

SURVEY REACH I	D : <u>MC-4</u> W	rshd/Subshd: <mark>Mer</mark> f	KLE CREEK		Date: <u>11/6/200</u>	<u>7</u>	ASSESSED	BY: TGC/BA
START TIME	e <mark>: 7 : 50_am</mark> /pm	LMK:	END	TIME:_:	AM/PM	LMK:		GPS ID:
LAT'	" Long_	<u> </u>	LATo	•	" Long_	°	<u>'</u>	
DESCRIPTION:			DESCRIPTI	ON:				
			Į.					I
RAIN IN LAST 24 HO	urs Heavy rain	☐ Steady rain	PRESENT CO	NDITIONS	☐ Heavy rain	☐ Stea	dy rain 🛭 I	ntermittent
□ None	☐ Intermitten	t □ Trace	Clear		☐ Trace	□ Ove	ercast 🗆 l	Partly cloudy
SURROUNDING LANI		l □ Commercial arse □ Park	☐ Urban/Res☐ Crop		☐ Suburban/Res ☐ Pasture	☐ Fore ☐ Othe		nstitutional
AVERAGE	CONDITIONS (che	ck applicable)		REACH S	KETCH AND SIT	E IMPA	CT TRACK	ING
BASE FLOW AS % CHANNEL WIDTH	□ 0-25% □25-50 %	□ 50%-75% □ 75-100%		survey read	survey reach. Tra ch (OT, ER, IB,SC, eemed appropriate.	UT, TR, M	II) as well as	any additional
DOMINANT SUBSTRA ☐ Silt/clay (fine or some substrate of	slick) \square C \square B	obble (2.5 –10") oulder (>10") ed rock		,	,, ,		•	
WATER CLARITY ☐ Stained (clear, no ☐ Other (chemicals, or	aturally colored) 🛚							
AQUATIC PLANTS IN STREAM		ne \square some \square lots e \square some \square lots						
WILDLIFE IN OR AROUND STREAM	(Evidence of) ☐ Fish ☐ Beav ☐ Snails ☐ Othe							
STREAM SHADING (water surface)	☐ Mostly shaded ☐ Halfway (≥509 ☐ Partially shade ☐ Unshaded (< 2	%) d (≥25%)						
CHANNEL DYNAMICS	Downcutting Widening Headcutting	Bed scour Bank failure Bank scour						
Unknown	Aggrading Sed. deposition	Slope failure Channelized						
CHANNEL DIMENSIONS (FACING DOWNSTREAM)	Height: LT bank RT bank Width: Bottom Top	10-15 (ft) 10-15 (ft) 20 (ft) 50-60 (ft)						
R	EACH ACCESSIBILI							
Good: Open area in public ownership, sufficient room to stockpile materials, easy stream channel access for heavy equipment using existing roads or trails.	Fair: Forested or developed area adjacent to stream. Access requires tree removal or impact to landscaped areas. Stockpile areas small or distant from stream.	Difficult. Must cross wetland, steep slope, or sensitive areas to get to stream. Few areas to stockpile available and/or located a great distance from stream. Specialized heavy equipment required.						
5 4	<u> </u>	2 1						
NOTES: (biggest prob	tem you see in survey	reach)						
					Repor	TED TO A	AUTHORITIE	s 🗌 Yes 🔲 No

		OVERALL STREAM CONDI	ITION	
	Optimal	Suboptimal	Marginal	Poor
IN-STREAM HABITAT (May modify criteria based on appropriate habitat regime)	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	40-70% mix of stable habitat; well- suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
17	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
VEGETATIVE PROTECTION (score each bank, determine sides by facing downstream)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
8	Left Bank 10 9	8 7 6	5 4 3	2 1 0
8	Right Bank 10 9	8 7 6	5 4 3	2 1 0
BANK EROSION (facing downstream)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Grade and width stable; isolated areas of bank failure/erosion; likely caused by a pipe outfall, local scour, impaired riparian vegetation or adjacent use.	Past downcutting evident, active stream widening, banks actively eroding at a moderate rate; no threat to property or infrastructure	Active downcutting; tall banks on both sides of the stream eroding a a fast rate; erosion contributing significant amount of sediment to stream; obvious threat to property or infrastructure.
<mark>7</mark>	Left Bank 10 9	8 7 6	5 4 3	2 1 0
<mark>7</mark>	Right Bank 10 9	8 7 6	5 4 3	2 1 0
FLOODPLAIN CONNECTION	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) not able to enter floodplain. Stream deeply entrenched.	High flows (greater than bankfull) not able to enter floodplain. Stream deeply entrenched.
10	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	OVER	ALL BUFFER AND FLOODPLA	IN CONDITION	
	Optimal	Suboptimal	Marginal	Poor
VEGETATED BUFFER WIDTH	Width of buffer zone >50 feet; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, crops) have not impacted zone.	Width of buffer zone 25-50 feet; human activities have impacted zone only minimally.	Width of buffer zone 10-25 feet; human activities have impacted zone a great deal.	Width of buffer zone <10 feet: little or no riparian vegetation due to human activities.
<mark>7</mark> 7	Left Bank 10 9	8 7 6	5 4 3	2 1 0
<mark>7</mark>	Right Bank 10 9	8 7 6	5 4 3	2 1 0
FLOODPLAIN VEGETATION	Predominant floodplain vegetation type is mature forest	Predominant floodplain vegetation type is young forest	Predominant floodplain vegetation type is shrub or old field	Predominant floodplain vegetation type is turf or crop land
12	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
FLOODPLAIN HABITAT	Even mix of wetland and non-wetland habitats, evidence of standing/ponded water	Even mix of wetland and non-wetland habitats, no evidence of standing/ponded water	Either all wetland or all non- wetland habitat, evidence of standing/ponded water	Either all wetland or all non- wetland habitat, no evidence of standing/ponded water
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8		Minor floodplain encroachment in the	Moderate floodplain encroachment in the form of	Significant floodplain encroachment (i.e. fill material,
8 FLOODPLAIN ENCROACH- MENT	No evidence of floodplain encroachment in the form of fill material, land development, or manmade structures	form of fill material, land development, or manmade structures, but not effecting floodplain function	filling, land development, or manmade structures, some effect on floodplain function	land development, or man-made structures). Significant effect on floodplain function



SURVEY REACH I	D: <u>MC-5</u> W	TRSHD/SUBSHD: MERI	KLE CREEK	DATE: <u>11/6/2007</u>	ASSESSED BY:	TGC/BA
START TIM	e <mark>: 9 : 00 am/pm</mark>	LMK:	END TIME: 9	0: 30 AM/PM	LMK:	GPS ID:
LAT ° '	" Long		LAT °	" Long	0 1 11	
DESCRIPTION:	Long_		DESCRIPTION:			
DESCRIPTION.			DESCRIPTION			
RAIN IN LAST 24 HO	URS □ Heavy rain	☐ Steady rain	PRESENT CONDITIONS	☐ Heavy rain ☐	☐ Steady rain ☐ Inter	mittent
□ None	☐ Intermitten		Clear			ly cloudy
SURROUNDING LAN			Urban/Residential		Forested Instit	
SCRROUNDING LAN		urse \square Park			Other:	diona
AVERAGE	CONDITIONS (ch	eck applicable)	REACH	SKETCH AND SITE	IMPACT TRACKING	
BASE FLOW AS %	□ 0-25%	□ 50%-75%	Simple planar sketch	of survey reach. Track l	locations and IDs for all	site impacts
CHANNEL WIDTH	□25-50 %	□ 75-100%	within the survey red	ach (OT, ER, IB,SC, UT	T, TR, MI) as well as any	
DOMINANT SUBSTR	ATE		features	deemed appropriate. In	idicate direction of flow	
☐ Silt/clay (fine or		Cobble (2.5 –10")				
☐ Sand (gritty)		Boulder (>10")				
☐ Gravel (0.1-2.5	5") □ B	sed rock				
WATER CLARITY	Clear Turb	id (quan and ad matter)				
☐ Stained (clear, no						
☐ Other (chemicals,		Opaque (miiky)				
· -		na 🗆 sama 🗆 lata	_			
AQUATIC PLANTS		ne □ some □ lots				
IN STREAM		ne □ some □ lots	_			
WILDLIFE IN OR	(Evidence of) ☐ Fish ☐ Bea	ver 🗆 Deer				
AROUND STREAM	☐ Snails ☐ Othe					
	☐ Mostly shaded	l (≥75% coverage)				
STREAM SHADING	☐ Halfway (≥50°					
(water surface)	☐ Partially shade	ed (≥25%)				
	☐ Unshaded (< 2	25%)				
CHANNEL	Downcutting	☐ Bed scour				
DYNAMICS	Widening	Bank failure				
	Headcutting	Bank scour				
Unknown	Aggrading	Slope failure				
Chkhowh	Sed. deposition	on Channelized				
	Height: LT bank	10-15 (ft)				
CHANNEL DIMENSIONS	RT bank					
(FACING	Width: Bottom	30 (ft)				
DOWNSTREAM)						
T.	Top	60 (ft)				
k	REACH ACCESSIBIL Fair: Forested or	Difficult. Must cross	-			
Good: Open area in	developed area	wetland, steep slope, or				
public ownership, sufficient room to	adjacent to stream.	sensitive areas to get to				
stockpile materials,	Access requires tree	stream. Few areas to				
easy stream channel	removal or impact to landscaped areas.	stockpile available and/or located a great				
access for heavy equipment using	Stockpile areas	distance from stream.				
existing roads or trails.	small or distant from	Specialized heavy				
5 4	stream.	equipment required.	-			
NOTES: (biggest prob	olem you see in surve		1			
. 55 1	-	•		_		_
				REPORTE	D TO AUTHORITIES	YES No

	Optimal	Suboptimal	Marginal	Poor
IN-STREAM HABITAT (May modify criteria based on appropriate habitat regime)	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
13	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
VEGETATIVE PROTECTION (score each bank, determine sides by facing downstream)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
<mark>7</mark>	Left Bank 10 9	8 7 6	5 4 3	2 1 0
<mark>7</mark>	Right Bank 10 9	8 7 6	5 4 3	2 1 0
BANK EROSION (facing downstream)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Grade and width stable; isolated areas of bank failure/erosion; likely caused by a pipe outfall, local scour, impaired riparian vegetation or adjacent use.	Past downcutting evident, active stream widening, banks actively eroding at a moderate rate; no threat to property or infrastructure	Active downcutting; tall banks on both sides of the stream eroding a a fast rate; erosion contributing significant amount of sediment to stream; obvious threat to property or infrastructure.
<mark>6</mark>	Left Bank 10 9	8 7 6	5 4 3	2 1 0
<mark>6</mark>	Right Bank 10 9	8 7 6	5 4 3	2 1 0
FLOODPLAIN CONNECTION	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) not able to enter floodplain. Stream deeply entrenched.	High flows (greater than bankfull) not able to enter floodplain. Stream deeply entrenched.
<mark>7</mark>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	OVER	ALL BUFFER AND FLOODPLAI	IN CONDITION	
	Optimal	Suboptimal	Marginal	Poor
VEGETATED BUFFER WIDTH	Width of buffer zone >50 feet; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, crops) have not impacted zone.	Width of buffer zone 25-50 feet; human activities have impacted zone only minimally.	Width of buffer zone 10-25 feet; human activities have impacted zone a great deal.	Width of buffer zone <10 feet: little or no riparian vegetation due to human activities.
<u>6</u>	Left Bank 10 9 Right Bank 10 9	8 7 6 8 7 6	5 4 3	2 1 0
6 FLOODPLAIN VEGETATION	Right Bank 10 9 Predominant floodplain vegetation type is mature forest	8 7 6 Predominant floodplain vegetation type is young forest	Predominant floodplain vegetation type is shrub or old field	2 1 0 Predominant floodplain vegetation type is turf or crop land
11	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
FLOODPLAIN HABITAT	Even mix of wetland and non-wetland habitats, evidence of standing/ponded water	Even mix of wetland and non-wetland habitats, no evidence of standing/ponded water	Either all wetland or all non- wetland habitat, evidence of standing/ponded water	Either all wetland or all non- wetland habitat, no evidence of standing/ponded water
5	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
FLOODPLAIN	No evidence of floodplain encroachment in the form of fill material, land development, or	Minor floodplain encroachment in the form of fill material, land development, or manmade structures, but not effecting floodplain functions.	Moderate floodplain encroachment in the form of filling, land development, or manmade structures, some	Significant floodplain encroachment (i.e. fill material, land development, or man-made structures). Significant effect on
ENCROACH- MENT	manmade structures	but not effecting floodplain function	effect on floodplain function	floodplain function



SURVEY REACH I	ID: <u>MC-6</u> W	rrshd/Subshd: Meri	KLE CREEK	Date: <u>11/6/2007</u>	ASSESSED	BY: TGC/BA
START TIM	e <mark>: 9: 45_am</mark> /pm	LMK:	END TIME: 10	0: 30 AM/PM	LMK:	GPS ID:
LAT	" Long_		LAT °	" Long	0 1 11	
DESCRIPTION:	Long_		DESCRIPTION:			
DESCRIPTION:			DESCRIPTION.			
Danyny age 24 wa	NING	□ C41:	Decrease comparisons		□ C4 □ L	-4:444
RAIN IN LAST 24 HO None	☐ Intermitten		PRESENT CONDITIONS Clear	<u> </u>	☐ Steady rain☐ In the control of the control of	Partly cloudy
SURROUNDING LAN		al ☐ Commercial urse ☐ Park			☐ Forested☐ In☐ Other:	nstitutional
Aventor						
	CONDITIONS (che			KETCH AND SITE		
BASE FLOW AS % CHANNEL WIDTH	□ 0-25% □25-50 %	□ 50%-75% □ 75-100%		t survey reach. Track ch (OT, ER, IB,SC, UT eemed appropriate. Is	T, TR, MI) as well as	any additional
DOMINANT SUBSTR ☐ Silt/clay (fine or ☐ Sand (gritty) ☐ Gravel (0.1-2.5	slick) □ C □ B	JNED Cobble (2.5 –10") Soulder (>10") ed rock		,	v	
WATER CLARITY ☐ Stained (clear, n ☐ Other (chemicals,	aturally colored) 🛚					
AQUATIC PLANTS IN STREAM		ne \square some \square lots e \square some \square lots				
WILDLIFE IN OR AROUND STREAM	(Evidence of) ☐ Fish ☐ Beav ☐ Snails ☐ Othe					
STREAM SHADING (water surface)	☐ Mostly shaded☐ Halfway (≥509☐ Partially shade☐ Unshaded (< 2	%) d (≥25%)				
CHANNEL	Downcutting	☐ Bed scour				
DYNAMICS	Widening	Bank failure				
	Headcutting	Bank scour				
Unknown	☐ Aggrading ☐ Sed. deposition	Slope failure Channelized				
			_			
CHANNEL	Height: LT bank	1.5 (ft)				
DIMENSIONS	RT bank	1.5 (ft)				
(FACING DOWNSTREAM)	Width: Bottom	8 (ft)				
	Тор	12 (ft)				
F	REACH ACCESSIBIL					
Good: Open area in	Fair: Forested or	Difficult. Must cross				
public ownership,	developed area adjacent to stream.	wetland, steep slope, or sensitive areas to get to				
sufficient room to stockpile materials,	Access requires tree	stream. Few areas to				
easy stream channel	removal or impact to	stockpile available				
access for heavy	landscaped areas. Stockpile areas	and/or located a great distance from stream.				
equipment using	small or distant from	Specialized heavy				
existing roads or trails.	stream.	equipment required.				
-	4 <mark>3</mark>	2 1				
NOTES: (biggest prob	blem you see in survey	reach)				
				REPORTE	ED TO AUTHORITIES	S 🗌 YES 🔲 No

	Ontino	Carlo and and	Manainal	Door
	Optimal	Suboptimal	Marginal	Poor
IN-STREAM HABITAT (May modify criteria based on appropriate habitat nation)	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	40-70% mix of stable habitat; well- suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
habitat regime) 13	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
			10 9 8 7 0	3 4 3 2 1 0
VEGETATIVE PROTECTION (score each bank, determine sides by facing downstream)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
9	Left Bank 10 9	8 7 6	5 4 3	2 1 0
9	Right Bank 10 9	8 7 6	5 4 3	2 1 0
BANK EROSION (facing downstream)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Grade and width stable; isolated areas of bank failure/erosion; likely caused by a pipe outfall, local scour, impaired riparian vegetation or adjacent use.	Past downcutting evident, active stream widening, banks actively eroding at a moderate rate; no threat to property or infrastructure	Active downcutting; tall banks on both sides of the stream eroding at a fast rate; erosion contributing significant amount of sediment to stream; obvious threat to property or infrastructure.
9	Left Bank 10 9	8 7 6	5 4 3	2 1 0
9	Right Bank 10 9	8 7 6	5 4 3	2 1 0
FLOODPLAIN CONNECTION	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) not able to enter floodplain. Stream deeply entrenched.	High flows (greater than bankfull) not able to enter floodplain. Stream deeply entrenched.
17	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	OVER	ALL BUFFER AND FLOODPLAI	IN CONDITION	
	Optimal	Suboptimal	Marginal	Poor
VEGETATED BUFFER WIDTH	Width of buffer zone >50 feet; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, crops) have not impacted zone.	Width of buffer zone 25-50 feet; human activities have impacted zone only minimally.	Width of buffer zone 10-25 feet; human activities have impacted zone a great deal.	Width of buffer zone <10 feet: little or no riparian vegetation due to human activities.
<mark>4</mark>	Left Bank 10 9	8 7 6	5 4 3	2 1 0
<mark>4</mark>	Right Bank 10 9	8 7 6	5 4 3	2 1 0
FLOODPLAIN VEGETATION	Predominant floodplain vegetation type is mature forest	Predominant floodplain vegetation type is young forest	Predominant floodplain vegetation type is shrub or old field	Predominant floodplain vegetation type is turf or crop land
		ł		5 4 2 2 1 0
12	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
12 FLOODPLAIN HABITAT	20 19 18 17 16 Even mix of wetland and non-wetland habitats, evidence of standing/ponded water	15 14 13 12 11 Even mix of wetland and non-wetland habitats, no evidence of standing/ponded water	10 9 8 7 6 Either all wetland or all non- wetland habitat, evidence of standing/ponded water	Either all wetland or all non- wetland habitat, no evidence of standing/ponded water
FLOODPLAIN	Even mix of wetland and non-wetland habitats, evidence of standing/ponded	Even mix of wetland and non-wetland habitats, no evidence of	Either all wetland or all non- wetland habitat, evidence of	Either all wetland or all non- wetland habitat, no evidence of
FLOODPLAIN HABITAT	Even mix of wetland and non-wetland habitats, evidence of standing/ponded water	Even mix of wetland and non-wetland habitats, no evidence of standing/ponded water	Either all wetland or all non- wetland habitat, evidence of standing/ponded water	Either all wetland or all non- wetland habitat, no evidence of standing/ponded water



SURVEY REACH I	D: <u>MC-7</u>	WTRSHD/SUBSHD: MER	kle Creek	DATE: <u>11/6/200</u>	<u>17</u>	Assessed by: <mark>1</mark>	GC/BA
START TIME	e <u>: 10: 30_</u> an	<mark>м</mark> /РМ LMK:	END TIME: 10	<mark>) : 45_</mark> АМ/РМ	LMK:		GPS ID:
Lat'	" Lon	NG''	LAT'	" Long_	o	<u>'</u> ''	
DESCRIPTION:			DESCRIPTION:				
RAIN IN LAST 24 HO			PRESENT CONDITIONS	☐ Heavy rain	-	rain 🗆 Interm	
□ None	☐ Intermi		Clear	☐ Trace	□ Overca	•	•
SURROUNDING LAND		strial Commercial feourse Park		☐ Suburban/Res☐ Pasture	☐ Foreste		tional
AVERAGE	CONDITIONS	(check applicable)	REACH S	SKETCH AND SIT	ГЕ ІМРАСТ	T TRACKING	
BASE FLOW AS % CHANNEL WIDTH	□ 0-25% □25-50 %	□ 50%-75% □ 75-100%	Simple planar sketch o within the survey rea features d		UT, TR , MI)	as well as any a	
DOMINANT SUBSTR. ☐ Silt/clay (fine or a grader) ☐ Sand (gritty) ☐ Gravel (0.1-2.5)	slick) [ATED CONC. BLOCK Cobble (2.5 –10") Boulder (>10") Bed rock	,,,,,,			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
	aturally colored)	urbid (suspended matter) Opaque (milky)					
AQUATIC PLANTS IN STREAM		none \square some \square lots none \square some \square lots					
WILDLIFE IN OR AROUND STREAM	(Evidence of) ☐ Fish ☐ I ☐ Snails ☐ (Beaver Deer Other:					
STREAM SHADING (water surface)	□ Halfway (≥	naded (<u>></u> 25%)					
CHANNEL DYNAMICS	Downcutt Widening Headcuttin	Bank failure Bank scour					
Unknown	Aggrading Sed. depo						
CHANNEL DIMENSIONS (FACING DOWNSTREAM)	Height: LT b RT b Width: Botto Top	sank 5-10 (ft)					
R	REACH ACCESSI						
Good: Open area in public ownership, sufficient room to stockpile materials, easy stream channel access for heavy equipment using existing roads or trails.	Fair: Forested or developed area adjacent to strear Access requires t removal or impac landscaped areas Stockpile areas small or distant fristream.	wetland, steep slope, or sensitive areas to get to stream. Few areas to stockpile available and/or located a great distance from stream.	_				
NOTES: (biggest prob	blem you see in su	urvey reach)		Depon	OTED TO ALM	THORITIES []	Vec No

		OVERALL STREAM CONDI	TION	
	Optimal	Suboptimal	Marginal	Poor
IN-STREAM HABITAT (May modify criteria based on appropriate habitat regime)	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	40-70% mix of stable habitat; well- suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
15	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
VEGETATIVE PROTECTION (score each bank, determine sides by facing downstream)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
9	Left Bank 10 9	8 7 6	5 4 3	2 1 0
9	Right Bank 10 9	8 7 6	5 4 3	2 1 0
BANK EROSION (facing downstream)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Grade and width stable; isolated areas of bank failure/erosion; likely caused by a pipe outfall, local scour, impaired riparian vegetation or adjacent use.	Past downcutting evident, active stream widening, banks actively eroding at a moderate rate; no threat to property or infrastructure	Active downcutting; tall banks on both sides of the stream eroding at a fast rate; erosion contributing significant amount of sediment to stream; obvious threat to property or infrastructure.
<mark>9</mark>	Left Bank 10 9	8 7 6	5 4 3	2 1 0
<mark>9</mark>	Right Bank 10 9	8 7 6	5 4 3	2 1 0
FLOODPLAIN CONNECTION	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) not able to enter floodplain. Stream deeply entrenched.	High flows (greater than bankfull) not able to enter floodplain. Stream deeply entrenched.
<u>17</u>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	OVER	ALL BUFFER AND FLOODPLAI	IN CONDITION	
	Optimal	Suboptimal	Marginal	Poor
VEGETATED BUFFER WIDTH	Width of buffer zone >50 feet; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, crops) have not impacted zone.	Width of buffer zone 25-50 feet; human activities have impacted zone only minimally.	Width of buffer zone 10-25 feet; human activities have impacted zone a great deal.	Width of buffer zone <10 feet: little or no riparian vegetation due to human activities.
<mark>4</mark>	Left Bank 10 9	8 7 6	5 4 3	2 1 0
4	Right Bank 10 9	8 7 6	5 4 3	2 1 0
FLOODPLAIN VEGETATION	Predominant floodplain vegetation type is mature forest	Predominant floodplain vegetation type is young forest	Predominant floodplain vegetation type is shrub or old field	Predominant floodplain vegetation type is turf or crop land
12	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
FLOODPLAIN HABITAT	Even mix of wetland and non-wetland habitats, evidence of standing/ponded water	Even mix of wetland and non-wetland habitats, no evidence of standing/ponded water	Either all wetland or all non- wetland habitat, evidence of standing/ponded water	Either all wetland or all non- wetland habitat, no evidence of standing/ponded water
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3				
FLOODPLAIN ENCROACH- MENT	No evidence of floodplain encroachment in the form of fill material, land development, or manmade structures	Minor floodplain encroachment in the form of fill material, land development, or manmade structures, but not effecting floodplain function	Moderate floodplain encroachment in the form of filling, land development, or manmade structures, some effect on floodplain function	Significant floodplain encroachment (i.e. fill material, land development, or man-made structures). Significant effect on floodplain function



SURVEY REACH I	D: <u>MC-8</u> WT	rshd/Subshd: <mark>Meri</mark>	<mark>kle Creek</mark>		Date: <u>11/6/200</u>	<u>7</u>	ASSESSED BY	: TGC/BA
START TIM	e <mark>: <u>10</u> : <u>45</u> am/pm</mark>	1 LMK:	END	Гіме::	AM/PM	LMK:		GPS ID:
LAT'	" Long	<u> </u>	LATo_	'	" Long_	_°	<u>'</u> '	
DESCRIPTION:			DESCRIPTIO	N:				
RAIN IN LAST 24 HO	ours Heavy rain	☐ Steady rain	PRESENT CONI	DITIONS	☐ Heavy rain	☐ Stea	dy rain 🗆 Inte	ermittent
□ None	☐ Intermittent	☐ Trace	Clear		☐ Trace	□ Ove	rcast \square Pa	rtly cloudy
SURROUNDING LAN		l □ Commercial rse □ Park	☐ Urban/Resio☐ Crop		☐ Suburban/Res ☐ Pasture			itutional
AVERAGE	E CONDITIONS (che	ck applicable)	F	REACH S	KETCH AND SIT	TE IMPA	CT TRACKIN	G
BASE FLOW AS % CHANNEL WIDTH	□ 0-25% □25-50 %	□ 50%-75% □ 75-100%	within the	urvey read	f survey reach. Trac ch (OT, ER, IB,SC, eemed appropriate.	UT, TR, M	II) as well as an	y additional
DOMINANT SUBSTR ☐ Silt/clay (fine or ☐ Sand (gritty) ☐ Gravel (0.1-2.5	slick) Co	DBLOCK obble (2.5 –10") oulder (>10") ed rock		,	77			
WATER CLARITY ☐ Stained (clear, n ☐ Other (chemicals,	aturally colored) dyes)	Opaque (milky)						
AQUATIC PLANTS IN STREAM		e \square some \square lots \square some \square lots						
WILDLIFE IN OR AROUND STREAM	(Evidence of) ☐ Fish ☐ Beav ☐ Snails ☐ Other							
STREAM SHADING (water surface)	☐ Mostly shaded ☐ Halfway (≥50% ☐ Partially shaded ☐ Unshaded (< 25	(5) d (≥25%)						
CHANNEL DYNAMICS	Downcutting Widening Headcutting	Bed scour Bank failure Bank scour						
Unknown	Aggrading Sed. deposition	Slope failure Channelized						
CHANNEL DIMENSIONS (FACING DOWNSTREAM)	Height: LT bank RT bank Width: Bottom	2 (ft) 2 (ft) 8-10 (ft)						
, , , , , , , , , , , , , , , , , , ,	Тор	8-10 (ft)						
F	REACH ACCESSIBILIT							
	· <u>-</u> .	Difficult. Must cross wetland, steep slope, or sensitive areas to get to stream. Few areas to stockpile available and/or located a great distance from stream. Specialized heavy equipment required.						
NOTES: (biggest prob	blem you see in survey	reach)						
					Repor	TED TO A	uthorities [YES No

		OVERALL STREAM CONDI	TION	
	Optimal	Suboptimal	Marginal	Poor
IN-STREAM HABITAT (May modify criteria based on appropriate habitat regime)	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	40-70% mix of stable habitat; well- suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
12	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
VEGETATIVE PROTECTION (score each bank, determine sides by facing downstream)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
7	Left Bank 10 9	8 7 6	5 4 3	2 1 0
7	Right Bank 10 9	8 7 6	5 4 3	2 1 0
BANK EROSION (facing downstream)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Grade and width stable; isolated areas of bank failure/erosion; likely caused by a pipe outfall, local scour, impaired riparian vegetation or adjacent use.	Past downcutting evident, active stream widening, banks actively eroding at a moderate rate; no threat to property or infrastructure	Active downcutting; tall banks on both sides of the stream eroding a a fast rate; erosion contributing significant amount of sediment to stream; obvious threat to property or infrastructure.
9	Left Bank 10 9	8 7 6	5 4 3	2 1 0
9	Right Bank 10 9	8 7 6	5 4 3	2 1 0
FLOODPLAIN CONNECTION	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) not able to enter floodplain. Stream deeply entrenched.	High flows (greater than bankfull) not able to enter floodplain. Stream deeply entrenched.
<mark>16</mark>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	OVER	ALL BUFFER AND FLOODPLA	IN CONDITION	
	Optimal	Suboptimal	Marginal	Poor
VEGETATED BUFFER WIDTH	Width of buffer zone >50 feet; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, crops) have not impacted zone.	Width of buffer zone 25-50 feet; human activities have impacted zone only minimally.	Width of buffer zone 10-25 feet; human activities have impacted zone a great deal.	Width of buffer zone <10 feet: little or no riparian vegetation due to human activities.
<mark>4</mark>	Left Bank 10 9	8 7 6	5 4 3	2 1 0
<mark>4</mark> Floodplain Vegetation	Right Bank 10 9 Predominant floodplain vegetation type is mature forest	8 7 6 Predominant floodplain vegetation type is young forest	5 4 3 Predominant floodplain vegetation type is shrub or old field	2 1 0 Predominant floodplain vegetation type is turf or crop land
<mark>5</mark>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
FLOODPLAIN HABITAT	Even mix of wetland and non-wetland habitats, evidence of standing/ponded water	Even mix of wetland and non-wetland habitats, no evidence of standing/ponded water	Either all wetland or all non- wetland habitat, evidence of standing/ponded water	Either all wetland or all non- wetland habitat, no evidence of standing/ponded water
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8		Minor floodplain encroachment in the	Moderate floodplain encroachment in the form of	Significant floodplain encroachment (i.e. fill material,
8 FLOODPLAIN ENCROACH- MENT	No evidence of floodplain encroachment in the form of fill material, land development, or manmade structures	form of fill material, land development, or manmade structures, but not effecting floodplain function	filling, land development, or manmade structures, some effect on floodplain function	land development, or man-made structures). Significant effect on floodplain function



SURVEY REACH I	D : <u>MC-9</u> W _T	rshd/Subshd: <mark>Mer</mark>	kle Creek	Date: <u>11/6/2007</u>	ASSESSED BY:	rgc/BA
START TIME	e <mark>: 1</mark> : 00 am/pm	LMK:	END TIME: 1	: 30 AM/PM LI	мк:	GPS ID:
LAT ° '	" Long_	0 1 11	Lato'	" Longo_	<u> </u>	
DESCRIPTION:			DESCRIPTION:			
RAIN IN LAST 24 HO	ours Heavy rain	☐ Steady rain	PRESENT CONDITIONS	☐ Heavy rain ☐ S	Steady rain Interm	nittent
□ None	☐ Intermittent	☐ Trace	Clear	☐ Trace ☐ (Overcast	cloudy
SURROUNDING LAND		l □ Commercial rse □ Park	☐ Urban/Residential ☐ Crop ☐		orested Institu Ither:	tional
AVERAGE	CONDITIONS (che	ck applicable)	REACH S	KETCH AND SITE IM	IPACT TRACKING	
BASE FLOW AS %	□ 0-25%	□ 50%-75%		f survey reach. Track loc		
CHANNEL WIDTH	□25-50 %	□ 75-100%		ch (OT, ER, IB,SC, UT, T eemed appropriate. Indic		dditional
DOMINANT SUBSTR ☐ Silt/clay (fine or ☐ Sand (gritty) ☐ Gravel (0.1-2.5	slick)	obble (2.5 –10") oulder (>10") ed rock		7 7	,,,	
WATER CLARITY ☐ Stained (clear, no ☐ Other (chemicals,	aturally colored) 🛚					
AQUATIC PLANTS IN STREAM		e □ some □ lots e □ some □ lots				
WILDLIFE IN OR AROUND STREAM	(Evidence of) ☐ Fish ☐ Beav ☐ Snails ☐ Other					
STREAM SHADING (water surface)	☐ Mostly shaded ☐ Halfway (≥50% ☐ Partially shaded ☐ Unshaded (< 25	(a) 1 (≥25%)				
CHANNEL	Downcutting	Bed scour				
DYNAMICS	Widening	Bank failure				
_	☐ Headcutting ☐ Aggrading	Bank scour Slope failure				
Unknown	Sed. deposition					
CHANNEL DIMENSIONS (FACING DOWNSTREAM)	Height: LT bank RT bank Width: Bottom Top	3-5 (ft) 3-5 (ft) 6 (ft) 15-20 (ft)				
R	REACH ACCESSIBILI	гү	1			
Good: Open area in	Fair: Forested or	Difficult. Must cross				
public ownership,	developed area adjacent to stream.	wetland, steep slope, or sensitive areas to get to				
sufficient room to stockpile materials,	Access requires tree	stream. Few areas to				
easy stream channel	removal or impact to landscaped areas.	stockpile available and/or located a great				
access for heavy	Stockpile areas	distance from stream.				
equipment using existing roads or trails.	small or distant from	Specialized heavy				
-	stream.	equipment required.	4			
5 NOTES: (biggest prob	dem vou see in survey	reach)	1			
1.0125. Oiggest prot	you see in survey					
				REPORTED T	TO AUTHORITIES .	Yes No

