stability).	
21.	Vege	tation/O	pen Wate	Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)	i
				st describes the amount of interspersion between vegetation and open water in the growing season. Pattern areas, while solid white areas indicate open water. □B □C □D	nec
		0	S.		
22.	-	_		y – assessment area condition metric (evaluate for riparian wetlands and Salt/Brackish Marsh only)	
				at may severely alter hydrologic connectivity include intensive ditching, fill, sedimentation, channelization, diversi	ion
	man- ⊠A			er dams, and stream incision. Documentation required if evaluated as B, C, or D. overland flow are not severely altered in the assessment area.	
	□в	Over	bank flow	is severely altered in the assessment area.	
				s severely altered in the assessment area. and overland flow are severely altered in the assessment area.	

Wetland Site Name PV		Date of Assessment Sep	
vvetland Type Bo	ottomland Hardwood Forest A	ssessor Name/Organization KM	I, BGB/HDR
Notes on Field Assessme	ent Form (Y/N)		NO
Presence of regulatory c	onsiderations (Y/N)		YES
Wetland is intensively ma	anaged (Y/N)		NO
Assessment area is loca	ted within 50 feet of a natural tributary	or other open water (Y/N)	YES
Assessment area is subs	stantially altered by beaver (Y/N)		NO
Assessment area experie	ences overbank flooding during norma	al rainfall conditions (Y/N)	NO
Assessment area is on a	coastal island (Y/N)		NO
Sub-function Rating Sur	nmary		
Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention Sub-surface Storage and	Condition	HIGH
	Retention	Condition	MEDIUM
Water Quality	Pathogen Change	Condition	HIGH
		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	NO
	Particulate Change	Condition	HIGH
		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	NO
	Soluble Change	Condition	HIGH
		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	NO
	Physical Change	Condition	MEDIUM
		Condition/Opportunity	MEDIUM
		Opportunity Presence (Y/N)	NO
	Pollution Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence (Y/N)	NA
Habitat	Physical Structure	Condition	LOW
	Landscape Patch Structure	Condition	MEDIUM
	Vegetation Composition	Condition	HIGH
unction Rating Summa	rv		
Function	-	Metrics	Rating
Hydrology		Condition	HIGH
Water Quality		Condition	HIGH
•		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	NO
Habitat		Condition	MEDIUM

NC WAM FIELD ASSESSMENT RESULTS Accompanies User Manual Version 5.0

110	SACE AID 7	#	Accompanies	NCDWP#	1
108			CLT Aimport Companies	NCDWR#	Optobox 2010
١.		oject Nam		Date of Evaluation	October 2019
ΙΑ	pplicant/Ov			Wetland Site Name	PW4-1 - Wetland 22
		etland Typ		Assessor Name/Organization	KMT, BGB/HDR
		Ecoregio		Nearest Named Water Body	Coffey Creek
	F	River Basi	n Catawba	USGS 8-Digit Catalogue Unit	03050103
		Count	y Mecklenburg	NCDWR Region	Mooresville
L	☐ Ye			Latitude/Longitude (deci-degrees)	35.192488, -80.943445
_		-4		4 h 241-2 - 41	
Is Re	ease circle cent past (f	and/or m for instance drological face and s ks, underg ns of vege bitat/plant sment are Considera adromous lerally pro DWR ripa uts a Prim	e, within 10 years). Noteworthy stressors is modifications (examples: ditches, dams, be sub-surface discharges into the wetland (examples into the wetland (examples) tation stress (examples: vegetation mortal community alteration (examples: mowing, ea intensively managed? Yes ations - Were regulatory considerations evaluations.	tressors is apparent. Consider departure f nclude, but are not limited to the following. eaver dams, dikes, berms, ponds, etc.) amples: discharges containing obvious polluetc.) lity, insect damage, disease, storm damage clear-cutting, exotics, etc.) No aluated? Yes No If Yes, check all the	utants, presence of nearby septic , salt intrusion, etc.)
	Des Abu	c. Division its a strea signated N its a 303(d	of Coastal Management Area of Environment method of SA or sull CNHP reference community d)-listed stream or a tributary to a 303(d)-listed stream.	upplemental classifications of HQW, ORW, of ted stream	or Trout
	Blad Bro Tida	ckwater wnwater al (if tidal,	check one of the following boxes) check one coastal island?	unar ☐ Wind ☐ Both	
			ea's surface water storage capacity or du area experience overbank flooding duri	uration substantially altered by beaver? ing normal rainfall conditions?	☐ Yes No
1.	Check a lassessment area base	box in ea ent area.		und surface (GS) in the assessment area ar (see User Manual). If a reference is not app	
	$\boxtimes A$	⊠A □B	sedimentation, fire-plow lanes, skidder tra	essment area (ground surface alteration exacks, bedding, fill, soil compaction, obvious ce, herbicides, salt intrusion [where appropron)	s pollutants) (vegetation structure
2.	Surface a	and Sub-	Surface Storage Capacity and Duration -	- assessment area condition metric	
	Consider deep is ex Surf	both incre cpected to Sub ⊠A	ease and decrease in hydrology. A ditch set affect both surface and sub-surface water. Water storage capacity and duration are no	acity and duration (Surf) and sub-surface sto 1 foot deep is considered to affect surface . Consider tidal flooding regime, if applicabl of altered. red, but not substantially (typically, not suffice	water only, while a ditch > 1 foot le.
2	□с	□c	Water storage capacity or duration are sub- (examples: draining, flooding, soil compacti	stantially altered (typically, alteration sufficiention, filling, excessive sedimentation, underg	ent to result in vegetation change) round utility lines).
3.		_		type condition metric (skip for all marshe	·
			ch column . Select the appropriate storage	e for the assessment area (AA) and the wetl	and type (WT).
	AA				
	□c ⊠d	□B □C ⊠D	Majority of wetland with depressions able to Majority of wetland with depressions able to Majority of wetland with depressions able to Depressions able to pond water < 3 inches	p pond water 6 inches to 1 foot deep p pond water 3 to 6 inches deep deep	
	□В	Evidence	that maximum depth of inundation is greate that maximum depth of inundation is betwe that maximum depth of inundation is less th	een 1 and 2 feet	

	Make soil o	x from each of the three soil property groups below. Dig soil profile in the dominant assessment area landscape feature. Oservations within the top 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for regional
	indicators. 4a. □A □B □C □D □D	Sandy soil Loamy or clayey soils exhibiting redoximorphic features (concentrations, depletions, or rhizospheres) Loamy or clayey soils not exhibiting redoximorphic features Loamy or clayey gleyed soil Histosol or histic epipedon
	4b. ⊠A □B	Soil ribbon < 1 inch
	4c. ⊠A □B	No peat or muck presence A peat or muck presence
5.	Discharge i	nto Wetland – opportunity metric
	of sub-surfa Surf Su	
	⊠A ⊠ □B □	
	□c □	
6.	Land Use -	opportunity metric (skip for non-riparian wetlands)
	to assessme	at apply (at least one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources draining and area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), miles and within the watershed draining to the assessment area (2M). 1 2M
	□A □ □B □ □C □	B ☐B Confined animal operations (or other local, concentrated source of pollutants
	□D □	D □D ≥ 20% coverage of agricultural land (regularly plowed land) E □E ≥ 20% coverage of maintained grass/herb
	□F □ ⊠G ⊠	
7.	Wetland Ac	ting as Vegetated Buffer – assessment area/wetland complex condition metric (skip for non-riparian wetlands)
	⊠Yes	essment area within 50 feet of a tributary or other open water? □No If Yes, continue to 7b. If No, skip to Metric 8. nd buffer need only be present on one side of the water body. Make buffer judgment based on the average width of wetland.
	Recor 7b. How n	d a note if a portion of the buffer has been removed or disturbed. nuch of the first 50 feet from the bank is wetland? (Wetland buffer need only be present on one side of the .water body. Make
	□A □B	judgment based on the average width of wetland. Record a note if a portion of the buffer has been removed or disturbed.) ≥ 50 feet From 30 to < 50 feet
	□c ⊠d □e	From 15 to < 30 feet From 5 to < 15 feet < 5 feet or buffer bypassed by ditches
	<u></u> ≤ 1	ary width. If the tributary is anastomosed, combine widths of channels/braids for a total width. 5-feet wide > 15-feet wide Other open water (no tributary present)
	☐Yes 7e. Is stre	am or other open water sheltered or exposed?
•	□Exp	eltered – adjacent open water with width < 2500 feet <u>and</u> no regular boat traffic. sosed – adjacent open water with width ≥ 2500 feet <u>or</u> regular boat traffic.
8.		dth at the Assessment Area – wetland type/wetland complex condition metric (evaluate WT for all marshes and Voody Wetland only; evaluate WC for Bottomland Hardwood Forest, Headwater Forest, and Riverine Swamp Forest
		x in each column for riverine wetlands only. Select the average width for the wetland type at the assessment area (WT) and complex at the assessment area (WC). See User Manual for WT and WC boundaries.
	□A □	
	□F □	F From 15 to < 30 feet
	⊠G ⊠	

4. Soil Texture/Structure – assessment area condition metric (skip for all marshes)

9.	Inundation Duration – assessment area condition metric (skip for non-riparian wetlands)
	Answer for assessment area dominant landform. Answer for assessment area dominant landform. By Evidence of short-duration inundation (< 7 consecutive days) By Evidence of saturation, without evidence of inundation Cycle Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)
10.	Indicators of Deposition – assessment area condition metric (skip for non-riparian wetlands and all marshes)
	Consider recent deposition only (no plant growth since deposition). A Sediment deposition is not excessive, but at approximately natural levels. B Sediment deposition is excessive, but not overwhelming the wetland. C Sediment deposition is excessive and is overwhelming the wetland.
11.	Wetland Size – wetland type/wetland complex condition metric
	Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column. WT WC FW (if applicable) A A A ≥ 500 acres B B B From 100 to < 500 acres C C From 50 to < 100 acres D D D From 25 to < 50 acres F F F From 10 to < 25 acres F F F From 5 to < 10 acres G G G G From 1 to < 5 acres H H H From 0.5 to < 1 acre X I X I X I X I X I X I X I X I X I X
12	Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)
	□ A Pocosin is the full extent (≥ 90%) of its natural landscape size. □ B Pocosin type is < 90% of the full extent of its natural landscape size.
13.	Connectivity to Other Natural Areas – landscape condition metric
	13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This metric evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly maintained utility line corridors the width of a four-lane road or wider, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide.
	Well Loosely □ A □ A ≥ 500 acres □ B □ B From 100 to < 500 acres □ C □ C From 50 to < 100 acres □ D □ D From 10 to < 50 acres □ E □ E < 10 acres □ F □ F Wetland type has a poor or no connection to other natural habitats
	13b. Evaluate for marshes only.
	☐Yes ☐No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.
14.	Edge Effect – wetland type condition metric (skip for all marshes and Estuarine Woody Wetland) May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors, and clear-cuts. Consider the eight main points of the compass. Artificial edge occurs within 150 feet in how many directions? If the assessment area is clear cut select option "C." □ A 0 □ B 1 to 4 □ C 5 to 8
15.	Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)
	 ✓A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area. ✓B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing It also includes communities with exotics present, but not dominant, over a large portion of the expected strata. ✓C Vegetation severely altered from reference in composition, or expected species are unnaturally absent (planted stands of non-characteristic species or at least one stratum inappropriately composed of a single species), or exotic species are dominant in a least one stratum.
16.	Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)
	 ✓A Vegetation diversity is high and is composed primarily of native species (< 10% cover of exotics). ✓B Vegetation diversity is low or has > 10% to 50% cover of exotics. ✓C Vegetation is dominated by exotic species (> 50 % cover of exotics).

17.	Vege	tative St	ructure –	assessment area/wetland type condition metric	
	17a.		ation pres		
		⊠Yes	∐No	If Yes, continue to 17b. If No, skip to Metric 18.	
	17b.	Evaluat □A □B	≥ 25% c	coverage of assessment area vegetation for all marshes only . Skip to 17c for non-marsh wetlands. overage of vegetation overage of vegetation	
	17c.	structur		each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider above the assessment area (AA) and the wetland type (WT) separately.	de
		AA ⊠A □B □C	⊠A □B □C	Canopy closed, or nearly closed, with natural gaps associated with natural processes Canopy present, but opened more than natural gaps Canopy sparse or absent	
	Mid-Story	□A ⊠B □C	□A ⊠B □C	Dense mid-story/sapling layer Moderate density mid-story/sapling layer Mid-story/sapling layer sparse or absent	
	Shrub	B B ⊠C	□A □B ⊠C	Dense shrub layer Moderate density shrub layer Shrub layer sparse or absent	
	Herb	a □A i □B i ⊠C	□A □B ⊠C	Dense herb layer Moderate density herb layer Herb layer sparse or absent	
18.	Snag	ıs – wetla	and type	condition metric (skip for all marshes)	
	□A ⊠B		e snags (r	nore than one) are visible (> 12 inches DBH, or large relative to species present and landscape stability).	
19.	Diam	neter Clas	ss Distrib	ution – wetland type condition metric (skip for all marshes)	
	□A			opy trees have stems > 6 inches in diameter at breast height (DBH); many large trees (> 12 inches DBH) are	
	□в ⊠с		rity of car	opy trees have stems between 6 and 12 inches DBH, few are > 12 inch DBH. opy trees are < 6 inches DBH or no trees.	
20.	Larg	e Woody	Debris -	wetland type condition metric (skip for all marshes)	
	Includ □A ⊠B		e logs (mo	ris and man-placed natural debris. re than one) are visible (> 12 inches in diameter, or large relative to species present and landscape stability).	
21.	Vege	tation/O	pen Wate	Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)	i
				st describes the amount of interspersion between vegetation and open water in the growing season. Pattern areas, while solid white areas indicate open water. □B □C □D	nec
		0	S.		
22.	-	_		y – assessment area condition metric (evaluate for riparian wetlands and Salt/Brackish Marsh only)	
				at may severely alter hydrologic connectivity include intensive ditching, fill, sedimentation, channelization, diversi	ion
	man- ⊠A			er dams, and stream incision. Documentation required if evaluated as B, C, or D. overland flow are not severely altered in the assessment area.	
	□в	Over	bank flow	is severely altered in the assessment area.	
				s severely altered in the assessment area. and overland flow are severely altered in the assessment area.	

Wetland Site Name P			ber 2019
Wetland Type B	ottomland Hardwood Forest As	sessor Name/Organization <u>KMT</u>	, BGB/HDR
Notes on Field Assessm	ent Form (Y/N)		NO
Presence of regulatory of	considerations (Y/N)		YES
Wetland is intensively m	anaged (Y/N)		NO
Assessment area is loca	ted within 50 feet of a natural tributary	or other open water (Y/N)	YES
Assessment area is sub	stantially altered by beaver (Y/N)		NO
Assessment area experi	ences overbank flooding during normal	rainfall conditions (Y/N)	NO
Assessment area is on a	a coastal island (Y/N)		NO
sub-function Rating Su	mmarv		
Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	HIGH
, 0,	Sub-surface Storage and		
	Retention	Condition	MEDIUM
Water Quality	Pathogen Change	Condition	HIGH
		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	NO NO
	Particulate Change	Condition	HIGH
		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	NO NO
	Soluble Change	Condition	HIGH
		Condition/Opportunity	HIGH
	5	Opportunity Presence (Y/N)	NO NO
	Physical Change	Condition	MEDIUM
		Condition/Opportunity	MEDIUM
	5 11 11 5 1	Opportunity Presence (Y/N)	NO
	Pollution Change	Condition	NA NA
		Condition/Opportunity	NA NA
	DI : 10:	Opportunity Presence (Y/N)	NA NA
Habitat	Physical Structure	Condition	LOW
	Landscape Patch Structure	Condition	LOW
	Vegetation Composition	Condition	HIGH
unction Rating Summa	nry		
Function		Metrics	Rating
Hydrology		Condition	HIGH
Water Quality		Condition	HIGH
		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	NO
Habitat		Condition	LOW

NC WAM FIELD ASSESSMENT RESULTS Accompanies User Manual Version 5.0

USACE AID #	7.000	NCDWR#	
Project Name	CLT Airport Expansion	Date of Evaluation	October 2019
Applicant/Owner Name	CLT	Wetland Site Name	PW5-1 - Wetland 24
Wetland Type	Bottomland Hardwood Forest	Assessor Name/Organization	KMT, BGB/HDR
Level III Ecoregion		Nearest Named Water Body	Coffey Creek
River Basin		USGS 8-Digit Catalogue Unit	03050103
County		NCDWR Region	Mooresville
☐ Yes 🛛 No	Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees)	35.190762, -80.941877
Please circle and/or mal recent past (for instance,	within 10 years). Noteworthy stressors is odifications (examples: ditches, dams, beb-surface discharges into the wetland (expound storage tanks (USTs), hog lagoons, ation stress (examples: vegetation mortal ommunity alteration (examples: mowing, intensively managed? Yes ons - Were regulatory considerations even to the constant of the constant o	tressors is apparent. Consider departure finclude, but are not limited to the following. eaver dams, dikes, berms, ponds, etc.) amples: discharges containing obvious polluetc.) lity, insect damage, disease, storm damage, clear-cutting, exotics, etc.) No aluated? Yes No If Yes, check all that atened species	stants, presence of nearby septic salt intrusion, etc.)
Abuts a 303(d)	with a NCDWQ classification of SA or su NHP reference community -listed stream or a tributary to a 303(d)-lis ream is associated with the wetland, if		or Irout
☐ Blackwater ☐ Brownwater ☐ Tidal (if tidal, cl	neck one of the following boxes)	unar ☐ Wind ☐ Both No	
		uration substantially altered by beaver? ing normal rainfall conditions? Yes	☐ Yes
Check a box in each	ompare to reference wetland if applicable	ment area condition metric und surface (GS) in the assessment area an (see User Manual). If a reference is not app	
⊠A ⊠A No □B □B So se al	edimentation, fire-plow lanes, skidder tra	essment area (ground surface alteration exa cks, bedding, fill, soil compaction, obvious ce, herbicides, salt intrusion [where appropri on)	pollutants) (vegetation structure
Check a box in each Consider both increa deep is expected to a Surf Sub	se and decrease in hydrology. A ditch ≤ ffect both surface and sub-surface water	acity and duration (Surf) and sub-surface sto 1 foot deep is considered to affect surface . Consider tidal flooding regime, if applicabl	water only, while a ditch > 1 foot
□B □B W	ater storage capacity or duration are sub	ot altered. red, but not substantially (typically, not suffic stantially altered (typically, alteration sufficie ion, filling, excessive sedimentation, underg	ent to result in vegetation change)
3. Water Storage/Surfa	ace Relief – assessment area/wetland t	ype condition metric (skip for all marshe	es)
	column . Select the appropriate storage	e for the assessment area (AA) and the wetl	and type (WT).
□B □B M □C □C M ☑D ☑D D	ajority of wetland with depressions able to ajority of wetland with depressions able to ajority of wetland with depressions able to epressions able to pond water < 3 inches	o pond water 6 inches to 1 foot deep o pond water 3 to 6 inches deep deep	
☐B Evidence the second control of the s	at maximum depth of inundation is greate at maximum depth of inundation is betwe at maximum depth of inundation is less t	een 1 and 2 feet	

	Make soil o	x from each of the three soil property groups below. Dig soil profile in the dominant assessment area landscape feature. Oservations within the top 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for regional
	indicators. 4a. □A □B □C □D □D	Sandy soil Loamy or clayey soils exhibiting redoximorphic features (concentrations, depletions, or rhizospheres) Loamy or clayey soils not exhibiting redoximorphic features Loamy or clayey gleyed soil Histosol or histic epipedon
	4b. ⊠A □B	Soil ribbon < 1 inch
	4c. ⊠A □B	No peat or muck presence A peat or muck presence
5.	Discharge i	nto Wetland – opportunity metric
	of sub-surfa Surf Su	
	⊠A ⊠ □B □	
	□c □	
6.	Land Use -	opportunity metric (skip for non-riparian wetlands)
	to assessme	at apply (at least one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources draining and area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), miles and within the watershed draining to the assessment area (2M). 1 2M
	□A □ □B □ □C □	B ☐B Confined animal operations (or other local, concentrated source of pollutants
	□D □	D □D ≥ 20% coverage of agricultural land (regularly plowed land) E □E ≥ 20% coverage of maintained grass/herb
	□F □ ⊠G ⊠	
7.	Wetland Ac	ting as Vegetated Buffer – assessment area/wetland complex condition metric (skip for non-riparian wetlands)
	⊠Yes	essment area within 50 feet of a tributary or other open water? □No If Yes, continue to 7b. If No, skip to Metric 8. nd buffer need only be present on one side of the water body. Make buffer judgment based on the average width of wetland.
	Recor 7b. How n	d a note if a portion of the buffer has been removed or disturbed. nuch of the first 50 feet from the bank is wetland? (Wetland buffer need only be present on one side of the .water body. Make
	□A □B	judgment based on the average width of wetland. Record a note if a portion of the buffer has been removed or disturbed.) ≥ 50 feet From 30 to < 50 feet
	□c ⊠d □e	From 15 to < 30 feet From 5 to < 15 feet < 5 feet or buffer bypassed by ditches
	<u></u> ≤ 1	ary width. If the tributary is anastomosed, combine widths of channels/braids for a total width. 5-feet wide > 15-feet wide Other open water (no tributary present)
	☐Yes 7e. Is stre	am or other open water sheltered or exposed?
•	□Exp	eltered – adjacent open water with width < 2500 feet <u>and</u> no regular boat traffic. sosed – adjacent open water with width ≥ 2500 feet <u>or</u> regular boat traffic.
8.		dth at the Assessment Area – wetland type/wetland complex condition metric (evaluate WT for all marshes and Voody Wetland only; evaluate WC for Bottomland Hardwood Forest, Headwater Forest, and Riverine Swamp Forest
		x in each column for riverine wetlands only. Select the average width for the wetland type at the assessment area (WT) and complex at the assessment area (WC). See User Manual for WT and WC boundaries.
	□A □	
	□F □	F From 15 to < 30 feet
	⊠G ⊠	

4. Soil Texture/Structure – assessment area condition metric (skip for all marshes)

9.	Inundation Duration – assessment area condition metric (skip for non-riparian wetlands)
	Answer for assessment area dominant landform. Answer for assessment area dominant landform. By Evidence of short-duration inundation (< 7 consecutive days) By Evidence of saturation, without evidence of inundation Cycle Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)
10.	Indicators of Deposition – assessment area condition metric (skip for non-riparian wetlands and all marshes)
	Consider recent deposition only (no plant growth since deposition). A Sediment deposition is not excessive, but at approximately natural levels. B Sediment deposition is excessive, but not overwhelming the wetland. C Sediment deposition is excessive and is overwhelming the wetland.
11.	Wetland Size – wetland type/wetland complex condition metric
	Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column. WT WC FW (if applicable) A A A ≥ 500 acres B B B From 100 to < 500 acres C C From 50 to < 100 acres D D D From 25 to < 50 acres F F F From 10 to < 25 acres F F F From 5 to < 10 acres G G G G From 1 to < 5 acres H H H From 0.5 to < 1 acre X I X I X I X I X I X I X I X I X I X
12	Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)
	□ A Pocosin is the full extent (≥ 90%) of its natural landscape size. □ B Pocosin type is < 90% of the full extent of its natural landscape size.
13.	Connectivity to Other Natural Areas – landscape condition metric
	13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This metric evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly maintained utility line corridors the width of a four-lane road or wider, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide.
	Well Loosely □ A □ A ≥ 500 acres □ B □ B From 100 to < 500 acres □ C □ C From 50 to < 100 acres □ D □ D From 10 to < 50 acres □ E □ E < 10 acres □ F □ F Wetland type has a poor or no connection to other natural habitats
	13b. Evaluate for marshes only.
	☐Yes ☐No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.
14.	Edge Effect – wetland type condition metric (skip for all marshes and Estuarine Woody Wetland) May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors, and clear-cuts. Consider the eight main points of the compass. Artificial edge occurs within 150 feet in how many directions? If the assessment area is clear cut select option "C." □ A 0 □ B 1 to 4 □ C 5 to 8
15.	Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)
	 ✓A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area. ✓B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing It also includes communities with exotics present, but not dominant, over a large portion of the expected strata. ✓C Vegetation severely altered from reference in composition, or expected species are unnaturally absent (planted stands of non-characteristic species or at least one stratum inappropriately composed of a single species), or exotic species are dominant in a least one stratum.
16.	Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)
	 ✓A Vegetation diversity is high and is composed primarily of native species (< 10% cover of exotics). ✓B Vegetation diversity is low or has > 10% to 50% cover of exotics. ✓C Vegetation is dominated by exotic species (> 50 % cover of exotics).

17.	Vege	tative St	ructure –	assessment area/wetland type condition metric	
	17a.		ation pres		
		⊠Yes	∐No	If Yes, continue to 17b. If No, skip to Metric 18.	
	17b.	Evaluat □A □B	≥ 25% c	coverage of assessment area vegetation for all marshes only . Skip to 17c for non-marsh wetlands. overage of vegetation overage of vegetation	
	17c.	structur		each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider above the assessment area (AA) and the wetland type (WT) separately.	de
		AA ⊠A □B □C	⊠A □B □C	Canopy closed, or nearly closed, with natural gaps associated with natural processes Canopy present, but opened more than natural gaps Canopy sparse or absent	
	Mid-Story	□A ⊠B □C	□A ⊠B □C	Dense mid-story/sapling layer Moderate density mid-story/sapling layer Mid-story/sapling layer sparse or absent	
	Shrub	B B ⊠C	□A □B ⊠C	Dense shrub layer Moderate density shrub layer Shrub layer sparse or absent	
	Herb	a □A i □B i ⊠C	□A □B ⊠C	Dense herb layer Moderate density herb layer Herb layer sparse or absent	
18.	Snag	ıs – wetla	and type	condition metric (skip for all marshes)	
	□A ⊠B		e snags (r	nore than one) are visible (> 12 inches DBH, or large relative to species present and landscape stability).	
19.	Diam	neter Clas	ss Distrib	ution – wetland type condition metric (skip for all marshes)	
	□A			opy trees have stems > 6 inches in diameter at breast height (DBH); many large trees (> 12 inches DBH) are	
	□в ⊠с		rity of car	opy trees have stems between 6 and 12 inches DBH, few are > 12 inch DBH. opy trees are < 6 inches DBH or no trees.	
20.	Larg	e Woody	Debris -	wetland type condition metric (skip for all marshes)	
	Includ □A ⊠B		e logs (mo	ris and man-placed natural debris. re than one) are visible (> 12 inches in diameter, or large relative to species present and landscape stability).	
21.	Vege	tation/O	pen Wate	Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)	i
				st describes the amount of interspersion between vegetation and open water in the growing season. Pattern areas, while solid white areas indicate open water. □B □C □D	nec
		0	S.		
22.	-	_		y – assessment area condition metric (evaluate for riparian wetlands and Salt/Brackish Marsh only)	
				at may severely alter hydrologic connectivity include intensive ditching, fill, sedimentation, channelization, diversi	ion
	man- ⊠A			er dams, and stream incision. Documentation required if evaluated as B, C, or D. overland flow are not severely altered in the assessment area.	
	□в	Over	bank flow	is severely altered in the assessment area.	
				s severely altered in the assessment area. and overland flow are severely altered in the assessment area.	

Wetland Site Name P\		Date of Assessment Octob	
Wetland Type <u>Bo</u>	ottomland Hardwood Forest	Assessor Name/Organization KMT,	BGB/HDR
Notes on Field Assessme	ent Form (Y/N)		NO
Presence of regulatory c	onsiderations (Y/N)		YES
Wetland is intensively ma	anaged (Y/N)		NO
Assessment area is loca	ted within 50 feet of a natural tributa	ary or other open water (Y/N)	YES
Assessment area is subs	stantially altered by beaver (Y/N)		NO
Assessment area experie	ences overbank flooding during nor	mal rainfall conditions (Y/N)	NO
Assessment area is on a	coastal island (Y/N)		NO
Sub-function Rating Sur	nmarv		
Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention Sub-surface Storage and	Condition	HIGH
	Retention	Condition	MEDIUM
ater Quality	Pathogen Change	Condition	HIGH
		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	NO
	Particulate Change	Condition	HIGH
		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	NO
	Soluble Change	Condition	HIGH
		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	NO
	Physical Change	Condition	MEDIUM
		Condition/Opportunity	MEDIUM
		Opportunity Presence (Y/N)	NO
	Pollution Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence (Y/N)	NA
Habitat	Physical Structure	Condition	LOW
	Landscape Patch Structure	Condition	LOW
	Vegetation Composition	Condition	HIGH
unction Rating Summa	ry		
Function	-	Metrics	Rating
Hydrology		Condition	HIGH
Water Quality		Condition	HIGH
-		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	NO
Habitat		Condition	LOW



Photograph 1 – PS1-1-Stream 8, Facing Upstream



Photograph 3 – PS3-1-Stream 2, Facing Downstream



Photograph 2 – PS2-1-Stream 2, Facing Upstream



Photograph 4 – PS4-1-Stream 1, Facing Upsream



Photograph 5 – PS5-1-Stream 10, Facing Upstream



Photograph 7 – PS6-1-Stream 10, Facing Upstream



Photograph 6 – PW1-1-Wetland 5, Facing South



Photograph 8 – PW2-1-Wetland 6, Facing South



Photograph 9 – PS7-1-Stream 25, Facing Downstream



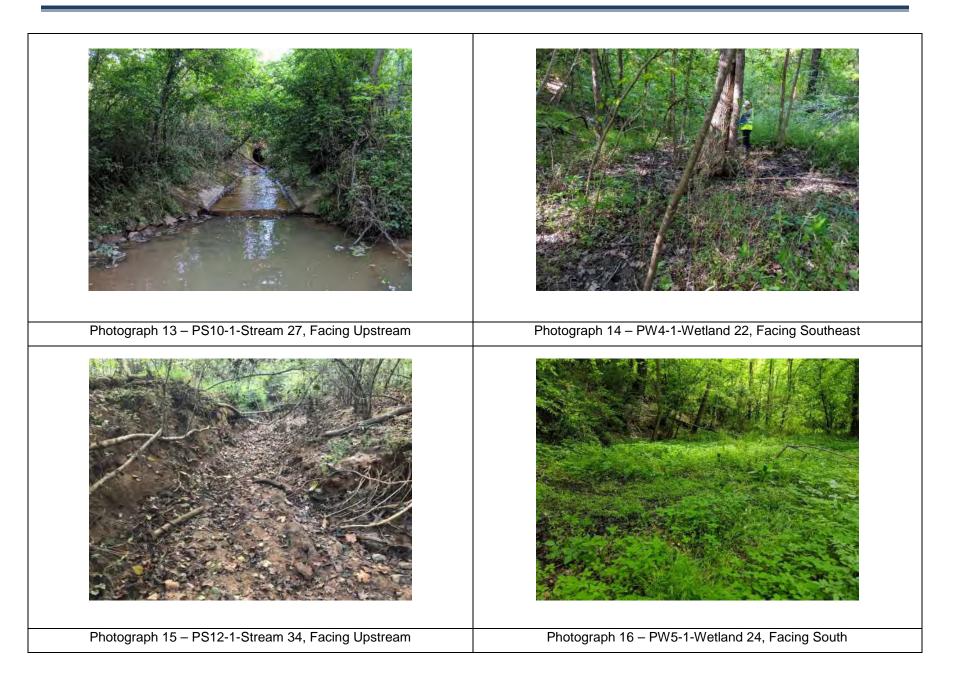
Photograph 11 – PS9-1-Stream 26-Reach 2, Facing Upstream



Photograph 10 – PS9-1-Stream 26-Reach 1, Facing Downstream



Photograph 12 – PW3-1-Wetland 15, acing Northwest









Photograph 18 –PS11-1-Stream 25, Facing Downstream

Appendix C

Phase 2: NCSAM and NCSAM Forms, and Photographs

NC SAM FIELD ASSESSMENT FORM Accompanies User Manual Version 2.1

	Accom	ipariles Oser Mariuai v	CI SIOII Z. I	
USACE AID #:			CDWR #:	
				7.5-minute topographic quadrangle,
		•		on the same property, identify and
				ser Manual for detailed descriptions
				urements were performed. See the
NC SAM User Manual for exa				the concernant area)
NOTE EVIDENCE OF STRES		ASSESSIVIENT AREA (to not need to be within	i the assessment area).
PROJECT/SITE INFORMATI	-	O Data	.f!	40
1. Project name (if any):3. Applicant/owner name:	CLT Airport Expansion CLT		of evaluation: April 20 sor name/organization:	KMT,BGB/HDR
5. County:	Mecklenburg		•	RWI, BGB/HDR
7. River basin:	Catawba		st named water body GGS 7.5-minute quad:	Coffey Creek
8. Site coordinates (decimal of			205045, -80.955335	Colley Creek
STREAM INFORMATION: (d	•	, <u> </u>	2000-10; 00.000000	
OTTEAM IN OTTAIN (C	PS1-2, S27			
9. Site number (show on attac	ched map): Reach 1	10. Length of	assessment reach evalu	ated (feet): 975'
11. Channel depth from bed (in riffle, if present) to top of	bank (feet): 1	□U	nable to assess channel depth.
12. Channel width at top of ba			nt reach a swamp steam	? ∐Yes ∐No
14. Feature type: ⊠Perennia	If Intermittent flow	Tidal Marsh Stream		
STREAM CATEGORY INFO		_		_
15. NC SAM Zone:	☐ Mountains (M)	∑ Piedmont (P) □	Inner Coastal Plain (I)	Outer Coastal Plain (O)
				/
16. Estimated geomorphic	\bowtie_{A}		□B →	
valley shape (skip for	_	(latter all a alara)		
Tidal Marsh Stream):	(more sinuous stream,	• • •	•	ream, steeper valley slope)
17. Watershed size: (skip	\boxtimes Size 1 (< 0.1 mi ²)	☐Size 2 (0.1 to < 0.5 m	ii²) ☐Size 3 (0.5 to <	5 mi²)
for Tidal Marsh Stream) ADDITIONAL INFORMATION	M.			
18. Were regulatory considera		No If Yes check all th	at annly to the assessme	ent area
Section 10 water	Classified Trou			shed (□I □II □III □IV □V)
☐Essential Fish Habitat	☐Primary Nurse			s/Outstanding Resource Waters
⊠Publicly owned propert		ian buffer rule in effect	☐Nutrient Sensitive W	aters
☐Anadromous fish				onmental Concern (AEC)
-	of a federal and/or state list	ted protected species wi	thin the assessment area	ı.
List species:	'tat (l'atana'a a			
☐Designated Critical Hab 19. Are additional stream info		acuramenta included in "	Notes/Cketch" section or	attached? ☐Yes ⊠No
19. Are additional stream into	mation/supplementary mea	asurements included in	Notes/Sketch Section of	attached? Tes No
1. Channel Water – assess	ment reach metric (skip fo	or Size 1 streams and 1	idal Marsh Streams)	
	it assessment reach.		,	
□B No flow, water in	1 /			
□C No water in asse	ssment reach.			
2. Evidence of Flow Restric	ction – assessment reach	metric		
☐A At least 10% of	assessment reach in-strear	m habitat or riffle-pool se	equence is severely affect	cted by a flow restriction or fill to the
				impoundment on flood or ebb within
the assessment beaver dams).	reach (examples: undersize	ea or percnea cuiverts, o	causeways that constrict	the channel, tidal gates, debris jams,
⊠B Not A				
3. Feature Pattern – assess		rad nattorn (avamples)	straightaning madification	a above or below outvert)
☐A A majority of the☒B Not A	assessment reach has alte	red pattern (examples. s	straigntening, modification	above of below curvert).
	· ('1			
	ofile – assessment reach r		Clarka and the state of the state of	to the contract of the contrac
				down-cutting, existing damming, over has not reformed from any of these
disturbances).	aggradation, diedging, and	а олоатанон тинете арр	rophate onamiel profile	nas not reformed from any of these
⊠B Not A				
	v _ accocement reach ma	tric		
	y – assessment reach me		m has currently recove	ered. Examples of instability include
				uch as concrete, gabion, rip-rap).
⊠A < 10% of channe		.,,		
□B 10 to 25% of character				
□C > 25% of channe	ıl unstable			

					. />				
		ie Left Ban	ik (LB) and the	Right Ba	ink (RB).				
LB ⊠A □B	RB ⊠A □B	Moderat reference	te evidence of ce interaction (e	conditions examples:	s (examples: be limited streams	rms, levee ide area a	es, down- ccess, dis	cutting, aggradation, dredging) that adversely affer ruption of flood flows through streamside area, lea	
□с	□c	[exampl of flood mosquit	les: causeways flows through s to ditching]) <u>or</u>	s with flood streamside	dplain and chann area] <u>or</u> too mud	nel constric ch floodpla	tion, bulk in/intertid	heads, retaining walls, fill, stream incision, disruptional zone access [examples: impoundments, intensi	on ve
Water (Quality	Stressors -	- assessment	reach/inte	ertidal zone me	tric			
	-								
ΠA								er discoloration, oil sheen, stream foam)	
								nd causing a water quality problem	
\Box D					,o critering the a	00000111011	1 100011 <u>01</u>	to busing a water quality problem	
□E			d or collected	data indica	ating degraded v	water qua	lity in the	assessment reach. Cite source in "Notes/Sketo	:h"
∏F			cess to stream	or intertida	al zone				
□G									
								owing, destruction, etc)	
⊠j				_ (0xpiaii	Till Hotos, Choto	511 5551101	1)		
Recent	Weath	er – waters	hed metric (sl	kip for Tid	al Marsh Strea	ms)			
									ht.
								st 48 hours	
⊠c				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			, u. c		
Large o	or Dang	erous Strea	am – assessm	ent reach	metric				
□Yes	⊠No	Is strear	m is too large o	or dangero	us to assess? If	f Yes, skip	to Metric	13 (Streamside Area Ground Surface Condition).	
						of the e		t reach (everyles of stressers include every	
10a. <u>L</u>	_res	se	edimentation, r	mining, ex	cavation, in-stre	eam harde	ning [for	example, rip-rap], recent dredging, and snagging	ve ig)
Ľ						idal	∐' _G	Submerged aquatic vegetation	
			cks and/or leaf	packs an	d/or emergent	for Stre		Low-tide refugia (pools)	
			ags and logs (i	ncluding la	ıp trees)	heck arsh	∐ ,	5% vertical bank along the marsh	
						ပ ≥	□K	Little or no habitat	
Г				mai wene					
]E	Little or no l		mai wotto	d perimeter				
_]E			mai wotto	d perimeter				
*****	*****	Little or no l	habitat EMAINING QUI	ESTIONS	ARE NOT APPI			AL MARSH STREAMS************************************	
*****	*****	Little or no l	habitat EMAINING QUI	ESTIONS	ARE NOT APPI			AL MARSH STREAMS************************************	
*****	****** m and S	Little or no l **********RE Substrate –	habitat EMAINING QUI · assessment i	ESTIONS reach met	ARE NOT APPI	ze 4 Coas	al Plain s		
Bedfor 11a. [11b. B	********* m and S Yes edform	Little or no l ***********RE Substrate – No Is a evaluated.	habitat EMAINING QUI - assessment rea check the app	ESTIONS reach met ach in a na propriate I	ARE NOT APPI tric (skip for Siz atural sand-bed s	ze 4 Coas	al Plain s	streams and Tidal Marsh Streams)	
********** Bedfor 11a. 11b. B	********** m and S Yes edform	Little or no l ***********RE Substrate – No Is a evaluated. (Riffle-run se	habitat EMAINING QUI - assessment i	ESTIONS reach met ach in a na propriate I te 11c)	ARE NOT APPI tric (skip for Siz atural sand-bed s	ze 4 Coas	al Plain s	streams and Tidal Marsh Streams)	
*********** Bedfor 11a. 11b. B	********* m and S Yes edform of A B	Little or no l ***************** Substrate — No Is a evaluated. (Riffle-run se Pool-glide s	EMAINING QUI assessment rea check the appection (evaluat section (evaluat	ESTIONS reach met ach in a na propriate I te 11c) ate 11d)	ARE NOT APPI tric (skip for Siz atural sand-bed s	ze 4 Coas stream? (s	al Plain s	streams and Tidal Marsh Streams)	
Bedfor 11a. [11b. B [[[[[[[[[[[[[m and S Yes edform of A B C riffle se	Little or no l ************************** Substrate — No Is a evaluated. (Riffle-run se Pool-glide s Natural bed ctions, chec one box in e	EMAINING QUI - assessment reassessment reassessment reassessment reassection (evaluate section (evaluate form absent (seck all that occure each row (skip	ESTIONS reach met ach in a na propriate I te 11c) ate 11d) skip to Me r below the	ARE NOT APPI tric (skip for Siz atural sand-bed s box(es). etric 12, Aquatic e normal wetted p 4 Coastal Plain	ze 4 Coasi stream? (s : Life) perimeter streams a	al Plain s kip for C of the ass and Tidal	essment reach – whether or not submerged. Check Marsh Streams). Not Present (NP) = absent, Ra	are
Bedfor 11a. [11b. B [[m and S Yes edform of A B C riffle set tleast of A R) = presenould no	*************************************	EMAINING QUID assessment reassessment reassessment reassessment reassection (evaluated form absent (stall that occurrence for (skip) 10%, Common 100% for each as	ESTIONS reach met ach in a na propriate I te 11c) the 11d) skip to Me r below the ofor Size 4 (C) = > 10 ssessment	ARE NOT APPI tric (skip for Siz atural sand-bed s box(es). etric 12, Aquatic e normal wetted p 4 Coastal Plain 0-40%, Abundan	ze 4 Coasi stream? (s : Life) perimeter streams a	al Plain s kip for C of the ass and Tidal	oastal Plain streams) essment reach – whether or not submerged. Che	are
Bedfor 11a. [11b. B [11c. Ir ar (F sl	m and S Yes edform of A B C riffle set least of R) = preshould no	Little or no l ************************** Substrate — No Is a evaluated. (Riffle-run se Pool-glide s Natural bed ctions, chec one box in e sent but ≤ 1	EMAINING QUID assessment reassessment reassessment reassessment reassection (evaluated form absent (stall that occurrence for (skip) 10%, Common 100% for each as	reach met ach in a na propriate I te 11c) ate 11d) skip to Me r below the ofor Size 4 (C) = > 10 ssessmen	ARE NOT APPI tric (skip for Siz atural sand-bed s box(es). etric 12, Aquatic e normal wetted p 4 Coastal Plain 0-40%, Abundan t reach.	ce 4 Coase stream? (s Life) perimeter streams a at (A) = > 4	al Plain s kip for C of the ass and Tidal	essment reach – whether or not submerged. Check Marsh Streams). Not Present (NP) = absent, Ra	are
Bedfor 11a. [11b. B [11c. Ir ar (F sl	m and S Yes edform of A B C riffle se t least of A P H H	*************************************	EMAINING QUID assessment reassessment reassessment reassessment reassection (evaluated form absent (stall that occurrence for (skip) 10%, Common 100% for each as	ESTIONS reach met ach in a na propriate I te 11c) the 11d) skip to Me r below the ofor Size 4 (C) = > 10 ssessment	ARE NOT APPI aric (skip for Siz atural sand-bed s box(es). attric 12, Aquatic e normal wetted p 4 Coastal Plain 0-40%, Abundan t reach.	ce 4 Coasistream? (see Life) perimeter streams and (A) = > 4	al Plain s kip for C of the ass and Tidal 40-70%, F	essment reach – whether or not submerged. Check Marsh Streams). Not Present (NP) = absent, Ra	are
Bedfor 11a. [11b. B [11c. Ir ar (F sl	m and S Yes edform of A B C riffle se t least of A P H H	Little or no l ********************************* Substrate — No Is a evaluated. (Riffle-run se Pool-glide s Natural bed ctions, chec one box in e sent but ≤ 1 tt exceed 10 R R R C R C R C R C	EMAINING QUI - assessment rea - assessment rea - assessment rea - check the apprection (evaluate - section (evaluate - section absent (section absent (section row (skip) - 10%, Common - 00% for each according acc	reach met ach in a na propriate I te 11c) ate 11d) skip to Me r below the ofor Size 4 (C) = > 10 ssessmen	ARE NOT APPI aric (skip for Siz atural sand-bed s box(es). attric 12, Aquatic e normal wetted p 4 Coastal Plain 0-40%, Abundan t reach. Bedrock/sapro Boulder (256- Cobble (64 - 2	ce 4 Coasistream? (see Life) perimeter streams and (A) = > 4 polite 4096 mr 256 mm)	al Plain s kip for C of the ass and Tidal 40-70%, F	essment reach – whether or not submerged. Check Marsh Streams). Not Present (NP) = absent, Ra	are
Bedfor 11a. [11b. B [11c. Ir ar (F sl	m and S Yes edform of A B C riffle se t least of A P H H	*************************************	EMAINING QUI - assessment rea - assessment rea - assessment rea - check the apprection (evaluate - section (evaluate - section absent (section absent (section row (skip) - 10%, Common - 00% for each according acc	reach met ach in a na propriate I te 11c) ate 11d) skip to Me r below the ofor Size 4 (C) = > 10 ssessmen	ARE NOT APPI aric (skip for Siz atural sand-bed s box(es). attric 12, Aquatic e normal wetted p 4 Coastal Plain 0-40%, Abundan t reach.	ce 4 Coasistream? (see Life) perimeter streams and (A) = > 4 polite - 4096 mr 256 mm) 4 mm)	al Plain s kip for C of the ass and Tidal 40-70%, F	essment reach – whether or not submerged. Check Marsh Streams). Not Present (NP) = absent, Ra	are
Bedfor 11a. [11b. B [11c. Ir ar (F sl	m and S Yes edform of A B C riffle se t least of A P H H	Little or no l ********************************* Substrate — No Is a evaluated. (Riffle-run se Pool-glide s Natural bed ctions, chec one box in e sent but ≤ 1 t exceed 10 R C □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	habitat EMAINING QUI assessment rea assessment rea Check the appection (evaluat section (evaluat form absent (section absent (section) Cok all that occur each row (skip 10%, Common 00% for each according A A B B B B B B B B B B B	reach met ach in a na propriate I te 11c) ate 11d) skip to Me r below the ofor Size 4 (C) = > 10 ssessmen	ARE NOT APPI tric (skip for Siz atural sand-bed s box(es). etric 12, Aquatic e normal wetted p 4 Coastal Plain 0-40%, Abundan t reach. Bedrock/sapro Boulder (256 Cobble (64 – 2 Gravel (2 – 64 Sand (.062 – 2 Silt/clay (< 0.0	ce 4 Coasistream? (see Life) perimeter streams and (A) = > 4 polite - 4096 mr 256 mm) 4 mm) 2 mm)	al Plain s kip for C of the ass and Tidal 40-70%, F	essment reach – whether or not submerged. Check Marsh Streams). Not Present (NP) = absent, Ra	are
Bedfor 11a. [11b. B [11c. Ir ar (F sl	m and s Yes edform of the second of the se	Little or no l ********************************* Substrate — No Is a evaluated. (Riffle-run se Pool-glide s Natural bed ctions, chec one box in e sent but ≤ 1 tt exceed 10 R R R C R C R C R C	habitat EMAINING QUI assessment rea assessment rea Check the appection (evaluat section (evaluat form absent (section absent (section) Cok all that occur each row (skip 10%, Common 00% for each according A A B B B B B B B B B B B	reach met ach in a na propriate I te 11c) ate 11d) skip to Me r below the ofor Size 4 (C) = > 10 ssessmen	ARE NOT APPI tric (skip for Siz atural sand-bed s box(es). etric 12, Aquatic e normal wetted p 4 Coastal Plain 0-40%, Abundan t reach. Bedrock/sapro Boulder (256 Cobble (64 – 2 Gravel (2 – 64 Sand (.062 – 2	ce 4 Coasistream? (see Life) perimeter streams and (A) = > 4 polite 4096 mm 4 mm) 2 mm) 2 mm) 2 mm)	eal Plain solve for Cooperation of the assumed Tidal 40-70%, F	essment reach – whether or not submerged. Check Marsh Streams). Not Present (NP) = absent, Ra	are
	Water C Check A B C D B C Check A B C D B C C C C C C C C C C C C C C C C	Water Quality S Check all that a A Discol B Exces C Notice D Odor (E Currer section F Livestr G Exces H Degra I Other: J Little tr Recent Weather For Size 1 or 2 s A Droug B Droug C No dro Large or Dange Yes No Natural In-streat 10a. Yes 10b. Check all A B B C D C		☑A ☑A Little or no evidence of reference interaction (e or intermittent bulkhea ☑C ☑C Extensive evidence of [examples: causeways of flood flows through smosquito ditching]]) or interstream divide Water Quality Stressors – assessment Check all that apply. ☐A Discolored water in stream or interstream divide Water Quality Stressors – assessment Check all that apply. ☐A Discolored water in stream or intersection (burying a continuous	☑A ☑A Little or no evidence of conditions reference interaction (examples: or intermittent bulkheads, caused or intermittent bulkheads or conditions and intermittent bulkheads or flood	☑A ☑A Little or no evidence of conditions that adversely reference interaction (examples: be reference interaction (examples: limited streams or intermittent bulkheads, causeways with floodplant and channof flood flows through streamside area] or too mure mosquito ditching]) or floodplain/intertidal zone interstream divide Water Quality Stressors – assessment reach/intertidal zone method interstream divide Water Quality Stressors – assessment reach/intertidal zone method interstream divide Water Quality Stressors – assessment reach/intertidal zone method interstream divide Water Quality Stressors – assessment reach/intertidal zone method interstream divide Water Quality Stressors – assessment reach/intertidal zone method interstream divide Water Quality Stressors – assessment reach/intertidal zone method interstream divide Water Quality Stressors – assessment reach/intertidal zone method interstream divide □ Discolored water in stream or intertidal zone (milky white, excessive sedimentation (burying of stream features or intertidal zone (milky white, excessive sedimentation discharges entering the acceptance of pollutant discharges entering the acceptanc	□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	⊠A A Little or no evidence of conditions that adversely affect reference interaction (examples: berms, levees, down-reference interaction) □C □C Extensive evidence of conditions that adversely affect reference interaction (examples: causeways with floodplain constriction, mide interstream divide Water Quality Stressors – assessment reach/intertidal zone unnaturally absent of interstream divide Image: percent of the percent of	☑A ☑A Little or no evidence of conditions that adversely affect reference interaction

12.	-		sessment reach metric (skip for Tidal Marsh Streams)
	12a. ⊠ If N		No Was an in-stream aquatic life assessment performed as described in the User Manual? one of the following reasons and skip to Metric 13. ☐No Water ☐Other:
	12b. 🛚	Yes	No Are aquatic organisms present in the assessment reach (look in riffles, pools, then snags)? If Yes, check all that apply. If No, skip to Metric 13.
	1 ⊠ □		Numbers over columns refer to "individuals" for Size 1 and 2 streams and "taxa" for Size 3 and 4 streams. Adult frogs Aquatic reptiles
			Aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats) Beetles Caddisfly larvae (T)
			Asian clam (<i>Corbicula</i>) Crustacean (isopod/amphipod/crayfish/shrimp) Damselfly and dragonfly larvae
			Dipterans Mayfly larvae (E) Megaloptera (alderfly, fishfly, dobsonfly larvae)
			Midges/mosquito larvae Mosquito fish (<i>Gambusia</i>) or mud minnows (<i>Umbra pygmaea)</i> Mussels/Clams (not <i>Corbicula</i>)
			Other fish Salamanders/tadpoles Snails
			Stonefly larvae (P) Tipulid larvae Worms/leeches
13.	Streams Conside	ide Area r for the	Ground Surface Condition – streamside area metric (skip for Tidal Marsh Streams and B valley types) Left Bank (LB) and the Right Bank (RB). Consider storage capacity with regard to both overbank flow and upland runoff.
	LB ⊠A □B □C	RB ⊠A □B □C	Little or no alteration to water storage capacity over a majority of the streamside area Moderate alteration to water storage capacity over a majority of the streamside area Severe alteration to water storage capacity over a majority of the streamside area (examples: ditches, fill, soil compaction,
14.			livestock disturbance, buildings, man-made levees, drainage pipes) Water Storage – streamside area metric (skip for Size 1 streams, Tidal Marsh Streams, and B valley types) Left Bank (LB) and the Right Bank (RB) of the streamside area.
	□A □B ⊠C	□A □B ⊠C	Majority of streamside area with depressions able to pond water ≥ 6 inches deep Majority of streamside area with depressions able to pond water 3 to 6 inches deep Majority of streamside area with depressions able to pond water < 3 inches deep
15.	Conside wetted p	r for the	 e – streamside area metric (skip for Tidal Marsh Streams) Left Bank (LB) and the Right Bank (RB). Do not consider wetlands outside of the streamside area or within the normal of assessment reach.
	□Y ⊠N	∐Y ⊠N	Are wetlands present in the streamside area?
16.		II contrib Streams	outors – assessment reach metric (skip for Size 4 streams and Tidal Marsh Streams) utors within the assessment reach or within view of <u>and</u> draining to the assessment reach. and/or springs (jurisdictional discharges) nclude wet detention basins; do not include sediment basins or dry detention basins)
	□C □D ⊠E □F	Obstruct Evidence Stream	ion passing flow during low-flow periods within the assessment area (beaver dam, leaky dam, bottom-release dam, weir) e of bank seepage or sweating (iron in water indicates seepage) bed or bank soil reduced (dig through deposited sediment if present) the above
17.	Check a	ll that ap	
	□A □B □C □D	Obstruct Urban st Evidence	e of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation) ion not passing flow during low-flow periods affecting the assessment reach (ex: watertight dam, sediment deposit) ream (≥ 24% impervious surface for watershed) that the streamside area has been modified resulting in accelerated drainage into the assessment reach
46	□E ⊠F	None of	nent reach relocated to valley edge the above
18.	Consider	aspect.	sment reach metric (skip for Tidal Marsh Streams) Consider "leaf-on" condition.
	⊠A □B □C	Degrade	shading is appropriate for stream category (may include gaps associated with natural processes) d (example: scattered trees) shading is gone or largely absent

19.	Buffer Width – streamside area metric (skip for Tidal Marsh Streams) Consider "vegetated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top of bank out to the first break. Vegetated Wooded LB RB LB RB $\triangle A \triangle A$
20.	Buffer Structure – streamside area metric (skip for Tidal Marsh Streams) Consider for left bank (LB) and right bank (RB) for Metric 19 ("Vegetated" Buffer Width). B RB A Mature forest B B Non-mature woody vegetation or modified vegetation structure C C Herbaceous vegetation with or without a strip of trees < 10 feet wide D Maintained shrubs E Little or no vegetation
21.	Buffer Stressors – streamside area metric (skip for Tidal Marsh Streams) Check all appropriate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but is within 30 feet of stream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet). If none of the following stressors occurs on either bank, check here and skip to Metric 22: Abuts < 30 feet 30-50 feet LB RB LB RB LB RB A A A A A Row crops B B B B B B B B B B B B B B B B B B B
22.	Stem Density – streamside area metric (skip for Tidal Marsh Streams) Consider for left bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width). LB RB A Medium to high stem density B B B Low stem density C C C No wooded riparian buffer or predominantly herbaceous species or bare ground
23.	Continuity of Vegetated Buffer – streamside area metric (skip for Tidal Marsh Streams) Consider whether vegetated buffer is continuous along stream (parallel). Breaks are areas lacking vegetation > 10 feet wide. LB RB A The total length of buffer breaks is < 25 percent. B B B The total length of buffer breaks is between 25 and 50 percent. C C The total length of buffer breaks is > 50 percent.
24.	Vegetative Composition – streamside area metric (skip for Tidal Marsh Streams) Evaluate the dominant vegetation within 100 feet of each bank or to the edge of the watershed (whichever comes first) as it contributes to assessment reach habitat. LB RB □A Vegetation is close to undisturbed in species present and their proportions. Lower strata composed of native species, with non-native invasive species absent or sparse. □B □B Vegetation indicates disturbance in terms of species diversity or proportions, but is still largely composed of native species. This may include communities of weedy native species that develop after clear-cutting or clearing or communities with non-native invasive species present, but not dominant, over a large portion of the expected strata or communities missing understory but retaining canopy trees. □C □C Vegetation is severely disturbed in terms of species diversity or proportions. Mature canopy is absent or communities with non-native invasive species dominant over a large portion of expected strata or communities composed of planted stands of non-characteristic species or communities inappropriately composed of a single species or no vegetation.
25.	Conductivity – assessment reach metric (skip for all Coastal Plain streams) 25a. ☐ Yes ☐ No Was conductivity measurement recorded? If No, select one of the following reasons. ☐ No Water ☐ Other: 25b. Check the box corresponding to the conductivity measurement (units of microsiemens per centimeter). ☐ A < 46 ☐ B 46 to < 67 ☐ C 67 to < 79 ☐ D 79 to < 230 ☐ E ≥ 230
Note	es/Sketch:

Draft NC SAM Stream Rating Sheet Accompanies User Manual Version 2.1

Stream Site Name	CL1 Airport Expansion	Date of Assessment	April 2019			
Stream Category	Pa1	Assessor Name/Organization	KMT,BGB/HDR			
Notes of Field Asses	Notes of Field Assessment Form (Y/N)					
Presence of regulator	YES					
Additional stream inf	ormation/supplementary measu	rements included (Y/N)	NO			
NC SAM feature type	//arsh Stream)	Perennial				

(poronnial, intornittorit, fradi waron ctroam)	1 Olollina	<u>. </u>
Function Class Rating Summary	USACE/ All Streams	NCDWR Intermittent
(1) Hydrology	HIGH	
(2) Baseflow	HIGH	
(2) Flood Flow	HIGH	
(3) Streamside Area Attenuation	HIGH	
(4) Floodplain Access	HIGH	
(4) Wooded Riparian Buffer	HIGH	
(4) Microtopography	HIGH	
(3) Stream Stability	HIGH	
(4) Channel Stability	HIGH	
(4) Sediment Transport	LOW	
(4) Stream Geomorphology	HIGH	
(2) Stream/Intertidal Zone Interaction	NA NA	
(2) Longitudinal Tidal Flow	NA NA	
· · · -		
(2) Tidal Marsh Stream Stability (3) Tidal Marsh Channel Stability	NA NA	
	NA NA	
(3) Tidal Marsh Stream Geomorphology	NA NA	
(1) Water Quality	HIGH	
(2) Baseflow	HIGH	
(2) Streamside Area Vegetation	HIGH	
(3) Upland Pollutant Filtration	HIGH	
(3) Thermoregulation	HIGH	
(2) Indicators of Stressors	NO	
(2) Aquatic Life Tolerance	HIGH	
(2) Intertidal Zone Filtration	NA	
(1) Habitat	LOW	
(2) In-stream Habitat	LOW	
(3) Baseflow	HIGH	
(3) Substrate	LOW	
(3) Stream Stability	HIGH	
(3) In-stream Habitat	MEDIUM	
(2) Stream-side Habitat	HIGH	
(3) Stream-side Habitat	HIGH	
(3) Thermoregulation	HIGH	
(2) Tidal Marsh In-stream Habitat	NA	
(3) Flow Restriction	NA	
(3) Tidal Marsh Stream Stability	NA	
(4) Tidal Marsh Channel Stability	NA NA	
(4) Tidal Marsh Stream Geomorphology	NA NA	
(3) Tidal Marsh In-stream Habitat	NA NA	
(2) Intertidal Zone	NA NA	
Overall	HIGH	

NC SAM FIELD ASSESSMENT FORM Accompanies User Manual Version 2.1

		ACCC	ilipallies Usel iv	nanuai versi	011 2.1		
USA	ACE AID #:			NCDW	/R #:		
INST	FRUCTIONS: Attach a sk	etch of the assessment a	rea and photogra	aphs. Attach	a copy of the USGS 7	.5-minute topographic quadra	ngle,
and o	circle the location of the s	stream reach under evalu	ation. If multiple	stream reach	hes will be evaluated	on the same property, identify	and
numl	ber all reaches on the atta	iched map, and include a	separate form fo	r each reach.	See the NC SAM Us	er Manual for detailed descrip	tions
and e	explanations of requested	d information. Record in	the "Notes/Sketcl	h" section if s	supplementary measu	rements were performed. See	e the
NC S	SAM User Manual for exa	mples of additional meas	urements that ma	ay be relevant	t.		
NOT	E EVIDENCE OF STRES	SORS AFFECTING THE	E ASSESSMENT	AREA (do n	ot need to be within	the assessment area).	
PRO	JECT/SITE INFORMATION	ON:					
1. Pr	roject name (if any):	CLT Airport Expansion		2. Date of ev	aluation: April 201	9	
	oplicant/owner name:	CLT		4. Assessor i	name/organization:	KMT,BGB/HDR	
-	ounty:	Mecklenburg			amed water body		
7. Ri	iver basin:	Catawba			7.5-minute quad:	Coffey Creek	
8. Sit	te coordinates (decimal d	egrees, at lower end of a	ssessment reach		360, -80.954446		
	EAM INFORMATION: (de		approximations)	·	·		
a Sit	te number (show on attac			enath of assu	essment reach evalua	ted (feet): 350'	
	Channel depth from bed (i			1		nable to assess channel depth	
	Channel width at top of ba				each a swamp steam?		
	Feature type: ⊠Perennia				cacii a swamp steam:		
	EAM CATEGORY INFOR			Sileaiii			
_	NC SAM Zone:	☐ Mountains (M)	M Diodmont /D)	or Coastal Plain (I)	Outer Coastal Plain (O)	
15. 1	NC SAIVI ZOITE.	☐ IVIOUTILAITIS (IVI)	□ Piedmont (P □ P □ Piedmont (P □ P □ Piedmont (P □ P □ P □ Piedmont (P □ P) IIIIle	er Coastal Plain (I)	Outer Coastal Plain (O)	
	Estimated geomorphic	\bowtie_{A}		/	□в		
	valley shape (skip for	_					
	Γidal Marsh Stream):	(more sinuous strean	•		•	eam, steeper valley slope)	
	Vatershed size: (skip	\boxtimes Size 1 (< 0.1 mi ²)	☐Size 2 (0.1 to	$0 < 0.5 \text{ mi}^2$	☐Size 3 (0.5 to < 5	5 mi^2) \square Size 4 ($\ge 5 \text{ mi}^2$)	
	or Tidal Marsh Stream)						
	ITIONAL INFORMATION						
	Were regulatory considera						7.0
_	Section 10 water	☐Classified Tr				hed (I II III IIV I	
_	Essential Fish Habitat	☐Primary Nurs				Outstanding Resource Waters	S
	Publicly owned property		arian buffer rule i		Nutrient Sensitive Wa		
_	Anadromous fish	⊠303(d) List				nmental Concern (AEC)	
L	Documented presence	of a federal and/or state I	isted protected sp	pecies within	the assessment area.		
_	List species:	itat (list appaiss)					
	Designated Critical Hab				/Clt-b"t	-4k10 DV DN-	
19. 4	Are additional stream infor	mation/supplementary m	easurements inci	luded in "Note	es/Sketch" section or a	attached? Lives Kino	
1 0	Channel Water – assessr	nent reach metric (skin	for Size 1 stream	me and Tidal	March Stroams)		
		t assessment reach.	ioi oize i streat	ins and man	i mai sii oti cailisj		
	B No flow, water in						
	C No water in asse						
			1				
	Evidence of Flow Restric			la naal aasus	anna ia anyonahy affan	tad by a flavy readviation or fill	40 460
L						ted by a flow restriction or fill mpoundment on flood or ebb	
						nipoundment on nood of ebb he channel, tidal gates, debris	
	beaver dams).	casi (champios, unders	oa or poronou c	Jan 10110, 0003	July of the control to	Juaning, tidal gatos, acbits	, jui 110,
\triangleright	⊠B Not A						
		mant raash matula					
_	eature Pattern – assess		tored nottore /	omplos: str=::	abtonina madification	above or below subject	
	☐A A majority of the ☐B Not A	assessment reach has al	nered pallern (ex	ampies: straiç	gntening, modification	above or below curvert).	
4. F	eature Longitudinal Pro						
						own-cutting, existing damming	
		aggradation, dredging, a	and excavation w	here appropr	riate channel profile h	as not reformed from any of	these
K	disturbances).						
Þ	☑B Not A						
5. S	Signs of Active Instability	y – assessment reach n	netric				
				he stream h	as currently recover	ed. Examples of instability in	nclude
a	ctive bank failure, active o	channel down-cutting (he				ch as concrete, gabion, rip-rap	
	△A < 10% of channe						
	B 10 to 25% of cha						
	☐C > 25% of channe	I unstable					

6.	Streamside Area Interaction – streamside area metric Consider for the Left Bank (LB) and the Right Bank (RB). LB RB									
	⊠A □B	⊠A □B	Moderate ev reference int	Little or no evidence of conditions that adversely affect reference interaction Moderate evidence of conditions (examples: berms, levees, down-cutting, aggradation, dredging) that adversely affect reference interaction (examples: limited streamside area access, disruption of flood flows through streamside area, leaky or intermittent bulkheads, causeways with floodplain constriction, minor ditching [including mosquito ditching])						
	□C	□c	Extensive ex [examples: of flood flows	vidence of con causeways wit s through strea ching]) or floo	ditions that h floodplair mside area	t adversely a n and channe a] <u>or</u> too muc	affect refe el constric h floodpla	rence inte tion, bulk in/intertid	eraction (little to no fl heads, retaining wall: lal zone access [exan	oodplain/intertidal zone access s, fill, stream incision, disruption nples: impoundments, intensive n is a man-made feature on an
7.		-	Stressors – ass	essment read	ch/intertid	al zone met	ric			
	□A □B □C	Excess Notice	ored water in str sive sedimentat able evidence o	ion (burying of of pollutant disc	stream fea charges en	atures or inte	ertidal zon	e)	er discoloration, oil sh nd causing a water q	
	□D □E		not including na nt published or			degraded w	ater qual	ity in the	assessment reach.	Cite source in "Notes/Sketch"
	□F	section Livesto	n. ock with access	to stream or ir	ntertidal zo	ne				
	□H □□ □J	Degrae Other:	sive algae in str ded marsh vege o no stressors	etation in the in	itertidal zoi	ne (removal, Notes/Sketc			owing, destruction, e	etc)
8.			er – watershed	metric (skip f	or Tidal M	arsh Strean	าร)			
		Size 1 or 2 s Drougl Drougl		ught or higher <u>d</u> no rainfall or <u>d</u> rainfall exce	is consider rainfall no	red a drough ot exceeding	t; for Size 1 inch wit	hin the la		higher is considered a drought.
9.	Larg e		erous Stream – Is stream is				Yes, skip	to Metric	13 (Streamside Area	a Ground Surface Condition).
10.			am Habitat Typ				of the or		st reach (everynles	of atropogra include avacables
	iua.	∐Yes ∣	sedime		ng, excava	ation, in-strea	am harde	ning [for	example, rip-rap], re	of stressors include excessive ecent dredging, and snagging)
	10b.	⊠A I	that occur (occ Multiple aquatic (include liverwork	macrophytes	and aquati	ic mosses		kip for S □F □G	ize 4 Coastal Plain s 5% oysters or othe Submerged aquation	r natural hard bottoms
			Multiple sticks a vegetation	ind/or leaf pac	ks and/or	emergent	k for T h Stre Only	□H	Low-tide refugia (po	pols)
		□C I	Multiple snags a 5% undercut ba	• ,	• .	,	hecars	∐j □K	5% vertical bank al Little or no habitat	ong the marsh
		i	in banks extend Little or no habit	to the normal			'		Little of He Habitat	
****	*****	******	********REMAI	NING QUEST	IONS ARE	NOT APPL	ICABLE I	FOR TID	AL MARSH STREAM	MS******
11.	Bedf	orm and S	ubstrate – ass	essment reac	h metric (skip for Size	e 4 Coast	al Plain s	streams and Tidal N	larsh Streams)
							tream? (s	kip for C	oastal Plain stream	s)
	11b.	⊠A I □B I	evaluated. Che e Riffle-run section Pool-glide section Natural bedform	n (evaluate 11 on (evaluate 1	c) 1d)	,	Life)			
	11c.	In riffle sed	ctions, check all	that occur belo	ow the nori	mal wetted p	erimeter o			ether or not submerged. Check
		(R) = pres	sent but < 10%,	Common (C)	= > 10-409	%, Abundant				ot Present (NP) = absent, Rare 70%. Cumulative percentages
		NP I	t exceed 100% t R C	for each asses A P		ch.				
					Bo	edrock/sapro oulder (256 -	4096 mm	n)		
						obble (64 – 2 ravel (2 – 64				
						and (.062 - 2 lt/clay (< 0.0				
		□ i] D∈	etritus tificial (rip-ra		te, etc.)		
	11d.		 ☐No Are poo	ls filled with se		` '	• •	,	streams and Tidal M	larsh Streams)

