



# Riverine Assessment Form 1 - Page 2

2/4/2017

**3. RIPARIAN ZONE OF INFLUENCE:** Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

	Condition Category														Comments:														
	Optimal					Suboptimal					Marginal					Poor													
	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					<b>High Suboptimal:</b> Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					<b>Low Suboptimal:</b> Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					<b>High Marginal:</b> Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				<b>Low Marginal:</b> Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				<b>High Poor:</b> Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, herbaceous trails, recently seeded and stabilized, or other comparable condition.				<b>Low Poor:</b> Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
						<b>High</b>					<b>Low</b>				<b>High</b>				<b>Low</b>										
<b>SCORE</b>					20 19 18 17 16					15 14 13 12 11				10 9 8 7 6				5 4 3 2 1											

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

	Condition Category												Side Sub-Index	Side Sub-Index = SUM(%Areas*Scores)/20	
<b>Right Side</b>	% Riparian Area:	30%	50%	20%	0%	0%	0%	0%	0%	0%	0%	0%	<b>0.52</b>		
	Score:	16	10	3	0	0	0	0	0	0	0	0			
	Total Sub-score:	<b>4.80</b>	<b>5.00</b>	<b>0.60</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	
<b>Left Side</b>	% Riparian Area:	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	<b>0.80</b>	<b>CI = (Left Side CI + Right Side CI)/2</b>	
	Score:	16	0	0	0	0	0	0	0	0	0	0			<b>CI</b>
	Total Sub-score:	<b>16.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>			<b>0.66</b>

**4. INSTREAM HABITAT:** Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

	Condition Category														Comments:										
	Optimal					Suboptimal					Marginal					Poor									
	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.									
					<b>High</b>					<b>Low</b>				<b>High</b>				<b>Low</b>							
<b>SCORE</b>					20 19 18 17 16					15 14 13 12 11				10 9 8 7 6				5 4 3 2 1				<b>SCORE</b>	<b>12</b>	<b>CI</b>	<b>0.60</b>

**5. CHANNEL ALTERATION:** Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

	Condition Category														Comments:										
	Negligible					Minor					Moderate					Severe									
	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.					<b>Minor High:</b> Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.					<b>Minor Low:</b> Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.					<b>Moderate High:</b> Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				<b>Moderate Low:</b> Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.	
					<b>High</b>					<b>Low</b>				<b>High</b>				<b>Low</b>							
<b>SCORE</b>					20 19 18 17 16					15 14 13 12 11				10 9 8 7 6				5 4 3 2 1				<b>SCORE</b>	<b>14</b>	<b>CI</b>	<b>0.70</b>

**RIVERINE CONDITION INDEX (RCI)** **RCI**

**NOTE:** The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5** **0.59**

*If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.*

**General Comments:**

# Riverine Assessment Form 1

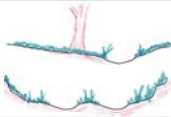
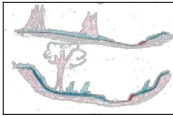
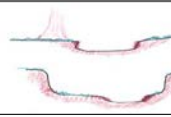
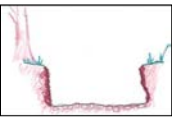
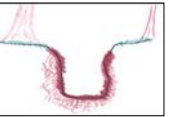
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	River Pointe Logistics Center	Upper Mount Bethel	10/02/22	Ch 93 Classification CW: CWF, MF Existing: CWF, MF	WA-2	590
Latitude	40.908867	Longitude	-75.086940		FGM Level 1 Channel Classification	
Evaluator(s)		Stream Name and Information			Notes:	
Stephen Dadio		UNT to Delaware River				