	0	OVERALL STREAM CONDI	T	D
	Optimal	Suboptimal	Marginal	Poor
IN-STREAM HABITAT (May modify criteria based on appropriate habitat regime)	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).	40-70% mix of stable habitat; well- suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
15	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
VEGETATIVE PROTECTION (score each bank, determine sides by facing downstream)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
8	Left Bank 10 9	8 7 6	5 4 3	2 1 0
8	Right Bank 10 9	8 7 6	5 4 3	2 1 0
BANK EROSION (facing downstream)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Grade and width stable; isolated areas of bank failure/erosion; likely caused by a pipe outfall, local scour, impaired riparian vegetation or adjacent use.	Past downcutting evident, active stream widening, banks actively eroding at a moderate rate; no threat to property or infrastructure	Active downcutting; tall banks on both sides of the stream eroding at a fast rate; erosion contributing significant amount of sediment to stream; obvious threat to property or infrastructure.
9	Left Bank 10 9	8 7 6	5 4 3	2 1 0
<mark>9</mark>	Right Bank 10 9	8 7 6	5 4 3	2 1 0
FLOODPLAIN CONNECTION	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) not able to enter floodplain. Stream deeply entrenched.	High flows (greater than bankfull) not able to enter floodplain. Stream deeply entrenched.
18	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	OVER	ALL BUFFER AND FLOODPLA	IN CONDITION	
	Optimal	Suboptimal	Marginal	Poor
VEGETATED BUFFER WIDTH	Width of buffer zone >50 feet; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, crops) have not impacted zone.	Width of buffer zone 25-50 feet; human activities have impacted zone only minimally.	Width of buffer zone 10-25 feet; human activities have impacted zone a great deal.	Width of buffer zone <10 feet: little or no riparian vegetation due to human activities.
<mark>7</mark>	Left Bank 10 9	8 7 6	5 4 3	2 1 0
<mark>7</mark>	Right Bank 10 9	8 7 6	5 4 3	2 1 0
FLOODPLAIN VEGETATION	Predominant floodplain vegetation type is mature forest	Predominant floodplain vegetation type is young forest	Predominant floodplain vegetation type is shrub or old field	Predominant floodplain vegetation type is turf or crop land
<u>5</u>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
FLOODPLAIN HABITAT	Even mix of wetland and non-wetland habitats, evidence of standing/ponded water	Even mix of wetland and non-wetland habitats, no evidence of standing/ponded water	Either all wetland or all non- wetland habitat, evidence of standing/ponded water	Either all wetland or all non- wetland habitat, no evidence of standing/ponded water
4	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	No evidence of floodplain	Minor floodplain encroachment in the form of fill material, land	Moderate floodplain encroachment in the form of filling, land development, or	Significant floodplain encroachment (i.e. fill material, land development, or man-made
FLOODPLAIN ENCROACH- MENT	encroachment in the form of fill material, land development, or manmade structures	development, or manmade structures, but not effecting floodplain function	manmade structures, some effect on floodplain function	structures). Significant effect on floodplain function



SURVEY REACH I	D: MC-10 W	rshd/Subshd: Meri	kle Creek	DATE: <u>11/6/200</u>	A S	SSESSED BY: 1	GC/BA
START TIME	e <mark>: 1: 30 </mark> am/pm	LMK:	END TIME: 2	2 : <u>00</u> AM/ <mark>PM</mark>	LMK:		GPS ID:
Lato_'	" Long_	0 1 11	LAT'	" Long_	<u> </u>	<u>''</u>	
DESCRIPTION:			DESCRIPTION:				
			1				
RAIN IN LAST 24 HO	urs □ Heavy rain	☐ Steady rain	PRESENT CONDITIONS	☐ Heavy rain	☐ Steady r	ain 🗆 Interm	ittent
□ None	☐ Intermittent	☐ Trace	Clear	☐ Trace	☐ Overcas	st 🗆 Partly	cloudy
SURROUNDING LANI	O USE: Industria	l □ Commercial	☐ Urban/Residential	☐ Suburban/Res	☐ Forested	☐ Institu	tional
	☐ Golf cou	rse 🗆 Park	□ Crop	☐ Pasture	☐ Other:		
AVERAGE	CONDITIONS (che	ck applicable)	REACH	SKETCH AND SIT	TE IMPACT	TRACKING	
BASE FLOW AS % CHANNEL WIDTH	□ 0-25% □25-50 %	□ 50%-75% □ 75-100%		of survey reach. Tra ach (OT, ER, IB,SC, deemed appropriate.	UT, TR, MI) a	s well as any ac	
DOMINANT SUBSTRA ☐ Silt/clay (fine or : ☐ Sand (gritty) ☐ Gravel (0.1-2.5	slick)	obble (2.5 –10") oulder (>10") ed rock					
WATER CLARITY ☐ Stained (clear, no) ☐ Other (chemicals, o)	aturally colored) 🛚						
AQUATIC PLANTS IN STREAM		e □ some □ lots e □ some □ lots					
WILDLIFE IN OR AROUND STREAM	(Evidence of) ☐ Fish ☐ Beav ☐ Snails ☐ Other						
STREAM SHADING (water surface)	☐ Mostly shaded ☐ Halfway (≥50% ☐ Partially shaded ☐ Unshaded (< 25	(5) d (≥25%)					
CHANNEL	Downcutting	Bed scour					
DYNAMICS	Widening	Bank failure					
	Headcutting	Bank scour					
Unknown	☐ Aggrading ☐ Sed. deposition	Slope failure Channelized					
			1				
CHANNEL	Height: LT bank	3-5 (ft)					
DIMENSIONS (FACING	RT bank	3-5 (ft)					
DOWNSTREAM)	Width: Bottom	6 (ft)					
·	Тор	12 (ft)					
R	Eair: Forested or						
Good: Open area in	Fair: Forested or developed area	Difficult. Must cross wetland, steep slope, or					
public ownership, sufficient room to	adjacent to stream.	sensitive areas to get to					
stockpile materials,	Access requires tree	stream. Few areas to					
easy stream channel	removal or impact to	stockpile available					
access for heavy	landscaped areas. Stockpile areas	and/or located a great distance from stream.					
equipment using	small or distant from	Specialized heavy					
existing roads or trails.	stream.	equipment required.					
5 4		2 1					
NOTES: (biggest prob	olem you see in survey	reach)					
				REPOR	TED TO AUTI	HORITIES Y	YES No

	Optimal	Suboptimal	Marginal	Poor
IN-STREAM HABITAT (May modify criteria based on appropriate habitat regime)	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
15	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
VEGETATIVE PROTECTION (score each bank, determine sides by facing downstream)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
9	Left Bank 10 9	8 7 6	5 4 3	2 1 0
9	Right Bank 10 9	8 7 6	5 4 3	2 1 0
BANK EROSION (facing downstream)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Grade and width stable; isolated areas of bank failure/erosion; likely caused by a pipe outfall, local scour, impaired riparian vegetation or adjacent use.	Past downcutting evident, active stream widening, banks actively eroding at a moderate rate; no threat to property or infrastructure	Active downcutting; tall banks on both sides of the stream eroding a a fast rate; erosion contributing significant amount of sediment to stream; obvious threat to property or infrastructure.
<mark>9</mark>	Left Bank 10 9	8 7 6	5 4 3	2 1 0
9	Right Bank 10 9	8 7 6	5 4 3	2 1 0
FLOODPLAIN CONNECTION	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) not able to enter floodplain. Stream deeply entrenched.	High flows (greater than bankfull) not able to enter floodplain. Stream deeply entrenched.
<mark>19</mark>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	OVER	ALL BUFFER AND FLOODPLAI	N CONDITION	
	Optimal	Suboptimal	Marginal	Poor
VEGETATED BUFFER WIDTH	Width of buffer zone >50 feet; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, crops) have not impacted zone.	Width of buffer zone 25-50 feet; human activities have impacted zone only minimally.	Width of buffer zone 10-25 feet; human activities have impacted zone a great deal.	Width of buffer zone <10 feet: little or no riparian vegetation due to human activities.
9	Left Bank 10 9	8 7 6	5 4 3	2 1 0
9 FLOODPLAIN VEGETATION	Right Bank 10 9 Predominant floodplain vegetation type is mature forest	8 7 6 Predominant floodplain vegetation type is young forest	5 4 3 Predominant floodplain vegetation type is shrub or old field	2 1 0 Predominant floodplain vegetation type is turf or crop land
8	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
FLOODPLAIN HABITAT	Even mix of wetland and non-wetland habitats, evidence of standing/ponded water	Even mix of wetland and non-wetland habitats, no evidence of standing/ponded water	Either all wetland or all non- wetland habitat, evidence of standing/ponded water	Either all wetland or all non- wetland habitat, no evidence of standing/ponded water
<mark>4</mark>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
FLOODPLAIN ENCROACH-	No evidence of floodplain encroachment in the form of fill material, land development, or	Minor floodplain encroachment in the form of fill material, land development, or manmade structures, but not effecting floodplain function	Moderate floodplain encroachment in the form of filling, land development, or manmade structures, some	Significant floodplain encroachment (i.e. fill material, land development, or man-made structures). Significant effect on
MENT	manmade structures	but not effecting hoodplain function	effect on floodplain function	floodplain function



SURVEY REACH I	D : <u>RC-22</u> W ₁	RSHD/SUBSHD: ROCK	K CREEK	DATE: <u>11/7/200</u>	<u>)7</u>	ASSESSED BY:	I'GC/DA
START TIME	E::AM/PM	LMK:	END TIME:_	:AM/PM	LMK:		GPS ID:
Lato'	" Long	<u> </u>	LAT'	" Long_	<u> </u>	<u>'</u>	
DESCRIPTION:			DESCRIPTION:				
							<u> </u>
RAIN IN LAST 24 HO	ours Heavy rain	☐ Steady rain	PRESENT CONDITIONS	☐ Heavy rain	☐ Stea	dy rain Interr	nittent
□ None	☐ Intermittent	☐ Trace	Clear	☐ Trace	□ Ove	ercast	y cloudy
SURROUNDING LAND		l □ Commercial rse □ Park	☐ Urban/Residential ☐ Crop	☐ Suburban/Res ☐ Pasture	☐ Fore		ıtional
AVERAGE	CONDITIONS (che	ck applicable)	REACH	SKETCH AND SI	ГЕ ІМРА	CT TRACKING	
BASE FLOW AS % CHANNEL WIDTH	□ 0-25% □25-50 %	□ 50%-75% □ 75-100%	Simple planar sketch within the survey red features		UT, TR, M	MI) as well as any a	
DOMINANT SUBSTR ☐ Silt/clay (fine or ☐ Sand (gritty) ☐ Gravel (0.1-2.5	slick) \square Co	obble (2.5 –10") oulder (>10") ed rock	- Jeann'es	асста арртортан		an eenon of from	
WATER CLARITY ☐ Stained (clear, no) ☐ Other (chemicals,	aturally colored) \Box						
AQUATIC PLANTS IN STREAM		e \square some \square lots \square some \square lots					
WILDLIFE IN OR AROUND STREAM	(Evidence of) ☐ Fish ☐ Beav ☐ Snails ☐ Other						
STREAM SHADING (water surface)	☐ Mostly shaded ☐ Halfway (≥50% ☐ Partially shaded ☐ Unshaded (< 25	(5) d (≥25%)					
CHANNEL DYNAMICS	Downcutting Widening Headcutting	Bed scour Bank failure Bank scour					
Unknown	Aggrading Sed. depositio	Slope failure Channelized					
CHANNEL DIMENSIONS (FACING DOWNSTREAM)	Height: LT bank RT bank Width: Bottom	5-10 (ft) 5-10 (ft) 15-25 (ft)					
	Top	30-40 (ft)					
R	REACH ACCESSIBILI						
Good: Open area in public ownership, sufficient room to stockpile materials, easy stream channel access for heavy equipment using existing roads or trails.	Fair: Forested or developed area adjacent to stream. Access requires tree removal or impact to landscaped areas. Stockpile areas small or distant from stream.	Difficult. Must cross wetland, steep slope, or sensitive areas to get to stream. Few areas to stockpile available and/or located a great distance from stream. Specialized heavy equipment required.					
5 NOTES: (biggest prob	dem vou see in survev	2 1 reach)					
TTOTES (Diggest prot	nem you see in survey	reacity					
				Repor	RTED TO A	AUTHORITIES	YES No

		OVERALL STREAM CONDI	TION	
	Optimal	Suboptimal	Marginal	Poor
IN-STREAM HABITAT (May modify criteria based on appropriate habitat regime)	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	40-70% mix of stable habitat; well- suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
16	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
VEGETATIVE PROTECTION (score each bank, determine sides by facing downstream)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streamban surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
<mark>4</mark>	Left Bank 10 9	8 7 6	5 4 3	2 1 0
<mark>4</mark>	Right Bank 10 9	8 7 6	5 4 3	2 1 0
BANK EROSION (facing downstream)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Grade and width stable; isolated areas of bank failure/erosion; likely caused by a pipe outfall, local scour, impaired riparian vegetation or adjacent use.	Past downcutting evident, active stream widening, banks actively eroding at a moderate rate; no threat to property or infrastructure	Active downcutting; tall banks on both sides of the stream eroding a fast rate; erosion contributing significant amount of sediment to stream; obvious threat to propert or infrastructure.
4	Left Bank 10 9	8 7 6	5 4 3	2 1 0
4	Right Bank 10 9	8 7 6	5 4 3	2 1 0
FLOODPLAIN CONNECTION	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) not able to enter floodplain. Stream deeply entrenched.	High flows (greater than bankfull not able to enter floodplain. Stream deeply entrenched.
11	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	OVER	RALL BUFFER AND FLOODPLAI	IN CONDITION	
	Optimal	Suboptimal	Marginal	Poor
VEGETATED BUFFER WIDTH	Width of buffer zone >50 feet; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, crops) have not impacted zone.	Width of buffer zone 25-50 feet; human activities have impacted zone only minimally.	Width of buffer zone 10-25 feet; human activities have impacted zone a great deal.	Width of buffer zone <10 feet: litt or no riparian vegetation due to human activities.
9	Left Bank 10 9	8 7 6	5 4 3	2 1 0
9 FLOODPLAIN VEGETATION	Right Bank 10 9 Predominant floodplain vegetation type is mature forest	8 7 6 Predominant floodplain vegetation type is young forest	5 4 3 Predominant floodplain vegetation type is shrub or old field	2 1 0 Predominant floodplain vegetation type is turf or crop land
17	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
FLOODPLAIN HABITAT	Even mix of wetland and non-wetland habitats, evidence of standing/ponded water	Even mix of wetland and non-wetland habitats, no evidence of standing/ponded water	Either all wetland or all non- wetland habitat, evidence of standing/ponded water	Either all wetland or all non- wetland habitat, no evidence of standing/ponded water
8	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
<u>U</u>	No evidence of floodplain	Minor floodplain encroachment in the	Moderate floodplain encroachment in the form of	Significant floodplain encroachment (i.e. fill material, land development, or man-made
FLOODPLAIN ENCROACH- MENT	encroachment in the form of fill material, land development, or manmade structures 20 19 18 17 16	form of fill material, land development, or manmade structures, but not effecting floodplain function 15 14 13 12 11	filling, land development, or manmade structures, some effect on floodplain function	structures). Significant effect or floodplain function 5 4 3 2 1 0



SURVEY REACH I	ID: <u>RC-25</u> W	rrshd/Subshd: <mark>Rock</mark>	CREEK	Date: <u>11/7/2007</u>	ASSESSED BY:	TGC/DA
START TIM	E::AM/PM	LMK:	END TIME:_:	AM/PM LMK:		GPS ID:
LAT'	" Long_	<u> </u>	LATo'	" Long°	<u>'</u> "	
DESCRIPTION:			DESCRIPTION:			
			1			<u> </u>
RAIN IN LAST 24 HO	ours Heavy rain	☐ Steady rain	PRESENT CONDITIONS	☐ Heavy rain ☐ Stea	ady rain 🗆 Intern	nittent
□ None	☐ Intermitten	t Trace	Clear	☐ Trace ☐ Ov	ercast \square Partly	y cloudy
SURROUNDING LAN		al □ Commercial urse □ Park		Suburban/Res		ıtional
AVERAGE	CONDITIONS (che	eck applicable)	REACH S	KETCH AND SITE IMPA	ACT TRACKING	
BASE FLOW AS % CHANNEL WIDTH	□ 0-25% □25-50 %	□ 50%-75% □ 75-100%	within the survey rea	f survey reach. Track locatio ch (OT, ER, IB,SC, UT, TR, I leemed appropriate. Indicate	MI) as well as any a	
DOMINANT SUBSTR ☐ Silt/clay (fine or ☐ Sand (gritty) ☐ Gravel (0.1-2.5	slick) \square C \square B	dobble (2.5 –10") soulder (>10") ed rock				
WATER CLARITY ☐ Stained (clear, n ☐ Other (chemicals,	aturally colored) 🛚					
AQUATIC PLANTS IN STREAM	Floating: 🔲 non	ne □ some □ lots e □ some □ lots				
WILDLIFE IN OR AROUND STREAM	(Evidence of) ☐ Fish ☐ Beav ☐ Snails ☐ Othe					
STREAM SHADING (water surface)	☐ Mostly shaded☐ Halfway (≥509☐ Partially shade☐ Unshaded (< 2	%) d (<u>></u> 25%)				
CHANNEL DYNAMICS	Downcutting Widening Headcutting	Bed scour Bank failure Bank scour				
Unknown	Aggrading Sed. deposition	Slope failure Channelized				
CHANNEL DIMENSIONS (FACING DOWNSTREAM)	Height: LT bank RT bank Width: Bottom Top					
F	REACH ACCESSIBILI					
Good: Open area in public ownership, sufficient room to stockpile materials, easy stream channel access for heavy equipment using existing roads or trails.	Fair: Forested or developed area adjacent to stream. Access requires tree removal or impact to landscaped areas. Stockpile areas small or distant from stream.	Difficult. Must cross wetland, steep slope, or sensitive areas to get to stream. Few areas to stockpile available and/or located a great distance from stream. Specialized heavy equipment required.				
NOTES: (biggest prob	blem you see in survey	reach)				
				D.	_	., 🗀
				<i>Reported</i> to	AUTHORITIES	Yes 📙 No

		OVERALL STREAM CONDI	TION	
	Optimal	Suboptimal	Marginal	Poor
IN-STREAM HABITAT (May modify criteria based on appropriate habitat regime)	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).	40-70% mix of stable habitat; well- suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
<mark>16</mark>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
VEGETATIVE PROTECTION (score each bank, determine sides by facing downstream)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
<mark>5</mark>	Left Bank 10 9	8 7 6	5 4 3	2 1 0
<u>5</u>	Right Bank 10 9	8 7 6	5 4 3	2 1 0
BANK EROSION (facing downstream)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Grade and width stable; isolated areas of bank failure/erosion; likely caused by a pipe outfall, local scour, impaired riparian vegetation or adjacent use.	Past downcutting evident, active stream widening, banks actively eroding at a moderate rate; no threat to property or infrastructure	Active downcutting; tall banks on both sides of the stream eroding a fast rate; erosion contributing significant amount of sediment to stream; obvious threat to property or infrastructure.
4	Left Bank 10 9	8 7 6	5 4 3	2 1 0
<mark>4</mark>	Right Bank 10 9	8 7 6	5 4 3	2 1 0
FLOODPLAIN CONNECTION	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) not able to enter floodplain. Stream deeply entrenched.	High flows (greater than bankfull) not able to enter floodplain. Stream deeply entrenched.
8	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	OVER	ALL BUFFER AND FLOODPLA	IN CONDITION	
	Optimal	Suboptimal	Marginal	Poor
VEGETATED BUFFER WIDTH	Width of buffer zone >50 feet; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, crops) have not impacted zone.	Width of buffer zone 25-50 feet; human activities have impacted zone only minimally.	Width of buffer zone 10-25 feet; human activities have impacted zone a great deal.	Width of buffer zone <10 feet: little or no riparian vegetation due to human activities.
9	Left Bank 10 9	8 7 6	5 4 3	2 1 0
9 FLOODPLAIN VEGETATION	Right Bank 10 9 Predominant floodplain vegetation type is mature forest	8 7 6 Predominant floodplain vegetation type is young forest	5 4 3 Predominant floodplain vegetation type is shrub or old field	2 1 0 Predominant floodplain vegetation type is turf or crop land
17	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
FLOODPLAIN HABITAT	Even mix of wetland and non-wetland habitats, evidence of standing/ponded water	Even mix of wetland and non-wetland habitats, no evidence of standing/ponded water	Either all wetland or all non- wetland habitat, evidence of standing/ponded water	Either all wetland or all non- wetland habitat, no evidence of standing/ponded water
0	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8		Minor floodplain encroachment in the	Moderate floodplain encroachment in the form of	Significant floodplain encroachment (i.e. fill material,
FLOODPLAIN ENCROACH- MENT	No evidence of floodplain encroachment in the form of fill material, land development, or manmade structures 20 19 18 17 16	form of fill material, land development, or manmade structures, but not effecting floodplain function	filling, land development, or manmade structures, some effect on floodplain function	land development, or man-made structures). Significant effect on floodplain function



SURVEY REACH I	D: <u>RC-26</u> W ₁	rshd/Subshd: <mark>Rock</mark>	CREEK	Date: <u>11/7/2007</u>	ASSESSED BY: 1	GC/DA
START TIME	E :_ : AM /PM	LMK:	END TIME::	AM/PM LN	1K:	GPS ID:
Lato'_	" Long _		LATo'	" Long°	"	
DESCRIPTION:			DESCRIPTION:			
RAIN IN LAST 24 HO	urs Heavy rain	☐ Steady rain	PRESENT CONDITIONS	☐ Heavy rain ☐	Steady rain Interm	ittent
□ None	☐ Intermittent	☐ Trace	☐ Clear	☐ Trace ☐	Overcast	cloudy
SURROUNDING LANI		l □ Commercial rse □ Park	☐ Urban/Residential ☐ Crop ☐		Forested	tional
AVERAGE	CONDITIONS (che	ck applicable)	REACH S	KETCH AND SITE I	MPACT TRACKING	
BASE FLOW AS % CHANNEL WIDTH	□ 0-25% □25-50 %	□ 50%-75% □ 75-100%	within the survey read		ocations and IDs for all si TR, MI) as well as any ac dicate direction of flow	
DOMINANT SUBSTRATE ☐ Silt/clay (fine or some constitution of some constitution) ☐ Gravel (0.1-2.5)	slick) \square Co	obble (2.5 –10") oulder (>10") ed rock	,			
WATER CLARITY ☐ Stained (clear, no	aturally colored) 🛚					
AQUATIC PLANTS IN STREAM		e □ some □ lots e □ some □ lots				
WILDLIFE IN OR AROUND STREAM	(Evidence of) ☐ Fish ☐ Beav ☐ Snails ☐ Other					
STREAM SHADING (water surface)	☐ Mostly shaded ☐ Halfway (≥50% ☐ Partially shaded ☐ Unshaded (< 25	%) d (≥25%)				
CHANNEL DYNAMICS	Downcutting Widening Headcutting	Bed scour Bank failure Bank scour				
Unknown	☐ Aggrading☐ Sed. depositio	Slope failure Channelized				
CHANNEL DIMENSIONS (FACING DOWNSTREAM)	Height: LT bank RT bank Width: Bottom Top	3-6 (ft) 3-6 (ft) 10-15 (ft) 25-30 (ft)				
R	REACH ACCESSIBILI					
Good: Open area in public ownership, sufficient room to stockpile materials, easy stream channel access for heavy equipment using existing roads or trails.	Fair: Forested or developed area adjacent to stream. Access requires tree removal or impact to landscaped areas. Stockpile areas small or distant from stream.	Difficult. Must cross wetland, steep slope, or sensitive areas to get to stream. Few areas to stockpile available and/or located a great distance from stream. Specialized heavy equipment required.				
5 A NOTES: (biggest prob	dem vou see in survey	2 1 reach)				
TIOIES (viggesi prob	acin you see iii sui vey	reactif				
				Reported	TO AUTHORITIES []	Yes 🔲 No

	Optimal	Suboptimal	Marginal	Poor
IN-STREAM HABITAT (May modify criteria based on appropriate habitat regime)	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).	40-70% mix of stable habitat; well- suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
<mark>17</mark>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
VEGETATIVE PROTECTION (score each bank, determine sides by facing downstream)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
<mark>6</mark>	Left Bank 10 9	8 7 6	5 4 3	2 1 0
<mark>6</mark>	Right Bank 10 9	8 7 6	5 4 3	2 1 0
BANK EROSION (facing downstream)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Grade and width stable; isolated areas of bank failure/erosion; likely caused by a pipe outfall, local scour, impaired riparian vegetation or adjacent use.	Past downcutting evident, active stream widening, banks actively eroding at a moderate rate; no threat to property or infrastructure	Active downcutting; tall banks on both sides of the stream eroding a a fast rate; erosion contributing significant amount of sediment to stream; obvious threat to property or infrastructure.
<mark>5</mark>	Left Bank 10 9	8 7 6	5 4 3	2 1 0
<mark>5</mark>	Right Bank 10 9	8 7 6	5 4 3	2 1 0
FLOODPLAIN CONNECTION	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched. High flows (greater than bankfull) not able to enter floodplain. Stream deeply entrenched.		High flows (greater than bankfull) not able to enter floodplain. Stream deeply entrenched.
12	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	OVER	ALL BUFFER AND FLOODPLAI	N CONDITION	
	Optimal	Suboptimal	Marginal	Poor
VEGETATED BUFFER WIDTH	Width of buffer zone >50 feet; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, crops) have not impacted zone.	Width of buffer zone 25-50 feet; human activities have impacted zone only minimally.	Width of buffer zone 10-25 feet; human activities have impacted zone a great deal.	Width of buffer zone <10 feet: little or no riparian vegetation due to human activities.
9	Left Bank 10 9	8 7 6	5 4 3	2 1 0
<mark>9</mark>	Right Bank 10 9	8 7 6	5 4 3	2 1 0
FLOODPLAIN VEGETATION	Predominant floodplain vegetation type is mature forest	Predominant floodplain vegetation type is young forest	Predominant floodplain vegetation type is shrub or old field	Predominant floodplain vegetation type is turf or crop land
16	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
FLOODPLAIN HABITAT	Even mix of wetland and non-wetland habitats, evidence of standing/ponded water	Even mix of wetland and non-wetland habitats, no evidence of standing/ponded water	Either all wetland or all non- wetland habitat, evidence of standing/ponded water	Either all wetland or all non- wetland habitat, no evidence of standing/ponded water
<mark>7</mark>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
FLOODPLAIN ENCROACH- MENT	No evidence of floodplain encroachment in the form of fill material, land development, or manmade structures	Minor floodplain encroachment in the form of fill material, land development, or manmade structures, but not effecting floodplain function	Moderate floodplain encroachment in the form of filling, land development, or manmade structures, some effect on floodplain function	Significant floodplain encroachment (i.e. fill material, land development, or man-made structures). Significant effect on floodplain function
18		15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0



SURVEY REACH I	D : <u>RC-34</u> W	rrshd/Subshd: <mark>Rock</mark>	CREEK	Date: <u>11/7/2007</u>	ASSESSED BY:	rgc/da
START TIME	E::AM/PM	LMK:	END TIME:_:	AM/PM LMK:		GPS ID:
LATo'	" Long_	<u> </u>	LATo'	" Long°	<u>'</u>	
DESCRIPTION:			DESCRIPTION:			
						1
RAIN IN LAST 24 HO	ours Heavy rain	☐ Steady rain	PRESENT CONDITIONS	☐ Heavy rain ☐ Ste	ady rain 🗆 Interr	nittent
None	☐ Intermitten	t Trace	Clear	☐ Trace ☐ Ov	rercast	y cloudy
SURROUNDING LAND		nl □ Commercial urse □ Park		☐ Suburban/Res ☐ For ☐ Pasture ☐ Otl		ıtional
AVERAGE	CONDITIONS (che	eck applicable)	REACH S	KETCH AND SITE IMP	ACT TRACKING	
BASE FLOW AS % CHANNEL WIDTH	□ 0-25% □25-50 %	□ 50%-75% □ 75-100%	within the survey rea	f survey reach. Track locati ch (OT, ER, IB,SC, UT, TR, eemed appropriate. Indicat	MI) as well as any a	
DOMINANT SUBSTR ☐ Silt/clay (fine or ☐ Sand (gritty) ☐ Gravel (0.1-2.5	slick) \square C \square B	obble (2.5 –10") oulder (>10") ed rock				
WATER CLARITY ☐ Stained (clear, no ☐ Other (chemicals,	aturally colored) 🛚	· •				
AQUATIC PLANTS IN STREAM	Floating: non	ne □ some □ lots e □ some □ lots				
WILDLIFE IN OR AROUND STREAM	(Evidence of) ☐ Fish ☐ Beav ☐ Snails ☐ Othe					
STREAM SHADING (water surface)	☐ Mostly shaded ☐ Halfway (≥50% ☐ Partially shade ☐ Unshaded (< 2	%) d (<u>≥</u> 25%)				
CHANNEL DYNAMICS	Downcutting Widening Headcutting	Bed scour Bank failure Bank scour				
Unknown	Aggrading Sed. deposition	Slope failure Channelized				
CHANNEL DIMENSIONS (FACING DOWNSTREAM)	Height: LT bank RT bank Width: Bottom Top					
T	REACH ACCESSIBILI					
Good: Open area in public ownership, sufficient room to stockpile materials, easy stream channel access for heavy equipment using existing roads or trails.	Fair: Forested or developed area adjacent to stream. Access requires tree removal or impact to landscaped areas. Stockpile areas small or distant from stream.	Difficult. Must cross wetland, steep slope, or sensitive areas to get to stream. Few areas to stockpile available and/or located a great distance from stream. Specialized heavy equipment required.				
NOTES: (biggest prob	olem you see in survey	reach)		<i>Reported</i> to	AUTHORITIES	Yes 🔲 No

	Optimal	Suboptimal	Marginal	Poor
IN-STREAM HABITAT (May modify criteria based on appropriate habitat regime)	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	40-70% mix of stable habitat; well- suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lac of habitat is obvious; substrate unstable or lacking.
16	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
VEGETATIVE PROTECTION (score each bank, determine sides by facing downstream)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streamban surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
9	Left Bank 10 9	8 7 6	5 4 3	2 1 0
9	Right Bank 10 9	8 7 6	5 4 3	2 1 0
BANK EROSION (facing downstream)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Grade and width stable; isolated areas of bank failure/erosion; likely caused by a pipe outfall, local scour, impaired riparian vegetation or adjacent use.	Past downcutting evident, active stream widening, banks actively eroding at a moderate rate; no threat to property or infrastructure	Active downcutting; tall banks on both sides of the stream eroding a fast rate; erosion contributing significant amount of sediment to stream; obvious threat to propert or infrastructure.
<mark>7</mark>	Left Bank 10 9	8 7 6	5 4 3	2 1 0
<mark>7</mark>	Right Bank 10 9	8 7 6	5 4 3	2 1 0
FLOODPLAIN CONNECTION	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) not able to enter floodplain. Stream deeply entrenched.	High flows (greater than bankfull), not able to enter floodplain. Stream deeply entrenched.
12	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	OVER	ALL BUFFER AND FLOODPLA	IN CONDITION	
	Optimal	Suboptimal	Marginal	Poor
VEGETATED BUFFER WIDTH	Width of buffer zone >50 feet; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, crops) have not impacted zone.	Width of buffer zone 25-50 feet; human activities have impacted zone only minimally.	Width of buffer zone 10-25 feet; human activities have impacted zone a great deal.	Width of buffer zone <10 feet: litt or no riparian vegetation due to human activities.
<mark>9</mark>	Left Bank 10 9	8 7 6	5 4 3	2 1 0
<mark>9</mark>	Right Bank 10 9	8 7 6	5 4 3	2 1 0
FLOODPLAIN VEGETATION	Predominant floodplain vegetation type is mature forest	Predominant floodplain vegetation type is young forest	Predominant floodplain vegetation type is shrub or old field	Predominant floodplain vegetation type is turf or crop land
16	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
FLOODPLAIN HABITAT	Even mix of wetland and non-wetland habitats, evidence of standing/ponded water	Even mix of wetland and non-wetland habitats, no evidence of standing/ponded water	Either all wetland or all non- wetland habitat, evidence of standing/ponded water	Either all wetland or all non- wetland habitat, no evidence of standing/ponded water
<mark>7</mark>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
<u></u>	No evidence of floodplain	Minor floodplain encroachment in the form of fill material, land	Moderate floodplain encroachment in the form of filling, land development, or	Significant floodplain encroachment (i.e. fill material, land development, or man-made
FLOODPLAIN ENCROACH- MENT	encroachment in the form of fill material, land development, or manmade structures	development, or manmade structures, but not effecting floodplain function	manmade structures, some effect on floodplain function	structures). Significant effect on floodplain function



SURVEY REACH I	D : <u>RC-40</u> W _T	TRIB TRIB	A - ROCK CREEK	Date: <u>11/7/2007</u>	ASSESSED BY:	GC/DA
START TIME	E :_ : AM /PM	LMK:	END TIME:_:	AM/PM LM	IK:	GPS ID:
LAT'	" Long	<u> </u>	LAT'	" Long°	"	
DESCRIPTION:			DESCRIPTION:			
RAIN IN LAST 24 HO	urs Heavy rain	☐ Steady rain	PRESENT CONDITIONS	☐ Heavy rain ☐	Steady rain Interm	ittent
□ None	☐ Intermittent	☐ Trace	☐ Clear	☐ Trace ☐	Overcast	cloudy
SURROUNDING LAND		l □ Commercial rse □ Park	☐ Urban/Residential ☐ Crop ☐		Forested	tional
AVERAGE	CONDITIONS (che	ck applicable)	REACH S	KETCH AND SITE I	MPACT TRACKING	
BASE FLOW AS % CHANNEL WIDTH	□ 0-25% □25-50 %	□ 50%-75% □ 75-100%	within the survey rea		ocations and IDs for all st TR, MI) as well as any ad licate direction of flow	
DOMINANT SUBSTR. ☐ Silt/clay (fine or ☐ Sand (gritty) ☐ Gravel (0.1-2.5	slick) \square Co	obble (2.5 –10") oulder (>10") ed rock	, cames a	center appropriates and		
WATER CLARITY ☐ Stained (clear, no ☐ Other (chemicals,	aturally colored) 🛚					
AQUATIC PLANTS IN STREAM		e □ some □ lots e □ some □ lots				
WILDLIFE IN OR AROUND STREAM	(Evidence of) ☐ Fish ☐ Beav ☐ Snails ☐ Other					
STREAM SHADING (water surface)	☐ Mostly shaded ☐ Halfway (≥50% ☐ Partially shaded ☐ Unshaded (< 25	%) d (≥25%)				
CHANNEL DYNAMICS	Downcutting Widening Headcutting	Bed scour Bank failure Bank scour				
Unknown	Aggrading Sed. deposition	Slope failure Channelized				
CHANNEL DIMENSIONS (FACING DOWNSTREAM)	Height: LT bank RT bank Width: Bottom Top	1-4 (ft) 1-4 (ft) 5-10 (ft) 25 (ft)				
R	REACH ACCESSIBILI					
Good: Open area in public ownership, sufficient room to stockpile materials, easy stream channel access for heavy equipment using existing roads or trails.	Fair: Forested or developed area adjacent to stream. Access requires tree removal or impact to landscaped areas. Stockpile areas small or distant from stream.	Difficult. Must cross wetland, steep slope, or sensitive areas to get to stream. Few areas to stockpile available and/or located a great distance from stream. Specialized heavy equipment required.				
5 NOTES: (biggest prob	dem vou see in survey	zeach)				
TIOIES (viggesi proc	acai you see ui suivey	reacts)				
				Reported	TO AUTHORITIES []	YES No