12.	-		sessment reach metric (skip for Tidal Marsh Streams)
	12a. ⊠ If N		No Was an in-stream aquatic life assessment performed as described in the User Manual? one of the following reasons and skip to Metric 13. ☐No Water ☐Other:
	12b. 🛛	Yes	No Are aquatic organisms present in the assessment reach (look in riffles, pools, then snags)? If Yes, check all that apply. If No, skip to Metric 13.
	1		Numbers over columns refer to "individuals" for Size 1 and 2 streams and "taxa" for Size 3 and 4 streams. Adult frogs Aquatic reptiles
		\boxtimes	Aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats)
		$\overline{\boxtimes}$	Beetles Caddisfly larvae (T)
	H		Asian clam (<i>Corbicula</i>) Crustacean (isopod/amphipod/crayfish/shrimp)
	Ē		Damselfly and dragonfly larvae Dipterans
			Mayfly larvae (E)
			Megaloptera (alderfly, fishfly, dobsonfly larvae) Midges/mosquito larvae
			Mosquito fish (<i>Gambusia</i>) or mud minnows (<i>Umbra pygmaea</i>) Mussels/Clams (not <i>Corbicula</i>)
			Other fish
			Salamanders/tadpoles Snails
			Stonefly larvae (P) Tipulid larvae
	\boxtimes		Worms/leeches
13.			Ground Surface Condition – streamside area metric (skip for Tidal Marsh Streams and B valley types) Left Bank (LB) and the Right Bank (RB). Consider storage capacity with regard to both overbank flow and upland runoff.
	\boxtimes A	⊠A	Little or no alteration to water storage capacity over a majority of the streamside area
	□B □C	□C	Moderate alteration to water storage capacity over a majority of the streamside area Severe alteration to water storage capacity over a majority of the streamside area (examples: ditches, fill, soil compaction, livestock disturbance, buildings, man-made levees, drainage pipes)
14.			Water Storage – streamside area metric (skip for Size 1 streams, Tidal Marsh Streams, and B valley types) Left Bank (LB) and the Right Bank (RB) of the streamside area.
	□A □B ⊠C	□A □B ⊠C	Majority of streamside area with depressions able to pond water ≥ 6 inches deep Majority of streamside area with depressions able to pond water 3 to 6 inches deep Majority of streamside area with depressions able to pond water < 3 inches deep
15.	Conside wetted p	r for the erimeter	e – streamside area metric (skip for Tidal Marsh Streams) Left Bank (LB) and the Right Bank (RB). Do not consider wetlands outside of the streamside area or within the normal of assessment reach.
	LB □Y ⊠N	RB □Y ⊠N	Are wetlands present in the streamside area?
16.			outors – assessment reach metric (skip for Size 4 streams and Tidal Marsh Streams)
	Check a ☐A		outors within the assessment reach or within view of <u>and</u> draining to the assessment reach. and/or springs (jurisdictional discharges)
	□B □C □D	Ponds (i	nclude wet detention basins; do not include sediment basins or dry detention basins) ion passing flow during low-flow periods within the assessment area (beaver dam, leaky dam, bottom-release dam, weir) e of bank seepage or sweating (iron in water indicates seepage)
	⊠E □F		ped or bank soil reduced (dig through deposited sediment if present) the above
17.	Baseflov Check a		ors – assessment area metric (skip for Tidal Marsh Streams)
	□A □B	Evidenc	e of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation)
	□c	Urban s	ion not passing flow during low-flow periods affecting the assessment reach (ex: watertight dam, sediment deposit) ream (≥ 24% impervious surface for watershed)
	□D □E		e that the streamside area has been modified resulting in accelerated drainage into the assessment reach nent reach relocated to valley edge
	⊠F	None of	the above
18.	-		sment reach metric (skip for Tidal Marsh Streams) Consider "leaf-on" condition.
	\boxtimes A	Stream	shading is appropriate for stream category (may include gaps associated with natural processes)
	□в □C		d (example: scattered trees) shading is gone or largely absent

19.	Buffer Width – streamside area metric (skip for Tidal Marsh Streams) Consider "vegetated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top of bank out to the first break. Vegetated Wooded LB RB LB RB △A △A △A △A ≥ 100 feet wide or extends to the edge of the watershed □B □B △B □B From 50 to < 100 feet wide □C □C □C □C □C From 30 to < 50 feet wide □D □D □D □D □D From 10 to < 30 feet wide									
20.	□ E □ E □ E < 10 feet wide or no trees Buffer Structure - streamside area metric (skip for Tidal Marsh Streams) Consider for left bank (LB) and right bank (RB) for Metric 19 ("Vegetated" Buffer Width). LB RB □ A □ A Mature forest □ B □ B Non-mature woody vegetation or modified vegetation structure □ C □ C Herbaceous vegetation with or without a strip of trees < 10 feet wide □ D □ D Maintained shrubs □ E □ E Little or no vegetation									
21.	Buffer Stressors – streamside area metric (skip for Tidal Marsh Streams) Check all appropriate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but is within 30 feet of stream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet). If none of the following stressors occurs on either bank, check here and skip to Metric 22: Abuts < 30 feet 30-50 feet LB RB LB RB LB RB A A A A Row crops B B B B B B B B B B B B B B B B B B B									
22.	Stem Density – streamside area metric (skip for Tidal Marsh Streams) Consider for left bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width). LB RB A Medium to high stem density B B B Low stem density C C C No wooded riparian buffer or predominantly herbaceous species or bare ground									
23.	Continuity of Vegetated Buffer – streamside area metric (skip for Tidal Marsh Streams) Consider whether vegetated buffer is continuous along stream (parallel). Breaks are areas lacking vegetation > 10 feet wide. LB RB A The total length of buffer breaks is < 25 percent. B B B The total length of buffer breaks is between 25 and 50 percent. C C The total length of buffer breaks is > 50 percent.									
24.	Vegetative Composition – streamside area metric (skip for Tidal Marsh Streams) Evaluate the dominant vegetation within 100 feet of each bank or to the edge of the watershed (whichever comes first) as it contributes to assessment reach habitat. LB RB △A Vegetation is close to undisturbed in species present and their proportions. Lower strata composed of native species, with non-native invasive species absent or sparse. □B B Vegetation indicates disturbance in terms of species diversity or proportions, but is still largely composed of native species. This may include communities of weedy native species that develop after clear-cutting or clearing or communities with non-native invasive species present, but not dominant, over a large portion of the expected strata or communities missing understory but retaining canopy trees. □C □C Vegetation is severely disturbed in terms of species diversity or proportions. Mature canopy is absent or communities with non-native invasive species dominant over a large portion of expected strata or communities composed of planted stands of non-characteristic species or communities inappropriately composed of a single species or no vegetation.									
25.	Conductivity – assessment reach metric (skip for all Coastal Plain streams) 25a. ☐ Yes ☐ No Was conductivity measurement recorded? If No, select one of the following reasons. ☐ No Water ☐ Other: 25b. Check the box corresponding to the conductivity measurement (units of microsiemens per centimeter). ☐ A < 46 ☐ B 46 to < 67 ☐ C 67 to < 79 ☐ D 79 to < 230 ☐ E ≥ 230									
Note	es/Sketch:									

Draft NC SAM Stream Rating Sheet Accompanies User Manual Version 2.1

Stream Site Name	CL1 Airport Expansion	Date of Assessment	April 2019						
Stream Category	Assessor Name/Organization	KMT,BGB/HDR							
Notes of Field Asses		NO							
Presence of regulator		YES							
Additional stream information/supplementary measurements included (Y/N) NO									
NC SAM feature type (perennial, intermittent, Tidal Marsh Stream) Perennial									

(poronnial, intornittorit, fradi waron ctroam)	1 010111110	<u>-</u>
Function Class Rating Summary	USACE/ All Streams	NCDWR Intermittent
(1) Hydrology	HIGH	
(2) Baseflow	HIGH	
(2) Flood Flow	HIGH	
(3) Streamside Area Attenuation	HIGH	
(4) Floodplain Access	HIGH	
(4) Wooded Riparian Buffer	HIGH	
(4) Microtopography	HIGH	
(3) Stream Stability	HIGH	
(4) Channel Stability	HIGH	
(4) Sediment Transport	LOW	
(4) Stream Geomorphology	HIGH	
(2) Stream/Intertidal Zone Interaction	NA NA	
(2) Longitudinal Tidal Flow	NA NA	
· · · -		
(2) Tidal Marsh Stream Stability (3) Tidal Marsh Channel Stability	NA NA	
	NA NA	
(3) Tidal Marsh Stream Geomorphology	NA NA	
(1) Water Quality	HIGH	
(2) Baseflow	HIGH	
(2) Streamside Area Vegetation	HIGH	
(3) Upland Pollutant Filtration	HIGH	
(3) Thermoregulation	HIGH	
(2) Indicators of Stressors	NO	
(2) Aquatic Life Tolerance	HIGH	
(2) Intertidal Zone Filtration	NA	
(1) Habitat	LOW	
(2) In-stream Habitat	LOW	
(3) Baseflow	HIGH	
(3) Substrate	LOW	
(3) Stream Stability	HIGH	
(3) In-stream Habitat	MEDIUM	
(2) Stream-side Habitat	HIGH	
(3) Stream-side Habitat	HIGH	
(3) Thermoregulation	HIGH	
(2) Tidal Marsh In-stream Habitat	NA	
(3) Flow Restriction	NA	
(3) Tidal Marsh Stream Stability	NA	
(4) Tidal Marsh Channel Stability	NA NA	
(4) Tidal Marsh Stream Geomorphology	NA NA	
(3) Tidal Marsh In-stream Habitat	NA NA	
(2) Intertidal Zone	NA NA	
Overall	HIGH	

NC SAM FIELD ASSESSMENT FORM Accompanies User Manual Version 2.1

		ACCO	inpanies Oser ivi	alluai veisioli 2. i		
USACE A	AID #:			NCDWR #:		
						.5-minute topographic quadrangle
						on the same property, identify and
						er Manual for detailed descriptions
					entary measur	rements were performed. See the
		nples of additional measu SORS AFFECTING THE		,	l to be within	the assessment area).
	T/SITE INFORMATION t name (if any):	ON: CLT Airport Expansion	2	2. Date of evaluation	: April 201	9
3. Applica	ant/owner name:	CLT		1. Assessor name/or	ganization:	KMT,BGB/HDR
5. County	<i>-</i>	Mecklenburg		6. Nearest named wa	ater body	
7. River b	oasin:	Catawba		on USGS 7.5-min	ute quad:	Coffey Creek
8. Site co	ordinates (decimal de	egrees, at lower end of as	sessment reach)	35.203812, -80).953573	
	•	pth and width can be a PS1-2, S2				
	ımber (show on attach			ength of assessment		
		riffle, if present) to top o		1		able to assess channel depth.
	nel width at top of bar			ssessment reach a s	wamp steam?	☐Yes ☐No
		flow Intermittent flow	☐Tidal Marsh S	tream		
_	CATEGORY INFOR		_	_		_
15. NC S	AM Zone:	☐ Mountains (M)	□ Piedmont (P)	☐ Inner Coasta	al Plain (I)	Outer Coastal Plain (O)
					1	/
					1	
16. Estim	ated geomorphic	\bowtie_{A}			1	_
	shape (skip for	_				
Tidal	Marsh Stream):	(more sinuous stream	, flatter valley slop	oe) (les	ss sinuous stre	eam, steeper valley slope)
	rshed size: (skip	\square Size 1 (< 0.1 mi ²)	⊠Size 2 (0.1 to	$< 0.5 \text{ mi}^2$) $\square \text{Siz}$	ze 3 (0.5 to < 5	5 mi²) ☐Size 4 (≥ 5 mi²)
	idal Marsh Stream)					
	NAL INFORMATION				L	4
	regulatory considerat	ions evaluated? □Yes □Classified Tro				nt area. hed (□I □II □III □IV □V)
	sential Fish Habitat	☐Primary Nurs				Outstanding Resource Waters
	blicly owned property		arian buffer rule ir		t Sensitive Wa	_
	adromous fish	⊠303(d) List	andir banor raio ii			nmental Concern (AEC)
_		of a federal and/or state li	sted protected sp			
	st species:					
□De	signated Critical Habi	tat (list species)				
19. Are a	dditional stream inforr	mation/supplementary me	easurements inclu	ided in "Notes/Sketc	ch" section or a	attached? □Yes ⊠No
	1111				٠.	
		nent reach metric (skip	for Size 1 stream	ns and Tidal Marsh	Streams)	
⊠A ⊟B	No flow, water in	assessment reach.				
□c	No water in asses					
2. Evide □A		ion – assessment reacl		nool coguence ic c	soverely offer	ted by a flow restriction or fill to the
⊔٨						mpoundment on flood or ebb with
						ne channel, tidal gates, debris jam
	beaver dams).					
⊠в	Not A					
3. Featu	re Pattern – assessr	ment reach metric				
□A	A majority of the a	assessment reach has alt	ered pattern (exa	mples: straightening	, modification	above or below culvert).
⊠в	Not A					
4. Featu	re Longitudinal Prof	ile – assessment reach	metric			
□A	_			eam profile (example	es: channel do	own-cutting, existing damming, ov
						as not reformed from any of the
 -	disturbances).					•
⊠в	Not A					
5. Signs	of Active Instability	– assessment reach m	etric			
Cons	ider only current ins	stability, not past event	s from which th			ed. Examples of instability include
			ad-cut), active wid	ening, and artificial h	hardening (su	ch as concrete, gabion, rip-rap).
⊠A □B	< 10% of channel					
∐B □C	10 to 25% of char > 25% of channel					
Цυ	- 20 /0 OI CHAIIIEI	distable				

6.					streamsid					
			the Left	Bank (LB) and the	Right Ba	nk (RB).			
	LB ⊠A □B	RB ⊠A □B	Mod refe	derate eviderence inte	dence of c eraction (ex	conditions camples:	limited streams	erms, levee ide area a	es, down- ccess, dis	eraction cutting, aggradation, dredging) that adversely affective in the adversely affective in the adversely affective in the adversely affective in the adversely and a stream side area, leaky in or ditching [including mosquito ditching])
	□c	□c	[exa of flo mos	amples: ca	auseways through st hing]) <u>or</u> f	with flood reamside	plain and chanr area] <u>or</u> too mu	nel constric ch floodpla	ction, bulk ain/intertic	eraction (little to no floodplain/intertidal zone access heads, retaining walls, fill, stream incision, disruption dal zone access [examples: impoundments, intensive or assessment reach is a man-made feature on an
7.	Wate	r Quality	Stresso	ors – asse	essment r	each/inte	rtidal zone me	tric		
		k all that								
										er discoloration, oil sheen, stream foam)
	□B □C						n features or int			nd causing a water quality problem
	\Box D				ural sulfide		s critering the d	0000011101	10 10 40 11 <u>41</u>	adding a water quality problem
	□E			shed or c	ollected da	ata indica	ting degraded	water qua	lity in the	assessment reach. Cite source in "Notes/Sketch
	□F	section Lives		h access t	o stream o	or intertida	al zone			
	□G				am or inte					
							I zone (removal in "Notes/Sketo			nowing, destruction, etc)
	⊠J		to no str			_ (OXPIGIT	III I TOLOGI OKOK	011 0001101	'/	
8.	Rece	nt Weath	ner – wat	tershed n	netric (ski	p for Tida	al Marsh Strea	ms)		
										reams, D2 drought or higher is considered a drought
	□A □B						II not exceeding I inch within the			ist 48 hours
	⊠c			onditions					0 0.0	
9.	Large	e or Dang	gerous S	Stream – a	assessme	nt reach	metric			
	□Ye	s ⊠No) Is st	tream is to	oo large or	dangerou	us to assess? I	f Yes, skip	to Metric	: 13 (Streamside Area Ground Surface Condition).
10.							ach metric	, of the o	2222222	at reach (examples of atraceas include exaces)
	iua.	∐Yes	⊠No	sedime	ntation, m	ining, exc		eam harde	ening [for	nt reach (examples of stressors include excessive example, rip-rap], recent dredging, and snagging to Metric 12)
	10b.	Check a ⊠A								ize 4 Coastal Plain streams) 5% oysters or other natural hard bottoms
					s, lichens,		uatic mosses mats)	Check for Tidal Marsh Streams Only	□F □G	Submerged aquatic vegetation
		⊠в			nd/or leaf p	oacks and	d/or emergent	k for T h Stre Only	□H □I	Low-tide refugia (pools) Sand bottom
		□с	vegetat Multiple		nd logs (inc	cluding lap	o trees)	heck arsh	∐'j	5% vertical bank along the marsh
		\boxtimes D	5% unc	dercut bar	ks and/or	root mats	s and/or roots	ਹਂ≥ਂ	□K	Little or no habitat
		□E		s extend t no habita		nal wetted	l perimeter			
****	*****	*******	******	**REMAIN	IING QUE	STIONS	ARE NOT APP	LICABLE	FOR TID	AL MARSH STREAMS************************************
11.	Bedf	orm and	Substra	te – asse	ssment re	each metr	ic (skip for Siz	ze 4 Coas	tal Plain	streams and Tidal Marsh Streams)
	11a.	□Yes	⊠No	Is assess	sment read	ch in a nat	tural sand-bed	stream? (s	skip for C	coastal Plain streams)
	11b.	Bedform ⊠A			k the appi (evaluate)		ox(es).			
		□B			າ (evaluate					
		□с	Natural	bedform	absent (sk	ip to Met	ric 12, Aquatio	: Life)		
	11c.	at least	one box	in each r	ow (skip 1	for Size 4	Coastal Plain	streams a	and Tidal	essment reach – whether or not submerged. Check Marsh Streams) . Not Present (NP) = absent, Rare Predominant (P) = > 70%. Cumulative percentages
		should n	ot excee	ed 100% fo	or each as	sessment		, ,		, ,
		NP ⊠	R □	C	A	P	Bedrock/sapr	olite		
		\boxtimes					Boulder (256	– 4096 mr	m)	
			H		님	H	Cobble (64 – Gravel (2 – 64			
						H	Sand (.062 –			
					\boxtimes		Silt/clay (< 0.0	,		
				\square		\exists	Detritus Artificial (rip-ra	ap, concre	ete, etc.)	
	11d.	□Yes	□No	Are pools	— s filled with			-		streams and Tidal Marsh Streams)

12.			sessment reach metric (skip for Tidal Marsh Streams)
	12a. ⊠ If N		No Was an in-stream aquatic life assessment performed as described in the User Manual? one of the following reasons and skip to Metric 13. ☐No Water ☐Other:
	12b. ⊠	Yes	No Are aquatic organisms present in the assessment reach (look in riffles, pools, then snags)? If Yes, check all that apply. If No, skip to Metric 13.
	1 		Numbers over columns refer to "individuals" for Size 1 and 2 streams and "taxa" for Size 3 and 4 streams. Adult frogs Aquatic reptiles
			Aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats) Beetles Caddisfly larvae (T)
			Asian clam (<i>Corbicula</i>) Crustacean (isopod/amphipod/crayfish/shrimp)
			Damselfly and dragonfly larvae Dipterans Mayfly larvae (E)
		\boxtimes	Megaloptera (alderfly, fishfly, dobsonfly larvae) Midges/mosquito larvae Mosquito fish (<i>Gambusia</i>) or mud minnows (<i>Umbra pygmaea</i>)
			Mussels/Clams (not <i>Corbicula</i>) Other fish
			Salamanders/tadpoles Snails Stonefly larvae (P)
			Tipulid larvae Worms/leeches
13.			Ground Surface Condition – streamside area metric (skip for Tidal Marsh Streams and B valley types) Left Bank (LB) and the Right Bank (RB). Consider storage capacity with regard to both overbank flow and upland runoff.
	⊠a □B □C	⊠a □B □C	Little or no alteration to water storage capacity over a majority of the streamside area Moderate alteration to water storage capacity over a majority of the streamside area Severe alteration to water storage capacity over a majority of the streamside area (examples: ditches, fill, soil compaction,
14.			livestock disturbance, buildings, man-made levees, drainage pipes) Water Storage – streamside area metric (skip for Size 1 streams, Tidal Marsh Streams, and B valley types) Left Bank (LB) and the Right Bank (RB) of the streamside area.
	LB	RB	Ecit Balik (EB) and the hight Balik (NB) of the streamside area.
	□A □B ⊠C	□A ⊠B □C	Majority of streamside area with depressions able to pond water ≥ 6 inches deep Majority of streamside area with depressions able to pond water 3 to 6 inches deep Majority of streamside area with depressions able to pond water < 3 inches deep
15.	Conside wetted po	r for the erimeter	e – streamside area metric (skip for Tidal Marsh Streams) Left Bank (LB) and the Right Bank (RB). Do not consider wetlands outside of the streamside area or within the normal of assessment reach.
	LB □Y ⊠N	RB ⊠Y □N	Are wetlands present in the streamside area?
16.	Check a ☐A	II contrib Streams	outors – assessment reach metric (skip for Size 4 streams and Tidal Marsh Streams) outors within the assessment reach or within view of <u>and</u> draining to the assessment reach. and/or springs (jurisdictional discharges)
	□B □C 図D 図E □F	Obstruc Evidenc Stream	nclude wet detention basins; do not include sediment basins or dry detention basins) ion passing flow during low-flow periods within the assessment area (beaver dam, leaky dam, bottom-release dam, weir) e of bank seepage or sweating (iron in water indicates seepage) bed or bank soil reduced (dig through deposited sediment if present) the above
17.	Check a	II that ap	
	□A □B □C □D	Obstruc Urban s	e of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation) tion not passing flow during low-flow periods affecting the assessment reach (ex: watertight dam, sediment deposit) tream (≥ 24% impervious surface for watershed) that the streamside area has been modified resulting in accelerated drainage into the assessment reach
	□E □F	Assessr	nent reach relocated to valley edge the above
18.	_		sment reach metric (skip for Tidal Marsh Streams)
	⊠a □B	Stream Degrade	Consider "leaf-on" condition. shading is appropriate for stream category (may include gaps associated with natural processes) and (example: scattered trees)
	□С	Stream	shading is gone or largely absent

19.	Buffer Width – streamside area metric (skip for Tidal Marsh Streams) Consider "vegetated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top of bank out to the first break. Vegetated Wooded LB RB LB RB $A A A A A A A A A A A A A A A A A A A$
20.	Buffer Structure – streamside area metric (skip for Tidal Marsh Streams) Consider for left bank (LB) and right bank (RB) for Metric 19 ("Vegetated" Buffer Width). LB RB □A □A Mature forest □B □B Non-mature woody vegetation or modified vegetation structure □C □C Herbaceous vegetation with or without a strip of trees < 10 feet wide
21.	□D □D Maintained shrubs □E □E Little or no vegetation Buffer Stressors – streamside area metric (skip for Tidal Marsh Streams) Check all appropriate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but is within 30 feet of stream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet). If none of the following stressors occurs on either bank, check here and skip to Metric 22: Abuts < 30 feet 30-50 feet
	LB RB LB RB LB RB A A A A A A A A A A Row crops B B B B B B Maintained turf C C C C C C C Pasture (no livestock)/commercial horticulture D D D D D D Pasture (active livestock use)
22.	Stem Density – streamside area metric (skip for Tidal Marsh Streams) Consider for left bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width). LB RB A Medium to high stem density B B B Low stem density C C C No wooded riparian buffer or predominantly herbaceous species or bare ground
23.	Continuity of Vegetated Buffer – streamside area metric (skip for Tidal Marsh Streams) Consider whether vegetated buffer is continuous along stream (parallel). Breaks are areas lacking vegetation > 10 feet wide. LB RB \[\text{A} \text{N} \text{A} \text{The total length of buffer breaks is < 25 percent.} \] \[\text{D} \text{B} \text{B} \text{The total length of buffer breaks is between 25 and 50 percent.} \] \[\text{C} \text{C} \text{The total length of buffer breaks is > 50 percent.} \]
24.	Vegetative Composition – streamside area metric (skip for Tidal Marsh Streams) Evaluate the dominant vegetation within 100 feet of each bank or to the edge of the watershed (whichever comes first) as it contributes to assessment reach habitat. LB RB ⊠A Vegetation is close to undisturbed in species present and their proportions. Lower strata composed of native species, with non-native invasive species absent or sparse. □B B Vegetation indicates disturbance in terms of species diversity or proportions, but is still largely composed of native species. This may include communities of weedy native species that develop after clear-cutting or clearing or communities with non-native invasive species present, but not dominant, over a large portion of the expected strata or communities missing understory but retaining canopy trees. □C □C Vegetation is severely disturbed in terms of species diversity or proportions. Mature canopy is absent or communities with non-native invasive species dominant over a large portion of expected strata or communities composed of planted stands of non-characteristic species or communities inappropriately composed of a single species or no vegetation.
25.	Conductivity – assessment reach metric (skip for all Coastal Plain streams) 25a. ☐ Yes ☐ No Was conductivity measurement recorded? If No, select one of the following reasons. ☐ No Water ☐ Other: 25b. Check the box corresponding to the conductivity measurement (units of microsiemens per centimeter). ☐ A < 46 ☐ B 46 to < 67 ☐ C 67 to < 79 ☐ D 79 to < 230 ☐ E ≥ 230
Note	es/Sketch:

Stream Site Name	CL1 Airport Expansion	Date of Assessment	April 2019					
Stream Category	Pa2	Assessor Name/Organization	KMT,BGB/HD	R				
Notes of Field Asses	sment Form (Y/N)		NO					
Presence of regulator	Presence of regulatory considerations (Y/N) YES							
Additional stream inf	dditional stream information/supplementary measurements included (Y/N) NO							
NC SAM feature type	IC SAM feature type (perennial, intermittent, Tidal Marsh Stream) Perennial Perennial							

e (perennial, intermittent, Tidal Marsh Stream)	Perennial			
Function Class Rating Summary	USACE/ All Streams	NCDWR Intermittent		
(1) Hydrology	HIGH	- Intermitted		
(2) Baseflow	HIGH			
(2) Flood Flow	HIGH			
(3) Streamside Area Attenuation	HIGH			
(4) Floodplain Access	HIGH			
(4) Wooded Riparian Buffer	HIGH			
(4) Microtopography	LOW			
(3) Stream Stability	HIGH			
(4) Channel Stability	HIGH			
(4) Sediment Transport	LOW			
(4) Stream Geomorphology	HIGH			
(2) Stream/Intertidal Zone Interaction	NA NA			
(2) Longitudinal Tidal Flow	NA NA			
(2) Tidal Marsh Stream Stability	NA NA			
(3) Tidal Marsh Channel Stability	NA NA			
(3) Tidal Marsh Stream Geomorphology	NA			
(1) Water Quality	HIGH			
(2) Baseflow	HIGH			
(2) Streamside Area Vegetation	HIGH			
(3) Upland Pollutant Filtration	HIGH			
(3) Thermoregulation	HIGH			
(2) Indicators of Stressors	NO			
(2) Aquatic Life Tolerance	HIGH			
(2) Intertidal Zone Filtration	NA			
(1) Habitat	HIGH			
(2) In-stream Habitat	MEDIUM			
(3) Baseflow	HIGH			
(3) Substrate	LOW			
(3) Stream Stability	HIGH			
(3) In-stream Habitat	HIGH			
(2) Stream-side Habitat	HIGH			
(3) Stream-side Habitat	HIGH			
(3) Thermoregulation	HIGH			
(2) Tidal Marsh In-stream Habitat	NA			
(3) Flow Restriction	NA			
(3) Tidal Marsh Stream Stability	NA			
(4) Tidal Marsh Channel Stability	NA			
(4) Tidal Marsh Stream Geomorphology	NA			
(3) Tidal Marsh In-stream Habitat	NA			
(2) Intertidal Zone	NA NA			
Overall	HIGH			

	Accor	inpanies Osei Manuai vers	1011 2.1	
USACE AID #:		NCDV	VR #:	
				7.5-minute topographic quadrangle,
		•		on the same property, identify and
				ser Manual for detailed descriptions
				rements were performed. See the
NC SAM User Manual for exa				
NOTE EVIDENCE OF STRES		ASSESSMENT AREA (do I	not need to be within	the assessment area).
PROJECT/SITE INFORMATI	-			
1. Project name (if any):	CLT Airport Expansion	2. Date of e		
3. Applicant/owner name:	CLT		name/organization:	KMT,BGB/HDR
5. County:	Mecklenburg Catawba		named water body	Coffort Crook
7. River basin: 8. Site coordinates (decimal of			3 7.5-minute quad:	Coffey Creek
`	•		3366, -80.953215	
STREAM INFORMATION: (d	epth and width can be ap PS1-2, S2			
9. Site number (show on attack			sessment reach evalua	ated (feet): 281'
11. Channel depth from bed (nable to assess channel depth.
12. Channel width at top of ba			reach a swamp steam	? ∐Yes ∐No
14. Feature type: ⊠Perennia	al flow Intermittent flow	☐Tidal Marsh Stream	•	
STREAM CATEGORY INFO	RMATION:			
15. NC SAM Zone:	☐ Mountains (M)	□ Piedmont (P) □ Inn	er Coastal Plain (I)	Outer Coastal Plain (O)
			1	1
16. Estimated geomorphic	\bowtie_{A}			
valley shape (skip for	_			
Tidal Marsh Stream):	(more sinuous stream	• • •	•	eam, steeper valley slope)
17. Watershed size: (skip	\square Size 1 (< 0.1 mi ²)	Size 2 (0.1 to < 0.5 mi ²)	☐Size 3 (0.5 to <	5 mi²)
for Tidal Marsh Stream)				
ADDITIONAL INFORMATION 18. Were regulatory considers		□No. If Vos. chack all that a	annly to the accessmo	nt area
Section 10 water	Classified Tro			marea. shed (□I □II □III □IV □V)
Essential Fish Habitat	☐Primary Nurse			/Outstanding Resource Waters
□ Publicly owned propert		_	Nutrient Sensitive W	_
☐Anadromous fish	303(d) List		CAMA Area of Enviro	onmental Concern (AEC)
☐Documented presence	of a federal and/or state lis	sted protected species withir	the assessment area	
List species:				
☐Designated Critical Hal				
19. Are additional stream info	rmation/supplementary me	easurements included in "Not	tes/Sketch" section or	attached? ☐Yes ⊠No
1. Channel Water – assess	ment reach metric (skin t	for Size 1 streams and Tida	al Marsh Streams)	
	ut assessment reach.	ior ollo i otrodino dila ria	in maron on oursamo,	
□B No flow, water in				
□C No water in asset	essment reach.			
2. Evidence of Flow Restric	ction – assessment reach	n metric		
☐A At least 10% of	assessment reach in-strea	am habitat or riffle-pool sequ	ence is severely affect	eted by a flow restriction or fill to the
point of obstruct	ting flow <u>or</u> a channel chok	ked with aquatic macrophyte	s <u>or</u> ponded water <u>or</u>	impoundment on flood or ebb within
	reach (examples: undersi	zed or perched culverts, cau	seways that constrict t	the channel, tidal gates, debris jams,
beaver dams). ⊠B Not A				
3. Feature Pattern – assess				
	assessment reach has alt	ered pattern (examples: stra	ightening, modification	above or below culvert).
⊠B Not A				
	ofile – assessment reach		,	
				lown-cutting, existing damming, over
widening, active disturbances).	aggradation, dredging, ar	nu excavation where approp	mate channel profile i	has not reformed from any of these
⊠B Not A				
	hy accomment =====	otrio		
	ty – assessment reach m		nae currently receye	red. Examples of instability include
				red. Examples of instability include itch as concrete, gabion, rip-rap).
⊠A < 10% of channe		, soure masining, and		
□B 10 to 25% of character	annel unstable			
☐C > 25% of channe	el unstable			

		ea Intera							
		ie Left B	ank (LB)	and the R	light Bai	nk (RB).			
LВ ⊠A □В	⊠A □B	Mode refere	erate evide ence intera	ence of co action (exa	nditions amples:	(examples: be limited streams	rms, levee ide area a	es, down- ccess, dis	cutting, aggradation, dredging) that adversely affect ruption of flood flows through streamside area, leaky
□C	□c	[exan of floo moso	nples: cau od flows th juito ditchi	iseways w rough stre ng]) <u>or</u> flo	ith flood eamside	plain and chann area] <u>or</u> too mud	el constric ch floodpla	tion, bulk in/intertid	heads, retaining walls, fill, stream incision, disruption al zone access [examples: impoundments, intensive
Water (Quality	Stressor	s – asses	sment re	ach/inte	rtidal zone me	tric		
	-								
ΠA									er discoloration, oil sheen, stream foam)
									nd causing a water quality problem
□Ď						ontorning the a	00000111011	t rodon <u>di</u>	to oddowy a water quality problem
□E			ned or col	lected dat	ta indica	ting degraded	water qua	lity in the	assessment reach. Cite source in "Notes/Sketch"
∏F			access to	stream or	intertida	l zone			
□G									
									owing, destruction, etc)
⊠j					(охріант	III MOLOG/OROL	000000	1)	
Recent	Weathe	er – wate	rshed me	tric (skip	for Tida	al Marsh Strea	ns)		
									st 48 hours
⊠c				aa 0710			1401 10 11	, u. c	
Large o	r Dang	erous St	ream – as	sessmen	t reach	metric			
□Yes	⊠No	Is str	eam is too	large or o	dangerou	is to assess? If	Yes, skip	to Metric	13 (Streamside Area Ground Surface Condition).
							of the e		t reach (examples of stressers include examples
10a. <u> </u>	res	⊠INO	sediment	ation, mir	ning, exc	avation, in-stre	am harde	ning [for	example, rip-rap], recent dredging, and snagging)
									ize 4 Coastal Plain streams) 5% oysters or other natural hard bottoms
							idal	∐' _G	Submerged aquatic vegetation
				or leaf pa	acks and	l/or emergent	for Stre		Low-tide refugia (pools) Sand bottom
]C			logs (incl	uding lap	trees)	heck arsh	∐ ,	5% vertical bank along the marsh
\triangleright							ပ ≥	□K	Little or no habitat
				the norma	ai welled	perimeter			
******	*****			NG QUES	TIONS A	ADE NOT ADD	ICABI E	FOR TID	AL MARSH STREAMS*******************
_	m and S	ubstrate	e – assess		ich metr	ic (skip for Siz	e 4 Coast	al Plain s	streams and Tidal Marsh Streams)
Bedfor	m and S	ubstrate	e – assess		ich metr	ic (skip for Siz	e 4 Coast	al Plain s	
11a. [m and S Yes edform e	Substrate ⊠No l evaluated	e – assess s assessr d. Check	nent reach	nch metr n in a nat ppriate b	ic (skip for Siz	e 4 Coast	al Plain s	streams and Tidal Marsh Streams)
11a. [11b. B	m and S]Yes edform 6]A]B	Substrate ⊠No levaluated Riffle-rur Pool-glid	e – assess s assess d. Check s section (e section	nent reach the appro evaluate (evaluate)	nch metr n in a nat opriate b 11c) 11d)	ic (skip for Sizeral sand-bed sox(es).	e 4 Coast	al Plain s	streams and Tidal Marsh Streams)
11a. [11b. B	m and S]Yes edform 6]A]B	Substrate ⊠No levaluated Riffle-rur Pool-glid	e – assess s assess d. Check s section (e section	nent reach the appro evaluate (evaluate)	nch metr n in a nat opriate b 11c) 11d)	ic (skip for Siz	e 4 Coast	al Plain s	streams and Tidal Marsh Streams)
11a.	m and S Yes edform e A B C riffle se	Substrate No evaluated Riffle-rur Pool-glid Natural b ctions, ch	e – assess d. Check a section (e section ab edform ab neck all tha n each ro	nent reach the appro evaluate (evaluate osent (ski) at occur be w (skip fo	och metropriate bottom in a nate bottom to Meteor the or Size 4	ic (skip for Sizeral sand-bed stock(es). ric 12, Aquatical normal wetted partical Coastal Plain	te 4 Coasi stream? (s Life) perimeter s streams a	al Plain s kip for C of the ass and Tidal	essment reach – whether or not submerged. Check Marsh Streams). Not Present (NP) = absent, Rare
11a. 11b. B 11c. In at (F	m and S Yes edform 6 A B C riffle se least o C onuld no	Substrate No evaluated Riffle-rur Pool-glid Natural b ctions, ch ne box i sent but t exceed	e – assess d. Check a section (e section about the section about the section of the section about the section about the section of the section about the section of the section of the section about the section	the approved the approved the approved the approved to the app	priate by 11c) 11d) p to Met elow the or Size 4 essment	ic (skip for Sizerural sand-bed stock(es). ric 12, Aquatice normal wetted properties to Coastal Plain 1-40%, Abundan	te 4 Coasi stream? (s Life) perimeter s streams a	al Plain s kip for C of the ass and Tidal	oastal Plain streams) essment reach – whether or not submerged. Check
11a.	m and S Yes edform e A B C riffle se least o C ould no	Substrate No evaluated Riffle-rur Pool-glid Natural b ctions, ch ne box i sent but	e – assess d. Check a section (e section about the seck all the character of the character	the approved the approved the approved the approved to the app	n in a nate priate by 11c) 11d) p to Met elow the pr Size 4 c) = > 10 essment	cic (skip for Sizeural sand-bed sox(es). ric 12, Aquatic normal wetted postal Plain -40%, Abundan reach.	Life) Descrimeter of streams at (A) = > 4	al Plain s kip for C of the ass and Tidal	essment reach – whether or not submerged. Check Marsh Streams). Not Present (NP) = absent, Rare
11a.	m and S Yes edform e A B C riffle se least o could no	Substrate No evaluated Riffle-rur Pool-glid Natural b ctions, ch ne box i sent but t exceed	e – assess d. Check a section (e section about the section about the section of the section about the section about the section of the section about the section of the section of the section about the section	the approved the approved the approved the approved to the app	priate by 11c) 11d) p to Met elow the or Size 4 essment	ric (skip for Sizeural sand-bed secox(es). ric 12, Aquaticenormal wetted processal Plain -40%, Abundan reach. Bedrock/sapro Boulder (256	Life) Derimeter of streams at (A) = > 4	al Plain s kip for C of the ass and Tidal 40-70%, F	essment reach – whether or not submerged. Check Marsh Streams). Not Present (NP) = absent, Rare
11a.	m and S Yes edform e A B C riffle se least o could no	Substrate No evaluated Riffle-rur Pool-glid Natural b ctions, ch ne box i sent but t exceed	e – assess s assessr d. Check a section (all the section reach ro ≤ 10%, Co 100% for C	the approved approved the approved to the control of the control o	n in a nate priate by 11c) 11d) p to Met elow the pr Size 4 c) = > 10 essment	ric (skip for Sizeural sand-bed secondes). ric 12, Aquaticum normal wetted processal Plain 1-40%, Abundan reach. Bedrock/sapro Boulder (256 - Cobble (64 - 1)	Life) Derimeter of streams a stream a strea	al Plain s kip for C of the ass and Tidal 40-70%, F	essment reach – whether or not submerged. Check Marsh Streams). Not Present (NP) = absent, Rare
11a.	m and S Yes edform e A B C riffle se least o could no	Substrate No evaluated Riffle-rur Pool-glid Natural b ctions, ch ne box i sent but t exceed	e – assess d. Check a section (e section about the section about the section of the section about the section about the section of the section about the section of the section of the section about the section	the approved approved the approved to the control of the control o	n in a nate priate by 11c) 11d) p to Met elow the pr Size 4 c) = > 10 essment	ric (skip for Sizeural sand-bed secox(es). ric 12, Aquaticenormal wetted processal Plain -40%, Abundan reach. Bedrock/sapro Boulder (256	Life) Derimeter of streams at (A) = > 4 Delite	al Plain s kip for C of the ass and Tidal 40-70%, F	essment reach – whether or not submerged. Check Marsh Streams). Not Present (NP) = absent, Rare
11a.	m and S Yes edform e A B C riffle se least o could no	Substrate No evaluated Riffle-rur Pool-glid Natural b ctions, ch ne box i sent but t exceed	e – assess s assessr d. Check a section (all the section reach ro 100% for C	the approvalent reach the approvaluate (evaluate sent (skip) at occur be well (skip) for the ach asset A	n in a nate priate by 11c) 11d) p to Met elow the pr Size 4 c) = > 10 essment	ric (skip for Sizeural sand-bed state). ric 12, Aquaticum and wetted processed Plain -40%, Abundar reach. Bedrock/sapre Boulder (256 Cobble (64 - 25 Cobble (64 - 25 Cobble (25 Cobble (25 - 25 Cobble (25 Cobble	Life) Derimeter of streams at (A) = > 4 Delite	al Plain s kip for C of the ass and Tidal 40-70%, F	essment reach – whether or not submerged. Check Marsh Streams). Not Present (NP) = absent, Rare
11a.	m and S Yes edform 6 A B C riffle se least o nould no P	Substrate No evaluated Riffle-rur Pool-glid Natural b ctions, ch ne box i sent but t exceed	e – assess s assessr d. Check a section (all the section reach ro ≤ 10%, Co 100% for C	the approved approved the approved to the control of the control o	n in a nate priate by 11c) 11d) p to Met elow the pr Size 4 c) = > 10 essment	ric (skip for Sizeural sand-bed secondes). ric 12, Aquaticum normal wetted properties (acceptable). Bedrock/sapre Boulder (256 Cobble (64 – 25 Cobble (64 – 25 Cobble (64 – 25 Cobble (25 –	Life) Derimeter streams at (A) = > 4 Dilite - 4096 mr 256 mm) H mm) H mm) H mm) H mm)	eal Plain solve for Cooperation of the assumed Tidal 40-70%, F	essment reach – whether or not submerged. Check Marsh Streams). Not Present (NP) = absent, Rare
	Water C Check: □A □B □C □D □E □G □H □I □J Recent For Size □A □B □C □Yes Natural 10a. □	Water Quality S Check all that all A Discol B Exces C Notice D Odor (E Currer sectio) F Livestr G Exces H Degra I Other: J Little t Recent Weather For Size 1 or 2 s A Droug B Droug C No dro Large or Dange Yes No Natural In-streat 10a. Yes 10b. Check all A B B C D D E	A	□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	☑A ☑A Little or no evidence of coreference interaction (exa or intermittent bulkheads or intermittent bulkheads ☑C ☑C Extensive evidence of coreflood flows through street mosquito ditching]) or flow interstream divide Water Quality Stressors – assessment received all that apply. ☐A Discolored water in stream or intermined interstream divide ☐B Excessive sedimentation (burying or conditions) ☐C Noticeable evidence of pollutant dividence of pollutant dividence or collected data section. ☐F Current published or collected data section. ☐F Livestock with access to stream or intertion. ☐G Excessive algae in stream or intertion. ☐H Degraded marsh vegetation in the other: ☐H Degraded marsh vegetation in the other: ☐H Degraded marsh vegetation in the other: ☐H Other: ☐J Little to no stressors Recent Weather – watershed metric (skip) For Size 1 or 2 streams, D1 drought or higher or conditions and no rainfall excended and provided conditions ☐C No drought conditions ☐A Drought conditions and rainfall excended and provided in-stream sedimentation, min (evaluate for Size) No Degraded in-stream sedimentat	☑A ☑A Little or no evidence of conditions reference interaction (examples: or intermittent bulkheads, causew or intermittent bulkheads, causewigh with flood of flood flows through streamside mosquito ditching]) or floodplain/interstream divide Water Quality Stressors – assessment reach/inte Check all that apply. ☐A Discolored water in stream or intertidal zone of pollutant discharges evidence of pollutant discharges of polluta	☑A ☑A Little or no evidence of conditions that adversely Moderate evidence of conditions (examples: be reference interaction (examples: limited streams or intermittent bulkheads, causeways with floodplain and chann of flood flows through streamside area] or too must mosquito ditching]) or floodplain/intertidal zone or interstream divide Water Quality Stressors – assessment reach/intertidal zone method flow interstream divide Water Quality Stressors – assessment reach/intertidal zone method flow interstream divide Water Quality Stressors – assessment reach/intertidal zone method flow interstream divide Water Quality Stressors – assessment reach/intertidal zone method flow interstream divide Water Quality Stressors – assessment reach/intertidal zone method flow interstream divide Water Quality Stressors – assessment reach/intertidal zone method flow flow interstream flow flow interstream flow flow flow flow flow flow flow flow	☑A ☑A Little or no evidence of conditions that adversely affect reference interaction (examples: limited streamside area at or intermittent bulkheads, causeways with floodplain construction of flood flows through streamside area and or intermittent bulkheads, causeways with floodplain construction of flood flows through streamside area or intermited bulkheads, causeways with floodplain construction of flood flows through streamside area or interdidal con much floodplain mosquito ditching]) or floodplain/intertidal zone unnaturally interstream divide Water Quality Stressors – assessment reach/intertidal zone metric Check all that apply. ☐ Discolored water in stream or intertidal zone (milky white, blue, unnaturally interstream divide) ☐ C Noticeable evidence of pollutant discharges entering the assessment Dodor (not including natural sulfide odors) ☐ C Current published or collected data indicating degraded water qual section. ☐ F Livestock with access to stream or intertidal zone ☐ G Excessive algae in stream or intertidal zone (removal, burning, Other:	⊠A A Little or no evidence of conditions that adversely affect reference intered Moderate evidence of conditions (examples: berms, levees, down-reference interaction (examples: berms, levees, down-reference interaction) □C □C Extensive evidence of conditions that adversely affect reference interaction (examples: causeways with floodplain and channel constriction, bulk of flood flows through streamside area] or too much floodplain/intertide mosquito ditchingl) or floodplain/intertidal zone unnaturally absent or interstream divide Water Quality Stressors – assessment reach/intertidal zone unnaturally absent or interstream divide Water Quality Stressors – assessment reach/intertidal zone unnaturally absent or interstream divide Water Quality Stressors – assessment reach/intertidal zone unnaturally absent or intertidal zone unnaturally absent or intertidal zone (milky white, blue, unnatural water streams) □C Discolored water in stream or intertidal zone (milky white, blue, unnatural water stream in the lassessment reach and policy assessment reach and policy in the section. □F Livestock with access to stream or intertidal zone (removal, burning, regular moly other. □C Livestock with access to stream or intertidal zone (removal,

12.	-		sessment reach metric (skip for Tidal Marsh Streams)
	12a. ⊠ If N		No Was an in-stream aquatic life assessment performed as described in the User Manual? one of the following reasons and skip to Metric 13. ☐No Water ☐Other:
	12b. 🛚	Yes	No Are aquatic organisms present in the assessment reach (look in riffles, pools, then snags)? If Yes, check all that apply. If No, skip to Metric 13.
	1 		Numbers over columns refer to "individuals" for Size 1 and 2 streams and "taxa" for Size 3 and 4 streams. Adult frogs Aquatic reptiles
			Aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats) Beetles Caddisfly larvae (T)
			Asian clam (<i>Corbicula</i>) Crustacean (isopod/amphipod/crayfish/shrimp)
	H		Damselfly and dragonfly larvae Dipterans Mayfly larvae (E)
			Megaloptera (alderfly, fishfly, dobsonfly larvae) Midges/mosquito larvae
			Mosquito fish (<i>Gambusia</i>) or mud minnows (<i>Umbra pygmaea</i>) Mussels/Clams (not <i>Corbicula</i>) Other fish
			Salamanders/tadpoles Snails Stonefly larvae (P)
			Tipulid larvae Worms/leeches
13.			Ground Surface Condition – streamside area metric (skip for Tidal Marsh Streams and B valley types) Left Bank (LB) and the Right Bank (RB). Consider storage capacity with regard to both overbank flow and upland runoff.
	⊠a □B	⊠a □B	Little or no alteration to water storage capacity over a majority of the streamside area Moderate alteration to water storage capacity over a majority of the streamside area
	□C	□с	Severe alteration to water storage capacity over a majority of the streamside area (examples: ditches, fill, soil compaction livestock disturbance, buildings, man-made levees, drainage pipes)
14.	Conside LB	r for the RB	Water Storage – streamside area metric (skip for Size 1 streams, Tidal Marsh Streams, and B valley types) Left Bank (LB) and the Right Bank (RB) of the streamside area.
	□A □B ⊠C	□A □B ⊠C	Majority of streamside area with depressions able to pond water ≥ 6 inches deep Majority of streamside area with depressions able to pond water 3 to 6 inches deep Majority of streamside area with depressions able to pond water < 3 inches deep
15.	Conside wetted p	r for the erimeter	te – streamside area metric (skip for Tidal Marsh Streams) Left Bank (LB) and the Right Bank (RB). Do not consider wetlands outside of the streamside area or within the norma of assessment reach.
	LB □Y ⊠N	RB ⊠Y □N	Are wetlands present in the streamside area?
16.	Check a ☐A	II contrik Streams	putors – assessment reach metric (skip for Size 4 streams and Tidal Marsh Streams) outors within the assessment reach or within view of <u>and</u> draining to the assessment reach. and/or springs (jurisdictional discharges)
	□B □C 図D 図E □F	Obstruc Evidenc Stream	nclude wet detention basins; do not include sediment basins or dry detention basins) tion passing flow during low-flow periods within the assessment area (beaver dam, leaky dam, bottom-release dam, weir) to of bank seepage or sweating (iron in water indicates seepage) to be dor bank soil reduced (dig through deposited sediment if present) the above
17.		w Detrac	tors – assessment area metric (skip for Tidal Marsh Streams)
	□A □B □C □D	Evidenc Obstruc Urban s	e of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation) tion not passing flow during low-flow periods affecting the assessment reach (ex: watertight dam, sediment deposit) tream (≥ 24% impervious surface for watershed) that the streamside area has been modified resulting in accelerated drainage into the assessment reach
	□E □F	Assessr	the above
18.	-		sment reach metric (skip for Tidal Marsh Streams) Consider "leaf-on" condition.
	⊠A □B □C	Stream Degrade	shading is appropriate for stream category (may include gaps associated with natural processes) d (example: scattered trees) shading is gone or largely absent

19.	Buffer Width – streamside area metric (skip for Tidal Marsh Streams) Consider "vegetated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top of bank out to the first break. Vegetated Wooded LB RB LB RB △A △A △A △A ≥ 100 feet wide or extends to the edge of the watershed □B □B △B □B From 50 to < 100 feet wide □C □C □C □C □C From 30 to < 50 feet wide □D □D □D □D From 10 to < 30 feet wide
20.	Buffer Structure – streamside area metric (skip for Tidal Marsh Streams) Consider for left bank (LB) and right bank (RB) for Metric 19 ("Vegetated" Buffer Width). B RB A Mature forest B B Non-mature woody vegetation or modified vegetation structure C C Herbaceous vegetation with or without a strip of trees < 10 feet wide D Maintained shrubs E Little or no vegetation
21.	Buffer Stressors – streamside area metric (skip for Tidal Marsh Streams) Check all appropriate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but is within 30 feet of stream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet). If none of the following stressors occurs on either bank, check here and skip to Metric 22: Abuts < 30 feet 30-50 feet LB RB LB RB LB RB A A A A Row crops B B B B B B B B B B B B B B B B B B B
22.	Stem Density – streamside area metric (skip for Tidal Marsh Streams) Consider for left bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width). LB RB A Medium to high stem density B B B Low stem density C C C No wooded riparian buffer or predominantly herbaceous species or bare ground
23.	Continuity of Vegetated Buffer – streamside area metric (skip for Tidal Marsh Streams) Consider whether vegetated buffer is continuous along stream (parallel). Breaks are areas lacking vegetation > 10 feet wide. LB RB A The total length of buffer breaks is < 25 percent. B B B The total length of buffer breaks is between 25 and 50 percent. C C The total length of buffer breaks is > 50 percent.
24.	Vegetative Composition – streamside area metric (skip for Tidal Marsh Streams) Evaluate the dominant vegetation within 100 feet of each bank or to the edge of the watershed (whichever comes first) as it contributes to assessment reach habitat. LB RB △A Vegetation is close to undisturbed in species present and their proportions. Lower strata composed of native species, with non-native invasive species absent or sparse. □B B Vegetation indicates disturbance in terms of species diversity or proportions, but is still largely composed of native species. This may include communities of weedy native species that develop after clear-cutting or clearing or communities with non-native invasive species present, but not dominant, over a large portion of the expected strata or communities missing understory but retaining canopy trees. □C □C Vegetation is severely disturbed in terms of species diversity or proportions. Mature canopy is absent or communities with non-native invasive species dominant over a large portion of expected strata or communities composed of planted stands of non-characteristic species or communities inappropriately composed of a single species or no vegetation.
25.	Conductivity – assessment reach metric (skip for all Coastal Plain streams) 25a. ☐ Yes ☐ No Was conductivity measurement recorded? If No, select one of the following reasons. ☐ No Water ☐ Other: 25b. Check the box corresponding to the conductivity measurement (units of microsiemens per centimeter). ☐ A < 46 ☐ B 46 to < 67 ☐ C 67 to < 79 ☐ D 79 to < 230 ☐ E ≥ 230
Note	es/Sketch:

Stream Site Name	CL1 Airport Expansion	Date of Assessment	Aprili 2019					
Stream Category	Pa2	Assessor Name/Organization	KMT,BGB/HDF	(
Notes of Field Assessment Form (Y/N) NO								
Presence of regulatory considerations (Y/N) YES								
Additional stream inf	dditional stream information/supplementary measurements included (Y/N) NO							
NC SAM feature typ	C SAM feature type (perennial, intermittent, Tidal Marsh Stream) Perennial							

Aporoninal, intornittorit, Tradi Maron Ctrodiny	T OTOTINA	<u>-</u>
Function Class Rating Summary	USACE/ All Streams	NCDWR Intermittent
(1) Hydrology	HIGH	
(2) Baseflow	HIGH	
(2) Flood Flow	HIGH	
(3) Streamside Area Attenuation	HIGH	
(4) Floodplain Access	HIGH	
(4) Wooded Riparian Buffer	HIGH	
(4) Microtopography	LOW	
(3) Stream Stability	HIGH	
•	HIGH	
(4) Channel Stability		
(4) Sediment Transport	LOW	
(4) Stream Geomorphology	HIGH	
(2) Stream/Intertidal Zone Interaction	NA NA	
(2) Longitudinal Tidal Flow	NA	
(2) Tidal Marsh Stream Stability	NA	
(3) Tidal Marsh Channel Stability	NA	
(3) Tidal Marsh Stream Geomorphology	NA	
(1) Water Quality	HIGH	
(2) Baseflow	HIGH	
(2) Streamside Area Vegetation	HIGH	
(3) Upland Pollutant Filtration	HIGH	
(3) Thermoregulation	HIGH	
(2) Indicators of Stressors	NO	
(2) Aquatic Life Tolerance	HIGH	
(2) Intertidal Zone Filtration	NA	
(1) Habitat	HIGH	
(2) In-stream Habitat	MEDIUM	
(3) Baseflow	HIGH	
(3) Substrate	LOW	
(3) Stream Stability	HIGH	
(3) In-stream Habitat	HIGH	
(2) Stream-side Habitat	HIGH	
(3) Stream-side Habitat	HIGH	
(3) Thermoregulation	HIGH	
(2) Tidal Marsh In-stream Habitat	NA NA	
(3) Flow Restriction	NA NA	
. ,	NA NA	
(3) Tidal Marsh Stream Stability (4) Tidal Marsh Channel Stability		
	NA NA	
(4) Tidal Marsh Stream Geomorphology	NA NA	
(3) Tidal Marsh In-stream Habitat (2) Intertidal Zone	NA NA	
	NA	
Overall	HIGH	

	The state of the s
USACE AID #:	NCDWR #:
	ketch of the assessment area and photographs. Attach a copy of the USGS 7.5-minute topographic quadrangle,
	stream reach under evaluation. If multiple stream reaches will be evaluated on the same property, identify and
	tached map, and include a separate form for each reach. See the NC SAM User Manual for detailed descriptions
· · · · · · · · · · · · · · · · · · ·	ed information. Record in the "Notes/Sketch" section if supplementary measurements were performed. See the
	amples of additional measurements that may be relevant.
NOTE EVIDENCE OF STRE	SSORS AFFECTING THE ASSESSMENT AREA (do not need to be within the assessment area).
PROJECT/SITE INFORMAT	ION:
1. Project name (if any):	CLT Airport Expansion 2. Date of evaluation: April 2019
3. Applicant/owner name:	CLT 4. Assessor name/organization: KMT,BGB/HDR
5. County:	Mecklenburg 6. Nearest named water body
7. River basin:	Catawba on USGS 7.5-minute quad: Coffey Creek
8. Site coordinates (decimal of	degrees, at lower end of assessment reach): 35.203748, -80.953340
	depth and width can be approximations)
9. Site number (show on atta	
	(in riffle, if present) to top of bank (feet): 1 Unable to assess channel depth.
12. Channel width at top of ba	•
	al flow □Intermittent flow □Tidal Marsh Stream
STREAM CATEGORY INFO	
15. NC SAM Zone:	☐ Mountains (M) ☐ Piedmont (P) ☐ Inner Coastal Plain (I) ☐ Outer Coastal Plain (O)
16. Estimated geomorphic	
valley shape (skip for	□B
Tidal Marsh Stream):	(more sinuous stream, flatter valley slope) (less sinuous stream, steeper valley slope)
17. Watershed size: (skip	Size 1 (< 0.1 mi²)
for Tidal Marsh Stream)	
ADDITIONAL INFORMATIO	N:
	rations evaluated? Yes No If Yes, check all that apply to the assessment area.
Section 10 water	☐ Classified Trout Waters ☐ Water Supply Watershed (☐ I☐ II☐ II ☐ IV☐ V)
☐Essential Fish Habitat	
☐ Publicly owned propert	
☐Anadromous fish	□ CAMA Area of Environmental Concern (AEC)
-	of a federal and/or state listed protected species within the assessment area.
List species: ☐Designated Critical Ha	hitat (list aposics)
	ormation/supplementary measurements included in "Notes/Sketch" section or attached? ☐Yes ☒No
19. Are additional stream into	initiation/suppliententary measurements included in Notes/Oketon Section of attached: Tes 2000
1. Channel Water – assess	sment reach metric (skip for Size 1 streams and Tidal Marsh Streams)
	ut assessment reach.
☐B No flow, water ir	
☐C No water in asset	essment reach.
2. Evidence of Flow Restri	ction – assessment reach metric
	assessment reach in-stream habitat or riffle-pool sequence is severely affected by a flow restriction or fill to the
	ting flow <u>or</u> a channel choked with aquatic macrophytes <u>or</u> ponded water <u>or</u> impoundment on flood or ebb within
	reach (examples: undersized or perched culverts, causeways that constrict the channel, tidal gates, debris jams,
beaver dams).	
⊠B Not A	
3. Feature Pattern – assess	sment reach metric
	e assessment reach has altered pattern (examples: straightening, modification above or below culvert).
⊠B Not A	g,g,
	ofile acceptement reach metric
	ofile – assessment reach metric
	ssment reach has a substantially altered stream profile (examples: channel down-cutting, existing damming, over aggradation, dredging, and excavation where appropriate channel profile has not reformed from any of these
disturbances).	aggradation, drouging, and executation where appropriate channel profile has not reformed from any of these
⊠B Not A	
	to accessment week matric
_	ty - assessment reach metric
	nstability, not past events from which the stream has currently recovered. Examples of instability include channel down-cutting (head-cut), active widening, and artificial hardening (such as concrete, gabion, rip-rap).
⊠A < 10% of channe	
☐B 10 to 25% of cha	
☐C > 25% of channe	

6.		amside Are											
	LB	sider for th RB	IC LUIL D	oalik (LD) č	inu ine R	igiit Da	IIK (KD).						
	⊠a □B	⊠A □B	Mode refer	erate evide ence intera	nce of co ction (exa	nditions imples:	limited strea	bern msid	ns, leve e area a	es, down ccess, di	-cutting, aggradation sruption of flood flow	, dredging) that adversel s through streamside area ng mosquito ditching])	
	□с	□c	Exter [exar of flo mosc	nsive evide nples: cau od flows thi	nce of co seways w ough stre ng]) <u>or</u> flo	nditions vith flood eamside	that adverse plain and cha area] <u>or</u> too	ely af anne much	ffect refe I constri n floodpla	erence in ction, bul ain/interti	teraction (little to no kheads, retaining wa dal zone access [exa	floodplain/intertidal zone ls, fill, stream incision, dis mples: impoundments, in h is a man-made feature	sruption itensive
7.	Wate	er Quality S	Stressor	s – assess	sment re	ach/inte	rtidal zone	metr	ic				
	Chec	Exces	ored wat sive sed	imentation	(burying	of strean	n features or	r inte	rtidal zoı	ne)	ter discoloration, oil s	·	
	□D □E		nt publis	iding natura hed or coll			ting degrade	ed wa	ater qua	lity in the	e assessment reach	Cite source in "Notes/s	Sketch"
	□F □G □H	Livesto Excess	ock with sive alga	access to sale in stream	n or intert	idal zone	е	wal l	hurning	reguları	nowing, destruction,	etc)	
	∏J	Other:					in "Notes/SI				nowing, destruction,	etoj	
8.		Size 1 or 2 s Drougl Drougl	streams, ht condit	D1 drough tions <u>and</u> notions <u>and</u> ra	t or highe o rainfall	r is cons or rainfa		ught; ding 1	for Size	thin the I	reams, D2 drought o ast 48 hours	r higher is considered a d	rought.
9.	Larg □Ye	e or Dange es ⊠No						? If \	Yes, skip	o to Metri	c 13 (Streamside Are	ea Ground Surface Condi	ition).
10.	Natu	ral In-strea	am Habi	tat Types ·	- assess	ment re	ach metric						
	10a.	∐Yes	⊠No	sedimenta	ation, min	ing, exc	cavation, in-	strea	m harde	ening [for	ent reach (examples r example, rip-rap], r to Metric 12)	of stressors include ex- recent dredging, and sn	cessive agging)
	10b.	□A I	Multiple (include	aquatic ma liverworts,	crophyte: lichens, a	s and aq ınd algal	luatic mosse		Check for Tidal ab Marsh Streams donly (4	skip for S	Size 4 Coastal Plain 5% oysters or othe Submerged aquat Low-tide refugia ()	er natural hard bottoms ic vegetation	
		□C I □D :	5% unde in banks	snags and ercut banks extend to t	and/or r	oot mats	and/or root	ts	Check f Marsh S	□I □J □K	Sand bottom 5% vertical bank a Little or no habitat	-	
		□E I	Little or i	no habitat									
												MS************************************	****
11.											streams and Tidal Coastal Plain strear	•	
		Bedform e						cu su	caiii: (s	skip ioi v	ooastai i laili streai	113)	
	112.	⊠A I □B I	Riffle-rur Pool-glid	n section (e le section (valuate ' evaluate	11c) 11d)	ric 12, Aqua	atic L	_ife)				
	11c.	at least or (R) = pressions should not NP I	ne box i sent but	n each rov ≤ 10%, Co 100% for c C □ □ □	v (skip fo mmon (C each asse A	or Size 4) = > 10	-Coastal Pla-40%, Abundreach. Bedrock/sa Boulder (2 Cobble (64 Gravel (2 - Sand (.062 Silt/clay (< Detritus	ain st dant 56 – 4 – 25 - 64 r 2 – 2	treams (A) = > (A) = > (te) 4096 mi 66 mm) mm) mm) 2 mm)	and Tida 40-70%, m)	l Marsh Streams).	ether or not submerged. Not Present (NP) = abser 70%. Cumulative perce	nt, Rare
	11d.					ப sedimen	Artificial (ri at? (skip for			-	streams and Tidal	Marsh Streams)	

12.	-		sessment reach metric (skip for Tidal Marsh Streams)
	12a. ⊠ If N	_	No Was an in-stream aquatic life assessment performed as described in the User Manual? one of the following reasons and skip to Metric 13. No Water Other:
	12b. 🛛	Yes [No Are aquatic organisms present in the assessment reach (look in riffles, pools, then snags)? If Yes, check all the apply. If No, skip to Metric 13.
	1 ⊠ □		Numbers over columns refer to "individuals" for Size 1 and 2 streams and "taxa" for Size 3 and 4 streams. Adult frogs Aquatic reptiles
			Aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats) Beetles Caddisfly larvae (T)
			Asian clam (<i>Corbicula</i>) Crustacean (isopod/amphipod/crayfish/shrimp)
			Damselfly and dragonfly larvae Dipterans Mayfly larvae (E)
			Megaloptera (alderfly, fishfly, dobsonfly larvae) Midges/mosquito larvae
			Mosquito fish (<i>Gambusia</i>) or mud minnows (<i>Umbra pygmaea)</i> Mussels/Clams (not <i>Corbicula</i>) Other fish
			Salamanders/tadpoles Snails Stonefly Iarvae (P)
			Tipulid larvae Worms/leeches
13.			Ground Surface Condition – streamside area metric (skip for Tidal Marsh Streams and B valley types) Left Bank (LB) and the Right Bank (RB). Consider storage capacity with regard to both overbank flow and upland runof
	⊠a □B	⊠a □B	Little or no alteration to water storage capacity over a majority of the streamside area Moderate alteration to water storage capacity over a majority of the streamside area
	С	□с	Severe alteration to water storage capacity over a majority of the streamside area (examples: ditches, fill, soil compaction livestock disturbance, buildings, man-made levees, drainage pipes)
14.	Conside LB	r for the RB	Water Storage – streamside area metric (skip for Size 1 streams, Tidal Marsh Streams, and B valley types) Left Bank (LB) and the Right Bank (RB) of the streamside area.
	□A □B ⊠C	□a □b ⊠C	Majority of streamside area with depressions able to pond water ≥ 6 inches deep Majority of streamside area with depressions able to pond water 3 to 6 inches deep Majority of streamside area with depressions able to pond water < 3 inches deep
15.	Conside wetted p	r for the erimeter	e – streamside area metric (skip for Tidal Marsh Streams) Left Bank (LB) and the Right Bank (RB). Do not consider wetlands outside of the streamside area or within the norma f assessment reach.
	LB □Y ⊠N	RB ⊠Y □N	Are wetlands present in the streamside area?
16.			utors – assessment reach metric (skip for Size 4 streams and Tidal Marsh Streams) utors within the assessment reach or within view of <u>and</u> draining to the assessment reach.
	⊠A □B □C ⊠D	Ponds Obstruc	and/or springs (jurisdictional discharges) nclude wet detention basins; do not include sediment basins or dry detention basins) on passing flow during low-flow periods within the assessment area (beaver dam, leaky dam, bottom-release dam, weil of bank seepage or sweating (iron in water indicates seepage)
	⊠E □F	Stream	ed or bank soil reduced (dig through deposited sediment if present) the above
17.	Check a	II that a	
	□A □B □C □D	Obstruc Urban s	of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation) on not passing flow during low-flow periods affecting the assessment reach (ex: watertight dam, sediment deposit) ream (≥ 24% impervious surface for watershed) that the streamside area has been modified resulting in accelerated drainage into the assessment reach
	□E ⊠F	Assess	ent reach relocated to valley edge he above
18.			ment reach metric (skip for Tidal Marsh Streams) Consider "leaf-on" condition.
	⊠A □B □C	Stream Degrad	hading is appropriate for stream category (may include gaps associated with natural processes) d (example: scattered trees) hading is gone or largely absent