		OVERALL STREAM CONDI	TION	
	Optimal	Suboptimal	Marginal	Poor
IN-STREAM HABITAT (May modify criteria based on appropriate habitat regime)	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
16	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
VEGETATIVE PROTECTION (score each bank, determine sides by facing downstream)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambani surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
9	Left Bank 10 9	8 7 6	5 4 3	2 1 0
9	Right Bank 10 9	8 7 6	5 4 3	2 1 0
BANK EROSION (facing downstream)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Grade and width stable; isolated areas of bank failure/erosion; likely caused by a pipe outfall, local scour, impaired riparian vegetation or adjacent use.	Past downcutting evident, active stream widening, banks actively eroding at a moderate rate; no threat to property or infrastructure	Active downcutting; tall banks on both sides of the stream eroding a fast rate; erosion contributing significant amount of sediment to stream; obvious threat to propert or infrastructure.
9	Left Bank 10 9	8 7 6	5 4 3	2 1 0
9	Right Bank 10 9	8 7 6	5 4 3	2 1 0
FLOODPLAIN CONNECTION	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) not able to enter floodplain. Stream deeply entrenched.	High flows (greater than bankfull not able to enter floodplain. Stream deeply entrenched.
16	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	OVER	RALL BUFFER AND FLOODPLAI	IN CONDITION	
	Optimal	Suboptimal	Marginal	Poor
VEGETATED BUFFER WIDTH	Width of buffer zone >50 feet; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, crops) have not impacted zone.	Width of buffer zone 25-50 feet; human activities have impacted zone only minimally.	Width of buffer zone 10-25 feet; human activities have impacted zone a great deal.	Width of buffer zone <10 feet: litt or no riparian vegetation due to human activities.
9	Left Bank 10 9	8 7 6	5 4 3	2 1 0
9 FLOODPLAIN VEGETATION	Right Bank 10 9 Predominant floodplain vegetation type is mature forest	8 7 6 Predominant floodplain vegetation type is young forest	5 4 3 Predominant floodplain vegetation type is shrub or old field	2 1 0 Predominant floodplain vegetation type is turf or crop land
17	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
FLOODPLAIN HABITAT	Even mix of wetland and non-wetland habitats, evidence of standing/ponded water	Even mix of wetland and non-wetland habitats, no evidence of standing/ponded water	Either all wetland or all non- wetland habitat, evidence of standing/ponded water	Either all wetland or all non- wetland habitat, no evidence of standing/ponded water
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
<mark>7</mark>			Moderate floodplain	Significant floodplain
7 FLOODPLAIN ENCROACH- MENT 18	No evidence of floodplain encroachment in the form of fill material, land development, or manmade structures 20 19 18 17 16	Minor floodplain encroachment in the form of fill material, land development, or manmade structures, but not effecting floodplain function 15 14 13 12 11	encroachment in the form of filling, land development, or manmade structures, some effect on floodplain function	encroachment (i.e. fill material, land development, or man-made structures). Significant effect or floodplain function 5 4 3 2 1 0



SURVEY REACH I	D: <u>RC-32</u> W ₁	TRIB TRIB	B - ROCK CREEK	Date: <u>11/7/2007</u>	ASSESSED BY:	GC/DA
START TIME	E::AM/PM	LMK:	END TIME:_:	AM/PM LM	K:	GPS ID:
Lat'	" Long _	<u> </u>	LATo'	" Long <u>°</u>	<u>"</u> "	
DESCRIPTION:			DESCRIPTION:			
RAIN IN LAST 24 HO	urs Heavy rain	☐ Steady rain	PRESENT CONDITIONS	☐ Heavy rain ☐	Steady rain Interm	ittent
□ None	☐ Intermittent	☐ Trace	☐ Clear	□ Trace □	Overcast	cloudy
SURROUNDING LAND		l □ Commercial rse □ Park	☐ Urban/Residential ☐ Crop ☐		Forested \square Institu Other:	tional
AVERAGE	CONDITIONS (che	ck applicable)	REACH S	KETCH AND SITE I	MPACT TRACKING	
BASE FLOW AS % CHANNEL WIDTH	□ 0-25% □25-50 %	□ 50%-75% □ 75-100%	within the survey rea		cations and IDs for all st TR, MI) as well as any ac icate direction of flow	
DOMINANT SUBSTR. ☐ Silt/clay (fine or ☐ Sand (gritty) ☐ Gravel (0.1-2.5	slick) \square Co	obble (2.5 –10") oulder (>10") ed rock	,,			
WATER CLARITY ☐ Stained (clear, no ☐ Other (chemicals,	aturally colored) \Box	-				
AQUATIC PLANTS IN STREAM		some \square lots \square some \square lots				
WILDLIFE IN OR AROUND STREAM	(Evidence of) ☐ Fish ☐ Beav ☐ Snails ☐ Other					
STREAM SHADING (water surface)	☐ Mostly shaded ☐ Halfway (≥50% ☐ Partially shaded ☐ Unshaded (< 25	%) d (≥25%)				
CHANNEL DYNAMICS	Downcutting Widening Headcutting	Bed scour Bank failure Bank scour				
Unknown	☐ Aggrading☐ Sed. depositio	Slope failure Channelized				
CHANNEL DIMENSIONS (FACING DOWNSTREAM)	Height: LT bank RT bank Width: Bottom Top	2-6 (ft) 2-6 (ft) 10-15 (ft) 25 (ft)				
R	REACH ACCESSIBILI					
Good: Open area in public ownership, sufficient room to stockpile materials, easy stream channel access for heavy equipment using existing roads or trails.	Fair: Forested or developed area adjacent to stream. Access requires tree removal or impact to landscaped areas. Stockpile areas small or distant from stream.	Difficult. Must cross wetland, steep slope, or sensitive areas to get to stream. Few areas to stockpile available and/or located a great distance from stream. Specialized heavy equipment required.				
5 NOTES: (biggest prob	dem vou see in survey	2 1				
1101ES. (viggesi prot	nem you see in survey	reacn)				
				Reported	TO AUTHORITIES []	Yes 🔲 No

	Ontimal	Cubantimal	Mousingl	Door
_	Optimal	Suboptimal	Marginal	Poor
IN-STREAM HABITAT (May modify criteria based on appropriate habitat regime)	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).	40-70% mix of stable habitat; well- suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
18	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
VEGETATIVE PROTECTION (score each bank, determine sides by facing downstream)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
<mark>9</mark>	Left Bank 10 9	8 7 6	5 4 3	2 1 0
9	Right Bank 10 9	8 7 6	5 4 3	2 1 0
BANK EROSION (facing downstream)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Grade and width stable; isolated areas of bank failure/erosion; likely caused by a pipe outfall, local scour, impaired riparian vegetation or adjacent use.	Past downcutting evident, active stream widening, banks actively eroding at a moderate rate; no threat to property or infrastructure	Active downcutting; tall banks on both sides of the stream eroding at a fast rate; erosion contributing significant amount of sediment to stream; obvious threat to property or infrastructure.
9	Left Bank 10 9	8 7 6	5 4 3	2 1 0
<mark>9</mark>	Right Bank 10 9	8 7 6	5 4 3	2 1 0
FLOODPLAIN CONNECTION	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) not able to enter floodplain. Stream deeply entrenched.	High flows (greater than bankfull) not able to enter floodplain. Stream deeply entrenched.
18	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	OVER	ALL BUFFER AND FLOODPLAI	IN CONDITION	
	Optimal	Suboptimal	Marginal	Poor
VEGETATED BUFFER WIDTH	Width of buffer zone >50 feet; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, crops) have not impacted zone.	Width of buffer zone 25-50 feet; human activities have impacted zone only minimally.	Width of buffer zone 10-25 feet; human activities have impacted zone a great deal.	Width of buffer zone <10 feet: little or no riparian vegetation due to human activities.
<mark>9</mark>	Left Bank 10 9	8 7 6	5 4 3	2 1 0
<mark>9</mark>	Right Bank 10 9	8 7 6	5 4 3	2 1 0
FLOODPLAIN VEGETATION	Predominant floodplain vegetation type is mature forest	Predominant floodplain vegetation type is young forest	Predominant floodplain vegetation type is shrub or old field	Predominant floodplain vegetation type is turf or crop land
17	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
FLOODPLAIN	Even mix of wetland and non-wetland habitats, evidence of standing/ponded water	Even mix of wetland and non-wetland habitats, no evidence of standing/ponded water	Either all wetland or all non- wetland habitat, evidence of standing/ponded water	Either all wetland or all non- wetland habitat, no evidence of standing/ponded water
Навітат				
H ABITAT 16	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	20 19 18 17 16 No evidence of floodplain encroachment in the form of fill material, land development, or manmade structures	15 14 13 12 11 Minor floodplain encroachment in the form of fill material, land development, or manmade structures, but not effecting floodplain function	10 9 8 7 6 Moderate floodplain encroachment in the form of filling, land development, or manmade structures, some effect on floodplain function	5 4 3 2 1 0 Significant floodplain encroachment (i.e. fill material, land development, or man-made structures). Significant effect on floodplain function



SURVEY REACH I	ID: <u>RC-29</u> W	TRIB (TRIB)	C - ROCK CREEK	Date: <u>11/7/2007</u>	ASSESSED BY:	rgc/da
START TIM	E::AM/PM	LMK:	END TIME:_:	AM/PM LMK:		GPS ID:
LAT'	" Long	<u> </u>	LAT	" Longo	<u>"</u> "	
DESCRIPTION:			DESCRIPTION:			
			1			
RAIN IN LAST 24 HO	•	•	PRESENT CONDITIONS	<u>-</u>	ady rain 🗆 Intern	
None	☐ Intermitter		Clear	_	ercast Partly	cloudy
SURROUNDING LAN		ial □ Commercial ourse □ Park		Suburban/Res		ıtional
AVERAGE	CONDITIONS (ch	neck applicable)	REACH S	KETCH AND SITE IMPA	ACT TRACKING	
BASE FLOW AS % CHANNEL WIDTH	□ 0-25% □25-50 %	□ 50%-75% □ 75-100%	within the survey read	f survey reach. Track location ch (OT, ER, IB,SC, UT, TR, see eemed appropriate. Indicato	MI) as well as any a	
DOMINANT SUBSTR ☐ Silt/clay (fine or ☐ Sand (gritty) ☐ Gravel (0.1-2.5	slick)	Cobble (2.5 –10") Boulder (>10") Bed rock				
WATER CLARITY ☐ Stained (clear, n ☐ Other (chemicals,	aturally colored)	id (suspended matter) ☐ Opaque (milky)				
AQUATIC PLANTS IN STREAM	Floating: 🔲 no	one □ some □ lots ne □ some □ lots				
WILDLIFE IN OR AROUND STREAM	(Evidence of) ☐ Fish ☐ Bea ☐ Snails ☐ Oth					
STREAM SHADING (water surface)	☐ Mostly shaded ☐ Halfway (≥50 ☐ Partially shaded ☐ Unshaded (< 2	ed (<u>≥</u> 25%)				
CHANNEL DYNAMICS	Downcutting Widening Headcutting	Bank failure Bank scour				
Unknown	Aggrading Sed. depositi	on Slope failure Channelized				
CHANNEL DIMENSIONS (FACING	Height: LT bank RT bank Width: Bottom					
DOWNSTREAM)	Top	25 (ft)				
F	REACH ACCESSIBII					
Good: Open area in public ownership, sufficient room to stockpile materials, easy stream channel access for heavy equipment using existing roads or trails.	Fair: Forested or developed area adjacent to stream. Access requires tree removal or impact to landscaped areas. Stockpile areas small or distant from stream.	Difficult. Must cross wetland, steep slope, or sensitive areas to get to stream. Few areas to stockpile available and/or located a great distance from stream. Specialized heavy equipment required.				
NOTES: (biggest prob	blem you see in surve	ry reach)				
				REPORTED TO	AUTHORITIES	Yes 🔲 No

		OVERALL STREAM CONDI	TION	
	Optimal	Suboptimal	Marginal	Poor
IN-STREAM HABITAT (May modify criteria based on appropriate habitat regime)	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lact of habitat is obvious; substrate unstable or lacking.
15	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
VEGETATIVE PROTECTION (score each bank, determine sides by facing downstream)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambani surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
<mark>7</mark>	Left Bank 10 9	8 7 6	5 4 3	2 1 0
	Right Bank 10 9	8 7 6	5 4 3	2 1 0
BANK EROSION (facing downstream)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Grade and width stable; isolated areas of bank failure/erosion; likely caused by a pipe outfall, local scour, impaired riparian vegetation or adjacent use.	Past downcutting evident, active stream widening, banks actively eroding at a moderate rate; no threat to property or infrastructure	Active downcutting; tall banks on both sides of the stream eroding a fast rate; erosion contributing significant amount of sediment to stream; obvious threat to propert or infrastructure.
5	Left Bank 10 9	8 7 6	5 4 3	2 1 0
<mark>5</mark>	Right Bank 10 9	8 7 6	5 4 3	2 1 0
FLOODPLAIN CONNECTION	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) not able to enter floodplain. Stream deeply entrenched.	High flows (greater than bankfull not able to enter floodplain. Stream deeply entrenched.
12	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	OVER	RALL BUFFER AND FLOODPLAI	IN CONDITION	
	Optimal	Suboptimal	Marginal	Poor
VEGETATED BUFFER WIDTH	Width of buffer zone >50 feet; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, crops) have not impacted zone.	Width of buffer zone 25-50 feet; human activities have impacted zone only minimally.	Width of buffer zone 10-25 feet; human activities have impacted zone a great deal.	Width of buffer zone <10 feet: litt or no riparian vegetation due to human activities.
9	Left Bank 10 9	8 7 6	5 4 3	2 1 0
9 FLOODPLAIN VEGETATION	Right Bank 10 9 Predominant floodplain vegetation type is mature forest	8 7 6 Predominant floodplain vegetation type is young forest	5 4 3 Predominant floodplain vegetation type is shrub or old field	2 1 0 Predominant floodplain vegetation type is turf or crop land
<mark>16</mark>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
FLOODPLAIN	Even mix of wetland and non-wetland habitats, evidence of standing/ponded water	Even mix of wetland and non-wetland habitats, no evidence of standing/ponded water	Either all wetland or all non- wetland habitat, evidence of standing/ponded water	Either all wetland or all non- wetland habitat, no evidence of standing/ponded water
HABITAT	water	otalianig/political trates	1	+
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
Навітат	* **	Ŭ 1	10 9 8 7 6 Moderate floodplain encroachment in the form of filling, land development, or manmade structures, some effect on floodplain function	5 4 3 2 1 0 Significant floodplain encroachment (i.e. fill material, land development, or man-made structures). Significant effect or floodplain function 5 4 3 2 1 0



SURVEY REACH ID: <u>RC-30</u>	WTRSHD/SUBSHD: TRIB	C - ROCK CREEK	Date: <u>11/7/2007</u>	ASSESSED BY:	rgc/da
START TIME:_:_AM/PM	LMK:	END TIME:_:	AM/PM LMK:		GPS ID:
Lat°'Lor	NG'	LAT'	" Longo		
DESCRIPTION:		DESCRIPTION:			
					l
RAIN IN LAST 24 HOURS ☐ Heavy		PRESENT CONDITIONS Clear	☐ Heavy rain ☐ Stea ☐ Trace ☐ Ov	ady rain ☐ Internercast ☐ Partly	
SURROUNDING LAND USE:	strial Commercial Course Park	☐ Urban/Residential ☐ Crop ☐	☐ Suburban/Res ☐ Fore ☐ Pasture ☐ Oth		ıtional
AVERAGE CONDITIONS	(check applicable)	REACH S	KETCH AND SITE IMPA	ACT TRACKING	
B ASE FLOW AS % □ 0-25% CHANNEL WIDTH □ 25-50 %	□ 50%-75% □ 75-100%	within the survey rea	f survey reach. Track location ch (OT, ER, IB,SC, UT, TR, In leemed appropriate. Indicate	MI) as well as any a	
☐ Sand (gritty)	☐ Cobble (2.5 –10") ☐ Boulder (>10") ☐ Bed rock	, and the second			
WATER CLARITY ☐ Clear ☐ To ☐ Stained (clear, naturally colored) ☐ Other (chemicals, dyes)					
Tigetifie I Entitis	none □ some □ lots none □ some □ lots				
WILDLIFE IN OR AROUND STREAM (Evidence of) ☐ Fish ☐ I ☐ Snails ☐ 0	Beaver □ Deer Other:				
STREAM SHADING Halfway (>	aded (≥25%)				
CHANNEL Downcutt DYNAMICS Widening Headcutti	Bank failure Bank scour				
Unknown Aggrading Sed. depo					
CHANNEL DIMENSIONS (FACING DOWNSTREAM) Height: LT b RT b Width: Botto Top					
REACH ACCESSI					
Good: Open area in public ownership, sufficient room to stockpile materials, easy stream channel access for heavy equipment using existing roads or trails. Fair: Forested or developed area adjacent to stream Access requires to removal or impact landscaped areas Stockpile areas small or distant frostream.	ree stream. Few areas to stockpile available and/or located a great distance from stream.				
5 4 3 NOTES: (biggest problem you see in su	zrvey reach)				
2. 2. 2. 10.00 providing you use in su	<i>yy</i>		Reported to	AUTHORITIES 🗌	Yes 🗖 No

		OVERALL STREAM CONDI	TION	
	Optimal	Suboptimal	Marginal	Poor
IN-STREAM HABITAT (May modify criteria based on appropriate habitat regime)	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	40-70% mix of stable habitat; well- suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
17	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
VEGETATIVE PROTECTION (score each bank, determine sides by facing downstream)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
7	Left Bank 10 9	8 7 6	5 4 3	2 1 0
<mark>7</mark>	Right Bank 10 9	8 7 6	5 4 3	2 1 0
BANK EROSION (facing downstream)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Grade and width stable; isolated areas of bank failure/erosion; likely caused by a pipe outfall, local scour, impaired riparian vegetation or adjacent use.	Past downcutting evident, active stream widening, banks actively eroding at a moderate rate; no threat to property or infrastructure	Active downcutting; tall banks on both sides of the stream eroding at a fast rate; erosion contributing significant amount of sediment to stream; obvious threat to property or infrastructure.
<u>5</u>	Left Bank 10 9	8 7 6	5 4 3	2 1 0
<u>5</u>	Right Bank 10 9	8 7 6	5 4 3	2 1 0
FLOODPLAIN CONNECTION	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) not able to enter floodplain. Stream deeply entrenched.	High flows (greater than bankfull) not able to enter floodplain. Stream deeply entrenched.
<mark>16</mark>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	OVER	ALL BUFFER AND FLOODPLAI	IN CONDITION	
	Optimal	Suboptimal	Marginal	Poor
VEGETATED Buffer Width	Width of buffer zone >50 feet; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, crops) have not impacted zone.	Width of buffer zone 25-50 feet; human activities have impacted zone only minimally.	Width of buffer zone 10-25 feet; human activities have impacted zone a great deal.	Width of buffer zone <10 feet: little or no riparian vegetation due to human activities.
9	Left Bank 10 9	8 7 6	5 4 3	2 1 0
<mark>9</mark>	Left Bank 10 9 Right Bank 10 9 Predominant floodplain vegetation type is mature forest	8 7 6 8 7 6 Predominant floodplain vegetation type is young forest	5 4 3 5 4 3 Predominant floodplain vegetation type is shrub or old field	2 1 0
9 9 FLOODPLAIN VEGETATION 17	Right Bank 10 9 Predominant floodplain vegetation type	8 7 6 Predominant floodplain vegetation	5 4 3 Predominant floodplain vegetation type is shrub or old	2 1 0 Predominant floodplain vegetation
9 FLOODPLAIN VEGETATION	Right Bank 10 9 Predominant floodplain vegetation type is mature forest	8 7 6 Predominant floodplain vegetation type is young forest	5 4 3 Predominant floodplain vegetation type is shrub or old field	2 1 0 Predominant floodplain vegetation type is turf or crop land
9 FLOODPLAIN VEGETATION 17 FLOODPLAIN	Right Bank 10 9 Predominant floodplain vegetation type is mature forest 20 19 18 17 16 Even mix of wetland and non-wetland habitats, evidence of standing/ponded	8 7 6 Predominant floodplain vegetation type is young forest 15 14 13 12 11 Even mix of wetland and non-wetland habitats, no evidence of	5 4 3 Predominant floodplain vegetation type is shrub or old field 10 9 8 7 6 Either all wetland or all nonwetland habitat, evidence of	Predominant floodplain vegetation type is turf or crop land 5 4 3 2 1 0 Either all wetland or all nonwetland habitat, no evidence of
FLOODPLAIN VEGETATION 17 FLOODPLAIN HABITAT	Right Bank 10 9 Predominant floodplain vegetation type is mature forest 20 19 18 17 16 Even mix of wetland and non-wetland habitats, evidence of standing/ponded water	Predominant floodplain vegetation type is young forest 15 14 13 12 11 Even mix of wetland and non-wetland habitats, no evidence of standing/ponded water	5 4 3 Predominant floodplain vegetation type is shrub or old field 10 9 8 7 6 Either all wetland or all non- wetland habitat, evidence of standing/ponded water	Predominant floodplain vegetation type is turf or crop land 5 4 3 2 1 0 Either all wetland or all nonwetland habitat, no evidence of standing/ponded water



SURVEY REACH I	D : <u>RC-47</u> W _T	rshd/Subshd: Trib	D - ROCK CREEK	Date: <u>11/7/2007</u>	ASSESSED BY:	TGC/DA
START TIME	E :_ : AM /PM	LMK:	END TIME:_:	AM/PM LM	MK:	GPS ID:
Lato'_	" Long	<u> </u>	LAT'	" Long	°''	
DESCRIPTION:			DESCRIPTION:			
RAIN IN LAST 24 HO	urs Heavy rain	☐ Steady rain	PRESENT CONDITIONS	☐ Heavy rain ☐	☐ Steady rain ☐ Interr	nittent
□ None	☐ Intermittent	☐ Trace	Clear	☐ Trace ☐	☐ Overcast ☐ Partl	y cloudy
SURROUNDING LAND		l □ Commercial rse □ Park	☐ Urban/Residential ☐ Crop ☐		☐ Forested ☐ Institute ☐ Institute ☐ Other:	ıtional
AVERAGE	CONDITIONS (che	ck applicable)	REACH S	KETCH AND SITE	IMPACT TRACKING	
BASE FLOW AS % CHANNEL WIDTH	□ 0-25% □25-50 %	□ 50%-75% □ 75-100%	within the survey rea	ch (OT, ER, IB,SC, UT	locations and IDs for all s T, TR, MI) as well as any o dicate direction of flow	
DOMINANT SUBSTR. ☐ Silt/clay (fine or ☐ Sand (gritty) ☐ Gravel (0.1-2.5	slick) \square Co	obble (2.5 –10") oulder (>10") ed rock	, cames a	come appropriate.		
WATER CLARITY ☐ Stained (clear, no ☐ Other (chemicals,	aturally colored) 🛚					
AQUATIC PLANTS IN STREAM		e □ some □ lots e □ some □ lots				
WILDLIFE IN OR AROUND STREAM	(Evidence of) ☐ Fish ☐ Beav ☐ Snails ☐ Other					
STREAM SHADING (water surface)	☐ Mostly shaded ☐ Halfway (≥50% ☐ Partially shaded ☐ Unshaded (< 25	(5) d (≥25%)				
CHANNEL DYNAMICS	Downcutting Widening Headcutting	Bed scour Bank failure Bank scour				
Unknown	Aggrading Sed. deposition	Slope failure Channelized				
CHANNEL DIMENSIONS (FACING DOWNSTREAM)	Height: LT bank RT bank Width: Bottom Top	5-10 (ft) 5-10 (ft) 10-15 (ft) 20-25 (ft)				
R	REACH ACCESSIBILIT					
Good: Open area in public ownership, sufficient room to stockpile materials, easy stream channel access for heavy equipment using existing roads or trails.	Fair: Forested or developed area adjacent to stream. Access requires tree removal or impact to landscaped areas. Stockpile areas small or distant from stream.	Difficult. Must cross wetland, steep slope, or sensitive areas to get to stream. Few areas to stockpile available and/or located a great distance from stream. Specialized heavy equipment required.				
5 NOTES: (biggest prob	dem vou see in survey	2 1 reach)				
TOTES. (viggesi prot	nem you see in survey	reucii)				
				<u>Reporte</u>	D TO AUTHORITIES	Yes No

	Optimal	Suboptimal	Marginal	Poor
IN-STREAM HABITAT (May modify criteria based on appropriate habitat regime)	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
15	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
VEGETATIVE PROTECTION (score each bank, determine sides by facing downstream)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
<mark>6</mark>	Left Bank 10 9	8 7 6	5 4 3	2 1 0
<u>6</u>	Right Bank 10 9	8 7 6	5 4 3	2 1 0
BANK EROSION (facing downstream)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Grade and width stable; isolated areas of bank failure/erosion; likely caused by a pipe outfall, local scour, impaired riparian vegetation or adjacent use.	Past downcutting evident, active stream widening, banks actively eroding at a moderate rate; no threat to property or infrastructure	Active downcutting; tall banks on both sides of the stream eroding at a fast rate; erosion contributing significant amount of sediment to stream; obvious threat to property or infrastructure.
4	Left Bank 10 9	8 7 6	5 4 3	2 1 0
4	Right Bank 10 9	8 7 6	5 4 3	2 1 0
FLOODPLAIN CONNECTION	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) not able to enter floodplain. Stream deeply entrenched.	High flows (greater than bankfull) not able to enter floodplain. Stream deeply entrenched.
10	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	OVER	ALL BUFFER AND FLOODPLAI	IN CONDITION	
	Optimal	Suboptimal	Marginal	Poor
VEGETATED BUFFER WIDTH	Width of buffer zone >50 feet; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, crops) have not impacted zone.	Width of buffer zone 25-50 feet; human activities have impacted zone only minimally.	Width of buffer zone 10-25 feet; human activities have impacted zone a great deal.	Width of buffer zone <10 feet: little or no riparian vegetation due to human activities.
9	Left Bank 10 9	8 7 6	5 4 3	2 1 0
<mark>9</mark>	Right Bank 10 9	8 7 6	5 4 3	2 1 0
FLOODPLAIN VEGETATION	Predominant floodplain vegetation type is mature forest	Predominant floodplain vegetation type is young forest	Predominant floodplain vegetation type is shrub or old field	Predominant floodplain vegetation type is turf or crop land
17	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
FLOODPLAIN HABITAT	Even mix of wetland and non-wetland habitats, evidence of standing/ponded water	Even mix of wetland and non-wetland habitats, no evidence of standing/ponded water	Either all wetland or all non- wetland habitat, evidence of standing/ponded water	Either all wetland or all non- wetland habitat, no evidence of standing/ponded water
3	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
<u> </u>	No evidence of floodplain	Minor floodplain encroachment in the	Moderate floodplain encroachment in the form of	Significant floodplain encroachment (i.e. fill material,
FLOODPLAIN ENCROACH- MENT	encroachment in the form of fill material, land development, or manmade structures	form of fill material, land development, or manmade structures, but not effecting floodplain function	filling, land development, or manmade structures, some effect on floodplain function	land development, or man-made structures). Significant effect on floodplain function



SURVEY REACH I	D : <u>RC-48</u> W _T	TRIB TRIB	D - ROCK CREEK	Date: <u>11/7/2007</u>	ASSESSED BY: 1	GC/DA
START TIME	E :_ : AM /PM	LMK:	END TIME:_:	AM/PM LM	ИК:	GPS ID:
Lato'_	" Long	<u> </u>	LAT'	" Long	·	
DESCRIPTION:			DESCRIPTION:			
RAIN IN LAST 24 HO	urs Heavy rain	☐ Steady rain	PRESENT CONDITIONS	☐ Heavy rain ☐	Steady rain Interm	ittent
□ None	☐ Intermittent	☐ Trace	Clear	☐ Trace ☐	☐ Overcast ☐ Partly	cloudy
SURROUNDING LAND		l □ Commercial rse □ Park	☐ Urban/Residential ☐ Crop ☐		Forested	tional
AVERAGE	CONDITIONS (che	ck applicable)	REACH S	KETCH AND SITE I	IMPACT TRACKING	
BASE FLOW AS % CHANNEL WIDTH	□ 0-25% □25-50 %	□ 50%-75% □ 75-100%	within the survey rea		ocations and IDs for all si TR, MI) as well as any ac dicate direction of flow	
DOMINANT SUBSTR. ☐ Silt/clay (fine or ☐ Sand (gritty) ☐ Gravel (0.1-2.5	slick) \square Co	obble (2.5 –10") oulder (>10") ed rock	,,		, , , , , , , , , , , , , , , , , , ,	
WATER CLARITY ☐ Stained (clear, no ☐ Other (chemicals,	aturally colored) 🛚					
AQUATIC PLANTS IN STREAM		e □ some □ lots				
WILDLIFE IN OR AROUND STREAM	(Evidence of) ☐ Fish ☐ Beav ☐ Snails ☐ Other					
STREAM SHADING (water surface)	☐ Mostly shaded ☐ Halfway (≥50% ☐ Partially shaded ☐ Unshaded (< 25	%) d (≥25%)				
CHANNEL DYNAMICS	Downcutting Widening Headcutting	Bed scour Bank failure Bank scour				
Unknown	Aggrading Sed. deposition	Slope failure Channelized				
CHANNEL DIMENSIONS (FACING DOWNSTREAM)	Height: LT bank RT bank Width: Bottom Top	3-5 (ft) 3-5 (ft) 10 (ft) 20 (ft)				
R	REACH ACCESSIBILIT					
Good: Open area in public ownership, sufficient room to stockpile materials, easy stream channel access for heavy equipment using existing roads or trails.	Fair: Forested or developed area adjacent to stream. Access requires tree removal or impact to landscaped areas. Stockpile areas small or distant from stream.	Difficult. Must cross wetland, steep slope, or sensitive areas to get to stream. Few areas to stockpile available and/or located a great distance from stream. Specialized heavy equipment required.				
5 NOTES: (biggest prob	dem vou see in survey	2 1 reach)				
1401E3. (viggesi prot	nem you see in survey	reacnj				
				REPORTEI	O TO AUTHORITIES []	YES No

		OVERALL STREAM CONDI	ITION	
	Optimal	Suboptimal	Marginal	Poor
IN-STREAM HABITAT (May modify criteria based on appropriate habitat regime)	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	40-70% mix of stable habitat; well- suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
15	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
VEGETATIVE PROTECTION (score each bank, determine sides by facing downstream)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
<mark>7</mark>	Left Bank 10 9	8 7 6	5 4 3	2 1 0
<mark>7</mark>	Right Bank 10 9	8 7 6	5 4 3	2 1 0
BANK EROSION (facing downstream)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Grade and width stable; isolated areas of bank failure/erosion; likely caused by a pipe outfall, local scour, impaired riparian vegetation or adjacent use.	Past downcutting evident, active stream widening, banks actively eroding at a moderate rate; no threat to property or infrastructure	Active downcutting; tall banks on both sides of the stream eroding at a fast rate; erosion contributing significant amount of sediment to stream; obvious threat to property or infrastructure.
<u>5</u>	Left Bank 10 9	8 7 6	5 4 3	2 1 0
<mark>5</mark>	Right Bank 10 9	8 7 6	5 4 3	2 1 0
FLOODPLAIN CONNECTION	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) not able to enter floodplain. Stream deeply entrenched.	High flows (greater than bankfull) not able to enter floodplain. Stream deeply entrenched.
<u>16</u>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	OVER	ALL BUFFER AND FLOODPLA	IN CONDITION	
	Optimal	Suboptimal	Marginal	Poor
VEGETATED BUFFER WIDTH	Width of buffer zone >50 feet; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, crops) have not impacted zone.	Width of buffer zone 25-50 feet; human activities have impacted zone only minimally.	Width of buffer zone 10-25 feet; human activities have impacted zone a great deal.	Width of buffer zone <10 feet: little or no riparian vegetation due to human activities.
<mark>9</mark>	Left Bank 10 9	8 7 6	5 4 3	2 1 0
9 9 FLOODPLAIN VEGETATION	Left Bank 10 9 Right Bank 10 9 Predominant floodplain vegetation type is mature forest	8 7 6 8 7 6 Predominant floodplain vegetation type is young forest	5 4 3 5 4 3 Predominant floodplain vegetation type is shrub or old field	2 1 0
FLOODPLAIN	Right Bank 10 9 Predominant floodplain vegetation type	8 7 6 Predominant floodplain vegetation	5 4 3 Predominant floodplain vegetation type is shrub or old	2 1 0 Predominant floodplain vegetation
FLOODPLAIN VEGETATION	Right Bank 10 9 Predominant floodplain vegetation type is mature forest	8 7 6 Predominant floodplain vegetation type is young forest	5 4 3 Predominant floodplain vegetation type is shrub or old field	2 1 0 Predominant floodplain vegetation type is turf or crop land
FLOODPLAIN VEGETATION 16 FLOODPLAIN	Right Bank 10 9 Predominant floodplain vegetation type is mature forest 20 19 18 17 16 Even mix of wetland and non-wetland habitats, evidence of standing/ponded	8 7 6 Predominant floodplain vegetation type is young forest 15 14 13 12 11 Even mix of wetland and non-wetland habitats, no evidence of	5 4 3 Predominant floodplain vegetation type is shrub or old field 10 9 8 7 6 Either all wetland or all nonwetland habitat, evidence of	Predominant floodplain vegetation type is turf or crop land 5 4 3 2 1 0 Either all wetland or all nonwetland habitat, no evidence of standing/ponded water 5 4 3 2 1 0
FLOODPLAIN VEGETATION 16 FLOODPLAIN HABITAT	Right Bank 10 9 Predominant floodplain vegetation type is mature forest 20 19 18 17 16 Even mix of wetland and non-wetland habitats, evidence of standing/ponded water	Predominant floodplain vegetation type is young forest 15 14 13 12 11 Even mix of wetland and non-wetland habitats, no evidence of standing/ponded water	5 4 3 Predominant floodplain vegetation type is shrub or old field 10 9 8 7 6 Either all wetland or all nonwetland habitat, evidence of standing/ponded water	Predominant floodplain vegetation type is turf or crop land 5 4 3 2 1 0 Either all wetland or all nonwetland habitat, no evidence of standing/ponded water