19.	Buffer Width – streamside area metric (skip for Tidal Marsh Streams) Consider "vegetated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top of bank out to the first break. Vegetated Wooded LB RB LB RB
20.	Buffer Structure – streamside area metric (skip for Tidal Marsh Streams) Consider for left bank (LB) and right bank (RB) for Metric 19 ("Vegetated" Buffer Width). LB RB
	⊠A MAture forest □B □B Non-mature woody vegetation or modified vegetation structure □C □C Herbaceous vegetation with or without a strip of trees < 10 feet wide □D □D Maintained shrubs □E □E Little or no vegetation
21.	Buffer Stressors – streamside area metric (skip for Tidal Marsh Streams) Check all appropriate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but is within 30 feet of stream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet). If none of the following stressors occurs on either bank, check here and skip to Metric 22:
	Abuts < 30 feet 30-50 feet LB RB LB RB □A □A □A □A □A □B □B
22.	Stem Density – streamside area metric (skip for Tidal Marsh Streams) Consider for left bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width). LB RB
	 ☑A
23.	Continuity of Vegetated Buffer – streamside area metric (skip for Tidal Marsh Streams) Consider whether vegetated buffer is continuous along stream (parallel). Breaks are areas lacking vegetation > 10 feet wide. LB RB
	 □A □A The total length of buffer breaks is < 25 percent. □B □B The total length of buffer breaks is between 25 and 50 percent. □C □C The total length of buffer breaks is > 50 percent.
24.	Vegetative Composition – streamside area metric (skip for Tidal Marsh Streams) Evaluate the dominant vegetation within 100 feet of each bank or to the edge of the watershed (whichever comes first) as it contributes to assessment reach habitat. LB RB
	☑A Vegetation is close to undisturbed in species present and their proportions. Lower strata composed of native species, with non-native invasive species absent or sparse.
	□B Vegetation indicates disturbance in terms of species diversity or proportions, but is still largely composed of native species. This may include communities of weedy native species that develop after clear-cutting or clearing or communities with non-native invasive species present, but not dominant, over a large portion of the expected strata or communities missing understory but retaining canopy trees.
	UC Vegetation is severely disturbed in terms of species diversity or proportions. Mature canopy is absent <u>or</u> communities with non-native invasive species dominant over a large portion of expected strata <u>or</u> communities composed of planted stands of non-characteristic species <u>or</u> communities inappropriately composed of a single species <u>or</u> no vegetation.
25.	Conductivity – assessment reach metric (skip for all Coastal Plain streams) 25a.
	25b. Check the box corresponding to the conductivity measurement (units of microsiemens per centimeter). □A < 46 □B 46 to < 67 □C 67 to < 79 □D 79 to < 230 □E ≥ 230
Note	es/Sketch:

Stream Site Name	CLT Airport Expansion	Date of Assessment	April 2019				
Stream Category	Pa1	KMT,BGB/HDR					
Notes of Field Asses		NO					
Presence of regulator	YES						
Additional stream inf	rements included (Y/N)	NO					
NC SAM feature type	IC SAM feature type (perennial, intermittent, Tidal Marsh Stream) Perennial						

(poronnial, intermittent, ridal Maren Stream)	1 Oronnia	<u>. </u>
	USACE/	NCDWR
Function Class Rating Summary	All Streams	Intermittent
(1) Hydrology	HIGH	
(2) Baseflow	HIGH	
(2) Flood Flow	HIGH	
(3) Streamside Area Attenuation	HIGH	
(4) Floodplain Access	HIGH	
(4) Wooded Riparian Buffer	HIGH	
(4) Microtopography	HIGH	
(3) Stream Stability	HIGH	
(4) Channel Stability	HIGH	
(4) Sediment Transport	LOW	
(4) Stream Geomorphology	HIGH	
(2) Stream/Intertidal Zone Interaction	NA	
(2) Longitudinal Tidal Flow	NA	
(2) Tidal Marsh Stream Stability	NA	
(3) Tidal Marsh Channel Stability	NA	
(3) Tidal Marsh Stream Geomorphology	NA	
(1) Water Quality	HIGH	
(2) Baseflow	HIGH	
(2) Streamside Area Vegetation	HIGH	
(3) Upland Pollutant Filtration	HIGH	
(3) Thermoregulation	HIGH	
(2) Indicators of Stressors	NO	
(2) Aquatic Life Tolerance	MEDIUM	
(2) Intertidal Zone Filtration	NA NA	
(1) Habitat	LOW	
(2) In-stream Habitat	LOW	
(3) Baseflow	HIGH	
(3) Substrate	LOW	
• •	HIGH	
(3) Stream Stability (3) In-stream Habitat	LOW	
	HIGH	
(2) Stream-side Habitat		
(3) Stream-side Habitat	HIGH	
(3) Thermoregulation (2) Tidal Marsh In-stream Habitat	HIGH	
• •	NA NA	
(3) Flow Restriction	NA NA	
(3) Tidal Marsh Stream Stability	NA NA	
(4) Tidal Marsh Channel Stability	NA	
(4) Tidal Marsh Stream Geomorphology	NA	
(3) Tidal Marsh In-stream Habitat	NA	
(2) Intertidal Zone	NA	
Overall	HIGH	

		71000	inpanies see inc				
USACE AID #				NCDWR #:			
						5-minute topographic quad	
						n the same property, iden	
						er Manual for detailed desc ements were performed. S	
		ples of additional measu			ary measule	этына мете репонией. К	Jee lile
NOTE EVIDE	NCE OF STRESS	ORS AFFECTING THE			be within t	he assessment area).	
PROJECT/SI 1. Project nan	TE INFORMATION TE (if any):	N: CLT Airport Expansion	2	. Date of evaluation:	April 2019	9	
3. Applicant/o	wner name:	CLT	4	. Assessor name/orgar	nization:	KMT,BGB/HDR	
5. County:		Mecklenburg	6	. Nearest named water	•		
7. River basin		Catawba	 	on USGS 7.5-minute		Coffey Creek	
	·	grees, at lower end of as	•	35.198185, -80.95	52880		
		oth and width can be a PS3-2 - S	29 -				
	er (show on attach			ngth of assessment re		· ' ' —	
		riffle, if present) to top o		2		able to assess channel dep	oth.
	width at top of banl	` '		sessment reach a swa	mp steam?	∐Yes ∐No	
•	/pe: ⊠Perenniai t TEGORY INFORM	flow Intermittent flow	□ riuai iviaisii St	ıcaiii			
15. NC SAM 2		MATION: Mountains (M)	□ Piedmont (P)	☐ Inner Coastal F	Plain (I)	☐ Outer Coastal Plain (O	,
	_00.	oantanio (IVI)		L milor Joastair	(1)	_ cate. codotar riair (o	′
				,	1		
16. Estimated	l geomorphic		7	_	1	/	
	pe (skip for	\boxtimes A		□В			
	sh Stream):	(more sinuous stream	, flatter valley slop	e) (less s	sinuous strea	am, steeper valley slope)	
17. Watershe	` .	\square Size 1 (< 0.1 mi ²)	⊠Size 2 (0.1 to	$< 0.5 \text{ mi}^2$) \square Size 3	3 (0.5 to < 5	mi²) ☐Size 4 (≥ 5 mi²)
	Marsh Stream)						
	. INFORMATION:	ons evaluated? ☐Yes	□No. If Voc. sho	ok all that apply to the	accaccmon	aron	
	n 10 water	Classified Tro				ned (I II III III IV	□V)
	ial Fish Habitat	☐Primary Nurs				Outstanding Resource Wat	
⊠Publicly	y owned property		arian buffer rule in	effect Nutrient Se	ensitive Wat	ers	
	mous fish	⊠303(d) List				nmental Concern (AEC)	
	•	a federal and/or state li	sted protected spe	ecies within the assess	ment area.		
List spe □Design	ecies: ated Critical Habit	at (list species)					
_		nation/supplementary me	easurements inclu	ded in "Notes/Sketch":	section or a	ttached? □Yes ⊠No	
	<u> </u>	ianon, ouppromontally me	<u> </u>		0001101101		
		ent reach metric (skip	for Size 1 stream	s and Tidal Marsh Sti	reams)		
	•	assessment reach.					
	No flow, water in p No water in assess	•					
		on – assessment reacl		-nool coguence is sev	oroly affact	ed by a flow restriction or	fill to the
	point of obstructing	g flow or a channel chol	ked with aquatic m	acrophytes or ponded	water or in	npoundment on flood or el	bb within
t	he assessment re					e channel, tidal gates, deb	
	peaver dams).						
_	Not A						
		nent reach metric			1161		
	A majority of the as Not A	ssessment reach has alt	ered pattern (exar	npies: straightening, m	nodification a	above or below culvert).	
	_	le – assessment reach		om muefile (الناء المصامم	una austina austrativa al como	laa
						wn-cutting, existing damm as not reformed from any	
	disturbances).	ggradation, dredging, a	na choavalion will	oro appropriate orialili	o prome ne	ao not reformed from any	or triese
_	Not A						
5. Signs of A	Active Instability	- assessment reach m	etric				
U	_			e stream has current	ly recovere	ed. Examples of instability	y include
active ban	k failure, active ch	nannel down-cutting (hea				h as concrete, gabion, rip-	
	< 10% of channel of the channel of t						
	10 to 25% of chan > 25% of channel (

о.					· streamsi B) and the						
	LB	RB	ile Leit	Dalik (LL	and the	Rigin Da	ilik (KD).				
	⊠A □B	⊠A □B	Mod refe or in	derate ev rence intenter ntermitter	idence of or eraction (e nt bulkhead	conditions examples: ds, cause	limited stream ways with flood	perms, levenside area a dplain cons	es, down- access, dis triction, m	cutting, aggradation, dredging cruption of flood flows through inor ditching [including mosqui	streamside area, leaky ito ditching])
	□c	□c	[exa of flo mos	amples: o	causeways s through s ching]) <u>or</u>	with flood treamside	dplain and cha area] <u>or</u> too m	nnel constri uch floodpl	ction, bulk ain/intertio	eraction (little to no floodplain, heads, retaining walls, fill, stre dal zone access [examples: im or assessment reach is a ma	eam incision, disruption poundments, intensive
7.	Wate	r Quality	Stresso	ors – ass	essment	reach/inte	ertidal zone m	netric			
	_	k all that		otor in otr	room or int	ortidal za	no (milla curbita	blue upp	otural wat	or discolaration, all about atra	oom foom)
	∐A □B						m features or i			er discoloration, oil sheen, stre	ann ioann)
					f pollutant tural sulfid		s entering the	assessme	nt reach <u>a</u>	nd causing a water quality pro	blem
	ΠE	Curre	ent publi				ating degraded	d water qua	ality in the	assessment reach. Cite sou	urce in "Notes/Sketch"
	□F	section Lives		n access	to stream	or intertid	al zone				
	□G □H				eam or inte			al burning	rogular m	nowing, destruction, etc)	
		Othe	r:				n in "Notes/Ske			iowing, destruction, etc)	
_	⊠J		to no str								
8.							lal Marsh Stre sidered a drou		e 3 or 4 str	eams, D2 drought or higher is	considered a drought.
	□A □B						all not exceedir 1 inch within tl			st 48 hours	
	⊠c			onditions	<u> 1</u> Tallilali 6.	Acceding	i ilicii witiiiii ti	16 1831 40 11	louis		
9.	Large □Yes	-	•		assessme too large o			If Yes, ski	p to Metric	: 13 (Streamside Area Ground	I Surface Condition).
10.							each metric				
	10a.	∐Yes	⊠No	sedime	entation, m	nining, ex		ream hard	ening [for	nt reach (examples of stress example, rip-rap], recent dre to Metric 12)	
	10b.	Check a					e of assessme		skip for S □F	ize 4 Coastal Plain streams) 5% oysters or other natural	
			(include	e liverwor	ts, lichens	, and alga	n mats)	Tida	□G	Submerged aquatic vegetati	
		⊠В	vegetat		nd/or leaf	packs an	d/or emergent	k for ⁻ h Stre	□H □I	Low-tide refugia (pools) Sand bottom	
		□C ⊠D			ind logs (in		ap trees) ts and/or roots	Chec	□J □K	5% vertical bank along the r Little or no habitat	narsh
			in bank	s extend	to the norr		d perimeter	Į		Little of no nabitat	
		□E	Little or	no habita	at						
****	*****	******	******	**REMAII	NING QUE	STIONS	ARE NOT AP	PLICABLE	FOR TID	AL MARSH STREAMS******	******
11.	Bedfo	orm and	Substra	te – asse	essment r	each met	ric (skip for S	ize 4 Coas	stal Plain	streams and Tidal Marsh Str	reams)
	11a.	□Yes	⊠No	Is asses	sment rea	ich in a na	atural sand-bed	d stream? (skip for C	coastal Plain streams)	
		Bedform ⊠A			ck the app		box(es).				
		□в	Pool-gli	ide sectio	on (evalua t	te 11d)	tuis 40 Assurat	:- ! !			
	110						tric 12, Aquat		of the acc	essment reach – whether or n	not submerged. Check
		at least of	one box	in each	row (skip	for Size 4	4 Coastal Plai	n streams	and Tidal	Marsh Streams). Not Prese	nt (NP) = absent, Rare
					for each as			ant (A) = >	40-70%, 1	Predominant (P) = > 70%. Cu	umulative percentages
		NP ⊠	R □	C	A	P □	Bedrock/sag	orolite			
				Ĭ		ij	Boulder (25	6 – 4096 m	m)		
			H	\boxtimes	H	H	Cobble (64 - Gravel (2 -				
							Sand (.062	– 2 mm)			
							Silt/clay (< 0 Detritus).062 mm)			
							Artificial (rip	-			
	11d.	□Yes	□No	Are poo	Is filled wit	th sedime	nt? (skip for S	ize 4 Coas	tal Plain	streams and Tidal Marsh Str	reams)

12.	-		sessment reach metric (skip for Tidal Marsh Streams)
	12a. ⊠ If N		No Was an in-stream aquatic life assessment performed as described in the User Manual? one of the following reasons and skip to Metric 13. ☐No Water ☐Other:
	12b. ⊠	Yes	No Are aquatic organisms present in the assessment reach (look in riffles, pools, then snags)? If Yes, check all that apply. If No, skip to Metric 13.
	1		Numbers over columns refer to "individuals" for Size 1 and 2 streams and "taxa" for Size 3 and 4 streams. Adult frogs Aquatic reptiles
		\boxtimes	Aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats)
			Beetles Caddisfly larvae (T)
	H		Asian clam (<i>Corbicula</i>) Crustacean (isopod/amphipod/crayfish/shrimp)
	Ē		Damselfly and dragonfly larvae Dipterans
			Mayfly larvae (E)
			Megaloptera (alderfly, fishfly, dobsonfly larvae) Midges/mosquito larvae
			Mosquito fish (<i>Gambusia</i>) or mud minnows (<i>Umbra pygmaea</i>) Mussels/Clams (not <i>Corbicula</i>)
			Other fish
			Salamanders/tadpoles Snails
	R		Stonefly larvae (P) Tipulid larvae
			Worms/leeches
13.			Ground Surface Condition – streamside area metric (skip for Tidal Marsh Streams and B valley types) Left Bank (LB) and the Right Bank (RB). Consider storage capacity with regard to both overbank flow and upland runoff.
	\boxtimes A	⊠A	Little or no alteration to water storage capacity over a majority of the streamside area
	□B □C	□C	Moderate alteration to water storage capacity over a majority of the streamside area Severe alteration to water storage capacity over a majority of the streamside area (examples: ditches, fill, soil compaction livestock disturbance, buildings, man-made levees, drainage pipes)
14.			Water Storage – streamside area metric (skip for Size 1 streams, Tidal Marsh Streams, and B valley types) Left Bank (LB) and the Right Bank (RB) of the streamside area.
	□A □B ⊠C	□A □B ⊠C	Majority of streamside area with depressions able to pond water ≥ 6 inches deep Majority of streamside area with depressions able to pond water 3 to 6 inches deep Majority of streamside area with depressions able to pond water < 3 inches deep
15.	Conside wetted po	r for the erimeter	e – streamside area metric (skip for Tidal Marsh Streams) Left Bank (LB) and the Right Bank (RB). Do not consider wetlands outside of the streamside area or within the normal of assessment reach.
	LB □Y ⊠N	RB □Y ⊠N	Are wetlands present in the streamside area?
16.			outors – assessment reach metric (skip for Size 4 streams and Tidal Marsh Streams)
	Check a		outors within the assessment reach or within view of <u>and</u> draining to the assessment reach. and/or springs (jurisdictional discharges)
	□B □C □D	Ponds (i	nclude wet detention basins; do not include sediment basins or dry detention basins) ion passing flow during low-flow periods within the assessment area (beaver dam, leaky dam, bottom-release dam, weir) e of bank seepage or sweating (iron in water indicates seepage)
	⊠E □F		ped or bank soil reduced (dig through deposited sediment if present) the above
17.	Baseflow Check a		tors – assessment area metric (skip for Tidal Marsh Streams)
	□A □B	Evidenc	e of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation) ion not passing flow during low-flow periods affecting the assessment reach (ex: watertight dam, sediment deposit)
	□C	Urban s	ream (≥ 24% impervious surface for watershed)
	□D □E		e that the streamside area has been modified resulting in accelerated drainage into the assessment reach nent reach relocated to valley edge
	⊠F	None of	the above
18.	_		sment reach metric (skip for Tidal Marsh Streams) Consider "leaf-on" condition.
	⊠A □B	Stream	shading is appropriate for stream category (may include gaps associated with natural processes) id (example: scattered trees)
	□C		shading is gone or largely absent

19.	Buffer Width – streamside area metric (skip for Tidal Marsh Streams) Consider "vegetated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top of bank out to the first break. Vegetated Wooded LB RB LB RB $A A A A A A A A A A A A A A A A A A A$
20.	Buffer Structure – streamside area metric (skip for Tidal Marsh Streams) Consider for left bank (LB) and right bank (RB) for Metric 19 ("Vegetated" Buffer Width). LB RB □A □A Mature forest □B □B Non-mature woody vegetation or modified vegetation structure □C □C Herbaceous vegetation with or without a strip of trees < 10 feet wide
21.	□D □D Maintained shrubs □E □E Little or no vegetation Buffer Stressors – streamside area metric (skip for Tidal Marsh Streams) Check all appropriate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but is within 30 feet of stream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet). If none of the following stressors occurs on either bank, check here and skip to Metric 22: Abuts < 30 feet 30-50 feet
	LB RB LB RB LB RB A A A A A A A A A Row crops B B B B B B Maintained turf C C C C C C C Pasture (no livestock)/commercial horticulture D D D D D D Pasture (active livestock use)
22.	Stem Density – streamside area metric (skip for Tidal Marsh Streams) Consider for left bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width). LB RB A Medium to high stem density B B B Low stem density C C C No wooded riparian buffer or predominantly herbaceous species or bare ground
23.	Continuity of Vegetated Buffer – streamside area metric (skip for Tidal Marsh Streams) Consider whether vegetated buffer is continuous along stream (parallel). Breaks are areas lacking vegetation > 10 feet wide. LB RB \[\text{A} \text{N} \text{A} \text{The total length of buffer breaks is < 25 percent.} \] \[\text{D} \text{B} \text{B} \text{The total length of buffer breaks is between 25 and 50 percent.} \] \[\text{C} \text{C} \text{The total length of buffer breaks is > 50 percent.} \]
24.	Vegetative Composition – streamside area metric (skip for Tidal Marsh Streams) Evaluate the dominant vegetation within 100 feet of each bank or to the edge of the watershed (whichever comes first) as it contributes to assessment reach habitat. LB RB ⊠A Vegetation is close to undisturbed in species present and their proportions. Lower strata composed of native species, with non-native invasive species absent or sparse. □B B Vegetation indicates disturbance in terms of species diversity or proportions, but is still largely composed of native species. This may include communities of weedy native species that develop after clear-cutting or clearing or communities with non-native invasive species present, but not dominant, over a large portion of the expected strata or communities missing understory but retaining canopy trees. □C □C Vegetation is severely disturbed in terms of species diversity or proportions. Mature canopy is absent or communities with non-native invasive species dominant over a large portion of expected strata or communities composed of planted stands of non-characteristic species or communities inappropriately composed of a single species or no vegetation.
25.	Conductivity – assessment reach metric (skip for all Coastal Plain streams) 25a. ☐ Yes ☐ No Was conductivity measurement recorded? If No, select one of the following reasons. ☐ No Water ☐ Other: 25b. Check the box corresponding to the conductivity measurement (units of microsiemens per centimeter). ☐ A < 46 ☐ B 46 to < 67 ☐ C 67 to < 79 ☐ D 79 to < 230 ☐ E ≥ 230
Note	es/Sketch:

Stream Site Name	CL1 Airport Expansion	Date of Assessment	April 2019					
Stream Category	Pa2	KMT,BGB/HD	R					
Notes of Field Asses		NO						
Presence of regulator		YES						
Additional stream inf	NO							
NC SAM feature type	NC SAM feature type (perennial, intermittent, Tidal Marsh Stream) Perennial							

(perennial, intermittent, ridal Marsh Stream)	Ferennia	<u> </u>
Function Class Rating Summary	USACE/ All Streams	NCDWR Intermittent
(1) Hydrology	HIGH	
(2) Baseflow	HIGH	
(2) Flood Flow	HIGH	
(3) Streamside Area Attenuation	HIGH	
(4) Floodplain Access	HIGH	
(4) Wooded Riparian Buffer	HIGH	
(4) Microtopography	LOW	
(3) Stream Stability	HIGH	
(4) Channel Stability	HIGH	
(4) Sediment Transport	LOW	
(4) Stream Geomorphology	HIGH	
(2) Stream/Intertidal Zone Interaction	NA	
` ,		
(2) Longitudinal Tidal Flow	NA NA	
(2) Tidal Marsh Stream Stability	NA NA	
(3) Tidal Marsh Channel Stability	NA NA	
(3) Tidal Marsh Stream Geomorphology	NA	
(1) Water Quality	HIGH	
(2) Baseflow	HIGH	
(2) Streamside Area Vegetation	HIGH	
(3) Upland Pollutant Filtration	HIGH	
(3) Thermoregulation	HIGH	
(2) Indicators of Stressors	NO	
(2) Aquatic Life Tolerance	MEDIUM	
(2) Intertidal Zone Filtration	NA	
(1) Habitat	LOW	
(2) In-stream Habitat	LOW	
(3) Baseflow	HIGH	
(3) Substrate	LOW	
(3) Stream Stability	HIGH	
(3) In-stream Habitat	MEDIUM	
(2) Stream-side Habitat	HIGH	
(3) Stream-side Habitat	HIGH	
(3) Thermoregulation	HIGH	
(2) Tidal Marsh In-stream Habitat	NA	
(3) Flow Restriction	NA	
(3) Tidal Marsh Stream Stability	NA	
(4) Tidal Marsh Channel Stability	NA	
(4) Tidal Marsh Stream Geomorphology	NA	
(3) Tidal Marsh In-stream Habitat	NA	
(2) Intertidal Zone	NA	
Overall	HIGH	

. Accompanies es	· ·················· · · · · · · · · ·
USACE AID #:	NCDWR #:
INSTRUCTIONS: Attach a sketch of the assessment area and photo	graphs. Attach a copy of the USGS 7.5-minute topographic quadrangle,
and circle the location of the stream reach under evaluation. If multi	ple stream reaches will be evaluated on the same property, identify and
	for each reach. See the NC SAM User Manual for detailed descriptions
	etch" section if supplementary measurements were performed. See the
NC SAM User Manual for examples of additional measurements that	•
NOTE EVIDENCE OF STRESSORS AFFECTING THE ASSESSME	NI AKEA (do not need to be within the assessment area).
PROJECT/SITE INFORMATION:	O Data de al artico
1. Project name (if any): CLT Airport Expansion	2. Date of evaluation: September 2019
3. Applicant/owner name: CLT	4. Assessor name/organization: KMT,BGB/HDR
5. County: Mecklenburg 7. River basin: Catawba	6. Nearest named water body
	on USGS 7.5-minute quad: Coffey Creek
8. Site coordinates (decimal degrees, at lower end of assessment rea	•
STREAM INFORMATION: (depth and width can be approximation PS3-2 - S29 -	
	D. Length of assessment reach evaluated (feet): 275'
11. Channel depth from bed (in riffle, if present) to top of bank (feet):	2 ☐ Unable to assess channel depth.
. ,	s assessment reach a swamp steam? ☐Yes ☐No
14. Feature type: ⊠Perennial flow ☐Intermittent flow ☐Tidal Mars	sh Stream
STREAM CATEGORY INFORMATION:	(B)
15. NC SAM Zone: ☐ Mountains (M) ☐ Piedmont	(P)
16. Estimated geomorphic	
valley snape (skip for	
Tidal Marsh Stream): (more sinuous stream, flatter valley	
17. Watershed size: (skip ☐ Size 1 (< 0.1 mi²) ☐ Size 2 (0.1 mi²) ☐ Size 2 (0.1 mi²)	1 to < 0.5 mi²)
ADDITIONAL INFORMATION:	
18. Were regulatory considerations evaluated? ☐Yes ☐No If Yes,	check all that apply to the assessment area.
Section 10 water Classified Trout Waters	□Water Supply Watershed (□I □II □III □IV □V)
☐Essential Fish Habitat ☐Primary Nursery Area	☐ High Quality Waters/Outstanding Resource Waters
	g ,
☐Anadromous fish ☐303(d) List	☐CAMA Area of Environmental Concern (AEC)
Documented presence of a federal and/or state listed protected	d species within the assessment area.
List species:	
☐ Designated Critical Habitat (list species) 19. Are additional stream information/supplementary measurements in the stream information of the str	included in "Notes/Sketch" section or attached? Voc. MNo.
13. Are additional stream information/supplementary measurements	included in Indies/Skelch section of attached? Tes Mind
1. Channel Water – assessment reach metric (skip for Size 1 str	eams and Tidal Marsh Streams)
☑A Water throughout assessment reach.	•
B No flow, water in pools only.	
C No water in assessment reach.	
2. Evidence of Flow Restriction – assessment reach metric	
	riffle-pool sequence is severely affected by a flow restriction $\underline{\text{or}}$ fill to the
	tic macrophytes <u>or</u> ponded water <u>or</u> impoundment on flood or ebb within
the assessment reach (examples: undersized or perche beaver dams).	ed culverts, causeways that constrict the channel, tidal gates, debris jams,
B Not A	
 Feature Pattern – assessment reach metric A majority of the assessment reach has altered pattern (avamples: straightening, modification above or below sulvert)
☐B Not A	(examples: straightening, modification above or below culvert).
4. Feature Longitudinal Profile – assessment reach metric	laterana medila (avamalas), al-arrad darra artificia di Constanti
	stream profile (examples: channel down-cutting, existing damming, over where appropriate channel profile has not reformed from any of these
disturbances).	i whore appropriate charmer profile has not reformed from any of these
⊠B Not A	
,	h the stream has currently recovered. Examples of instability include
	widening, and artificial hardening (such as concrete, gabion, rip-rap).
☐A < 10% of channel unstable	5, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2,
☐B 10 to 25% of channel unstable	

6.				streamside area) and the Right I					
	□A □B	□A □B	Moderate evic reference inte	dence of condition raction (examples	s: limited streamsi	rms, levee de area ac	s, down- cess, dis	cutting, aggradation, ruption of flood flows	dredging) that adversely affect through streamside area, leaky g mosquito ditching])
	⊠C	⊠c	Extensive evid [examples: ca of flood flows t	dence of conditio auseways with flo through streamsio hing]) <u>or</u> floodpla	ns that adversely odplain and chann de area] <u>or</u> too mud	affect refer el constric ch floodpla	rence inte tion, bulk in/intertid	eraction (little to no fl heads, retaining walls al zone access [exan	on modula in the mining of modula in the mining of the min
7.		-		essment reach/ir	ntertidal zone me	tric			
	□A □B	Excess	ored water in stre sive sedimentatio	on (burying of stre	am features or int	ertidal zon	e)	er discoloration, oil sh	
		Odor (r	not including natu	ural sulfide odors)			nd causing a water quassessment reach	Cite source in "Notes/Sketch"
	□F	section).	o stream or intert		vator quan	ity iii tiio	assessment reach.	One source in Protesy exeteri
	□G □H			am or intertidal zo ation in the interti		, burning, r	egular m	owing, destruction, e	etc)
	∐I ∐I		no stressors	(expla	ain in "Notes/Sketo	ch" section))		
8.	For S □A	Size 1 or 2 st Drough	treams, D1 droug nt conditions <u>and</u>	ght or higher is co no rainfall or rair	nfall not exceeding	it; for Size	hin the la		higher is considered a drought.
	□в ⊠с		ught conditions and	raintaii exceedin	g 1 inch within the	last 48 no	urs		
9.	Larg e			assessment reac oo large or dange		Yes, skip	to Metric	13 (Streamside Area	a Ground Surface Condition).
10.			⊠No Degrade sedimer	ntation, mining, e	oitat over majority	am harder	ning [for	example, rip-rap], re	of stressors include excessive ecent dredging, and snagging)
	10b.	□A N	Multiple aquatic n include liverworts	nacrophytes and s, lichens, and alo	aquatic mosses gal mats)		kip for S i □F □G	ize 4 Coastal Plain s 5% oysters or other Submerged aquation	r natural hard bottoms
		V	egetation	nd/or leaf packs a	•	Check for Tidal Marsh Streams Only		Low-tide refugia (po	,
		□D 5	5% undercut ban	d logs (including ks and/or root m o the normal wett t	ats and/or roots	Che Mar	□K	5% vertical bank all Little or no habitat	ong the marsh
****	*****	*****	**********	INC OUESTION	C ADE NOT ADD	ICADI E I	OR TID	AL MADOU OTDEAN	//S***********************************
								streams and Tidal N	
	11a.	□Yes □	⊠No Is assess	sment reach in a	natural sand-bed s	stream? (s	kip for C	oastal Plain stream	s)
	11b.	⊠A F	Riffle-run section Pool-glide section	(evaluate 11d)	e box(es). letric 12, Aquatic	Life)			
	11c.	In riffle sec	ctions, check all th	hat occur below th	he normal wetted p	perimeter c			ether or not submerged. Check
		(R) = prese	ent but < 10%, C		10-40%, Abundan				ot Present (NP) = absent, Rare 70%. Cumulative percentages
		NP F		A P	Bedrock/sapro	olite			
		\boxtimes			Boulder (256 - Cobble (64 - 2	256 mm)	1)		
					Gravel (2 – 64 Sand (.062 – 2	2 mm)			
					Silt/clay (< 0.0 Detritus Artificial (rip-ra		e etc /		
	11d.	□ Yes [⊔ ⊔]No Are pools		` '	•	,	streams and Tidal N	larsh Streams)

12.	-		sessment reach metric (skip for Tidal Marsh Streams)
	12a. ⊠ If N		No Was an in-stream aquatic life assessment performed as described in the User Manual? one of the following reasons and skip to Metric 13. ☐No Water ☐Other:
	12b. 🛚	Yes	No Are aquatic organisms present in the assessment reach (look in riffles, pools, then snags)? If Yes, check all that apply. If No, skip to Metric 13.
	1		Numbers over columns refer to "individuals" for Size 1 and 2 streams and "taxa" for Size 3 and 4 streams. Adult frogs Aquatic reptiles
		\boxtimes	Aquatic reptiles Aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats) Beetles
			Caddisfly larvae (T) Asian clam (<i>Corbicula</i>)
		\boxtimes	Crustacean (isopod/amphipod/crayfish/shrimp) Damselfly and dragonfly larvae
			Dipterans Mayfly larvae (E)
			Megaloptera (alderfly, fishfly, dobsonfly larvae) Midges/mosquito larvae
			Mosquito fish (<i>Gambusia</i>) or mud minnows (<i>Umbra pygmaea</i>) Mussels/Clams (not <i>Corbicula</i>)
			Other fish Salamanders/tadpoles
			Snails Stonefly larvae (P)
			Tipulid larvae Worms/leeches
13.			Ground Surface Condition – streamside area metric (skip for Tidal Marsh Streams and B valley types) Left Bank (LB) and the Right Bank (RB). Consider storage capacity with regard to both overbank flow and upland runoff.
	□A □B	□A □B	Little or no alteration to water storage capacity over a majority of the streamside area Moderate alteration to water storage capacity over a majority of the streamside area
	⊠c	⊠c	Severe alteration to water storage capacity over a majority of the streamside area (examples: ditches, fill, soil compaction, livestock disturbance, buildings, man-made levees, drainage pipes)
14.			Water Storage – streamside area metric (skip for Size 1 streams, Tidal Marsh Streams, and B valley types) Left Bank (LB) and the Right Bank (RB) of the streamside area.
	□A □B ⊠C	□A □B ⊠C	Majority of streamside area with depressions able to pond water ≥ 6 inches deep Majority of streamside area with depressions able to pond water 3 to 6 inches deep Majority of streamside area with depressions able to pond water < 3 inches deep
15.	Conside wetted p	r for the erimeter	e – streamside area metric (skip for Tidal Marsh Streams) Left Bank (LB) and the Right Bank (RB). Do not consider wetlands outside of the streamside area or within the normal of assessment reach.
	LB □Y ⊠N	RB □Y ⊠N	Are wetlands present in the streamside area?
16.	Baseflo	w Contril	outors – assessment reach metric (skip for Size 4 streams and Tidal Marsh Streams)
	\square A	Streams	and/or springs (jurisdictional discharges)
	□B □C □D	Obstruc	nclude wet detention basins; do not include sediment basins or dry detention basins) ion passing flow during low-flow periods within the assessment area (beaver dam, leaky dam, bottom-release dam, weir) e of bank seepage or sweating (iron in water indicates seepage)
	⊠E □F	Stream	bed or bank soil reduced (dig through deposited sediment if present) the above
17.	Baseflov Check a		tors – assessment area metric (skip for Tidal Marsh Streams)
	□A □B	Evidenc	e of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation) ion not passing flow during low-flow periods affecting the assessment reach (ex: watertight dam, sediment deposit)
	□C □D	Urban s	ream (≥ 24% impervious surface for watershed) e that the streamside area has been modified resulting in accelerated drainage into the assessment reach
	□E ⊠F	Assessr	nent reach relocated to valley edge the above
18.	-		sment reach metric (skip for Tidal Marsh Streams) Consider "leaf-on" condition.
	□A □B	Stream	shading is appropriate for stream category (may include gaps associated with natural processes) id (example: scattered trees)
	⊠c		shading is gone or largely absent

19.	Buffer Width – streamside area metric (skip for Tidal Marsh Streams) Consider "vegetated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top of bank out to the first break. Vegetated Wooded
	LB RB LB RB □ A □ A □ A □ A ≥ 100 feet wide or extends to the edge of the watershed □ B □ B □ B □ B From 50 to < 100 feet wide □ C □ C □ C □ C From 30 to < 50 feet wide □ D □ D □ D □ D □ D From 10 to < 30 feet wide □ E □ E □ E □ E □ E □ C 10 feet wide or no trees
20.	Buffer Structure – streamside area metric (skip for Tidal Marsh Streams) Consider for left bank (LB) and right bank (RB) for Metric 19 ("Vegetated" Buffer Width).
	LB RB A Mature forest B Non-mature woody vegetation or modified vegetation structure C C Herbaceous vegetation with or without a strip of trees < 10 feet wide D D Maintained shrubs E ME Little or no vegetation
21.	Buffer Stressors – streamside area metric (skip for Tidal Marsh Streams) Check all appropriate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but is within 30 feet of stream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet). If none of the following stressors occurs on either bank, check here and skip to Metric 22: Abuts < 30 feet 30-50 feet
	LB RB LB RB □A □A □A □A Row crops □B □B □B □B □B Maintained turf □C □C □C □C □C Pasture (no livestock)/commercial horticulture □D □D □D □D □D Pasture (active livestock use)
22.	Stem Density – streamside area metric (skip for Tidal Marsh Streams) Consider for left bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width).
	LB RB □A □A Medium to high stem density □B □B Low stem density □C □C No wooded riparian buffer or predominantly herbaceous species or bare ground
23.	Continuity of Vegetated Buffer – streamside area metric (skip for Tidal Marsh Streams) Consider whether vegetated buffer is continuous along stream (parallel). Breaks are areas lacking vegetation > 10 feet wide. LB RB
	 □ A □ B □ B □ C □ C □ C □ C □ C □ D □ D
24.	Vegetative Composition – streamside area metric (skip for Tidal Marsh Streams) Evaluate the dominant vegetation within 100 feet of each bank or to the edge of the watershed (whichever comes first) as it contributes to assessment reach habitat.
	LB RB A Vegetation is close to undisturbed in species present and their proportions. Lower strata composed of native species, with non-native invasive species absent or sparse.
	Vegetation indicates disturbance in terms of species diversity or proportions, but is still largely composed of native species. This may include communities of weedy native species that develop after clear-cutting or clearing or communities with non-native invasive species present, but not dominant, over a large portion of the expected strata or
	communities missing understory but retaining canopy trees. Vegetation is severely disturbed in terms of species diversity or proportions. Mature canopy is absent <u>or</u> communities with non-native invasive species dominant over a large portion of expected strata <u>or</u> communities composed of planted stands of non-characteristic species <u>or</u> communities inappropriately composed of a single species <u>or</u> no vegetation.
25.	Conductivity – assessment reach metric (skip for all Coastal Plain streams) 25a. Yes No Was conductivity measurement recorded? If No, select one of the following reasons. No Water Other:
	25b. Check the box corresponding to the conductivity measurement (units of microsiemens per centimeter). $\Box A < 46$ $\Box B = 46$ to < 67 $\Box C = 67$ to < 79 $\Box D = 79$ to < 230 $\Box E = 230$
Note	es/Sketch:

Stream Site Name	CLT Airport Expansion	Date of Assessment	September 2019		
Stream Category	Pa2	Assessor Name/Organization	KMT,BGB/HDR		
Notes of Field Asses	NO				
Presence of regulator		NO			
Additional stream inf	urements included (Y/N)	NO			
NC SAM feature typ	e (perennial, intermittent, Tidal	Marsh Stream)	Perennial		

(perennial, intermittent, Tidal Marsh Stream)	Perennia	<u> </u>
	USACE/	NCDWR
Function Class Rating Summary	All Streams	Intermittent
(1) Hydrology	LOW	
(2) Baseflow	HIGH	
(2) Flood Flow	LOW	
(3) Streamside Area Attenuation	LOW	
(4) Floodplain Access	LOW	
(4) Wooded Riparian Buffer	LOW	
(4) Microtopography	LOW	
(3) Stream Stability	LOW	
(4) Channel Stability	LOW	
(4) Sediment Transport	LOW	
(4) Stream Geomorphology	MEDIUM	
(2) Stream/Intertidal Zone Interaction	NA	
(2) Longitudinal Tidal Flow	NA	
(2) Tidal Marsh Stream Stability	NA	
(3) Tidal Marsh Channel Stability	NA	
(3) Tidal Marsh Stream Geomorphology	NA	
(1) Water Quality	LOW	
(2) Baseflow	HIGH	
(2) Streamside Area Vegetation	LOW	
(3) Upland Pollutant Filtration	LOW	
(3) Thermoregulation	LOW	
(2) Indicators of Stressors	NO	
(2) Aquatic Life Tolerance	LOW	
(2) Intertidal Zone Filtration	NA	
(1) Habitat	LOW	
(2) In-stream Habitat	LOW	
(3) Baseflow	HIGH	
(3) Substrate	LOW	
(3) Stream Stability	LOW	
(3) In-stream Habitat	LOW	
(2) Stream-side Habitat	LOW	
(3) Stream-side Habitat	LOW	
(3) Thermoregulation	LOW	
(2) Tidal Marsh In-stream Habitat	NA NA	
(3) Flow Restriction	NA NA	
(3) Tidal Marsh Stream Stability	NA NA	
(4) Tidal Marsh Channel Stability	NA NA	
(4) Tidal Marsh Stream Geomorphology	NA NA	
(3) Tidal Marsh In-stream Habitat (2) Intertidal Zone Overall	NA NA LOW	

USACE AID #:	NCDWR #:
INSTRUCTIONS: Attach a sketch of the assessment area and photogr	aphs. Attach a copy of the USGS 7.5-minute topographic quadrangle,
and circle the location of the stream reach under evaluation. If multiple	e stream reaches will be evaluated on the same property, identify and
number all reaches on the attached map, and include a separate form for	
and explanations of requested information. Record in the "Notes/Sketo	
NC SAM User Manual for examples of additional measurements that m	•
NOTE EVIDENCE OF STRESSORS AFFECTING THE ASSESSMENT	I AKEA (αο not need to be within the assessment area).
PROJECT/SITE INFORMATION:	0 Patrick and affect 0 of the 2010
1. Project name (if any): CLT Airport Expansion	2. Date of evaluation: September 2019
3. Applicant/owner name: CLT	4. Assessor name/organization: KMT,BGB/HDR
5. County: Mecklenburg 7. River basin: Catawba	6. Nearest named water body
	on USGS 7.5-minute quad: Coffey Creek
8. Site coordinates (decimal degrees, at lower end of assessment reach	
STREAM INFORMATION: (depth and width can be approximations PS3-2 - S29 -	,
	Length of assessment reach evaluated (feet): 86'
11. Channel depth from bed (in riffle, if present) to top of bank (feet):	2 ☐Unable to assess channel depth.
. , ,	assessment reach a swamp steam? ☐Yes ☐No
14. Feature type: ⊠Perennial flow ☐Intermittent flow ☐Tidal Marsh	Stream
STREAM CATEGORY INFORMATION:	
15. NC SAM Zone: ☐ Mountains (M) ☐ Piedmont (F	P)
16. Estimated geomorphic	
valley shape (skip for	
Tidal Marsh Stream): (more sinuous stream, flatter valley sl	
17. Watershed size: (skip ☐ Size 1 (< 0.1 mi²) ☐ Size 2 (0.1	to $< 0.5 \text{ mi}^2$) \square Size 3 (0.5 to $< 5 \text{ mi}^2$) \square Size 4 ($\ge 5 \text{ mi}^2$)
for Tidal Marsh Stream) ADDITIONAL INFORMATION:	
18. Were regulatory considerations evaluated? ☐Yes ☐No If Yes, cl	heck all that apply to the assessment area
Section 10 water Classified Trout Waters	Water Supply Watershed (☐I ☐II ☐IV ☐V)
☐ Essential Fish Habitat ☐ Primary Nursery Area	☐ High Quality Waters/Outstanding Resource Waters
	· · · · · · · · · · · · · · · · · · ·
☐Anadromous fish ☐303(d) List	☐CAMA Area of Environmental Concern (AEC)
Documented presence of a federal and/or state listed protected s	species within the assessment area.
List species:	
Designated Critical Habitat (list species)	bluded in "Notes /Chatch" postion or ottocked 0 TV MAI
19. Are additional stream information/supplementary measurements inc	bruded in Indies/sketch section of attached? Tes Mino
1. Channel Water – assessment reach metric (skip for Size 1 stream	ams and Tidal Marsh Streams)
☑A Water throughout assessment reach.	· · · · · ·
B No flow, water in pools only.	
C No water in assessment reach.	
2. Evidence of Flow Restriction – assessment reach metric	
	fle-pool sequence is severely affected by a flow restriction or fill to the
point of obstructing flow or a channel choked with aquation	macrophytes or ponded water or impoundment on flood or ebb within
` '	culverts, causeways that constrict the channel, tidal gates, debris jams,
beaver dams). ⊠B Not A	
3. Feature Pattern – assessment reach metric	complete straightening modification = h h - l h - l
	xamples: straightening, modification above or below culvert).
4. Feature Longitudinal Profile – assessment reach metric	
	tream profile (examples: channel down-cutting, existing damming, over
widening, active aggradation, dredging, and excavation videntical disturbances).	where appropriate channel profile has not reformed from any of these
⊠B Not A	
5. Signs of Active Instability – assessment reach metric	the stream has currently recovered. Examples of instability include
active bank failure, active channel down-cutting (head-cut), active w	the stream has currently recovered. Examples of instability include ridening, and artificial hardening (such as concrete, gabion, rip-rap).
☐A < 10% of channel unstable	g, said salancisa instituting (odori do controlo; gabien, np rap).
☐B 10 to 25% of channel unstable	

6.					streamsic					
	LB	rider for t RB	ne Left	Bank (LB) and the	Right Ba	ink (RB).			
	□A □B	□A □B	Mod refe	derate evi rence inte	dence of or eraction (ex	conditions xamples:	limited streams	erms, leve ide area a	es, down- ccess, dis	cutting, aggradation, dredging) that adversely affect ruption of flood flows through streamside area, leaky
	⊠C	⊠c	Exte [exa of flo mos	ensive evi amples: ca ood flows	dence of auseways through st thing]) <u>or</u> f	conditions with flood reamside	that adversely Iplain and chanr area] <u>or</u> too mu	affect refe nel constri ch floodpla	erence inte ction, bulk ain/intertic	nor ditching [including mosquito ditching]) eraction (little to no floodplain/intertidal zone access heads, retaining walls, fill, stream incision, disruption lal zone access [examples: impoundments, intensive or assessment reach is a man-made feature on an
7.	Wate	r Quality	Stresso	ors – asse	essment r	each/inte	ertidal zone me	tric		
		k all that								
										er discoloration, oil sheen, stream foam)
	□B □C						m features or inter- es entering the a			nd causing a water quality problem
	\Box D	Odor	(not incl	uding nat	ural sulfide	e odors)	_			
	□E	Curre section		shed or c	ollected d	ata indica	ating degraded	water qua	lity in the	assessment reach. Cite source in "Notes/Sketch"
	□F			n access t	o stream	or intertida	al zone			
	□G				am or inte			ممنوسيط ا		touring doctruction ato)
							ai zone (removal n in "Notes/Sketo			nowing, destruction, etc)
	$\overline{\boxtimes}$ J		to no str			- 、 .			,	
8.					•	•	al Marsh Strea	•		
	For S						sidered a drough all not exceeding			eams, D2 drought or higher is considered a drought.
	⊟в						1 inch within the			31 40 Hours
	⊠c	No di	rought co	onditions						
9.	Large □Ye		•		assessme oo large or			f Yes, skip	to Metric	: 13 (Streamside Area Ground Surface Condition).
10.							each metric			
	10a.	∐Yes	⊠No	sedime	ntation, m	ining, exc	at over majority cavation, in-stre tal Plain strea n	eam harde	ening [for	nt reach (examples of stressors include excessive example, rip-rap], recent dredging, and snagging) to Metric 12)
	10b.									ize 4 Coastal Plain streams)
		□A			nacropnyt s, lichens,		quatic mosses I mats)	Check for Tidal Marsh Streams Only	□F □G	5% oysters or other natural hard bottoms Submerged aquatic vegetation
		⊠В	Multiple	sticks ar			d/or emergent	k for T h Stree Only	□!·	Low-tide refugia (pools)
		□с	vegetat Multiple		nd logs (in	cluding la	p trees)	arsh C	□J	Sand bottom 5% vertical bank along the marsh
		□D	5% und	lercut bar	nks and/or	root mats	s and/or roots	ວັ ຊັ	□κ	Little or no habitat
		□E		s extend t no habita		nal wetted	d perimeter			
****	*****	*******	******	**REMAIN	IING QUE	STIONS	ARE NOT APP	LICABLE	FOR TID	AL MARSH STREAMS************************************
11.	Bedf	orm and	Substra	te – asse	ssment re	each met	ric (skip for Siz	ze 4 Coas	tal Plain	streams and Tidal Marsh Streams)
	11a.	□Yes	⊠No	Is asses	sment rea	ch in a na	tural sand-bed	stream? (s	skip for C	oastal Plain streams)
	11b.				k the app		oox(es).			
		⊠a □B			evaluate) ∩ (evaluat					
		□с					tric 12, Aquatio	: Life)		
	11c.	at least	one box	in each r	ow (skip	for Size 4	4 Coastal Plain	streams	and Tidal	essment reach – whether or not submerged. Check Marsh Streams). Not Present (NP) = absent, Rare
					or each as			II (A) - >	40-7076, 1	Predominant (P) = > 70%. Cumulative percentages
		NP	R □	C	A	P	Dodrook/oone	مانده		
		\boxtimes	H		H		Bedrock/sapre Boulder (256		m)	
							Cobble (64 –	256 mm)	,	
				님	H	片	Gravel (2 – 6 ² Sand (.062 –			
						Ĭ	Silt/clay (< 0.0	,		
		H	\square	H	H		Detritus Artificial (rip-ra	ap, concre	ete, etc)	
	11d.	□ □Yes	□No	Are pool	 s filled with	_		-		streams and Tidal Marsh Streams)
				- 12001			,			

12.	12a. ⊠	Yes 🗆]No \	ent reach metric (skip for Tidal Marsh Streams) Was an in-stream aquatic life assessment performed as described in the User Manual? the following reasons and skip to Metric 13. □No Water □Other:	
	12b. 🖾	Yes 🗆		re aquatic organisms present in the assessment reach (look in riffles, pools, then snags)? If Yes, check a oply. If No, skip to Metric 13.	ıll that
			Ni]Adult fro]Aquatic]Aquatic]Beetles]Caddisf]Asian cl]Crustac]Damsel]Dipteral]Mayfly I]Megalop]Midges/	umbers over columns refer to "individuals" for Size 1 and 2 streams and "taxa" for Size 3 and 4 streams. ogs reptiles macrophytes and aquatic mosses (include liverworts, lichens, and algal mats) fly larvae (T) lam (Corbicula) tean (isopod/amphipod/crayfish/shrimp) fly and dragonfly larvae	
]Mussels]Other fis]Salama]Snails]Stonefly]Tipulid I	s/Clams (not <i>Corbicula</i>) sh nders/tadpoles / larvae (P)	
13.				d Surface Condition – streamside area metric (skip for Tidal Marsh Streams and B valley types) nk (LB) and the Right Bank (RB). Consider storage capacity with regard to both overbank flow and upland re	runoff.
	□A □B ⊠C	□A □B ⊠C	Modera Severe	r no alteration to water storage capacity over a majority of the streamside area ate alteration to water storage capacity over a majority of the streamside area e alteration to water storage capacity over a majority of the streamside area (examples: ditches, fill, soil compack disturbance, buildings, man-made levees, drainage pipes)	action,
14.	Conside LB	r for the RB	Left Ba	Storage – streamside area metric (skip for Size 1 streams, Tidal Marsh Streams, and B valley types) nk (LB) and the Right Bank (RB) of the streamside area.	
	□a □B ⊠C	□A □B ⊠C	Majorit	ty of streamside area with depressions able to pond water ≥ 6 inches deep ty of streamside area with depressions able to pond water 3 to 6 inches deep ty of streamside area with depressions able to pond water < 3 inches deep	
15.	Conside wetted po LB □Y	r for the erimeter RB □Y	Left Ba of asses	eamside area metric (skip for Tidal Marsh Streams) nk (LB) and the Right Bank (RB). Do not consider wetlands outside of the streamside area or within the nesment reach. etlands present in the streamside area?	ıormal
16.		II contrib Streams Ponds (Obstruc Evidenc Stream	outors was and/or sinclude was tion passes of ban	- assessment reach metric (skip for Size 4 streams and Tidal Marsh Streams) vithin the assessment reach or within view of and draining to the assessment reach. springs (jurisdictional discharges) wet detention basins; do not include sediment basins or dry detention basins) sing flow during low-flow periods within the assessment area (beaver dam, leaky dam, bottom-release dam, k seepage or sweating (iron in water indicates seepage) ank soil reduced (dig through deposited sediment if present) ve	weir)
17.	Baseflov Check a A B C C D D E S F	II that ap Evidence Obstruct Urban s Evidence Assessr	oply. e of subation not perfeam (≥ tream (≥ e that th	stantial water withdrawals from the assessment reach (includes areas excavated for pump installation) passing flow during low-flow periods affecting the assessment reach (ex: watertight dam, sediment deposit) 24% impervious surface for watershed) e streamside area has been modified resulting in accelerated drainage into the assessment reach ch relocated to valley edge ve	
18.	Shading	aspect. Stream Degrade	Conside shading ed (exam	reach metric (skip for Tidal Marsh Streams) er "leaf-on" condition. is appropriate for stream category (may include gaps associated with natural processes) hple: scattered trees) is gone or largely absent	

19.	Buffer Width – streamside area metric (skip for Tidal Marsh Streams)
	Consider "vegetated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top of bank out to the first break.
	Vegetated Wooded
	LB RB LB RB
	□ A □ A □ A ≥ 100 feet wide or extends to the edge of the watershed
	□B □B □B From 50 to < 100 feet wide □C □C □C From 30 to < 50 feet wide
	\Box D \Box D \Box D From 10 to < 30 feet wide
	\Box E \Box E $\overline{\Box}$ E $\overline{\Box}$ E < 10 feet wide <u>or</u> no trees
20.	Buffer Structure – streamside area metric (skip for Tidal Marsh Streams)
	Consider for left bank (LB) and right bank (RB) for Metric 19 ("Vegetated" Buffer Width).
	LB RB
	□A □A Mature forest □B □B Non-mature woody vegetation or modified vegetation structure
	□C □C Herbaceous vegetation with or without a strip of trees < 10 feet wide
	D D Maintained shrubs
	⊠E
21.	Buffer Stressors – streamside area metric (skip for Tidal Marsh Streams)
	Check all appropriate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but is
	within 30 feet of stream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet).
	If none of the following stressors occurs on either bank, check here and skip to Metric 22: Abuts < 30 feet 30-50 feet
	LB RB LB RB
	□A □A □A □A □A Row crops
	□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □
	□C □C □C □C Pasture (no livestock)/commercial horticulture □D □D
00	
22.	Stem Density – streamside area metric (skip for Tidal Marsh Streams) Consider for left bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width).
	LB RB
	□A □A Medium to high stem density
	B B Low stem density
23.	Continuity of Vegetated Buffer – streamside area metric (skip for Tidal Marsh Streams)
	Consider whether vegetated buffer is continuous along stream (parallel). Breaks are areas lacking vegetation > 10 feet wide.
	LB RB ☑A ☐A The total length of buffer breaks is < 25 percent.
	B B The total length of buffer breaks is between 25 and 50 percent.
	☐C ☐C The total length of buffer breaks is > 50 percent.
24.	Vegetative Composition – streamside area metric (skip for Tidal Marsh Streams)
	Evaluate the dominant vegetation within 100 feet of each bank or to the edge of the watershed (whichever comes first) as it contributes to
	assessment reach habitat.
	LB RB A Vegetation is close to undisturbed in species present and their proportions. Lower strata composed of native species,
	with non-native invasive species absent or sparse.
	B Vegetation indicates disturbance in terms of species diversity or proportions, but is still largely composed of native
	species. This may include communities of weedy native species that develop after clear-cutting or clearing or
	communities with non-native invasive species present, but not dominant, over a large portion of the expected strata or communities missing understory but retaining canopy trees.
	 ☑C ☑C ☑C ✓C ✓Equation is severely disturbed in terms of species diversity or proportions. Mature canopy is absent or communities
	with non-native invasive species dominant over a large portion of expected strata or communities composed of planted
	stands of non-characteristic species <u>or</u> communities inappropriately composed of a single species <u>or</u> no vegetation.
25.	Conductivity – assessment reach metric (skip for all Coastal Plain streams)
	25a. Yes No Was conductivity measurement recorded?
	If No, select one of the following reasons. ☐No Water ☐Other:
	25b. Check the box corresponding to the conductivity measurement (units of microsiemens per centimeter).
	\square A < 46 \square B 46 to < 67 \square C 67 to < 79 \square D 79 to < 230 \square E \geq 230
Note	es/Sketch:

Stream Site Name	CL1 Airport Expansion	Date of Assessment	September 2019			
Stream Category	Pa2	KMT,BGB/HDR				
Notes of Field Asses		NO				
Presence of regulator		YES				
Additional stream inf	rements included (Y/N)	NO				
NC SAM feature type (perennial, intermittent, Tidal Marsh Stream) Perennial						

(poroninal, intermitterit, ridal Maron Groam)	1 010111110	<u>. </u>
Function Class Rating Summary	USACE/ All Streams	NCDWR Intermittent
(1) Hydrology	LOW	
(2) Baseflow	HIGH	
(2) Flood Flow	LOW	
(3) Streamside Area Attenuation	LOW	
(4) Floodplain Access	LOW	
(4) Wooded Riparian Buffer	LOW	
(4) Microtopography	LOW	
(3) Stream Stability	LOW	
(4) Channel Stability	LOW	
(4) Sediment Transport	LOW	
(4) Stream Geomorphology	MEDIUM	
(2) Stream/Intertidal Zone Interaction	NA NA	
(2) Longitudinal Tidal Flow	NA NA	
(2) Tidal Marsh Stream Stability	NA NA	
(3) Tidal Marsh Channel Stability	NA NA	
(3) Tidal Marsh Stream Geomorphology	NA LOW	
(1) Water Quality	LOW HIGH	
(2) Baseflow		
(2) Streamside Area Vegetation	LOW	
(3) Upland Pollutant Filtration	LOW	
(3) Thermoregulation	LOW	
(2) Indicators of Stressors	NO	
(2) Aquatic Life Tolerance	LOW	
(2) Intertidal Zone Filtration	NA	
(1) Habitat	LOW	
(2) In-stream Habitat	LOW	
(3) Baseflow	HIGH	
(3) Substrate	LOW	
(3) Stream Stability	LOW	
(3) In-stream Habitat	LOW	
(2) Stream-side Habitat	LOW	
(3) Stream-side Habitat	LOW	
(3) Thermoregulation	LOW	
(2) Tidal Marsh In-stream Habitat	NA	
(3) Flow Restriction	NA	
(3) Tidal Marsh Stream Stability	NA	
(4) Tidal Marsh Channel Stability	NA	
(4) Tidal Marsh Stream Geomorphology	NA	
(3) Tidal Marsh In-stream Habitat	NA	
(2) Intertidal Zone	NA	
Overall	LOW	

. isompanie con	
USACE AID #:	NCDWR #:
INSTRUCTIONS: Attach a sketch of the assessment area and photogra	
and circle the location of the stream reach under evaluation. If multiple	
number all reaches on the attached map, and include a separate form for	
and explanations of requested information. Record in the "Notes/Sketc	
NC SAM User Manual for examples of additional measurements that manual NOTE EVIDENCE OF STRESSORS AFFECTING THE ASSESSMENT	•
	ANEA (uo not need to be within the assessment area).
PROJECT/SITE INFORMATION: 1 Project name (if anyl): CLT Airport Expansion	2. Date of evaluation: September 2010
1. Project name (if any): 3. Applicant/owner name: CLT Airport Expansion CLT	Date of evaluation: September 2019 Assessor name/organization: KMT,BGB/HDR
5. County: Mecklenburg	Assessor name/organization. Nearest named water body
7. River basin: Catawba	on USGS 7.5-minute quad: Coffey Creek
Site coordinates (decimal degrees, at lower end of assessment reach	•
STREAM INFORMATION: (depth and width can be approximations)	•
PS3-2 - S29 -	
9. Site number (show on attached map): Reach 4 10. I	ength of assessment reach evaluated (feet): 173'
11. Channel depth from bed (in riffle, if present) to top of bank (feet):	2 Unable to assess channel depth.
. , ,	assessment reach a swamp steam?
14. Feature type: ⊠Perennial flow ☐Intermittent flow ☐Tidal Marsh	Stream
STREAM CATEGORY INFORMATION:	_
15. NC SAM Zone: ☐ Mountains (M) ☐ Piedmont (P	P) Inner Coastal Plain (I) Outer Coastal Plain (O)
16. Estimated geomorphic	/ _{DB}
valley shape (skip for	
Tidal Marsh Stream): (more sinuous stream, flatter valley sle	. ,
17. Watershed size: (skip ☐ Size 1 (< 0.1 mi²) ☐ Size 2 (0.1 t	to < 0.5 mi²) ☐Size 3 (0.5 to < 5 mi²) ☐Size 4 (≥ 5 mi²)
for Tidal Marsh Stream)	
ADDITIONAL INFORMATION: 18. Were regulatory considerations evaluated? ☐Yes ☐No If Yes, ch	nack all that apply to the assessment area
Section 10 water Classified Trout Waters	Water Supply Watershed (☐I ☐II ☐II ☐IV ☐V)
☐ Essential Fish Habitat ☐ Primary Nursery Area	☐ High Quality Waters/Outstanding Resource Waters
□ Publicly owned property □ NCDWR Riparian buffer rule	• •
☐Anadromous fish ☐303(d) List	☐CAMA Area of Environmental Concern (AEC)
☐Documented presence of a federal and/or state listed protected s	
List species:	
Designated Critical Habitat (list species)	
19. Are additional stream information/supplementary measurements inc	luded in "Notes/Sketch" section or attached? ∐Yes ⊠No
Channel Water – assessment reach metric (skip for Size 1 strea	ms and Tidal Marsh Streams)
A Water throughout assessment reach.	and much on outling
B No flow, water in pools only.	
C No water in assessment reach.	
2. Evidence of Flow Restriction – assessment reach metric	
	fle-pool sequence is severely affected by a flow restriction or fill to the
point of obstructing flow or a channel choked with aquatic	macrophytes $\underline{\text{or}}$ ponded water $\underline{\text{or}}$ impoundment on flood or ebb within
` '	culverts, causeways that constrict the channel, tidal gates, debris jams,
beaver dams). ⊠B Not A	
3. Feature Pattern – assessment reach metric	
	amples: straightening, modification above or below culvert).
☐B Not A	
4. Feature Longitudinal Profile – assessment reach metric	
	ream profile (examples: channel down-cutting, existing damming, over
	here appropriate channel profile has not reformed from any of these
disturbances). ⊠B Not A	
5. Signs of Active Instability – assessment reach metric	the stream has summath assessed to the stream of the strea
Consider only current instability, not past events from which t active bank failure, active channel down-cutting (head-cut), active wi	the stream has currently recovered. Examples of instability include identifying and artificial hardening (such as concrete, gabion, rip-ran)
active bank failure, active channel down-cutting (nead-cut), active wi ☐A < 10% of channel unstable	idening, and artificial naturaling (Such as concrete, gabion, rip-fap).
B 10 to 25% of channel unstable	
C > 25% of channel unstable	

		ea Interaction						
Conside LB	der for t RB	he Left Bank (L	.B) and the Right	Bank (RB).				
□A ⊠B	∏а ⊠в	Moderate e reference in	vidence of condition teraction (example	ons (examples: bees: limited streams	erms, levee ide area ad	s, down- ccess, dis	cutting, aggradation, dredging) that adversely af ruption of flood flows through streamside area, le	
□с	□C	Extensive e [examples: of flood flow mosquito di	evidence of condition causeways with flow its through streams in the condition of the condi	ons that adversely oodplain and chanr ide area] <u>or</u> too mu	affect refe nel constric ch floodpla	rence inte tion, bulk in/intertid	eraction (little to no floodplain/intertidal zone acc heads, retaining walls, fill, stream incision, disrup lal zone access [examples: impoundments, inten	tion sive
Water	Quality	Stressors – as	sessment reach/i	ntertidal zone me	tric			
Check	call that	apply.						
							er discoloration, oil sheen, stream foam)	
							nd causing a water quality problem	
\Box D	Odor	(not including na	atural sulfide odors	s)				
∐E			collected data inc	dicating degraded	water qual	ity in the	assessment reach. Cite source in "Notes/Ske	etch"
□F	Lives	tock with access						
					Lburning	rogular m	lowing dostruction atc)	
<u> </u>							owing, destruction, etc)	
\boxtimes J	Little	to no stressors				,		
			• •		•			
								ght.
⊟в	Drou	ght conditions ar	<u>nd</u> rainfall exceedir				ot 40 floats	
⊠c	No dr	ought conditions	S					
					f Yes, skip	to Metric	13 (Streamside Area Ground Surface Condition	n).
_								
10a.	∐Yes	sedim	nentation, mining,	excavation, in-stre	eam harde	ning [for	example, rip-rap], recent dredging, and snagg	sive jing)
į			o macrophytes and		ns fal	□F	5% oysters or other natural hard bottoms	
	∟, 、			lgal mats)	.≥	□G	Submerged aquatic vegetation	
[⊠в	(include liverwo Multiple sticks	orts, lichens, and a and/or leaf packs		for Tic Strear	⊟н	Submerged aquatic vegetation Low-tide refugia (pools)	
	⊠B	(include liverwood) Multiple sticks vegetation	orts, lichens, and a and/or leaf packs	and/or emergent	neck for Tic arsh Strear Only	□H	Low-tide refugia (pools) Sand bottom	
[(include liverwo Multiple sticks vegetation Multiple snags 5% undercut ba	orts, lichens, and al and/or leaf packs and logs (including anks and/or root m	and/or emergent g lap trees) nats and/or roots	Check for Tidal Marsh Streams Only	⊟н	Low-tide refugia (pools)	
[⊠B □C □D	(include liverwo Multiple sticks vegetation Multiple snags 5% undercut ba	orts, lichens, and al and/or leaf packs and logs (including anks and/or root m d to the normal wet	and/or emergent g lap trees) nats and/or roots	Check for Tic Marsh Strear Only	□J □I □H	Low-tide refugia (pools) Sand bottom 5% vertical bank along the marsh	
[⊠B □C	(include liverwo Multiple sticks vegetation Multiple snags 5% undercut be in banks extend	orts, lichens, and al and/or leaf packs and logs (including anks and/or root m d to the normal wet	and/or emergent g lap trees) nats and/or roots	Check for Tic Marsh Strear Only	□J □I □H	Low-tide refugia (pools) Sand bottom 5% vertical bank along the marsh	
[⊠B □C □D	(include liverwo Multiple sticks vegetation Multiple snags 5% undercut be in banks extend Little or no habi	orts, lichens, and al and/or leaf packs and logs (including anks and/or root n d to the normal wet itat	and/or emergent g lap trees) nats and/or roots tted perimeter	·	□H □J □K	Low-tide refugia (pools) Sand bottom 5% vertical bank along the marsh	
[[⊠B □C □D □E *******************************	(include liverwo Multiple sticks vegetation Multiple snags 5% undercut be in banks extend Little or no habi	orts, lichens, and all and/or leaf packs and logs (including anks and/or root n d to the normal wer itat INING QUESTION sessment reach n	and/or emergent g lap trees) nats and/or roots tted perimeter NS ARE NOT APP	LICABLE ze 4 Coast	□H □I □J □K FOR TIDA	Low-tide refugia (pools) Sand bottom 5% vertical bank along the marsh Little or no habitat AL MARSH STREAMS************************************	
[[]	⊠B □C □D □E *******************************	(include liverwo Multiple sticks vegetation Multiple snags 5% undercut be in banks extend Little or no habi	orts, lichens, and all and/or leaf packs and logs (including anks and/or root n d to the normal wer itat INING QUESTION sessment reach n	and/or emergent g lap trees) nats and/or roots tted perimeter NS ARE NOT APP	LICABLE ze 4 Coast	□H □I □J □K FOR TIDA	Low-tide refugia (pools) Sand bottom 5% vertical bank along the marsh Little or no habitat AL MARSH STREAMS************************************	
 	⊠B □C □D □E •••••••••••••••••••••••••••••••	(include liverwood Multiple sticks vegetation Multiple snags 5% undercut be in banks extend Little or no habitation of the banks with the control of the banks with the ban	orts, lichens, and all and/or leaf packs and logs (including anks and/or root meditat and logs (including anks and/or root meditat and logs (including anks and/or root meditat and logs and log	and/or emergent g lap trees) nats and/or roots tted perimeter NS ARE NOT APPI netric (skip for Siz	LICABLE ze 4 Coast	□H □I □J □K FOR TIDA	Low-tide refugia (pools) Sand bottom 5% vertical bank along the marsh Little or no habitat AL MARSH STREAMS************************************	
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######################################	□ B □ C □ D □ E *********** Frm and S □ Yes Bedform □ A □ B □ C In riffle seat least o	(include liverwood Multiple sticks vegetation Multiple snags 5% undercut be in banks extend Little or no habitation of the company of the com	orts, lichens, and all and/or leaf packs and logs (including anks and/or root meditat and logs). Including anks and/or root meditat and logs. Including a sesment reach messment reach in a leck the appropriation (evaluate 11c) ion (evaluate 11d) in absent (skip to It ill that occur below in row (skip for Siz	and/or emergent g lap trees) nats and/or roots tted perimeter NS ARE NOT APP netric (skip for Siz natural sand-bed ste box(es). Metric 12, Aquatic the normal wetted the 4 Coastal Plain	LICABLE ze 4 Coast stream? (s : Life) perimeter of streams a	H I J K FOR TIDA al Plain s kip for C	Low-tide refugia (pools) Sand bottom 5% vertical bank along the marsh Little or no habitat AL MARSH STREAMS************************************	e ck Rare
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Bedfo 11a. [11b. [1 11c. [1 1] [1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	⊠B □C □D □E Frm and S □Yes Bedform □A □B □C In riffle se at least ((R) = pre should no	(include liverwork Multiple sticks vegetation Multiple snags 5% undercut be in banks extend Little or no habitative. ************************************	orts, lichens, and all and/or leaf packs and logs (including anks and/or root meditat and logs). Including anks and/or root meditat all and al	and/or emergent g lap trees) nats and/or roots tted perimeter NS ARE NOT APP netric (skip for Siz natural sand-bed size 4 Coastal Plain 10-40%, Abundar nent reach. Bedrock/sapr Boulder (256 Cobble (64 – Gravel (2 – 64 Sand (.062 – Silt/clay (< 0.0	LICABLE ze 4 Coast stream? (s : Life) perimeter c streams a nt (A) = > 4 olite - 4096 mn 256 mm) 4 mm) 2 mm)	H I J K FOR TIDA al Plain s kip for C of the ass and Tidal 40-70%, F	Low-tide refugia (pools) Sand bottom 5% vertical bank along the marsh Little or no habitat AL MARSH STREAMS************************************	e ck Rare
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	Water Checles B C C C C C C C C C C C C C C C C C C	Water Quality Check all that A Disco B Excess C Notice D Odor E Curre sectio F Lives G Excess H Degra I Other J Little Recent Weath For Size 1 or 2 A Droug C No dr Large or Dang Yes No Natural In-stree 10a. Yes	⊠B ⊠B Moderate e reference in or intermitted or intermitted. □C □C Extensive e [examples: of flood flow mosquito di interstream. Water Quality Stressors – as Check all that apply. □A Discolored water in selection. □B Excessive sedimentales evidence. □D Odor (not including nelection. □C Current published or section. □F Livestock with accessed algae in stem section. □F Livestock with accessed algae in stem section. □H Degraded marsh vegent section. □I Other: □J Little to no stressors Recent Weather – watershed for Size 1 or 2 streams, D1 drown and the prought conditions an	□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	☑B ☑B Moderate evidence of conditions (examples: be reference interaction (examples: limited streams or intermittent bulkheads, causeways with floodped in the causeways with floodped in the causeways with floodplain and channed flood flows through streamside area] or too mu mosquito ditching]) or floodplain/intertidal zone interstream divide Water Quality Stressors – assessment reach/intertidal zone interstream divide Water Quality Stressors – assessment reach/intertidal zone medicated all that apply. ☐A Discolored water in stream or intertidal zone (milky white, Bedicated section) ☐B Excessive sedimentation (burying of stream features or intermidated in the cause of pollutant discharges entering the additional color) ☐C Noticeable evidence of pollutant discharges entering the additional color (not including natural sulfide odors) ☐E Current published or collected data indicating degraded section. ☐F Livestock with access to stream or intertidal zone (removal acceptance) ☐F Livestock with access to stream or intertidal zone (removal acceptance) ☐F Livestock with access to stream or intertidal zone (removal acceptance) ☐F Livestock with access to stream or intertidal zone (removal acceptance) ☐F Livestock with access to stream or intertidal zone (removal acceptance) ☐F Livestock with access to stream or intertidal zone (removal acceptance)	☑B ☑B Moderate evidence of conditions (examples: berms, levee reference interaction (examples: limited streamside area as or intermittent bulkheads, causeways with floodplain constrict of Extensive evidence of conditions that adversely affect refe [examples: causeways with floodplain and channel constrict of flood flows through streamside area] or too much floodplain mosquito ditching]) or floodplain/intertidal zone unnaturally interstream divide Water Quality Stressors – assessment reach/intertidal zone metric Check all that apply. ☐A Discolored water in stream or intertidal zone (milky white, blue, unna Excessive) sedimentation (burying of stream features or intertidal zone Color (not including natural sulfide odors) Conditional color (not including natural sulfide odors) ☐B Excessive sedimentation (burying of stream features or intertidal zone Current published or collected data indicating degraded water qual section. ☐F Livestock with access to stream or intertidal zone (removal, burning, Degraded marsh vegetation in the intertidal zone (removal, burning, Other: (explain in "Notes/Sketch" section Little to no stressors Recent Weather – watershed metric (skip for Tidal Marsh Streams) For Size 1 or 2 streams, D1 drought or higher is considered a drought; for Size Drought conditions and no rainfall or rainfall not exceeding 1 inch with the last 48 hours of the properties of	Moderate evidence of conditions (examples: berms, levees, down-reference interaction (examples: limited streamside area access, dis or intermittent bulkheads, causeways with floodplain constriction, milextensive evidence of conditions that adversely affect reference interaction (examples: causeways with floodplain and channel constriction, bulk of flood flows through streamside area] or too much floodplain/intertided mosquito ditching]) or floodplain/intertidal zone unnaturally absent interstream divide Water Quality Stressors − assessment reach/intertidal zone metric	Moderate evidence of conditions (examples: berms, levees, down-cutting, aggradation, dredging) that adversely at reference interaction (examples: limited streamside area access, disruption of flood flows through streamside area, le or intermittent bulkheads, causeways with floodplain constriction, minor ditching [including mosquito ditching]) Extensive evidence of conditions that adversely affect reference interaction (little to no floodplain/intertidal zone acc [examples: causeways with floodplain and channel constriction, bulkheads, fluit, stream incision, disruption of flood flows through streamside area] or too much floodplain/intertidal zone access [examples: impoundments, inten mosquito ditching]) or floodplain/intertidal zone unnaturally absent or assessment reach is a man-made feature or interstream divide Water Quality Stressors – assessment reach/intertidal zone metric Check all that apply.