SURVEY REACH I	D: <u>TMFC</u> -	WTI	RSHD/SUBSHD: TEN	MILE FLAT	Creek	DATE: <u>11/6/200</u>	<u>7</u>	Assessi	ED BY: <mark>T</mark>	CGC/BA
START TIME	E <u>: 3:00</u> A	M/ <mark>PM</mark>	LMK:	END	Тіме <mark>:_4</mark> _	: 00 AM/PM	LMK	:		GPS ID:
LAT'	" L	ONG	<u> </u>	LAT	°'	" Long_	°	<u>'</u>	**	
DESCRIPTION:				DESCRIP	TION:					
RAIN IN LAST 24 HO	urs 🗆 Heav	vy rain	☐ Steady rain	PRESENT C	ONDITIONS	☐ Heavy rain	☐ Stea	dy rain □	Interm	ittent
□ None	☐ Inter	mittent	☐ Trace	Clear		☐ Trace	□ Ove	rcast [☐ Partly	cloudy
SURROUNDING LAND		dustrial olf cour	☐ Commercial se ☐ Park	☐ Urban/R ☐ Crop		☐ Suburban/Res ☐ Pasture	☐ Fores		Institu	tional
AVERAGE	CONDITION	NS (chec	k applicable)		REACH S	KETCH AND SIT	ГЕ ІМРА	CT TRAC	CKING	
BASE FLOW AS % CHANNEL WIDTH	□ 0-25% □25-50 %	6	□ 50%-75% □ 75-100%	Simple p within	the survey rea	f survey reach. Tra ch (OT, ER, IB,SC, leemed appropriate.	UT, TR, M	II) as well	as any a	ite impacts Iditional
DOMINANT SUBSTRA ☐ Silt/clay (fine or some conditions) ☐ Sand (gritty) ☐ Gravel (0.1-2.5)	slick)	□Во	bble (2.5 –10") ulder (>10") d rock		v					
WATER CLARITY ☐ Stained (clear, no) ☐ Other (chemicals, o)	aturally colore									
AQUATIC PLANTS IN STREAM			some \square lots \square some \square lots							
WILDLIFE IN OR AROUND STREAM	(Evidence of ☐ Fish ☐ Snails ☐	_ ☐ Beave								
STREAM SHADING (water surface)	☐ Mostly s ☐ Halfway ☐ Partially ☐ Unshade	/ (≥50%) / shaded	(<u>></u> 25%)							
CHANNEL DYNAMICS	Downer Wideni	ng itting	Bed scour Bank failure Bank scour							
Unknown	Aggrad Sed. de	ling position	Slope failure Channelized							
CHANNEL DIMENSIONS (FACING DOWNSTREAM)	Height: LT RT Width: Bo	Γ bank ottom	0-4 (ft) 0-4 (ft) 10 (ft) 15-20 (ft)							
R	REACH ACCES	SSIBILIT								
Good: Open area in public ownership, sufficient room to stockpile materials, easy stream channel access for heavy equipment using existing roads or trails.	Fair: Forested developed are adjacent to str Access require removal or implandscaped ar Stockpile area small or distanties.	eam. es tree pact to reas.	Difficult. Must cross wetland, steep slope, or sensitive areas to get to stream. Few areas to stockpile available and/or located a great distance from stream. Specialized heavy equipment required.							
NOTES: (biggest prob						Repor	TED TO A	UTHODIT	TES []	YES NO

	Optimal	Suboptimal	Marginal	Poor
IN-STREAM HABITAT (May modify criteria based on appropriate habitat regime)	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).	40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lac of habitat is obvious; substrate unstable or lacking.
18	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
VEGETATIVE PROTECTION (score each bank, determine sides by facing downstream)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streamban surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
9	Left Bank 10 9	8 7 6	5 4 3	2 1 0
9	Right Bank 10 9	8 7 6	5 4 3	2 1 0
BANK EROSION (facing downstream)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Grade and width stable; isolated areas of bank failure/erosion; likely caused by a pipe outfall, local scour, impaired riparian vegetation or adjacent use.	Past downcutting evident, active stream widening, banks actively eroding at a moderate rate; no threat to property or infrastructure	Active downcutting; tall banks on both sides of the stream eroding a fast rate; erosion contributing significant amount of sediment to stream; obvious threat to propert or infrastructure.
<mark>4</mark>	Left Bank 10 9	8 7 6	5 4 3	2 1 0
<mark>4</mark>	Right Bank 10 9	8 7 6	5 4 3	2 1 0
FLOODPLAIN CONNECTION	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) not able to enter floodplain. Stream deeply entrenched.	High flows (greater than bankfull not able to enter floodplain. Stream deeply entrenched.
<mark>11</mark>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	Over	ALL BUFFER AND FLOODPLA	IN CONDITION	
	Optimal	Suboptimal	Marginal	Poor
VEGETATED BUFFER WIDTH	Width of buffer zone >50 feet; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, crops) have not impacted zone.	Width of buffer zone 25-50 feet; human activities have impacted zone only minimally.	Width of buffer zone 10-25 feet; human activities have impacted zone a great deal.	Width of buffer zone <10 feet: litt or no riparian vegetation due to human activities.
<mark>9</mark> 9	Left Bank 10 9	8 7 6	5 4 3	2 1 0
9 FLOODPLAIN VEGETATION	Right Bank 10 9 Predominant floodplain vegetation type is mature forest	8 7 6 Predominant floodplain vegetation type is young forest	5 4 3 Predominant floodplain vegetation type is shrub or old field	2 1 0 Predominant floodplain vegetation type is turf or crop land
<mark>16</mark>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
FLOODPLAIN HABITAT	Even mix of wetland and non-wetland habitats, evidence of standing/ponded water	Even mix of wetland and non-wetland habitats, no evidence of standing/ponded water	Either all wetland or all non- wetland habitat, evidence of standing/ponded water	Either all wetland or all non- wetland habitat, no evidence of standing/ponded water
8	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
FLOODPLAIN ENCROACH- MENT	No evidence of floodplain encroachment in the form of fill material, land development, or manmade structures	Minor floodplain encroachment in the form of fill material, land development, or manmade structures, but not effecting floodplain function	Moderate floodplain encroachment in the form of filling, land development, or manmade structures, some effect on floodplain function	Significant floodplain encroachment (i.e. fill material, land development, or man-made structures). Significant effect on floodplain function
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0



SURVEY REACH I	D: TMFC-	WTI	RSHD/SUBSHD: TEN	MILE FLAT C	REEK	DATE: <u>11/6/200</u>	<mark>7</mark>	Asses	SED BY: <mark>T</mark>	GC/BA
START TIME	e <mark>: 4:00</mark> A	M/ <mark>PM</mark>	LMK:	END	Тіме <mark>:_4</mark> _	: <u>40</u> AM/ <mark>PM</mark>	LMK		_	GPS ID:
LAT'	" L	ONG	<u> </u>	LAT	'' <u></u>	" Long	°	_'	'''	
DESCRIPTION:				DESCRIPT	ION:					
RAIN IN LAST 24 HO	urs Heav	y rain	☐ Steady rain	PRESENT CO	NDITIONS	☐ Heavy rain	☐ Stead	dy rain	☐ Interm	ittent
□ None	☐ Intern	mittent	☐ Trace	Clear		☐ Trace	□ Ove	rcast	☐ Partly	cloudy
SURROUNDING LANI		dustrial olf cour	☐ Commercial se ☐ Park	□ Urban/Re □ Crop		☐ Suburban/Res☐ Pasture	☐ Fores		□ Institu	tional
AVERAGE	CONDITION	NS (chec	k applicable)		REACH S	KETCH AND SIT	E IMPA	CT TRA	ACKING	
BASE FLOW AS % CHANNEL WIDTH	□ 0-25% □25-50 %		□ 50%-75% □ 75-100%	Simple pla within th	e survey read	^c survey reach. Trac ch (OT, ER, IB,SC, eemed appropriate.	UT, TR, M	II) as we	ll as any a	ite impacts dditional
DOMINANT SUBSTRA ☐ Silt/clay (fine or some conditions) ☐ Sand (gritty) ☐ Gravel (0.1-2.5)	slick)	□Во	bble (2.5 –10") ulder (>10") d rock		v					
WATER CLARITY ☐ Stained (clear, no	aturally colored									
AQUATIC PLANTS IN STREAM			some □ lots □ some □ lots							
WILDLIFE IN OR AROUND STREAM	(Evidence of ☐ Fish ☐ Snails ☐	Beave								
STREAM SHADING (water surface)	☐ Mostly sl☐ Halfway☐ Partially☐ Unshade	(<u>></u> 50%) shaded	(<u>></u> 25%)							
CHANNEL DYNAMICS	Downcu Widenin	ng tting	Bed scour Bank failure Bank scour							
Unknown	Aggradi Sed. dep	-	Slope failure Channelized							
CHANNEL DIMENSIONS (FACING DOWNSTREAM)	Height: LT RT Width: Bo To	bank ottom	3-5 (ft) 3-5 (ft) 20 (ft) 50 (ft)							
R	REACH ACCES			1						
Good: Open area in public ownership, sufficient room to stockpile materials, easy stream channel access for heavy equipment using existing roads or trails.	Fair: Forested developed area adjacent to stre Access require removal or imp landscaped areas small or distant stream.	eam. es tree pact to eas. s	Difficult. Must cross wetland, steep slope, or sensitive areas to get to stream. Few areas to stockpile available and/or located a great distance from stream. Specialized heavy equipment required.							
NOTES: (biggest prob				•		REPOR	TED TO A	ПТНОБ	ITIES []	YES NO

	Optimal	Suboptimal	Marginal	Poor
IN-STREAM HABITAT (May modify criteria based on appropriate habitat regime)	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).	40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lac of habitat is obvious; substrate unstable or lacking.
18	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
VEGETATIVE PROTECTION (score each bank, determine sides by facing downstream)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streamban surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
9	Left Bank 10 9	8 7 6	5 4 3	2 1 0
9	Right Bank 10 9	8 7 6	5 4 3	2 1 0
BANK EROSION (facing downstream)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Grade and width stable; isolated areas of bank failure/erosion; likely caused by a pipe outfall, local scour, impaired riparian vegetation or adjacent use.	Past downcutting evident, active stream widening, banks actively eroding at a moderate rate; no threat to property or infrastructure	Active downcutting; tall banks on both sides of the stream eroding a fast rate; erosion contributing significant amount of sediment to stream; obvious threat to propert or infrastructure.
8	Left Bank 10 9	8 7 6	5 4 3	2 1 0
8	Right Bank 10 9	8 7 6	5 4 3	2 1 0
FLOODPLAIN CONNECTION	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) not able to enter floodplain. Stream deeply entrenched.	High flows (greater than bankfull not able to enter floodplain. Stream deeply entrenched.
<mark>19</mark>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	Over	ALL BUFFER AND FLOODPLA	IN CONDITION	
	Optimal	Suboptimal	Marginal	Poor
VEGETATED BUFFER WIDTH	Width of buffer zone >50 feet; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, crops) have not impacted zone.	Width of buffer zone 25-50 feet; human activities have impacted zone only minimally.	Width of buffer zone 10-25 feet; human activities have impacted zone a great deal.	Width of buffer zone <10 feet: litt or no riparian vegetation due to human activities.
<mark>9</mark> 9	Left Bank 10 9	8 7 6	5 4 3	2 1 0
9 FLOODPLAIN VEGETATION	Right Bank 10 9 Predominant floodplain vegetation type is mature forest	8 7 6 Predominant floodplain vegetation type is young forest	5 4 3 Predominant floodplain vegetation type is shrub or old field	2 1 0 Predominant floodplain vegetation type is turf or crop land
<u>16</u>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
FLOODPLAIN HABITAT	Even mix of wetland and non-wetland habitats, evidence of standing/ponded water	Even mix of wetland and non-wetland habitats, no evidence of standing/ponded water	Either all wetland or all non- wetland habitat, evidence of standing/ponded water	Either all wetland or all non- wetland habitat, no evidence of standing/ponded water
8	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
FLOODPLAIN ENCROACH- MENT	No evidence of floodplain encroachment in the form of fill material, land development, or manmade structures	Minor floodplain encroachment in the form of fill material, land development, or manmade structures, but not effecting floodplain function	Moderate floodplain encroachment in the form of filling, land development, or manmade structures, some effect on floodplain function	Significant floodplain encroachment (i.e. fill material, land development, or man-made structures). Significant effect on floodplain function
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0



SURVEY REACH I	D: TMFC-	WTI	RSHD/SUBSHD: TEN	MILE FLAT (CREEK	DATE: <u>11/6/200</u>	<u>7</u>	Assessi	ED BY: <mark>T</mark>	CGC/BA
START TIMI	e <mark>: 4 : 45</mark> Al	M/ <mark>PM</mark>	LMK:	END	Тіме <mark>: 5</mark>	: 00 AM/PM	LMK			GPS ID:
LAT'	''' L	ONG	<u> </u>	Lat	°'_	" Long_	<u> </u>	_'	-''	
DESCRIPTION:				DESCRIP	TION:					
				1					i	
RAIN IN LAST 24 HO	urs Heav	y rain	☐ Steady rain	PRESENT C	ONDITIONS	☐ Heavy rain	☐ Stead	dy rain □	Interm	ittent
□ None	☐ Interr	mittent	☐ Trace	Clear		☐ Trace	□ Ove	rcast [☐ Partly	cloudy
SURROUNDING LANI		dustrial olf cour	☐ Commercial se ☐ Park	☐ Urban/R ☐ Crop		☐ Suburban/Res ☐ Pasture	☐ Fores		Institu	tional
AVERAGE	CONDITION	NS (chec	k applicable)		REACH S	KETCH AND SIT	ГЕ ІМРА	CT TRAC	CKING	
BASE FLOW AS % CHANNEL WIDTH	□ 0-25% □25-50 %)	□ 50%-75% □ 75-100%	Simple pl within t	he survey rea	f survey reach. Trad ch (OT, ER, IB,SC, leemed appropriate.	UT, TR, M	II) as well	as any ad	te impacts Iditional
DOMINANT SUBSTRA ☐ Silt/clay (fine or some some some some some some some some	slick)	□Во	bble (2.5 –10") ulder (>10") d rock		,	17 17			<i>y y</i> · · · ·	
WATER CLARITY ☐ Stained (clear, no: ☐ Other (chemicals, o	aturally colored									
AQUATIC PLANTS IN STREAM			some □ lots □ some □ lots							
WILDLIFE IN OR AROUND STREAM	(Evidence of) ☐ Fish ☐ ☐ Snails ☐	Beave								
STREAM SHADING (water surface)	☐ Mostly sl ☐ Halfway ☐ Partially ☐ Unshade	(<u>></u> 50%) shaded	(<u>></u> 25%)							
CHANNEL DYNAMICS	Downcu Widenin Headcut	ng	Bed scour Bank failure Bank scour							
Unknown	Aggradi Sed. dep	-	Slope failure Channelized							
CHANNEL DIMENSIONS (FACING DOWNSTREAM)	Height: LT RT Width: Bo To	bank ttom	1-3 (ft) 1-3 (ft) 2-8 (ft) 15 (ft)							
R	REACH ACCES									
Good: Open area in public ownership, sufficient room to stockpile materials, easy stream channel access for heavy equipment using existing roads or trails.	Fair: Forested developed area adjacent to stre Access require removal or implandscaped are Stockpile areas small or distant stream.	eam. es tree eact to eas.	Difficult. Must cross wetland, steep slope, or sensitive areas to get to stream. Few areas to stockpile available and/or located a great distance from stream. Specialized heavy equipment required.							
NOTES: (biggest prob						REPOR	TED TO A	ПТНОВІТ	TES 🗆 T	YES NO

	Optimal	Suboptimal	Marginal	Poor
IN-STREAM HABITAT (May modify criteria based on appropriate habitat regime)	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).	40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lac of habitat is obvious; substrate unstable or lacking.
<mark>16</mark>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
VEGETATIVE PROTECTION (score each bank, determine sides by facing downstream)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streamban surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
<mark>9</mark>	Left Bank 10 9	8 7 6	5 4 3	2 1 0
9	Right Bank 10 9	8 7 6	5 4 3	2 1 0
BANK EROSION (facing downstream)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Grade and width stable; isolated areas of bank failure/erosion; likely caused by a pipe outfall, local scour, impaired riparian vegetation or adjacent use.	Past downcutting evident, active stream widening, banks actively eroding at a moderate rate; no threat to property or infrastructure	Active downcutting; tall banks on both sides of the stream eroding a fast rate; erosion contributing significant amount of sediment to stream; obvious threat to propert or infrastructure.
<mark>9</mark>	Left Bank 10 9	8 7 6	5 4 3	2 1 0
9	Right Bank 10 9	8 7 6	5 4 3	2 1 0
FLOODPLAIN CONNECTION	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) not able to enter floodplain. Stream deeply entrenched.	High flows (greater than bankfull) not able to enter floodplain. Stream deeply entrenched.
<mark>19</mark>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	OVER	ALL BUFFER AND FLOODPLA	IN CONDITION	
	Optimal	Suboptimal	Marginal	Poor
VEGETATED BUFFER WIDTH	Width of buffer zone >50 feet; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, crops) have not impacted zone.	Width of buffer zone 25-50 feet; human activities have impacted zone only minimally.	Width of buffer zone 10-25 feet; human activities have impacted zone a great deal.	Width of buffer zone <10 feet: litt or no riparian vegetation due to human activities.
10	Left Bank 10 9	8 7 6	5 4 3	2 1 0
10	Right Bank 10 9	8 7 6	5 4 3	2 1 0
FLOODPLAIN VEGETATION	Predominant floodplain vegetation type is mature forest	Predominant floodplain vegetation type is young forest	Predominant floodplain vegetation type is shrub or old field	Predominant floodplain vegetation type is turf or crop land
18	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
FLOODPLAIN HABITAT	Even mix of wetland and non-wetland habitats, evidence of standing/ponded water	Even mix of wetland and non-wetland habitats, no evidence of standing/ponded water	Either all wetland or all non- wetland habitat, evidence of standing/ponded water	Either all wetland or all non- wetland habitat, no evidence of standing/ponded water
8	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
FLOODPLAIN ENCROACH- MENT	No evidence of floodplain encroachment in the form of fill material, land development, or manmade structures	Minor floodplain encroachment in the form of fill material, land development, or manmade structures, but not effecting floodplain function	Moderate floodplain encroachment in the form of filling, land development, or manmade structures, some effect on floodplain function	Significant floodplain encroachment (i.e. fill material, land development, or man-made structures). Significant effect on floodplain function
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0



SURVEY REACH I	D: TMFC	WTI	RSHD/SUBSHD: TEN	MILE FLAT C	CREEK	DATE: <u>11/6/200</u>	<mark>7</mark>	ASSESSED B	Y: TGC/BA
START TIME	e <mark>: 5</mark> :00 A	AM/ <mark>PM</mark>	LMK:	END	Тіме <mark>: 5</mark>	: <u>15</u> _AM/PM	LMK	:	GPS ID:
Lat'	" I	LONG	<u> </u>	Lat	°'	" Long_	_°	<u>'</u>	
DESCRIPTION:				DESCRIP	TION:				
RAIN IN LAST 24 HO	urs 🗆 Heav	vy rain	☐ Steady rain	PRESENT CO	ONDITIONS	☐ Heavy rain	☐ Stead	dy rain 🛚 Int	ermittent
□ None	☐ Inter	rmittent	☐ Trace	Clear		☐ Trace	□ Ove	rcast \square Pa	artly cloudy
SURROUNDING LAND		ndustrial Golf cour	☐ Commercial se ☐ Park	☐ Urban/Re☐ Crop		☐ Suburban/Res ☐ Pasture	☐ Fores		stitutional
AVERAGE	CONDITIO	NS (chec	k applicable)		REACH S	KETCH AND SIT	TE IMPA	CT TRACKI	NG
BASE FLOW AS % CHANNEL WIDTH	□ 0-25% □25-50 %	%	□ 50%-75% □ 75-100%	Simple pla within ti	he survey read	f survey reach. Trac ch (OT, ER, IB,SC, eemed appropriate.	UT, TR, M	II) as well as a	ny additional
DOMINANT SUBSTR. ☐ Silt/clay (fine or ☐ Sand (gritty) ☐ Gravel (0.1-2.5	slick)	□Во	bble (2.5 –10") ulder (>10") d rock		,				
WATER CLARITY ☐ Stained (clear, no ☐ Other (chemicals,	aturally colore								
AQUATIC PLANTS IN STREAM			e □ some □ lots □ some □ lots						
WILDLIFE IN OR AROUND STREAM	(Evidence of District Control of	🗀 Beave							
STREAM SHADING (water surface)	☐ Mostly s ☐ Halfway ☐ Partially ☐ Unshade	y (<u>></u> 50%) y shaded	(<u>></u> 25%)						
CHANNEL DYNAMICS	Downc Wideni Headcu	ing utting	Bed scour Bank failure Bank scour						
Unknown	Aggrad Sed. de	ling eposition	Slope failure Channelized						
CHANNEL DIMENSIONS (FACING DOWNSTREAM)	Height: LT R' Width: Bo	T bank ottom	1-5 (ft) 1-5 (ft) 10 (ft) 20 (ft)						
R	ВЕАСН АССЕ								
Good: Open area in public ownership, sufficient room to stockpile materials, easy stream channel access for heavy equipment using existing roads or trails.	Fair: Forested developed are adjacent to str. Access requir removal or im landscaped at Stockpile area small or distar stream.	ream. res tree rpact to reas. res	Difficult. Must cross wetland, steep slope, or sensitive areas to get to stream. Few areas to stockpile available and/or located a great distance from stream. Specialized heavy equipment required.						
NOTES: (biggest prob				1		REPOR	TED TO A	UTHODITIES	□ YES □ NO

	Optimal	Suboptimal	Marginal	Poor
IN-STREAM HABITAT (May modify criteria based on appropriate habitat regime)	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).	40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lac of habitat is obvious; substrate unstable or lacking.
18	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
VEGETATIVE PROTECTION (score each bank, determine sides by facing downstream)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streamban surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
9	Left Bank 10 9	8 7 6	5 4 3	2 1 0
9	Right Bank 10 9	8 7 6	5 4 3	2 1 0
BANK EROSION (facing downstream)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Grade and width stable; isolated areas of bank failure/erosion; likely caused by a pipe outfall, local scour, impaired riparian vegetation or adjacent use.	Past downcutting evident, active stream widening, banks actively eroding at a moderate rate; no threat to property or infrastructure	Active downcutting; tall banks on both sides of the stream eroding a fast rate; erosion contributing significant amount of sediment to stream; obvious threat to propert or infrastructure.
9	Left Bank 10 9	8 7 6	5 4 3	2 1 0
9	Right Bank 10 9	8 7 6	5 4 3	2 1 0
FLOODPLAIN CONNECTION	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) not able to enter floodplain. Stream deeply entrenched.	High flows (greater than bankfull not able to enter floodplain. Stream deeply entrenched.
18	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	OVER	ALL BUFFER AND FLOODPLA	IN CONDITION	
	Optimal	Suboptimal	Marginal	Poor
VEGETATED BUFFER WIDTH	Width of buffer zone >50 feet; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, crops) have not impacted zone.	Width of buffer zone 25-50 feet; human activities have impacted zone only minimally.	Width of buffer zone 10-25 feet; human activities have impacted zone a great deal.	Width of buffer zone <10 feet: litt or no riparian vegetation due to human activities.
10	Left Bank 10 9	8 7 6	5 4 3	2 1 0
10 FLOODPLAIN VEGETATION	Right Bank 10 9 Predominant floodplain vegetation type is mature forest	8 7 6 Predominant floodplain vegetation type is young forest	5 4 3 Predominant floodplain vegetation type is shrub or old field	2 1 0 Predominant floodplain vegetation type is turf or crop land
<mark>4</mark>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
FLOODPLAIN HABITAT	Even mix of wetland and non-wetland habitats, evidence of standing/ponded water	Even mix of wetland and non-wetland habitats, no evidence of standing/ponded water	Either all wetland or all non- wetland habitat, evidence of standing/ponded water	Either all wetland or all non- wetland habitat, no evidence of standing/ponded water
8	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
FLOODPLAIN ENCROACH- MENT	No evidence of floodplain encroachment in the form of fill material, land development, or manmade structures	Minor floodplain encroachment in the form of fill material, land development, or manmade structures, but not effecting floodplain function	Moderate floodplain encroachment in the form of filling, land development, or manmade structures, some effect on floodplain function	Significant floodplain encroachment (i.e. fill material, land development, or man-made structures). Significant effect on floodplain function
<mark>19</mark>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0



SURVEY REACH I	ID: <u>TMFC-</u>	WTRSHD/SUBSHD: TEN	MILE FLAT CREEK	DATE: <u>11/6/200</u>	<u>7</u>	ASSESSED BY: 1	GC/BA
START TIM	e <mark>: 5:15</mark> am/pn	м LMK:	END TIME: 5	: 35 AM/PM	LMK:		GPS ID:
LAT'	" Lone	G''	LAT'	" Long_	<u> </u>	<u>'</u> "	
DESCRIPTION:			DESCRIPTION:				
RAIN IN LAST 24 HO	<u>-</u>		PRESENT CONDITIONS	☐ Heavy rain		y rain Interm	
None	☐ Intermit		Clear	☐ Trace	Over	•	•
SURROUNDING LAN		course \square Park	☐ Urban/Residential ☐ Crop ☐	☐ Suburban/Res☐ Pasture	☐ Forest☐ Other☐		tional
AVERAGE	E CONDITIONS ((check applicable)	REACH S	SKETCH AND SIT	ГЕ ІМРАС	CT TRACKING	
BASE FLOW AS % CHANNEL WIDTH	□ 0-25% □25-50 %	□ 50%-75% □ 75-100%	Simple planar sketch o within the survey rea features d		UT, TR, MI	I) as well as any ad	
DOMINANT SUBSTR ☐ Silt/clay (fine or ☐ Sand (gritty) ☐ Gravel (0.1-2.5	slick)	Cobble (2.5 –10") Boulder (>10") Bed rock					
WATER CLARITY ☐ Stained (clear, n ☐ Other (chemicals,	aturally colored)	rbid (suspended matter) ☐ Opaque (milky)					
AQUATIC PLANTS IN STREAM		none □ some □ lots none □ some □ lots					
WILDLIFE IN OR AROUND STREAM	(Evidence of) ☐ Fish ☐ B ☐ Snails ☐ O	eaver □ Deer hther:					
STREAM SHADING (water surface)	☐ Mostly shad ☐ Halfway (≥: ☐ Partially sha ☐ Unshaded (•	aded (<u>></u> 25%)					
CHANNEL DYNAMICS	Downcutting Widening Headcuttin	Bank failure Bank scour					
Unknown	Aggrading Sed. depos						
CHANNEL DIMENSIONS (FACING DOWNSTREAM)	Height: LT ba RT ba Width: Botton Top	1-3 (ft)					
F	REACH ACCESSIE		1				
Good: Open area in public ownership, sufficient room to stockpile materials, easy stream channel access for heavy equipment using existing roads or trails.	Fair: Forested or developed area adjacent to stream Access requires treemoval or impact landscaped areas. Stockpile areas small or distant fro stream.	stream. Few areas to stockpile available and/or located a great distance from stream. Specialized heavy equipment required.					
NOTES: (biggest prob	blem you see in sur	vey reach)		Repor	<i>TED</i> TO AU	UTHORITIES T	res □ No

OVERALL STREAM CONDITION								
	Optimal	Suboptimal	Marginal	Poor				
IN-STREAM HABITAT (May modify criteria based on appropriate habitat regime)	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	40-70% mix of stable habitat; well- suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.				
17	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0				
VEGETATIVE PROTECTION (score each bank, determine sides by facing downstream)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.				
9	Left Bank 10 9	8 7 6	5 4 3	2 1 0				
9	Right Bank 10 9	8 7 6	5 4 3	2 1 0				
BANK EROSION (facing downstream)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Grade and width stable; isolated areas of bank failure/erosion; likely caused by a pipe outfall, local scour, impaired riparian vegetation or adjacent use.	Past downcutting evident, active stream widening, banks actively eroding at a moderate rate; no threat to property or infrastructure	Active downcutting; tall banks on both sides of the stream eroding at a fast rate; erosion contributing significant amount of sediment to stream; obvious threat to property or infrastructure.				
9	Left Bank 10 9	8 7 6	5 4 3	2 1 0				
<mark>9</mark>	Right Bank 10 9	8 7 6	5 4 3	2 1 0				
FLOODPLAIN CONNECTION	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) not able to enter floodplain. Stream deeply entrenched.	High flows (greater than bankfull) not able to enter floodplain. Stream deeply entrenched.				
18	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0				
		ALL BUFFER AND FLOODPLAI						
	Optimal	Suboptimal	Marginal	Poor				
VEGETATED BUFFER WIDTH	Width of buffer zone >50 feet; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, crops) have not impacted zone.	Width of buffer zone 25-50 feet; human activities have impacted zone only minimally.	Width of buffer zone 10-25 feet; human activities have impacted zone a great deal.	Width of buffer zone <10 feet: little or no riparian vegetation due to human activities.				
10	Left Bank 10 9	8 7 6	5 4 3	2 1 0				
10	Right Bank 10 9	8 7 6	5 4 3	2 1 0				
FLOODPLAIN VEGETATION	Predominant floodplain vegetation type is mature forest	Predominant floodplain vegetation type is young forest	Predominant floodplain vegetation type is shrub or old field	Predominant floodplain vegetation type is turf or crop land				
<u>5</u>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0				
FLOODPLAIN HABITAT	Even mix of wetland and non-wetland habitats, evidence of standing/ponded water	Even mix of wetland and non-wetland habitats, no evidence of standing/ponded water	Either all wetland or all non- wetland habitat, evidence of standing/ponded water	Either all wetland or all non- wetland habitat, no evidence of standing/ponded water				
8	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0				
FLOODPLAIN ENCROACH- MENT	No evidence of floodplain encroachment in the form of fill material, land development, or manmade structures	Minor floodplain encroachment in the form of fill material, land development, or manmade structures, but not effecting floodplain function	Moderate floodplain encroachment in the form of filling, land development, or manmade structures, some effect on floodplain function	Significant floodplain encroachment (i.e. fill material, land development, or man-made structures). Significant effect on floodplain function				



SURVEY REACH I	D: <u>TMFC-</u>	WTR	SHD/SUBSHD: TEN	AILE FLAT (CREEK	DATE: <u>11/6/200</u>	<u>7</u>	ASSESSED BY:	TGC/BA
START TIME	E <u>: 5:35</u> AM	I/ <mark>PM</mark>	LMK:	END	Тіме <mark>:_6</mark>	: 00 AM/PM	LMK	:	GPS ID:
Lat'	" Lo	NG	<u> </u>	Lat	°'	" Long_	_°	<u>'</u>	
DESCRIPTION:				DESCRIP	TION:				
RAIN IN LAST 24 HO	urs Heavy	rain	☐ Steady rain	PRESENT C	ONDITIONS	☐ Heavy rain	☐ Stea	dy rain 🛚 Inter	mittent
□ None	☐ Interm	ittent	☐ Trace	Clear		☐ Trace	□ Ove	rcast	y cloudy
SURROUNDING LAND			☐ Commercial See ☐ Park	☐ Urban/R ☐ Crop		☐ Suburban/Res ☐ Pasture	☐ Fores		utional
AVERAGE	CONDITIONS	S (check	k applicable)		REACH S	KETCH AND SIT	ГЕ ІМРА	CT TRACKING	+
BASE FLOW AS % CHANNEL WIDTH	□ 0-25% □25-50 %		□ 50%-75% □ 75-100%	Simple pl within t	the survey rea	f survey reach. Trac ch (OT, ER, IB,SC, leemed appropriate.	UT, TR, M	II) as well as any	site impacts additional
DOMINANT SUBSTR. ☐ Silt/clay (fine or ☐ Sand (gritty) ☐ Gravel (0.1-2.5	slick)	□ Во	oble (2.5 –10") ulder (>10") d rock		J				
WATER CLARITY ☐ Stained (clear, no	aturally colored,								
AQUATIC PLANTS IN STREAM			some □ lots □ some □ lots						
WILDLIFE IN OR AROUND STREAM	(Evidence of) ☐ Fish ☐ ☐ Snails ☐	Beaver Other:							
STREAM SHADING (water surface)	☐ Mostly sh☐ Halfway (☐ Partially s☐ Unshaded	<u>></u> 50%) haded	(<u>></u> 25%)						
CHANNEL DYNAMICS	Downcut Widening Headcutt	3	Bed scour Bank failure Bank scour						
Unknown	Aggradin Sed. depo	-	Slope failure Channelized						
CHANNEL DIMENSIONS (FACING DOWNSTREAM)	Height: LT b RT b Width: Bott Top	bank com	1-3 (ft) 1-3 (ft) 5-15 (ft) 10-25 (ft)						
R	REACH ACCESS			1					
Good: Open area in public ownership, sufficient room to stockpile materials, easy stream channel access for heavy equipment using existing roads or trails.	Fair: Forested o developed area adjacent to stree Access requires removal or impa landscaped area Stockpile areas small or disant t stream.	am. tree ct to as.	Difficult. Must cross wetland, steep slope, or sensitive areas to get to stream. Few areas to stockpile available and/or located a great distance from stream. Specialized heavy equipment required.						
NOTES: (biggest prob			each)	1		REPOR	TED TO A	UTHORITIES	Ves No

	Optimal	Suboptimal	Marginal	Poor	
IN-STREAM HABITAT (May modify criteria based on appropriate habitat regime)	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).	40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.	
<mark>16</mark>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	
VEGETATIVE PROTECTION (score each bank, determine sides by facing downstream)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.	
9	Left Bank 10 9	8 7 6	5 4 3	2 1 0	
9	Right Bank 10 9	8 7 6	5 4 3	2 1 0	
BANK EROSION (facing downstream)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Grade and width stable; isolated areas of bank failure/erosion; likely caused by a pipe outfall, local scour, impaired riparian vegetation or adjacent use.	Past downcutting evident, active stream widening, banks actively eroding at a moderate rate; no threat to property or infrastructure	Active downcutting; tall banks on both sides of the stream eroding a fast rate; erosion contributing significant amount of sediment to stream; obvious threat to property or infrastructure.	
9	Left Bank 10 9	8 7 6	5 4 3	2 1 0	
9	Right Bank 10 9	8 7 6	5 4 3	2 1 0	
FLOODPLAIN CONNECTION	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) able to enter floodplain. Stream not deeply entrenched.	High flows (greater than bankfull) not able to enter floodplain. Stream deeply entrenched.	High flows (greater than bankfull) not able to enter floodplain. Stream deeply entrenched.	
19	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	
	OVER	ALL BUFFER AND FLOODPLA	IN CONDITION		
	Optimal	Suboptimal	Marginal	Poor	
VEGETATED BUFFER WIDTH	Width of buffer zone >50 feet; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, crops) have not impacted zone.	Width of buffer zone 25-50 feet; human activities have impacted zone only minimally.	Width of buffer zone 10-25 feet; human activities have impacted zone a great deal.	Width of buffer zone <10 feet: littl or no riparian vegetation due to human activities.	
10	Left Bank 10 9	8 7 6	5 4 3	2 1 0	
10	Right Bank 10 9	8 7 6	5 4 3	2 1 0	
FLOODPLAIN VEGETATION	Predominant floodplain vegetation type is mature forest	Predominant floodplain vegetation type is young forest	Predominant floodplain vegetation type is shrub or old field	Predominant floodplain vegetatio type is turf or crop land	
<mark>4</mark>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	
FLOODPLAIN HABITAT	Even mix of wetland and non-wetland habitats, evidence of standing/ponded water	Even mix of wetland and non-wetland habitats, no evidence of standing/ponded water	Either all wetland or all non- wetland habitat, evidence of standing/ponded water	Either all wetland or all non- wetland habitat, no evidence of standing/ponded water	
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	
10	<u> </u>	Minor floodplain encroachment in the	Moderate floodplain encroachment in the form of	Significant floodplain encroachment (i.e. fill material,	
FLOODPLAIN ENCROACH- MENT	No evidence of floodplain encroachment in the form of fill material, land development, or manmade structures	form of fill material, land development, or manmade structures, but not effecting floodplain function	filling, land development, or manmade structures, some effect on floodplain function	land development, or man-made structures). Significant effect on floodplain function	

Storm Water Master Plan City of Norman Cleveland County, Oklahoma

October 2009

Appendix E

Mapped Watershed/Basin Physiographic Characteristics and Statistics

(Note: Bound Separately)





Document No. 080238 PBS&J Job No. 441941

PBS&J

6504 Bridge Point Pkwy.

Suite 200

Austin, TX 78730



STORM WATER MASTER PLAN CITY OF NORMAN CLEVELAND COUNTY, OKLAHOMA

APPENDIX E: MAPPED WATERSHED/BASIN PHYSIOGRAPHIC CHARACTERISTICS AND STATISTICS

Prepared for:

City of Norman, Oklahoma 201 West Gray, Building A Norman, Oklahoma 73070

Prepared by:

PBS&J 350 David L. Boren Blvd. Suite 1510 Norman, OK 73072 Vieux, Inc. 350 David L. Boren Blvd. Suite 2500 Norman, OK 73072-7267

October 2009

Data and information provided in the following watershed order:

1. Bishop Creek	13. Hog Creek Tributary D	25. Trib 2 to Lake Thunderbird
2. Brookhaven Creek	14. Imhoff Creek	26. Trib 3 to East Little River
3. Canadian River 1	15. Jim Blue Creek	27. Trib 4 to East Little River
4. Canadian River 2	16. Lower Dave Blue Creek	28. Trib 5 to East Little River
5. Canadian River 3	17. Lower Little River	29. Trib to Dave Blue Creek
6. Canadian River 4	18. Lower Mid Little River	30. Tributary G to Little River
7. Clear Creek	19. Lower Rock Creek	31. Upper Dave Blue Creek
8. Direct Lake Thunderbird Runoff	20. Merkle Creek	32. Upper Little River
9. East Little River 1	21. Ten Mile Flat Creek	33. Upper Mid Little River
10. Elm Creek	22. Trib 1 to East Little River	34. Upper Rock Creek
11. Hog Creek	23. Trib 1 to Lake Thunderbird	35. Willow Branch
12. Hog Creek Arm	24. Trib 2 to East Little River	36. Woodcrest Creek

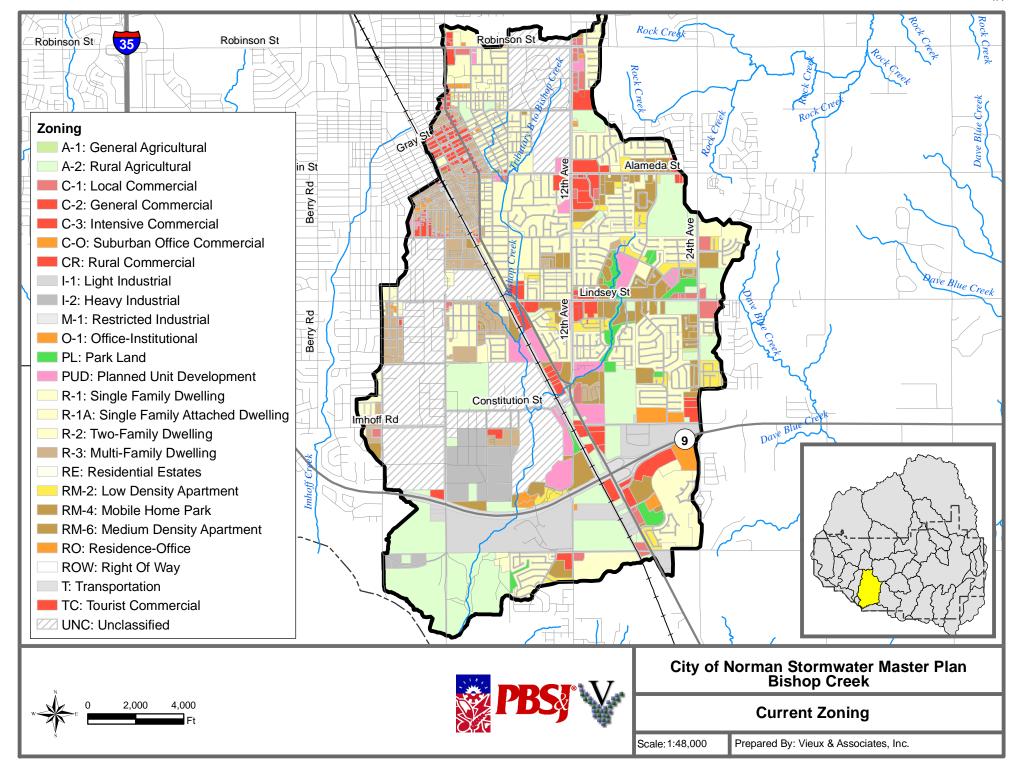
Note: The hydrologic soil groups were developed by the National Resource Conservation Service (NRCS) and primarily reflects the rate at which water enters the soil at the soil surface (infiltration) and/or the rate of water moving within the soil column (transmission rate). The four soil groups are defined below. Although not a soil type, a "W" designation reflects water covering the ground surface.

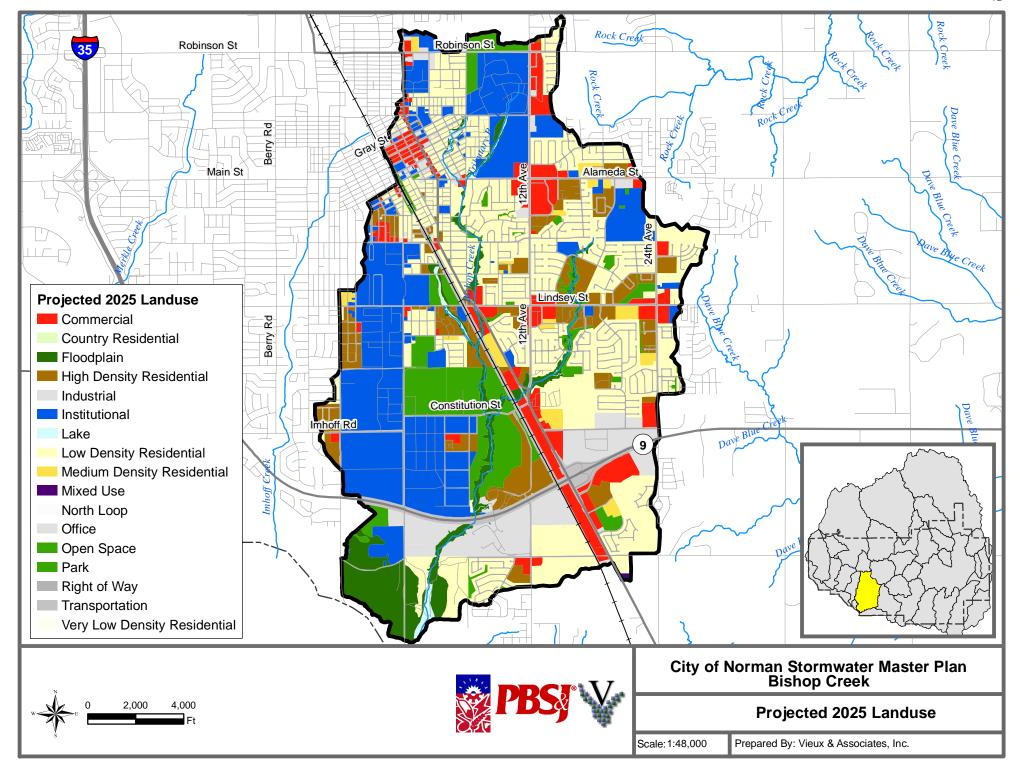
Group A – Group A soils generally consist of sands, loamy sands, or sandy loams. Runoff potential is low with high infiltration/transmission rates (greater than 0.30 in/hr).

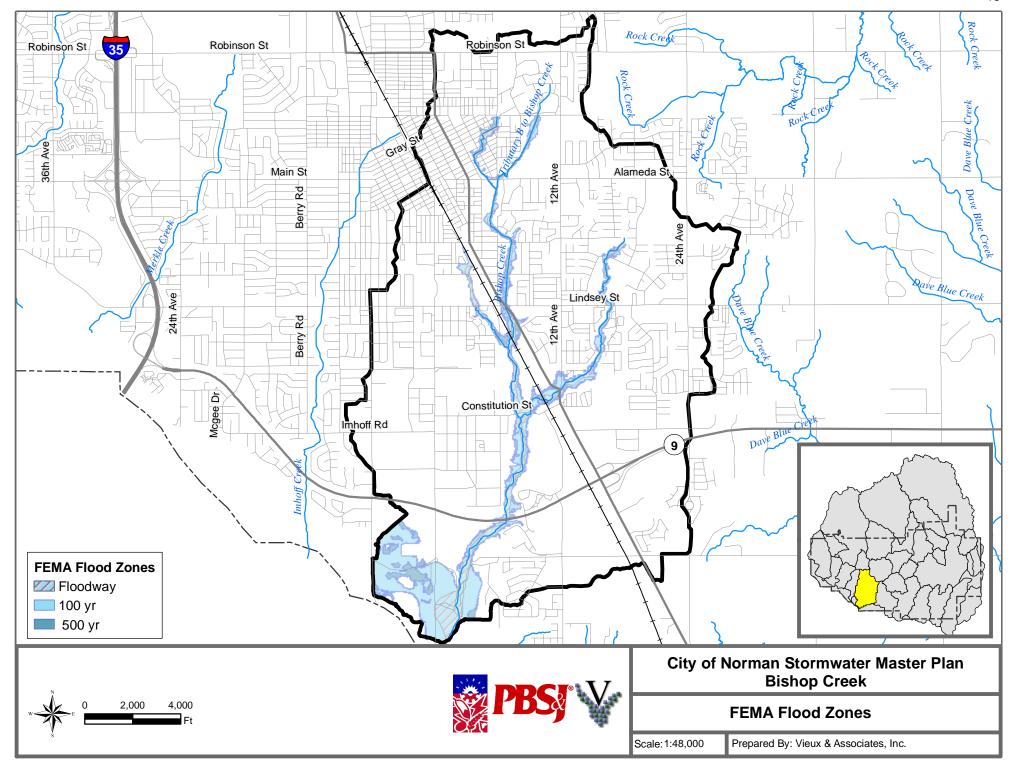
Group B – These soils are generally composed of silt loams or loams and have moderate textures with infiltration/transmission rates of 0.15 in/hr to 0.30 in/hr.

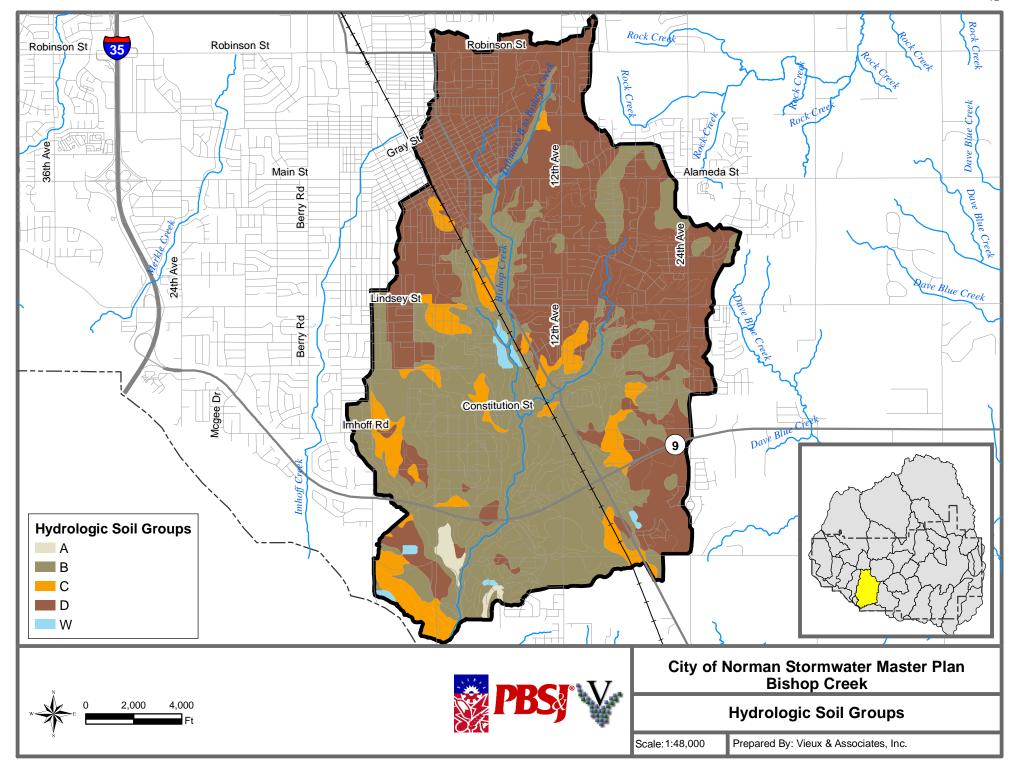
Group C – Group C soils are typically sandy clay loams with moderate infiltration/transmission rates that vary from 0.05 to 0.15 in/hr.

Group D – These soils generally consist of clay loams, silty clay loams, sandy clays, silty clays, or clay. Runoff potential is high with low infiltration/transmission rates of 0.0 to 0.05 in/hr.









Drainage Area (sq. mi.): 9.87

Current Zoning

Zoning	Percentage
A-1: General Agricultural	0.07%
A-2: Rural Agricultural	13.69%
C-1: Local Commercial	1.4%
C-2: General Commercial	3.95%
C-3: Intensive Commercial	0.77%
C-O: Suburban Office Commercial	0.67%
I-1: Light Industrial	4.95%
I-2: Heavy Industrial	2.67%
O-1: Office-Institutional	0.51%
PL: Park Land	1.36%
PUD: Planned Unit Development	2.61%
R-1: Single Family Dwelling	20.32%
R-1A: Single Family Attached Dwelling	0.02%
R-2: Two-Family Dwelling	2.08%
R-3: Multi-Family Dwelling	4.35%
RM-2: Low Density Apartment	1.86%
RM-4: Mobile Home Park	0.33%
RM-6: Medium Density Apartment	5.45%
RO: Residence-Office	0.17%
ROW: Right Of Way	0%
T: Transportation	15.19%
UNC: Unclassified	17.57%

Projected Landuse

Landuse	Percentage
Commercial	6.81%
Floodplain	5.85%
High Density Residential	8.02%
Industrial	4.98%
Institutional	20.38%
Lake/ Floodplain	0.75%
Low Density Residential	27.11%
Medium Density Residential	1.55%
Mixed Use	0.04%
Office	1.63%
Open	4.3%
Park	3.45%
Transportation	15.13%

Hydrologic Group	Percentage
Α	0.7%
В	43.6%
С	7.7%
D	47.5%
W	0.6%

FEMA Flood Zone	Percentage
100	6.7%
500	7.9%
Floodway	2.4%

Impervious (%): 31.8

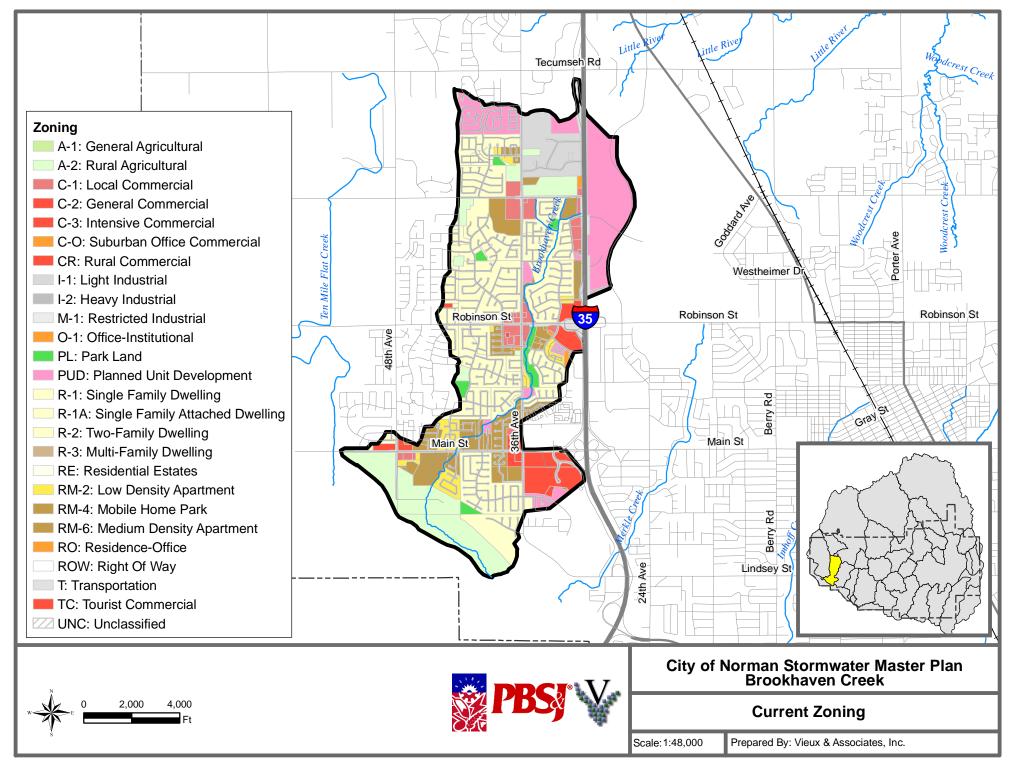


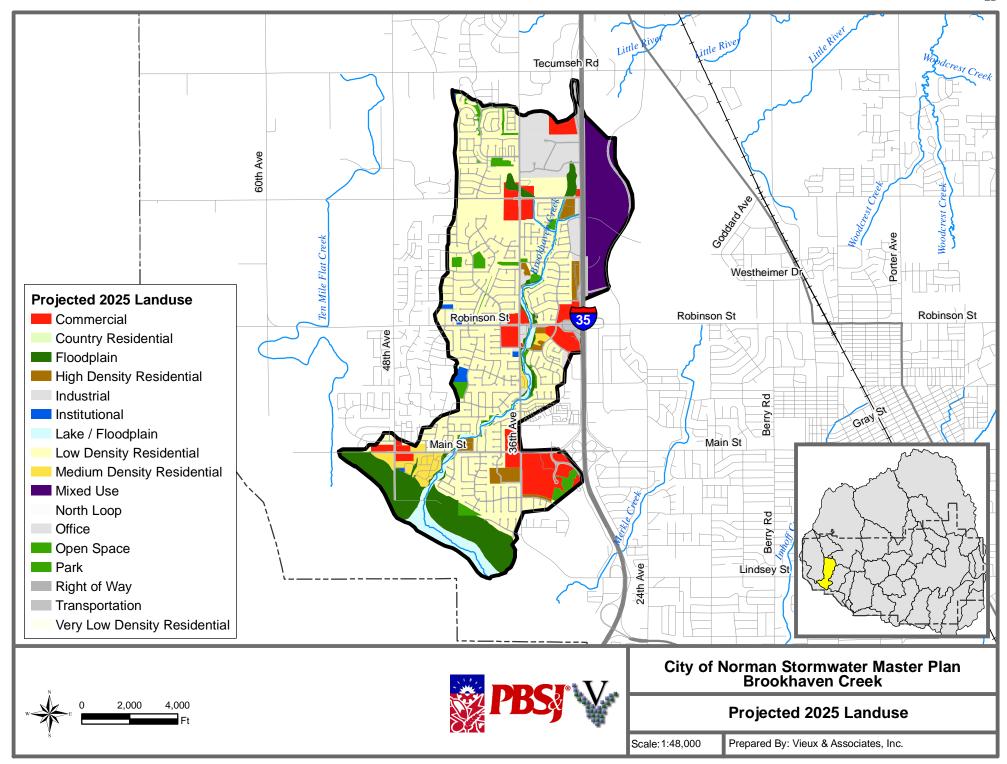


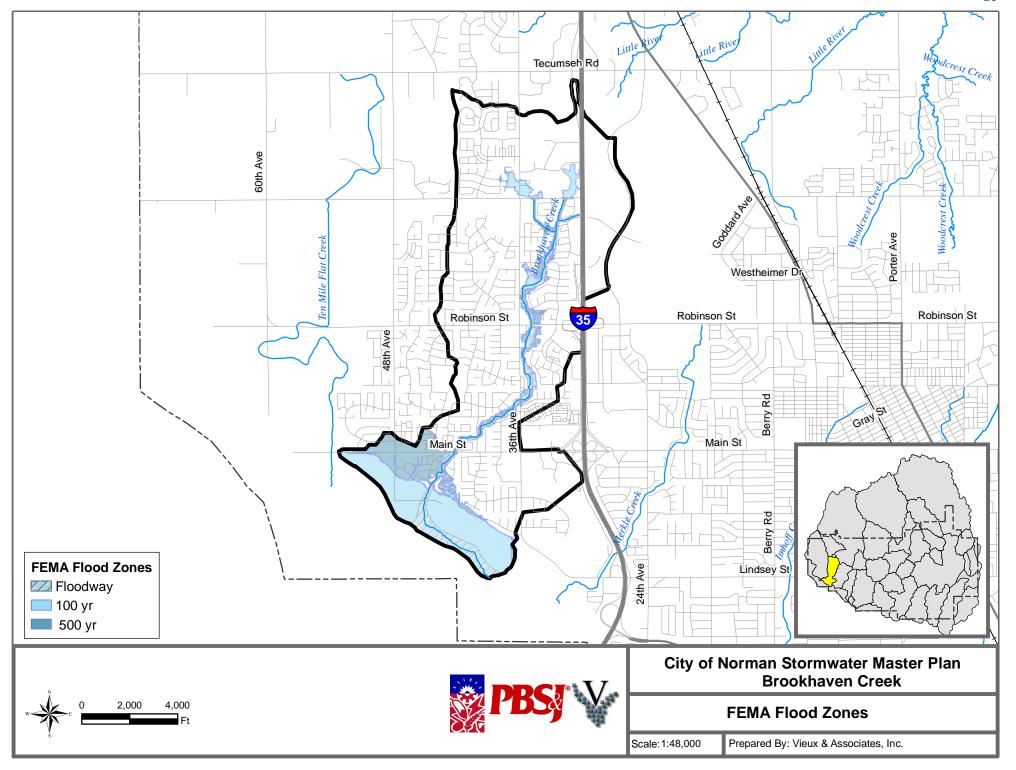
City of Norman Stormwater Master Plan Bishop Creek

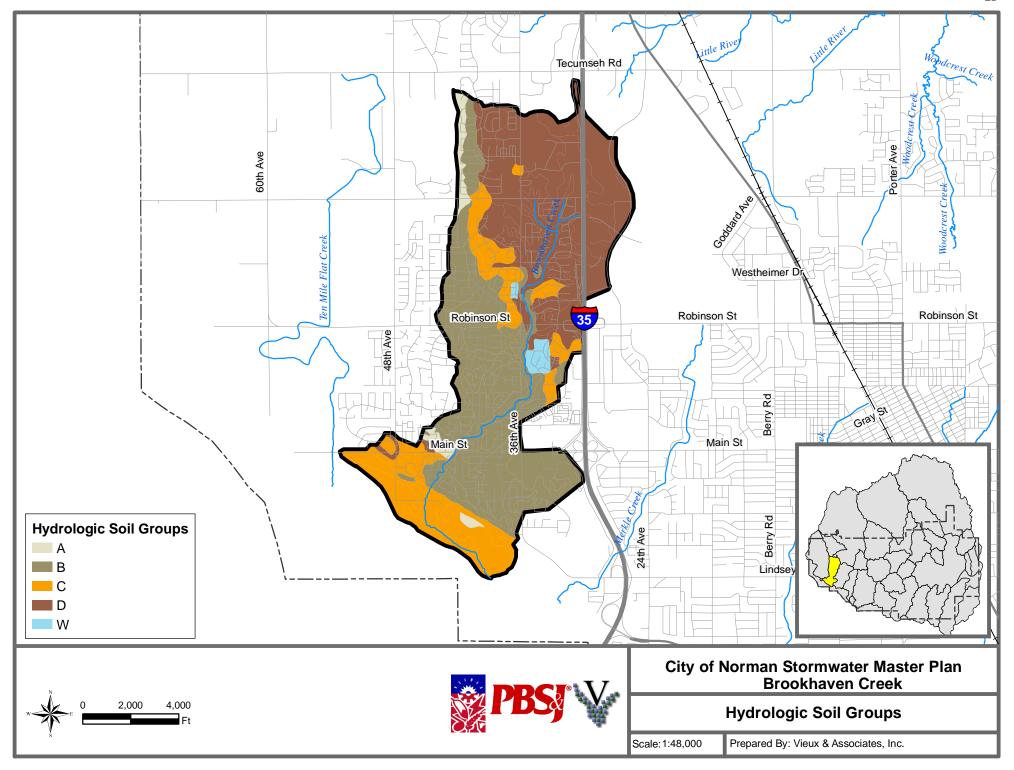
Basin Statistics

Prepared By: Vieux & Associates, Inc.









Drainage Area (sq. mi.): 4.12

Current Zoning

T: Transportation

<u> </u>	
Zoning	Percentage
A-2: Rural Agricultural	11.65%
C-1: Local Commercial	3.48%
C-2: General Commercial	5.28%
C-O: Suburban Office Commerci	0.19%
I-1: Light Industrial	4.15%
O-1: Office-Institutional	0.09%
PL: Park Land	1.65%
PUD: Planned Unit Development	12.22%
R-1: Single Family Dwelling	31.68%
RE: Residential Estates	0.04%
RM-2: Low Density Apartment	2.37%
RM-4: Mobile Home Park	1.56%
RM-6: Medium Density Apartment	7.8%

17.84%

Projected Landuse

Projected Landuse	
Landuse	Percentage
Commercial	8.13%
Floodplain	9.52%
High Density Residential	2.08%
Industrial	4.18%
Institutional	0.53%
Lake/ Floodplain	4.77%
Low Density Residential	39.44%
Medium Density Residential	1.98%
Mixed Use	7.43%
Office	1.19%
Open	1.16%
Park	1.5%
Transportation	18.06%

2.6%
38.6%
19.1%
38.5%
1.2%

FEMA Flood Zone	Percentage
100	14.5%
500	19.5%
Floodway	4.1%

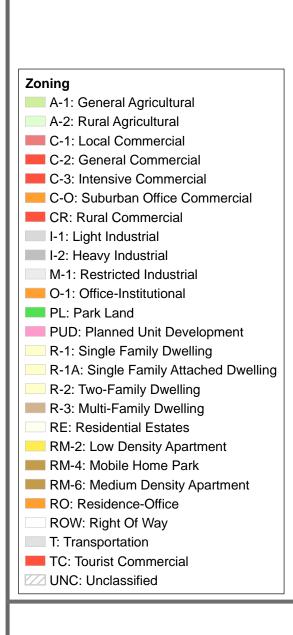
Impervious (%): 34.4

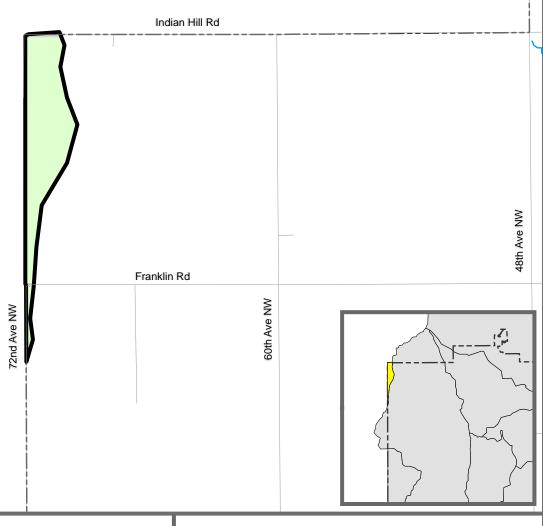




City of Norman Stormwater Master Plan Brookhaven Creek

Basin Statistics







City of Norman Stormwater Master Plan Canadian River 1

Current Zoning

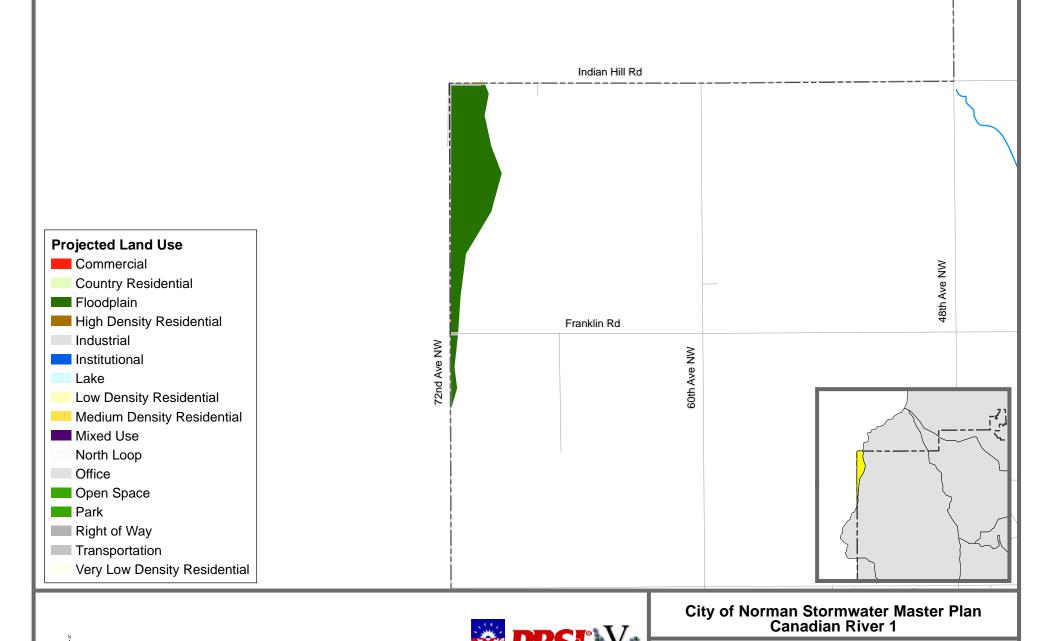
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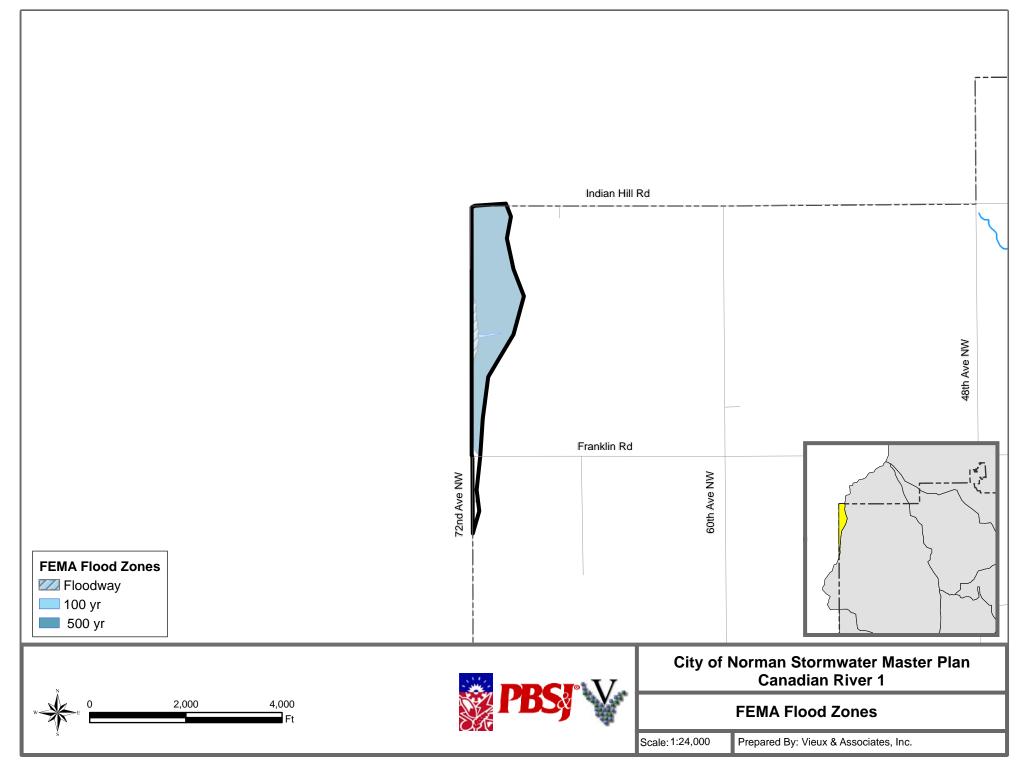
Projected Land Use

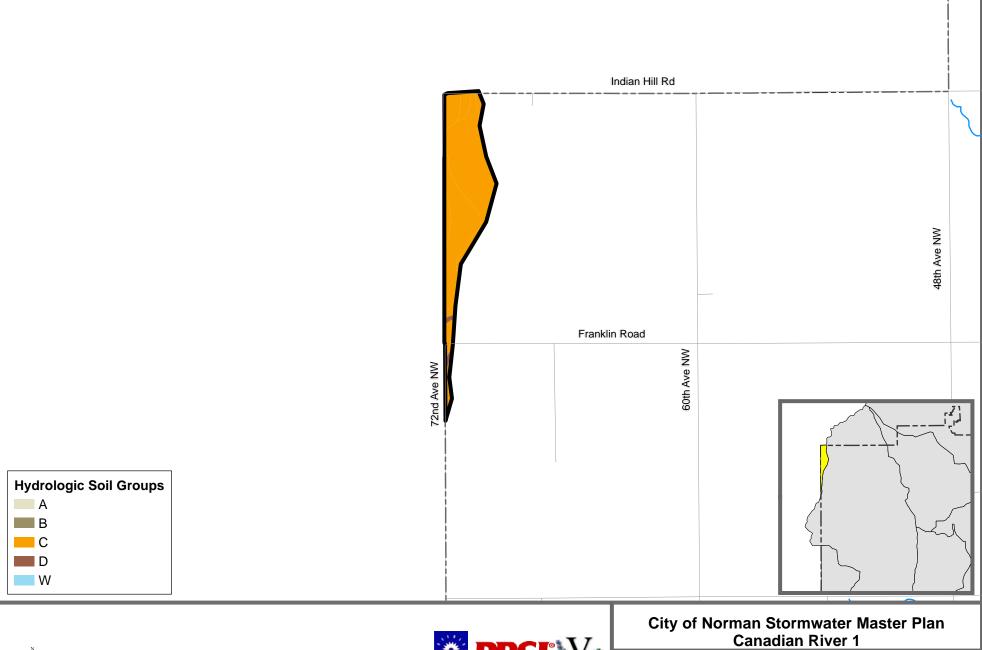
Prepared By: Vieux & Associates, Inc.