12.	-		sessment reach metric (skip for Tidal Marsh Streams)
	12a. ⊠ If N		No Was an in-stream aquatic life assessment performed as described in the User Manual? tone of the following reasons and skip to Metric 13. ☐No Water ☐Other:
	12b. 🛚	Yes 🗆	No Are aquatic organisms present in the assessment reach (look in riffles, pools, then snags)? If Yes, check all that apply. If No, skip to Metric 13.
	1 		Numbers over columns refer to "individuals" for Size 1 and 2 streams and "taxa" for Size 3 and 4 streams. Adult frogs Aquatic reptiles
		\boxtimes	Aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats) Beetles
			Caddisfly larvae (T) Asian clam (Corbicula)
			Crustacean (isopod/amphipod/crayfish/shrimp) Damselfly and dragonfly larvae Dipterans
			Mayfly larvae (E) Megaloptera (alderfly, fishfly, dobsonfly larvae)
			Midges/mosquito larvae Mosquito fish (<i>Gambusia</i>) or mud minnows (<i>Umbra pygmaea)</i>
			Mussels/Clams (not <i>Corbicula</i>) Other fish Salamanders/tadpoles
	H		Salamanders/taupoles Snails Stonefly larvae (P)
			Tipulid larvae Worms/leeches
13.			Ground Surface Condition – streamside area metric (skip for Tidal Marsh Streams and B valley types) Left Bank (LB) and the Right Bank (RB). Consider storage capacity with regard to both overbank flow and upland runoff.
	□A ⊠B	∏A ⊠B	Little or no alteration to water storage capacity over a majority of the streamside area Moderate alteration to water storage capacity over a majority of the streamside area
	□с	□с	Severe alteration to water storage capacity over a majority of the streamside area (examples: ditches, fill, soil compaction, livestock disturbance, buildings, man-made levees, drainage pipes)
14.			Water Storage – streamside area metric (skip for Size 1 streams, Tidal Marsh Streams, and B valley types) Left Bank (LB) and the Right Bank (RB) of the streamside area.
	□A □B ⊠C	□A □B ⊠C	Majority of streamside area with depressions able to pond water ≥ 6 inches deep Majority of streamside area with depressions able to pond water 3 to 6 inches deep Majority of streamside area with depressions able to pond water < 3 inches deep
15.	Conside wetted p	r for the	ce – streamside area metric (skip for Tidal Marsh Streams) Left Bank (LB) and the Right Bank (RB). Do not consider wetlands outside of the streamside area or within the normal of assessment reach.
	□Y ⊠N	∏Υ ⊠N	Are wetlands present in the streamside area?
16.			outors – assessment reach metric (skip for Size 4 streams and Tidal Marsh Streams) outors within the assessment reach or within view of and draining to the assessment reach.
	□A □B	Streams	and/or springs (jurisdictional discharges) include wet detention basins; do not include sediment basins or dry detention basins)
	□C □D ⊠E □F	Evidence Stream	tion passing flow during low-flow periods within the assessment area (beaver dam, leaky dam, bottom-release dam, weir) e of bank seepage or sweating (iron in water indicates seepage) bed or bank soil reduced (dig through deposited sediment if present) the above
17.			tors – assessment area metric (skip for Tidal Marsh Streams)
	□A □B □C	Evidence Obstruc	e of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation) tion not passing flow during low-flow periods affecting the assessment reach (ex: watertight dam, sediment deposit) tream (≥ 24% impervious surface for watershed)
	□D □E ⊠F	Assessr	e that the streamside area has been modified resulting in accelerated drainage into the assessment reach nent reach relocated to valley edge the above
18.	-		sment reach metric (skip for Tidal Marsh Streams) Consider "leaf-on" condition.
	□A □B □C	Stream Degrade	shading is appropriate for stream category (may include gaps associated with natural processes) ed (example: scattered trees) shading is gone or largely absent
	\Box	Sueam	snaung is gone or largery absent

19.	Buffer Width – streamside area metric (skip for Tidal Marsh Streams) Consider "vegetated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top of bank out to the first break. Vegetated Wooded LB RB LB RB \square A \square A \square A \supseteq 100 feet wide \underline{or} extends to the edge of the watershed \square B \square B \square B \square B \square B \square B From 50 to < 100 feet wide						
20.	 Buffer Structure – streamside area metric (skip for Tidal Marsh Streams) Consider for left bank (LB) and right bank (RB) for Metric 19 ("Vegetated" Buffer Width). LB RB A A Mature forest 						
	☑B ☑B Non-mature woody vegetation or modified vegetation structure ☐C ☐C Herbaceous vegetation with or without a strip of trees < 10 feet wide						
21.	Buffer Stressors – streamside area metric (skip for Tidal Marsh Streams) Check all appropriate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but is within 30 feet of stream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet). If none of the following stressors occurs on either bank, check here and skip to Metric 22: Abuts < 30 feet 30-50 feet LB RB LB RB LB RB						
	□A □A □A □A Row crops □B □B □B □B □B Maintained turf □C □C □C □C □C □C Pasture (no livestock)/commercial horticulture □D □D<						
22.	Stem Density – streamside area metric (skip for Tidal Marsh Streams) Consider for left bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width). LB RB						
	 □A						
23.	Continuity of Vegetated Buffer – streamside area metric (skip for Tidal Marsh Streams) Consider whether vegetated buffer is continuous along stream (parallel). Breaks are areas lacking vegetation > 10 feet wide. LB RB						
	 □ A □ B □ B □ C □ C □ C □ C □ D □ D						
24.	Vegetative Composition – streamside area metric (skip for Tidal Marsh Streams) Evaluate the dominant vegetation within 100 feet of each bank or to the edge of the watershed (whichever comes first) as it contributes to assessment reach habitat. LB RB						
	 □A Vegetation is close to undisturbed in species present and their proportions. Lower strata composed of native species, with non-native invasive species absent or sparse. ☑B ☑B Vegetation indicates disturbance in terms of species diversity or proportions, but is still largely composed of native 						
	species. This may include communities of weedy native species that develop after clear-cutting or clearing or communities with non-native invasive species present, but not dominant, over a large portion of the expected strata or communities missing understory but retaining canopy trees. UC UC Vegetation is severely disturbed in terms of species diversity or proportions. Mature canopy is absent or communities with non-native invasive species dominant over a large portion of expected strata or communities composed of planted						
25.	stands of non-characteristic species <u>or</u> communities inappropriately composed of a single species <u>or</u> no vegetation. Conductivity – assessment reach metric (skip for all Coastal Plain streams) 25a. Yes No Was conductivity measurement recorded? If No, select one of the following reasons. No Water Other:						
	25b. Check the box corresponding to the conductivity measurement (units of microsiemens per centimeter). □A < 46 □B 46 to < 67 □C 67 to < 79 □D 79 to < 230 □E ≥ 230						
Note	es/Sketch:						

Stream Site Name	CLT Airport Expansion	Date of Assessment	September 20)19			
Stream Category	Pa2	KMT,BGB/HD	R				
Notes of Field Assessment Form (Y/N) NO							
Presence of regulator	YES						
Additional stream information/supplementary measurements included (Y/N) NO							
NC SAM feature type	IC SAM feature type (perennial, intermittent, Tidal Marsh Stream) Perennial						

(poroninal, intermittent, ridal Maron Gream)	1 010111110	<u>. </u>
Function Class Rating Summary	USACE/ All Streams	NCDWR Intermittent
(1) Hydrology	LOW	
(2) Baseflow	HIGH	
(2) Flood Flow	LOW	
(3) Streamside Area Attenuation	LOW	
(4) Floodplain Access	MEDIUM	
(4) Wooded Riparian Buffer	LOW	
(4) Microtopography	LOW	
(3) Stream Stability	LOW	
(4) Channel Stability	MEDIUM	
(4) Sediment Transport	LOW	
(4) Stream Geomorphology	MEDIUM	
	-	
(2) Stream/Intertidal Zone Interaction	NA NA	
(2) Longitudinal Tidal Flow	NA NA	
(2) Tidal Marsh Stream Stability	NA	
(3) Tidal Marsh Channel Stability	NA NA	
(3) Tidal Marsh Stream Geomorphology	NA	
(1) Water Quality	MEDIUM	
(2) Baseflow	HIGH	
(2) Streamside Area Vegetation	MEDIUM	
(3) Upland Pollutant Filtration	MEDIUM	
(3) Thermoregulation	MEDIUM	
(2) Indicators of Stressors	NO	
(2) Aquatic Life Tolerance	MEDIUM	
(2) Intertidal Zone Filtration	NA	
(1) Habitat	LOW	
(2) In-stream Habitat	LOW	
(3) Baseflow	HIGH	
(3) Substrate	LOW	
(3) Stream Stability	MEDIUM	
(3) In-stream Habitat	LOW	
(2) Stream-side Habitat	MEDIUM	
(3) Stream-side Habitat	MEDIUM	
(3) Thermoregulation	MEDIUM	
(2) Tidal Marsh In-stream Habitat	NA	
(3) Flow Restriction	NA	
(3) Tidal Marsh Stream Stability	NA	
(4) Tidal Marsh Channel Stability	NA NA	
(4) Tidal Marsh Stream Geomorphology	NA NA	
(3) Tidal Marsh In-stream Habitat	NA NA	
(2) Intertidal Zone	NA NA	
Overall	LOW	

Accompanies user manual version 2.1
USACE AID #: NCDWR #:
INSTRUCTIONS: Attach a sketch of the assessment area and photographs. Attach a copy of the USGS 7.5-minute topographic quadrangle
and circle the location of the stream reach under evaluation. If multiple stream reaches will be evaluated on the same property, identify and
number all reaches on the attached map, and include a separate form for each reach. See the NC SAM User Manual for detailed descriptions
and explanations of requested information. Record in the "Notes/Sketch" section if supplementary measurements were performed. See the
NC SAM User Manual for examples of additional measurements that may be relevant.
NOTE EVIDENCE OF STRESSORS AFFECTING THE ASSESSMENT AREA (do not need to be within the assessment area).
PROJECT/SITE INFORMATION:
1. Project name (if any): CLT Airport Expansion 2. Date of evaluation: April 2019
3. Applicant/owner name: CLT 4. Assessor name/organization: KMT,BGB/HDR
5. County: Mecklenburg 6. Nearest named water body
7. River basin: Catawba on USGS 7.5-minute quad: Coffey Creek
8. Site coordinates (decimal degrees, at lower end of assessment reach): 35.214265, -80.940910
STREAM INFORMATION: (depth and width can be approximations)
9. Site number (show on attached map): PS4-2 - Stream 24 10. Length of assessment reach evaluated (feet): 200'
11. Channel depth from bed (in riffle, if present) to top of bank (feet): 1
12. Channel width at top of bank (feet): 2 13. Is assessment reach a swamp steam? ☐Yes ☐No
14. Feature type: ☐Perennial flow ☐Intermittent flow ☐Tidal Marsh Stream
STREAM CATEGORY INFORMATION:
15. NC SAM Zone: ☐ Mountains (M) ☐ Piedmont (P) ☐ Inner Coastal Plain (I) ☐ Outer Coastal Plain (O)
institution (iii) Zirisament (ii) Zirisament (ii)
16. Estimated geomorphic
Valley snape (skip for — — — — — — —
Tidal Marsh Stream): (more sinuous stream, flatter valley slope) (less sinuous stream, steeper valley slope)
17. Watershed size: (skip \square Size 1 (< 0.1 mi ²) \square Size 2 (0.1 to < 0.5 mi ²) \square Size 3 (0.5 to < 5 mi ²) \square Size 4 (≥ 5 mi ²)
for Tidal Marsh Stream)
ADDITIONAL INFORMATION:
18. Were regulatory considerations evaluated? ⊠Yes □No If Yes, check all that apply to the assessment area.
Section 10 water □Classified Trout Waters □Water Supply Watershed (□I □II □II □IV □V)
☐ Essential Fish Habitat ☐ Primary Nursery Area ☐ High Quality Waters/Outstanding Resource Waters
☑Publicly owned property
☐ Anadromous fish ☐ 303(d) List ☐ CAMA Area of Environmental Concern (AEC)
☐Documented presence of a federal and/or state listed protected species within the assessment area.
List species:
Designated Critical Habitat (list species)
19. Are additional stream information/supplementary measurements included in "Notes/Sketch" section or attached? ⊠Yes □No
1. Channel Water – assessment reach metric (skip for Size 1 streams and Tidal Marsh Streams)
☑A Water throughout assessment reach.
B No flow, water in pools only.
☐C No water in assessment reach.
2. Evidence of Flow Restriction – assessment reach metric
At least 10% of assessment reach in-stream habitat or riffle-pool sequence is severely affected by a flow restriction or fill to the
point of obstructing flow <u>or</u> a channel choked with aquatic macrophytes <u>or</u> ponded water <u>or</u> impoundment on flood or ebb with
the assessment reach (examples: undersized or perched culverts, causeways that constrict the channel, tidal gates, debris jam
beaver dams).
⊠B Not A
2 Facture Bettern accessment reach matric
3. Feature Pattern – assessment reach metric
LIB INULA
4. Feature Longitudinal Profile – assessment reach metric
A Majority of assessment reach has a substantially altered stream profile (examples: channel down-cutting, existing damming, ov
widening, active aggradation, dredging, and excavation where appropriate channel profile has not reformed from any of the
disturbances).
⊠B Not A
5. Signs of Active Instability – assessment reach metric
Consider only current instability, not past events from which the stream has currently recovered. Examples of instability includes
active bank failure, active channel down-cutting (head-cut), active widening, and artificial hardening (such as concrete, gabion, rip-rap).
□ A < 10% of channel unstable
☐B 10 to 25% of channel unstable
C > 25% of channel unstable

6.	Streamside Area Interaction – streamside area metric Consider for the Left Bank (LB) and the Right Bank (RB). LB RB									
	□A □B	□A □B						through streamside area, leaky		
	⊠C	⊠c	Extensive everage [examples: of flood flows	vidence of cor causeways wi s through strea ching]) or floo	nditions t th floodp amside a	that adversely a blain and chann area] <u>or</u> too mud	affect refe el constric ch floodpla	rence inte tion, bulk iin/intertic	eraction (little to no fl heads, retaining wall lal zone access [exar	oodplain/intertidal zone access s, fill, stream incision, disruption nples: impoundments, intensive n is a man-made feature on ar
7.		-	Stressors – ass	essment rea	ch/inter	tidal zone met	ric			
	□A □B	Excess	ored water in str sive sedimentati	ion (burying o	of stream	features or int	ertidal zon	ie)	er discoloration, oil sl	
		Odor (ı	not including na	tural sulfide o	odors)	J			<u>nd</u> causing a water q	
		section	۱.				vater qual	ity in the	assessment reach.	Cite source in "Notes/Sketch"
	□F □G	Excess	ock with access sive algae in str	eam or intertion	dal zone		h			.4-\
	□I □H	Other:	no stressors			in "Notes/Sketo			nowing, destruction, e	eic)
8.	Rece		r – watershed						D 0 1 14	
	$\square A$	Drough	nt conditions and	<u>d</u> no rainfall o	r rainfall	not exceeding	1 inch wit	hin the la		higher is considered a drought.
	□в ⊠с		nt conditions <u>and</u> aught conditions	<u>a</u> rainiali exce	eeaing i	inch within the	เสริเ 48 กัด	ours		
9.	Larg e		erous Stream – Is stream is t				Yes, skip	to Metric	: 13 (Streamside Area	a Ground Surface Condition).
10.	Natural In-stream Habitat Types – assessment reach metric 10a. Yes No Degraded in-stream habitat over majority of the assessment reach (examples of stressors include excessive sedimentation, mining, excavation, in-stream hardening [for example, rip-rap], recent dredging, and snagging) (evaluate for Size 4 Coastal Plain streams only, then skip to Metric 12)									
	10b.		that occur (occur)					kip for S □F	ize 4 Coastal Plain	streams) r natural hard bottoms
		_ (include liverwor Multiple sticks a	ts, lichens, ar	nd algaİ ı	mats)	Check for Tidal Marsh Streams Only	□. □G □H	Submerged aquation Low-tide refugia (po	cvegetation
		V	vegetation Multiple snags a	-		_	neck for arsh Stre	□J □I	Sand bottom 5% vertical bank al	,
		□D 5	5% undercut ba n banks extend Little or no habit	nks and/or ro to the normal	ot mats	and/or roots	Ū Ž	∏κ	Little or no habitat	Ü
		_				DE 1107 4 DD	10.151.5			
									AL MARSH STREAD	MS************************************
									oastal Plain stream	•
	11b.		valuated. Chec Riffle-run section			ox(es).				
		□B F	Pool-glide section	on (evaluate 1	11d)	ic 12. Aquatic	Life)			
	11c.	In riffle sec	ctions, check all	that occur be	low the r	normal wetted p	erimeter o			ether or not submerged. Check
		(R) = pres		Common (C)	= > 10-	40%, Abundan				lot Present (NP) = absent, Rare 70%. Cumulative percentages
		NP F	R C		5 	Bedrock/sapro	olite			
					=	Boulder (256 - Cobble (64 – 2	- 4096 mn	n)		
						Gravel (2 – 64 Sand (.062 – 2	mm)			
						Silt/clay (< 0.0 Detritus				
				i 🗇 i	<u> </u>	Artificial (rip-ra	• •	,		Land Otto and
	пa.	□Yes [□No Are poo	is illied with s	eaiment	. (Skip for Siz	e 4 Coast	ai Piain 9	streams and Tidal N	iaisn Streams)

12.	-		sessment reach metric (skip for Tidal Marsh Streams)
	12a. ⊠ If N		No Was an in-stream aquatic life assessment performed as described in the User Manual? cone of the following reasons and skip to Metric 13. ☐No Water ☐Other:
	12b. 🛚	Yes 🗆	No Are aquatic organisms present in the assessment reach (look in riffles, pools, then snags)? If Yes, check all that apply. If No, skip to Metric 13.
	1 		Numbers over columns refer to "individuals" for Size 1 and 2 streams and "taxa" for Size 3 and 4 streams. Adult frogs Aquatic reptiles
			Aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats) Beetles
			Caddisfly larvae (T) Asian clam (<i>Corbicula</i>) Crustacean (isopod/amphipod/crayfish/shrimp)
			Damselfly and dragonfly larvae Dipterans Mayfly larvae (E)
			Megaloptera (alderfly, fishfly, dobsonfly larvae) Midges/mosquito larvae
	H		Mosquito fish (<i>Gambusia</i>) or mud minnows (<i>Umbra pygmaea)</i> Mussels/Clams (not <i>Corbicula</i>) Other fish
			Salamanders/tadpoles Snails
			Stonefly larvae (P) Tipulid larvae Worms/leeches
13.	Conside	r for the	Ground Surface Condition – streamside area metric (skip for Tidal Marsh Streams and B valley types) Left Bank (LB) and the Right Bank (RB). Consider storage capacity with regard to both overbank flow and upland runoff.
	LB □A □B	RB □A □B	Little or no alteration to water storage capacity over a majority of the streamside area Moderate alteration to water storage capacity over a majority of the streamside area
	⊠c	⊠c	Severe alteration to water storage capacity over a majority of the streamside area (examples: ditches, fill, soil compaction livestock disturbance, buildings, man-made levees, drainage pipes)
14.	Conside LB	r for the RB	Water Storage – streamside area metric (skip for Size 1 streams, Tidal Marsh Streams, and B valley types) Left Bank (LB) and the Right Bank (RB) of the streamside area.
	□A □B ⊠C	□A □B ⊠C	Majority of streamside area with depressions able to pond water ≥ 6 inches deep Majority of streamside area with depressions able to pond water 3 to 6 inches deep Majority of streamside area with depressions able to pond water < 3 inches deep
15.	Conside wetted p	er for the erimeter	te - streamside area metric (skip for Tidal Marsh Streams) Left Bank (LB) and the Right Bank (RB). Do not consider wetlands outside of the streamside area or within the normal of assessment reach.
	LB ⊠Y □N	RB ⊠Y □N	Are wetlands present in the streamside area?
16.		II contrib	outors – assessment reach metric (skip for Size 4 streams and Tidal Marsh Streams) outors within the assessment reach or within view of <u>and</u> draining to the assessment reach. and/or springs (jurisdictional discharges)
	□B □C □D □E □F	Ponds (Obstruction of the control o	nclude wet detention basins; do not include sediment basins or dry detention basins) tion passing flow during low-flow periods within the assessment area (beaver dam, leaky dam, bottom-release dam, weir) e of bank seepage or sweating (iron in water indicates seepage) bed or bank soil reduced (dig through deposited sediment if present) the above
17.			tors – assessment area metric (skip for Tidal Marsh Streams) ply.
	□A □B ⊠C □D	Evidence Obstructure Urban s	e of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation) tion not passing flow during low-flow periods affecting the assessment reach (ex: watertight dam, sediment deposit) tream (≥ 24% impervious surface for watershed) to the the streamside area has been modified resulting in accelerated drainage into the assessment reach
	□E □F	Assessr	nent reach relocated to valley edge the above
18.	-		sment reach metric (skip for Tidal Marsh Streams) Consider "leaf-on" condition.
	□A □B ⊠C	Stream Degrade	shading is appropriate for stream category (may include gaps associated with natural processes) ed (example: scattered trees) shading is gone or largely absent

19.	Buffer Width – streamside area metric (skip for Tidal Marsh Streams) Consider "vegetated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top of bank out to the first break. Vegetated Wooded LB RB LB RB			
	A			
20.	Buffer Structure – streamside area metric (skip for Tidal Marsh Streams) Consider for left bank (LB) and right bank (RB) for Metric 19 ("Vegetated" Buffer Width).			
	LB RB □A Mature forest □B □B Non-mature woody vegetation or modified vegetation structure □C □C Herbaceous vegetation with or without a strip of trees < 10 feet wide □D □D Maintained shrubs □E □E Little or no vegetation			
21.	Buffer Stressors – streamside area metric (skip for Tidal Marsh Streams) Check all appropriate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but is within 30 feet of stream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet). If none of the following stressors occurs on either bank, check here and skip to Metric 22: Abuts < 30 feet 30-50 feet LB RB LB RB LB RB A A A A A A A A A A A A B A B A B B B B			
22.	Stem Density – streamside area metric (skip for Tidal Marsh Streams) Consider for left bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width). LB RB A Medium to high stem density B B Low stem density C C No wooded riparian buffer or predominantly herbaceous species or bare ground			
23. Continuity of Vegetated Buffer – streamside area metric (skip for Tidal Marsh Streams) Consider whether vegetated buffer is continuous along stream (parallel). Breaks are areas lacking vegetation > 10 feet with the continuous along stream (parallel).				
	LB RB □ B The total length of buffer breaks is < 25 percent. □ C □ C The total length of buffer breaks is > 50 percent.			
24.	Vegetative Composition – streamside area metric (skip for Tidal Marsh Streams) Evaluate the dominant vegetation within 100 feet of each bank or to the edge of the watershed (whichever comes first) as it contributes to assessment reach habitat. LB RB			
	 □A			
	species. This may include communities of weedy native species that develop after clear-cutting or clearing on communities with non-native invasive species present, but not dominant, over a large portion of the expected strata on communities missing understory but retaining canopy trees.			
	□C Vegetation is severely disturbed in terms of species diversity or proportions. Mature canopy is absent or communities with non-native invasive species dominant over a large portion of expected strata or communities composed of planted stands of non-characteristic species or communities inappropriately composed of a single species or no vegetation.			
25.	Conductivity – assessment reach metric (skip for all Coastal Plain streams) 25a. Yes No Was conductivity measurement recorded? If No, select one of the following reasons. No Water Other:			
	25b. Check the box corresponding to the conductivity measurement (units of microsiemens per centimeter). □A < 46 □B 46 to < 67 □C 67 to < 79 □D 79 to < 230 □E ≥ 230			
Note	s/Sketch:			
Stre	am is located in the middle of an airport airfield,			

Draft NC SAM Stream Rating Sheet Accompanies User Manual Version 2.1

Stream Site Name	CLT Airport Expansion	Date of Assessment	April 2019	
Stream Category	Pa1	Assessor Name/Organization	KMT,BGB	/HDR
		_		
Notes of Field Asses	ssment Form (Y/N)		YES	
Presence of regulate	ory considerations (Y/N)		NO	
Additional stream inf	formation/supplementary measi	urements included (Y/N)	YES	
NC SAM feature typ	e (perennial, intermittent, Tidal	Marsh Stream)	Intermitter	nt
		_	USACE/	NCDWR
	Function Class Rating Sum	mary A	II Streams	Intermittent
	(1) Hydrology		LOW	LOW
	(2) Baseflow		MEDIUM	MEDIUM
	(2) Flood Flow		LOW	LOW
	(3) Streamside A	rea Attenuation	LOW	LOW
	(4) Floodpl	ain Access	LOW	LOW
	(4) Woode	d Riparian Buffer	LOW	LOW
	(4) Microto	pography	LOW	LOW
	(3) Stream Stabil	ity	MEDIUM	MEDIUM
	(4) Channe	el Stability	HIGH	HIGH
		ent Transport	LOW	LOW
		Geomorphology	MEDIUM	MEDIUM
		dal Zone Interaction	NA	NA
	(2) Longitudinal Ti		NA	NA
	(2) Tidal Marsh St		NA	NA
	* *	arsh Channel Stability	NA	NA NA
		arsh Stream Geomorphology	NA	NA NA
	(1) Water Quality	arsh Stream Geomorphology	LOW	LOW
	(2) Baseflow		MEDIUM	MEDIUM
			LOW	LOW
	(2) Streamside Area Ve	·		
	(3) Upland Pollut		LOW	LOW
	(3) Thermoregula		LOW	LOW
	(2) Indicators of Stresso		NO	NO
	(2) Aquatic Life Toleran		LOW	NA
	(2) Intertidal Zone Filtrati	on	NA	NA
	(1) Habitat		LOW	LOW
	(2) In-stream Habitat	<u> </u>	LOW	MEDIUM
	(3) Baseflow		MEDIUM	MEDIUM
	(3) Substrate		LOW	LOW
	(3) Stream Stabil	ity	HIGH	HIGH
	(3) In-stream Hab	oitat	MEDIUM	HIGH
	(2) Stream-side Habitat	<u></u>	LOW	LOW
	(3) Stream-side H		LOW	LOW
	(3) Thermoregula	ation	LOW	LOW
	(2) Tidal Marsh In-stream	n Habitat	NA	NA
	(3) Flow Restriction	on	NA	NA
	(3) Tidal Marsh St	ream Stability	NA	NA
		arsh Channel Stability	NA	NA
		arsh Stream Geomorphology	NA	NA
	(3) Tidal Marsh In-	· · · · · · · · · · · · · · · · · · ·	NA	NA
	(2) Intertidal Zone		NA	NA
	Overall		LOW	LOW

NC SAM FIELD ASSESSMENT FORM Accompanies User Manual Version 2.1

	7,000	mpamoo ooor ma	11441 10101011 211				
USACE AID #:			NCDWR #:				
INSTRUCTIONS: Attach a s	ketch of the assessment a	area and photograpl	hs. Attach a copy of the USGS	7.5-minute topographic quadrangle,			
and circle the location of the	stream reach under evalu	ation. If multiple st	tream reaches will be evaluated	on the same property, identify and			
number all reaches on the att	ached map, and include a	separate form for e	each reach. See the NC SAM U	ser Manual for detailed descriptions			
				urements were performed. See the			
NC SAM User Manual for exa							
NOTE EVIDENCE OF STRE	SSORS AFFECTING THE	E ASSESSMENT A	REA (do not need to be within	n the assessment area).			
PROJECT/SITE INFORMAT	ION:						
 Project name (if any): 	CLT Airport Expansion		Date of evaluation: April 20				
3. Applicant/owner name:	CLT	4.	Assessor name/organization:	KMT,BGB/HDR			
5. County:	Mecklenburg	6.	Nearest named water body				
7. River basin:	Catawba		on USGS 7.5-minute quad:	Coffey Creek			
8. Site coordinates (decimal of	degrees, at lower end of a	ssessment reach):	35.208268, -80.947637				
STREAM INFORMATION: (d							
9. Site number (show on atta			ngth of assessment reach evalu				
11. Channel depth from bed				Inable to assess channel depth.			
12. Channel width at top of b			sessment reach a swamp steam	n? ∐Yes ∐No			
14. Feature type: ⊠Perenni		/ ∐Tidal Marsh Str	ream				
STREAM CATEGORY INFO	_						
15. NC SAM Zone:	☐ Mountains (M)	□ Piedmont (P)	☐ Inner Coastal Plain (I)	☐ Outer Coastal Plain (O)			
			\	/			
16. Estimated geomorphic			⊠B				
valley shape (skip for							
Tidal Marsh Stream):	(more sinuous stream	•	,	ream, steeper valley slope)			
17. Watershed size: (skip	☐Size 1 (< 0.1 mi²)	⊠Size 2 (0.1 to	< 0.5 mi ²)	5 mi²)			
for Tidal Marsh Stream)							
ADDITIONAL INFORMATIO							
☐Section 10 water	ations evaluated? ⊠Yes Classified Tr		ck all that apply to the assessme	ent area. rshed (I II III III IV V)			
☐Essential Fish Habitat				s/Outstanding Resource Waters			
☐ Essential Fish Habitat		parian buffer rule in		_			
☐Anadromous fish	☐303(d) List	dian banci raic iii		ronmental Concern (AEC)			
		listed protected spe	cies within the assessment area				
List species:							
☐Designated Critical Ha	bitat (list species)						
19. Are additional stream info	ormation/supplementary m	easurements includ	ded in "Notes/Sketch" section or	attached? ⊠Yes □No			
		for Size 1 streams	s and Tidal Marsh Streams)				
	ut assessment reach.						
☐B No flow, water in C No water in ass	. ,						
2. Evidence of Flow Restri							
				cted by a flow restriction or fill to the			
				impoundment on flood or ebb within the channel, tidal gates, debris jams,			
beaver dams).	Todori (oxampioo: undoro	nzou or pereneu ou	volto, dadocwayo triat conotinot	the original, tidal gates, dobits jame,			
⊠B Not A							
3. Feature Pattern – asses	emont roach motric						
		ltered nattern (evan	nples: straightening, modificatio	n above or below culvert)			
☐B Not A	assessment reactinas at	itered pattern (exam	ipies. straighterning, modificatio	if above of below curvert).			
	6 11						
4. Feature Longitudinal Pr			Cl. /	Lancard Constitution of the second			
				down-cutting, existing damming, over			
disturbances).	, aggradation, dredging, a	ana excavation with	no appropriate charmer profile	has not reformed from any of these			
⊠B Not A							
5. Signs of Active Instabili	=		otroom has summently recover	ared Examples of instability installed			
				ered. Examples of instability include uch as concrete, gabion, rip-rap).			
☐A < 10% of chann		aa oat, aotive wide	and artificial flatderiffy (5)	aon ao conorete, gabien, np-rapj.			
⊠B 10 to 25% of ch							
\Box C > 25% of channel							

6.					streamsid					
	LB	RB	tne Lett	вапк (св	3) and the	Right Ba	nk (RB).			
	□A □B	□A □B	Mod refe	derate eviderence inte	dence of c eraction (ex	conditions xamples:	limited streams	rms, levee ide area a	es, down- ccess, dis	cutting, aggradation, dredging) that adversely affect ruption of flood flows through streamside area, leaky
	⊠C	⊠c	Exte [exa of fl mos	ensive evic amples: ca lood flows	dence of causeways through strong]) or f	conditions with flood reamside	that adversely lplain and chann area] <u>or</u> too mud	affect refe nel constric ch floodpla	erence inte ction, bulk ain/intertio	nor ditching [including mosquito ditching]) eraction (little to no floodplain/intertidal zone access heads, retaining walls, fill, stream incision, disruption lal zone access [examples: impoundments, intensive or assessment reach is a man-made feature on an
7.	Wate	r Quality	Stresso	ors – asse	essment r	each/inte	ertidal zone me	tric		
		k all that								
	ΠA									er discoloration, oil sheen, stream foam)
	□B □C						n features or int s entering the a			nd causing a water quality problem
	\Box D	Odor	(not inc	luding nati	ural sulfide	e odors)	_			
	□E	Curre section		shed or co	ollected da	ata indica	iting degraded v	water qua	lity in the	assessment reach. Cite source in "Notes/Sketch"
	□F	Lives	stock with		to stream o					
	□G □H				am or inte			Lhurning	regular m	owing, destruction, etc)
							in "Notes/Sketo			owing, destruction, etc)
	\boxtimes J	Little	to no str	ressors						
8.					•	•	al Marsh Strea	•	0 4 . 1	DO 1 14 - 15 1 - 5 5 1 - 1 - 1 - 1 - 1 -
	For S						sidered a drougr ill not exceeding			eams, D2 drought or higher is considered a drought. st 48 hours
	⊟в	Drou	ght cond	ditions and			1 inch within the			
_	⊠c		•	onditions						
9.	Large ☐Ye	`	-		assessme oo large or			f Yes, skip	to Metric	13 (Streamside Area Ground Surface Condition).
10.							each metric	, of the a		at reach (exemples of stressors include executive
	iva.	∐Yes	⊠No	sedime	ntation, m	ining, exc	cavation, in-stre tal Plain strean	eam harde	ning [for	nt reach (examples of stressors include excessive example, rip-rap], recent dredging, and snagging) to Metric 12)
	10b.	10b. Check all that occur (occurs if > 5% coverage of assessment reach) (skip for Size 4 Coastal Plain streams)								
		⊠A			macrophytes, lichens,		quatic mosses I mats)	Check for Tidal Marsh Streams Only	□F □G	5% oysters or other natural hard bottoms Submerged aquatic vegetation
		⊠B	Multiple	e sticks an			d/or emergent	k for T h Strea Only	□н	Low-tide refugia (pools)
		□с	vegetat Multiple		nd logs (ind	cluding la	p trees)	arsh O	□J	Sand bottom 5% vertical bank along the marsh
		ΠĎ	5% und	dercut ban	nks and/or	root mats	s and/or roots	ວ ຊັ	□κ	Little or no habitat
		□E		લ્s extend t r no habita		nal wetted	l perimeter			
****	*****	*******	******	**REMAIN	IING QUE	STIONS	ARE NOT APP	LICABLE	FOR TID	AL MARSH STREAMS************************************
11.	Bedf	orm and	Substra	ite – asse	ssment re	each met	ric (skip for Siz	ze 4 Coas	tal Plain s	streams and Tidal Marsh Streams)
	11a.	□Yes	⊠No	ls assess	sment read	ch in a na	tural sand-bed	stream? (s	kip for C	oastal Plain streams)
	11b.				k the appi		oox(es).			
		⊠A □B			(evaluate n (evaluat					
		□с	Natural	bedform a	absent (sk	tip to Met	tric 12, Aquatic	: Life)		
	11c.	at least	one box	in each r	row (skip 1	for Size 4	Coastal Plain	streams a	and Tidal	essment reach – whether or not submerged. Check Marsh Streams) . Not Present (NP) = absent, Rare Predominant (P) = > 70%. Cumulative percentages
					or each as			(//) - //	+∪-1U/0, F	Todominant (1) - 7 70%. Outfluidlive percentages
		NP ⊠	R □	С	A	P	Bedrock/sapro	olite		
				ä	Ħ		Boulder (256		n)	
							Cobble (64 – 2 Gravel (2 – 64			
		H				H	Sand (.062 – :			
							Silt/clay (< 0.0	062 mm)		
			\square	\boxtimes	\exists		Detritus Artificial (rip-ra	ap, concre	te, etc.)	
	11d.	□Yes	□No	Are pools	s filled with	n sedimer	nt? (skip for Siz	e 4 Coast	tal Plain s	streams and Tidal Marsh Streams)

12.	Aquatic Life – assessment reach metric (skip for Tidal Marsh Streams)						
	12a. ⊠ If N		No Was an in-stream aquatic life assessment performed as described in the User Manual? cone of the following reasons and skip to Metric 13. ☐No Water ☐Other:				
	12b. 🛚	Yes [No Are aquatic organisms present in the assessment reach (look in riffles, pools, then snags)? If Yes, check all that apply. If No, skip to Metric 13.				
	1		Adult frogs				
			Aquatic reptiles Aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats)				
			Beetles Caddisfly larvae (T)				
			Asian clam (<i>Corbicula</i>) Crustacean (isopod/amphipod/crayfish/shrimp)				
			Damselfly and dragonfly larvae				
			Dipterans Mayfly larvae (E)				
	Ē		Megaloptera (alderfly, fishfly, dobsonfly larvae)				
			Midges/mosquito larvae Mosquito fish (<i>Gambusia</i>) or mud minnows (<i>Umbra pygmaea</i>)				
			Mussels/Clams (not <i>Corbicula</i>) Other fish				
	ğ		Salamanders/tadpoles				
			Snails Stonefly larvae (P)				
			Tipulid larvae Worms/leeches				
13.	Streams Conside	ide Area er for the	Ground Surface Condition – streamside area metric (skip for Tidal Marsh Streams and B valley types) Left Bank (LB) and the Right Bank (RB). Consider storage capacity with regard to both overbank flow and upland runoff.				
	LB □A	RB □A	Little or no alteration to water storage capacity over a majority of the streamside area				
	⊟B ⊠C	∏в ⊠С	Moderate alteration to water storage capacity over a majority of the streamside area Severe alteration to water storage capacity over a majority of the streamside area (examples: ditches, fill, soil compaction)				
			livestock disturbance, buildings, man-made levees, drainage pipes)				
14.		er for the RB	Water Storage – streamside area metric (skip for Size 1 streams, Tidal Marsh Streams, and B valley types) Left Bank (LB) and the Right Bank (RB) of the streamside area.				
	□A □B ⊠C	□а □в ⊠С	Majority of streamside area with depressions able to pond water ≥ 6 inches deep Majority of streamside area with depressions able to pond water 3 to 6 inches deep Majority of streamside area with depressions able to pond water < 3 inches deep				
15.	Conside wetted p	er for the erimeter	ce – streamside area metric (skip for Tidal Marsh Streams) Left Bank (LB) and the Right Bank (RB). Do not consider wetlands outside of the streamside area or within the normal of assessment reach.				
	LB □Y ⊠N	RB □Y ⊠N	Are wetlands present in the streamside area?				
16.			outors – assessment reach metric (skip for Size 4 streams and Tidal Marsh Streams)				
	Check a	II contril	outors within the assessment reach or within view of <u>and</u> draining to the assessment reach.				
	□A □B		and/or springs (jurisdictional discharges) nclude wet detention basins; do not include sediment basins or dry detention basins)				
	□c ⊠d		tion passing flow during low-flow periods within the assessment area (beaver dam, leaky dam, bottom-release dam, weir) e of bank seepage or sweating (iron in water indicates seepage)				
	⊠E □F	Stream	bed or bank soil reduced (dig through deposited sediment if present) the above				
17.			tors – assessment area metric (skip for Tidal Marsh Streams)				
	Check a ☐A		ply. e of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation)				
	□в ⊠c	Obstruc	tion not passing flow during low-flow periods affecting the assessment reach (ex: watertight dam, sediment deposit) tream (≥ 24% impervious surface for watershed)				
	\Box D	Evidend	e that the streamside area has been modified resulting in accelerated drainage into the assessment reach				
	□E □F		nent reach relocated to valley edge the above				
18.	_		sment reach metric (skip for Tidal Marsh Streams)				
	Consider A		Consider "leaf-on" condition. shading is appropriate for stream category (may include gaps associated with natural processes)				
	□B ⊠C	Degrade	ed (example: scattered trees) shading is gone or largely absent				
		Cacam	snaamy to gono or largory abount				

19.	 Buffer Width – streamside area metric (skip for Tidal Marsh Streams) Consider "vegetated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top of bank out to the first break. 						
	LB RB LB	rooded RB A					
20.		 streamside area metric (skip for Tidal Marsh Streams) bank (LB) and right bank (RB) for Metric 19 ("Vegetated" Buffer Width). 					
	LB RB □ A □ A □ B □ B □ C □ C □ D □ D □ E □ E	Mature forest Non-mature woody vegetation or modified vegetation structure Herbaceous vegetation with or without a strip of trees < 10 feet wide Maintained shrubs Little or no vegetation					
21.	Check all appropriate within 30 feet of some of the following the follow	s – streamside area metric (skip for Tidal Marsh Streams) priate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but is tream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet). lowing stressors occurs on either bank, check here and skip to Metric 22:					
22.	_	bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width). Medium to high stem density Low stem density No wooded riparian buffer or predominantly herbaceous species or bare ground					
23.	Consider whether LB RB ⊠A ⊠A B B	getated Buffer – streamside area metric (skip for Tidal Marsh Streams) r vegetated buffer is continuous along stream (parallel). Breaks are areas lacking vegetation > 10 feet wide. The total length of buffer breaks is < 25 percent. The total length of buffer breaks is steepen 25 and 50 percent.					
24.	Evaluate the dom assessment reacl	The total length of buffer breaks is > 50 percent. position – streamside area metric (skip for Tidal Marsh Streams) inant vegetation within 100 feet of each bank or to the edge of the watershed (whichever comes first) as it contributes to a habitat.					
	LB RB □A □A	Vegetation is close to undisturbed in species present and their proportions. Lower strata composed of native species, with non-native invasive species absent or sparse.					
	□в □в	Vegetation indicates disturbance in terms of species diversity or proportions, but is still largely composed of native species. This may include communities of weedy native species that develop after clear-cutting or clearing or communities with non-native invasive species present, but not dominant, over a large portion of the expected strata or communities missing understory but retaining canopy trees.					
	⊠c ⊠c	Vegetation is severely disturbed in terms of species diversity or proportions. Mature canopy is absent <u>or</u> communities with non-native invasive species dominant over a large portion of expected strata <u>or</u> communities composed of planted stands of non-characteristic species <u>or</u> communities inappropriately composed of a single species <u>or</u> no vegetation.					
25.	5. Conductivity – assessment reach metric (skip for all Coastal Plain streams) 25a. Yes No Was conductivity measurement recorded? If No, select one of the following reasons. No Water Other:						
	25b. Check the b ☐A < 46	pox corresponding to the conductivity measurement (units of microsiemens per centimeter). □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □					
	es/Sketch:						
Stre	am is located in th	e middle of an airport airfield,					

Draft NC SAM Stream Rating Sheet Accompanies User Manual Version 2.1

Stream Site Name	CL1 Airport Expansion	Date of Assessment	April 2019					
Stream Category	Pb2	Assessor Name/Organization	KMT,BGB/HDR					
Notes of Field Asses		YES						
Presence of regulator		NO						
Additional stream inf	rements included (Y/N)	YES						
NC SAM feature type	NC SAM feature type (perennial, intermittent, Tidal Marsh Stream) Perennial Perennial							

(poronnial, intermittent, ridal Maren Stream)			
Function Class Rating Summary	USACE/ All Streams	NCDWR Intermittent	
(1) Hydrology	LOW		
(2) Baseflow	HIGH		
(2) Flood Flow	LOW		
(3) Streamside Area Attenuation	LOW		
(4) Floodplain Access	LOW		
(4) Wooded Riparian Buffer	LOW		
(4) Microtopography	NA		
(3) Stream Stability	MEDIUM		
(4) Channel Stability	MEDIUM		
(4) Sediment Transport	MEDIUM		
(4) Stream Geomorphology	MEDIUM		
(2) Stream/Intertidal Zone Interaction	NA NA		
(2) Longitudinal Tidal Flow	NA NA		
(2) Tidal Marsh Stream Stability	NA NA		
(2) Tidal Marsh Channel Stability	NA NA		
(3) Tidal Marsh Stream Geomorphology	NA NA		
	HIGH		
(1) Water Quality (2) Baseflow	HIGH		
` ,			
(2) Streamside Area Vegetation	LOW		
(3) Upland Pollutant Filtration	MEDIUM		
(3) Thermoregulation	LOW		
(2) Indicators of Stressors	NO		
(2) Aquatic Life Tolerance	HIGH		
(2) Intertidal Zone Filtration	NA NA		
(1) Habitat	LOW		
(2) In-stream Habitat	MEDIUM		
(3) Baseflow	HIGH		
(3) Substrate	MEDIUM		
(3) Stream Stability	MEDIUM		
(3) In-stream Habitat	MEDIUM		
(2) Stream-side Habitat	LOW		
(3) Stream-side Habitat	LOW		
(3) Thermoregulation	LOW		
(2) Tidal Marsh In-stream Habitat	NA		
(3) Flow Restriction	NA		
(3) Tidal Marsh Stream Stability	NA		
(4) Tidal Marsh Channel Stability	NA		
(4) Tidal Marsh Stream Geomorphology	NA		
(3) Tidal Marsh In-stream Habitat	NA		
(2) Intertidal Zone	NA		
Overall	LOW		

NC SAM FIELD ASSESSMENT FORM Accompanies User Manual Version 2.1

		ACC	Unipanies User	Manual Version 2.1	
USACE AII	O #:			NCDWR #:	
					7.5-minute topographic quadrangle,
			•		d on the same property, identify and
					User Manual for detailed descriptions
					surements were performed. See the
		amples of additional meas			: th
			E ASSESSMEN	T AREA (do not need to be with	in the assessment area).
	SITE INFORMATI ame (if any):	CLT Airport Expansion		Date of evaluation: Septer	mber 2019
-	t/owner name:	CLT		4. Assessor name/organization:	KMT,BGB/HDR
5. County:	downer name.	Mecklenburg		Nearest named water body	14011,000,11014
7. River bas	sin:	Catawba		on USGS 7.5-minute quad:	Coffey Creek
		degrees, at lower end of a	assessment reach		
	,	lepth and width can be		·	
	ber (show on attac			Length of assessment reach eval	uated (feet): 822.5'
		(in riffle, if present) to top	of bank (feet):	6 🗆	Unable to assess channel depth.
12. Channe	l width at top of ba	ank (feet): 12	13. ls	assessment reach a swamp stear	m? ∐Yes ∐No
14. Feature	type: Perennia	al flow Intermittent flow	w □Tidal Marsh	Stream	
_	ATEGORY INFO	-			
15. NC SAN	Л Zone:	☐ Mountains (M)	□ Piedmont (Figure 1)	P) Inner Coastal Plain (I)	Outer Coastal Plain (O)
				\	/
16. Estimat	ed geomorphic			/ ⊠B \	
valley s	hape (skip for	LA			
Tidal M	arsh Stream):	(more sinuous strear			tream, steeper valley slope)
	ned size: (skip	\square Size 1 (< 0.1 mi ²)	☐Size 2 (0.1	to $< 0.5 \text{ mi}^2$) \square Size 3 (0.5 to \cdot	< 5 mi²)
	al Marsh Stream)				
	AL INFORMATIO			Landa all disease and standard accession	
	egulatory consider on 10 water	ations evaluated? ⊠Yes □Classified T		heck all that apply to the assessm	
	ntial Fish Habitat	□ Classified Ti			ershed (I II III IIV V) rs/Outstanding Resource Waters
_	cly owned propert		parian buffer rule		<u> </u>
	romous fish	☐303(d) List			ironmental Concern (AEC)
		` '	listed protected s	species within the assessment are	` ,
List s	species:				
	gnated Critical Hal				
19. Are add	litional stream info	ormation/supplementary m	neasurements inc	cluded in "Notes/Sketch" section of	or attached? ⊠Yes □No
1. Channe	J Water – acces	mont roach motric (ckir	o for Sizo 1 etros	ams and Tidal Marsh Streams)	
		ut assessment reach.	7101 0120 1 31100	and ridar marsh otreams,	
⊟В	No flow, water in				
□c	No water in asse	essment reach.			
2. Evidend	e of Flow Restri	ction – assessment read	ch metric		
				ffle-pool sequence is severely affo	ected by a flow restriction or fill to the
					r impoundment on flood or ebb within
		reach (examples: unders	sized or perched	culverts, causeways that constric	t the channel, tidal gates, debris jams,
Μn	beaver dams).				
⊠в	Not A				
3. Feature	Pattern – assess	sment reach metric			
⊠A		assessment reach has a	altered pattern (ex	xamples: straightening, modification	on above or below culvert).
□В	Not A				
4. Feature	Longitudinal Pro	ofile – assessment reac	h metric		
⊠A					down-cutting, existing damming, over
		e aggradation, dredging,	and excavation v	where appropriate channel profile	has not reformed from any of these
	disturbances).				
□В	Not A				
		ty – assessment reach i			
					ered. Examples of instability include
active ba ⊠A	ank failure, active < 10% of channe		ead-cut), active w	videning, and artificial hardening (s	such as concrete, gabion, rip-rap).
⊠A □B	10 to 25% of channe				
□c	> 25% of channe				

6.	Streamside Area Interaction – streamside area metric Consider for the Left Bank (LB) and the Right Bank (RB). LB RB									
	⊠A □B	∏A ⊠B	Moderate ev reference int	teraction (exam	ditions (exan ples: limite	nples: ber d streamsid	ms, levee de area ac	s, down- ccess, dis	cutting, aggradation, ruption of flood flows	dredging) that adversely affect through streamside area, leaky g mosquito ditching])
	□C	□с	Extensive ex [examples: of flood flows	vidence of conc causeways with s through streat ching]) or flood	ditions that a n floodplain a mside area]	adversely a and channe <u>or</u> too muc	affect refe el constric h floodpla	rence inte tion, bulk in/intertid	eraction (little to no fl heads, retaining wall: lal zone access [exan	oodplain/intertidal zone access s, fill, stream incision, disruption nples: impoundments, intensive n is a man-made feature on an
7.		-	Stressors – ass	essment reac	:h/intertidal	zone met	ric			
	□A □B □C	Exces Notice	ored water in st sive sedimentat able evidence o	ion (burying of of pollutant disc	stream feat charges ente	ures or inte	ertidal zon	ie)	er discoloration, oil sh nd causing a water q	
	□D □E	Currer				legraded w	ater qual	ity in the	assessment reach.	Cite source in "Notes/Sketch"
	□F	section Livest	n. ock with access	to stream or ir	ntertidal zone	Э				
	□H □□ □J	Degra Other:	sive algae in str ded marsh vege o no stressors	etation in the in					owing, destruction, e	etc)
8.			er – watershed	metric (skip fe	or Tidal Mar	rsh Strean	าร)			
		Size 1 or 2 s Droug Droug		ught or higher i <u>d</u> no rainfall or <u>d</u> rainfall excee	s considered rainfall not d	d a drough exceeding	t; for Size 1 inch wit	hin the la		higher is considered a drought.
9.		e or Dange	erous Stream –	assessment			Yes, skip	to Metric	13 (Streamside Area	a Ground Surface Condition).
10.			am Habitat Typ				of the or		st reach (everynles	of atropogra include avacable
	iua.	□Yes	sedim		g, excavation	on, in-strea	am harde	ning [for	example, rip-rap], re	of stressors include excessive ecent dredging, and snagging)
	10b.		that occur (oce Multiple aquatic					kip for S □F	ize 4 Coastal Plain s 5% oysters or othe	streams) r natural hard bottoms
			(include liverwork Multiple sticks a				or Tida tream ly	□G □H	Submerged aquation Low-tide refugia (po	
			vegetation Multiple snags a	and logs (includ	ling lap trees	s)	Check for Tidal Marsh Streams Only		Sand bottom 5% vertical bank al	ong the marsh
		□D	5% undercut ba in banks extend Little or no habit	nks and/or root to the normal	ot mats and/	or roots	Ö 🛎	□κ	Little or no habitat	
****	. 	****	*****	NING OUTOT	010 405 1	IOT ADDI	104515	FOR TIP		
									streams and Tidal N	MS************************************
	11a.	□Yes	⊠No Is asses	ssment reach i	n a natural s	and-bed s	tream? (s	kip for C	oastal Plain stream	s)
	11b.		evaluated. Che e Riffle-run sectio			s).				
		□В	Pool-glide section Natural bedform	on (evaluate 1	1d)	. Aquatic	l ife)			
	11c.	In riffle se	ctions, check all	that occur belo	ow the norma	al wetted p	erimeter o			ether or not submerged. Check
		(R) = pres	sent but < 10%,	Common (C) :	= > 10-40%,	Abundant				lot Present (NP) = absent, Rare 70%. Cumulative percentages
		NP	t exceed 100% f	for each asses A P	_					
					Bou	rock/sapro lder (256 –	- 4096 mn	n)		
						ble (64 – 2 vel (2 – 64				
						d (.062 – 2 clay (< 0.0				
] Detr		·	te, etc.)		
	11d.			ols filled with se	ediment? (sk	ip for Size	e 4 Coast	al Plain s	streams and Tidal M	larsh Streams)

12.		Aquatic Life – assessment reach metric (skip for Tidal Marsh Streams)						
	12a. ⊠ If N		No Was an in-stream aquatic life assessment performed as described in the User Manual? one of the following reasons and skip to Metric 13. ☐No Water ☐Other:					
	12b. ⊠	Yes	No Are aquatic organisms present in the assessment reach (look in riffles, pools, then snags)? If Yes, check all that apply. If No, skip to Metric 13.					
	1 		Numbers over columns refer to "individuals" for Size 1 and 2 streams and "taxa" for Size 3 and 4 streams. Adult frogs Aquatic reptiles					
		\boxtimes	Aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats) Beetles Caddisfly larvae (T)					
			Asian clam (<i>Corbicula</i>) Crustacean (isopod/amphipod/crayfish/shrimp)					
			Damselfly and dragonfly larvae Dipterans Mayfly larvae (E)					
		\boxtimes	Megaloptera (alderfly, fishfly, dobsonfly larvae) Midges/mosquito larvae Mosquito fish (<i>Gambusia</i>) or mud minnows (<i>Umbra pygmaea</i>)					
			Mussels/Clams (not <i>Corbicula</i>) Other fish					
			Salamanders/tadpoles Snails Stonefly larvae (P)					
			Tipulid larvae Worms/leeches					
13.			Ground Surface Condition – streamside area metric (skip for Tidal Marsh Streams and B valley types) Left Bank (LB) and the Right Bank (RB). Consider storage capacity with regard to both overbank flow and upland runoff.					
	⊠a □B □C	□A ⊠B □C	Little or no alteration to water storage capacity over a majority of the streamside area Moderate alteration to water storage capacity over a majority of the streamside area Severe alteration to water storage capacity over a majority of the streamside area (examples: ditches, fill, soil compaction,					
14.	Conside	r for the	livestock disturbance, buildings, man-made levees, drainage pipes) Water Storage – streamside area metric (skip for Size 1 streams, Tidal Marsh Streams, and B valley types) Left Bank (LB) and the Right Bank (RB) of the streamside area.					
	LB □A ⊠B □C	RB □A □B ⊠C	Majority of streamside area with depressions able to pond water ≥ 6 inches deep Majority of streamside area with depressions able to pond water 3 to 6 inches deep Majority of streamside area with depressions able to pond water < 3 inches deep					
15.	Conside wetted po	r for the erimeter	ee – streamside area metric (skip for Tidal Marsh Streams) Left Bank (LB) and the Right Bank (RB). Do not consider wetlands outside of the streamside area or within the normal of assessment reach.					
	LB □Y ⊠N	RB □Y ⊠N	Are wetlands present in the streamside area?					
16.		II contrib Streams	outors – assessment reach metric (skip for Size 4 streams and Tidal Marsh Streams) outors within the assessment reach or within view of and draining to the assessment reach. and/or springs (jurisdictional discharges) nclude wet detention basins; do not include sediment basins or dry detention basins)					
	□C □D □E □F	Obstruc Evidenc Stream	tion passing flow during low-flow periods within the assessment area (beaver dam, leaky dam, bottom-release dam, weir) e of bank seepage or sweating (iron in water indicates seepage) bed or bank soil reduced (dig through deposited sediment if present) the above					
17.			tors – assessment area metric (skip for Tidal Marsh Streams) ply.					
	□A □B ⊠C □D	Evidence Obstruct Urban s	e of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation) tion not passing flow during low-flow periods affecting the assessment reach (ex: watertight dam, sediment deposit) tream (≥ 24% impervious surface for watershed) that the streamside area has been modified resulting in accelerated drainage into the assessment reach					
	□E □F		nent reach relocated to valley edge the above					
18.	Consider	aspect.	sment reach metric (skip for Tidal Marsh Streams) Consider "leaf-on" condition.					
	⊠A □B □C	Degrade	shading is appropriate for stream category (may include gaps associated with natural processes) d (example: scattered trees) shading is gone or largely absent					

19.	Buffer Width – streamside area metric (skip for Tidal Marsh Streams) Consider "vegetated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top of bank out to the first break. Vegetated Wooded
	LB RB LB RB $□$ A $□$ A $□$ A $□$ A $□$ A $□$ A $□$ 2 100 feet wide \underline{or} extends to the edge of the watershed $□$ B $□$ B $□$ B $□$ B $□$ B From 50 to < 100 feet wide $□$ C $□$ C $□$ C $□$ C $□$ C From 30 to < 50 feet wide $□$ D
20.	Buffer Structure – streamside area metric (skip for Tidal Marsh Streams) Consider for left bank (LB) and right bank (RB) for Metric 19 ("Vegetated" Buffer Width).
	LB RB A Mature forest B Non-mature woody vegetation or modified vegetation structure C C Herbaceous vegetation with or without a strip of trees < 10 feet wide D Maintained shrubs E Little or no vegetation
21.	Buffer Stressors – streamside area metric (skip for Tidal Marsh Streams) Check all appropriate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but is within 30 feet of stream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet). If none of the following stressors occurs on either bank, check here and skip to Metric 22: Abuts < 30 feet 30-50 feet LB RB LB RB LB RB A A A A A A A A A A A A A A B A B A B
22.	Stem Density – streamside area metric (skip for Tidal Marsh Streams) Consider for left bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width). LB RB A Medium to high stem density B B Low stem density C C No wooded riparian buffer or predominantly herbaceous species or bare ground
23.	Continuity of Vegetated Buffer – streamside area metric (skip for Tidal Marsh Streams) Consider whether vegetated buffer is continuous along stream (parallel). Breaks are areas lacking vegetation > 10 feet wide. LB RB □ A □ The total length of buffer breaks is < 25 percent. □ B □ B The total length of buffer breaks is between 25 and 50 percent.
	☐C ☐C The total length of buffer breaks is > 50 percent.
24.	Vegetative Composition – streamside area metric (skip for Tidal Marsh Streams) Evaluate the dominant vegetation within 100 feet of each bank or to the edge of the watershed (whichever comes first) as it contributes to assessment reach habitat. LB RB ☑A □A Vegetation is close to undisturbed in species present and their proportions. Lower strata composed of native species with non-native invasive species absent or sparse.
	 □B Vegetation indicates disturbance in terms of species diversity or proportions, but is still largely composed of native species. This may include communities of weedy native species that develop after clear-cutting or clearing or communities with non-native invasive species present, but not dominant, over a large portion of the expected strata or communities missing understory but retaining canopy trees. □C □C Vegetation is severely disturbed in terms of species diversity or proportions. Mature canopy is absent or communities
	with non-native invasive species dominant over a large portion of expected strata <u>or</u> communities composed of planted stands of non-characteristic species <u>or</u> communities inappropriately composed of a single species <u>or</u> no vegetation.
25.	Conductivity – assessment reach metric (skip for all Coastal Plain streams) 25a.
	25b. Check the box corresponding to the conductivity measurement (units of microsiemens per centimeter). □A < 46 □B 46 to < 67 □C 67 to < 79 □D 79 to < 230 □E ≥ 230
Note	es/Sketch:
Stre	eam is located in the middle of an airport airfield,

Draft NC SAM Stream Rating Sheet Accompanies User Manual Version 2.1

Stream Site Name	CL1 Airport Expansion	Date of Assessment	September 201	9			
Stream Category	Stream Category Pb3 Assessor Name/Organization						
Notes of Field Asses	YES						
Presence of regulator	NO						
Additional stream inf	YES						
NC SAM feature type (perennial, intermittent, Tidal Marsh Stream) Perennial							