Scale: 1:24,000



2,000







2,000



Hydrologic Soil Groups

Scale: 1:24,000

Drainage Area (sq. mi.): 0.13

Current Zoning

Zoning	Percentage
A-2: Rural Agricultural	93.7%
T: Transportation	6.4%

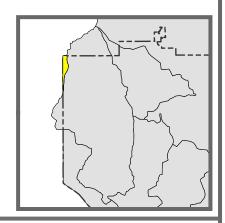
Projected Landuse

Landuse	Percentage
Commercial	0.5%
Floodplain	92.7%
Low Density Residential	0.5%
Transportation	6.4%

Hydrologic Soil Group	Percentage
С	98.6%
D	1.4%

FEMA Flood Zone	Percentage
100	4.3%
500	94.6%
Floodway	3.8%

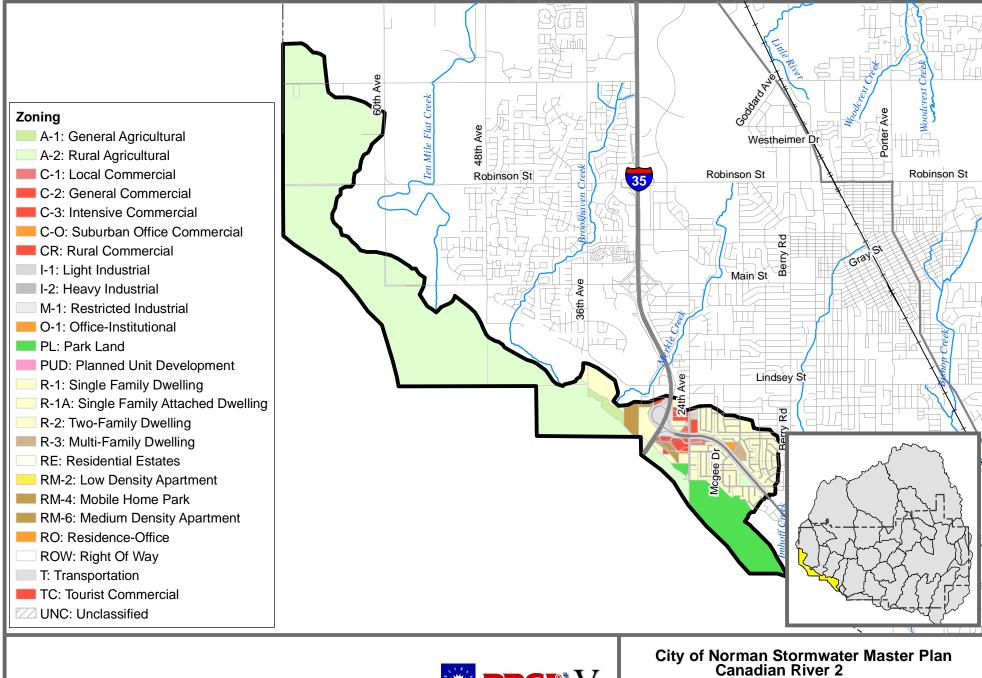
Impervious (%): 14.5





City of Norman Stormwater Master Plan Canadian River 1

Basin Statistics

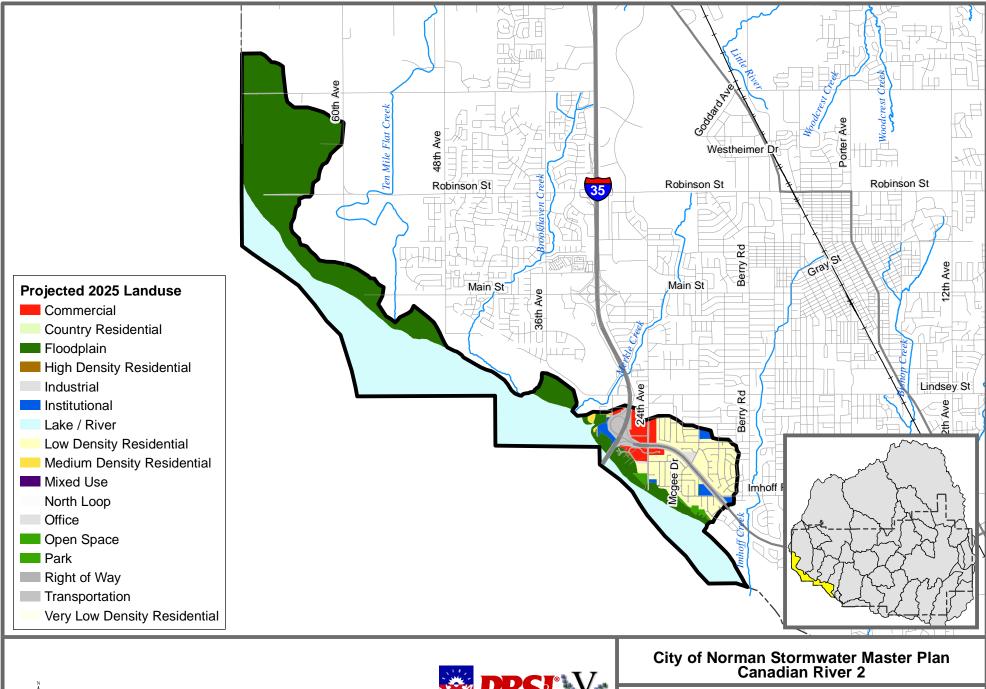






Current Zoning

Scale: 1:60.000

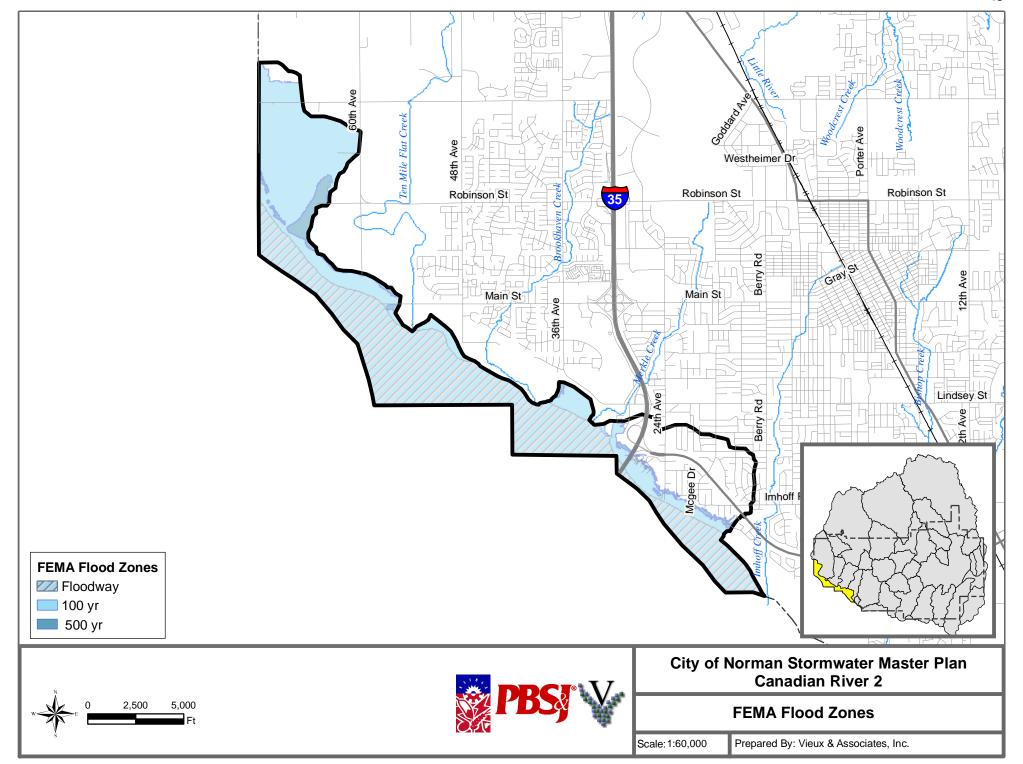


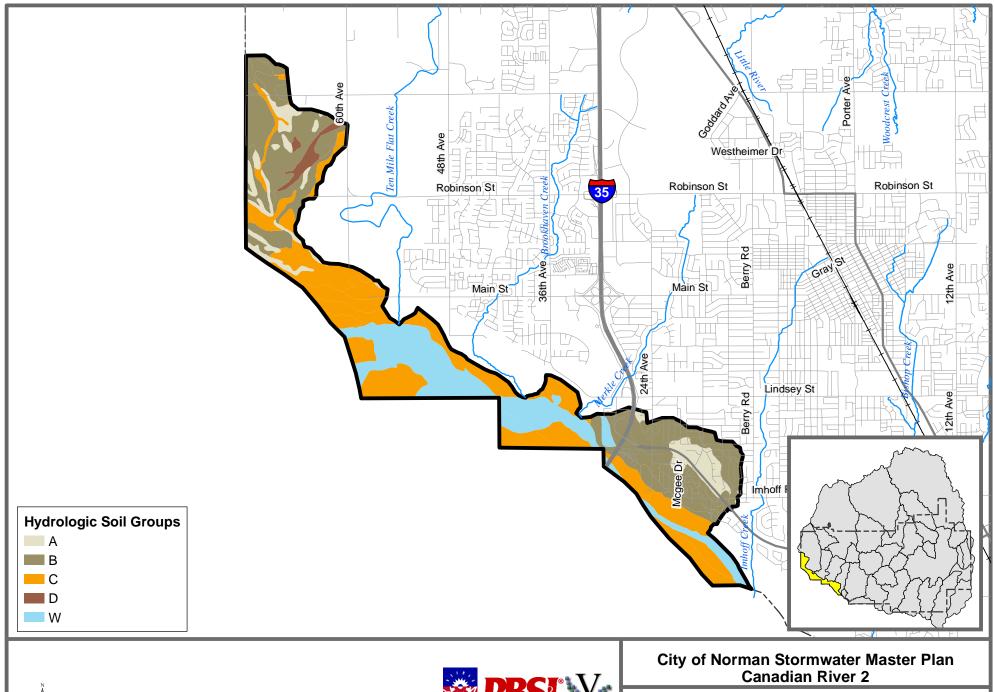




Projected 2025 Landuse

Scale: 1:60,000









Hydrologic Soil Groups

Scale: 1:60,000

Drainage Area (sq. mi.): 4.61

Current Zoning

Zoning	Percentage
A-1: General Agricultural	0.7%
A-2: Rural Agricultural	67.2%
C-1: Local Commercial	0.2%
C-2: General Commercial	1.5%
C-O: Suburban Office Commercial	0.2%
I-1: Light Industrial	0.2%
O-1: Office-Institutional	0.1%
PL: Park Land	8.9%
PUD: Planned Unit Development	0%
R-1: Single Family Dwelling	12.2%
R-2: Two-Family Dwelling	0.6%
R-3: Multi-Family Dwelling	0.3%
RM-4: Mobile Home Park	0.2%
RM-6: Medium Density Apartment	1.4%
T: Transportation	6.5%

Projected Landuse

Landuse	Percentage
Commercial	2.1%
Floodplain	35.9%
High Density Residential	1%
Institutional	44.5%
Lake/ Floodplain	9.2%
Low Density Residential	0.3%
Medium Density Residential	0.2%
Office	0.4%
Open	0.2%
Park	6.3%

Hydrologic Soil Group	Percentage
Α	8.6%
В	33.5%
С	36.4%
D	1.6%
W	19.9%

FEMA Flood Zone	Percentage
100	77.1%
500	80.9%
Floodway	46.4%

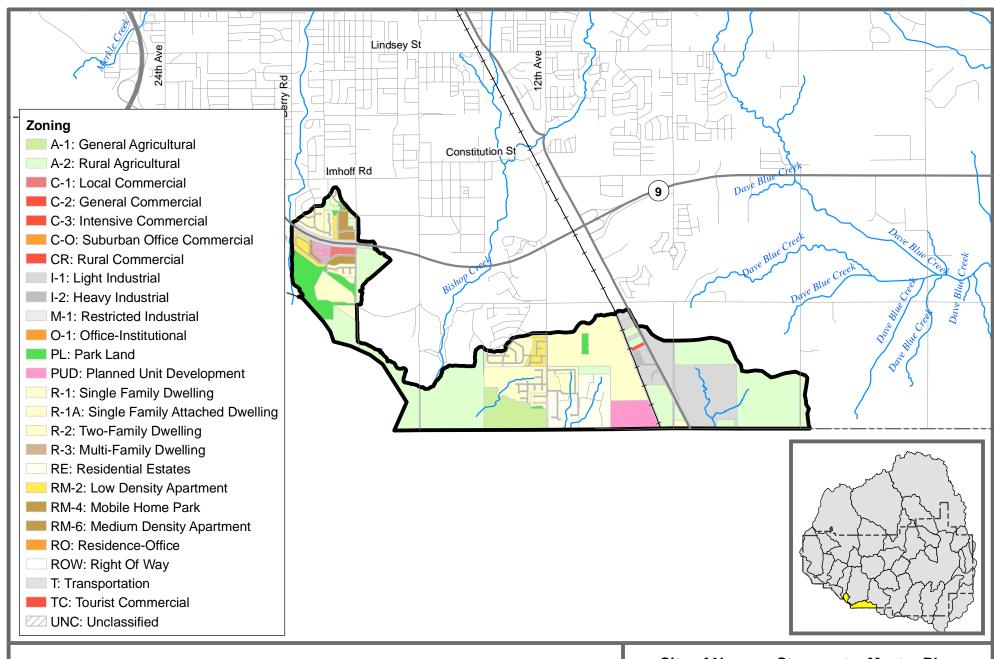
Impervious (%): 14.3

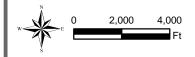




City of Norman Stormwater Master Plan Canadian River 2

Basin Statistics



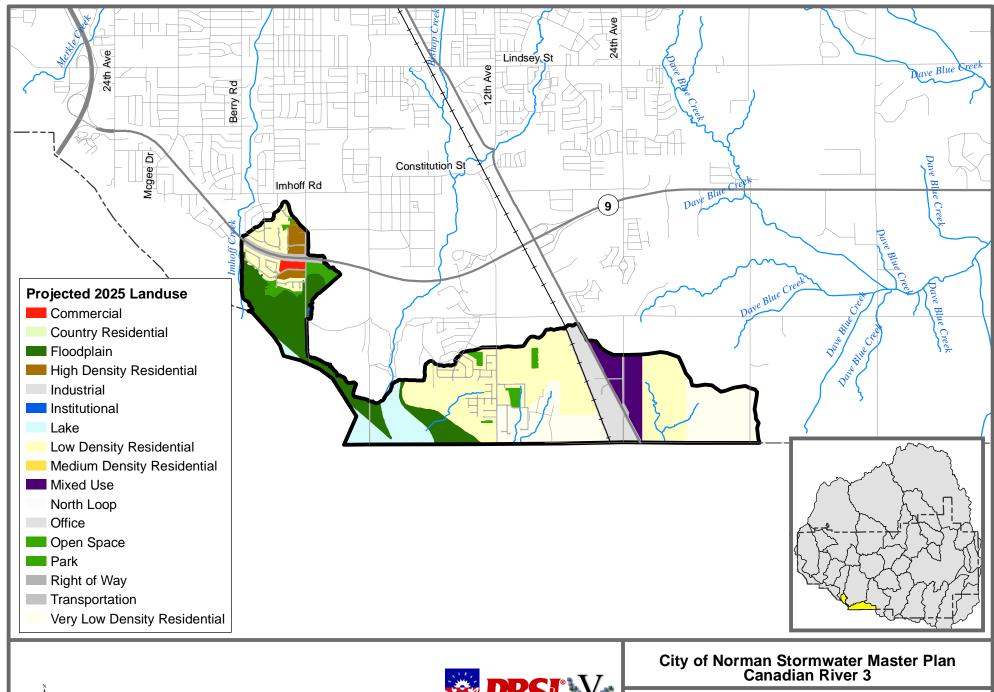




City of Norman Stormwater Master Plan Canadian River 3

Current Zoning

Scale: 1:48.000

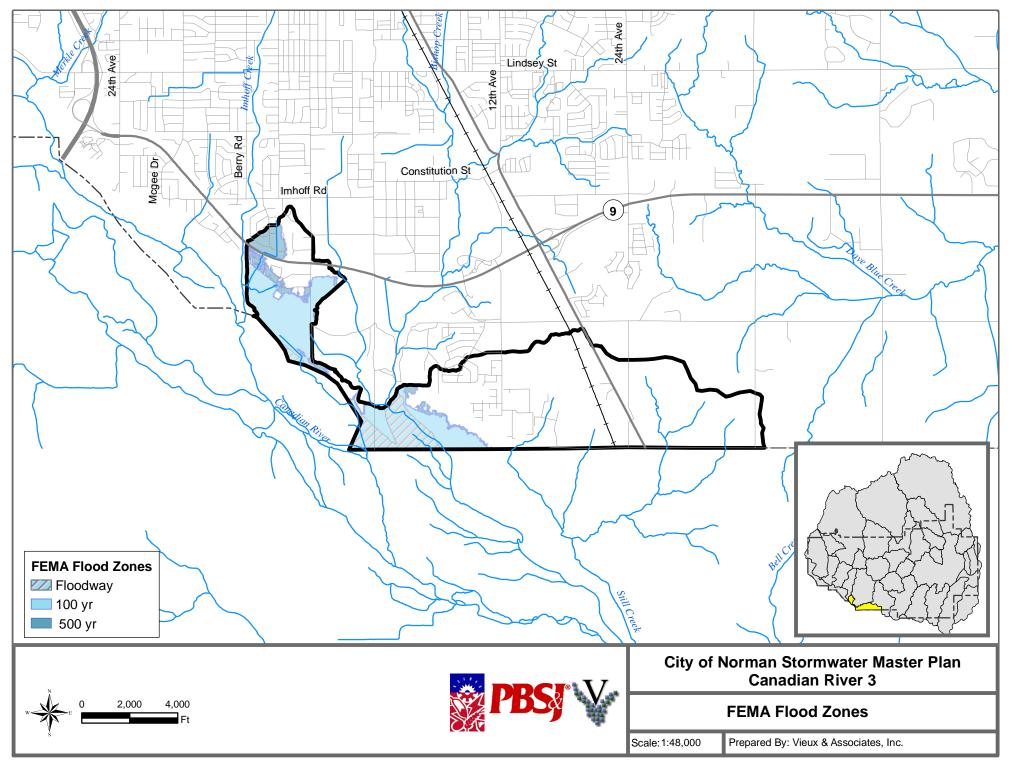


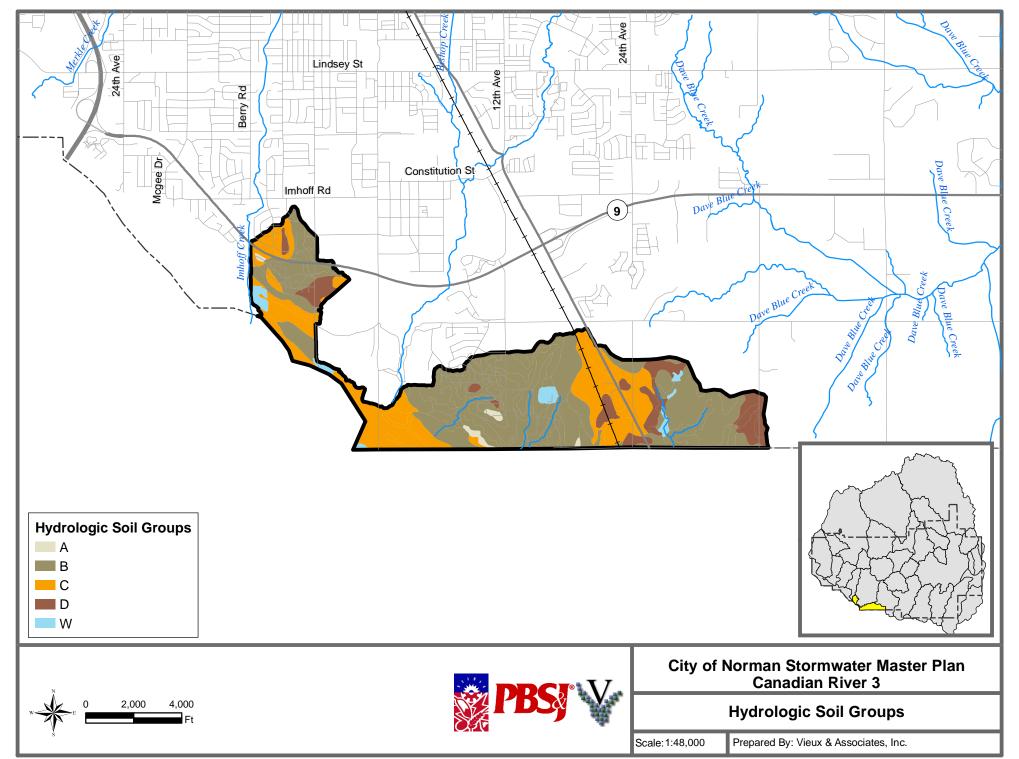




Projected 2025 Landuse

Scale: 1:48,000





Drainage Area (sq. mi.): 2.62

Current Zoning

Zoning	Percentage
A-1: General Agricultural	4.5%
A-2: Rural Agricultural	33.3%
C-1: Local Commercial	0.5%
C-2: General Commercial	0.1%
I-1: Light Industrial	11.9%
I-2: Heavy Industrial	0.3%
PL: Park Land	4.6%
PUD: Planned Unit Development	3.3%
R-1: Single Family Dwelling	23.2%
RE: Residential Estates	6.5%
RM-2: Low Density Apartment	2.1%
RM-6: Medium Density Apartment	1.6%
T: Transportation	8%
UNC: Unclassified	0.1%

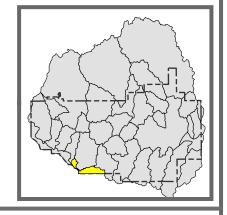
Projected Landuse

Landuse	Percentage
Commercial	0.5%
Floodplain	15%
High Density Residential	1.6%
Industrial	5%
Institutional	0.2%
Lake/ Floodplain	6.5%
Low Density Residential	37.1%
Mixed Use	4.9%
Open	2.1%
Park	1%
Transportation	8.1%
Very Low Density Residential	18.3%

Hydrologic Soil Group	Percentage
Α	1.0%
В	58.1%
С	28.2%
D	10.0%
W	2.7%

FEMA Flood Zone	Percentage
100	21.5%
500	25.7%
Floodway	6.5%

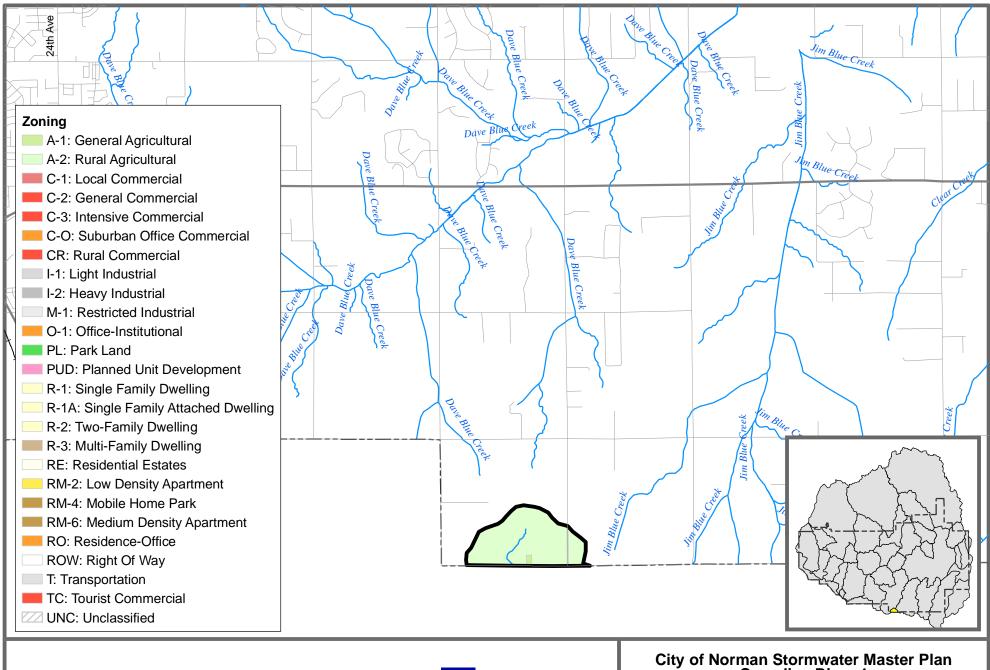
Impervious (%): 10.1

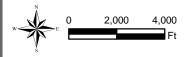




City of Norman Stormwater Master Plan Canadian River 3

Basin Statistics



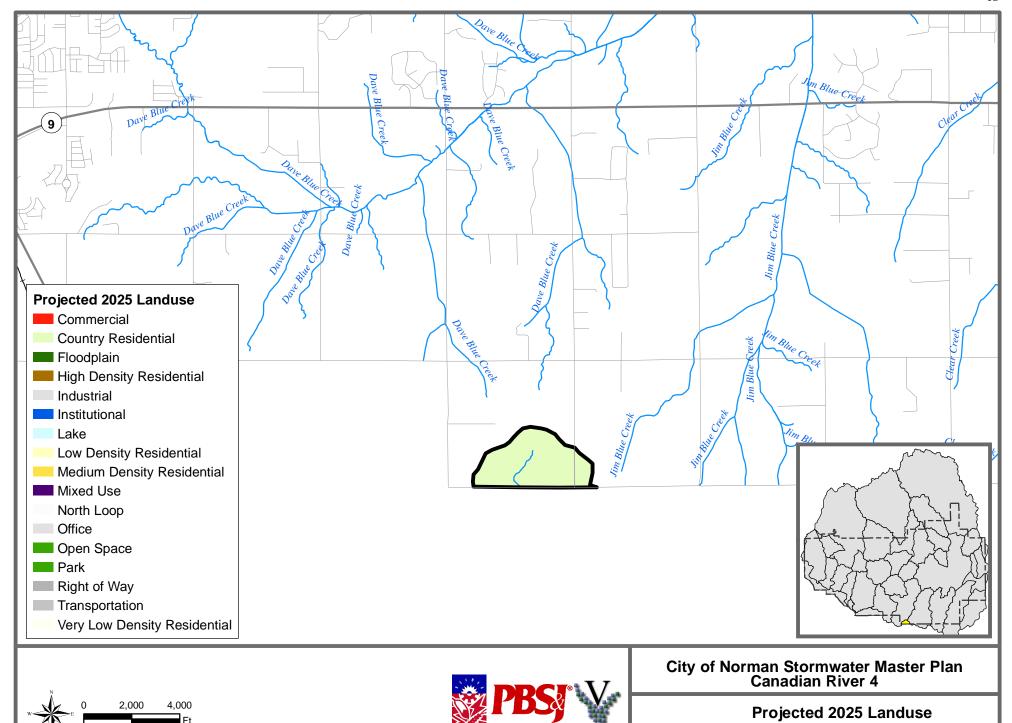




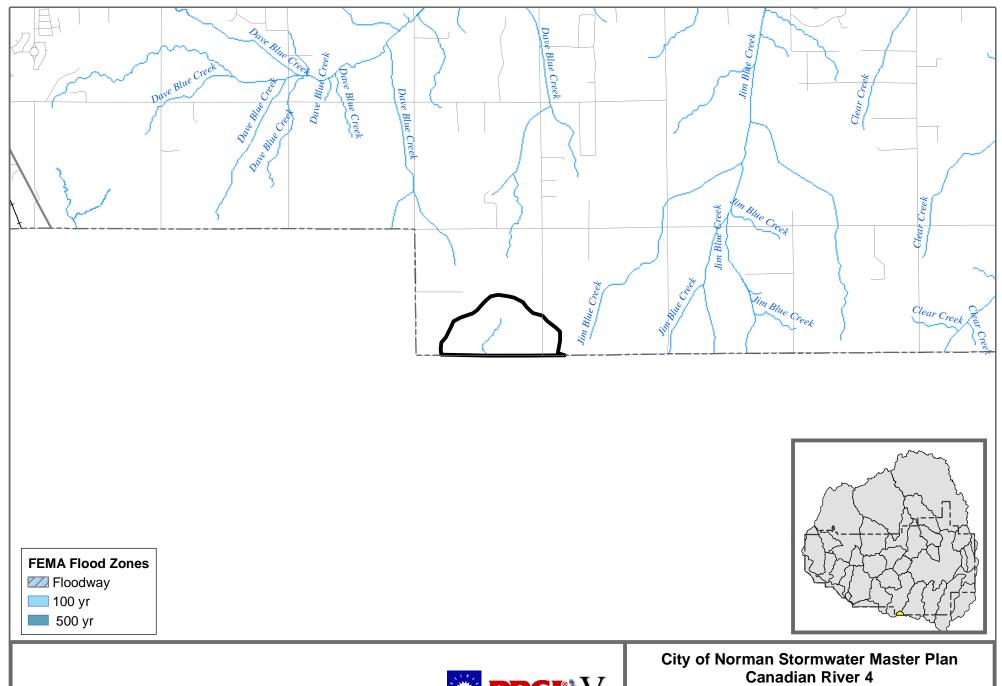
City of Norman Stormwater Master Plan Canadian River 4

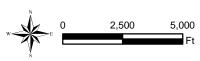
Current Zoning

Scale: 1:48.000



Scale: 1:48,000

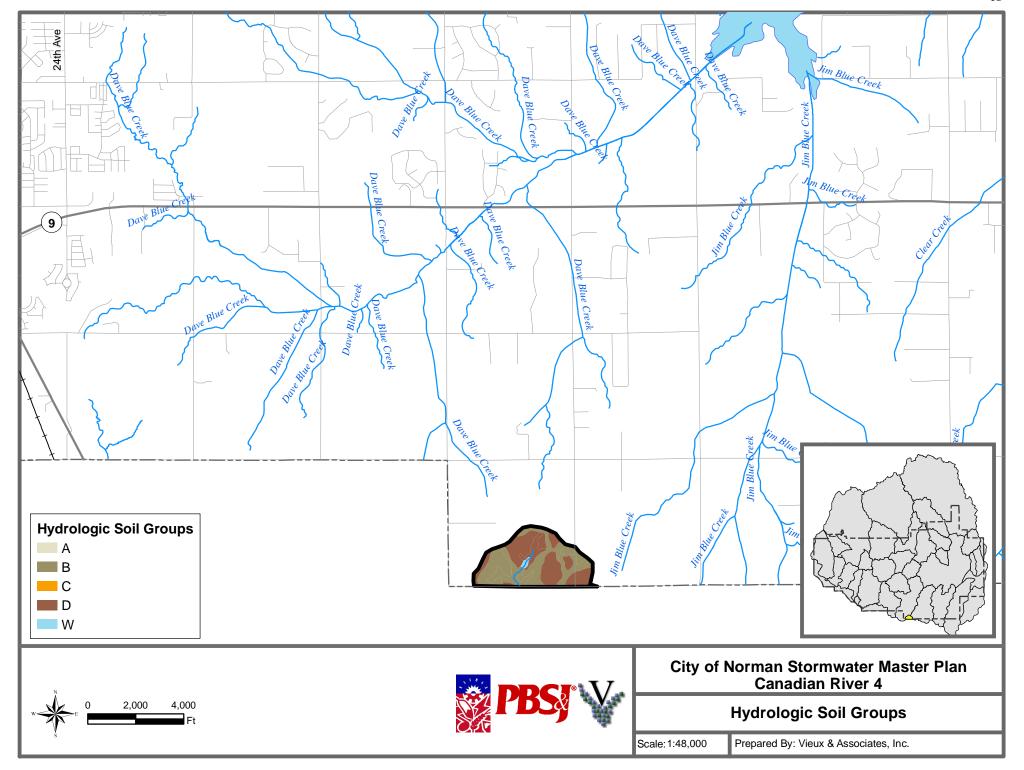






FEMA Flood Zones

Scale: 1:48,000



Drainage Area (sq. mi.): 0.32

Current Zoning

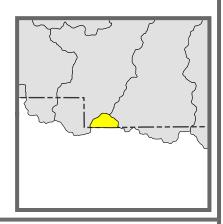
Zoning	Percentage
A-1: General Agricultural	1%
A-2: Rural Agricultural	96.4%
T: Transportation	2.6%

Projected Landuse

Landuse	Percentage
Country Residential	97.4%
Transportation	2.6%

Hydrologic Soil Group	Percentage
В	52.0%
D	46.9%
W	1.1%

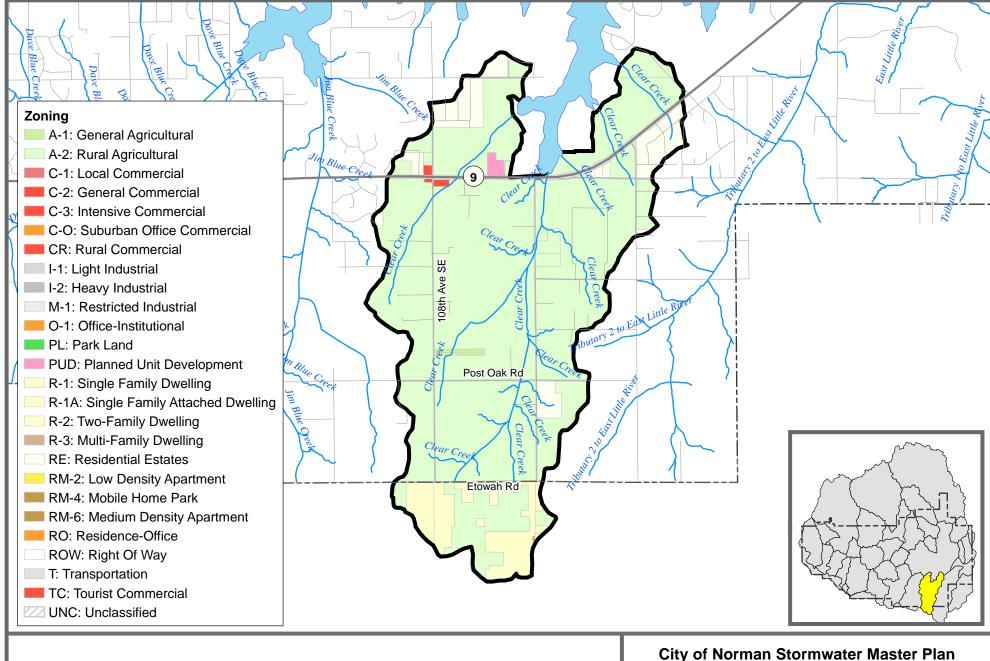
Impervious (%): 3.0





City of Norman Stormwater Master Plan
Canadian River 4

Basin Statistics



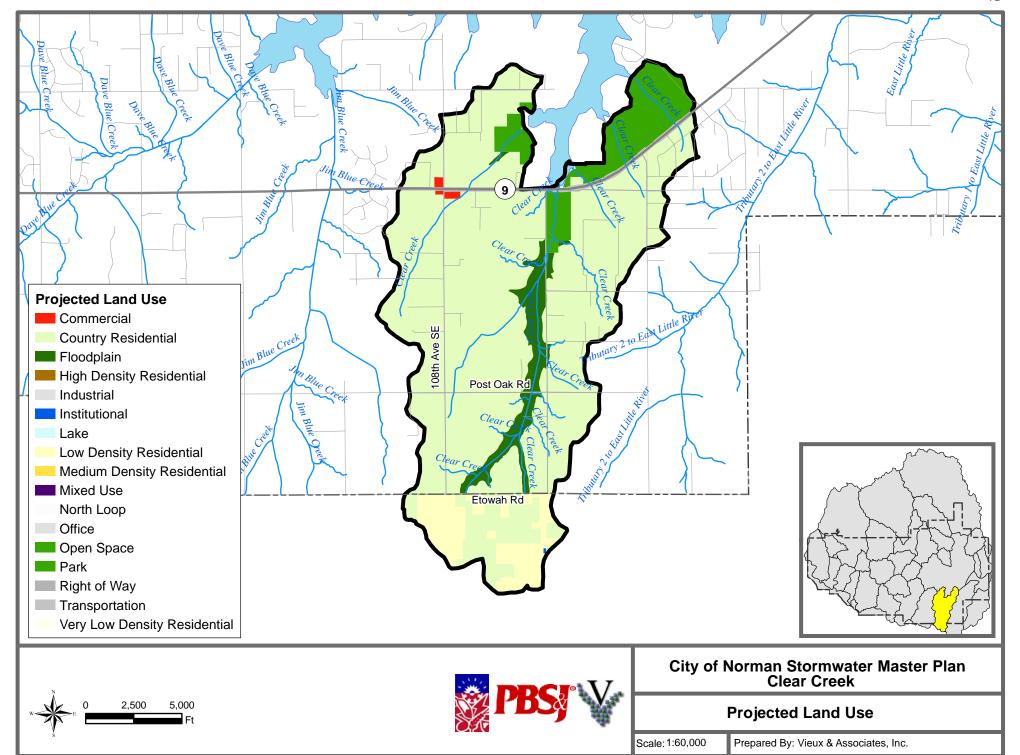


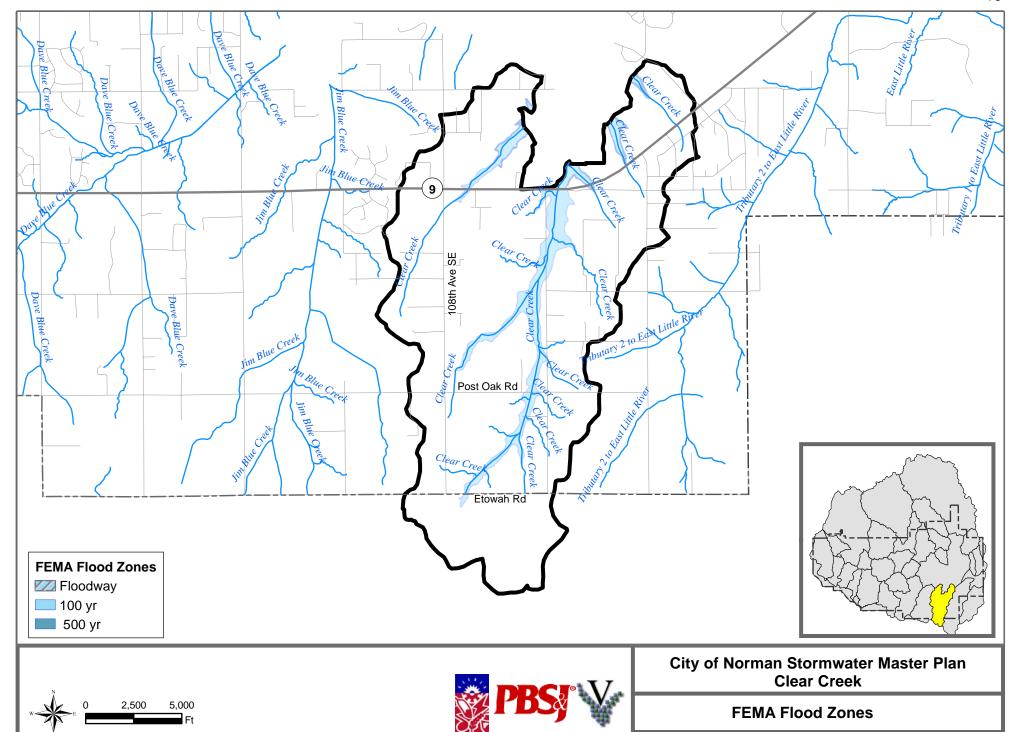


City of Norman Stormwater Master Plan Clear Creek

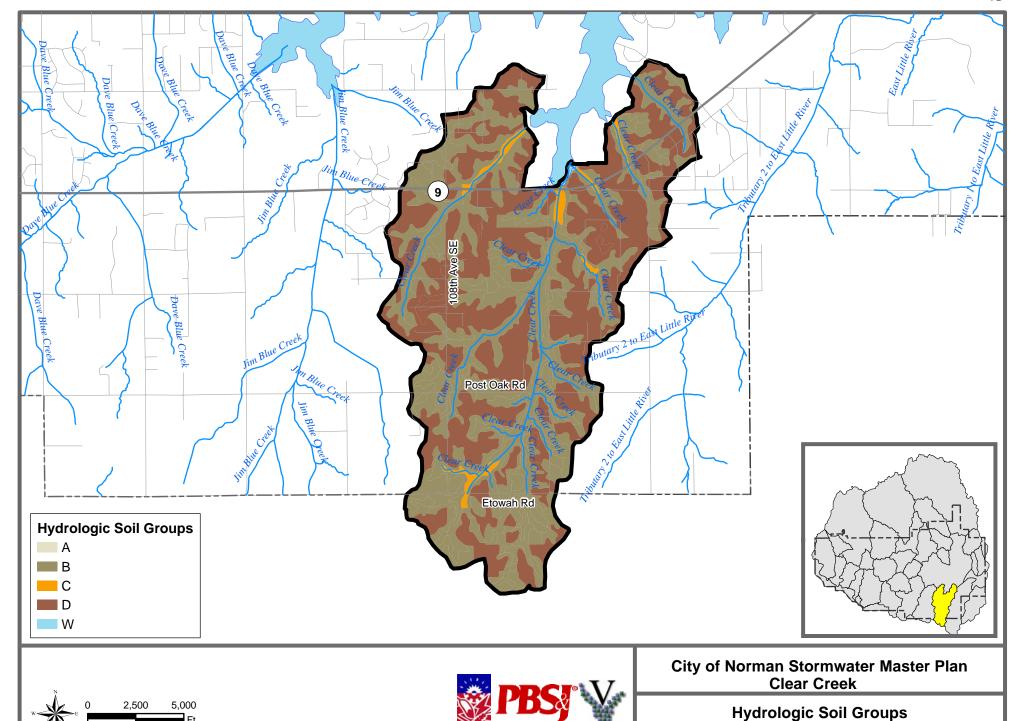
Current Zoning

Scale: 1:60,000





Scale: 1:60,000



Scale: 1:60,000

Drainage Area (sq. mi.): 9.16

Current Zoning

J	
Zoning	Percentage
A-1: General Agricultural	0.33%
A-2: Rural Agricultural	83.07%
C-2: General Commercial	0.01%
O-1: Office-Institutional	0.01%
PUD: Planned Unit Development	0.34%
R-1: Single Family Dwelling	6.23%
RE: Residential Estates	6.48%
T: Transportation	3.27%
TC: Tourist Commercial	0.24%
	•

Projected Landuse

Landuse	Percentage
Commercial	0.26%
Country Residential	75.76%
Floodplain	4.99%
Institutional	0.01%
Lake/ Floodplain	0.1%
Low Density Residential	6.23%
Open	0.05%
Park	9.32%
Transportation	3.27%

Hydrologic Soil Group	Percentage
В	51.8%
С	1.8%
D	46.4%
W	0.1%

FEMA Flood Zone	Percentage
100	6.7%
500	7.2%

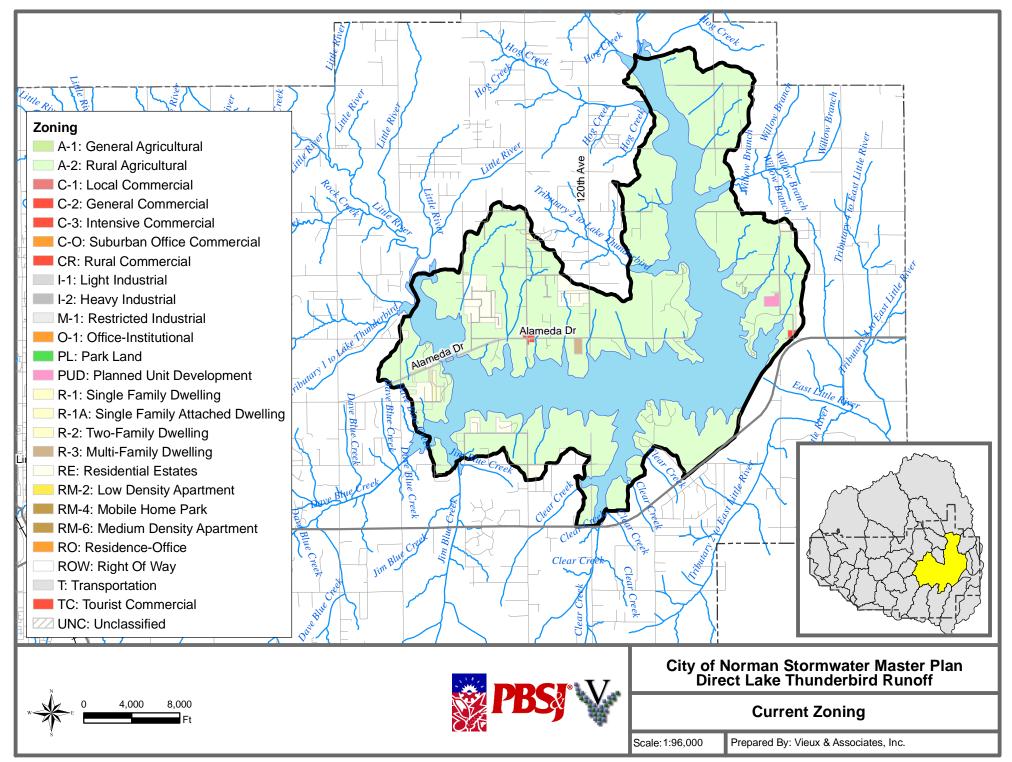
Impervious(%): 3.6

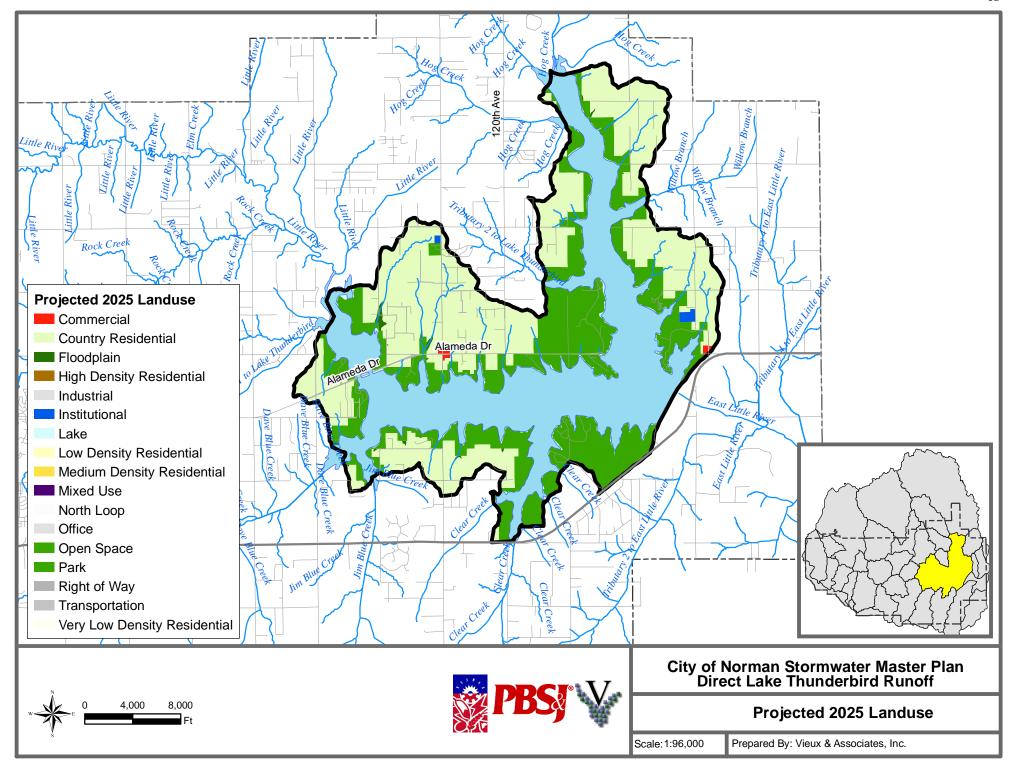


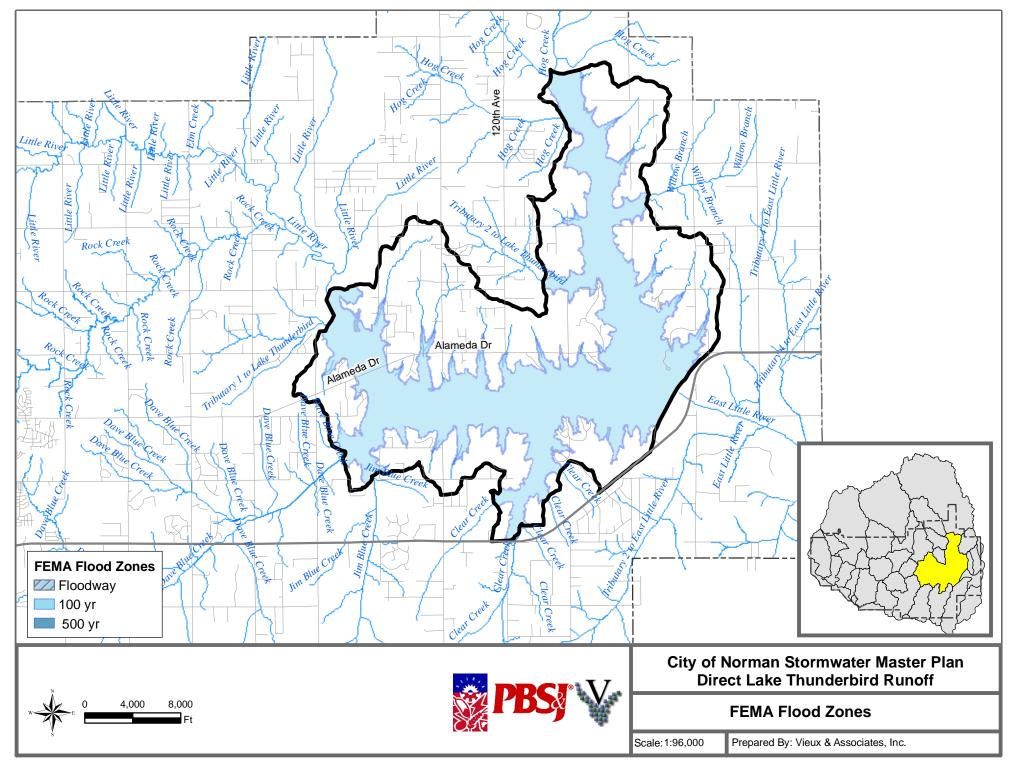


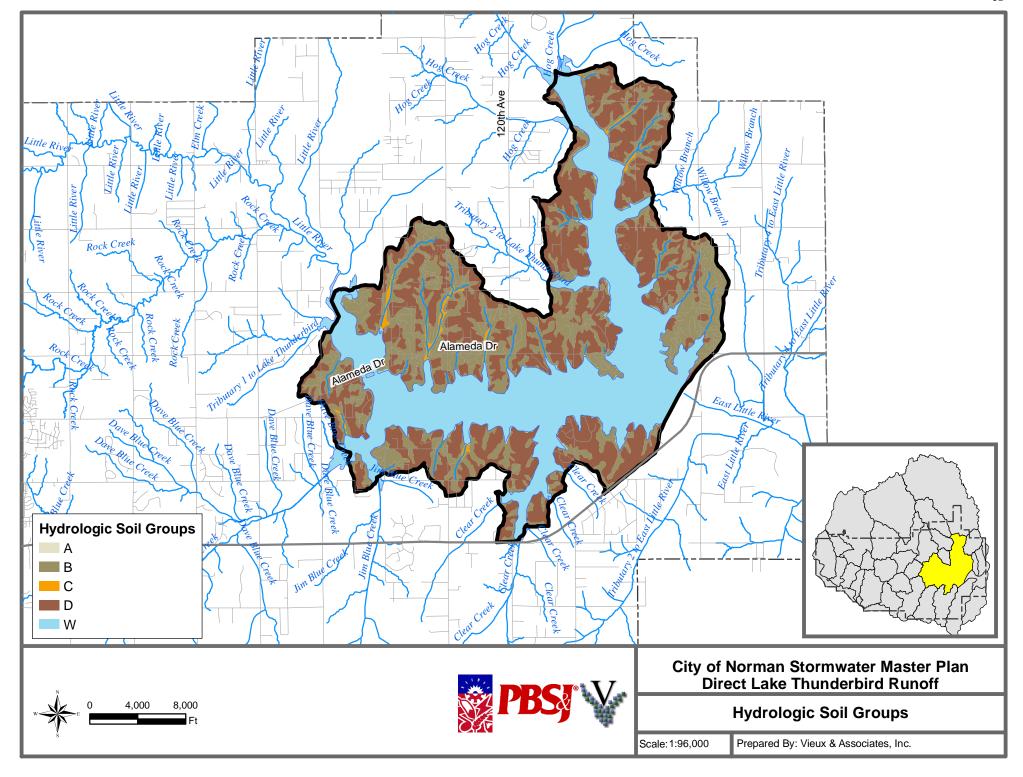
City of Norman Stormwater Master Plan Clear Creek

Basin Statistics









Drainage Area (sq. mi.): 25.04

Current Zoning

Projected Landuse

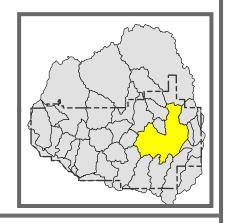
Zoning	Percentage
A-1: General Agricultural	0.07%
A-2: Rural Agricultural	93.79%
PUD: Planned Unit Development	0.16%
R-1: Single Family Dwelling	0.31%
R-3: Multi-Family Dwelling	0.12%
RE: Residential Estates	3.59%
ROW: Right Of Way	0.12%
T: Transportation	1.67%
TC: Tourist Commercial	0.17%

Landuse	Percentage
Commercial	0.17%
Country Residential	36.36%
Floodplain	0.3%
Institutional	0.22%
Lake/ Floodplain	33.7%
Park	27.74%
Transportation	1.52%

Hydrologic Soil Group	Percentage
В	30.4%
С	1.0%
D	35.3%
W	33.3%

FEMA Flood Zone	Percentage
100	41.7%
500	44.4%

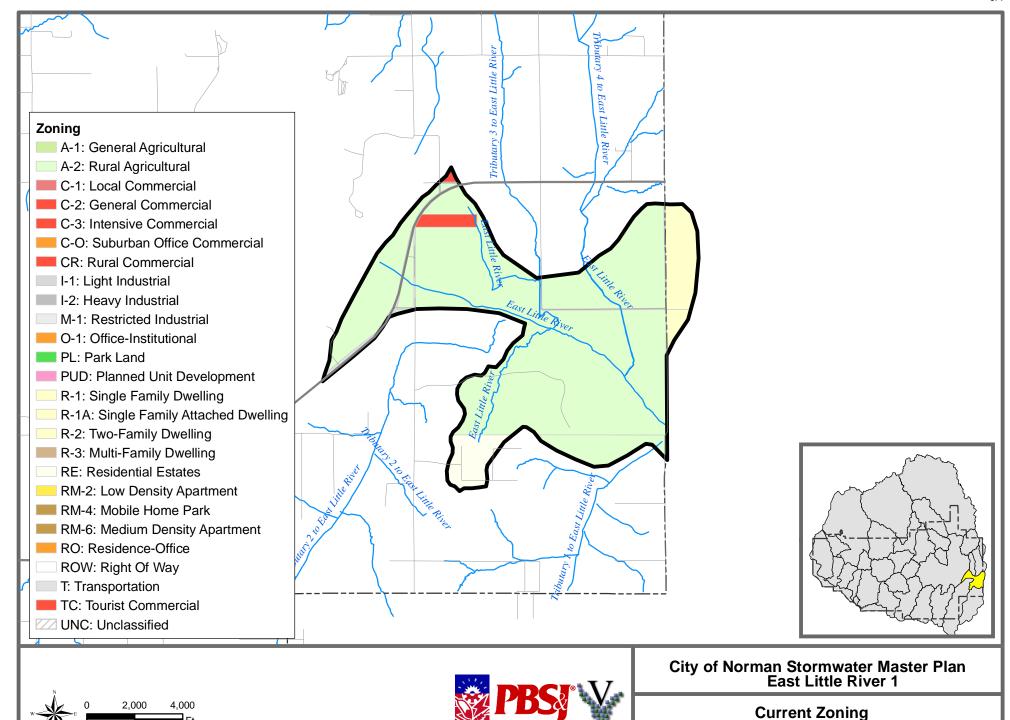
Impervious (%): 2.1



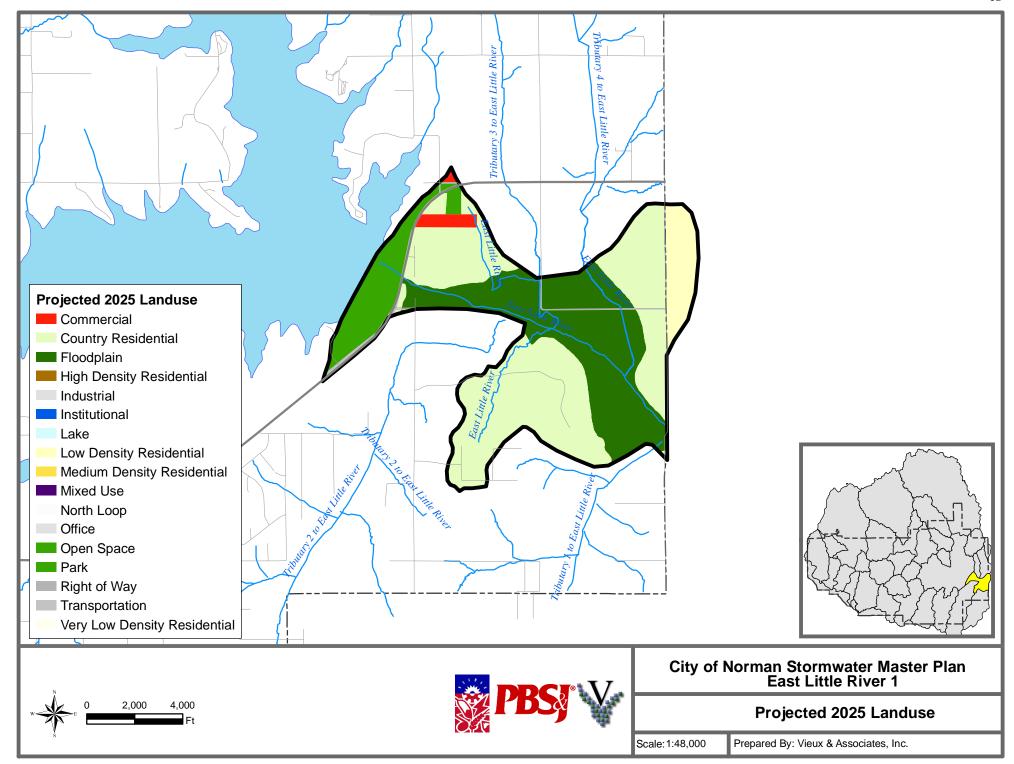


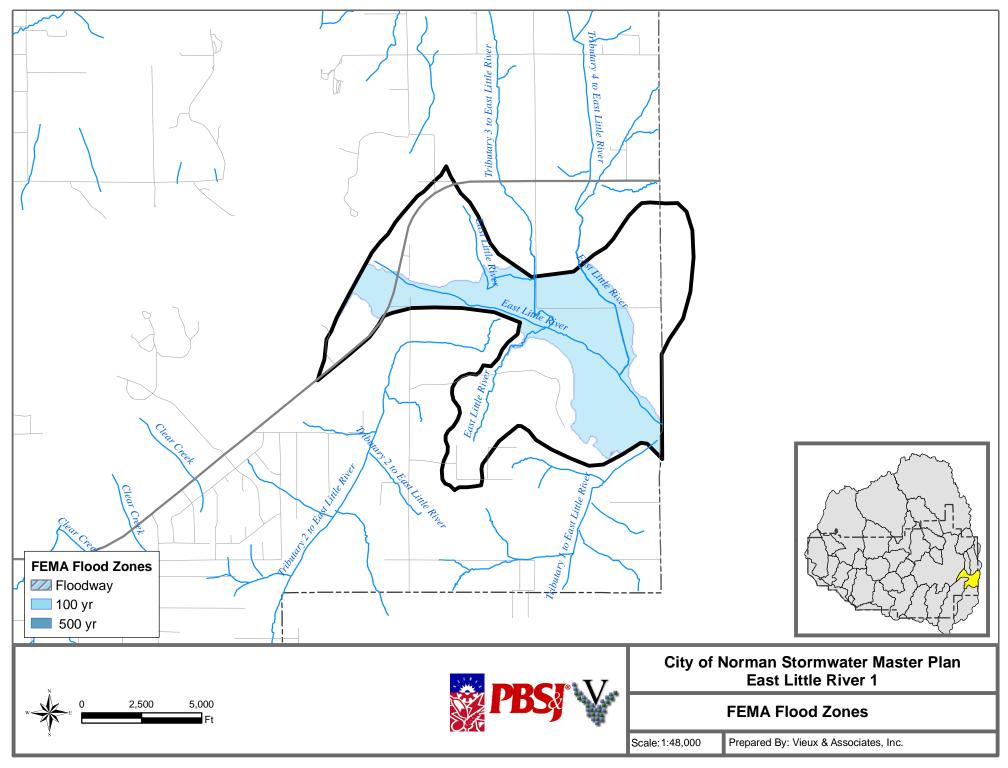
City of Norman Stormwater Master Plan Direct Lake Thunderbird Runoff

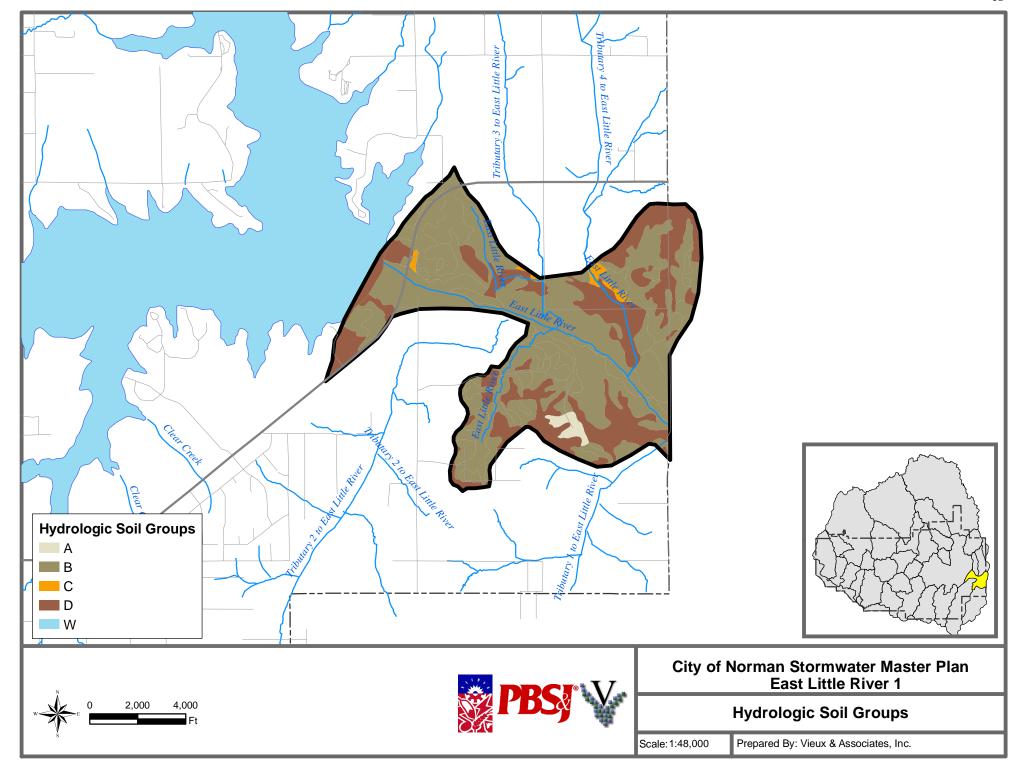
Basin Statistics



Scale: 1:48.000







Drainage Area (sq. mi.): 3.52

Current Zoning

Zoning	Percentage
A-2: Rural Agricultural	85.2%
R-1: Single Family Dwelling	6.6%
RE: Residential Estates	4.2%
T: Transportation	2.5%
TC: Tourist Commercial	1.6%