(pororimal, intermittent, ridal Maron Ottoam)			
	USACE/	NCDWR	
Function Class Rating Summary	All Streams	Intermittent	
(1) Hydrology	HIGH		
(2) Baseflow	HIGH		
(2) Flood Flow	HIGH		
(3) Streamside Area Attenuation	HIGH		
(4) Floodplain Access	HIGH		
(4) Wooded Riparian Buffer	MEDIUM		
(4) Microtopography	NA		
(3) Stream Stability	MEDIUM		
(4) Channel Stability	HIGH		
(4) Sediment Transport	HIGH		
(4) Stream Geomorphology	LOW		
(2) Stream/Intertidal Zone Interaction	NA		
• •	NA NA		
(2) Longitudinal Tidal Flow			
(2) Tidal Marsh Stream Stability	NA NA		
(3) Tidal Marsh Channel Stability	NA NA		
(3) Tidal Marsh Stream Geomorphology	NA NA		
(1) Water Quality	HIGH		
(2) Baseflow	HIGH		
(2) Streamside Area Vegetation	MEDIUM		
(3) Upland Pollutant Filtration	MEDIUM		
(3) Thermoregulation	HIGH		
(2) Indicators of Stressors	NO		
(2) Aquatic Life Tolerance	HIGH		
(2) Intertidal Zone Filtration	NA		
(1) Habitat	HIGH		
(2) In-stream Habitat	HIGH		
(3) Baseflow	HIGH		
(3) Substrate	HIGH		
(3) Stream Stability	MEDIUM		
(3) In-stream Habitat	HIGH		
(2) Stream-side Habitat	HIGH		
(3) Stream-side Habitat	HIGH		
(3) Thermoregulation	HIGH		
(2) Tidal Marsh In-stream Habitat	NA		
(3) Flow Restriction	NA		
(3) Tidal Marsh Stream Stability	NA		
(4) Tidal Marsh Channel Stability	NA NA		
(4) Tidal Marsh Stream Geomorphology	NA NA		
(3) Tidal Marsh In-stream Habitat	NA NA		
(2) Intertidal Zone	NA NA		
Overall	HIGH		

NC SAM FIELD ASSESSMENT FORM Accompanies User Manual Version 2.1

sempanies seei i	
USACE AID #:	NCDWR #:
INSTRUCTIONS: Attach a sketch of the assessment area and photogra	aphs. Attach a copy of the USGS 7.5-minute topographic quadrangle,
and circle the location of the stream reach under evaluation. If multiple	e stream reaches will be evaluated on the same property, identify and
number all reaches on the attached map, and include a separate form for	
and explanations of requested information. Record in the "Notes/Sketo	
NC SAM User Manual for examples of additional measurements that m	•
NOTE EVIDENCE OF STRESSORS AFFECTING THE ASSESSMENT	AKEA (do not need to be within the assessment area).
PROJECT/SITE INFORMATION:	O Data de al alta de la contra
1. Project name (if any): CLT Airport Expansion	2. Date of evaluation: September 2019
3. Applicant/owner name: CLT	4. Assessor name/organization: KMT,BGB/HDR
5. County: Mecklenburg Cotombo	6. Nearest named water body
7. River basin: Catawba	on USGS 7.5-minute quad: Coffey Creek
8. Site coordinates (decimal degrees, at lower end of assessment reach	
STREAM INFORMATION: (depth and width can be approximations) PS7-2 - S30,	
	Length of assessment reach evaluated (feet): 367'
11. Channel depth from bed (in riffle, if present) to top of bank (feet):	1 Unable to assess channel depth.
	assessment reach a swamp steam? Yes No
14. Feature type: ⊠Perennial flow ☐Intermittent flow ☐Tidal Marsh	Stream
STREAM CATEGORY INFORMATION:	D)
15. NC SAM Zone: ☐ Mountains (M) ☐ Piedmont (F	P)
16. Estimated geomorphic	/
valley shape (skip for Tidal Marsh Stream): (more sinuous stream, flatter valley sl	
17. Watershed size: (skip ⊠Size 1 (< 0.1 mi²) □Size 2 (0.1 for Tidal Marsh Stream)	to < 0.5 mi ²)
ADDITIONAL INFORMATION:	
18. Were regulatory considerations evaluated? ☐Yes ☐No If Yes, ch	neck all that apply to the assessment area.
Section 10 water Classified Trout Waters	Water Supply Watershed (☐I ☐II ☐III ☐IV ☐V)
□ Essential Fish Habitat □ Primary Nursery Area	☐ High Quality Waters/Outstanding Resource Waters
☐Anadromous fish ☐303(d) List	CAMA Area of Environmental Concern (AEC)
Documented presence of a federal and/or state listed protected s	pecies within the assessment area.
List species: ☐Designated Critical Habitat (list species)	
19. Are additional stream information/supplementary measurements inc	cluded in "Notes/Sketch" section or attached? TVes MNo
10.7110 additional stream information/supplementary measurements inc	Made III Notes/Oreton Section of attached: 1165 MINO
1. Channel Water – assessment reach metric (skip for Size 1 strea	ms and Tidal Marsh Streams)
	·
B No flow, water in pools only.	
☐C No water in assessment reach.	
2. Evidence of Flow Restriction – assessment reach metric	
	fle-pool sequence is severely affected by a flow restriction \underline{or} fill to the
	macrophytes or ponded water or impoundment on flood or ebb within
beaver dams).	culverts, causeways that constrict the channel, tidal gates, debris jams,
B Not A	
 Feature Pattern – assessment reach metric A majority of the assessment reach has altered pattern (ex 	camples: straightening, modification above or below culvert).
☐B Not A	ampies. straightening, meanication above of below curverty.
4. Feature Longitudinal Profile – assessment reach metric	troom profile (examples), channel down outline, existing demands
	tream profile (examples: channel down-cutting, existing damming, over where appropriate channel profile has not reformed from any of these
disturbances).	more appropriate entainer profile has not reformed from any of these
⊠B Not A	
Signs of Active Instability – assessment reach metric	
=	the stream has currently recovered. Examples of instability include
active bank failure, active channel down-cutting (head-cut), active w	
☐A < 10% of channel unstable	J. J
□B 10 to 25% of channel unstable	
□C > 25% of channel unstable	

6.	Streamside Area Interaction – streamside area metric Consider for the Left Bank (LB) and the Right Bank (RB). LB RB									
	⊠A □B	⊠A □B	reference interact	ce of conditions ion (examples:	(examples: ber limited streams)	ms, levee de area ac	s, down- cess, dis	cutting, aggradation, ruption of flood flows	dredging) that adversely affect through streamside area, leaky g mosquito ditching])	
	□C	□с	Extensive evidence [examples: cause of flood flows thro	ce of conditions ways with flood ugh streamside g]) <u>or</u> floodplain/i	that adversely a plain and channo area] <u>or</u> too mud	affect refer el constrict h floodplai	rence inte tion, bulk in/intertid	eraction (little to no fl heads, retaining walls lal zone access [exan	oodplain/intertidal zone access s, fill, stream incision, disruption nples: impoundments, intensive n is a man-made feature on an	
7.		-	Stressors – assessr	nent reach/inte	rtidal zone met	ric				
	⊠A □B □C	Exces Notice	ored water in stream sive sedimentation (bable evidence of poll	ourying of strean utant discharges	n features or inte	ertidal zon	e)	er discoloration, oil sh nd causing a water q		
	□D □E	Currer			ting degraded v	vater quali	ity in the	assessment reach.	Cite source in "Notes/Sketch"	
	□F	section Livesto	n. ock with access to st	ream or intertida	l zone					
	□H □□ □J	Degra	sive algae in stream ded marsh vegetation on ostressors	n in the intertidal				owing, destruction, e	etc)	
8.			r – watershed metr	ic (skip for Tida	al Marsh Strean	ns)				
	For S □A □B ⊠C	Droug Droug	streams, D1 drought on the conditions <u>and</u> no the conditions <u>and</u> rain tought conditions	rainfall or rainfal	I not exceeding	1 inch with	hin the la		higher is considered a drought.	
9.	Larg e		erous Stream – asse Is stream is too la			Yes, skip	to Metric	13 (Streamside Area	a Ground Surface Condition).	
10.			am Habitat Types –			-6 41			of atmospherical colored	
	10a.	∐Yes	sedimentati		avation, in-strea	am harder	ning [for	example, rip-rap], re	of stressors include excessive ecent dredging, and snagging)	
	10b.	□A I	that occur (occurs i Multiple aquatic mac (include liverworts, lid	rophytes and aq	uatic mosses		kip for S i □F □G	ize 4 Coastal Plain s 5% oysters or other Submerged aquation	r natural hard bottoms	
			Multiple sticks and/or vegetation	r leaf packs and	l/or emergent	k for T h Stree Only		Low-tide refugia (po Sand bottom		
		□C I	Multiple snags and lo 5% undercut banks a	• • • •	,	hecars	□k □i	5% vertical bank all Little or no habitat	ong the marsh	
		i	n banks extend to th Little or no habitat			'		Little of No Habitat		
****	*****	******	**************************************	QUESTIONS /	ARE NOT APPL	ICABLE F	OR TID	AL MARSH STREAM	MS******	
11.	Bedf	orm and S	ubstrate – assessm	ent reach metr	ic (skip for Siz	e 4 Coasta	al Plain s	streams and Tidal M	larsh Streams)	
	11a.	□Yes	⊠No Is assessme	nt reach in a nat	ural sand-bed s	tream? (sl	kip for C	oastal Plain stream	s)	
	11b.	⊠A □B	evaluated. Check th Riffle-run section (ev Pool-glide section (ev Natural bedform abse	aluate 11c) valuate 11d)	, ,	Life)				
	11c.				-	-	of the ass	essment reach – whe	ether or not submerged. Check	
									lot Present (NP) = absent, Rare 70%. Cumulative percentages	
			t exceed 100% for ea R C A	ach assessment P	reach.					
			3 8 8		Bedrock/sapro Boulder (256 -		1)			
					Cobble (64 – 2 Gravel (2 – 64	256 mm)	-,			
					Sand (.062 – 2	2 mm)				
				į	Silt/clay (< 0.0 Detritus		o oto)			
	11d.		□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	ı ⊔ ed with sedimen	Artificial (rip-ra	•	,	streams and Tidal M	farsh Streams)	

12.	-		sessment reach metric (skip for Tidal Marsh Streams)
	12a. ⊠ If N		No Was an in-stream aquatic life assessment performed as described in the User Manual? one of the following reasons and skip to Metric 13. ☐No Water ☐Other:
	12b. 🛚	Yes	No Are aquatic organisms present in the assessment reach (look in riffles, pools, then snags)? If Yes, check all that apply. If No, skip to Metric 13.
	1 X 		Numbers over columns refer to "individuals" for Size 1 and 2 streams and "taxa" for Size 3 and 4 streams. Adult frogs Aquatic reptiles
			Aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats) Beetles
			Caddisfly larvae (T) Asian clam (<i>Corbicula</i>) Crustacean (isopod/amphipod/crayfish/shrimp)
			Damselfly and dragonfly larvae Dipterans Mayfly larvae (E)
			Megaloptera (alderfly, fishfly, dobsonfly larvae) Midges/mosquito larvae
			Mosquito fish (<i>Gambusia</i>) or mud minnows (<i>Umbra pygmaea</i>) Mussels/Clams (not <i>Corbicula</i>) Other fish
			Salamanders/tadpoles Snails
			Stonefly larvae (P) Tipulid larvae Worms/leeches
13.			Ground Surface Condition – streamside area metric (skip for Tidal Marsh Streams and B valley types) Left Bank (LB) and the Right Bank (RB). Consider storage capacity with regard to both overbank flow and upland runoff.
	□A □B ⊠C	□A □B ⊠C	Little or no alteration to water storage capacity over a majority of the streamside area Moderate alteration to water storage capacity over a majority of the streamside area Severe alteration to water storage capacity over a majority of the streamside area (examples: ditches, fill, soil compaction,
			livestock disturbance, buildings, man-made levees, drainage pipes)
14.	Conside LB	r for the RB	Water Storage – streamside area metric (skip for Size 1 streams, Tidal Marsh Streams, and B valley types) Left Bank (LB) and the Right Bank (RB) of the streamside area.
	□A □B ⊠C	□A □B ⊠C	Majority of streamside area with depressions able to pond water ≥ 6 inches deep Majority of streamside area with depressions able to pond water 3 to 6 inches deep Majority of streamside area with depressions able to pond water < 3 inches deep
15.	Conside wetted p	r for the	e – streamside area metric (skip for Tidal Marsh Streams) Left Bank (LB) and the Right Bank (RB). Do not consider wetlands outside of the streamside area or within the norma of assessment reach.
	□Y ⊠N	∐Y ⊠N	Are wetlands present in the streamside area?
16.	Check a ☐A	II contrib Streams	butors – assessment reach metric (skip for Size 4 streams and Tidal Marsh Streams) butors within the assessment reach or within view of <u>and</u> draining to the assessment reach. and/or springs (jurisdictional discharges)
	□B □C □D ⊠E □F	Obstruc Evidenc Stream	nclude wet detention basins; do not include sediment basins or dry detention basins) ion passing flow during low-flow periods within the assessment area (beaver dam, leaky dam, bottom-release dam, weir) e of bank seepage or sweating (iron in water indicates seepage) ped or bank soil reduced (dig through deposited sediment if present) the above
17.		w Detrac	ors – assessment area metric (skip for Tidal Marsh Streams)
	□A □B □C	Evidenc Obstruc Urban s	e of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation) ion not passing flow during low-flow periods affecting the assessment reach (ex: watertight dam, sediment deposit) ream (≥ 24% impervious surface for watershed)
	□D □E ⊠F	Assessr	e that the streamside area has been modified resulting in accelerated drainage into the assessment reach nent reach relocated to valley edge the above
18.	_		sment reach metric (skip for Tidal Marsh Streams) Consider "leaf-on" condition.
	□A □B □C	Stream Degrade	shading is appropriate for stream category (may include gaps associated with natural processes) Id (example: scattered trees) Is shading is gone or largely absent

19.	 Buffer Width – streamside area metric (skip for Tidal Marsh Streams) Consider "vegetated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top of bank out to the first break. 									
	Vegetated Wooded LB RB LB RB \square A \square A \supseteq 100 feet wide or extends to the edge of the watershed \square B \square B \square B \square B From 50 to < 100 feet wide \square C \square C \square C \square C From 30 to < 50 feet wide \square D \square D \square D \square D From 10 to < 30 feet wide \square E \square									
20.	Buffer Structure – streamside area metric (skip for Tidal Marsh Streams) Consider for left bank (LB) and right bank (RB) for Metric 19 ("Vegetated" Buffer Width).									
	LB RB									
	□D □D Maintained shrubs □E □E Little or no vegetation									
21.	Buffer Stressors – streamside area metric (skip for Tidal Marsh Streams) Check all appropriate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but is within 30 feet of stream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet). If none of the following stressors occurs on either bank, check here and skip to Metric 22: Abuts < 30 feet 30-50 feet LB RB LB RB LB RB									
	□A □A □A □A Row crops □B □B □B □B Maintained turf □C □C □C □C □C Pasture (no livestock)/commercial horticulture □D □D □D □D □D Pasture (active livestock use)									
22.	Stem Density – streamside area metric (skip for Tidal Marsh Streams) Consider for left bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width). LB RB									
	 □A									
23.	Continuity of Vegetated Buffer – streamside area metric (skip for Tidal Marsh Streams) Consider whether vegetated buffer is continuous along stream (parallel). Breaks are areas lacking vegetation > 10 feet wide. LB RB									
	 ☑A ☑B ☐B ☐C ☐C ☐C ☐C ☐D /ul>									
24.	Vegetative Composition – streamside area metric (skip for Tidal Marsh Streams) Evaluate the dominant vegetation within 100 feet of each bank or to the edge of the watershed (whichever comes first) as it contributes to assessment reach habitat.									
	LB RB A Vegetation is close to undisturbed in species present and their proportions. Lower strata composed of native species									
	with non-native invasive species absent or sparse. Vegetation indicates disturbance in terms of species diversity or proportions, but is still largely composed of native species. This may include communities of weedy native species that develop after clear-cutting or clearing of communities with non-native invasive species present, but not dominant, over a large portion of the expected strata of the communities with non-native invasive species present, but not dominant, over a large portion of the expected strata of the communities with non-native invasive species present, but not dominant, over a large portion of the expected strata of the communities with non-native invasive species present, but not dominant, over a large portion of the expected strata of the communities with non-native invasive species present, but not dominant, over a large portion of the expected strata of the communities of the communities with non-native invasive species present, but not dominant, over a large portion of the expected strata of the communities of the c									
	communities missing understory but retaining canopy trees. Vegetation is severely disturbed in terms of species diversity or proportions. Mature canopy is absent or communities with non-native invasive species dominant over a large portion of expected strata or communities composed of planted stands of non-characteristic species or communities inappropriately composed of a single species or no vegetation.									
25.	Conductivity – assessment reach metric (skip for all Coastal Plain streams) 25a.									
	25b. Check the box corresponding to the conductivity measurement (units of microsiemens per centimeter). $\Box A < 46 \qquad \Box B 46 \text{ to } < 67 \qquad \Box C 67 \text{ to } < 79 \qquad \Box D 79 \text{ to } < 230 \qquad \Box E \geq 230$									
	es/Sketch:									
wate	er appeared black, receives stormwater runoff from recycling center/composting center									

Draft NC SAM Stream Rating Sheet Accompanies User Manual Version 2.1

Stream Site Name	CLT Airport Expansion	Date of Assessment	September 2019	
Stream Category Pb1 Assessor Name/Organization		KMT,BGB/HDR		
Notes of Field Asses		YES		
Presence of regulator	YES			
Additional stream inf	NO			
NC SAM feature type	Perennial			

(perennial, intermittent, ridal Marsh Stream)	referina	<u> </u>
Function Class Rating Summary	USACE/ All Streams	NCDWR Intermittent
(1) Hydrology	MEDIUM	- Intornation
(2) Baseflow	HIGH	
(2) Flood Flow	MEDIUM	
(3) Streamside Area Attenuation	MEDIUM	
(4) Floodplain Access	HIGH	
(4) Wooded Riparian Buffer	LOW	
(4) Microtopography	NA NA	
	MEDIUM	
(3) Stream Stability	MEDIUM	
(4) Channel Stability		
(4) Sediment Transport	MEDIUM	
(4) Stream Geomorphology	MEDIUM	
(2) Stream/Intertidal Zone Interaction	NA NA	
(2) Longitudinal Tidal Flow	NA	
(2) Tidal Marsh Stream Stability	NA	
(3) Tidal Marsh Channel Stability	NA	
(3) Tidal Marsh Stream Geomorphology	NA	
(1) Water Quality	LOW	
(2) Baseflow	HIGH	
(2) Streamside Area Vegetation	LOW	
(3) Upland Pollutant Filtration	LOW	
(3) Thermoregulation	LOW	
(2) Indicators of Stressors	NO	
(2) Aquatic Life Tolerance	LOW	
(2) Intertidal Zone Filtration	NA	
(1) Habitat	LOW	
(2) In-stream Habitat	LOW	
(3) Baseflow	HIGH	
(3) Substrate	MEDIUM	
(3) Stream Stability	MEDIUM	
(3) In-stream Habitat	LOW	
(2) Stream-side Habitat	LOW	
(3) Stream-side Habitat	LOW	
(3) Thermoregulation	LOW	
(2) Tidal Marsh In-stream Habitat	NA	
(3) Flow Restriction	NA	
(3) Tidal Marsh Stream Stability	NA	
(4) Tidal Marsh Channel Stability	NA NA	
(4) Tidal Marsh Stream Geomorphology	NA NA	
(3) Tidal Marsh In-stream Habitat	NA NA	
(2) Intertidal Zone	NA NA	
Overall	LOW	

NC SAM FIELD ASSESSMENT FORM Accompanies User Manual Version 2.1

USACE AID #:	NCDWR #:						
INSTRUCTIONS: Attach a sketch of the assessment area and photographs. Attach a copy of the USGS 7.5-minute topographic quadrangle,							
	ble stream reaches will be evaluated on the same property, identify and						
	for each reach. See the NC SAM User Manual for detailed descriptions						
and explanations of requested information. Record in the "Notes/Ske NC SAM User Manual for examples of additional measurements that	etch" section if supplementary measurements were performed. See the						
NOTE EVIDENCE OF STRESSORS AFFECTING THE ASSESSMENT	•						
	TO AREA (ao not noon to be within the assessment alea).						
PROJECT/SITE INFORMATION: 1. Project name (if any): CLT Airport Expansion	Date of evaluation: September 2019						
3. Applicant/owner name: CLT	4. Assessor name/organization: KMT,BGB/HDR						
5. County: Mecklenburg	6. Nearest named water body						
7. River basin: Catawba	on USGS 7.5-minute quad: Coffey Creek						
8. Site coordinates (decimal degrees, at lower end of assessment rea							
STREAM INFORMATION: (depth and width can be approximation PS7-2 - S30,	s)						
	Length of assessment reach evaluated (feet): 980'						
11. Channel depth from bed (in riffle, if present) to top of bank (feet):	2 Unable to assess channel depth.						
12. Channel width at top of bank (feet): 3 13. Is	s assessment reach a swamp steam?						
14. Feature type: ⊠Perennial flow ☐Intermittent flow ☐Tidal Mars	h Stream						
STREAM CATEGORY INFORMATION:							
15. NC SAM Zone: ☐ Mountains (M) ☐ Piedmont	(P)						
16. Estimated geomorphic							
valley shape (skip for Tidal Marsh Stream): (more sinuous stream, flatter valley							
17. Watershed size: (skip ⊠Size 1 (< 0.1 mi²) □Size 2 (0. for Tidal Marsh Stream)	1 to < 0.5 mi²)						
ADDITIONAL INFORMATION:							
18. Were regulatory considerations evaluated? ☐Yes ☐No If Yes,	check all that apply to the assessment area.						
Section 10 water Classified Trout Waters							
☐Essential Fish Habitat ☐Primary Nursery Area	☐ High Quality Waters/Outstanding Resource Waters						
☐ Publicly owned property ☐ NCDWR Riparian buffer rul							
☐ Anadromous fish ☐ 303(d) List ☐ Decumented presence of a foderal and/or state listed pretected	CAMA Area of Environmental Concern (AEC)						
Documented presence of a federal and/or state listed protected List species:	า จุทธดเธอ พเนาแบ แบะ สองธองเทียนน์ สเซส.						
☐ Designated Critical Habitat (list species)							
19. Are additional stream information/supplementary measurements in	ncluded in "Notes/Sketch" section or attached?						
1. Channel Water – assessment reach metric (skip for Size 1 stre	eams and Tidal Marsh Streams)						
☑A Water throughout assessment reach.☐B No flow, water in pools only.							
☐C No water in assessment reach.							
Evidence of Flow Restriction – assessment reach metric							
	riffle-pool sequence is severely affected by a flow restriction or fill to the						
	tic macrophytes or ponded water or impoundment on flood or ebb within						
the assessment reach (examples: undersized or perche	d culverts, causeways that constrict the channel, tidal gates, debris jams,						
beaver dams).							
⊠B Not A							
3. Feature Pattern – assessment reach metric							
	examples: straightening, modification above or below culvert).						
⊠B Not A							
4. Feature Longitudinal Profile – assessment reach metric							
	stream profile (examples: channel down-cutting, existing damming, over						
widening, active aggradation, dredging, and excavation disturbances).	where appropriate channel profile has not reformed from any of these						
B Not A							
5. Signs of Active Instability – assessment reach metric Consider only current instability, not past events from which	the stream has currently recovered. Examples of instability include						
	widening, and artificial hardening (such as concrete, gabion, rip-rap).						
	5. G. (
B 10 to 25% of channel unstable							
□C > 25% of channel unstable							

6.					streamsic					
			he Left	Bank (LE	3) and the	Right Ba	nk (RB).			
	LB ⊠A □B	RB ⊠A □B	Mod refe	derate evi erence inte	dence of ceraction (ex	conditions xamples:	limited streams	erms, leve ide area a	es, down- ccess, dis	eraction cutting, aggradation, dredging) that adversely affect ruption of flood flows through streamside area, leaky nor ditching [including mosquito ditching])
	□c	□c	[exa of fl mos	amples: c ood flows	auseways through st ching]) <u>or</u> f	with flood reamside	lplain and chanr area] <u>or</u> too mu	nel constri ch floodpla	ction, bulk ain/intertic	eraction (little to no floodplain/intertidal zone access heads, retaining walls, fill, stream incision, disruption lal zone access [examples: impoundments, intensive or assessment reach is a man-made feature on an
7.	Wate	r Quality	Stresso	ors – asso	essment r	each/inte	ertidal zone me	tric		
		k all that								
	ΠĀ									er discoloration, oil sheen, stream foam)
	□B □C						m features or inf			nd causing a water quality problem
	∐ŏ				tural sulfide		o ontorning the c	0000011101	10 100011 <u>al</u>	ta valor quality problem
	□E			shed or c	ollected d	ata indica	iting degraded	water qua	lity in the	assessment reach. Cite source in "Notes/Sketch"
	□F	section Lives		h access t	to stream o	or intertida	al zone			
	□G				eam or inte					
							al zone (remova a in "Notes/Sketa			nowing, destruction, etc)
	⊠j		to no str			_ (0xpiaii)	III TVOLCO, CROC	011 0001101	'/	
8.	Rece	nt Weath	er – wa	tershed r	netric (ski	ip for Tida	al Marsh Strea	ms)		
										eams, D2 drought or higher is considered a drought.
	□A □B						ıll not exceeding 1 inch within the			st 48 hours
	⊠c			onditions	<u>.</u>				0 0.0	
9.	Large	e or Dang	gerous S	Stream –	assessme	ent reach	metric			
	□Ye	s ⊠No	ls s	tream is to	oo large or	dangerou	us to assess? I	f Yes, skip	to Metric	: 13 (Streamside Area Ground Surface Condition).
10.							each metric	. of the o		at reach (averagles of attractors include averaging
	iua.	∐Yes	⊠No	sedime	ntation, m	ining, exc	cavation, in-stream tal Plain stream	eam harde	ening [for	nt reach (examples of stressors include excessive example, rip-rap], recent dredging, and snagging) to Metric 12)
	10b.	Check a ☐A								ize 4 Coastal Plain streams) 5% oysters or other natural hard bottoms
		ШΑ			ts, lichens,		quatic mosses I mats)	Check for Tidal Marsh Streams Only	□F □G	Submerged aquatic vegetation
		⊠в			nd/or leaf	packs and	d/or emergent	k for T h Stre Only	∏H.	Low-tide refugia (pools)
		□с	vegetat Multiple		nd logs (in	cluding la	p trees)	arsh O	□J	Sand bottom 5% vertical bank along the marsh
		⊠D	5% und	dercut bar	nks and/or	root mats	s and/or roots	Ö 🖺	□ĸ	Little or no habitat
		□E		s extend to no habita		nal wetted	d perimeter			
			2.11.10 01	no nabite						
****	*****	*******	******	**REMAIN	ING QUE	STIONS	ARE NOT APP	LICABLE	FOR TID	AL MARSH STREAMS************************************
11.	Bedf	orm and	Substra	ite – asse	ssment re	each meti	ric (skip for Siz	ze 4 Coas	tal Plain	streams and Tidal Marsh Streams)
	11a.	□Yes	⊠No	Is asses	sment read	ch in a na	tural sand-bed	stream? (s	skip for C	oastal Plain streams)
	11b.				k the app		oox(es).			
		⊠A □B			n (evaluate n (evaluat					
		□c					tric 12, Aquatio	: Life)		
	11c.	at least	one box	in each	row (skip i	for Size 4	Coastal Plain	streams	and Tidal	essment reach – whether or not submerged. Check Marsh Streams) . Not Present (NP) = absent, Rare Predominant (P) = > 70%. Cumulative percentages
					or each as			n (//) - /	40 7070, I	redominant (1) = > 1070. Cumulative percentages
		NP ⊠	R □	С	A	P □	Podrock/copr	olito		
			H	H	Ħ	H	Bedrock/sapr Boulder (256		m)	
		\boxtimes					Cobble (64 –			
					H	片	Gravel (2 – 64 Sand (.062 –			
					₫	₫	Silt/clay (< 0.0	,		
			\square	H		R	Detritus Artificial (rip-ra	an concre	ete etc)	
	11d	□Yes	□No	Are nool	ப s filled witi			-		streams and Tidal Marsh Streams)
			,	, o pool	- mod will	Journal	(S.up 101 012		-a. , idili (and man man on outlis

12.	-		sessment reach metric (skip for Tidal Marsh Streams)
	12a. ⊠ If N		No Was an in-stream aquatic life assessment performed as described in the User Manual? cone of the following reasons and skip to Metric 13. ☐No Water ☐Other:
	12b. 🛚	Yes 🗆	No Are aquatic organisms present in the assessment reach (look in riffles, pools, then snags)? If Yes, check all that apply. If No, skip to Metric 13.
	1		Numbers over columns refer to "individuals" for Size 1 and 2 streams and "taxa" for Size 3 and 4 streams. Adult frogs Aquatic reptiles
			Aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats)
			Beetles Caddisfly larvae (T)
			Asian clam (<i>Corbicula</i>) Crustacean (isopod/amphipod/crayfish/shrimp)
			Damselfly and dragonfly larvae Dipterans
	Ē		Mayfly larvae (E) Megaloptera (alderfly, fishfly, dobsonfly larvae)
		\boxtimes	Midges/mosquito larvae
			Mosquito fish (<i>Gambusia</i>) or mud minnows (<i>Umbra pygmaea)</i> Mussels/Clams (not <i>Corbicula</i>)
			Other fish Salamanders/tadpoles
	Ë		Snails
			Stonefly larvae (P) Tipulid larvae
12			Worms/leeches Ground Surface Condition – streamside area metric (skip for Tidal Marsh Streams and B valley types)
	Conside	r for the	Left Bank (LB) and the Right Bank (RB). Consider storage capacity with regard to both overbank flow and upland runoff.
	LB ⊠A	RB ⊠A	Little or no alteration to water storage capacity over a majority of the streamside area
	□B □C	□B □C	Moderate alteration to water storage capacity over a majority of the streamside area Severe alteration to water storage capacity over a majority of the streamside area (examples: ditches, fill, soil compaction, livestock disturbance, buildings, man-made levees, drainage pipes)
14.			Water Storage – streamside area metric (skip for Size 1 streams, Tidal Marsh Streams, and B valley types) Left Bank (LB) and the Right Bank (RB) of the streamside area.
	□A □B ⊠C	□A □B ⊠C	Majority of streamside area with depressions able to pond water ≥ 6 inches deep Majority of streamside area with depressions able to pond water 3 to 6 inches deep Majority of streamside area with depressions able to pond water < 3 inches deep
15.	Conside wetted p	er for the erimeter	te – streamside area metric (skip for Tidal Marsh Streams) Left Bank (LB) and the Right Bank (RB). Do not consider wetlands outside of the streamside area or within the normal of assessment reach.
	LB □Y ⊠N	RB □Y ⊠N	Are wetlands present in the streamside area?
16.		w Contri	outors – assessment reach metric (skip for Size 4 streams and Tidal Marsh Streams)
	Check a ☐A		outors within the assessment reach or within view of <u>and</u> draining to the assessment reach. and/or springs (jurisdictional discharges)
	□B □C		nclude wet detention basins; do not include sediment basins or dry detention basins) tion passing flow during low-flow periods within the assessment area (beaver dam, leaky dam, bottom-release dam, weir)
	□D ⊠E	Evidenc	e of bank seepage or sweating (iron in water indicates seepage) bed or bank soil reduced (dig through deposited sediment if present)
	□F		the above
17.	Baseflov Check a		tors – assessment area metric (skip for Tidal Marsh Streams) plv.
	□A □B	Evidenc	e of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation) tion not passing flow during low-flow periods affecting the assessment reach (ex: watertight dam, sediment deposit)
	□C	Urban s	tream (≥ 24% impervious surface for watershed)
	□D □E	Assessr	e that the streamside area has been modified resulting in accelerated drainage into the assessment reach nent reach relocated to valley edge
12	⊠F Shading		the above sment reach metric (skip for Tidal Marsh Streams)
	Consider	aspect.	Consider "leaf-on" condition.
	⊠a ∐B	Degrade	shading is appropriate for stream category (may include gaps associated with natural processes) ed (example: scattered trees)
	□C	Stream	shading is gone or largely absent

19.	Buffer Width – streamside area metric (skip for Tidal Marsh Streams) Consider "vegetated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top of bank out to the first break. Vegetated Wooded LB RB LB RB $A A A A A A A A A A A A A A A A A A A$
20.	Buffer Structure – streamside area metric (skip for Tidal Marsh Streams) Consider for left bank (LB) and right bank (RB) for Metric 19 ("Vegetated" Buffer Width). LB RB □A □A Mature forest □B □B Non-mature woody vegetation or modified vegetation structure □C □C Herbaceous vegetation with or without a strip of trees < 10 feet wide
21.	□D □D Maintained shrubs □E □E Little or no vegetation Buffer Stressors – streamside area metric (skip for Tidal Marsh Streams) Check all appropriate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but is within 30 feet of stream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet). If none of the following stressors occurs on either bank, check here and skip to Metric 22: Abuts < 30 feet 30-50 feet
	LB RB LB RB LB RB A A A A A A A A A A Row crops B B B B B B Maintained turf C C C C C C C Pasture (no livestock)/commercial horticulture D D D D D D Pasture (active livestock use)
22.	Stem Density – streamside area metric (skip for Tidal Marsh Streams) Consider for left bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width). LB RB A Medium to high stem density B B B Low stem density C C C No wooded riparian buffer or predominantly herbaceous species or bare ground
23.	Continuity of Vegetated Buffer – streamside area metric (skip for Tidal Marsh Streams) Consider whether vegetated buffer is continuous along stream (parallel). Breaks are areas lacking vegetation > 10 feet wide. LB RB \[\text{A} \text{N} \text{A} \text{The total length of buffer breaks is < 25 percent.} \] \[\text{D} \text{B} \text{B} \text{The total length of buffer breaks is between 25 and 50 percent.} \] \[\text{C} \text{C} \text{The total length of buffer breaks is > 50 percent.} \]
24.	Vegetative Composition – streamside area metric (skip for Tidal Marsh Streams) Evaluate the dominant vegetation within 100 feet of each bank or to the edge of the watershed (whichever comes first) as it contributes to assessment reach habitat. LB RB ⊠A Vegetation is close to undisturbed in species present and their proportions. Lower strata composed of native species, with non-native invasive species absent or sparse. □B B Vegetation indicates disturbance in terms of species diversity or proportions, but is still largely composed of native species. This may include communities of weedy native species that develop after clear-cutting or clearing or communities with non-native invasive species present, but not dominant, over a large portion of the expected strata or communities missing understory but retaining canopy trees. □C □C Vegetation is severely disturbed in terms of species diversity or proportions. Mature canopy is absent or communities with non-native invasive species dominant over a large portion of expected strata or communities composed of planted stands of non-characteristic species or communities inappropriately composed of a single species or no vegetation.
25.	Conductivity – assessment reach metric (skip for all Coastal Plain streams) 25a. ☐ Yes ☐ No Was conductivity measurement recorded? If No, select one of the following reasons. ☐ No Water ☐ Other: 25b. Check the box corresponding to the conductivity measurement (units of microsiemens per centimeter). ☐ A < 46 ☐ B 46 to < 67 ☐ C 67 to < 79 ☐ D 79 to < 230 ☐ E ≥ 230
Note	es/Sketch:

Draft NC SAM Stream Rating Sheet Accompanies User Manual Version 2.1

Stream Site Name	CL1 Airport Expansion	Date of Assessment	September 20	19			
Stream Category	Pb1	KMT,BGB/HD	R				
Notes of Field Asses		NO					
Presence of regulator	YES						
Additional stream inf	rements included (Y/N)	NO					
NC SAM feature type (perennial, intermittent, Tidal Marsh Stream) Perennial							

(perennial, intermittent, Tidal Marsh Stream)	Perennia	<u> </u>
Function Class Bating Summany	USACE/	NCDWR
Function Class Rating Summary	All Streams HIGH	Intermittent
(1) Hydrology		
(2) Baseflow	HIGH	
(2) Flood Flow	HIGH	
(3) Streamside Area Attenuation	HIGH	
(4) Floodplain Access	HIGH	
(4) Wooded Riparian Buffer	HIGH	
(4) Microtopography	NA	
(3) Stream Stability	HIGH	
(4) Channel Stability	HIGH	
(4) Sediment Transport	LOW	
(4) Stream Geomorphology	HIGH	
(2) Stream/Intertidal Zone Interaction	NA	
(2) Longitudinal Tidal Flow	NA	
(2) Tidal Marsh Stream Stability	NA	
(3) Tidal Marsh Channel Stability	NA	
(3) Tidal Marsh Stream Geomorphology	NA	
(1) Water Quality	HIGH	
(2) Baseflow	HIGH	
(2) Streamside Area Vegetation	HIGH	
(3) Upland Pollutant Filtration	HIGH	
(3) Thermoregulation	HIGH	
(2) Indicators of Stressors	NO	
(2) Aquatic Life Tolerance	MEDIUM	
(2) Intertidal Zone Filtration	NA	
(1) Habitat	MEDIUM	
(2) In-stream Habitat	LOW	
(3) Baseflow	HIGH	
(3) Substrate	LOW	
(3) Stream Stability	HIGH	
(3) In-stream Habitat	MEDIUM	
(2) Stream-side Habitat	HIGH	
(3) Stream-side Habitat	HIGH	
(3) Thermoregulation	HIGH	
(2) Tidal Marsh In-stream Habitat	NA	
(3) Flow Restriction	NA NA	
	NA NA	
(3) Tidal Marsh Stream Stability (4) Tidal Marsh Channel Stability	NA NA	
· · · · · · · · · · · · · · · · · · ·		
(4) Tidal Marsh Stream Geomorphology (3) Tidal Marsh In-stream Habitat	NA NA	
	NA NA	
(2) Intertidal Zone		

NC WAM FIELD ASSESSMENT RESULTS Accompanies User Manual Version 5.0

110	SACE AID #	+	Accompanies	NCDWR#	1
0		<i><u>+</u> </i> oject Nam	e _CLT Airport Expansion	Date of Evaluation	April 2019
^	Pro pplicant/Ov			Wetland Site Name	PW1-2 - Wetland 6
^		tland Typ		Assessor Name/Organization	KMT, BGB/HDR
		Ecoregio		Nearest Named Water Body	Ticer Branch
		River Basi		USGS 8-Digit Catalogue Unit	03050101
	'	Count	-	NCDWR Region	Mooresville
	☐ Yes	_		Latitude/Longitude (deci-degrees)	35.231203, -80.958653
			•	<u> </u>	,
Pl re	ease circle cent past (for	and/or mor instance rological inface and size, undergons of vege intat/plant sment are dromous erally products a Primalicly owner	e, within 10 years). Noteworthy stressors in modifications (examples: ditches, dams, bub-surface discharges into the wetland (examples tanks (USTs), hog lagoons, tation stress (examples: vegetation mortal community alteration (examples: mowing, ta intensively managed? Yes Strions - Were regulatory considerations everties and the stress of the stress	tressors is apparent. Consider departure finclude, but are not limited to the following. eaver dams, dikes, berms, ponds, etc.) amples: discharges containing obvious polluetc.) lity, insect damage, disease, storm damage clear-cutting, exotics, etc.) No aluated? Yes No If Yes, check all the eatened species	utants, presence of nearby septic , salt intrusion, etc.)
	Des	ts a strea ignated N		upplemental classifications of HQW, ORW, o	or Trout
Is Is	Black Brown Tida the assess	ckwater wnwater al (if tidal, sment are		unar 🗌 Wind 🔲 Both	□ Yes ⊠ No ⊠ No
D	bes the ass	essment	area experience overbank nooding dur	ing normal raintall conditions?	⊠ N0
1.	Check a kassessme area base GS	oox in ea ent area. (d on evid √S □A ⊠B	Compare to reference wetland if applicable ence an effect. Not severely altered Severely altered over a majority of the assessedimentation, fire-plow lanes, skidder tra	und surface (GS) in the assessment area ar (see User Manual). If a reference is not app essment area (ground surface alteration exa ticks, bedding, fill, soil compaction, obvious ce, herbicides, salt intrusion [where appropr	olicable, then rate the assessment amples: vehicle tracks, excessive pollutants) (vegetation structure
2.	Surface a	nd Sub-S	Surface Storage Capacity and Duration -	- assessment area condition metric	
	Consider I deep is ex Surf S A [both incre cpected to Sub □A □B ⊠C	ase and decrease in hydrology. A ditch saffect both surface and sub-surface water water storage capacity and duration are now water storage capacity or duration are alterestorage capacity or duration are subwater storage capacity or duration are subwater storage capacity or duration are subwater storage.	acity and duration (Surf) and sub-surface sto in 1 foot deep is considered to affect surface in Consider tidal flooding regime, if applicable of altered. Tred, but not substantially (typically, not suffice stantially altered (typically, alteration sufficientially, excessive sedimentation, underg	water only, while a ditch > 1 foot le. cient to change vegetation). ent to result in vegetation change)
3.	Water Sto	orage/Sur	face Relief – assessment area/wetland t	type condition metric (skip for all marshe	es)
		_		e for the assessment area (AA) and the wetl	
	AA \ 3a. ⊠A □B □C □D	WT □A □B □C ⊠D	Majority of wetland with depressions able to Majority of wetland with depressions able to Majority of wetland with depressions able to Depressions able to pond water < 3 inches	o pond water > 1 deep o pond water 6 inches to 1 foot deep o pond water 3 to 6 inches deep deep	-3r - V
	⊠B∣	Evidence	that maximum depth of inundation is greate that maximum depth of inundation is betwee that maximum depth of inundation is less t	een 1 and 2 feet	

	Make soil	observation	ch of the three soil property groups below. Dig soil profile in the dominant assessment area landscape feature. s within the top 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for regional
	indicators 4a. □A □B □C □D □D	Sandy s Loamy o Loamy o Loamy o	oil or clayey soils exhibiting redoximorphic features (concentrations, depletions, or rhizospheres) or clayey soils not exhibiting redoximorphic features or clayey gleyed soil or histic epipedon
	4b. ⊠A □B		on < 1 inch on ≥ 1 inch
	4c. ⊠A □B		or muck presence or muck presence
5.	Discharg	e into Wetla	nd – opportunity metric
	of sub-sur Surf	face dischar Sub	column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). Examples ges include presence of nearby septic tank, underground storage tank (UST), etc.
		□B Not	le or no evidence of pollutants or discharges entering the assessment area iceable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the atment capacity of the assessment area
	□C	pot	ciceable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and entially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive limentation, odor)
6.	Land Use	e – opportun	ity metric (skip for non-riparian wetlands)
	to assessi and within	ment area wi	at least one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources draining thin entire upstream watershed (WS), within 5 miles <u>and</u> within the watershed draining to the assessment area (5M), within the watershed draining to the assessment area (2M).
	□A □B	□A □ <i>A</i> □B □E □C □C	A ≥ 10% impervious surfaces Confined animal operations (or other local, concentrated source of pollutants
	□D ⊠E	□d □d ⊠e ⊠e ⊠f ⊠f	D ≥ 20% coverage of agricultural land (regularly plowed land) E ≥ 20% coverage of maintained grass/herb
		Ğ Ğ	
7.	Wetland A	Acting as Ve	egetated Buffer – assessment area/wetland complex condition metric (skip for non-riparian wetlands)
	□Y	′es ⊠No	rea within 50 feet of a tributary or other open water? If Yes, continue to 7b. If No, skip to Metric 8. leed only be present on one side of the water body. Make buffer judgment based on the average width of wetland.
	7b. How buff	v much of the er judgment	a portion of the buffer has been removed or disturbed. In first 50 feet from the bank is wetland? (Wetland buffer need only be present on one side of the .water body. Make It based on the average width of wetland. Record a note if a portion of the buffer has been removed or disturbed.)
	□A □B □C	From 3 From 1	et :0 to < 50 feet 5 to < 30 feet
			i to < 15 feet t <u>or</u> buffer bypassed by ditches
	7c. Trib	utary width.	If the tributary is anastomosed, combine widths of channels/braids for a total width.
	_	15-feet wide roots of asse	e
	☐Y 7e. Is st		er open water sheltered or exposed?
	□s	Sheltered – ad	djacent open water with width < 2500 feet <u>and</u> no regular boat traffic. jacent open water with width ≥ 2500 feet <u>or</u> regular boat traffic.
8.			Assessment Area – wetland type/wetland complex condition metric (evaluate WT for all marshes and etland only; evaluate WC for Bottomland Hardwood Forest, Headwater Forest, and Riverine Swamp Forest
	the wetlar		column for riverine wetlands only. Select the average width for the wetland type at the assessment area (WT) and the assessment area (WC). See User Manual for WT and WC boundaries.
	□A	_A ≥ 1	00 feet
		=	m 80 to < 100 feet m 50 to < 80 feet
	\Box D	□D Fro	m 40 to < 50 feet
	□E I	□E Fro	m 30 to < 40 feet
			m 15 to < 30 feet m 5 to < 15 feet
			foot

4. Soil Texture/Structure – assessment area condition metric (skip for all marshes)

9.	Inundation Duration – assessment area condition metric (skip for non-riparian wetlands)
	Answer for assessment area dominant landform. Answer for assessment area dominant landform. Evidence of short-duration inundation (< 7 consecutive days) Evidence of saturation, without evidence of inundation Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)
10.	Indicators of Deposition – assessment area condition metric (skip for non-riparian wetlands and all marshes)
	Consider recent deposition only (no plant growth since deposition). □ A Sediment deposition is not excessive, but at approximately natural levels. □ B Sediment deposition is excessive, but not overwhelming the wetland. □ C Sediment deposition is excessive and is overwhelming the wetland.
11.	Wetland Size – wetland type/wetland complex condition metric
	Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column. WT WC FW (if applicable) A A A ≥ 500 acres B B B From 100 to < 500 acres C C C From 50 to < 100 acres D D D From 25 to < 50 acres E E From 10 to < 25 acres F F F From 5 to < 10 acres G G G From 1 to < 5 acres H H H H H From 0.5 to < 1 acre I I I From 0.1 to < 0.5 acre J J J J From 0.01 to < 0.1 acre K K K K K K K C K < 0.01 acre or assessment area is clear-cut
12.	Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)
	□A Pocosin is the full extent (≥ 90%) of its natural landscape size. □B Pocosin type is < 90% of the full extent of its natural landscape size.
12	Connectivity to Other Natural Areas – landscape condition metric
	13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This metric evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly maintained utility line corridors the width of a four-lane road or wider, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Well Loosely A A ≥ 500 acres B B From 100 to < 500 acres C C From 50 to < 100 acres D D From 10 to < 50 acres E E < 10 acres F Wetland type has a poor or no connection to other natural habitats 13b. Evaluate for marshes only.
	Yes No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.
14.	Edge Effect – wetland type condition metric (skip for all marshes and Estuarine Woody Wetland) May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors, and clear-cuts. Consider the eight main points of the compass. Artificial edge occurs within 150 feet in how many directions? If the assessment area is clear cut, select option "C." □ A 0 □ B 1 to 4 □ C 5 to 8
15.	Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)
	 □A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area. □B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata. □C Vegetation severely altered from reference in composition, or expected species are unnaturally absent (planted stands of non-characteristic species or at least one stratum inappropriately composed of a single species), or exotic species are dominant in at least one stratum.
16.	Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)
	 □A Vegetation diversity is high and is composed primarily of native species (< 10% cover of exotics). □B Vegetation diversity is low or has > 10% to 50% cover of exotics. □C Vegetation is dominated by exotic species (> 50 % cover of exotics).

17.	. Vegetative Structure – assessment area/wetland type condition metric 17a. Is vegetation present?				
	⊠Y	∕es □No	If Yes, continue to 17b. If No, skip to Metric 18.		
	17b. Eva □ <i>A</i> □E	A ≥ 25% c	nt coverage of assessment area vegetation for all marshes only . Skip to 17c for coverage of vegetation coverage of vegetation	non-marsh wetlands.	
	stru	ucture in airsp	n each column for each stratum. Evaluate this portion of the metric for non-space above the assessment area (AA) and the wetland type (WT) separately.	marsh wetlands. Consider	
	Canopy □□ □□	A ⊠A B □B C □C	Canopy closed, or nearly closed, with natural gaps associated with natural processe. Canopy present, but opened more than natural gaps Canopy sparse or absent	S	
	Mid-Story	A □A B ⊠B C □C	Dense mid-story/sapling layer Moderate density mid-story/sapling layer Mid-story/sapling layer sparse or absent		
	Shrub □ □	A □A B □B C ⊠C	Dense shrub layer Moderate density shrub layer Shrub layer sparse or absent		
	H B B B B B B B B B B B B B B B B B B B	A □A B □B C ⊠C	Dense herb layer Moderate density herb layer Herb layer sparse or absent		
18.	Snags -	wetland type	e condition metric (skip for all marshes)		
	⊠В	Not A	(more than one) are visible (> 12 inches DBH, or large relative to species present and I	andscape stability).	
19.			ibution – wetland type condition metric (skip for all marshes)	- /- 40 in ab DDLI)	
		present.	anopy trees have stems > 6 inches in diameter at breast height (DBH); many large trees	3 (> 12 inches DBH) are	
			anopy trees have stems between 6 and 12 inches DBH, few are > 12 inch DBH. anopy trees are < 6 inches DBH or no trees.		
20.	_	=	- wetland type condition metric (skip for all marshes)		
	$\square A$		ebris and man-placed natural debris. more than one) are visible (> 12 inches in diameter, or large relative to species present :	and landscape stability).	
21.	Vegetatio	on/Open Wate	ter Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal	Freshwater Marsh only)	
			best describes the amount of interspersion between vegetation and open water in the ed areas, while solid white areas indicate open water.	growing season. Patterned	
	0				
22.			vity – assessment area condition metric (evaluate for riparian wetlands and Salt/E	= :	
	man-mad ⊠A □B □C	e berms, beav Overbank <u>and</u> Overbank flow Overland flow	that may severely alter hydrologic connectivity include intensive ditching, fill, sedimentate aver dams, and stream incision. Documentation required if evaluated as B, C, or D. and overland flow are not severely altered in the assessment area. It is and overland flow are severely altered in the assessment area.	ion, channelization, diversion,	

Notes

wetland created by road construction and culvert downstream. Canopy trees dead.

NC WAM Wetland Rating Sheet Accompanies User Manual Version 5.0

Wetland Site Name		Date of Assessment April 2	
Wetland Type	Headwater Forest A	Assessor Name/Organization KMT,	BGB/HDR
Notes on Field Assess	ment Form (Y/N)		YES
Presence of regulatory	considerations (Y/N)		YES
Wetland is intensively i	managed (Y/N)		NO
Assessment area is loc	cated within 50 feet of a natural tributar	y or other open water (Y/N)	NO
Assessment area is su	bstantially altered by beaver (Y/N)		NO
Assessment area expe	riences overbank flooding during norm	al rainfall conditions (Y/N)	NO
Assessment area is on	a coastal island (Y/N)		NO
Sub-function Rating S	ummary		
Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention Sub-surface Storage and	Condition	LOW
	Retention	Condition	LOW
Water Quality	Pathogen Change	Condition	LOW
		Condition/Opportunity	LOW
		Opportunity Presence (Y/N)	NO
	Particulate Change	Condition	LOW
		Condition/Opportunity	NA
		Opportunity Presence (Y/N)	NA
	Soluble Change	Condition	MEDIUM
		Condition/Opportunity	MEDIUM
		Opportunity Presence (Y/N)	NO
	Physical Change	Condition	LOW
		Condition/Opportunity	LOW
		Opportunity Presence (Y/N)	YES
	Pollution Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence (Y/N)	NA
Habitat	Physical Structure	Condition	LOW
	Landscape Patch Structure	Condition	LOW
	Vegetation Composition	Condition	MEDIUM
unction Rating Summ	nary		
Function		Metrics	Rating
Hydrology		Condition	LOW
Water Quality		Condition	LOW
		Condition/Opportunity	LOW
		Opportunity Presence (Y/N)	YES
Habitat		Condition	LOW

NC WAM FIELD ASSESSMENT RESULTS Accompanies User Manual Version 5.0

He	ACE AID #	+	Accompanies	NCDWP#	1
US			CIT Airmont Communication	NCDWR#	Contombox 2040
		ject Nam		Date of Evaluation	September 2019
Ap	plicant/Ov			Wetland Site Name	PW2-2 - Wetland 7
		tland Typ		Assessor Name/Organization	KMT, BGB/HDR
		Ecoregio		Nearest Named Water Body	Ticer Branch
	F	River Basi	n Catawba	USGS 8-Digit Catalogue Unit	03050101
		Count	ty Mecklenburg	NCDWR Region	Mooresville
	☐ Yes	s 🛛 N	o Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees)	35.219133, -80.955870
Ple	ase circle	and/or m	s affecting the assessment area (may no ake note on the last page if evidence of se, within 10 years). Noteworthy stressors is	tressors is apparent. Consider departure f	rom reference, if appropriate, in
100			modifications (examples: ditches, dams, be		
				amples: discharges containing obvious pollu	itants, presence of nearby septic
			ground storage tanks (USTs), hog lagoons,		,
				lity, insect damage, disease, storm damage	. salt intrusion. etc.)
			community alteration (examples: mowing,		, ,
		-		-	
IS T	ne assess	sment are	ea intensively managed? 🔲 Yes 🛛	No	
Reg				aluated? ⊠Yes □No If Yes, check all tha	at apply to the assessment area.
		dromous			
			tected species or State endangered or thre	atened species	
			rian buffer rule in effect		
			ary Nursery Area (PNA)		
			ed property		
			of Coastal Management Area of Environment		_
ا∐				upplemental classifications of HQW, ORW, o	or Trout
			ICNHP reference community		
	Abu	ts a 303(d	d)-listed stream or a tributary to a 303(d)-lis	ted stream	
Wh	at type of	natural	stream is associated with the wetland, if	any? (check all that annly)	
		kwater	stroum to appointed with the worlding, it	any: (oncor an that apply)	
		wnwater			
			check one of the following hoves)	ınar IIWind IIRoth	
	Hua	ıı (ıı ııuaı,	check one of the following boxes)	ınar 🗌 Wind 🔲 Both	
		•	check one of the following boxes) Licea on a coastal island? Tyes X i		
ls t	he assess	sment are	ea on a coastal island? 🔲 Yes 🛛 🌣	No —	□ Ves ⊠ No
ls t	he assess he assess	sment are	ea on a coastal island? Yes Page 1 Yes One 1	No uration substantially altered by beaver?	☐ Yes ☒ No
ls t	he assess he assess	sment are	ea on a coastal island? Yes Page 1 Yes One 1	No —	
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	Make soil	observations withi	the three soil property groups below. Dig soil profile in the dominant assessment area landscape feature. n the top 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for regional
	indicators. 4a. □A □B □C □D □D	Sandy soil Loamy or claye	
	4b. ⊠A □B	Soil ribbon < 1 Soil ribbon ≥ 1	
	4c. ⊠A □B	No peat or much A peat or much	
5.	Discharge	e into Wetland – o	pportunity metric
	of sub-sur Surf	face discharges ind Sub	 n. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). Examples clude presence of nearby septic tank, underground storage tank (UST), etc.
	□B [□B Noticeable treatment	o evidence of pollutants or discharges entering the assessment area e evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the capacity of the assessment area
	□c [potentially	e evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and voverwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive ation, odor)
6.	Land Use	- opportunity me	tric (skip for non-riparian wetlands)
	to assessr and within	ment area within er	et one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources draining tire upstream watershed (WS), within 5 miles <u>and</u> within the watershed draining to the assessment area (5M), the watershed draining to the assessment area (2M).
	□в [_В _В	≥ 10% impervious surfaces Confined animal operations (or other local, concentrated source of pollutants ≥ 20% coverage of pasture
	□D [⊠E [□D □D ⊠E ⊠E	≥ 20% coverage of agricultural land (regularly plowed land) ≥ 20% coverage of maintained grass/herb ≥ 20% coverage of clear-cut land
		□G □G	Little or no opportunity to improve water quality. Lack of opportunity may result from little or no disturbance in the watershed <u>or</u> hydrologic alterations that prevent drainage <u>and/or</u> overbank flow from affecting the assessment area.
7.	Wetland /	Acting as Vegetate	ed Buffer – assessment area/wetland complex condition metric (skip for non-riparian wetlands)
	□Y	es ⊠No If Yo	hin 50 feet of a tributary or other open water? es, continue to 7b. If No, skip to Metric 8.
	Reco 7b. How	ord a note if a porti much of the first 5	nly be present on one side of the water body. Make buffer judgment based on the average width of wetland. on of the buffer has been removed or disturbed. 50 feet from the bank is wetland? (Wetland buffer need only be present on one side of the .water body. Make
	buffe ∐A ∏B	≥ 50 feet	on the average width of wetland. Record a note if a portion of the buffer has been removed or disturbed.) 50 feet
	□c □D □E	From 15 to < From 5 to < 1	30 feet
	7c. Tribi	utary width. If th <u>e t</u>	ributary is anastomosed, combine widths of channels/braids for a total width. > 15-feet wide
	□Y	es 🔲No	at area vegetation extend into the bank of the tributary/open water?
	□s	heltered – adjacen	n water sheltered or exposed? t open water with width < 2500 feet <u>and</u> no regular boat traffic. open water with width ≥ 2500 feet <u>or</u> regular boat traffic.
8.			ssment Area – wetland type/wetland complex condition metric (evaluate WT for all marshes and only; evaluate WC for Bottomland Hardwood Forest, Headwater Forest, and Riverine Swamp Forest
	Check a b the wetlan		n for riverine wetlands only . Select the average width for the wetland type at the assessment area (WT) and ssessment area (WC). See User Manual for WT and WC boundaries.
		//C]A ≥ 100 fee	.t
	□B [B From 80 t	o < 100 feet
			o < 80 feet o < 50 feet
			o < 50 feet
	□F [☐F From 15 t	o < 30 feet
		☐G From 5 to	< 15 feet

4. Soil Texture/Structure – assessment area condition metric (skip for all marshes)

9.	Inundation Duration – assessment area condition metric (skip for non-riparian wetlands)
	Answer for assessment area dominant landform. Answer for assessment area dominant landform. Evidence of short-duration inundation (< 7 consecutive days) Evidence of saturation, without evidence of inundation Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)
10.	Indicators of Deposition – assessment area condition metric (skip for non-riparian wetlands and all marshes)
	Consider recent deposition only (no plant growth since deposition). □ A Sediment deposition is not excessive, but at approximately natural levels. □ B Sediment deposition is excessive, but not overwhelming the wetland. □ C Sediment deposition is excessive and is overwhelming the wetland.
11.	Wetland Size – wetland type/wetland complex condition metric
	Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column. WT WC FW (if applicable) A A A ≥ 500 acres B B B From 100 to < 500 acres C C C From 50 to < 100 acres D D D From 25 to < 50 acres E E From 10 to < 25 acres F F F From 5 to < 10 acres G G G From 1 to < 5 acres H A H A From 0.5 to < 1 acre I I From 0.1 to < 0.5 acre J J J J From 0.01 to < 0.1 acre K K K K K K K C N.01 acre or assessment area is clear-cut
12.	Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)
	□A Pocosin is the full extent (≥ 90%) of its natural landscape size. □B Pocosin type is < 90% of the full extent of its natural landscape size.
12	Connectivity to Other Natural Areas – landscape condition metric
	13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This metric evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly maintained utility line corridors the width of a four-lane road or wider, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Well Loosely A A ≥ 500 acres B B From 100 to < 500 acres C C From 50 to < 100 acres D D From 10 to < 50 acres E E < 10 acres F Wetland type has a poor or no connection to other natural habitats 13b. Evaluate for marshes only.
	Yes No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.
14.	Edge Effect – wetland type condition metric (skip for all marshes and Estuarine Woody Wetland) May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors, and clear-cuts. Consider the eight main points of the compass. Artificial edge occurs within 150 feet in how many directions? If the assessment area is clear cut, select option "C." □ A 0 □ B 1 to 4 □ C 5 to 8
15.	Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)
	 □A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area. □B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata. □C Vegetation severely altered from reference in composition, or expected species are unnaturally absent (planted stands of non-characteristic species or at least one stratum inappropriately composed of a single species), or exotic species are dominant in at least one stratum.
16.	Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)
	 □A Vegetation diversity is high and is composed primarily of native species (< 10% cover of exotics). □B Vegetation diversity is low or has > 10% to 50% cover of exotics. □C Vegetation is dominated by exotic species (> 50 % cover of exotics).

17.	Vegetative	e Structure -	- assessment area/wetland type condition metric		
	_	getation pres			
	17b. Eval □A □B	[.] 25% c	nt coverage of assessment area vegetation for all marshes only . Skip to 17c for non-r coverage of vegetation coverage of vegetation	narsh wetlands.	
	struc A A		n each column for each stratum. Evaluate this portion of the metric for non-marsh space above the assessment area (AA) and the wetland type (WT) separately.	n wetlands. Co	onsider
	Canopy ⊠⊟ S⊟⊟	⊠A □B □C	Canopy closed, or nearly closed, with natural gaps associated with natural processes Canopy present, but opened more than natural gaps Canopy sparse or absent		
	Mid-Story □⊠B □	□A ⊠B □C	Dense mid-story/sapling layer Moderate density mid-story/sapling layer Mid-story/sapling layer sparse or absent		
	Shrub ⊠B □V	□A □B ⊠C	Dense shrub layer Moderate density shrub layer Shrub layer sparse or absent		
	d □V BB □C	□A □B ⊠C	Dense herb layer Moderate density herb layer Herb layer sparse or absent		
18.	Snags – w	etland type	e condition metric (skip for all marshes)		
		arge snags (lot A	(more than one) are visible (> 12 inches DBH, or large relative to species present and landso	ape stability).	
19.			ibution – wetland type condition metric (skip for all marshes)	0 : DDU)	
	p	resent.	anopy trees have stems > 6 inches in diameter at breast height (DBH); many large trees (> 1.	z iliches DBH) ai	е
			anopy trees have stems between 6 and 12 inches DBH, few are > 12 inch DBH. anopy trees are < 6 inches DBH or no trees.		
20.	Large Wo	ody Debris -	- wetland type condition metric (skip for all marshes)		
	□A L		ebris and man-placed natural debris. more than one) are visible (> 12 inches in diameter, or large relative to species present and la	ndscape stability	/).
21.	_	-	ter Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Fres		
			best describes the amount of interspersion between vegetation and open water in the grov ed areas, while solid white areas indicate open water.	<i>i</i> ing season. Pa	atterned
	6				
22.			vity – assessment area condition metric (evaluate for riparian wetlands and Salt/Brack		
	man-made	berms, beav Overbank <u>and</u> Overbank flow Overland flow	that may severely alter hydrologic connectivity include intensive ditching, fill, sedimentation, caver dams, and stream incision. Documentation required if evaluated as B, C, or D. and overland flow are not severely altered in the assessment area. by is severely altered in the assessment area. w is severely altered in the assessment area.	nannelization, div	/ersion,
		our overbank	nk <u>and</u> overland flow are severely altered in the assessment area.		

Notes

wetland located in topographic crenulation in an airfield - canpy is intensely managed to do FAA regulations

NC WAM Wetland Rating Sheet Accompanies User Manual Version 5.0

Wetland Site Name _		Date of Assessment Septe			
Wetland Type _	Headwater Forest A	ssessor Name/Organization <u>KMT,</u>	BGB/HDR		
Notes on Field Assess	ment Form (Y/N)		YES		
Presence of regulatory	considerations (Y/N)		YES		
Wetland is intensively	` '		NO		
ssessment area is located within 50 feet of a natural tributary or other open water (Y/N)					
Assessment area is su	bstantially altered by beaver (Y/N)		NO		
Assessment area expe	riences overbank flooding during norm	al rainfall conditions (Y/N)	NO		
Assessment area is on	a coastal island (Y/N)		NO		
Sub-function Rating S	ummary				
Function	Sub-function	Metrics	Rating		
Hydrology	Surface Storage and Retention	Condition	LOW		
, 0,	Sub-surface Storage and				
NV / O I''	Retention	Condition	HIGH		
Water Quality	Pathogen Change	Condition	LOW		
		Condition/Opportunity	LOW		
	5	Opportunity Presence (Y/N)	NO		
	Particulate Change	Condition	HIGH		
		Condition/Opportunity	NA		
		Opportunity Presence (Y/N)	NA		
	Soluble Change	Condition	MEDIUM		
		Condition/Opportunity	MEDIUM		
	· · · · · ·	Opportunity Presence (Y/N)	NO		
	Physical Change	Condition	LOW		
		Condition/Opportunity	LOW		
		Opportunity Presence (Y/N)	YES		
	Pollution Change	Condition	NA		
		Condition/Opportunity	NA		
11.1%	D	Opportunity Presence (Y/N)	NA NA		
Habitat	Physical Structure	Condition	LOW		
	Landscape Patch Structure	Condition	LOW		
	Vegetation Composition	Condition	LOW		
unction Rating Sumn	nary				
Function		Metrics	Rating		
Hydrology		Condition	MEDIUM		
Water Quality		Condition	LOW		
		Condition/Opportunity	LOW		
		Opportunity Presence (Y/N)	YES		
Habitat		Condition	LOW		

NC WAM FIELD ASSESSMENT RESULTS Accompanies User Manual Version 5.0

HC	ACE AID #	H	Accompanies	NCDWP#	1
108			CLT Airmout Communication	NCDWR#	Contombox 2040
		oject Nam		Date of Evaluation	September 2019
A	oplicant/Ov			Wetland Site Name	PW3-2 - Wetland 8
		etland Typ		Assessor Name/Organization	KMT, BGB/HDR
		Ecoregio		Nearest Named Water Body	Ticer Branch
	F	River Bas	in Catawba	USGS 8-Digit Catalogue Unit	03050101
		Coun	ty Mecklenburg	NCDWR Region	Mooresville
	☐ Ye	s 🛛 N	lo Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees)	35.216431, -80.955398
Ple	ase circle	and/or m	s affecting the assessment area (may no nake note on the last page if evidence of si	tressors is apparent. Consider departure f	rom reference, if appropriate, in
rec			ce, within 10 years). Noteworthy stressors i		
			modifications (examples: ditches, dams, be		
			sub-surface discharges into the wetland (ex		itants, presence of nearby septic
			ground storage tanks (USTs), hog lagoons,		a altinturaion ata \
			etation stress (examples: vegetation mortal		, sait intrusion, etc.)
	• пац	лат/ріап	community alteration (examples: mowing,	clear-cutting, exotics, etc.)	
			, , , – –	No	
Re			ations - Were regulatory considerations eva	aluated? $oxtimes$ Yes $oxtimes$ No If Yes, check all tha	at apply to the assessment area.
		dromous			
			tected species or State endangered or thre	atened species	
			rian buffer rule in effect		
			ary Nursery Area (PNA)		
			ed property	(450) (1 1 1 1 1 1 1 1 1	
ᅵ닏			of Coastal Management Area of Environme		T
ᅵ닏			am with a NCDWQ classification of SA or su	ipplemental classifications of HQW, ORW, o	or I rout
			NCNHP reference community		
	Abu	its a 303(d)-listed stream or a tributary to a 303(d)-lis	ted stream	
W	nat type of	f natural	stream is associated with the wetland, if	any? (check all that apply)	
		ckwater	· · · · · · · · · · · · · · · · · · ·	any: (encon an inacappiy)	
\boxtimes		wnwater			
			check one of the following boxes)	ınar 🗌 Wind 🔲 Both	
╽╹	iide	ai (ii tiddi,			
ls t	the assess	sment ar	ea on a coastal island? 🛭 Yes 🛛 🛚	No	
le f	tha accac	smont ar	ea's surface water storage capacity or di	uration substantially altered by heaver?	☐ Yes ⊠ No
DO	es the ass	sessmen	t area experience overbank flooding duri	ing normal raiman conditions? Tes	⊠ No
1.	Ground S	Surface C	Condition/Vegetation Condition – assessi	ment area condition metric	
	Check a l	hox in ea	ch column. Consider alteration to the grou	ind surface (GS) in the assessment area ar	nd vegetation structure (VS) in the
			Compare to reference wetland if applicable		
			lence an effect.	(See Oser Maridar). If a reference is not app	meable, then rate the assessment
		VS	ichice ari chicot.		
			Not severely altered		
	□B	⊠n ⊠B	Severely altered over a majority of the asse	essment area (ground surface alteration exa	amples: vehicle tracks, excessive
			sedimentation, fire-plow lanes, skidder tra		
			alteration examples: mechanical disturbance		
			diversity [if appropriate], hydrologic alteration		iatoj, okolio specios, grazirig, iess
				•	
2.	Surface a	nd Sub-	Surface Storage Capacity and Duration –	- assessment area condition metric	
	Check a b	oox in ea	ch column. Consider surface storage capa	acity and duration (Surf) and sub-surface sto	orage capacity and duration (Sub).
			ease and decrease in hydrology. A ditch ≤		
			affect both surface and sub-surface water.		
		Sub		gg,pp	
			Water storage capacity and duration are no	et altered.	
		_	Water storage capacity or duration are alter		cient to change vegetation).
		⊟c	Water storage capacity or duration are sub-		
	_	_	(examples: draining, flooding, soil compacti		
•	W-4 04-				• •
3.		_	rface Relief – assessment area/wetland t		·
			ch column . Select the appropriate storage	e for the assessment area (AA) and the wet	and type (WT).
	AA '				
	3a. <u>□</u> A		Majority of wetland with depressions able to		
			Majority of wetland with depressions able to		
	□c	□с	Majority of wetland with depressions able to		
	□D	$\boxtimes D$	Depressions able to pond water < 3 inches	deep	
	3b. □Δ i	Fvidence	that maximum depth of inundation is greate	er than 2 feet	
		_ *.401100	and maximum depth of multidation is gleate		
		Fyidence	that maximum depth of inundation is between	en 1 and 2 feet	
	□В∣		that maximum depth of inundation is betwee that maximum depth of inundation is less that		

	Make soil	observations withi	the three soil property groups below. Dig soil profile in the dominant assessment area landscape feature. n the top 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for regional
	indicators. 4a. □A □B □C □D □D	Sandy soil Loamy or claye	
	4b. ⊠A □B	Soil ribbon < 1 Soil ribbon ≥ 1	inch
	4c. ⊠A □B	No peat or much A peat or much	
5.	Discharge	e into Wetland – o	pportunity metric
	of sub-sur Surf	face discharges ind Sub	 n. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). Examples clude presence of nearby septic tank, underground storage tank (UST), etc.
	□B [□B Noticeable treatment	o evidence of pollutants or discharges entering the assessment area e evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the capacity of the assessment area
	□c [potentially	e evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and voverwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive ation, odor)
6.	Land Use	- opportunity me	tric (skip for non-riparian wetlands)
	to assessr and within	ment area within er	et one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources draining tire upstream watershed (WS), within 5 miles <u>and</u> within the watershed draining to the assessment area (5M), the watershed draining to the assessment area (2M).
	□в [_В _В	≥ 10% impervious surfaces Confined animal operations (or other local, concentrated source of pollutants ≥ 20% coverage of pasture
	□D [⊠E [□D □D ⊠E ⊠E	≥ 20% coverage of agricultural land (regularly plowed land) ≥ 20% coverage of maintained grass/herb ≥ 20% coverage of clear-cut land
		□G □G	Little or no opportunity to improve water quality. Lack of opportunity may result from little or no disturbance in the watershed <u>or</u> hydrologic alterations that prevent drainage <u>and/or</u> overbank flow from affecting the assessment area.
7.	Wetland /	Acting as Vegetate	ed Buffer – assessment area/wetland complex condition metric (skip for non-riparian wetlands)
	□Y	es ⊠No If Yo	hin 50 feet of a tributary or other open water? es, continue to 7b. If No, skip to Metric 8.
	Reco 7b. How	ord a note if a porti much of the first 5	nly be present on one side of the water body. Make buffer judgment based on the average width of wetland. on of the buffer has been removed or disturbed. 50 feet from the bank is wetland? (Wetland buffer need only be present on one side of the .water body. Make
	buffe ∐A ∏B	≥ 50 feet	on the average width of wetland. Record a note if a portion of the buffer has been removed or disturbed.) 50 feet
	□c □D □E	From 5 to < 1	
	7c. Tribi	utary width. If th <u>e t</u>	ributary is anastomosed, combine widths of channels/braids for a total width. > 15-feet wide
	□Y	es 🔲No	at area vegetation extend into the bank of the tributary/open water?
	□s	heltered – adjacen	n water sheltered or exposed? t open water with width < 2500 feet <u>and</u> no regular boat traffic. open water with width ≥ 2500 feet <u>or</u> regular boat traffic.
8.			ssment Area – wetland type/wetland complex condition metric (evaluate WT for all marshes and only; evaluate WC for Bottomland Hardwood Forest, Headwater Forest, and Riverine Swamp Forest
	Check a b the wetlan		n for riverine wetlands only . Select the average width for the wetland type at the assessment area (WT) and ssessment area (WC). See User Manual for WT and WC boundaries.
		//C]A ≥ 100 fee	.t
	□B [B From 80 t	o < 100 feet
			o < 80 feet o < 50 feet
			o < 50 feet
	□F [☐F From 15 t	o < 30 feet
		☐G From 5 to	< 15 feet

4. Soil Texture/Structure – assessment area condition metric (skip for all marshes)

9.	Inundation Duration – assessment area condition metric (skip for non-riparian wetlands)					
	Answer for assessment area dominant landform. A Evidence of short-duration inundation (< 7 consecutive days) B Evidence of saturation, without evidence of inundation C Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)					
10.	Indicators of Deposition – assessment area condition metric (skip for non-riparian wetlands and all marshes)					
	Consider recent deposition only (no plant growth since deposition). □ Sediment deposition is not excessive, but at approximately natural levels. □ Sediment deposition is excessive, but not overwhelming the wetland. □ C Sediment deposition is excessive and is overwhelming the wetland.					
11.	Wetland Size – wetland type/wetland complex condition metric					
	Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column. WT WC FW (if applicable) A A A S 500 acres B B B From 100 to < 500 acres C C C From 50 to < 100 acres D D D From 25 to < 50 acres E E From 10 to < 25 acres F F F From 5 to < 10 acres G G G From 1 to < 5 acres H A H A H From 0.5 to < 1 acre I I From 0.1 to < 0.5 acre J J J From 0.01 to < 0.1 acre K K K K K K C N.01 acre or assessment area is clear-cut					
12.	Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)					
	□A Pocosin is the full extent (≥ 90%) of its natural landscape size. □B Pocosin type is < 90% of the full extent of its natural landscape size.					
12	Connectivity to Other Natural Areas – landscape condition metric					
	13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This metric evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly maintained utility line corridors the width of a four-lane road or wider, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Well Loosely A A ≥ 500 acres B B From 100 to < 500 acres C C From 50 to < 100 acres D D From 10 to < 50 acres E E < 10 acres F Wetland type has a poor or no connection to other natural habitats 13b. Evaluate for marshes only.					
	☐Yes ☐No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.					
14.	Edge Effect – wetland type condition metric (skip for all marshes and Estuarine Woody Wetland) May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors, and clear-cuts. Consider the eight main points of the compass. Artificial edge occurs within 150 feet in how many directions? If the assessment area is clear cut select option "C." □ A 0 □ B 1 to 4 □ C 5 to 8					
15.	Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)					
	 □A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area. □B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing It also includes communities with exotics present, but not dominant, over a large portion of the expected strata. □C Vegetation severely altered from reference in composition, or expected species are unnaturally absent (planted stands of nor characteristic species or at least one stratum inappropriately composed of a single species), or exotic species are dominant in a least one stratum. 					
16.	Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)					
	 □A Vegetation diversity is high and is composed primarily of native species (< 10% cover of exotics). □B Vegetation diversity is low or has > 10% to 50% cover of exotics. □C Vegetation is dominated by exotic species (> 50 % cover of exotics). 					

17.	Vegetative Structure – assessment area/wetland type condition metric							
	17a. Is vegetation present? ⊠Yes □No If Yes, continue to 17b. If No, skip to Metric 18.							
	17b. Evaluate percent coverage of assessment area vegetation for all marshes only . Skip to 17c for non-marsh wetlands. □A ≥ 25% coverage of vegetation □B < 25% coverage of vegetation							
	17c. Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately. AA WT							
	© □A □A Canopy closed, or nearly closed, with natural gaps associated with natural processes □B □B Canopy present, but opened more than natural gaps □C □C Canopy sparse or absent							
	☐ A ☐ A Dense mid-story/sapling layer ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐							
	용							
	후 □A □A Dense herb layer 의 □B ■ Moderate density herb layer □C □C Herb layer sparse or absent							
18.	Snags – wetland type condition metric (skip for all marshes)							
	□A Large snags (more than one) are visible (> 12 inches DBH, or large relative to species present and landscape stability).□B Not A							
19.	Diameter Class Distribution – wetland type condition metric (skip for all marshes)							
	Majority of canopy trees have stems > 6 inches in diameter at breast height (DBH); many large trees (> 12 inches DBH) are present.							
	☐B Majority of canopy trees have stems between 6 and 12 inches DBH, few are > 12 inch DBH.☐C Majority of canopy trees are < 6 inches DBH or no trees.							
20.	Large Woody Debris – wetland type condition metric (skip for all marshes)							
	Include both natural debris and man-placed natural debris. ☐A Large logs (more than one) are visible (> 12 inches in diameter, or large relative to species present and landscape stability). ☐B Not A							
21.	Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)							
	Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.							
	DA DB DC DD							
22.	Hydrologic Connectivity – assessment area condition metric (evaluate for riparian wetlands and Salt/Brackish Marsh only)							
	Examples of activities that may severely alter hydrologic connectivity include intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, and stream incision. Documentation required if evaluated as B, C, or D.							
	 ☑A Overbank and overland flow are not severely altered in the assessment area. ☑B Overbank flow is severely altered in the assessment area. 							
	□ C Overland flow is severely altered in the assessment area. □ D Both overbank and overland flow are severely altered in the assessment area.							

Notes

wetland located in topographic crenulation in an airfield - canopy is intensely managed to do FAA regulations

NC WAM Wetland Rating Sheet Accompanies User Manual Version 5.0

Wetland Site Name	•	Date of Assessment Septe		
Wetland Type Headwater Forest		ssessor Name/Organization <u>KMT,</u>	BGB/HDR	
Notes on Field Assessi	ment Form (Y/N)		YES	
Presence of regulatory	considerations (Y/N)		YES	
Wetland is intensively managed (Y/N)				
	cated within 50 feet of a natural tributary	y or other open water (Y/N)	NO	
Assessment area is su	bstantially altered by beaver (Y/N)		NO	
Assessment area experiences overbank flooding during normal rainfall conditions (Y/N)				
Assessment area is on	a coastal island (Y/N)		NO	
Sub-function Rating S	ummary			
Function	Sub-function	Metrics	Rating	
Hydrology	Surface Storage and Retention	Condition	LOW	
, 0,	Sub-surface Storage and	O and disting		
Matan Ovality	Retention Dath area Charre	Condition	HIGH	
Water Quality	Pathogen Change	Condition	LOW	
		Condition/Opportunity	LOW	
	Double Change	Opportunity Presence (Y/N)	NO	
	Particulate Change	Condition	HIGH	
		Condition/Opportunity	NA NA	
	Calubia Changa	Opportunity Presence (Y/N)	NA MEDIUM	
	Soluble Change	Condition	MEDIUM	
		Condition/Opportunity Opportunity Presence (Y/N)	MEDIUM NO	
	Physical Change	Condition	LOW	
	i nysical change	Condition/Opportunity	LOW	
		Opportunity Presence (Y/N)	YES	
	Pollution Change	Condition	NA	
	1 ollation onlinge	Condition/Opportunity	NA	
		Opportunity Presence (Y/N)	NA	
Habitat	Physical Structure	Condition	LOW	
	Landscape Patch Structure	Condition	LOW	
	Vegetation Composition	Condition	LOW	
	· ·			
Function Rating Summ Function	iary	Metrics	Rating	
Hydrology		Condition	MEDIUM	
Water Quality		Condition	LOW	
vvalor Quality		Condition/Opportunity	LOW	
		Opportunity Presence (Y/N)	YES	
		Condition	LOW	

110	SACE AID	#	Accompanies	NCDWP#	1
US			o CLT Airport Function	NCDWR#	April 2010
_		oject Nam		Date of Evaluation	April 2019
l A	pplicant/O۱			Wetland Site Name	PW4-2 - Wetland 14
		etland Typ		Assessor Name/Organization	KMT, BGB/HDR
		Ecoregio		Nearest Named Water Body	Coffey Creek
	ı	River Basi		USGS 8-Digit Catalogue Unit	03050103
		Count		NCDWR Region	Mooresville
	∐ Ye	s 🛛 N	o Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees)	35.214516, -80.940643
Ple red	ease circle cent past (f	and/or more instance of instance and seeks, undergons of vege obtat/plant sment are adromous derally pro DWR ripa at a Primolicly owner.	s affecting the assessment area (may no ake note on the last page if evidence of size, within 10 years). Noteworthy stressors is modifications (examples: ditches, dams, be sub-surface discharges into the wetland (examples trained storage tanks (USTs), hog lagoons, etation stress (examples: vegetation mortal community alteration (examples: mowing, ea intensively managed? Yes ations - Were regulatory considerations evalue.	t be within the assessment area) tressors is apparent. Consider departure f nclude, but are not limited to the following. eaver dams, dikes, berms, ponds, etc.) amples: discharges containing obvious pollu- etc.) ity, insect damage, disease, storm damage clear-cutting, exotics, etc.) No aluated? Yes No If Yes, check all the atened species	rom reference, if appropriate, in utants, presence of nearby septic , salt intrusion, etc.)
	Abı Des Abı	its a strea signated N its a 303(o	m with a NCDWQ classification of SA or su ICNHP reference community d)-listed stream or a tributary to a 303(d)-lis	pplemental classifications of HQW, ORW, or ted stream	or Trout
□ □ □	Blad Bro Tida the asses	ckwater wnwater al (if tidal, sment are	check one of the following boxes) check one a coastal island? Yes N	nar □ Wind □ Both	
			ea's surface water storage capacity or du area experience overbank flooding duri	uration substantially altered by beaver? ing normal rainfall conditions?	☐ Yes ⊠ No ☑ No
1.	Ground S	Surface C	ondition/Vegetation Condition – assessi	ment area condition metric	
	Check a lassessment area base	box in ea ent area.	ch column. Consider alteration to the grou	ind surface (GS) in the assessment area ar (see User Manual). If a reference is not app	
	$\square A$	∏A ⊠B	sedimentation, fire-plow lanes, skidder tra	essment area (ground surface alteration exacks, bedding, fill, soil compaction, obvious ce, herbicides, salt intrusion [where appropron)	s pollutants) (vegetation structure
2.	Surface a	and Sub-S	Surface Storage Capacity and Duration -	assessment area condition metric	
	Consider deep is ex Surf	both incre cpected to Sub ⊠A □B	ease and decrease in hydrology. A ditch see affect both surface and sub-surface water. Water storage capacity and duration are now water storage capacity or duration are alternation.	red, but not substantially (typically, not suffi	water only, while a ditch > 1 foot le. cient to change vegetation).
2	_		(examples: draining, flooding, soil compacti	stantially altered (typically, alteration sufficients) on, filling, excessive sedimentation, undergovers condition matrix (skin for all marshs	round utility lines).
3.		_		ype condition metric (skip for all marshe	·
			ch column . Select the appropriate storage	e for the assessment area (AA) and the wet	and type (WT).
	⊠c □D	□A □B □C ⊠D	Majority of wetland with depressions able to Majority of wetland with depressions able to Majority of wetland with depressions able to Depressions able to pond water < 3 inches	p pond water 6 inches to 1 foot deep p pond water 3 to 6 inches deep deep	
	□В	Evidence	that maximum depth of inundation is greate that maximum depth of inundation is betwe that maximum depth of inundation is less th	en 1 and 2 feet	

		ox from each of the three soil property groups below. Dig soil profile in the dominant assessment area landscape feature observations within the top 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for region
	4a. □A ⊠B □C □D □E	Sandy soil Loamy or clayey soils exhibiting redoximorphic features (concentrations, depletions, or rhizospheres) Loamy or clayey soils not exhibiting redoximorphic features Loamy or clayey gleyed soil Histosol or histic epipedon
	4b. ⊠A □B	Soil ribbon < 1 inch Soil ribbon ≥ 1 inch
	4c. ⊠A □B	No peat or muck presence A peat or muck presence
5.	Discharge	into Wetland – opportunity metric
	of sub-surf Surf S	ox in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). Example ace discharges include presence of nearby septic tank, underground storage tank (UST), etc.
	□В □	A Little or no evidence of pollutants or discharges entering the assessment area Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area
	□c □	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation, odor)
6.	Land Use	- opportunity metric (skip for non-riparian wetlands)
	to assessm	that apply (at least one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources draining tent area within entire upstream watershed (WS), within 5 miles <u>and</u> within the watershed draining to the assessment area (5M2 miles and within the watershed draining to the assessment area (2M). M 2M
	□A [A □A ≥ 10% impervious surfaces
		B ☐B Confined animal operations (or other local, concentrated source of pollutants C ☐C ≥ 20% coverage of pasture
		D □D ≥ 20% coverage of agricultural land (regularly plowed land)
		IE ⊠E ≥ 20% coverage of maintained grass/herb IF ⊠F ≥ 20% coverage of clear-cut land
		If \(\sum \) \(
7.	Wetland A	cting as Vegetated Buffer – assessment area/wetland complex condition metric (skip for non-riparian wetlands)
		sessment area within 50 feet of a tributary or other open water?
	⊠Y∈ Wetl:	s ∏No If Yes, continue to 7b. If No, skip to Metric 8. Ind buffer need only be present on one side of the water body. Make buffer judgment based on the average width of wetlan
	Reco	rd a note if a portion of the buffer has been removed or disturbed.
		much of the first 50 feet from the bank is wetland? (Wetland buffer need only be present on one side of the .water body. Mak judgment based on the average width of wetland. Record a note if a portion of the buffer has been removed or disturbed.)
	□A	≥ 50 feet
	□B □C	From 30 to < 50 feet From 15 to < 30 feet
		From 5 to < 15 feet
	⊠E 7c. Tribu	< 5 feet <u>or</u> buffer bypassed by ditches arry width. If the tributary is anastomosed, combine widths of channels/braids for a total width.
		5-feet wide
		ots of assessment area vegetation extend into the bank of the tributary/open water?
	⊠Y∈ 7e. Is str	s ∏No eam or other open water sheltered or exposed?
		eltered – adjacent open water with width < 2500 feet <u>and</u> no regular boat traffic. posed – adjacent open water with width ≥ 2500 feet <u>or</u> regular boat traffic.
8.		idth at the Assessment Area – wetland type/wetland complex condition metric (evaluate WT for all marshes and Woody Wetland only; evaluate WC for Bottomland Hardwood Forest, Headwater Forest, and Riverine Swamp Fore
	Check a be	ox in each column for riverine wetlands only. Select the average width for the wetland type at the assessment area (WT) are complex at the assessment area (WC). See User Manual for WT and WC boundaries. C
		G A ≥ 100 feet
	□В □	B From 80 to < 100 feet
		C From 50 to < 80 feet D From 40 to < 50 feet
		E From 30 to < 40 feet
	⊠F ∑	F From 15 to < 30 feet
		G From 5 to < 15 feet

9.	Inundation Duration – assessment area condition metric (skip for non-riparian wetlands)
	Answer for assessment area dominant landform. Answer for assessment area dominant landform. Evidence of short-duration inundation (< 7 consecutive days) Evidence of saturation, without evidence of inundation Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)
10.	Indicators of Deposition – assessment area condition metric (skip for non-riparian wetlands and all marshes)
	Consider recent deposition only (no plant growth since deposition). \[\begin{align*} \begin{align*}
11.	Wetland Size – wetland type/wetland complex condition metric
	Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column. WT WC FW (if applicable) A A ≥ 500 acres B B B From 100 to < 500 acres C C C From 50 to < 100 acres D D D From 25 to < 50 acres F From 10 to < 25 acres F F F From 5 to < 10 acres G G G G From 1 to < 5 acres H H H H From 0.5 to < 1 acre I I I From 0.1 to < 0.5 acre
	\square K \square K < 0.01 acre <u>or</u> assessment area is clear-cut
12.	Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)
	□A Pocosin is the full extent (≥ 90%) of its natural landscape size.□B Pocosin type is < 90% of the full extent of its natural landscape size.
13.	Connectivity to Other Natural Areas – landscape condition metric
	13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This metric evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly maintained utility line corridors the width of a four-lane road or wider, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Well Loosely A A ≥ 500 acres B B From 100 to < 500 acres C C From 50 to < 100 acres D D From 10 to < 50 acres E SF Wetland type has a poor or no connection to other natural habitats
	13b. Evaluate for marshes only.
	☐Yes ☐No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.
14.	Edge Effect – wetland type condition metric (skip for all marshes and Estuarine Woody Wetland) May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors, and clear-cuts. Consider the eight main points of the compass. Artificial edge occurs within 150 feet in how many directions? If the assessment area is clear cut, select option "C." □ A 0 □ B 1 to 4 □ C 5 to 8
15.	Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)
	 □A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area. □B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata. □ Vegetation severely altered from reference in composition, or expected species are unnaturally absent (planted stands of non-characteristic species or at least one stratum inappropriately composed of a single species), or exotic species are dominant in at least one stratum.
16.	Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)
	 □A Vegetation diversity is high and is composed primarily of native species (< 10% cover of exotics). □B Vegetation diversity is low or has > 10% to 50% cover of exotics. □C Vegetation is dominated by exotic species (> 50 % cover of exotics).

17.	Vegetative Structure – assessment area/wetland type condition metric 17a. Is vegetation present? ☐ Yes ☐ No If Yes, continue to 17b. If No, skip to Metric 18.
	☐ Tes ☐ INO II Tes, continue to 17b. II No, skip to Metric To.
	17b. Evaluate percent coverage of assessment area vegetation for all marshes only . Skip to 17c for non-marsh wetlands. □A ≥ 25% coverage of vegetation □B < 25% coverage of vegetation
	17c. Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Conside structure in airspace above the assessment area (AA) and the wetland type (WT) separately. AA WT
	data of the control
	Dense mid-story/sapling layer
	요
	_e □A □A Dense herb layer = □B □B Moderate density herb layer □C □C Herb layer sparse or absent
18.	Snags – wetland type condition metric (skip for all marshes)
	□A Large snags (more than one) are visible (> 12 inches DBH, or large relative to species present and landscape stability).□B Not A
19.	Diameter Class Distribution – wetland type condition metric (skip for all marshes)
	A Majority of canopy trees have stems > 6 inches in diameter at breast height (DBH); many large trees (> 12 inches DBH) are present.
	 □B Majority of canopy trees have stems between 6 and 12 inches DBH, few are > 12 inch DBH. □C Majority of canopy trees are < 6 inches DBH or no trees.
20.	Large Woody Debris – wetland type condition metric (skip for all marshes)
	Include both natural debris and man-placed natural debris. ☐A Large logs (more than one) are visible (> 12 inches in diameter, or large relative to species present and landscape stability). ☐B Not A
21.	Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)
	Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water. A B C D
22.	Hydrologic Connectivity – assessment area condition metric (evaluate for riparian wetlands and Salt/Brackish Marsh only)
	Examples of activities that may severely alter hydrologic connectivity include intensive ditching, fill, sedimentation, channelization, diversion man-made berms, beaver dams, and stream incision. Documentation required if evaluated as B, C, or D. \[\sum A \] Overbank \(\frac{\text{and}}{\text{overland}} \) overland flow are not severely altered in the assessment area. \[\sum B \] Overbank flow is severely altered in the assessment area.
	□C Overland flow is severely altered in the assessment area. □D Both overland sand overland flow are severely altered in the assessment area.
	TO DOM OVERDADK AND OVERAND NOW ARE SEVERENTABLE OF THE ASSESSMENTALES.

wetland located in topographic crenulation in an airfield - canopy is intensely managed to do FAA regulations; evidence of regulary mowing and maintenance

Wetland Site Name _I		Date of Assessment April 2	
Wetland Type _I	Headwater Forest A	Assessor Name/Organization KMT,	BGB/HDR
Notes on Field Assessi	ment Form (Y/N)		YES
Presence of regulatory	considerations (Y/N)		YES
Wetland is intensively r	managed (Y/N)		NO
Assessment area is loc	cated within 50 feet of a natural tributar	y or other open water (Y/N)	YES
Assessment area is su	bstantially altered by beaver (Y/N)		NO
Assessment area expe	riences overbank flooding during norm	al rainfall conditions (Y/N)	NO
Assessment area is on	a coastal island (Y/N)		NO
Sub-function Rating St	ummarv		
Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention Sub-surface Storage and	Condition	LOW
	Retention	Condition	HIGH
Water Quality	Pathogen Change	Condition	LOW
		Condition/Opportunity	LOW
		Opportunity Presence (Y/N)	NO
	Particulate Change	Condition	LOW
		Condition/Opportunity	NA
		Opportunity Presence (Y/N)	NA
	Soluble Change	Condition	MEDIUM
		Condition/Opportunity	MEDIUM
		Opportunity Presence (Y/N)	NO
	Physical Change	Condition	HIGH
		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	YES
	Pollution Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence (Y/N)	NA
Habitat	Physical Structure	Condition	LOW
	Landscape Patch Structure	Condition	LOW
	Vegetation Composition	Condition	LOW
Function Rating Summ	nary		
Function	•	Metrics	Rating
Hydrology		Condition	MEDIUM
Water Quality		Condition	LOW
-		Condition/Opportunity	MEDIUM
		Opportunity Presence (Y/N)	YES
Habitat		Condition	LOW

110	SACE AID	#	Accompanies	NCDWP#	1
08			o CLT Airport Evenesian	NCDWR#	April 2010
		oject Nam		Date of Evaluation	April 2019
l A	pplicant/O			Wetland Site Name	PW5-2 - Wetland 16
		etland Typ		Assessor Name/Organization	KMT, BGB/HDR
		Ecoregio		Nearest Named Water Body	Coffey Creek
		River Basi		USGS 8-Digit Catalogue Unit	03050103
		Count		NCDWR Region	Mooresville
	☐ Ye	s 🛛 N	o Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees)	35.204049, -80.954101
Is Re	ridence of ease circle cent past (for ease cent pas	stressors and/or m for instance drological face and s ks, underg ns of vege bitat/plant sment are dromous lerally pro DWR ripa uts a Prima blicly owne	s affecting the assessment area (may no ake note on the last page if evidence of ste, within 10 years). Noteworthy stressors is modifications (examples: ditches, dams, be sub-surface discharges into the wetland (examound storage tanks (USTs), hog lagoons, tation stress (examples: vegetation mortal community alteration (examples: mowing, examples: were regulatory considerations evantisms - Were regulatory considerations evantisms buffer rule in effect ary Nursery Area (PNA) and property	t be within the assessment area) tressors is apparent. Consider departure f nclude, but are not limited to the following. eaver dams, dikes, berms, ponds, etc.) amples: discharges containing obvious polluetc.) ity, insect damage, disease, storm damage clear-cutting, exotics, etc.) No aluated? Yes No If Yes, check all the atened species	rom reference, if appropriate, in utants, presence of nearby septic , salt intrusion, etc.)
	Des Abu	its a strea signated N its a 303(d	of Coastal Management Area of Environment with a NCDWQ classification of SA or su CNHP reference community a)-listed stream or a tributary to a 303(d)-listed stream is associated with the wetland, if	replemental classifications of HQW, ORW, or ted stream	or Trout
	Bla Bro Tida	ckwater wnwater al (if tidal,	check one of the following boxes) □ Lu	ınar 🗌 Wind 🔲 Both	
			ea's surface water storage capacity or du	uration substantially altered by beaver? ing normal rainfall conditions? Yes	☐ Yes
1.	Check a lassessme area base	box in eac ent area. (ment area condition metric und surface (GS) in the assessment area ar (see User Manual). If a reference is not app	
	$\boxtimes A$	⊠A □B	sedimentation, fire-plow lanes, skidder tra	essment area (ground surface alteration exacks, bedding, fill, soil compaction, obvious ce, herbicides, salt intrusion [where appropron)	s pollutants) (vegetation structure
2.	Surface a	and Sub-S	Surface Storage Capacity and Duration –	- assessment area condition metric	
	Consider deep is ex Surf ⊠A □B	both incre cpected to Sub ⊠A □B	ase and decrease in hydrology. A ditch ≤ affect both surface and sub-surface water. Water storage capacity and duration are no Water storage capacity or duration are alter	acity and duration (Surf) and sub-surface sto 1 foot deep is considered to affect surface . Consider tidal flooding regime, if applicable at altered. red, but not substantially (typically, not suffice stantially altered (typically, alteration sufficient	water only, while a ditch > 1 foot le. cient to change vegetation).
3.			(examples: draining, flooding, soil compacti	ion, filling, excessive sedimentation, underg ype condition metric (skip for all marshe	round utility lines).
٥.		_			·
			on column. Select the appropriate storage	e for the assessment area (AA) and the wetl	anu type (w I).
	⊠c □D	□A □B □C ⊠D	Majority of wetland with depressions able to Majority of wetland with depressions able to Majority of wetland with depressions able to Depressions able to pond water < 3 inches	p pond water 6 inches to 1 foot deep p pond water 3 to 6 inches deep deep	
	□В	Evidence	that maximum depth of inundation is greate that maximum depth of inundation is betwe that maximum depth of inundation is less th	en 1 and 2 feet	

	Make soil ob	t from each of the three soil property groups below . Dig soil profile in the dominant assessment area landscape feature. servations within the top 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for regiona
	indicators. 4a. □A □B □C □D □D	Sandy soil Loamy or clayey soils exhibiting redoximorphic features (concentrations, depletions, or rhizospheres) Loamy or clayey soils not exhibiting redoximorphic features Loamy or clayey gleyed soil Histosol or histic epipedon
	4b. ⊠A □B	Soil ribbon < 1 inch
	4c. ⊠A □B	No peat or muck presence A peat or muck presence
5.	Discharge in	nto Wetland – opportunity metric
	of sub-surfac Surf Sub	
	⊠A ⊠ <i>A</i> □B □E	
	□c □c	Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation, odor)
6.	Land Use -	opportunity metric (skip for non-riparian wetlands)
	to assessme	at apply (at least one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources draining to treat area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M) miles and within the watershed draining to the assessment area (2M). 2M
	□A □ <i>A</i> □B □E	B DB Confined animal operations (or other local, concentrated source of pollutants
	□D □C ⊠E ⊠E □F □F	D
	□G □G	Little or no opportunity to improve water quality. Lack of opportunity may result from little or no disturbance in the watershed <u>or</u> hydrologic alterations that prevent drainage <u>and/or</u> overbank flow from affecting the assessment area.
7.	Wetland Act	ing as Vegetated Buffer – assessment area/wetland complex condition metric (skip for non-riparian wetlands)
	⊠Yes	ssment area within 50 feet of a tributary or other open water? □No If Yes, continue to 7b. If No, skip to Metric 8. d buffer need only be present on one side of the water body. Make buffer judgment based on the average width of wetland.
	Record 7b. How m	l a note if a portion of the buffer has been removed or disturbed. uch of the first 50 feet from the bank is wetland? (Wetland buffer need only be present on one side of the .water body. Make
	□A □B	udgment based on the average width of wetland. Record a note if a portion of the buffer has been removed or disturbed.) ≥ 50 feet From 30 to < 50 feet
	□c ⊠d □e	From 15 to < 30 feet From 5 to < 15 feet < 5 feet <u>or</u> buffer bypassed by ditches
	<u></u> ≤ 15	ry width. If the tributary is anastomosed, combine widths of channels/braids for a total width. -feet wide ⊠> 15-feet wide □ Other open water (no tributary present) ts of assessment area vegetation extend into the bank of the tributary/open water?
		⊠No am or other open water sheltered or exposed? tered – adjacent open water with width < 2500 feet <u>and</u> no regular boat traffic.
8.		osed – adjacent open water with width ≥ 2500 feet <u>or</u> regular boat traffic. Ith at the Assessment Area – wetland type/wetland complex condition metric (evaluate WT for all marshes and
	only)	oody Wetland only; evaluate WC for Bottomland Hardwood Forest, Headwater Forest, and Riverine Swamp Forest in each column for riverine wetlands only. Select the average width for the wetland type at the assessment area (WT) and
	the wetland o	complex at the assessment area (WC). See User Manual for WT and WC boundaries.
	□A □ <i>A</i> □B □E	
	⊠c ⊠c	From 50 to < 80 feet
		From 5 to < 15 feet
		4 < 5 feet

9.	Inundation Duration – assessment area condition metric (skip for non-riparian wetlands)
	Answer for assessment area dominant landform. Answer for assessment area dominant landform. Evidence of short-duration inundation (< 7 consecutive days) Evidence of saturation, without evidence of inundation Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)
10.	Indicators of Deposition – assessment area condition metric (skip for non-riparian wetlands and all marshes)
	Consider recent deposition only (no plant growth since deposition). □ A Sediment deposition is not excessive, but at approximately natural levels. □ B Sediment deposition is excessive, but not overwhelming the wetland. □ C Sediment deposition is excessive and is overwhelming the wetland.
11.	Wetland Size – wetland type/wetland complex condition metric
	Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column. WT WC FW (if applicable) A A A ≥ 500 acres B B B From 100 to < 500 acres C C C From 50 to < 100 acres D D D From 25 to < 50 acres E E From 10 to < 25 acres F F F From 5 to < 10 acres G G G From 1 to < 5 acres H H H From 0.5 to < 1 acre I I I From 0.1 to < 0.5 acre J J J From 0.01 to < 0.1 acre K K K K K K K C K < 0.01 acre or assessment area is clear-cut
12.	Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)
	□A Pocosin is the full extent (≥ 90%) of its natural landscape size. □B Pocosin type is < 90% of the full extent of its natural landscape size.
40	Connectivity to Other Natural Areas – landscape condition metric
	13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This metric evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly maintained utility line corridors the width of a four-lane road or wider, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Well Loosely A A ≥ 500 acres B B From 100 to < 500 acres C C From 50 to < 100 acres D D From 10 to < 50 acres E C C From 50 to < 100 acres F C C C From 40 to < 50 acres F C C C From 50 to < 100 acres C C C From 50 to < 100 acres C C C From 50 to < 50 acres C C C From 50 to < 50 acres C C C From 50 to < 50 acres C C C From 50 to < 50 acres C C C From 50 to < 50 acres C C C From 50 to < 50 acres C C C From 50 to < 50 acres C C C From 50 to < 50 acres C C C From 50 to < 50 acres C C C From 50 to < 50 acres C C C From 50 to < 50 acres C C C From 50 to < 50 acres C C C From 50 to < 50 acres C C C From 50 to < 50 acres C C C From 50 to < 50 acres C C C From 50 to < 50 acres C C C From 50 to < 50 acres
	☐Yes ☐No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.
14.	Edge Effect – wetland type condition metric (skip for all marshes and Estuarine Woody Wetland) May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors, and clear-cuts. Consider the eight main points of the compass. Artificial edge occurs within 150 feet in how many directions? If the assessment area is clear cut, select option "C." □ A 0 □ B 1 to 4 □ C 5 to 8
15.	Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)
	 ☑A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area. ☐B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata. ☐C Vegetation severely altered from reference in composition, or expected species are unnaturally absent (planted stands of non-characteristic species or at least one stratum inappropriately composed of a single species), or exotic species are dominant in at least one stratum.
16.	Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)
	 □A Vegetation diversity is high and is composed primarily of native species (< 10% cover of exotics). □B Vegetation diversity is low or has > 10% to 50% cover of exotics. □C Vegetation is dominated by exotic species (> 50 % cover of exotics).

17.	17. Vegetative Structure – assessment area/wetland type condition metric				
	17a.		ation pres		
		⊠Yes	∐No	If Yes, continue to 17b. If No, skip to Metric 18.	
	17b.	Evaluat □A □B	≥ 25% c	coverage of assessment area vegetation for all marshes only . Skip to 17c for non-marsh wetlands. overage of vegetation overage of vegetation	
	17c.	structur	e in airsp	each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Considere above the assessment area (AA) and the wetland type (WT) separately.	de
		AA □A □B □C	WT ⊠A □B □C	Canopy closed, or nearly closed, with natural gaps associated with natural processes Canopy present, but opened more than natural gaps Canopy sparse or absent	
	Mid-Story	□A ⊠B □C	□A ⊠B □C	Dense mid-story/sapling layer Moderate density mid-story/sapling layer Mid-story/sapling layer sparse or absent	
	Shrub	B □A B □C	□A ⊠B □C	Dense shrub layer Moderate density shrub layer Shrub layer sparse or absent	
	Herb	A ⊠B □C	□A □B ⊠C	Dense herb layer Moderate density herb layer Herb layer sparse or absent	
18.	Snag	ıs – wetla	and type	condition metric (skip for all marshes)	
	□a ⊠B	Larg Not <i>i</i>		nore than one) are visible (> 12 inches DBH, or large relative to species present and landscape stability).	
19.	Diam	neter Clas	ss Distrib	ution – wetland type condition metric (skip for all marshes)	
	□A			opy trees have stems > 6 inches in diameter at breast height (DBH); many large trees (> 12 inches DBH) are	
	□B ⊠C		rity of can	opy trees have stems between 6 and 12 inches DBH, few are > 12 inch DBH. opy trees are < 6 inches DBH or no trees.	
20.	Larg	e Woody	Debris -	wetland type condition metric (skip for all marshes)	
	Includ □A ⊠B		e logs (mo	ris and man-placed natural debris. re than one) are visible (> 12 inches in diameter, or large relative to species present and landscape stability).	
21.	Vege	tation/O	oen Wate	Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)	
				st describes the amount of interspersion between vegetation and open water in the growing season. Patterr areas, while solid white areas indicate open water. □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	nec
		0	S S		
22.	-	_		y – assessment area condition metric (evaluate for riparian wetlands and Salt/Brackish Marsh only)	
				at may severely alter hydrologic connectivity include intensive ditching, fill, sedimentation, channelization, diversions and etraps includes. Programmentation required if evaluated as R. C. or D.	on
	man- ⊠A			er dams, and stream incision. Documentation required if evaluated as B, C, or D. overland flow are not severely altered in the assessment area.	
	□в	Over	bank flow	is severely altered in the assessment area.	
				s severely altered in the assessment area. and overland flow are severely altered in the assessment area.	

Wetland Site Name F	_	Date of Assessment April 2	
Wetland Type <u>F</u>	leadwater Forest	Assessor Name/Organization KMT,	BGB/HDR
Notes on Field Assessn	nent Form (Y/N)		NO
Presence of regulatory	considerations (Y/N)		YES
Wetland is intensively n	nanaged (Y/N)		NO
Assessment area is loc	ated within 50 feet of a natural tributa	ry or other open water (Y/N)	YES
Assessment area is sub	estantially altered by beaver (Y/N)		NO
Assessment area exper	iences overbank flooding during norn	nal rainfall conditions (Y/N)	NO
Assessment area is on	a coastal island (Y/N)		NO
Sub-function Rating Su	mmarv		
Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention Sub-surface Storage and	Condition	MEDIUM
	Retention	Condition	HIGH
Water Quality	Pathogen Change	Condition	LOW
		Condition/Opportunity	LOW
		Opportunity Presence (Y/N)	NO
	Particulate Change	Condition	HIGH
		Condition/Opportunity	NA
		Opportunity Presence (Y/N)	NA
	Soluble Change	Condition	MEDIUM
		Condition/Opportunity	MEDIUM
		Opportunity Presence (Y/N)	NO
	Physical Change	Condition	MEDIUM
		Condition/Opportunity	MEDIUM
		Opportunity Presence (Y/N)	YES
	Pollution Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence (Y/N)	NA
Habitat	Physical Structure	Condition	LOW
	Landscape Patch Structure	Condition	MEDIUM
	Vegetation Composition	Condition	HIGH
unction Rating Summ	ary		
Function		Metrics	Rating
Hydrology		Condition	HIGH
Water Quality		Condition	MEDIUM
		Condition/Opportunity	MEDIUM
		Opportunity Presence (Y/N)	YES
Habitat		Condition	MEDIUM

USACE AID#		ssampamos	NCDWR#	
	t Name	CLT Airport Expansion	Date of Evaluation	April 2019
Applicant/Owne		CLT	Wetland Site Name	PW6-2 - Wetland 17
Wetlar	nd Type	Headwater Forest	Assessor Name/Organization	KMT, BGB/HDR
Level III Ec			Nearest Named Water Body	Coffey Creek
	er Basin		USGS 8-Digit Catalogue Unit	03050103
	County	Mecklenburg	NCDWR Region	Mooresville
☐ Yes	⊠ No	Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees)	35.203572, -80.953350
Please circle and recent past (for in recent past (for in Hydrold Surface tanks, in Signs of Habitat Is the assessment Segulatory Con Anadro Pedera NCDW Abuts a Publicky N.C. Di	d/or makenstance, ogical moderand subundergroof vegetat /plant coent area sideration R riparian Primary y owned ivision of	within 10 years). Noteworthy stressors in diffications (examples: ditches, dams, but be surface discharges into the wetland (extended to the stress (examples: vegetation mortal	tressors is apparent. Consider departure finclude, but are not limited to the following. eaver dams, dikes, berms, ponds, etc.) amples: discharges containing obvious pollu etc.) lity, insect damage, disease, storm damage, clear-cutting, exotics, etc.) No aluated? Yes No If Yes, check all that eatened species	ntants, presence of nearby septic , salt intrusion, etc.) nt apply to the assessment area.
Abuts a	ated NCI a 303(d)-l	NHP reference community isted stream or a tributary to a 303(d)-lis		or Trout
☐ Blackw ☐ Brown ☐ Tidal (if	rater water f tidal, ch ent area	eam is associated with the wetland, if eck one of the following boxes) on a coastal island? Yes !	unar □ Wind □ Both No	
			uration substantially altered by beaver? ing normal rainfall conditions? Yes	☐ Yes ⊠ No ⊠ No
Check a box	in each area. Co	mpare to reference wetland if applicable	ment area condition metric und surface (GS) in the assessment area an (see User Manual). If a reference is not app	
⊠A ⊠A □B □E	3 Se sed alte	dimentation, fire-plow lanes, skidder tra	essment area (ground surface alteration exa icks, bedding, fill, soil compaction, obvious ce, herbicides, salt intrusion [where appropri on)	pollutants) (vegetation structure
Check a box Consider both	in each h increas cted to af	e and decrease in hydrology. A ditch ≤	 assessment area condition metric acity and duration (Surf) and sub-surface sto 1 foot deep is considered to affect surface Consider tidal flooding regime, if applicabl 	water only, while a ditch > 1 foot
⊠A ⊠A □B □E □C □C	Wa Wa Wa	ater storage capacity or duration are sub	ot altered. red, but not substantially (typically, not suffic stantially altered (typically, alteration sufficie ion, filling, excessive sedimentation, underg	ent to result in vegetation change)
3. Water Storag	ge/Surfa	ce Relief – assessment area/wetland t	type condition metric (skip for all marshe	es)
Check a box	in each	column. Select the appropriate storage	e for the assessment area (AA) and the wetl	and type (WT).
AA WT		-		,
3a.	B Ma C Ma D De	pjority of wetland with depressions able to pjority of wetland with depressions able to pjority of wetland with depressions able to pressions able to pond water < 3 inches	o pond water 6 inches to 1 foot deep o pond water 3 to 6 inches deep deep	
☐B Evid	dence tha	at maximum depth of inundation is greate at maximum depth of inundation is betwe at maximum depth of inundation is less t	een 1 and 2 feet	

	Check a box from each of the three soil property groups below. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for regional indicators. 4a. A Sandy soil B Loamy or clayey soils exhibiting redoximorphic features (concentrations, depletions, or rhizospheres) C Loamy or clayey soils not exhibiting redoximorphic features Loamy or clayey gleyed soil
	 ☐E Histosol or histic epipedon 4b. ☒A Soil ribbon < 1 inch ☐B Soil ribbon ≥ 1 inch
	4c. ⊠A No peat or muck presence ☐B A peat or muck presence
5.	Discharge into Wetland – opportunity metric Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). Examples of sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc. Surf Sub A A Little or no evidence of pollutants or discharges entering the assessment area B B Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area C C C Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation, odor)
6.	Land Use – opportunity metric (skip for non-riparian wetlands) Check all that apply (at least one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources draining to assessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), and within 2 miles and within the watershed draining to the assessment area (2M). WS 5M 2M A A A > 10% impervious surfaces B B B Confined animal operations (or other local, concentrated source of pollutants C C C C C ≥ 20% coverage of pasture D D D D D ≥ 20% coverage of agricultural land (regularly plowed land) E E E E E ≥ 20% coverage of maintained grass/herb F F F F ≥ 20% coverage of clear-cut land G G G G G G Little or no opportunity to improve water quality. Lack of opportunity may result from little or no disturbance in the watershed or hydrologic alterations that prevent drainage and/or overbank flow from affecting the assessment area.
7.	Wetland Acting as Vegetated Buffer – assessment area/wetland complex condition metric (skip for non-riparian wetlands)
	 7a. Is assessment area within 50 feet of a tributary or other open water?
8.	Wetland Width at the Assessment Area – wetland type/wetland complex condition metric (evaluate WT for all marshes and Estuarine Woody Wetland only; evaluate WC for Bottomland Hardwood Forest, Headwater Forest, and Riverine Swamp Forest only) Check a box in each column for riverine wetlands only. Select the average width for the wetland type at the assessment area (WT) and the wetland complex at the assessment area (WC). See User Manual for WT and WC boundaries. WT WC A A ≥ 100 feet B B From 80 to < 100 feet C C From 50 to < 80 feet D D From 40 to < 50 feet E F From 30 to < 40 feet F F F From 15 to < 30 feet G G G From 5 to < 15 feet

9.	Inundation Duration – assessment area condition metric (skip for non-riparian wetlands)
	Answer for assessment area dominant landform. A Evidence of short-duration inundation (< 7 consecutive days) Evidence of saturation, without evidence of inundation C Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)
10.	Indicators of Deposition – assessment area condition metric (skip for non-riparian wetlands and all marshes)
	Consider recent deposition only (no plant growth since deposition). □ A Sediment deposition is not excessive, but at approximately natural levels. □ B Sediment deposition is excessive, but not overwhelming the wetland. □ C Sediment deposition is excessive and is overwhelming the wetland.
11.	Wetland Size – wetland type/wetland complex condition metric
	Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column. WT WC FW (if applicable) A A A ≥ 500 acres B B B From 100 to < 500 acres C C C From 50 to < 100 acres D D D From 25 to < 50 acres E E From 10 to < 25 acres F F F From 5 to < 10 acres G G G From 1 to < 5 acres H H H From 0.5 to < 1 acre I I I From 0.1 to < 0.5 acre J J J J J From 0.01 to < 0.1 acre K K K K K K C K < 0.01 acre or assessment area is clear-cut
12.	Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)
	□A Pocosin is the full extent (≥ 90%) of its natural landscape size. □B Pocosin type is < 90% of the full extent of its natural landscape size.
12	Connectivity to Other Natural Areas – landscape condition metric
	 13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This metric evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly maintained utility line corridors the width of a four-lane road or wider, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Well Loosely
	,
14.	Edge Effect – wetland type condition metric (skip for all marshes and Estuarine Woody Wetland) May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors, and clear-cuts. Consider the eight main points of the compass. Artificial edge occurs within 150 feet in how many directions? If the assessment area is clear cut, select option "C." □ A 0 □ B 1 to 4 □ C 5 to 8
15.	Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)
	 ☑A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area. ☐B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata. ☐C Vegetation severely altered from reference in composition, or expected species are unnaturally absent (planted stands of non-characteristic species or at least one stratum inappropriately composed of a single species), or exotic species are dominant in at least one stratum.
16.	Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)
	 □A Vegetation diversity is high and is composed primarily of native species (< 10% cover of exotics). □B Vegetation diversity is low or has > 10% to 50% cover of exotics. □C Vegetation is dominated by exotic species (> 50 % cover of exotics).

17.	Vege	tative St	ructure –	assessment area/wetland type condition metric	
	17a.		ation pres		
		⊠Yes	∐No	If Yes, continue to 17b. If No, skip to Metric 18.	
	17b.	Evaluate □A □B	≥ 25% c	coverage of assessment area vegetation for all marshes only . Skip to 17c for non-marsh wetlands. overage of vegetation overage of vegetation	
	17c.	structure	e in airsp	each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider above the assessment area (AA) and the wetland type (WT) separately.	side
		AA □A □B □C	WT ⊠A □B □C	Canopy closed, or nearly closed, with natural gaps associated with natural processes Canopy present, but opened more than natural gaps Canopy sparse or absent	
	Mid-Story	□A ⊠B □C	□A ⊠B □C	Dense mid-story/sapling layer Moderate density mid-story/sapling layer Mid-story/sapling layer sparse or absent	
	Shrub	B □A B □C	□A □B ⊠C	Dense shrub layer Moderate density shrub layer Shrub layer sparse or absent	
	Herb	A ⊠B □C	□A □B ⊠C	Dense herb layer Moderate density herb layer Herb layer sparse or absent	
18.	Snag	ıs – wetla	and type	condition metric (skip for all marshes)	
	□A ⊠B		e snags (r	nore than one) are visible (> 12 inches DBH, or large relative to species present and landscape stability).	
19.	Diam	neter Clas	ss Distrib	ution – wetland type condition metric (skip for all marshes)	
	□A			opy trees have stems > 6 inches in diameter at breast height (DBH); many large trees (> 12 inches DBH) are	
	□в ⊠с		rity of can	opy trees have stems between 6 and 12 inches DBH, few are > 12 inch DBH. opy trees are < 6 inches DBH or no trees.	
20.	Larg	e Woody	Debris -	wetland type condition metric (skip for all marshes)	
	Includ □A ⊠B		e logs (mo	ris and man-placed natural debris. re than one) are visible (> 12 inches in diameter, or large relative to species present and landscape stability).	
21.	Vege	tation/O	oen Wate	Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only	y)
				st describes the amount of interspersion between vegetation and open water in the growing season. Patter areas, while solid white areas indicate open water. □B □C □D	erned
			S S		
22.	-	_		y – assessment area condition metric (evaluate for riparian wetlands and Salt/Brackish Marsh only)	
				at may severely alter hydrologic connectivity include intensive ditching, fill, sedimentation, channelization, diver	rsion
	man- ⊠A			er dams, and stream incision. Documentation required if evaluated as B, C, or D. overland flow are not severely altered in the assessment area.	
	□в	Over	bank flow	is severely altered in the assessment area.	
				s severely altered in the assessment area. and overland flow are severely altered in the assessment area.	

Wetland Site NameI		Date of Assessment April 2	
Wetland Type _I	Headwater Forest A	Assessor Name/Organization <u>KMT,</u>	BGB/HDR
Notes on Field Assessi	ment Form (Y/N)		NO
Presence of regulatory	considerations (Y/N)		YES
Wetland is intensively r	managed (Y/N)		NO
Assessment area is loc	cated within 50 feet of a natural tributar	y or other open water (Y/N)	YES
Assessment area is su	bstantially altered by beaver (Y/N)		NO
Assessment area expe	riences overbank flooding during norm	al rainfall conditions (Y/N)	NO
Assessment area is on	a coastal island (Y/N)		NO
Sub-function Rating S	ımmarv		
Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	MEDIUM
,	Sub-surface Storage and		
NA	Retention	Condition	HIGH
Water Quality	Pathogen Change	Condition/Opportunity	HIGH
		Condition/Opportunity	HIGH NO
	Double Change	Opportunity Presence (Y/N)	HIGH
	Particulate Change	Condition Condition/Opportunity	NA
		• • •	NA NA
	Salubla Changa	Opportunity Presence (Y/N) Condition	MEDIUM
	Soluble Change	Condition/Opportunity	MEDIUM
		Opportunity Presence (Y/N)	NO
	Physical Change	Condition	MEDIUM
	1 Hysical Change	Condition/Opportunity	MEDIUM
		Opportunity Presence (Y/N)	YES
	Pollution Change	Condition	NA
	. s.i.a.i.o.i. G.i.a.i.go	Condition/Opportunity	NA
		Opportunity Presence (Y/N)	NA
Habitat	Physical Structure	Condition	LOW
	Landscape Patch Structure	Condition	MEDIUM
	Vegetation Composition	Condition	HIGH
Function Rating Summ	nary.		
Function	ıwı y	Metrics	Rating
Hydrology		Condition	HIGH
Water Quality		Condition	HIGH
s.c. Quanty		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	YES
Habitat		Condition	MEDIUM

USA	ACE AID 7	 		,	NCDWR#	
		ject Nam	ne	CLT Airport Expansion	Date of Evaluation	April 2019
Apı	olicant/Ov			CLT	Wetland Site Name	PW7-2 - Wetland 18
	We	tland Typ	е	Headwater Forest	Assessor Name/Organization	KMT, BGB/HDR
		Ecoregic		Piedmont	Nearest Named Water Body	Coffey Creek
	F	River Bas			USGS 8-Digit Catalogue Unit	03050103
	_	Coun		Mecklenburg	NCDWR Region	Mooresville
	☐ Ye	s 🛛 N	lo	Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees)	35.198073, -80.952080
Plea rece	ase circle ent past (f	and/or mor instance inclogical face and size, undergons of vegotiat/plant sment are dromous erally proDWR ripatts a Primulicly owner. Division	make mo sub grou etat cor ea i fish tec riar ary ed p	within 10 years). Noteworthy stressors i difications (examples: ditches, dams, be-surface discharges into the wetland (examples torage tanks (USTs), hog lagoons, ion stress (examples: vegetation mortal mmunity alteration (examples: mowing, ntensively managed? Yes Sons - Were regulatory considerations evanted species or State endangered or three in buffer rule in effect Nursery Area (PNA) property Coastal Management Area of Environments.	tressors is apparent. Consider departure finclude, but are not limited to the following. eaver dams, dikes, berms, ponds, etc.) amples: discharges containing obvious pollu etc.) ity, insect damage, disease, storm damage, clear-cutting, exotics, etc.) No aluated? Yes No If Yes, check all that atened species	tants, presence of nearby septic salt intrusion, etc.) t apply to the assessment area.
	Des Abu	ignated N ts a 303(d)-li	with a Nobwo classification of SA of standard in the SA of Standard in Sa of Standar	ted stream	n Trout
	Blad Bro Tida ne assess	ckwater wnwater al (if tidal, sment ar	che ea e	eck one of the following boxes)	ınar □ Wind □ Both No	
					uration substantially altered by beaver? ing normal rainfall conditions? Yes	☐ Yes
(3	Check a l assessme area base	oox in ea ent area.	ch Cor		ment area condition metric und surface (GS) in the assessment area an (see User Manual). If a reference is not app	
[□Α	∏A ⊠B	Sev sec alte	limentation, fire-plow lanes, skidder tra	essment area (ground surface alteration exa cks, bedding, fill, soil compaction, obvious ce, herbicides, salt intrusion [where appropri on)	pollutants) (vegetation structure
(Check a l Consider	oox in ea both incre	ch eas	e and decrease in hydrology. A ditch ≤	acity and duration (Surf) and sub-surface sto 1 foot deep is considered to affect surface	water only, while a ditch > 1 foot
: []	Surḟ ⊒A ⊒B	Sub □A □B ☑C	Wa Wa Wa	ter storage capacity and duration are no ter storage capacity or duration are alte ter storage capacity or duration are sub	red, but not substantially (typically, not suffic stantially altered (typically, alteration sufficie	sient to change vegetation). ent to result in vegetation change)
3. \	Nater St		-		ion, filling, excessive sedimentation, underg ype condition metric (skip for all marshe	
	Check a l	oox in ea			e for the assessment area (AA) and the wetl	
(□A □B □C	Ma Ma	jority of wetland with depressions able to jority of wetland with depressions able to jority of wetland with depressions able to pressions able to pressions able to pressions able to pond water < 3 inches	o pond water 6 inches to 1 foot deep o pond water 3 to 6 inches deep	
3	□В	Evidence	tha	t maximum depth of inundation is greate t maximum depth of inundation is betwe t maximum depth of inundation is less t	en 1 and 2 feet	

		observations wi	of the three soil property groups below. Dig soil profile in the dominant assessment area landscape feature. ithin the top 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for regional triangles.
	4a. □A □B □C □D □E	Sandy soil Loamy or cl Loamy or cl Loamy or cl	ayey soils exhibiting redoximorphic features (concentrations, depletions, or rhizospheres) ayey soils not exhibiting redoximorphic features ayey gleyed soil nistic epipedon
	4b. ⊠A □B	Soil ribbon soil ribbon	
	4c. ⊠A □B		nuck presence uck presence
5.	Discharge	into Wetland -	- opportunity metric
	of sub-surf Surf S	face discharges Sub	Imn. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). Examples include presence of nearby septic tank, underground storage tank (UST), etc.
	□В	□B Noticea treatme	r no evidence of pollutants or discharges entering the assessment area able evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the ent capacity of the assessment area
	□c [potentia	able evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and ally overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive entation, odor)
6.	Land Use	- opportunity	metric (skip for non-riparian wetlands)
	to assessn <u>and</u> within	nent area within	east one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources draining entire upstream watershed (WS), within 5 miles <u>and</u> within the watershed draining to the assessment area (5M), in the watershed draining to the assessment area (2M).
	□A [□A □A	≥ 10% impervious surfaces
		□B □B □C □C	Confined animal operations (or other local, concentrated source of pollutants ≥ 20% coverage of pasture
		□D □D	≥ 20% coverage of agricultural land (regularly plowed land)
		⊠E ⊠E ⊠F ⊠F	≥ 20% coverage of maintained grass/herb ≥ 20% coverage of clear-cut land
		Ğ ☐G	Little or no opportunity to improve water quality. Lack of opportunity may result from little or no disturbance in the watershed <u>or</u> hydrologic alterations that prevent drainage <u>and/or</u> overbank flow from affecting the assessment area.
7.	Wetland A	Acting as Veget	ated Buffer – assessment area/wetland complex condition metric (skip for non-riparian wetlands)
		sessment area	within 50 feet of a tributary or other open water?
	⊠Y€ WetI		f Yes, continue to 7b. If No, skip to Metric 8. I only be present on one side of the water body. Make buffer judgment based on the average width of wetland.
	Reco	ord a note if a po	ortion of the buffer has been removed or disturbed.
		er judgment base	st 50 feet from the bank is wetland? (Wetland buffer need only be present on one side of the .water body. Make ed on the average width of wetland. Record a note if a portion of the buffer has been removed or disturbed.)
	□B		< 50 feet
	□C □D		
	⊠E	< 5 feet <u>or</u>	buffer bypassed by ditches
			tributary is anastomosed, combine widths of channels/braids for a total width.
	_		⊠> 15-feet wide ☐ Other open water (no tributary present) nent area vegetation extend into the bank of the tributary/open water?
	□Y€	es ⊠No	
			pen water sheltered or exposed? ent open water with width < 2500 feet and no regular boat traffic.
			ent open water with width ≥ 2500 feet <u>or</u> regular boat traffic.
8.	Estuarine		sessment Area – wetland type/wetland complex condition metric (evaluate WT for all marshes and nd only; evaluate WC for Bottomland Hardwood Forest, Headwater Forest, and Riverine Swamp Forest
	the wetland	d complex at the	umn for riverine wetlands only. Select the average width for the wetland type at the assessment area (WT) and assessment area (WC). See User Manual for WT and WC boundaries.
		VC]A ≥ 100 f	icat
	□B [0 to < 100 feet
	□c [☐C From 5	0 to < 80 feet
			0 to < 50 feet 0 to < 40 feet
	□F [5 to < 30 feet
	⊠G	G From 5	to < 15 feet

9.	Inundation Duration – assessment area condition metric (skip for non-riparian wetlands)
	Answer for assessment area dominant landform. A Evidence of short-duration inundation (< 7 consecutive days) Evidence of saturation, without evidence of inundation C Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)
10.	Indicators of Deposition – assessment area condition metric (skip for non-riparian wetlands and all marshes)
	Consider recent deposition only (no plant growth since deposition). □ A Sediment deposition is not excessive, but at approximately natural levels. □ B Sediment deposition is excessive, but not overwhelming the wetland. □ C Sediment deposition is excessive and is overwhelming the wetland.
11.	Wetland Size – wetland type/wetland complex condition metric
	Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column. WT WC FW (if applicable) A A A ≥ 500 acres B B B From 100 to < 500 acres C C C From 50 to < 100 acres D D D From 25 to < 50 acres E E From 10 to < 25 acres F F F From 5 to < 10 acres G G G From 1 to < 5 acres H H H From 0.5 to < 1 acre I I I From 0.1 to < 0.5 acre K K K K K K C C 0.01 acre or assessment area is clear-cut
12.	Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)
	□A Pocosin is the full extent (≥ 90%) of its natural landscape size.
40	B Pocosin type is < 90% of the full extent of its natural landscape size. Connectivity to Other Natural Areas – landscape condition metric
	13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This metric evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly maintained utility line corridors the width of a four-lane road or wider, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Well Loosely A A ≥ 500 acres B B From 100 to < 500 acres C From 50 to < 100 acres D D From 10 to < 50 acres E E = E < 10 acres F Wetland type has a poor or no connection to other natural habitats 13b. Evaluate for marshes only.
	☐Yes ☐No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.
14.	Edge Effect – wetland type condition metric (skip for all marshes and Estuarine Woody Wetland) May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors, and clear-cuts. Consider the eight main points of the compass. Artificial edge occurs within 150 feet in how many directions? If the assessment area is clear cut, select option "C." □ A 0 □ B 1 to 4 □ C 5 to 8
15.	Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)
	 □A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area. □B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata. □C Vegetation severely altered from reference in composition, or expected species are unnaturally absent (planted stands of non-characteristic species or at least one stratum inappropriately composed of a single species), or exotic species are dominant in at least one stratum.
16.	Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)
	 □A Vegetation diversity is high and is composed primarily of native species (< 10% cover of exotics). □B Vegetation diversity is low or has > 10% to 50% cover of exotics. □C Vegetation is dominated by exotic species (> 50 % cover of exotics).