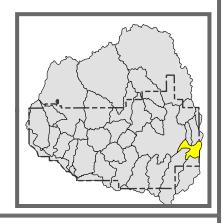
Projected Landuse

Landuse	Percentage
Commercial	1.6%
Country Residential	48.6%
Floodplain	31.4%
Low Density Residential	6.6%
Open	9.6%
Park	2.3%

Hydrologic Soil Group	Percentage
Α	1.1%
В	67.7%
С	1.2%
D	30.0%

FEMA Flood Zone	Percentage
100	36.5%
500	36.6%

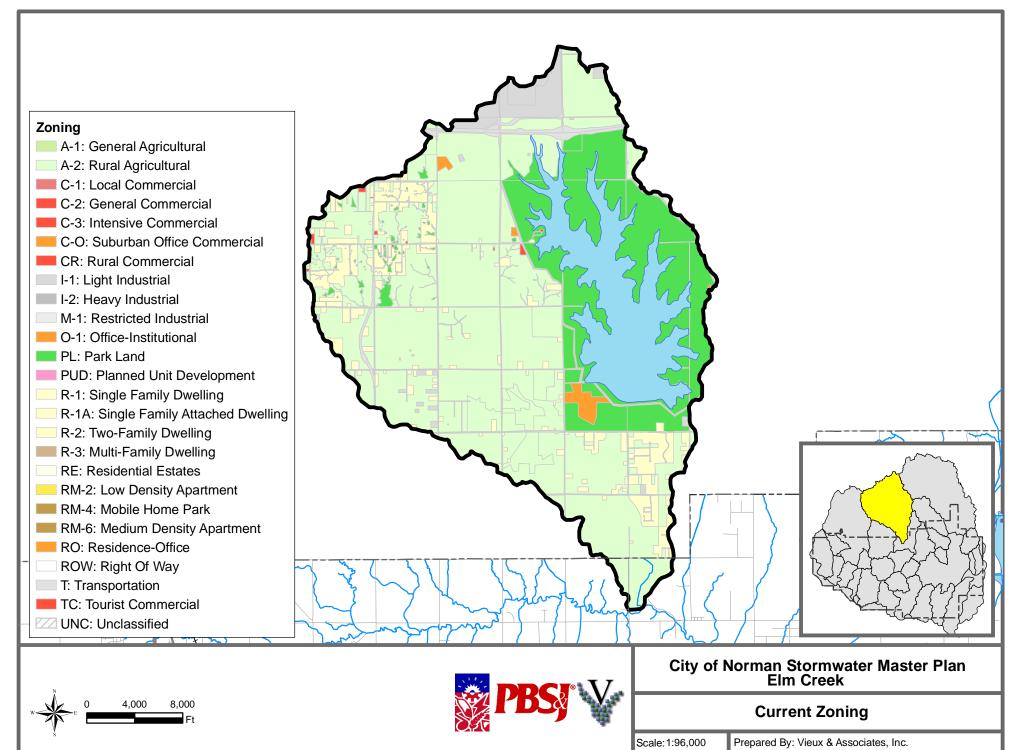
Impervious (%): 4.6

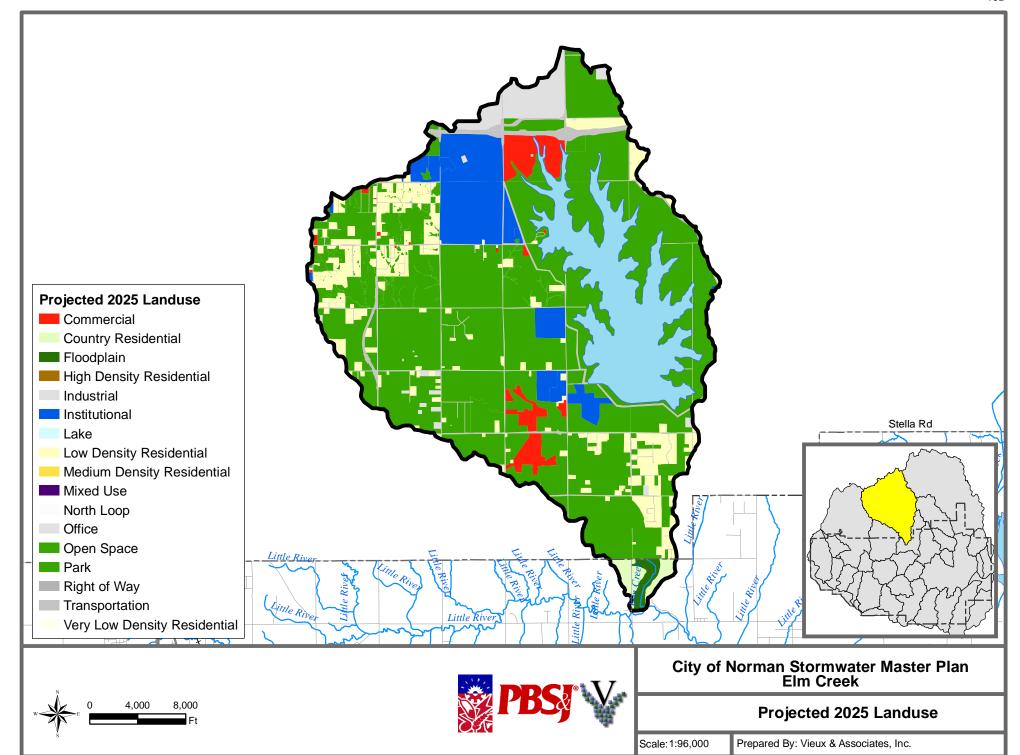


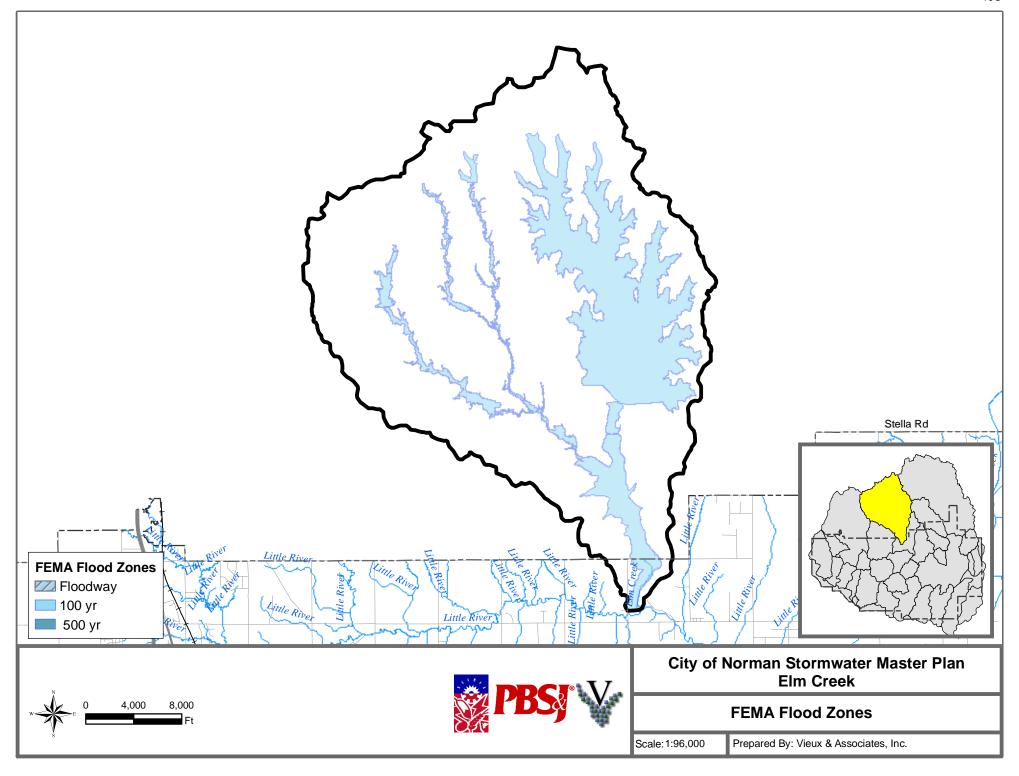


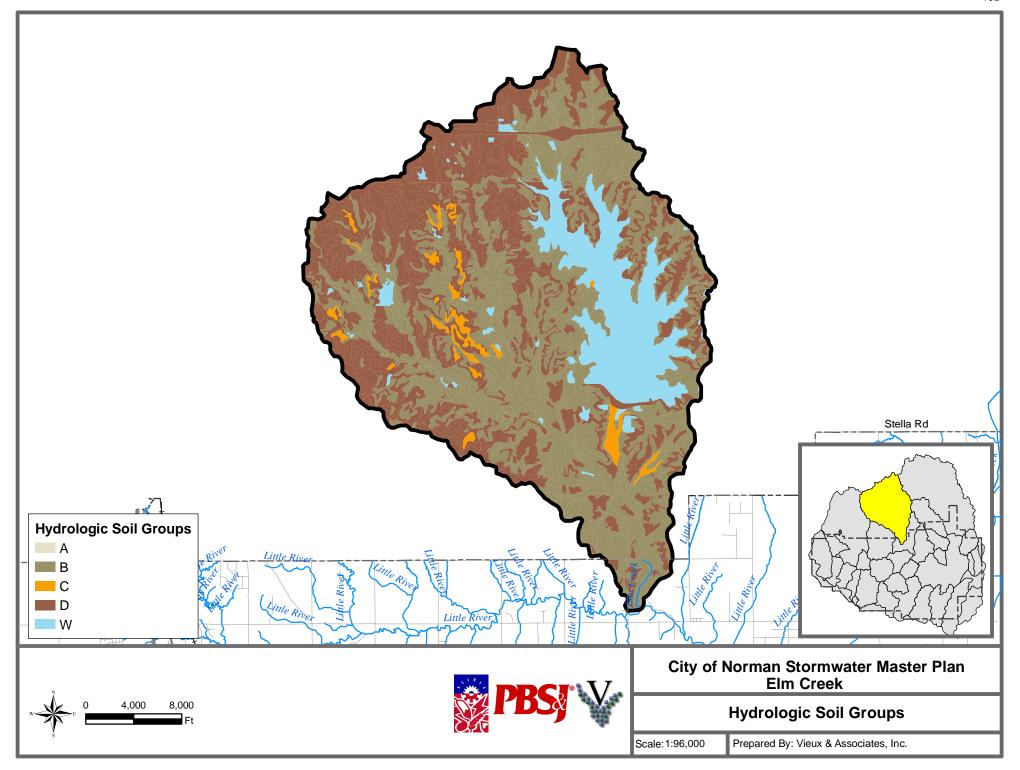
City of Norman Stormwater Master Plan East Little River 1

Basin Statistics









Drainage Area (sq. mi.): 32.69

Current Zoning

Zoning	Percentage
A-2: Rural Agricultural	52.44%
C-2: General Commercial	0.15%
I-1: Light Industrial	2.99%
O-1: Office-Institutional	0.78%
PL: Park Land	30.56%
R-1: Single Family Dwelling	8.42%
T: Transportation	4.66%

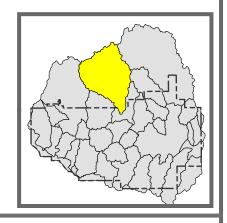
Projected Landuse

Landuse	Percentage
Commercial	3.09%
Country Residential	0.92%
Floodplain	0.55%
Industrial	2.99%
Institutional	8.17%
Low Density Residential	9.4%
Open	39.3%
Park	30.92%
Transportation	4.66%

Hydrologic Soil Group	Percentage
В	46.4%
С	2.1%
D	38.6%
W	12.9%

FEMA Flood Zone	Percentage
100	21.5%

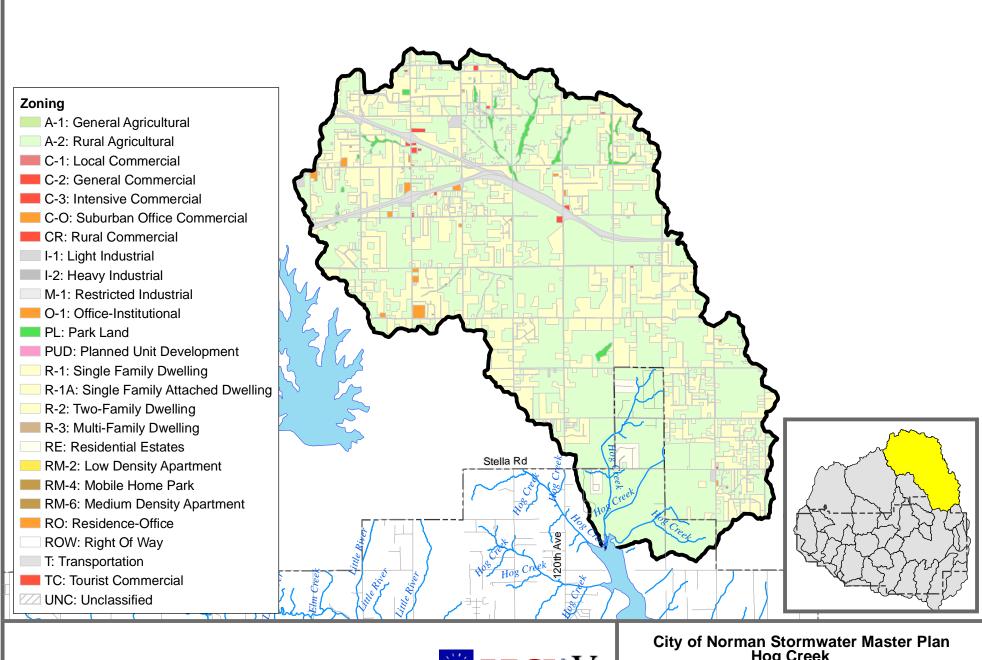
Impervious (%): 1.7





City of Norman Stormwater Master Plan Elm Creek

Basin Statistics



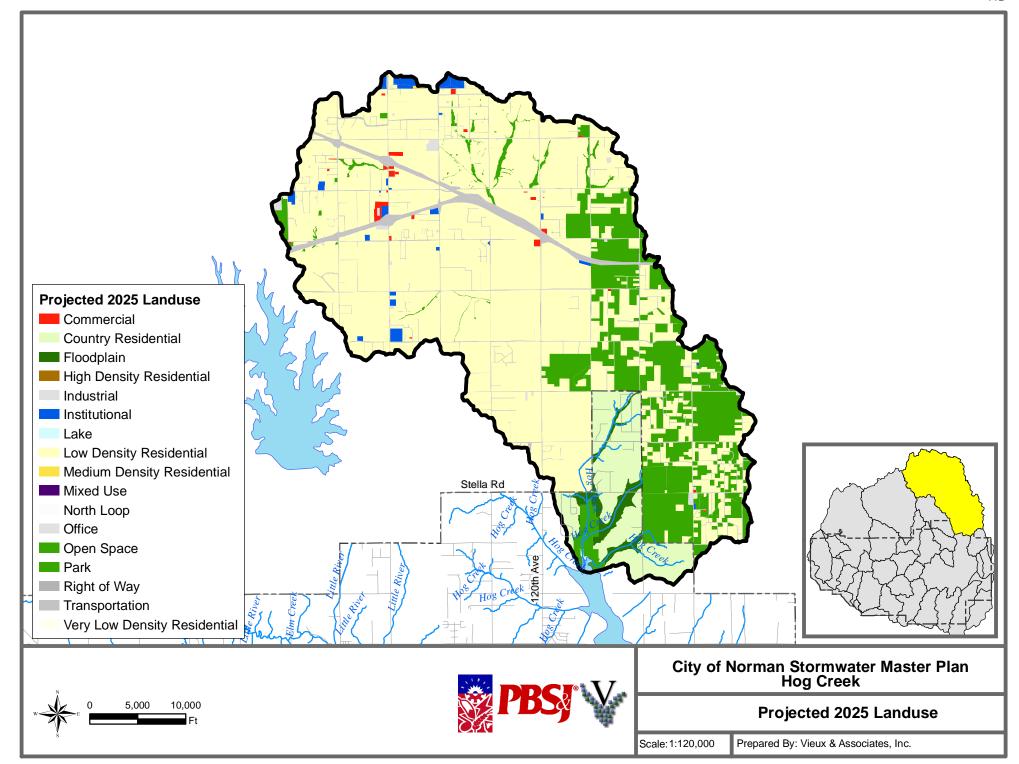


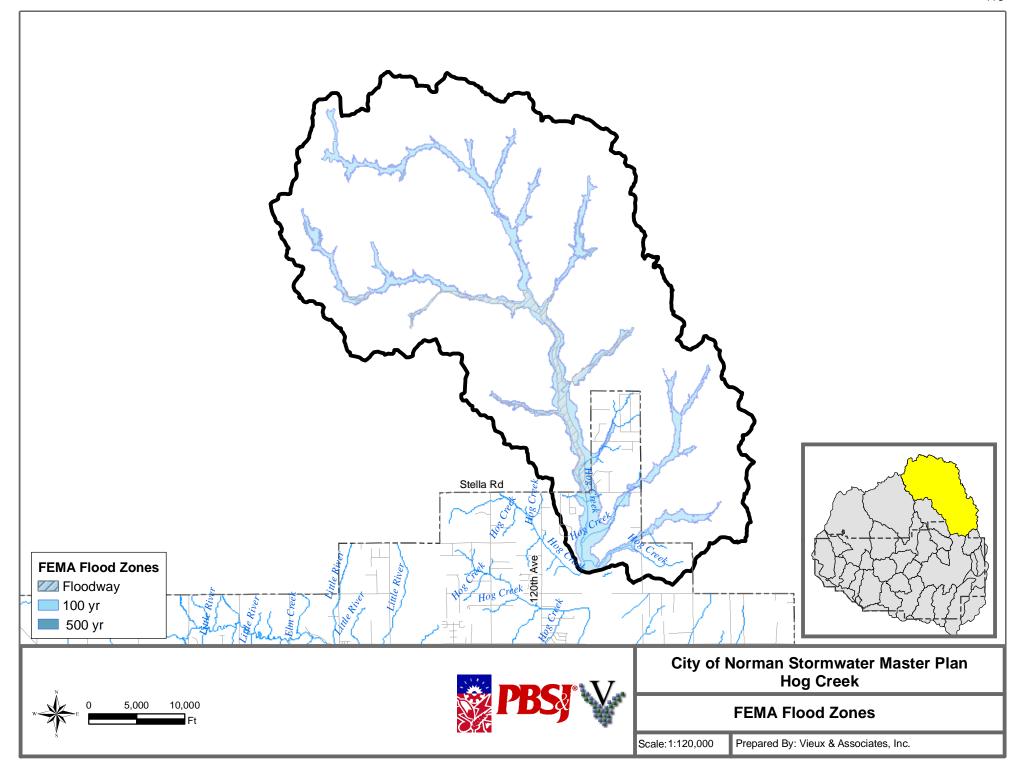


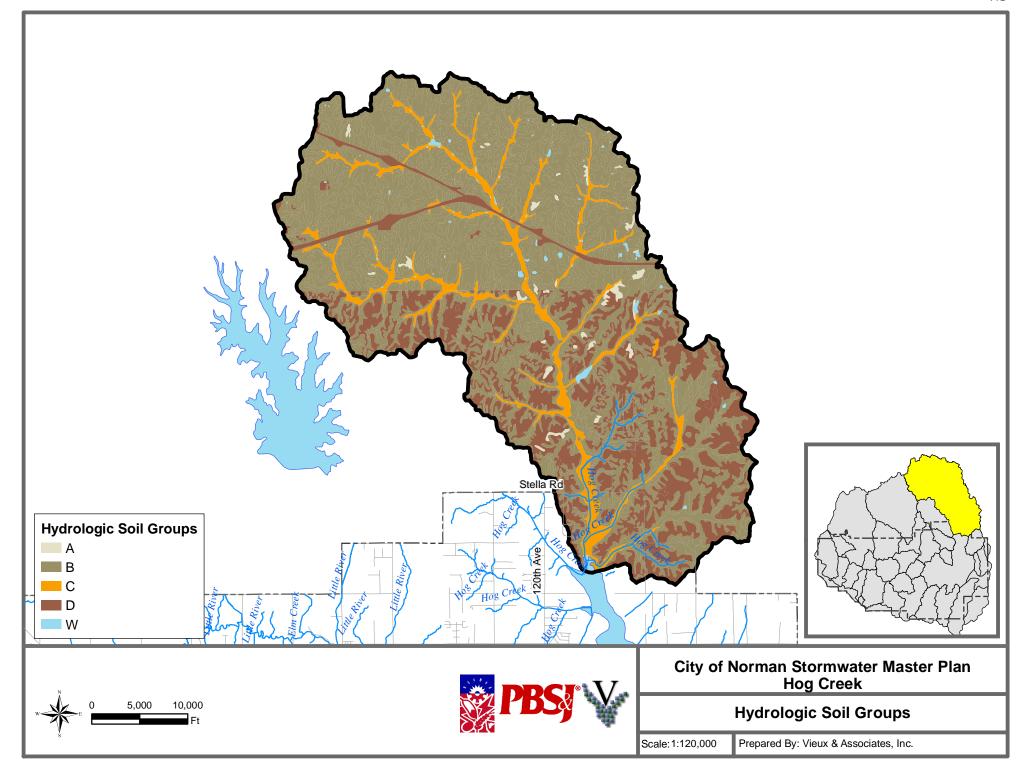
Hog Creek

Current Zoning

Scale: 1:120.000







Drainage Area (sq. mi.): 52.27

Current Zoning

Percentage
57.59%
0.23%
0.02%
0.46%
0.46%
1.09%
32.64%
0.86%
6.66%

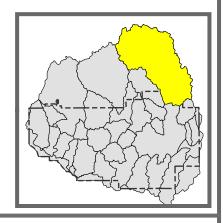
Projected Landuse

Landuse	Percentage
Commercial	0.35%
Country Residential	7.08%
Floodplain	1.38%
Industrial	0.46%
Institutional	0.94%
Lake/ Floodplain	0.09%
Low Density Residential	64.45%
Medium Density Residential	0.02%
Open	16.56%
Park	2.03%
Transportation	6.64%

Hydrologic Soil Group	Percentage
Α	0.9%
В	68.0%
С	7.1%
D	23.6%
W	0.5%

FEMA Flood Zone	Percentage
100	8.83%
500	9.6%
Floodway	1.51%

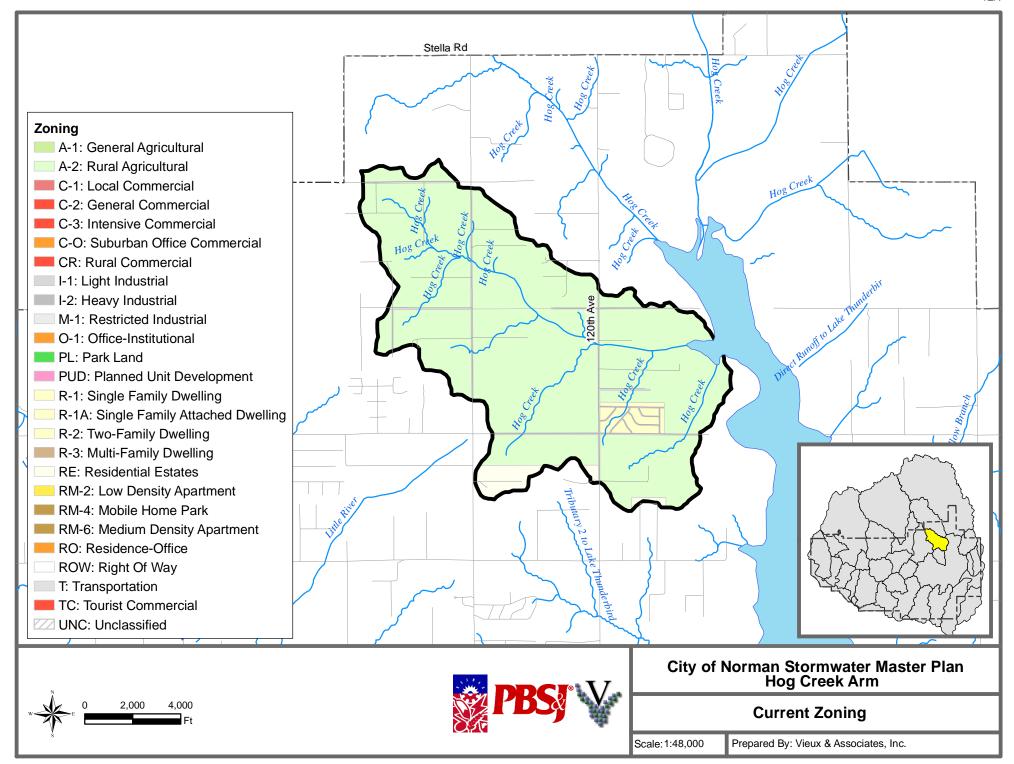
Impervious (%): 2.6

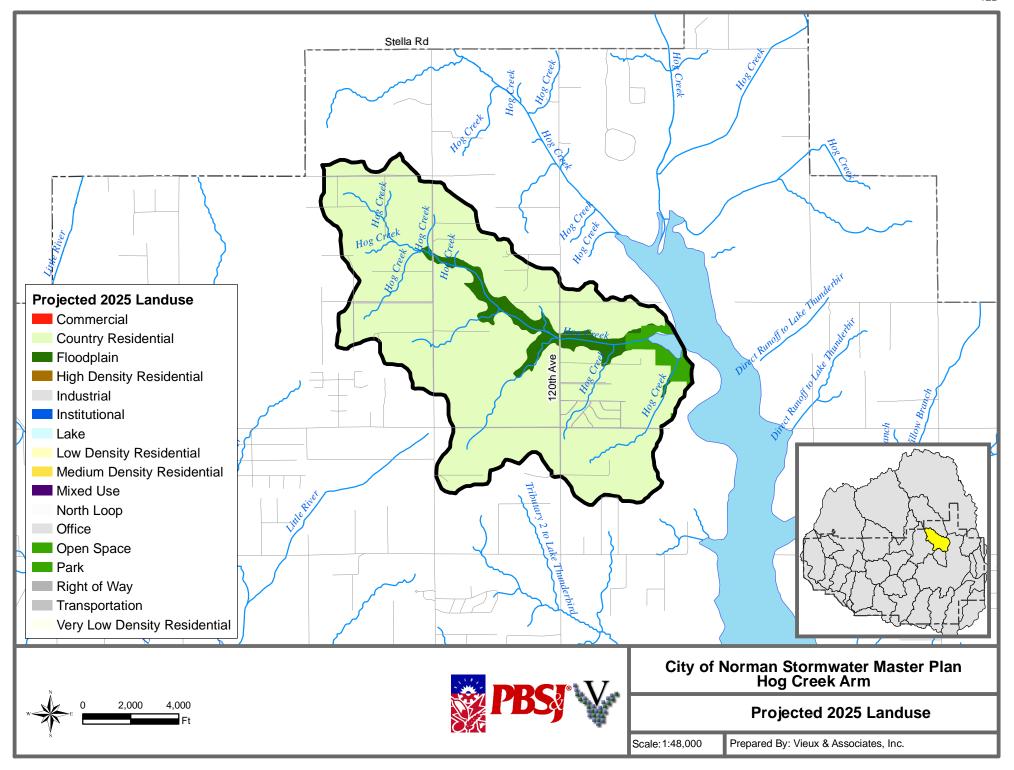


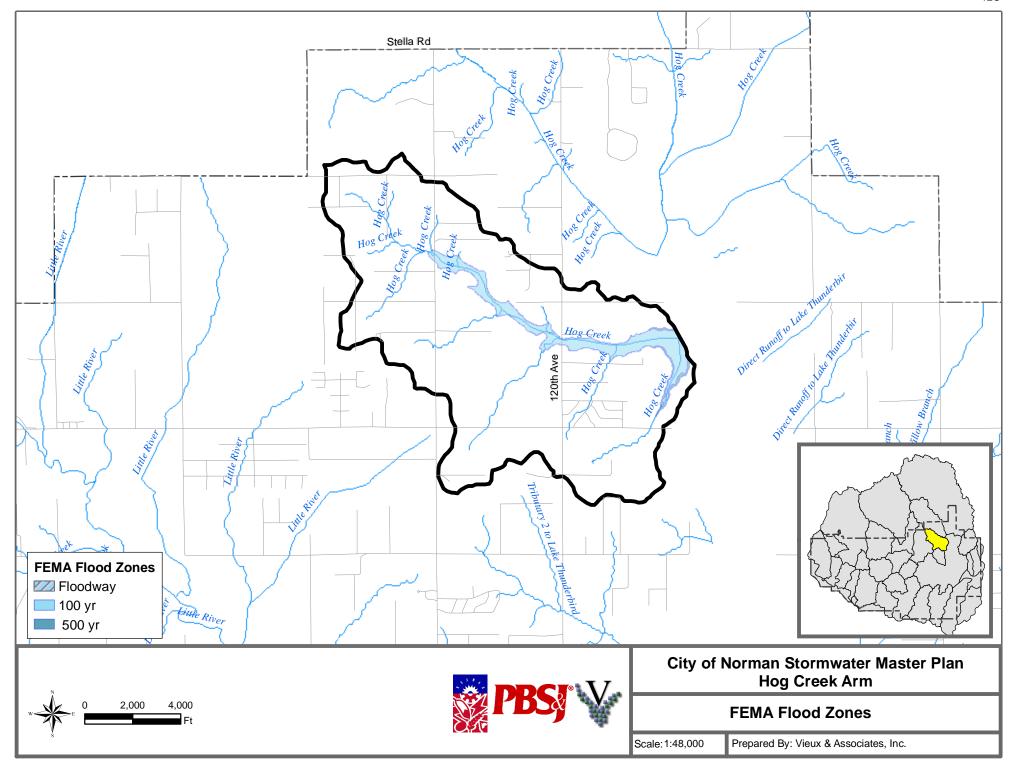


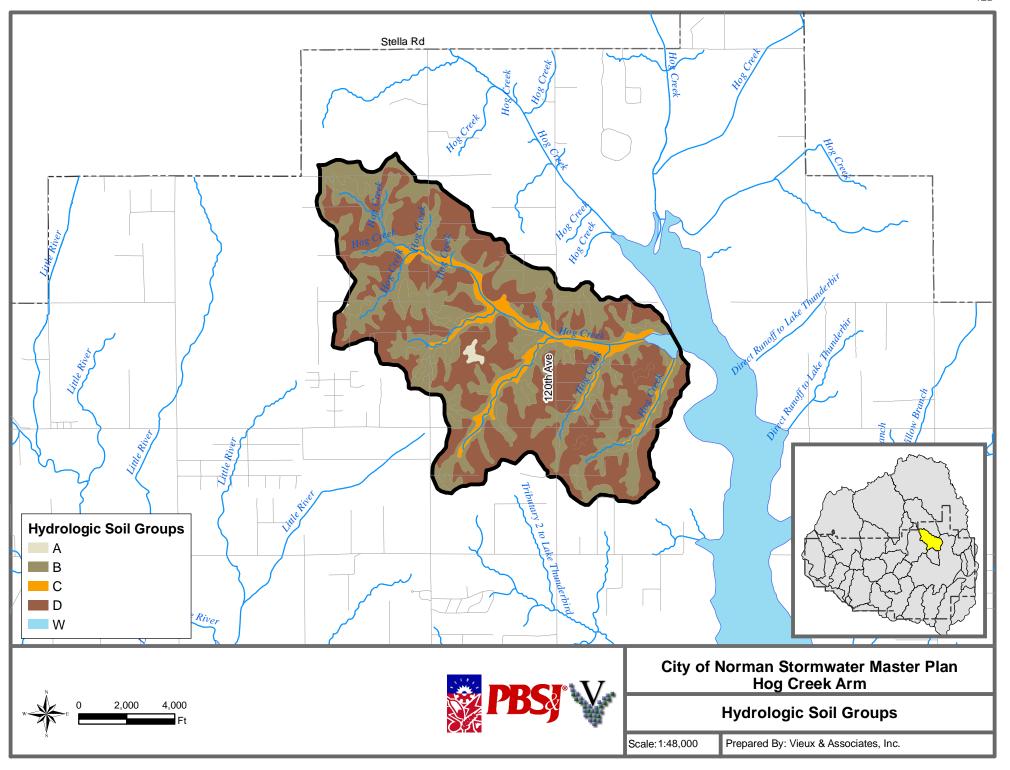
City of Norman Stormwater Master Plan Hog Creek

Basin Statistics









Drainage Area (sq. mi.): 4.37

Current Zoning

Zoning	Percentage
A-2: Rural Agricultural	91.87%
R-1: Single Family Dwelling	2.45%
RE: Residential Estates	2.91%
T: Transportation	2.76%

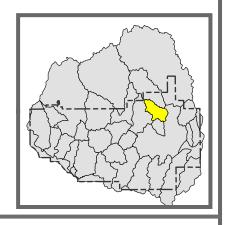
Projected Landuse

Landuse	Percentage
Country Residential	88.61%
Floodplain	5.95%
Lake/ Floodplain	0.54%
Park	2.38%
Transportation	2.52%

Hydrologic Soil Group	Percentage
Α	0.4%
В	45.3%
С	7.0%
D	46.8%
W	0.5%

FEMA Flood Zone	Percentage
100	5.6%
500	5.9%

Impervious (%): 2.9





City of Norman Stormwater Master Plan Hog Creek Arm

Basin Statistics