17.	Vegetative Structure – assessment area/wetland type condition metric
	17a. Is vegetation present? ⊠Yes □No If Yes, continue to 17b. If No, skip to Metric 18.
	17b. Evaluate percent coverage of assessment area vegetation for all marshes only . Skip to 17c for non-marsh wetlands. □A ≥ 25% coverage of vegetation □B < 25% coverage of vegetation
	17c. Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately. AA WT
	© □A □A Canopy closed, or nearly closed, with natural gaps associated with natural processes □B □B Canopy present, but opened more than natural gaps □C □C Canopy sparse or absent
	☐ A ☐ A Dense mid-story/sapling layer ☐ B ☐ B Moderate density mid-story/sapling layer ☐ C Mid-story/sapling layer sparse or absent
	의 지 Dense shrub layer 된 DB Moderate density shrub layer 이 区C Shrub layer sparse or absent
	은 □A □A Dense herb layer 의 □B □B Moderate density herb layer □C □C Herb layer sparse or absent
18.	Snags – wetland type condition metric (skip for all marshes)
	□A Large snags (more than one) are visible (> 12 inches DBH, or large relative to species present and landscape stability).□B Not A
19.	Diameter Class Distribution – wetland type condition metric (skip for all marshes)
	Majority of canopy trees have stems > 6 inches in diameter at breast height (DBH); many large trees (> 12 inches DBH) are present.
	 ☐B Majority of canopy trees have stems between 6 and 12 inches DBH, few are > 12 inch DBH. ☐C Majority of canopy trees are < 6 inches DBH or no trees.
20.	Large Woody Debris – wetland type condition metric (skip for all marshes)
	Include both natural debris and man-placed natural debris. ☐A Large logs (more than one) are visible (> 12 inches in diameter, or large relative to species present and landscape stability). ☐B Not A
21.	Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)
	Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.
22.	Hydrologic Connectivity – assessment area condition metric (evaluate for riparian wetlands and Salt/Brackish Marsh only)
	Examples of activities that may severely alter hydrologic connectivity include intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, and stream incision. Documentation required if evaluated as B, C, or D.
	 ☑A Overbank and overland flow are not severely altered in the assessment area. ☑B Overbank flow is severely altered in the assessment area.
	□ C Overland flow is severely altered in the assessment area. □ D Both overbank and overland flow are severely altered in the assessment area.
	LD Both overbank and overland now are severely altered in the assessificil alea.

wetland is created by stormwater drainage in regularly mowed area within CLT airfield

Wetland Site Name _ F		Date of Assessment April 2	
Wetland Type <u>I</u>	leadwater Forest	Assessor Name/Organization KMT,	BGB/HDR
Notes on Field Assessr	nent Form (Y/N)		YES
Presence of regulatory	considerations (Y/N)		YES
Wetland is intensively n	nanaged (Y/N)		NO
Assessment area is loc	ated within 50 feet of a natural tributa	ry or other open water (Y/N)	YES
Assessment area is sub	ostantially altered by beaver (Y/N)		NO
Assessment area expe	riences overbank flooding during norr	nal rainfall conditions (Y/N)	NO
Assessment area is on	a coastal island (Y/N)		NO
ວິub-function Rating Sເ	ımmarv		
Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention		LOW
,	Sub-surface Storage and		
NA 4 0 124	Retention	Condition	LOW
Water Quality	Pathogen Change	Condition	HIGH
		Condition/Opportunity	HIGH
	D (; 1) O	Opportunity Presence (Y/N)	NO
	Particulate Change	Condition	LOW
		Condition/Opportunity	NA NA
	Calvible Charges	Opportunity Presence (Y/N)	NA MEDIUM
	Soluble Change	Condition	MEDIUM
		Condition/Opportunity	MEDIUM
	Dhysical Change	Opportunity Presence (Y/N) Condition	MEDIUM
	Physical Change	-	MEDIUM
		Condition/Opportunity Opportunity Presence (Y/N)	YES
	Pollution Change	Condition	NA
	Folidion Change	Condition/Opportunity	NA NA
		Opportunity Presence (Y/N)	NA NA
Habitat	Physical Structure	Condition	LOW
Tabitat	Landscape Patch Structure	Condition	LOW
	Vegetation Composition	Condition	LOW
	<u> </u>	Condition	
unction Rating Summ	ary	Making	D-#:
Function		Metrics	Rating
Hydrology		Condition	LOW
Water Quality		Condition	MEDIUM
		Condition/Opportunity	HIGH
11.19.7		Opportunity Presence (Y/N)	YES
Habitat		Condition	LOW

110	SACE AID	#	Accompanies	NCDWP#	1
08			CLT Airmont Francesis	NCDWR#	A = il 2010
		oject Nam		Date of Evaluation	April 2019
l A	pplicant/O			Wetland Site Name	PW8-2 - Wetland 20
		etland Typ		Assessor Name/Organization	KMT, BGB/HDR
		Ecoregio		Nearest Named Water Body	Coffey Creek
		River Basi		USGS 8-Digit Catalogue Unit	03050103
		Count		NCDWR Region	Mooresville
	☐ Ye	s 🛛 N	o Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees)	35.193787, -80.951252
Is Re	ridence of ease circle cent past (for the cent past) Hyde Sur tanl Sig Hat the assess egulatory (Ana Fec NC	stressors and/or m for instance drological face and s s s, under ns of vege bitat/plant sment are dromous derally pro DWR ripa uts a Prima blicly owne	s affecting the assessment area (may no ake note on the last page if evidence of si e, within 10 years). Noteworthy stressors i modifications (examples: ditches, dams, be sub-surface discharges into the wetland (expround storage tanks (USTs), hog lagoons, station stress (examples: vegetation mortal community alteration (examples: mowing, ea intensively managed? Yes Ations - Were regulatory considerations evaluations - Were regulatory considerations - Were regulatory - Were regul	t be within the assessment area) tressors is apparent. Consider departure f nclude, but are not limited to the following. eaver dams, dikes, berms, ponds, etc.) amples: discharges containing obvious polluetc.) ity, insect damage, disease, storm damage clear-cutting, exotics, etc.) No aluated? Yes No If Yes, check all the atened species	rom reference, if appropriate, in utants, presence of nearby septic , salt intrusion, etc.)
	Des Abu	its a strea signated N its a 303(d	of Coastal Management Area of Environment with a NCDWQ classification of SA or sul CNHP reference community d)-listed stream or a tributary to a 303(d)-listeram is associated with the wetland, if	replemental classifications of HQW, ORW, or ted stream	or Trout
	Bla Bro Tida	ckwater wnwater al (if tidal,	check one of the following boxes)	ınar 🗌 Wind 🔲 Both	
			ea's surface water storage capacity or do area experience overbank flooding duri	uration substantially altered by beaver? ing normal rainfall conditions? Yes	☐ Yes
1.	Check a lassessme area base	box in ea		nent area condition metric und surface (GS) in the assessment area ar (see User Manual). If a reference is not app	
	⊠A □B	□В	sedimentation, fire-plow lanes, skidder tra	essment area (ground surface alteration exacks, bedding, fill, soil compaction, obvious ce, herbicides, salt intrusion [where appropron)	s pollutants) (vegetation structure
2.	Surface a	and Sub-S	Surface Storage Capacity and Duration -	- assessment area condition metric	
	Consider deep is ex Surf ⊠A □B	both incre cpected to Sub ⊠A □B	ease and decrease in hydrology. A ditch see affect both surface and sub-surface water. Water storage capacity and duration are now water storage capacity or duration are alternation.	acity and duration (Surf) and sub-surface sto 1 foot deep is considered to affect surface . Consider tidal flooding regime, if applicable at altered. red, but not substantially (typically, not suffice stantially altered (typically, alteration sufficie	water only, while a ditch > 1 foot le. cient to change vegetation).
3.			(examples: draining, flooding, soil compacti	ion, filling, excessive sedimentation, underg ype condition metric (skip for all marshe	round utility lines).
٥.		_			·
			ch column. Select the appropriate storage	e for the assessment area (AA) and the wetl	anu type (w I).
	□c ⊠d	□A □B □C ⊠D	Majority of wetland with depressions able to Majority of wetland with depressions able to Majority of wetland with depressions able to Depressions able to pond water < 3 inches	p pond water 6 inches to 1 foot deep p pond water 3 to 6 inches deep deep	
	□В	Evidence	that maximum depth of inundation is greate that maximum depth of inundation is betwe that maximum depth of inundation is less tl	en 1 and 2 feet	

indicators. 4a.	a and draining
B Soil ribbon ≥ 1 inch 4c. A No peat or muck presence B A peat or muck presence Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). Exof sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc. Surf Sub A A A Little or no evidence of pollutants or discharges entering the assessment area B B Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area C C Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation, odor) Land Use - opportunity metric (skip for non-riparian wetlands) Check all that apply (at least one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources of to assessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (2M). WS 5M 2M A A A A A A A A A	a and draining
Discharge into Wetland – opportunity metric Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). Exof sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc. Surf Sub A Little or no evidence of pollutants or discharges entering the assessment area B B Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation, odor) Land Use – opportunity metric (skip for non-riparian wetlands) Check all that apply (at least one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources of to assessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area and within 2 miles and within the watershed draining to the assessment area (2M). WS 5M 2M A A A A A A A ≥ 10% impervious surfaces B B B B B Confined animal operations (or other local, concentrated source of pollutants	a and draining
Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). Exof sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc. Surf Sub A A Little or no evidence of pollutants or discharges entering the assessment area Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation, odor) Land Use − opportunity metric (skip for non-riparian wetlands) Check all that apply (at least one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources to assessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area and within 2 miles and within the watershed draining to the assessment area (2M). WS 5M 2M A B B B Confined animal operations (or other local, concentrated source of pollutants	a and draining
 □A	draining
Land Use – opportunity metric (skip for non-riparian wetlands) Check all that apply (at least one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources to assessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (2M). WS 5M 2M A A A > 10% impervious surfaces B B B B Confined animal operations (or other local, concentrated source of pollutants	
to assessment area within entire upstream watershed (WS), within 5 miles <u>and</u> within the watershed draining to the assessment area <u>and</u> within 2 miles and within the watershed draining to the assessment area (2M). WS 5M 2M A A A > 10% impervious surfaces B B B Confined animal operations (or other local, concentrated source of pollutants	
□B □B □Confined animal operations (or other local, concentrated source of pollutants	
□D □D □D ≥ 20% coverage of agricultural land (regularly plowed land)	
☐F ☐F ≥ 20% coverage of clear-cut land ☐☐ ☐☐ ☐☐ ☐☐ ☐☐ ☐☐ Little or no opportunity to improve water quality. Lack of opportunity may result from little or no disturbative watershed or hydrologic alterations that prevent drainage and/or overbank flow from affecting the assessment area.	ance in
Wetland Acting as Vegetated Buffer – assessment area/wetland complex condition metric (skip for non-riparian wetlands)	
 7a. Is assessment area within 50 feet of a tributary or other open water? Yes No If Yes, continue to 7b. If No, skip to Metric 8. Wetland buffer need only be present on one side of the water body. Make buffer judgment based on the average width of v Record a note if a portion of the buffer has been removed or disturbed. 7b. How much of the first 50 feet from the bank is wetland? (Wetland buffer need only be present on one side of the .water body buffer judgment based on the average width of wetland. Record a note if a portion of the buffer has been removed or disturbe	y. Make
7c. Tributary width. If the tributary is anastomosed, combine widths of channels/braids for a total width.	
7d. Do roots of assessment area vegetation extend into the bank of the tributary/open water?	
7e. Is stream or other open water sheltered or exposed? ☐Sheltered – adjacent open water with width < 2500 feet <u>and</u> no regular boat traffic. ☐Exposed – adjacent open water with width ≥ 2500 feet <u>or</u> regular boat traffic.	
Wetland Width at the Assessment Area – wetland type/wetland complex condition metric (evaluate WT for all marshes and Estuarine Woody Wetland only; evaluate WC for Bottomland Hardwood Forest, Headwater Forest, and Riverine Swamp only)	Forest
Check a box in each column for riverine wetlands only. Select the average width for the wetland type at the assessment area (V the wetland complex at the assessment area (WC). See User Manual for WT and WC boundaries. WT WC A A ≥ 100 feet B B From 80 to < 100 feet C From 50 to < 80 feet D D From 40 to < 50 feet E From 30 to < 40 feet F From 15 to < 30 feet G G From 5 to < 15 feet H H H < 5 feet	NT) and
	□ □ □ □ □ □ ≥ 20% coverage of agricultural land (regularly plowed land) □ □ □ □ ≥ 20% coverage of agricultural land (regularly plowed land) □ □ □ □ □ ≥ 20% coverage of clear-cut land □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □

9.	Inundation Duration – assessment area condition metric (skip for non-riparian wetlands)				
	Answer for assessment area dominant landform. Answer for assessment area dominant landform. Evidence of short-duration inundation (< 7 consecutive days) Evidence of saturation, without evidence of inundation Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)				
10.	Indicators of Deposition – assessment area condition metric (skip for non-riparian wetlands and all marshes)				
	Consider recent deposition only (no plant growth since deposition). \[\begin{align*} \text{Sediment deposition is not excessive, but at approximately natural levels.} \] \[\begin{align*} \text{Sediment deposition is excessive, but not overwhelming the wetland.} \] \[\begin{align*} \text{Consider recent deposition is not excessive, but at approximately natural levels.} \] \[\begin{align*} \text{Sediment deposition is excessive and is overwhelming the wetland.} \]				
11.	Wetland Size – wetland type/wetland complex condition metric				
	Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see Use Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column. WT WC FW (if applicable) A A A S 500 acres B B B From 100 to < 500 acres C C C From 50 to < 100 acres D D D From 25 to < 50 acres E F From 10 to < 25 acres F F F From 5 to < 10 acres G G G G From 1 to < 5 acres H H H H From 0.5 to < 1 acre I D D J From 0.1 to < 0.5 acre J D J J From 0.01 to < 0.1 acre K K K K K K C K < 0.01 acre or assessment area is clear-cut				
12.	Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)				
	 □A Pocosin is the full extent (≥ 90%) of its natural landscape size. □B Pocosin type is < 90% of the full extent of its natural landscape size. 				
13.	Connectivity to Other Natural Areas – landscape condition metric				
	13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This metric evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly maintained utility line corridors the width of a four-lane road or wider, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide.				
	Well Loosely				
	□A □A ≥ 500 acres □B □B From 100 to < 500 acres				
	☐C ☐C From 50 to < 100 acres				
	□D ☑D From 10 to < 50 acres				
	☐E ☐E <10 acres ☑F ☐F Wetland type has a poor or no connection to other natural habitats				
	Zi. Trougha type has a poor of he composition to sure hadata.				
	13b. Evaluate for marshes only . Yes No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.				
14.	Edge Effect – wetland type condition metric (skip for all marshes and Estuarine Woody Wetland) May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors, and clear-cuts. Conside the eight main points of the compass. Artificial edge occurs within 150 feet in how many directions? If the assessment area is clear cut select option "C." □A 0 □B 1 to 4 □C 5 to 8				
15.	Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)				
	☑A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate				
	species, with exotic plants absent or sparse within the assessment area. Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata. Vegetation severely altered from reference in composition, or expected species are unnaturally absent (planted stands of non-				
	characteristic species <u>or</u> at least one stratum inappropriately composed of a single species), <u>or</u> exotic species are dominant in a				
	least one stratum.				
16.	Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)				
	 ✓A Vegetation diversity is high and is composed primarily of native species (< 10% cover of exotics). ✓B Vegetation diversity is low or has > 10% to 50% cover of exotics. ✓C Vegetation is dominated by exotic species (> 50 % cover of exotics). 				

17.	Vegetative Structure – assessment area/wetland type condition metric
	17a. Is vegetation present? ⊠Yes □No If Yes, continue to 17b. If No, skip to Metric 18.
	17b. Evaluate percent coverage of assessment area vegetation for all marshes only . Skip to 17c for non-marsh wetlands. □A ≥ 25% coverage of vegetation □B < 25% coverage of vegetation
	17c. Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately. AA WT
	© ☑A ☑A Canopy closed, or nearly closed, with natural gaps associated with natural processes ☐B ☐B Canopy present, but opened more than natural gaps ○ ☐C ☐C Canopy sparse or absent
	Dense mid-story/sapling layer O
	용
	후 □A □A Dense herb layer 의 □B ■ Moderate density herb layer □C □C Herb layer sparse or absent
18.	Snags – wetland type condition metric (skip for all marshes)
	□A Large snags (more than one) are visible (> 12 inches DBH, or large relative to species present and landscape stability).□B Not A
19.	Diameter Class Distribution – wetland type condition metric (skip for all marshes)
	Majority of canopy trees have stems > 6 inches in diameter at breast height (DBH); many large trees (> 12 inches DBH) are present.
	 ☐B Majority of canopy trees have stems between 6 and 12 inches DBH, few are > 12 inch DBH. ☐C Majority of canopy trees are < 6 inches DBH or no trees.
20.	Large Woody Debris – wetland type condition metric (skip for all marshes)
	Include both natural debris and man-placed natural debris. ☐A Large logs (more than one) are visible (> 12 inches in diameter, or large relative to species present and landscape stability). ☐B Not A
21.	Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)
	Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.
22.	Hydrologic Connectivity – assessment area condition metric (evaluate for riparian wetlands and Salt/Brackish Marsh only)
	Examples of activities that may severely alter hydrologic connectivity include intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, and stream incision. Documentation required if evaluated as B, C, or D.
	 ☑A Overbank and overland flow are not severely altered in the assessment area. ☐B Overbank flow is severely altered in the assessment area.
	Overland flow is severely altered in the assessment area. D Both overbank and overland flow are severely altered in the assessment area.

wetland is created by stormwater drainage in regularly mowed area within CLT airfield

Wetland Site Name		Date of Assessment April 2	
Wetland Type _	Headwater Forest A	ssessor Name/Organization <u>KMT,</u>	BGB/HDR
Notes on Field Assess	ment Form (Y/N)		YES
Presence of regulatory	considerations (Y/N)		YES
Wetland is intensively	managed (Y/N)		NO
Assessment area is loo	cated within 50 feet of a natural tributary	y or other open water (Y/N)	NO
Assessment area is su	is substantially altered by beaver (Y/N) experiences overbank flooding during normal rainfall conditions (Y/N)		NO
Assessment area expe			NO
Assessment area is on	a coastal island (Y/N)		NO
Sub-function Rating S	ummarv		
Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	HIGH
, 5,	Sub-surface Storage and	Condition	пісп
Water Quality	Retention Pathogen Change	Condition Condition	HIGH LOW
vvaler Quality	Pathogen Change	Condition/Opportunity	LOW
		Opportunity Presence (Y/N)	NO
	Particulate Change	Condition	HIGH
	i articulate Change	Condition/Opportunity	NA
		Opportunity Presence (Y/N)	NA
	Soluble Change	Condition	MEDIUM
	Colubio Chango	Condition/Opportunity	MEDIUM
		Opportunity Presence (Y/N)	NO
	Physical Change	Condition	LOW
	, ,	Condition/Opportunity	LOW
		Opportunity Presence (Y/N)	YES
	Pollution Change	Condition	NA
	Ç	Condition/Opportunity	NA
		Opportunity Presence (Y/N)	NA
Habitat	Physical Structure	Condition	LOW
	Landscape Patch Structure	Condition	HIGH
	Vegetation Composition	Condition	HIGH
unction Rating Sumn	narv		
Function	···· <i>j</i>	Metrics	Rating
Hydrology		Condition	HIGH
Water Quality		Condition	LOW
		Condition/Opportunity	LOW
		Opportunity Presence (Y/N)	YES
Habitat		Condition	MEDIUM

110	SACE AID	#	Accompanies	NCDWP#	
08			CLT Airmont Eventure:	NCDWR#	A = il 2010
		oject Nam		Date of Evaluation	April 2019
l A	pplicant/O			Wetland Site Name	PW9-2 - Wetland 19
		etland Typ		Assessor Name/Organization	KMT, BGB/HDR
		l Ecoregio		Nearest Named Water Body	Coffey Creek
	ı	River Basi		USGS 8-Digit Catalogue Unit	03050103
		Count		NCDWR Region	Mooresville
	☐ Ye	s 🛛 N	o Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees)	35.193268, -80.953933
Ple red	ridence of ease circle cent past (f	stressors and/or material relationships and/or material relationships and stressors an	affecting the assessment area (may no ake note on the last page if evidence of ste, within 10 years). Noteworthy stressors in modifications (examples: ditches, dams, be sub-surface discharges into the wetland (examound storage tanks (USTs), hog lagoons, tation stress (examples: vegetation mortal community alteration (examples: mowing, a intensively managed? Yes witions - Were regulatory considerations evaluations and the sub-sub-sub-sub-sub-sub-sub-sub-sub-sub-	t be within the assessment area) tressors is apparent. Consider departure f nclude, but are not limited to the following. eaver dams, dikes, berms, ponds, etc.) amples: discharges containing obvious pollu- etc.) ity, insect damage, disease, storm damage clear-cutting, exotics, etc.) No aluated? Yes No If Yes, check all the atened species	rom reference, if appropriate, in utants, presence of nearby septic , salt intrusion, etc.)
	Abı Des Abı	its a strea signated N its a 303(c	m with a NCDWQ classification of SA or su CNHP reference community I)-listed stream or a tributary to a 303(d)-lis	pplemental classifications of HQW, ORW, or ted stream	or Trout
	Blad Bro Tida	ckwater wnwater al (if tidal,	ctream is associated with the wetland, if check one of the following boxes) Lucka on a coastal island? Yes N	ınar □ Wind □ Both	
			a's surface water storage capacity or du area experience overbank flooding duri	uration substantially altered by beaver? ing normal rainfall conditions?	☐ Yes No
1.	Check a lassessment area base	box in eac ent area. (ment area condition metric Ind surface (GS) in the assessment area ar (see User Manual). If a reference is not app	
	⊠A □B	<u>□</u> в ;	sedimentation, fire-plow lanes, skidder tra-	essment area (ground surface alteration exacks, bedding, fill, soil compaction, obvious ce, herbicides, salt intrusion [where appropron)	s pollutants) (vegetation structure
2.	Surface a	and Sub-S	Surface Storage Capacity and Duration –	assessment area condition metric	
	Consider deep is ex Surf ⊠A □B	both incre xpected to Sub ⊠A \ □B	ase and decrease in hydrology. A ditch ≤ affect both surface and sub-surface water. Water storage capacity and duration are no Nater storage capacity or duration are alter	acity and duration (Surf) and sub-surface sto 1 foot deep is considered to affect surface Consider tidal flooding regime, if applicab at altered. red, but not substantially (typically, not sufficient stantially altered (typically, alteration sufficient	water only, while a ditch > 1 foot le. cient to change vegetation).
2		(examples: draining, flooding, soil compacti	on, filling, excessive sedimentation, underg	round utility lines).
3.		_		ype condition metric (skip for all marshe	·
			ch column. Select the appropriate storage	e for the assessment area (AA) and the wet	and type (WT).
	□c ⊠d	□A I □B I □C I ⊠D I	Majority of wetland with depressions able to Majority of wetland with depressions able to Majority of wetland with depressions able to Depressions able to pond water < 3 inches	p pond water 6 inches to 1 foot deep p pond water 3 to 6 inches deep deep	
	□В	Evidence '	that maximum depth of inundation is greate that maximum depth of inundation is betwe that maximum depth of inundation is less th	en 1 and 2 feet	

4.	Soil Texture/Structure – assessment area condition metric (skip for all marshes) Check a box from each of the three soil property groups below. Dig soil profile in the dominant assessment area landscape feature.
	Make soil observations within the top 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for regional
	indicators. 4a. □A Sandy soil
	B Loamy or clayey soils exhibiting redoximorphic features (concentrations, depletions, or rhizospheres)
	□C Loamy or clayey soils not exhibiting redoximorphic features□D Loamy or clayey gleyed soil
	☐E Histosol or histic epipedon
	4b. ⊠A Soil ribbon < 1 inch □B Soil ribbon ≥ 1 inch
	4c. 🖂 No peat or muck presence
_	B A peat or muck presence
5.	Discharge into Wetland – opportunity metric Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). Examples
	of sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.
	Surf Sub ☐A ☑A Little or no evidence of pollutants or discharges entering the assessment area
	treatment capacity of the assessment area C Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and
	potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation, odor)
6.	Land Use – opportunity metric (skip for non-riparian wetlands)
	Check all that apply (at least one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources draining
	to assessment area within entire upstream watershed (WS), within 5 miles <u>and</u> within the watershed draining to the assessment area (5M), <u>and</u> within 2 miles and within the watershed draining to the assessment area (2M).
	WS 5M 2M
	□A □A ≥ 10% impervious surfaces □B □B □B Confined animal operations (or other local, concentrated source of pollutants
	□C □C ≥ 20% coverage of pasture □D □D □D ≥ 20% coverage of agricultural land (regularly plowed land)
	⊠E ⊠E ≥ 20% coverage of maintained grass/herb
	 □ G □ G □ G □ G □ G □ G □ G □ G
	the watershed <u>or</u> hydrologic alterations that prevent drainage <u>and/or</u> overbank flow from affecting the assessment area.
7.	Wetland Acting as Vegetated Buffer – assessment area/wetland complex condition metric (skip for non-riparian wetlands)
	7a. Is assessment area within 50 feet of a tributary or other open water? ☐Yes ☑No If Yes, continue to 7b. If No, skip to Metric 8.
	Wetland buffer need only be present on one side of the water body. Make buffer judgment based on the average width of wetland.
	Record a note if a portion of the buffer has been removed or disturbed. 7b. How much of the first 50 feet from the bank is wetland? (Wetland buffer need only be present on one side of the .water body. Make
	buffer judgment based on the average width of wetland. Record a note if a portion of the buffer has been removed or disturbed.)
	☐C From 15 to < 30 feet
	□D From 5 to < 15 feet □E < 5 feet or buffer bypassed by ditches
	7c. Tributary width. If the tributary is anastomosed, combine widths of channels/braids for a total width. □≤ 15-feet wide □> 15-feet wide □ Other open water (no tributary present)
	7d. Do roots of assessment area vegetation extend into the bank of the tributary/open water?
	☐Yes ☐No 7e. Is stream or other open water sheltered or exposed?
	☐Sheltered – adjacent open water with width < 2500 feet <u>and</u> no regular boat traffic.
•	□Exposed – adjacent open water with width ≥ 2500 feet <u>or</u> regular boat traffic.
8.	Wetland Width at the Assessment Area – wetland type/wetland complex condition metric (evaluate WT for all marshes and Estuarine Woody Wetland only; evaluate WC for Bottomland Hardwood Forest, Headwater Forest, and Riverine Swamp Forest only)
	Check a box in each column for riverine wetlands only. Select the average width for the wetland type at the assessment area (WT) and
	the wetland complex at the assessment area (WC). See User Manual for WT and WC boundaries. WT WC
	□A □A ≥ 100 feet
	□ B □ B From 80 to < 100 feet
	□D □D From 40 to < 50 feet
	☐E ☐E From 30 to < 40 feet ☐F ☐F From 15 to < 30 feet
	☐G ☐G From 5 to < 15 feet ☐H ☐H < 5 feet

9.	Inundation Duration – assessment area condition metric (skip for non-riparian wetlands)		
	Answer for assessment area dominant landform. A Evidence of short-duration inundation (< 7 consecutive days) B Evidence of saturation, without evidence of inundation C Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)		
10.	Indicators of Deposition – assessment area condition metric (skip for non-riparian wetlands and all marshes)		
	Consider recent deposition only (no plant growth since deposition). A Sediment deposition is not excessive, but at approximately natural levels. B Sediment deposition is excessive, but not overwhelming the wetland. C Sediment deposition is excessive and is overwhelming the wetland.		
11.	Wetland Size – wetland type/wetland complex condition metric		
	Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see Use Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column. WT WC FW (if applicable) A A ≥ 500 acres B B B From 100 to < 500 acres C C C From 50 to < 100 acres D D D From 25 to < 50 acres F F F From 10 to < 25 acres F F F F From 5 to < 10 acres G G G From 1 to < 5 acres H H H From 0.5 to < 1 acre XI SI From 0.01 to < 0.5 acre XI SI From 0.01 to < 0.1 acre K K K K K K C.0.01 acre or assessment area is clear-cut		
12.	Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)		
	□A Pocosin is the full extent (≥ 90%) of its natural landscape size.□B Pocosin type is < 90% of the full extent of its natural landscape size.		
13.	Connectivity to Other Natural Areas – landscape condition metric		
	13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This metric evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly maintained utility line corridors the width of a four-lane road or wider, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Well Loosely		
	□A □A ≥ 500 acres		
	☐B ☐B From 100 to < 500 acres ☐C ☐C From 50 to < 100 acres		
	□D □D From 10 to < 50 acres		
	□E □E <10 acres		
	☑F ☐F Wetland type has a poor or no connection to other natural habitats		
	13b. Evaluate for marshes only . ☐ Yes ☐ No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.		
11	Edge Effect – wetland type condition metric (skip for all marshes and Estuarine Woody Wetland)		
1-7.	May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors, and clear-cuts. Conside the eight main points of the compass. Artificial edge occurs within 150 feet in how many directions? If the assessment area is clear cut select option "C." □ A 0 □ B 1 to 4 □ C 5 to 8		
15.	Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)		
	☑A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate		
	species, with exotic plants absent or sparse within the assessment area. Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.		
	Vegetation severely altered from reference in composition, <u>or</u> expected species are unnaturally absent (planted stands of non-characteristic species <u>or</u> at least one stratum inappropriately composed of a single species), <u>or</u> exotic species are dominant in a least one stratum.		
16.	Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)		
	 ✓A Vegetation diversity is high and is composed primarily of native species (< 10% cover of exotics). ✓B Vegetation diversity is low or has > 10% to 50% cover of exotics. ✓C Vegetation is dominated by exotic species (> 50 % cover of exotics). 		

17.	Vegetative Structure – assessment area/wetland type condition metric			
	17a. Is vegetation present? ⊠Yes □No If Yes, continue to 17b. If No, skip to Metric 18.			
	17b. Evaluate percent coverage of assessment area vegetation for all marshes only . Skip to 17c for non-marsh wetlands. □A ≥ 25% coverage of vegetation □B < 25% coverage of vegetation			
	17c. Check a box in each column for each stratum. Evaluate this portion of the metric for non-marsh wetlands. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately. AA WT			
	© □A □A Canopy closed, or nearly closed, with natural gaps associated with natural processes □B □B Canopy present, but opened more than natural gaps □C □C □C Canopy sparse or absent			
	☐ A ☐ A Dense mid-story/sapling layer			
	요			
	후 □A □A Dense herb layer 의 □B			
18.	Snags – wetland type condition metric (skip for all marshes)			
	□A Large snags (more than one) are visible (> 12 inches DBH, or large relative to species present and landscape stability).□B Not A			
19.	Diameter Class Distribution – wetland type condition metric (skip for all marshes)			
	Majority of canopy trees have stems > 6 inches in diameter at breast height (DBH); many large trees (> 12 inches DBH) are present.			
	☐B Majority of canopy trees have stems between 6 and 12 inches DBH, few are > 12 inch DBH.☑C Majority of canopy trees are < 6 inches DBH or no trees.			
20.	Large Woody Debris – wetland type condition metric (skip for all marshes)			
	Include both natural debris and man-placed natural debris. ☐A Large logs (more than one) are visible (> 12 inches in diameter, or large relative to species present and landscape stability). ☐B Not A			
21.	Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)			
	Select the figure that best describes the amount of interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.			
22.	Hydrologic Connectivity – assessment area condition metric (evaluate for riparian wetlands and Salt/Brackish Marsh only)			
	Examples of activities that may severely alter hydrologic connectivity include intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, and stream incision. Documentation required if evaluated as B, C, or D.			
	 ☑A Overbank and overland flow are not severely altered in the assessment area. ☐B Overbank flow is severely altered in the assessment area. 			
	Overland flow is severely altered in the assessment area. D Both overbank and overland flow are severely altered in the assessment area.			

wetland is created by stormwater drainage in regularly mowed area within CLT airfield

Wetland Site Name _	PW9-2 - Wetland 19	Date of Assessment April 2	2019
Wetland Type _	Headwater Forest A	Assessor Name/Organization KMT,	BGB/HDR
Notes on Field Assess	ment Form (Y/N)		YES
Presence of regulatory	considerations (Y/N)		YES
Wetland is intensively	managed (Y/N)		NO
Assessment area is loc	cated within 50 feet of a natural tributar	y or other open water (Y/N)	NO
Assessment area is su	essment area is substantially altered by beaver (Y/N)		
Assessment area expe	riences overbank flooding during norm	al rainfall conditions (Y/N)	NO
Assessment area is on	a coastal island (Y/N)		NO
Sub-function Rating S	ummary		
Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	MEDIUM
, 3,	Sub-surface Storage and		
	Retention	Condition	HIGH
Water Quality	Pathogen Change	Condition	LOW
		Condition/Opportunity	LOW
	5	Opportunity Presence (Y/N)	NO
	Particulate Change	Condition	HIGH
		Condition/Opportunity	NA
	0.1.1.01	Opportunity Presence (Y/N)	NA
	Soluble Change	Condition	MEDIUM
		Condition/Opportunity	MEDIUM
	DI	Opportunity Presence (Y/N)	NO NO
	Physical Change	Condition	LOW
		Condition/Opportunity	LOW
	D. II. II. OI	Opportunity Presence (Y/N)	YES
	Pollution Change	Condition	NA NA
		Condition/Opportunity	NA NA
Llahitat	Dhysical Structure	Opportunity Presence (Y/N) Condition	NA LOW
Habitat	Physical Structure Landscape Patch Structure	Condition	LOW LOW
	Vegetation Composition	Condition	HIGH
	-	Condition	111011
unction Rating Sumn	nary		
Function		Metrics	Rating
Hydrology		Condition	HIGH
Water Quality		Condition	LOW
		Condition/Opportunity	LOW
		Opportunity Presence (Y/N)	YES
Habitat		Condition	LOW



Photograph 19 – PW1-2-Wetland 6, Facing South



Photograph 21 – PW3-2-Wetland 8, Facing Southeast



Photograph 20 – PW2-2-Wetland 7, Facing Northwest



Photograph 22 – PW4-2-Wetland 14, Facing Northeast



Photograph 23 – PS4-2-Stream 24, Facing Downstream



Photograph 25 – PW5-2-Wetland 16, Facing Southeast



Photograph 24 – PS5-2-Stream 25, Facing Upstream



Photograph 26 – PS1-2-Stream 27, Reach 2, Facing Downstream



Photograph 27 – PS2-2-Stream 28, Facing Upstream



Photograph 29 - PS3-2-Stream 29, Reach 1, Facing Downstream



Photograph 28 – PW6-2-Wetland 17, Facing North



Photograph 30 – PS3-2-Stream 29, Reach 2, Facing Downstream



Photograph 31 – PS3-2-Stream 29, Reach 3, Facing Downstream



Photograph 33 – PS7-2-Stream 30, Reach1, Facing Downstream

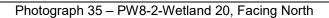


Photograph 32 – PS6-2-Stream 25, Facing Downstream



Photograph 34 – PS7-2-Stream 30, Reach2, Facing Upstream







Photograph 36 – PW9-2-Wetland 19, Facing East



DEPARTMENT OF THE ARMY WILMINGTON DISTRICT, CORPS OF ENGINEERS 151 PATTON AVENUE ROOM 208 ASHEVILLE, NORTH CAROLINA 28801-5006

December 15, 2020

Regulatory Division

Action ID: SAW-2018-01071

Ms. Haley Gentry
City of Charlotte
Aviation Department
5601 Wilkinson Boulevard
Charlotte, North Carolina 28208

Dear Ms. Gentry:

Enclosed is a Department of the Army permit to place fill material in 12,057 linear feet of stream and 5.89 acres of wetlands to facilitate the expansion and improvement of Charlotte Douglas International Airport. The Corps is issuing this permit in response to your written request of January 29, 2020, and the ensuing administrative record.

Any deviation in the authorized work will likely require modification of this permit. If a change in the authorized work is necessary, you should promptly submit revised plans to the Corps showing the proposed changes. You may not undertake the proposed changes until the Corps notifies you that your permit has been modified.

Carefully read your permit. The general and special conditions are important. Your failure to comply with these conditions could result in a violation of Federal law. Certain significant conditions require that:

- a. You must complete construction before December 31, 2033.
- b. You must notify this office in advance as to when you intend to commence and complete work.
- c. You must allow representatives from this office to make periodic visits to your worksite as deemed necessary to assure compliance with permit plans and conditions.
- d. In order to compensate for impacts associated with this permit, mitigation shall be provided in accordance with the provisions outlined in the U.S. Army Corps of Engineers, Wilmington District, Compensatory Mitigation Responsibility Transfer

Form. The requirements of this form, including any special conditions listed on this form, are hereby incorporated as special conditions of this permit authorization.

You should address all questions regarding this authorization to David L. Shaeffer at the Charlotte Regulatory Field Office, telephone (704) 510-1437.

FOR THE COMMANDER

Scott Jones, PWS

Chief

Asheville/Charlotte Regulatory Field Office

Enclosures

cc (with enclosures):

Ms. Kelly Thames
404 South Church Street
Suite 900
Charlotte, North Carolina 28202

NOAA/National Ocean Service 1315 East-West Highway Rm 7316 Silver Spring, Maryland 20910-3282

U.S. Fish and Wildlife Service 160 Zillicoa Street Asheville, North Carolina 28801

Mr. Fritz Rohde National Marine Fisheries Service Habitat Conservation Division 101 Pivers Island Road Beaufort, North Carolina 28516

Mr. Todd Bowers U.S. Environmental Protection Agency Region IV Wetlands Protection Section 61 Forsyth Street, SW Atlanta, Georgia 30303 Mr. Jonathan Howell Division of Coastal Management N.C. Department of Environmental Quality 400 Commerce Avenue Morehead City, North Carolina 28557

Dr. Pace Wilber National Marine Fisheries Service 219 Fort Johnson Road Charleston, South Carolina 29412-9110

cc (via email):

NC DENR - Division of Water Resources

NOTIFICATION OF ADMINISTRATION	VE APPEAL OPTIONS AN Γ FOR APPEAL	D PROCE	SS AND		
Applicant: City of Charlotte – Aviation Department	File Number: SAW-2018	01071	Date: 12/15/2020		
Attached is:	DAW-2010	See Section below			
INITIAL PROFFERED PERMIT (Standard Permit or Le		A			
PROFFERED PERMIT (Standard Permit or Letter of per	В				
PERMIT DENIAL	С				
APPROVED JURISDICTIONAL DETERMINATION		D			
☐ PRELIMINARY JURISDICTIONAL DETERMINATIO		E			

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision.

Additional information may be found at or http://www.usace.armv.mil/Missions/CivilWorks/RegulatoryProgramandPermits.aspx or the Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final
 authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your
 signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all
 rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the
 permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.
- C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.
- **D: APPROVED JURISDICTIONAL DETERMINATION:** You may accept or appeal the approved JD or provide new information.
- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the district engineer. This form must be received by the division engineer within 60 days of the date of this notice.

preliminary JD. The Preliminary JD is not appealable. If yo	TION: You do not need to respond to the Corps regarding the ou wish, you may request an approved JD (which may be appealed), you may provide new information for further consideration by the						
SECTION II - REQUEST FOR APPEAL or OBJECTIONS	TO AN INITIAL PROFFERED PERMIT						
	our reasons for appealing the decision or your objections to an initial h additional information to this form to clarify where your reasons or						
record of the appeal conference or meeting, and any suppler clarify the administrative record. Neither the appellant nor t However, you may provide additional information to clarify record.	review of the administrative record, the Corps memorandum for the nental information that the review officer has determined is needed to he Corps may add new information or analyses to the record. the location of information that is already in the administrative						
POINT OF CONTACT FOR QUESTIONS OR INFORMA							
If you have questions regarding this decision and/or the appeal process you may contact:	If you only have questions regarding the appeal process you may also contact:						
District Engineer, Wilmington Regulatory Division Attn: David L. Shaeffer Asheville Regulatory Office U.S Army Corps of Engineers	Mr. Phillip Shannin, Administrative Appeal Review Officer CESAD-PDO U.S. Army Corps of Engineers, South Atlantic Division 60 Forsyth Street, Room 10M15						
151 Patton Avenue, Room 208	Atlanta, Georgia 30303-8801						
Asheville, North Carolina 28801	Phone: (404) 562-5137						
	of entry to Corps of Engineers personnel, and any government ng the course of the appeal process. You will be provided a 15 day						
consultants, to conduct investigations of the project site duri	of entry to Corps of Engineers personnel, and any government ng the course of the appeal process. You will be provided a 15 day						

For appeals on Initial Proffered Permits send this form to:

Signature of appellant or agent.

District Engineer, Wilmington Regulatory Division, Attn: David L. Shaeffer , 69 Darlington Avenue, Wilmington, North Carolina 28403

For Permit denials, Proffered Permits and Approved Jurisdictional Determinations send this form to:

Division Engineer, Commander, U.S. Army Engineer Division, South Atlantic, Attn: Mr. Phillip Shannin, Administrative Appeal Officer, CESAD-PDO, 60 Forsyth Street, Room 10M15, Atlanta, Georgia 30303-8801 Phone: (404) 562-5137

SPECIAL CONDITIONS Action ID: SAW-2018-01071

Special condition 1: All work authorized by this permit shall be performed in strict compliance with the attached impact maps plans Figures 1-6 dated October 26, 2019 and the detailed design plans Sheets 1-26 dated January 31, 2020 for Phase I of the project, which are a part of this permit. The Permittee shall submit detailed design plans for the conceptual phases of the project and receive written approval from the Corps prior to commencement of the work. The Permittee shall ensure that the construction design plans for this project do not deviate from the permit plans attached to this authorization. Any modification to the attached permit plans must be approved by the U.S. Army Corps of Engineers (Corps) prior to any active construction in waters or wetlands.

Rationale: This condition ties the permittee's project plans to the permit.

Special condition 2: Except as authorized by this permit or any Corps-approved modification to this permit, no excavation, fill or mechanized land-clearing activities shall take place at any time in the construction or maintenance of this project, within waters or wetlands. This permit does not authorize temporary placement or double handling of excavated or fill material within waters or wetlands outside the permitted area. This prohibition applies to all borrow and fill activities connected with this project.

Rationale: This condition clarify that only the impacts to waters of the US specified by the project plans are approved by this permit.

Special condition 3: Except as specified in the plans attached to this permit, no excavation, fill or mechanized land-clearing activities shall take place at any time in the construction or maintenance of this project, in such a manner as to impair normal flows and circulation patterns within waters or wetlands or to reduce the reach of waters and/or wetlands.

Rationale: This condition clarify that the project cannnot impound waters or reduce the reach of waters without being specifically authorized by the permit.

Special condition 4: All mechanized equipment shall be regularly inspected and maintained to prevent contamination of waters and wetlands from fuels, lubricants, hydraulic fluids, or other toxic materials. In the event of a spill of petroleum products or any other hazardous waste, the Permittee shall immediately report it to the N.C. Division of Water Resources at (919) 733-3300 or (800) 858-0368 and provisions of the North Carolina Oil Pollution and Hazardous Substances Control Act shall be followed.

Rationale: This condition addresses potential indirect impacts to waters of the U.S. from mechanized equipment fluids.

Special condition 5: The Permittee shall implement all necessary measures to ensure the authorized activity does not kill, injure, capture, harass, or otherwise harm any federally-listed threatened or endangered species. While accomplishing the authorized work, if the Permittee discovers or observes an injured or dead threatened or endangered species, the U.S. Army Corps of Engineers, Wilmington District, Charlotte Field Office, will be immediately notified to initiate the required Federal coordination.

Rationale: This special condition ensures continued compliance with the Endangered Species Act.

Special condition 6: The Permittee shall notify the U.S. Army Corps of Engineers in writing prior to beginning the work authorized by this permit and again upon completion of the work authorized by this permit.

Rationale: This condition facilitates timely inspections for Section 404 CWA compliance.

Special Condition 7: The Permittee shall conduct an onsite preconstruction meeting between its representatives, the contractor's representatives and the appropriate U.S. Army Corps of Engineers Project Manager prior to undertaking any work within jurisdictional waters and wetlands to ensure that there is a mutual understanding of all terms and conditions contained within the Department of the Army permit. The Permittee shall schedule the preconstruction meeting for a time frame when the Corps and NCDWR Project Managers can attend. The Permittee shall invite the Corps and NCDWR Project Managers a minimum of thirty (30) days in advance of the scheduled meeting in order to provide those individuals with ample opportunity to schedule and participate in the required meeting. The thirty (30) day requirement can be waived with the concurrence of the Corps.

Rationale: This condition gives the Corps and agencies the opportunity to meet with the contractors and applicant to dicuss permit conditions and to answer questions.

Special condition 8: The Permittee shall use only clean fill material for this project. The fill material shall be free of items such as trash, construction debris, metal and plastic products, and concrete block with exposed metal reinforcement bars. Soils used for fill shall not be contaminated with any toxic substance in concentrations governed by Section 307 of the Clean Water Act. Unless otherwise authorized by this permit, all fill material placed in waters or wetlands shall be generated from an upland source.

Rationale: This condition addresses potential indirect impacts to waters of the U.S. from contaminated fill material.

Special condition 9: The Permittee shall take measures necessary to prevent live or fresh concrete, including bags of uncured concrete, from coming into contact with any water in or entering into waters of the United States. Water inside coffer dams or

casings that has been in contact with concrete shall only be returned to waters of the United States when it no longer poses a threat to aquatic organisms (concrete is set and cured).

Rationale: This condition addresses potential indirect impacts to waters of the U.S. from live concrete.

Special condition 10: The Permittee shall require its contractors and/or agents to comply with the terms and conditions of this permit in the construction and maintenance of this project, and shall provide each of its contractors and/or agents associated with the construction or maintenance of this project with a copy of this permit. A copy of this permit, including all conditions and drawings shall be available at the project site during construction and maintenance of this project.

Rationale: This condition specifies that the permittee is responsible for discharges of dredged or fill material in waters of the United States done by their contractors.

Special condition 11:

- 1) During the clearing phase of the project, heavy equipment shall not be operated in surface waters or stream channels. Temporary stream crossings will be used to access the opposite sides of stream channels. All temporary diversion channels and stream crossings will be constructed of non-erodible materials. Grubbing of riparian vegetation will not occur until immediately before construction begins on a given segment of stream channel.
- 2) No fill or excavation impacts for the purposes of sedimentation and erosion control shall occur within jurisdictional waters, including wetlands, unless the impacts are included on the plan drawings and specifically authorized by this permit. This includes, but is not limited to, sediment control fences and other barriers intended to catch sediment losses.
- 3) The Permittee shall remove all sediment and erosion control measures placed in waters and/or wetlands, and shall restore natural grades on those areas, prior to project completion.
- 4) The Permittee shall use appropriate sediment and erosion control practices which equal or exceed those outlined in the most recent version of the "North Carolina Sediment and Erosion Control Planning and Design Manual" to ensure compliance with the appropriate turbidity water quality standard. Erosion and sediment control practices shall be in full compliance with all specifications governing the proper design, installation and operation and maintenance of such Best Management Practices in order to ensure compliance with the appropriate turbidity water quality standards. This shall include, but is not limited to, the immediate installation of silt fencing or similar appropriate devices around all areas subject to soil disturbance or the movement of earthen fill, and the immediate stabilization of all disturbed areas. Additionally, the

project shall remain in full compliance with all aspects of the Sedimentation Pollution Control Act of 1973 (North Carolina General Statutes Chapter 113A Article 4). Adequate sedimentation and erosion control measures shall be implemented prior to any ground disturbing activities to minimize impacts to downstream aquatic resources. These measures shall be inspected and maintained regularly, especially following rainfall events. All fill material shall be adequately stabilized at the earliest practicable date to prevent sediment from entering into adjacent waters or wetlands.

Rationale: This condition documents the permittees responsibility to employ appropriate sediment and erosion control practices to avoid potential indirect impacts to jurisdicitonal waters.

Special condition 12: The Permittee, upon receipt of a notice of revocation of this permit or upon its expiration before completion of the work will, without expense to the United States and in such time and manner as the Secretary of the Army or his authorized representative may direct, restore the water or wetland to its pre-project condition.

Rationale: This condition documents the permittee's responsibility to restore permitted impacts to their pre-project condition.

Special condition 13: Violation of these permit conditions or violation of Section 404 of the Clean Water Act shall be reported to the Corps in writing and by telephone at: 828-271-7980 within 24 hours of the Permittee's discovery of the violation.

Rationale: This condition specify compliance reporting contacts and requirements.

Special condition 14: In order to compensate for impacts associated with this permit, mitigation shall be provided in accordance with the provisions outlined on the most recent version of the attached Compensatory Mitigation Responsibility Transfer Form for each phase of the project. The requirements of this form, including any special conditions listed on this form, are hereby incorporated as special conditions of this permit.

Rationale: This permit condition was added to document compensatory mitigation requirements for the project, to ensure compliance with the 404(b)(1) guidelines, and to ensure that project impacts were not more than minimal.

Special Condition 15: No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area. All discharges of dredged or fill material within waters of the United States shall be designed and constructed to maintain low flows to sustain the movement of aquatic species.

Rationale: This condition addresses potential issues associated with the installation of improperly designed and/or installed culverts.

Special Condition 16:

- 1) Measures shall be included in the culvert construction/installation that will promote the safe passage of fish and other aquatic organisms. The dimension, pattern, and profile of the stream above and below a culvert or pipe shall not be modified by widening the stream channel or by reducing the depth of the stream in connection with the construction activity. The width, height, and gradient of a proposed opening shall be such as to pass the average historical low flow and spring flow without adversely altering flow velocity. Spring flow should be determined from gauge data, if available. In the absence of such data, bankfull flow can be used as a comparable level.
- 2) The Permittee shall implement all reasonable and practicable measures to ensure that equipment, structures, fill pads, work, and operations associated with this project do not adversely affect upstream and/or downstream reaches. Adverse effects include, but are not limited to, channel instability, flooding, and/or stream bank erosion. The Permittee shall routinely monitor for these effects, cease all work when detected, take initial corrective measures to correct actively eroding areas, and notify this office immediately. Permanent corrective measures may require additional authorization by the U.S. Army Corps of Engineers.
- 3) Culverts placed within wetlands must be installed in a manner that does not restrict the flows and circulation patterns of waters of the United States. Culverts placed across wetland fills purely for the purposes of equalizing surface water shall not be buried, but the culverts must be of adequate size and/or number to ensure unrestricted transmission of water.

Rationale: This condition documents the permittee's responsibility as it relates to the installation of culverts.

Special Condition 17: If previously undiscovered cultural resources are encountered while condcuting grading within the project area, the Corps shall be immediately notified in writing and by telephone at: 704-510-1439within 24 hours of the Permittee's discovery of the resources so that coordination can be initiated with the North Carolina State Historic Preservation Office.

Rationale: This is to address the North Carolina State Historic Preservation Office regarding the potential for the discovery of cultural resources during the grading operations.

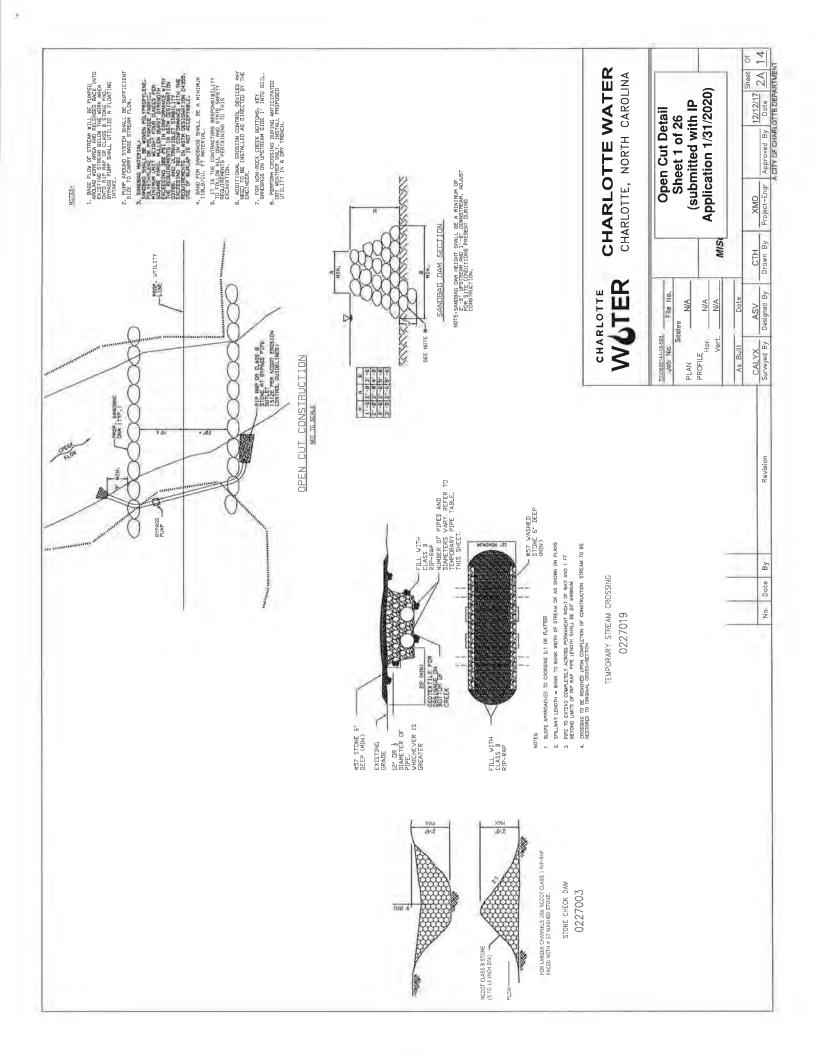
Special Condition 18: Prior to the commencement of construction in waters on any airport element, the Permittee shall submit a Finding of No Significant Impact and/or Record of Decision issued by the FAA for that project element.

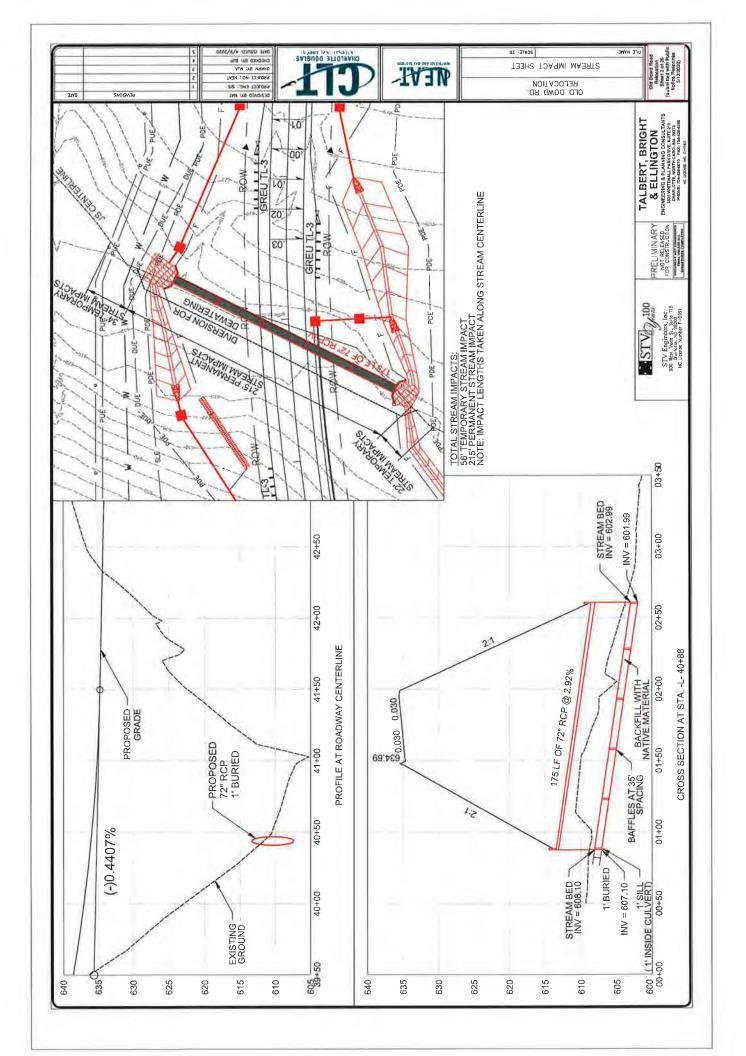
Rationale: This condition is neccesary to since these documents must be included in the Corps adminstrative record.

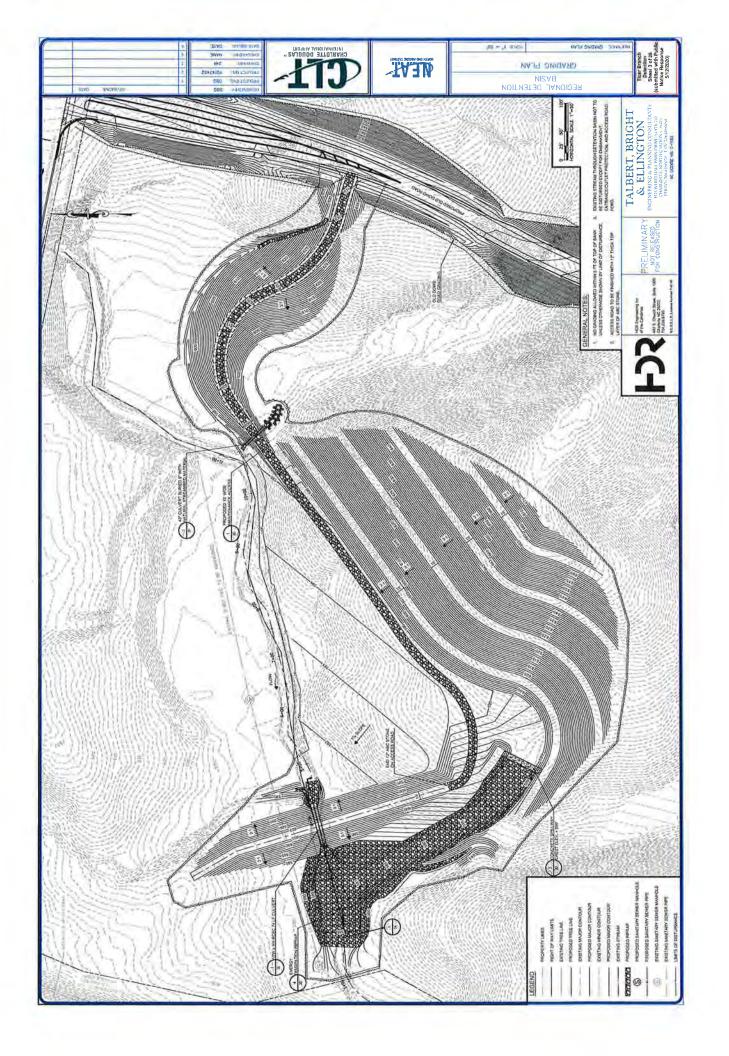
Special Condition 19: Streams within the project limits that would experience flooding from the Ticer Branch and Coffey Creek in-line detention basins, as well as the stream below each detention basin, shall be monitored by the Permittee to establish any loss of aquatic function. Monitoring shall be done in accordance with the Proposed Monitoring Plan dated August 4, 2020. Proposed monitoring locations shall be submitted to the Corps for approval at least 60 days prior to commencement of construction of each detention basin. Any modifications to the Proposed Monitoring Plan must be submitted to the Corps for approval. Annual reports of monitoring shall be submitted to the Corps and the North Carolina Division of Water Resources Division on June 1 of each year which commences June 2021 with a report that details results collected by that date at that time.

If monitoring indicates changes in geomorphology or a degradation of function as indicated in the Monitoring Report, the Permittee shall notify the Corps and provide a detailed analysis of the situation. Additional monitoring and/or remedial actions may be required by the Corps. If the Corps determines that there has been a loss of function that cannot be remedied to the Corps' satisfaction within any of the monitored streams, the Permittee shall submit a corrective action plan plan to the Corps for review and approval.

Rationale: This condition is necessary to address any potential indirect effects associated with the large in-line detention structure since they are unique and not widley used at this scale.







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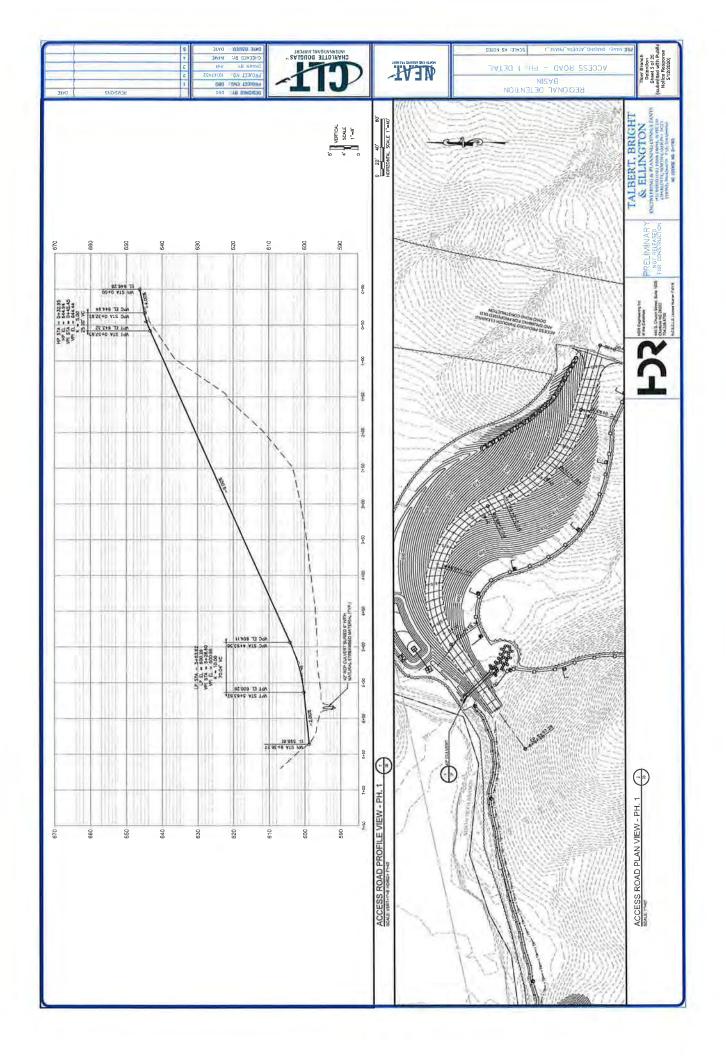
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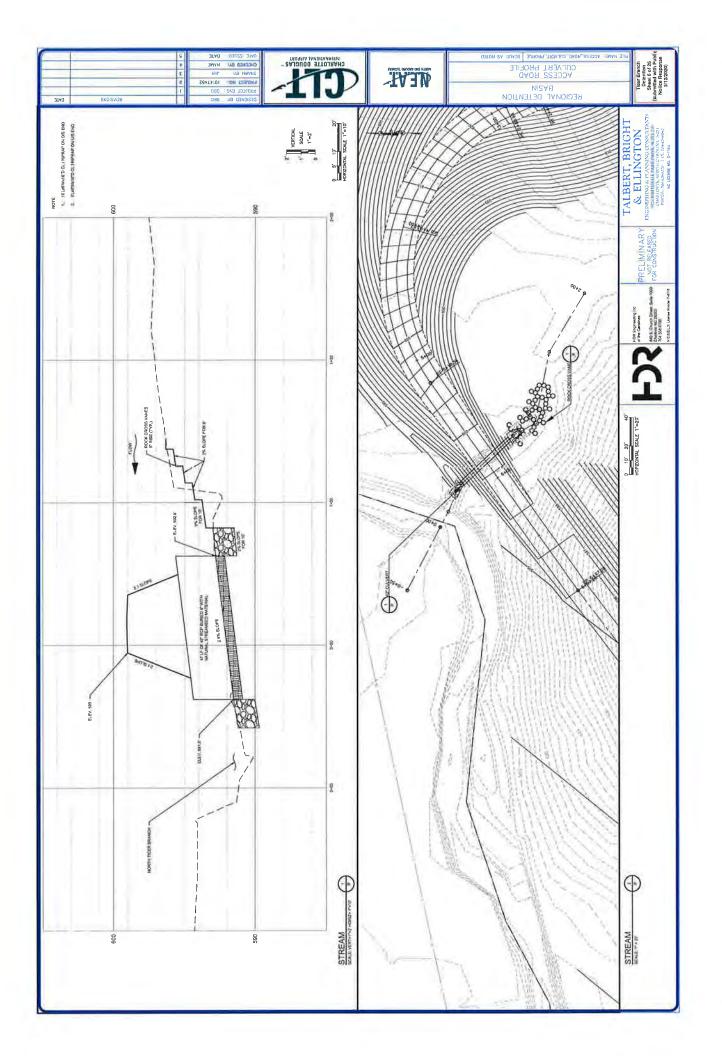


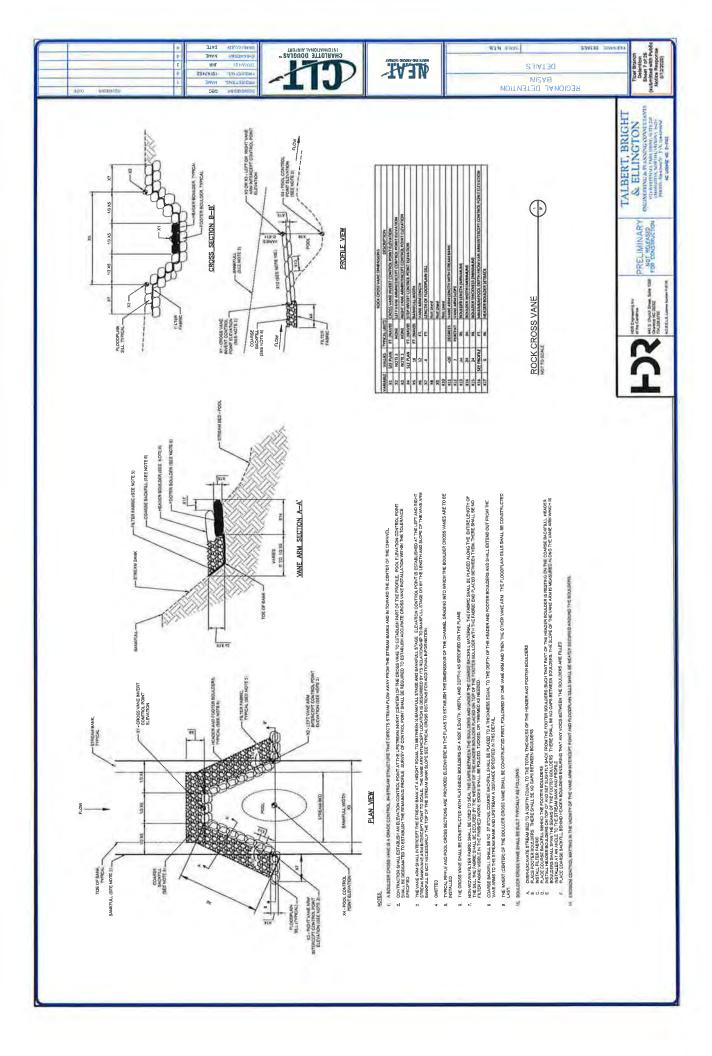


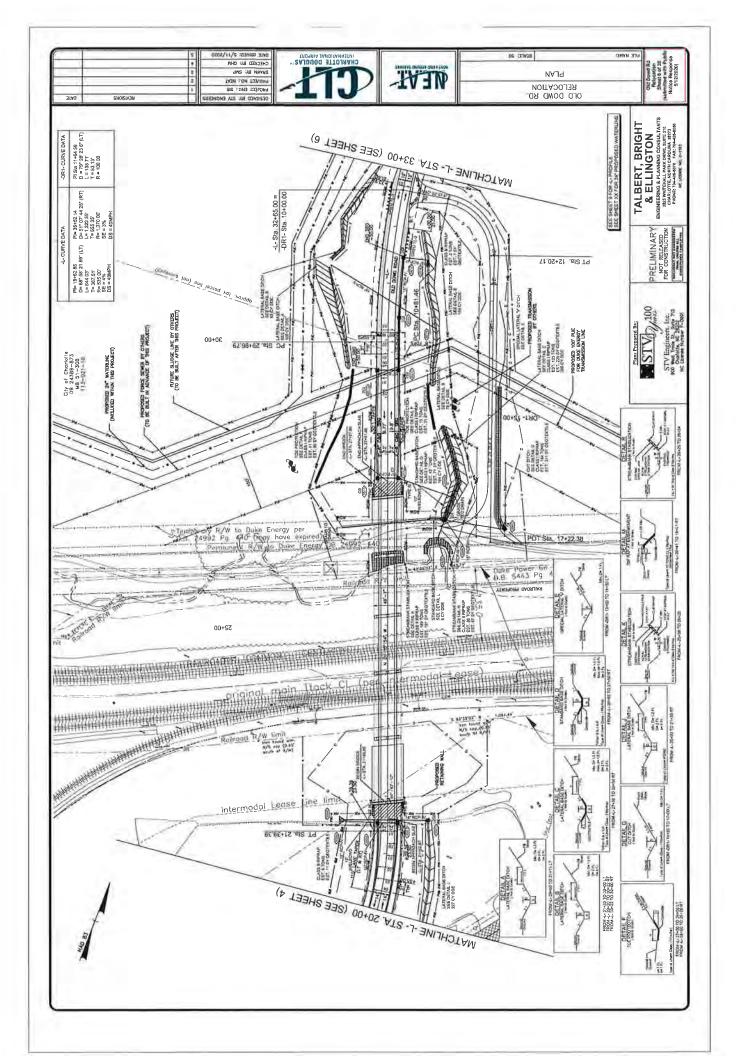


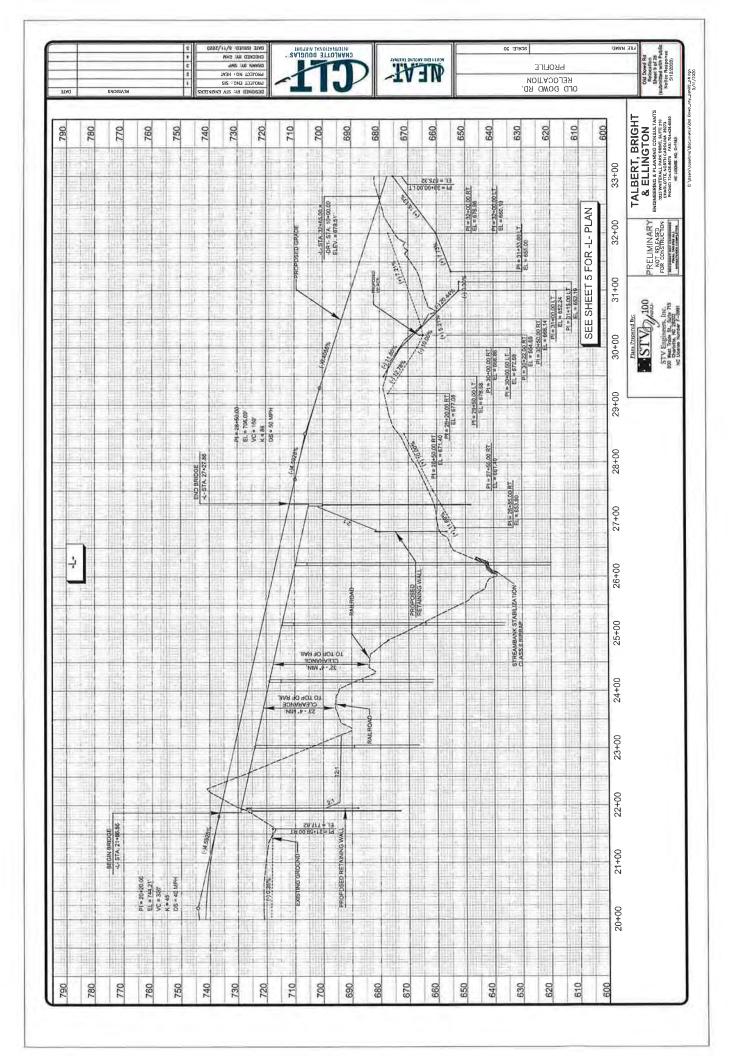


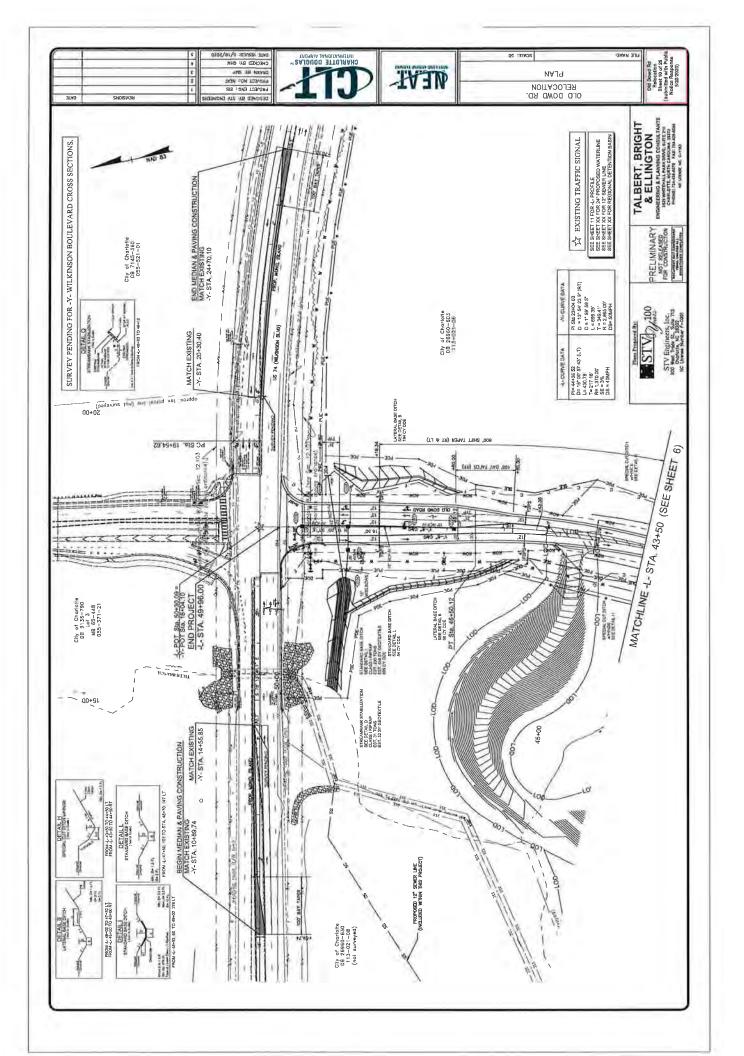


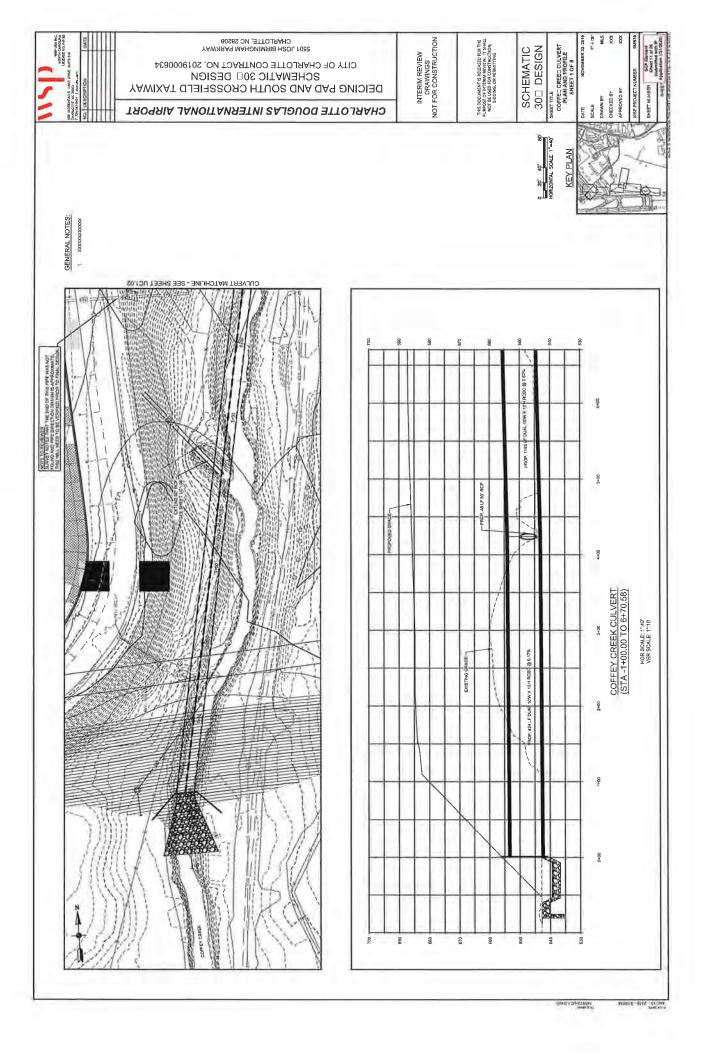






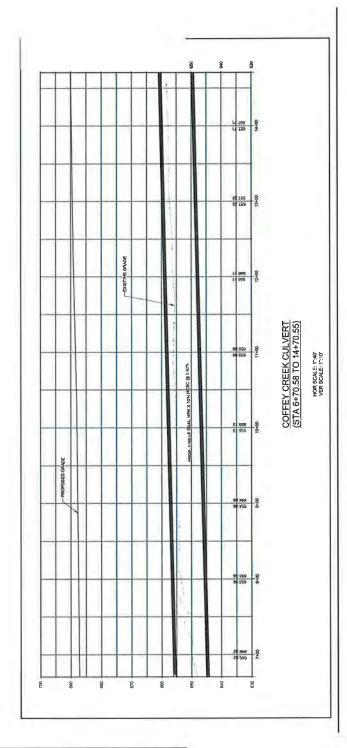




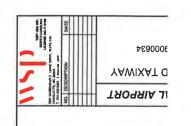


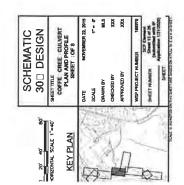


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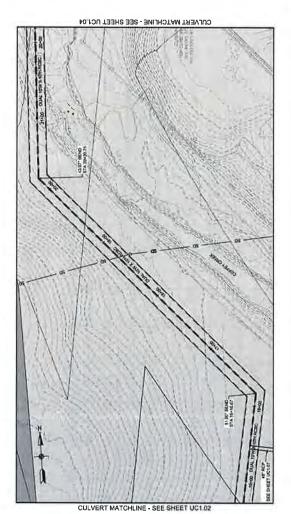


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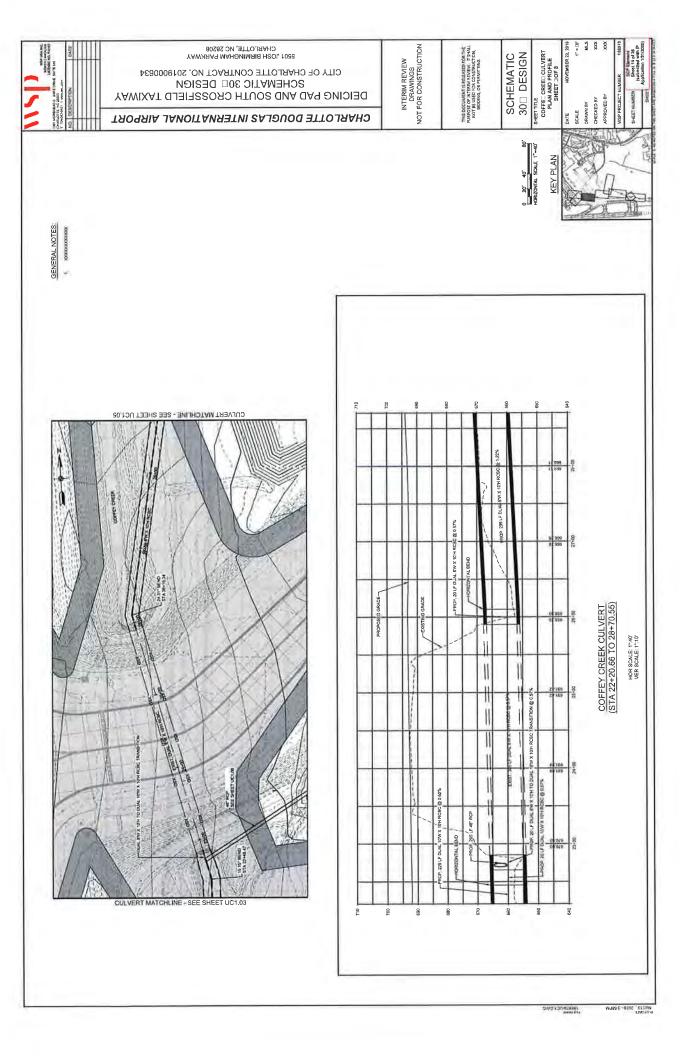


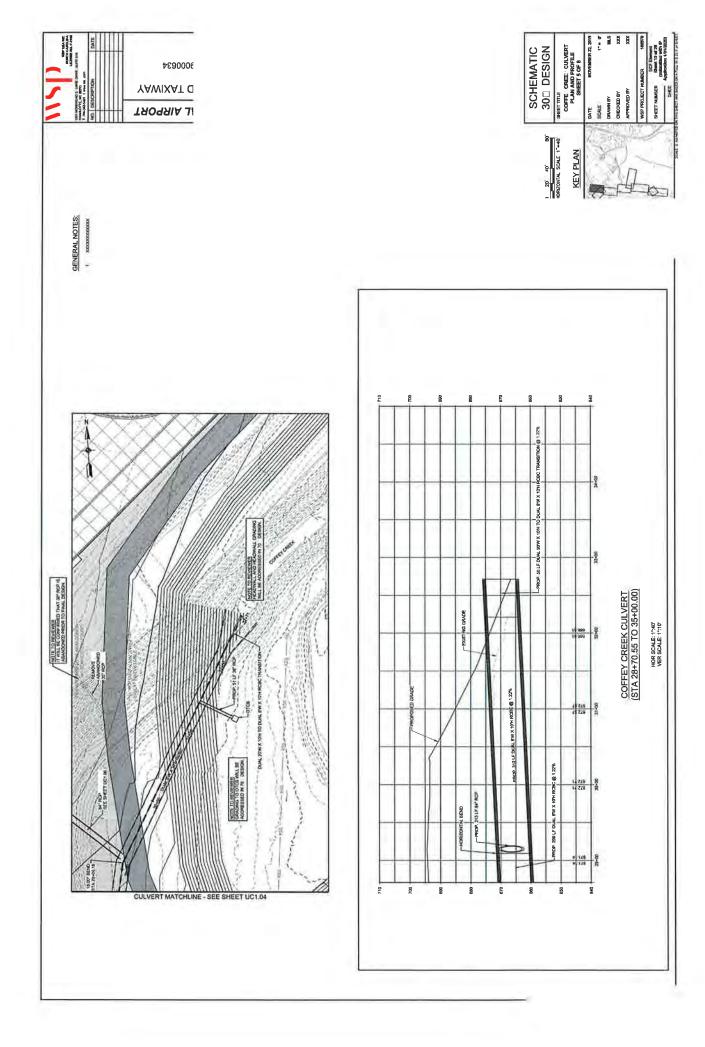


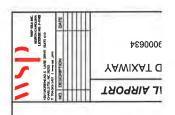
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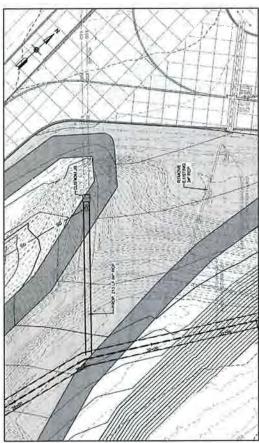
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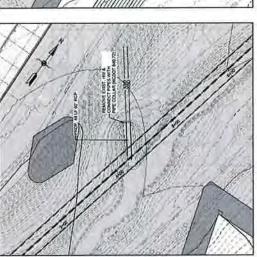
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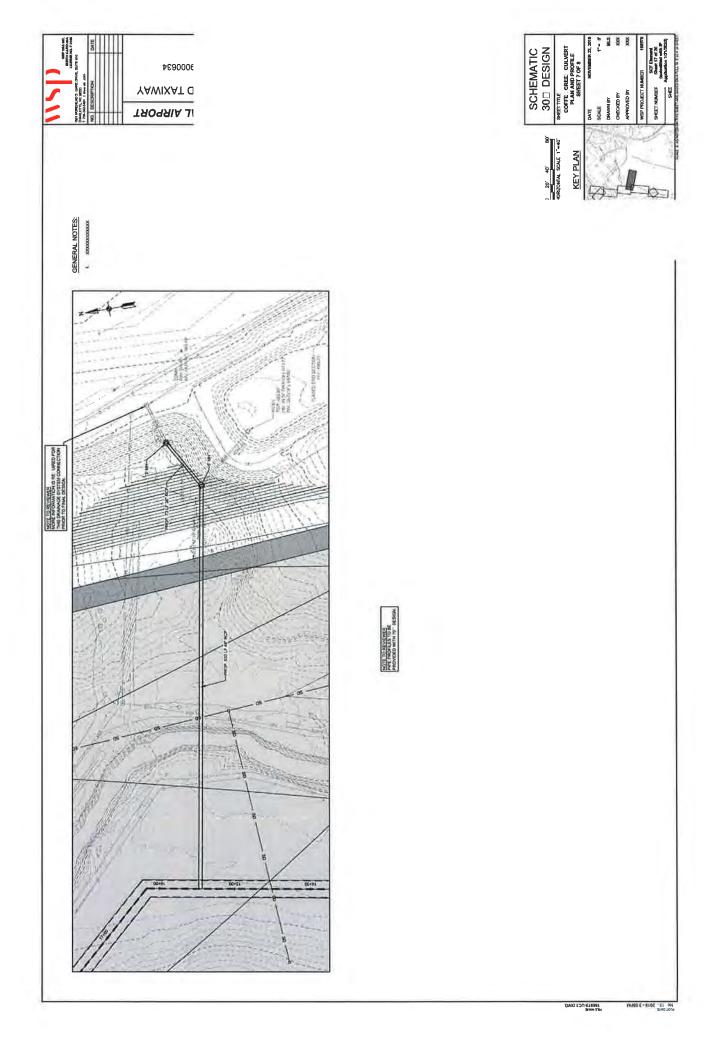
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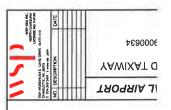
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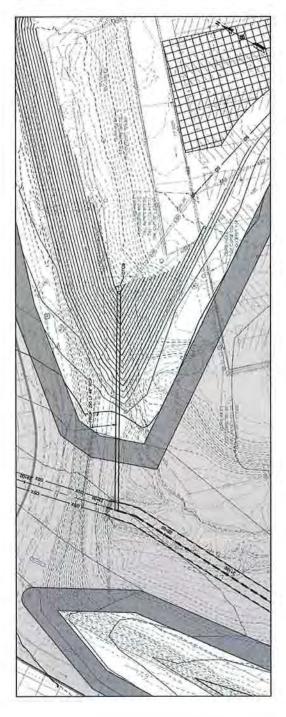
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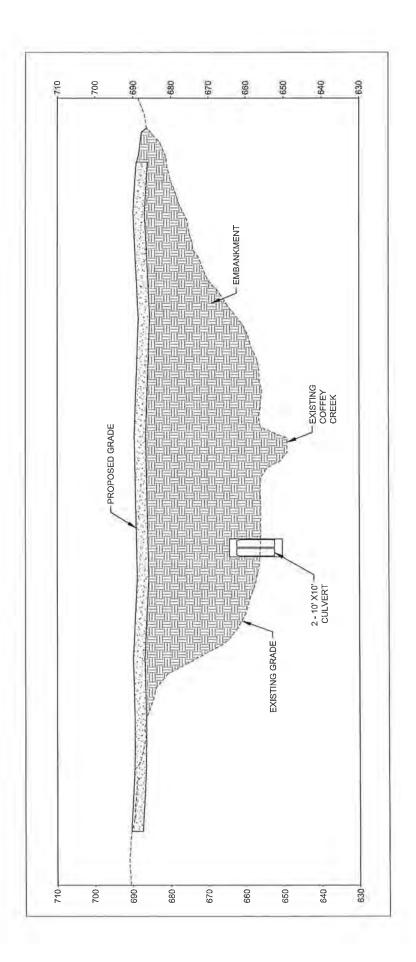
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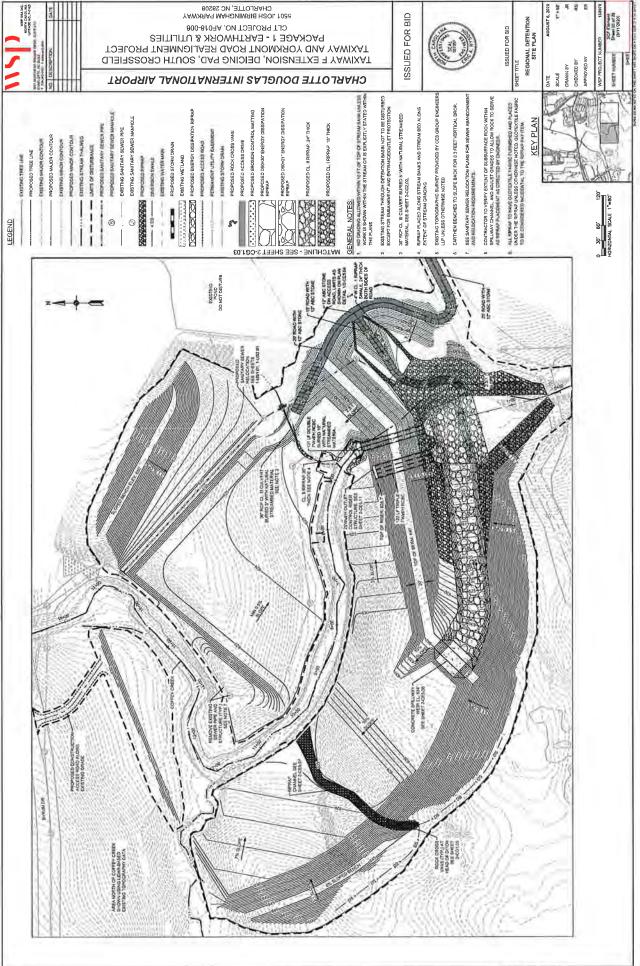
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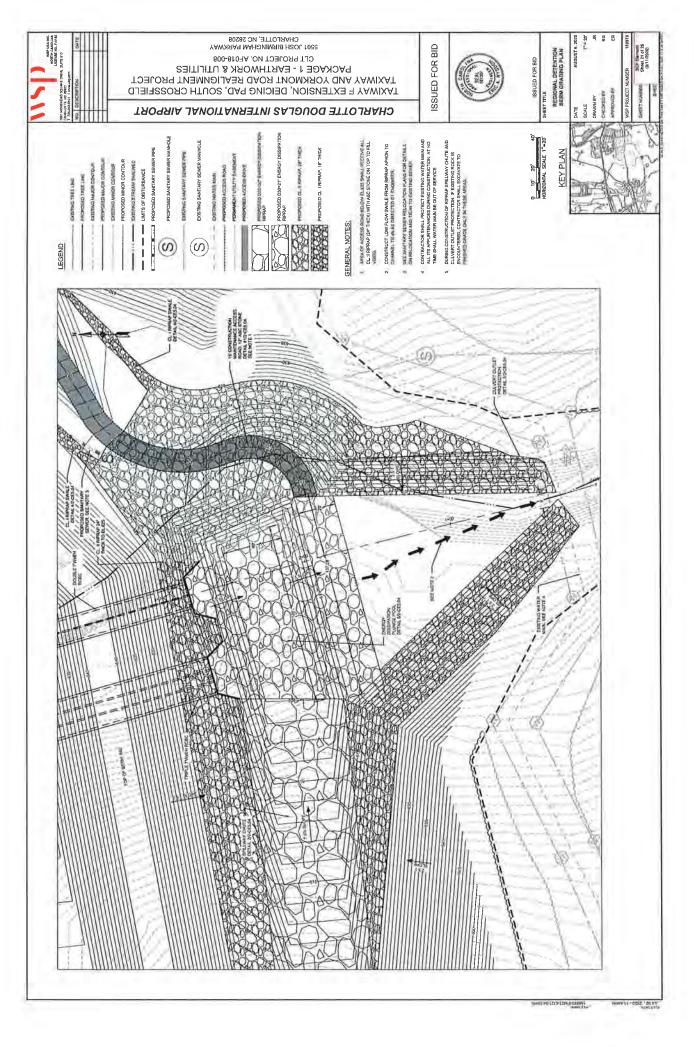
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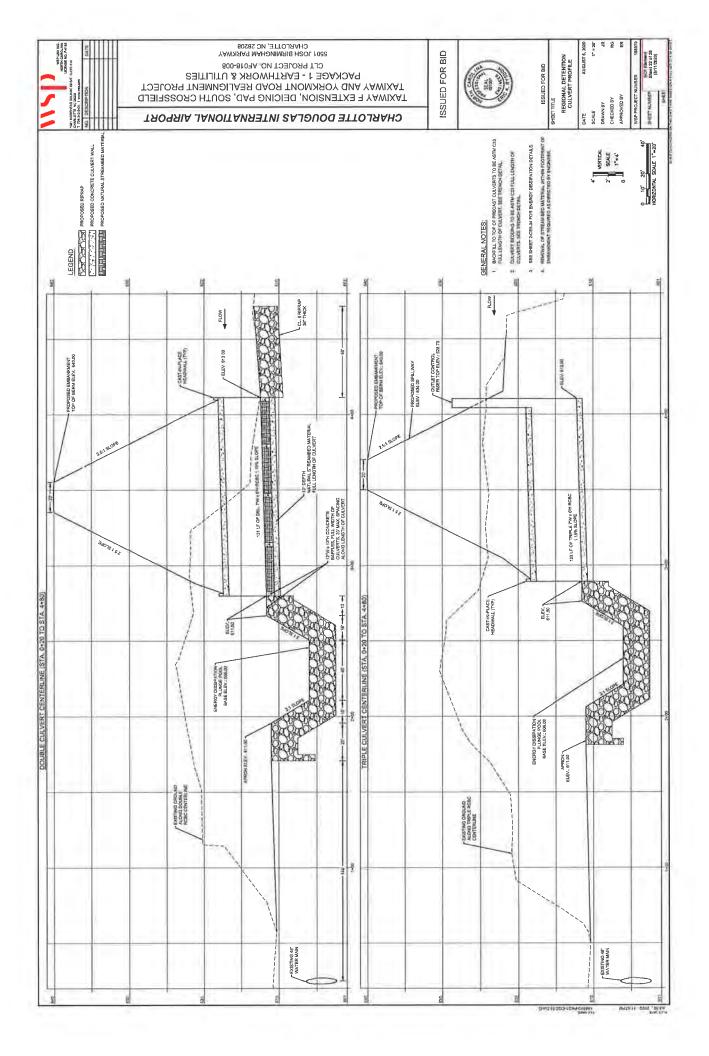


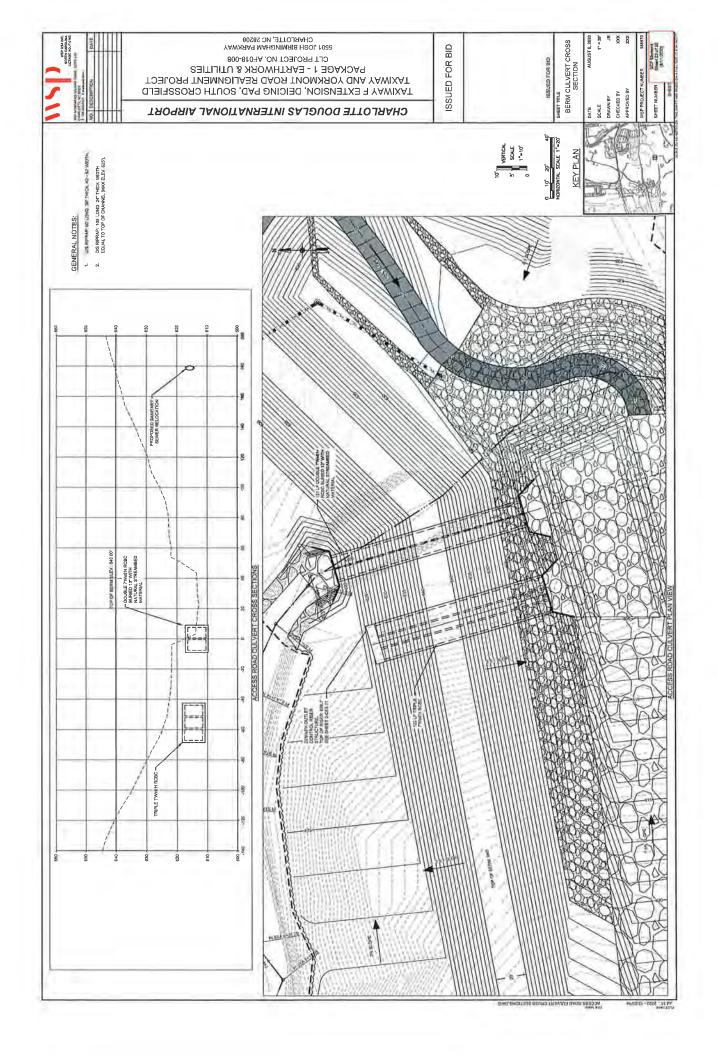
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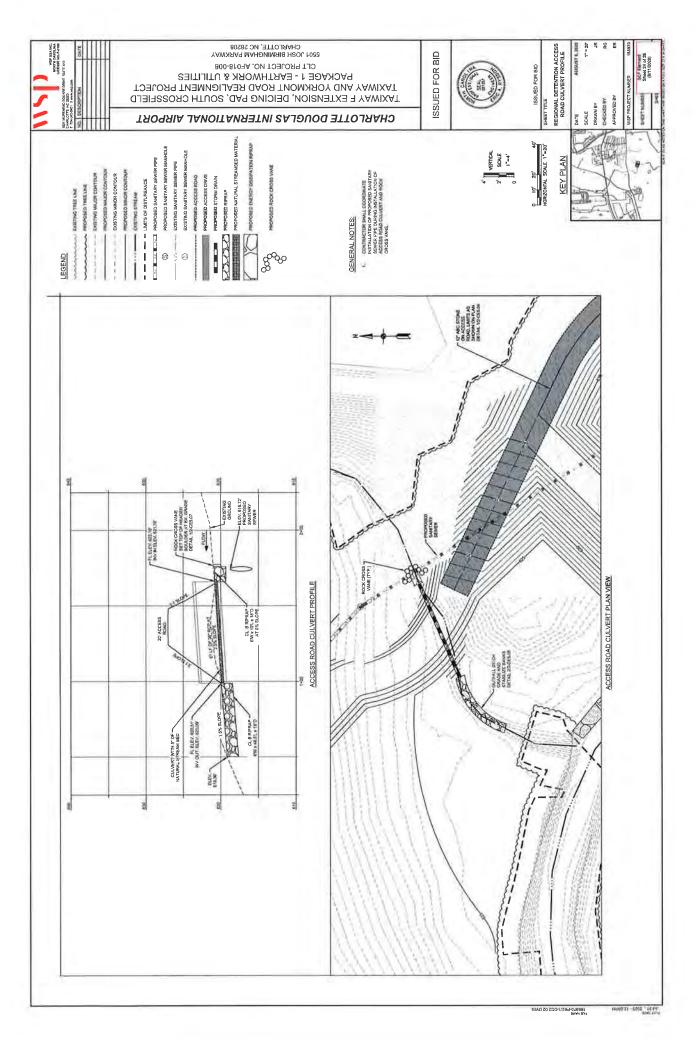














CHARLOTTE DOUGLAS INTERNATIONAL AIRPORT

TAXIWAY F EXTENSION, DEICING PAD, SOUTH CROSSFIELD
TAXIWAY AND YORKMONT ROAD REALIGNMENT PROJECT
CLT PROJECT NO. AFO18-008
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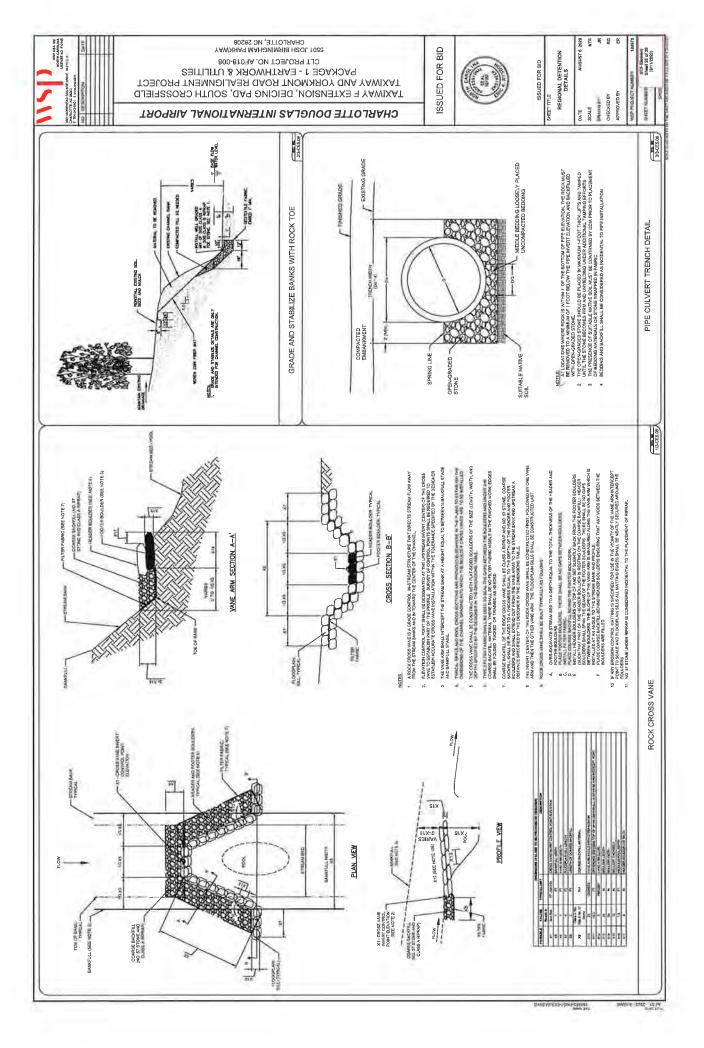
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ROY COOPER Governor MICHAEL S. REGAN Secretary S. DANIEL SMITH Director



August 21, 2020

DWR # 20001195 Ver 17 Mecklenburg County

City of Charlotte – Aviation Department Attn: Mr. Brent Cagle 5601 Wilkinson Blvd Charlotte NC 28208

Subject: Approval of Individual 401 Water Quality Certification with Additional Conditions

CLT Airport Expansion

USACE Action ID. No. SAW-2018-01071

Dear Mr. Cagle:

Attached hereto is a copy of Certification No. #WQC004233 issued to Mr. Brent Cagle and City of Charlotte – Aviation Department, dated August 21, 2020. Please note that you should get any other federal, state or local permits before proceeding with the subject project, including those required by (but not limited to) Sediment and Erosion Control, Non-Discharge, and Water Supply Watershed regulations.

This approval and its conditions are final and binding unless contested. This Certification can be contested as provided in Articles 3 and 4 of General Statute 150B by filing a written petition for an administrative hearing to the Office of Administrative Hearings (hereby known as OAH) within sixty (60) calendar days.

A petition form may be obtained from the OAH at http://www.ncoah.com/ or by calling the OAH Clerk's Office at (919) 431-3000 for information. A petition is considered filed when the original and one (1) copy along with any applicable OAH filing fee is received in the OAH during normal office hours (Monday through Friday between 8:00am and 5:00pm, excluding official state holidays).

The petition may be faxed to the OAH at (919) 431-3100, provided the original and one copy of the petition along with any applicable OAH filing fee is received by the OAH within five (5) business days following the faxed transmission.

Mailing address for the OAH:



City of Charlotte – Aviation Department DWR Project #20001195 V17 Individual Certification #WQC004233 Page 2 of 9

If sending via US Postal Service:

If sending via delivery service (UPS, FedEx, etc):

Office of Administrative Hearings 6714 Mail Service Center

Office of Administrative Hearings 1711 New Hope Church Road

Raleigh, NC 27699-6714

Raleigh, NC 27609-6285

One (1) copy of the petition must also be served to DEQ:

William F. Lane, General Counsel Department of Environmental Quality 1601 Mail Service Center Raleigh, NC 27699-1601

Unless such a petition is filed, this Certification shall be final and binding.

This Certification completes the review of the Division under section 401 of the Clean Water Act and 15A NCAC 02H .0500. Contact Sue Homewood at 336-776-9693 or sue.homewood@ncdenr.gov if you have any questions or concerns.

Sincerely,

-DocuSigned by:

Paul Wojoski

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Paul Wojoski, Supervisor 401 & Buffer Permitting Branch

cc: Kelly Thames, HDR (via email)

USACE Charlotte Regulatory Field Office (via email)

Olivia Munzer, NC WRC (via email)

Todd Bowers, EPA, (via email)

DWR MRO 401 file

DWR 401 & Buffer Permitting Branch file

Filename: 001195v17CLTExpansion(Mecklengburg) 401_IC

NORTH CAROLINA 401 WATER QUALITY CERTIFICATION

CERTIFICATION #WQC004233 is issued in conformity with the requirements of Section 401, Public Laws 92-500 and 95-217 of the United States and subject to North Carolina's Regulations in 15 NCAC 02H .0500, to Mr. Brent Cagle and City of Charlotte – Aviation Department, who have authorization for the impacts listed below, as described within your application received by the N.C. Division of Water Resources (Division) on February 4, 2020 and subsequent information on June 3, 2020, July 23, 2020 and August 10, 2020, and by Public Notice issued by the U. S. Army Corps of Engineers on February 18, 2020.

The State of North Carolina certifies that this activity will not violate the applicable portions of Sections 301, 302, 303, 306, 307 of the Public Laws 92-500 and PL 95-217 if conducted in accordance with the application, the supporting documentation, and conditions hereinafter set forth.

This approval requires you to follow the conditions listed in the Certification below.

Conditions of Certification:

1. The following phased impacts are hereby approved. No other impacts are approved, including incidental impacts. [15A NCAC 02H .0506(b)]

Phase 1

Type of Impact	Amount Approved (units) Permanent	Amount Approved (units) Temporary	
Stream			
Perennial streams	3,159 (linear feet) – permanent loss of waters	246 (linear feet)	
	174 (linear feet) – non- loss of waters		
Intermittent streams	125 (linear feet) – permanent loss of waters	0 (linear feet)	
	30 (linear feet) –		
	non-loss of waters	V	
404/401 Wetlands	0.82 (acres)	0 (acres)	

Phase 2

Type of Impact	Amount Approved (units) Permanent	Amount Approved (units) Temporary	
Stream			
Perennial streams	7,958 (linear feet)	0 (linear feet)	
Intermittent streams	193 (linear feet)	0 (linear feet)	
404/401 Wetlands	5.07 (acres)	0 (acres)	

2. Mitigation must be provided for the proposed impacts as specified in the table below. Mitigation for each Phase will be provided prior to commencing construction on any impact areas within that Phase. The Division has received an acceptance letter from the City of Charlotte Umbrella Stream and Wetland Mitigation Bank to meet this mitigation requirement. Until the City of Charlotte Umbrella Stream and Wetland Mitigation Bank receives and clears your payment, and proof of payment has been provided to this Office, no impacts specified in this Authorization Certificate shall occur. For accounting purposes, this Authorization Certificate authorizes payment to the City of Charlotte Umbrella Stream and Wetland Mitigation Bank to meet the following compensatory mitigation requirement [15A NCAC 02H .0506 (c)]:

	Compensatory Mitigation Required	River and Sub-basin Number
Stream	Phase 1a (NEAT) – 1,302 (credits)	Catawba
	Phase 1b (SCF) – 1,857 (credits)	03050101 and 03050103
	Phase 2 – 7,958 (credits)	
Wetland	Phase 1a (NEAT) – 0.68 (credits)	Catawba
	Phase 1b (SCF) – 0.14 (credits)	03050101 and 03050103
	Phase 2 – 5.07 (credits)	

- 3. This approval is for the purpose and design described in your application and as described in the Public Notice. The plans and specifications for this project are incorporated by reference and are an enforceable part of the Certification. When final design plans are developed for a Phase II activities, they shall be submitted to the Division for review to determine if modification to this 401 Water Quality Certification is required. If a modification is required, an application shall be submitted to the Division with the appropriate fee. Final designs shall reflect all appropriate avoidance, minimization, and mitigation for impacts to wetlands, streams, and other surface waters, and buffers. No construction activities that impact any wetlands or streams within Phase II shall begin until after the Permittee applies for, and receives, either a notification from the Division that a modification to the 401 is not required, or a modified 401 Water Quality Certification from the Division. [15A NCAC 02H .0501 and .0502]
- 4. You are required to secure an approved Stormwater Management Plan (SMP) from the City of Charlotte for water quality treatment of stormwater from new built upon areas created from this project before any impacts authorized in this certification occur. After it is approved, the SMP may not be modified without prior written authorization from City of Charlotte. [15A NCAC 02H .0506(b)(1)]
- No waste, spoil, solids, or fill of any kind shall occur in wetlands or waters beyond the footprint of the impacts (including temporary impacts) as authorized under this Certification. [15A NCAC 02H .0501 and .0502]
- The Permittee shall contact the Division Mooresville Regional Office within 10 days of the commencement of construction on each detention basin. [15A NCAC 02H .0507 (c) and 15A NCAC 02H .0502 (e)]
- Streams within the project limits that will experience flooding from the Ticer Branch and Coffey
 Creek in-line detention basins, as well as the stream channel immediately below each detention

City of Charlotte – Aviation Department DWR Project #20001195 V17 Individual Certification #WQC004233 Page 5 of 9

basin, shall be monitored by the Permittee to establish any loss of function per required in North Carolina Administrative Code 15A NCAC 2B .0201. Monitoring shall be done in accordance with the Proposed Monitoring Plan dated August 4, 2020. Proposed monitoring locations shall be submitted to the Division for approval at least 60 days prior to commencement of construction of each detention basin. Any modifications to the Proposed Monitoring Plan must be submitted to the Division for approval. Annual reports of monitoring shall be submitted to the Division on June 1 of each year which commences June 2021 with a report that details results collected by that date at that time.

If monitoring indicates a significant change in geomorphology or a degradation of function as indicated in the Proposed Monitoring Report, the Permittee shall notify the Division and provide a detailed analysis of the situation. Additional monitoring and/or remedial actions may be required by the Division. If the Division determines that there has been a loss of function that cannot be remedied to the Division's satisfaction within any of the monitored streams, the Permittee shall submit a mitigation plan to the Division.

- 8. All construction activities shall be performed and maintained in full compliance with G.S. Chapter 113A Article 4 (Sediment and Pollution Control Act of 1973).
- Sediment and erosion control measures shall not be placed in wetlands or waters except within the footprint of temporary or permanent impacts authorized under this Certification. [15A NCAC 02H .0501 and .0502]
- 10. All wetlands, streams, surface waters, and riparian buffers located within 50 feet of each construction area on the project site shall be clearly marked (example- orange fabric fencing) prior to any land disturbing activities and must be maintained on the property until the project phase is completed. [15A NCAC 02H .0506 (b)(2) and (c)(2) and 15A NCAC 02H .0507 (c)]
- 11. Erosion control matting that incorporates plastic mesh and/or plastic twine shall not be used along streambanks or within wetlands. [15A NCAC 02B .0201]
- 12. An NPDES Construction Stormwater Permit (NCG010000) is required for construction projects that disturb one (1) or more acres of land. The NCG010000 Permit allows stormwater to be discharged during land disturbing construction activities as stipulated in the conditions of the permit. If the project is covered by this permit, full compliance with permit conditions including the erosion & sedimentation control plan, inspections and maintenance, self-monitoring, record keeping and reporting requirements is required. [15A NCAC 02H .0506(b)(5) and (c)(5)]
- 13. All work in or adjacent to streams shall be conducted so that the flowing stream does not come in contact with the disturbed area. Approved best management practices from the most current version of the NC Sediment and Erosion Control Manual, or the NC DOT Construction and Maintenance Activities Manual, such as sandbags, rock berms, cofferdams, and other diversion structures shall be used to minimize excavation in flowing water. [15A NCAC 02H .0506(b)(3) and (c)(3)]

City of Charlotte – Aviation Department DWR Project #20001195 V17 Individual Certification #WQC004233 Page 6 of 9

14. Culverts shall be designed and installed in such a manner that the original stream profiles are not altered and allow for aquatic life movement during low flows. The dimension, pattern, and profile of the stream above and below a pipe or culvert shall not be modified by widening the stream channel or by reducing the depth of the stream in connection with the construction activity. The width, height, and gradient of a proposed culvert shall be such as to pass the average historical low flow and spring flow without adversely altering flow velocity. [15A NCAC 02H .0506(b)(2) and (c)(2)].

If multiple pipes or barrels are required, they shall be designed to mimic the existing stream cross section as closely as possible including pipes or barrels at flood plain elevation and/or sills where appropriate. Widening the stream channel shall be avoided.

Installation of culverts in wetlands shall ensure continuity of water movement and be designed to adequately accommodate high water or flood conditions. When roadways, causeways, or other fill projects are constructed across FEMA-designated floodways or wetlands, openings such as culverts or bridges shall be provided to maintain the natural hydrology of the system as well as prevent constriction of the floodway that may result in destabilization of streams or wetlands.

The establishment of native woody vegetation and other soft stream bank stabilization techniques shall be used where practicable instead of riprap or other bank hardening methods.

- 15. Application of fertilizer to establish planted/seeded vegetation within disturbed riparian areas and/or wetlands shall be conducted at agronomic rates and shall comply with all other Federal, State and Local regulations. Fertilizer application shall be accomplished in a manner that minimizes the risk of contact between the fertilizer and surface waters. [15A NCAC 02B .0200 and 15A NCAC 02B .0231]
- 16. If concrete is used during construction, then all necessary measures shall be taken to prevent direct contact between uncured or curing concrete and waters of the state. Water that inadvertently contacts uncured concrete shall not be discharged to waters of the state. [15A NCAC 02B .0200]
- 17. No temporary impacts are allowed beyond those included in this Certification. All temporary fill and culverts shall be removed, and the impacted area shall be returned to natural conditions within 60 calendar days after the temporary impact is no longer necessary. The impacted areas shall be restored to original grade, including each stream's original cross sectional dimensions, planform pattern, and longitudinal bed profile. All temporarily impacted sites shall be restored and stabilized with native vegetation. [15A NCAC 02H .0506(b)(2) and (c)(2)]
- 18. All proposed and approved temporary pipes/culverts/riprap pads etc. in streams shall be installed as outlined in the most recent edition of the North Carolina Sediment and Erosion Control Planning and Design Manual or the North Carolina Surface Mining Manual or the North Carolina Department of Transportation Best Management Practices for Construction and Maintenance Activities so as not to restrict stream flow or cause dis-equilibrium during use of this Certification. [15A NCAC 02H .0506(b)(2) and (c)(2)]

- 19. Any riprap required for proper culvert placement, stream stabilization, or restoration of temporarily disturbed areas shall be restricted to the area directly impacted by the approved construction activity. All riprap shall be buried and/or "keyed in" such that the original stream elevation and streambank contours are restored and maintained. Placement of riprap or other approved materials shall not result in de-stabilization of the stream bed or banks upstream or downstream of the area. [15A NCAC 02H .0506(b)(2)]
- 20. Any riprap used for stream stabilization shall be of a size and density to prevent movement by wave, current action, or stream flows and shall consist of clean rock or masonry material free of debris or toxic pollutants. Riprap shall not be installed in the streambed except in specific areas required for velocity control and to ensure structural integrity of bank stabilization measures. [15A NCAC 02H .0506(b)(2)]
- 21. This Certification does not relieve the applicant of the responsibility to obtain all other required Federal, State, or Local approvals before proceeding with the project, including those required by, but not limited to Sediment and Erosion Control, Non-Discharge, Water Supply Watershed, and Trout Buffer regulations.
- 22. All mechanized equipment operated near surface waters shall be inspected and maintained regularly to prevent contamination of surface waters from fuels, lubricants, hydraulic fluids, or other toxic materials. Construction shall be staged in order to minimize the exposure of equipment to surface waters to the maximum extent practicable. Fueling, lubrication and general equipment maintenance shall not take place within 50 feet of a waterbody or wetlands to prevent contamination by fuels and oils. [15A NCAC 02H .0506(b)(3) and (c)(3) and 15A NCAC 02B .0211 (12)]
- 23. Heavy equipment working in wetlands shall be placed on mats or other measures shall be taken to minimize soil disturbance. [15A NCAC 02H .0506(b)(3) and (c)(3)]
- 24. In accordance with 143-215.85(b), the Permittee shall report to the Mooresville Regional Office at 704-663-1699 (after hours and on weekends call 800-858-0368) any petroleum spill of 25 gallons or more; any spill regardless of amount that causes a sheen on surface waters; any petroleum spill regardless of amount occurring within 100 feet of surface waters; and any petroleum spill less than 25 gallons that cannot be cleaned up within 24 hours.

City of Charlotte – Aviation Department DWR Project #20001195 V17 Individual Certification #WQC004233 Page 8 of 9

- 25. Mr. Brent Cagle and City of Charlotte Aviation Department shall conduct construction activities in a manner consistent with State water quality standards (including any requirements resulting from compliance with section 303(d) of the Clean Water Act) and any other appropriate requirements of State and Federal law. [15A NCAC 02B .0200] If the Division determines that such standards or laws are not being met (including the failure to sustain a designated or achieved use) or that State or federal law is being violated, or that further conditions are necessary to assure compliance, the Division may reevaluate and modify this Certification. Before modifying the Certification, the Division shall notify Mr. Brent Cagle and City of Charlotte Aviation Department and the U.S. Army Corps of Engineers, provide public notice in accordance with 15A NCAC 02H .0503 and provide opportunity for public hearing in accordance with 15A NCAC 02H .0504. Any new or revised conditions shall be provided to Mr. Brent Cagle and City of Charlotte Aviation Department in writing, shall be provided to the U.S. Army Corps of Engineers for reference in any Permit issued pursuant to Section 404 of the Clean Water Act, and shall also become conditions of the 404 Permit for the project.
- 26. Upon completion of all permitted impacts included within the approval and any subsequent modifications, the applicant shall be required to return a certificate of completion (available on the DWR website https://edocs.deg.nc.gov/Forms/Certificate-of-Completion). [15A NCAC 02H .0502(f)]
- 27. If the property or project is sold or transferred, the new Permittee shall be given a copy of this Certification (and written authorization if applicable) and is responsible for complying with all conditions. [15A NCAC 02H .0501 and .0502]
- 28. This Certification neither grants nor affirms any property right, license, or privilege in any waters, or any right of use in any waters. This Certification does not authorize any person to interfere with the riparian rights, littoral rights, or water use rights of any other person and this Certification does not create any prescriptive right or any right of priority regarding any usage of water. This Certification shall not be interposed as a defense in any action respecting the determination of riparian or littoral rights or other rights to water use. No consumptive user is deemed by virtue of this Certification to possess any prescriptive or other right of priority with respect to any other consumptive user regardless of the quantity of the withdrawal or the date on which the withdrawal was initiated or expanded.
- 29. This Certification grants permission to the director, an authorized representative of the Director, or DEQ staff, upon the presentation of proper credentials, to enter the property during normal business hours. [15A NCAC 02H .0502(e)]
- 30. Non-compliance with or violation of the conditions herein set forth by a specific project may result in revocation of this Certification for the project and may also result in criminal and/or civil penalties.

31. The permittee shall report to the Mooresville Regional Office at 704-663-1699 any noncompliance with this Certification, any violation of stream or wetland standards [15A NCAC 02B .0200] including but not limited to sediment impacts, and any violation of state regulated riparian buffer rules [15A NCAC 02B .0200]. Information shall be provided orally within 24 hours (or the next business day if a weekend or holiday) from the time the applicant became aware of the circumstances. A written submission shall also be provided within 5 business days of the time the applicant becomes aware of the circumstances. The written submission shall contain a description of the noncompliance, and its causes; the period of noncompliance, including exact dates and times, if the noncompliance has not been corrected, the anticipated time compliance is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. The Division may waive the written submission requirement on a case-by-case basis.

This approval to proceed with your proposed impacts or to conduct impacts to waters as depicted in your application shall expire upon expiration of the 404 Permit. The conditions in effect on the date of issuance shall remain in effect for the life of the project, regardless of the expiration date of this Certification. [15A NCAC 02H .0507(d)(2) and 15A NCAC 02H .0506]

This the 21st day of August 2020

-DocuSigned by:

Paul Wojoski —949D91BA53EF4E0...

Paul Wojoski, Supervisor 401 & Buffer Permitting Branch

SLH

WQC004233

Compensatory Mitigation Responsibility Transfer Form

Permittee: City of Charlotte – Aviation Department, Haley Gentry

Action ID: SAW-2018-01071

Project Name: Charlotte Douglas International Airport Expansion (Phase 1 Only) County: Mecklenburg

Instructions to Permittee: The Permittee must provide a copy of this form to the Mitigation Sponsor, either an approved Mitigation Bank or the North Carolina Division of Mitigation Services (NCDMS), who will then sign the form to verify the transfer of the mitigation responsibility. Once the Sponsor has signed this form, it is the Permittee's responsibility to ensure that to the U.S. Army Corps of Engineers (USACE) Project Manager identified on page two is in receipt of a signed copy of this form before conducting authorized impacts, unless otherwise specified below. If more than one mitigation Sponsor will be used to provide the mitigation associated with the permit, or if the impacts and/or the mitigation will occur in more than one 8-digit Hydrologic Unit Code (HUC), multiple forms will be attached to the permit, and the separate forms for each Sponsor and/or HUC must be provided to the appropriate mitigation Sponsors.

Instructions to Sponsor: The Sponsor must verify that the mitigation requirements (credits) shown below are available at the identified site. By signing below, the Sponsor is accepting full responsibility for the identified mitigation, regardless of whether or not they have received payment from the Permittee. Once the form is signed, the Sponsor must update the bank ledger and provide a copy of the signed form and the updated bank ledger to the Permittee, the USACE Project Manager, and the Wilmington District Mitigation Office (see contact information on page 2). The Sponsor must also comply with all reporting requirements established in their authorizing instrument.

Permitted Impacts and Compensatory Mitigation Requirements:

Permitted Impacts Requiring Mitigation* 8-digit HUC and Basin: 03050101, Catawba River Basin

Stream Impacts (linear feet) Wetland Impacts (acres)			cres)			
Warm	Cool	Cold	Riparian Riverine	Riparian Non-Riverine	Non-Riparian	Coastal
1,302			0.68			

^{*}If more than one mitigation sponsor will be used for the permit, only include impacts to be mitigated by this sponsor.

Compensatory Mitigation Requirements: 8-digit HUC and Basin: 03050101, Catawba River Basin

Stream Mitigation (credits)		Stream Mitigation (credits) Wetland Mitigation (credits)				
Warm	Cool	Cold	Riparian Riverine	Riparian Non- Riverine	Non-Riparian	Coastal
2,604			1,25			

Mitigation Site Debited: Charlotte Mecklenburg Stormwater Services – Allenbrook Tributary and Torrence Creek
(List the name of the bank to be debited. For umbrella banks, also list the specific site. For NCDMS, list NCDMS. If the NCDMS acceptance letter identifies a specific site, also list the specific site to be debited).

Section to be completed by the Mitigation Sponsor

Statement of Mitigation Liability Acceptance: I, the undersigned, verify that I am authorized to approve mitigation transactions for the Mitigation Sponsor shown below, and I certify that the Sponsor agrees to accept full responsibility for providing the mitigation identified in this document (see the table above), associated with the USACE Permittee and Action ID number shown. I also verify that released credits (and/or advance credits for NCDMS), as approved by the USACE, are currently available at the mitigation site identified above. Further, I understand that if the Sponsor fails to provide the required compensatory mitigation, the USACE Wilmington District Engineer may pursue measures against the Sponsor to ensure compliance associated with the mitigation requirements.

gnature of Sponsor's Authorized Representative	Date of Signature
e of Sponsor's Authorized Representative:	
gation Sponsor Name:	

Conditions for Transfer of Compensatory Mitigation Credit:

- Once this document has been signed by the Mitigation Sponsor and the USACE is in receipt of the signed form, the
 Permittee is no longer responsible for providing the mitigation identified in this form, though the Permittee remains
 responsible for any other mitigation requirements stated in the permit conditions.
- Construction within jurisdictional areas authorized by the permit identified on page one of this form can begin only after the USACE is in receipt of a copy of this document signed by the Sponsor, confirming that the Sponsor has accepted responsibility for providing the mitigation requirements listed herein. For authorized impacts conducted by the North Carolina Department of Transportation (NCDOT), construction within jurisdictional areas may proceed upon permit issuance; however, a copy of this form signed by the Sponsor must be provided to the USACE within 30 days of permit issuance. NCDOT remains fully responsible for the mitigation until the USACE has received this form, confirming that the Sponsor has accepted responsibility for providing the mitigation requirements listed herein.
- Signed copies of this document must be retained by the Permittee, Mitigation Sponsor, and in the USACE administrative records for both the permit and the Bank/ILF Instrument. It is the Permittee's responsibility to ensure that the USACE Project Manager (address below) is provided with a signed copy of this form.
- If changes are proposed to the type, amount, or location of mitigation after this form has been signed and returned to the USACE, the Sponsor must obtain case-by-case approval from the USACE Project Manager and/or North Carolina Interagency Review Team (NCIRT). If approved, higher mitigation ratios may be applied, as per current District guidance and a new version of this form must be completed and included in the USACE administrative records for both the permit and the Bank/ILF Instrument.

Comments/Additional Conditions: A letter from Charlotte Mecklenburg Stormwater Services, confirming their willing and able to accept the applicants compensatory mitigation responsibility, dated 5/15/2020was included with the preconstruction notification.

This form is not valid unless signed below by the USACE Project Manager and by the Mitigation Sponsor on Page 1. Once signed, the Sponsor should provide copies of this form along with an updated bank ledger to: 1) the Permittee, 2) the USACE Project Manager at the address below, and 3) the Wilmington District Mitigation Office, Attn: Todd Tugwell, 11405 Falls of Neuse Road, Wake Forest, NC 27587 (email: todd.tugwell@usace.army.mil). Questions regarding this form or any of the permit conditions may be directed to the USACE Project Manager below.

USACE Project Manager:

David L. Shaeffer

USACE Field Office:

Asheville Regulatory Office US Army Corps of Engineers 151 Patton Avenue, Room 208 Asheville, North Carolina 28801

Email:

david.l.shaeffer@usace.army.mil
Digitally signed by

SHAEFFER.DAVID.LEIGH.12

60750573

12/14/2020

USACE Project Manager Signature

Date of Signature

Current Wilmington District mitigation guidance, including information on mitigation ratios, functional assessments, and mitigation bank location and availability, and credit classifications (including stream temperature and wetland groupings) is available at http://ribits.usace.army.mil

Compensatory Mitigation Responsibility Transfer Form

Permittee: City of Charlotte – Aviation Department, Haley Gentry

Project Name: Charlotte Douglas International Airport Expansion (Phase 1 Only)

County: Mecklenburg

Instructions to Permittee: The Permittee must provide a copy of this form to the Mitigation Sponsor, either an approved Mitigation Bank or the North Carolina Division of Mitigation Services (NCDMS), who will then sign the form to verify the transfer of the mitigation responsibility. Once the Sponsor has signed this form, it is the Permittee's responsibility to ensure that to the U.S. Army Corps of Engineers (USACE) Project Manager identified on page two is in receipt of a signed copy of this form before conducting authorized impacts, unless otherwise specified below. If more than one mitigation Sponsor will be used to provide the mitigation associated with the permit, or if the impacts and/or the mitigation will occur in more than one 8-digit Hydrologic Unit Code (HUC), multiple forms will be attached to the permit, and the separate forms for each Sponsor and/or HUC must be provided to the appropriate mitigation Sponsors.

Instructions to Sponsor: The Sponsor must verify that the mitigation requirements (credits) shown below are available at the identified site. By signing below, the Sponsor is accepting full responsibility for the identified mitigation, regardless of whether or not they have received payment from the Permittee. Once the form is signed, the Sponsor must update the bank ledger and provide a copy of the signed form and the updated bank ledger to the Permittee, the USACE Project Manager, and the Wilmington District Mitigation Office (see contact information on page 2). The Sponsor must also comply with all reporting requirements established in their authorizing instrument.

Permitted Impacts and Compensatory Mitigation Requirements:

Permitted Impacts Requiring Mitigation* 8-digit HUC and Basin: 03050103, Catawba River Basin

Stream	Stream Impacts (linear feet)		Stream Impacts (linear feet) Wetland Impacts (acres)			
Warm	Cool	Cold	Riparian Riverine	Riparian Non-Riverine	Non-Riparian	Coastal
1,982		1	0.14			

^{*}If more than one mitigation sponsor will be used for the permit, only include impacts to be mitigated by this sponsor.

Compensatory Mitigation Requirements: 8-digit HUC and Basin: 03050103, Catawba River Basin

Stream Mitigation (credits)		am Mitigation (credits) Wetland Mitigation (credits)				
Warm	Cool	Cold	Riparian Riverine	Riparian Non- Riverine	Non-Riparian	Coastal
3,496.5			0.28			

Mitigation Site Debited: Charlotte Mecklenburg Stormwater Services – Sedgefield Park-Dairy Branch, Edwards Branch Ph III, and Muddy Creek. (List the name of the bank to be debited. For umbrella banks, also list the specific site. For NCDMS, list NCDMS. If the NCDMS acceptance letter identifies a specific site, also list the specific site to be debited).

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Signature of Sponsor's Authorized Representative	Date of Signature
Name of Sponsor's Authorized Representative:	
Mitigation Sponsor Name:	
ensure compliance associated with the mitigation requirements.	,

Conditions for Transfer of Compensatory Mitigation Credit:

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Comments/Additional Conditions: A letter from Charlotte Mecklenburg Stormwater Services, confirming their willing and able to accept the applicants compensatory mitigation responsibility, dated 5/15/2020 was included with the preconstruction notification.

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USACE Project Manager: David L. Shaeffer

USACE Field Office: Asheville Regulatory Office

US Army Corps of Engineers 151 Patton Avenue, Room 208 Asheville, North Carolina 28801

Email: david.l.shaeffer@usace.army.mil

Digitally signed by

SHAEFFER.DAVID.LEIGH.12

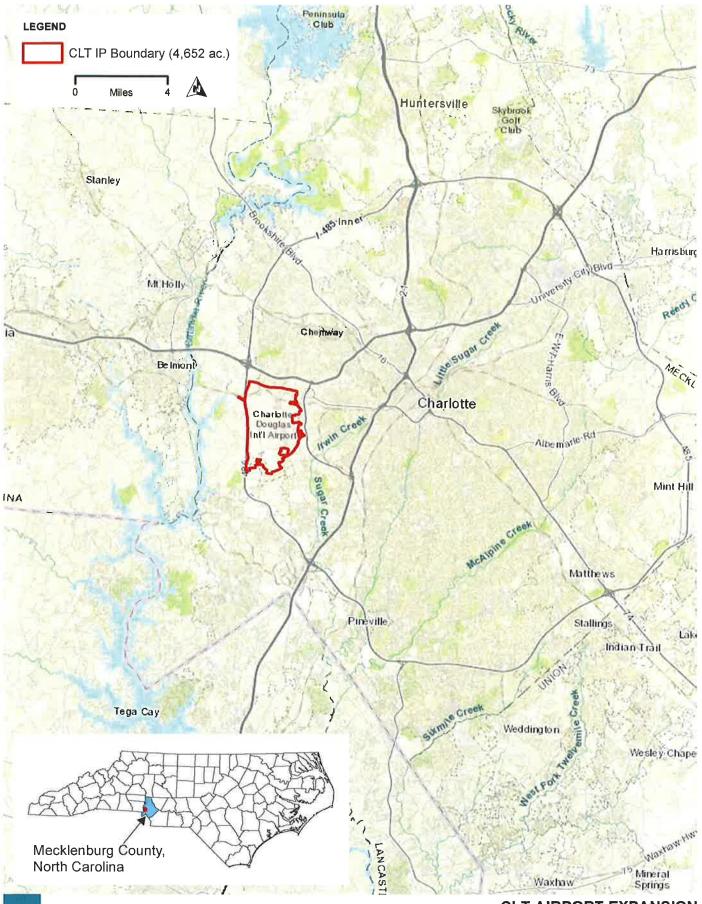
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USACE Project Manager Signature

12/14/2020

Date of Signature

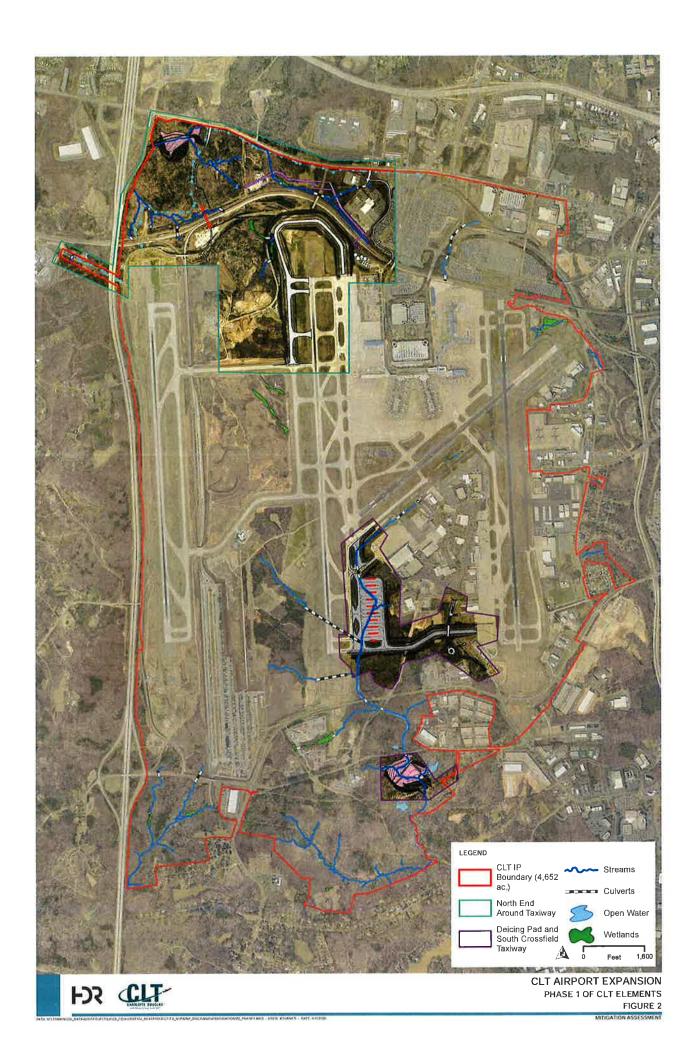
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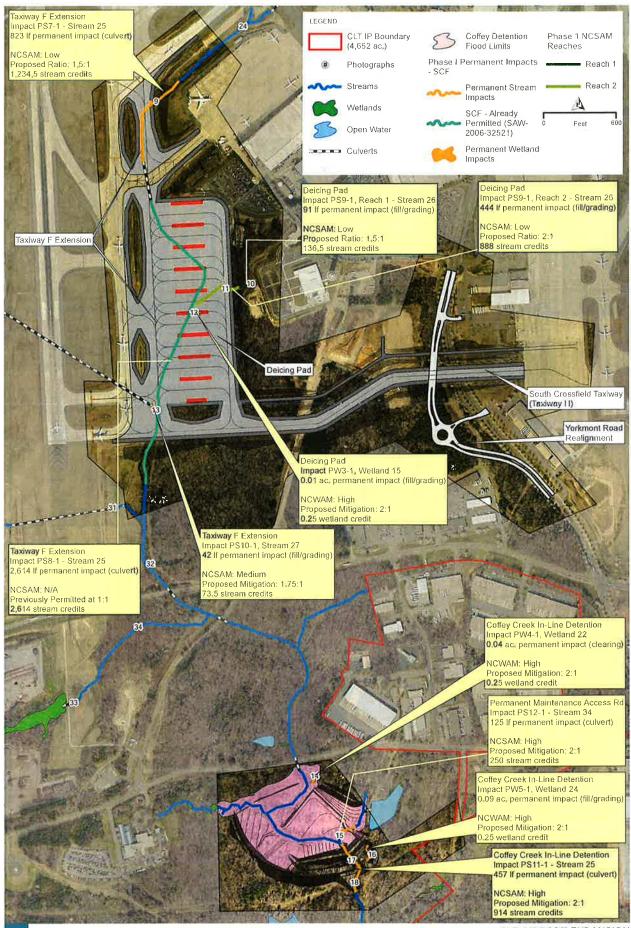
CLT AIRPORT EXPANSION PROJECT VICINITY

FIGURE 1

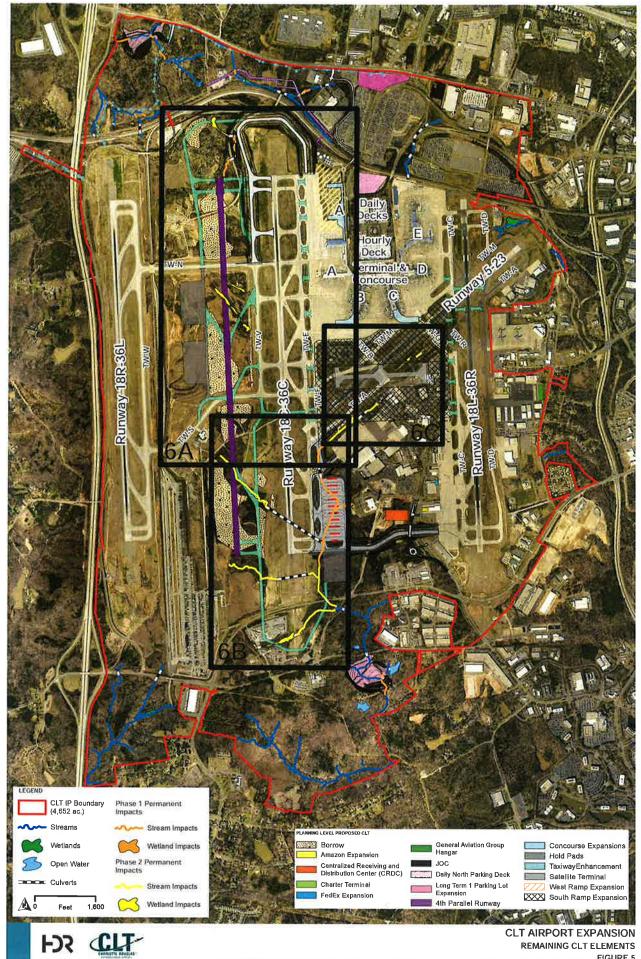


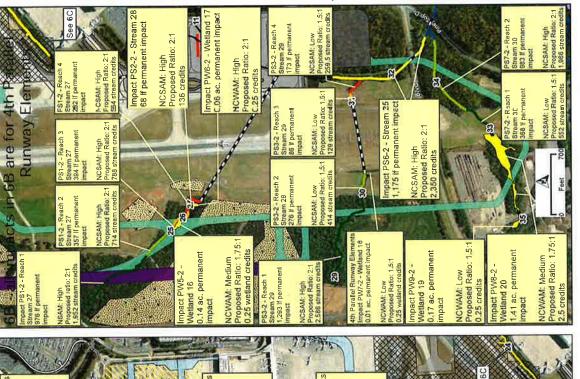


CLT AIRPORT EXPANSION NORTH END AROUND TAXIWAY



HOR CLIT







Photographs (#)

Phase 2 Permanent Impacts

Concourse Expansions TaxiwayEnhancement

Hold Pads

Stream Impac Wetland Impe

4th Parallel Runway

Wetlands Streams

Phase 2 NCSAM

Reaches

Centralized Receiving and Distribution Center (CRDC)

Charter Terminal Expansion FedEx Expansion

> Reach 1 Reach 2

Amazon Expansion

Open Water

Culverts

Phase 1 Permanent

General Aviation Group

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Stream Impacts

Wetland Impacts Areach 4 Reach 3

Long Term 1 Parking Lot Expansion Daily North Parking Deck 1

West Ramp Expansion Satellite Terminal

South Ramp Expansion Borrow Areas **CLT AIRPORT EXPANSION** REMAINING CLT ELEMENTS