**1. CHANNEL/FLOODPLAIN:** Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal			Marginal			Poor		Severe									
<b>Channel / Floodplain</b>																				
	<p><b>Channel Geometry:</b> These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p><b>Channel Stability:</b> Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p><b>Active Floodplain Connection:</b> The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p><b>Channel Geometry:</b> These channels are slightly incised or overwidened and contain a few areas of active erosion.</p> <p><b>Channel Stability:</b> Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p><b>Active Floodplain Connection:</b> The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>			<p><b>Channel Geometry:</b> These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p><b>Channel Stability:</b> Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p><b>Active Floodplain Connection:</b> The bankfull stream flows have infrequent connection to the active floodplain.</p>			<p><b>Channel Geometry:</b> These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p><b>Channel Stability:</b> Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p><b>Active Floodplain Connection:</b> The bankfull stream flows are not connected to the active floodplain.</p>		<p><b>Channel Geometry:</b> These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p><b>Channel Stability:</b> Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p><b>Active Floodplain Connection:</b> The bankfull stream flows are never connected to the active floodplain.</p>									
<b>SCORE</b>	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

**Comments:**

	<b>CI = (Score)/20</b>	<b>CI</b>
<b>SCORE</b>	4	0.20

**2. RIPARIAN VEGETATION:** Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
<b>Riparian Vegetation (Floodplain)</b>	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) &gt; 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p> <p><b>High Suboptimal:</b> Riparian area vegetation consists of a tree stratum (dbh &gt; 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p> <p><b>Low Suboptimal:</b> Riparian area vegetation consists of a tree stratum (dbh &gt; 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p> <p><b>High Marginal:</b> Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh &gt; 3 inches) present, with less than 30% tree canopy cover.</p> <p><b>Low Marginal:</b> Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (&lt; 10 acres). If trees are present, tree stratum (dbh &gt; 3 inches) present, with less than 30% tree canopy cover with maintained</p> <p><b>High Poor:</b> Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p> <p><b>Low Poor:</b> Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>								<b>Comments:</b>											
	<b>SCORE</b>	20	19	18	17	16	15	14		13	12	11	10	9	8	7	6	5	4	3

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category								
	% Riparian Area:	100%	0%	0%	0%	0%			0%
<b>Right Side</b>	Score:	16	0	0	0	0	0	<b>0.80</b>	<b>Side Sub-Index = SUM(%Areas*Scores)/20</b>
	Total Sub-score:	16.00	0.00	0.00	0.00	0.00	0.00		
<b>Left Side</b>	Condition Category								
	% Riparian Area:	100%	0%	0%	0%	0%			0%
Score:	16	0	0	0	0	0	<b>0.80</b>	<b>CI = (Left Side CI + Right Side CI)/2</b>	<b>CI</b>
Total Sub-score:	16.00	0.00	0.00	0.00	0.00	0.00			

# Riverine Assessment Form 1 - Page 2

2/4/2017

**3. RIPARIAN ZONE OF INFLUENCE:** Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

	Condition Category														Comments:					
	Optimal				Suboptimal				Marginal				Poor							
	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.																			
<b>Riparian ZOI</b>	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with		High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, herbaceous trails, recently seeded and stabilized, or other comparable condition.		Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.			
	<b>High</b>				<b>Low</b>				<b>High</b>				<b>Low</b>		<b>High</b>		<b>Low</b>			
<b>SCORE</b>	<b>20</b>	<b>19</b>	<b>18</b>	<b>17</b>	<b>16</b>	<b>15</b>	<b>14</b>	<b>13</b>	<b>12</b>	<b>11</b>	<b>10</b>	<b>9</b>	<b>8</b>	<b>7</b>	<b>6</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

	Condition Category										Side Sub-Index	Side Sub-Index = SUM(%Areas*Scores)/20	
<b>Right Side</b>	% Riparian Area:	100%	0%	0%	0%	0%	0%	0%	0%	0%	<b>0.80</b>		
	Score:	16	0	0	0	0	0	0	0	0			
	Total Sub-score:	<b>16.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	
<b>Left Side</b>	% Riparian Area:	100%	0%	0%	0%	0%	0%	0%	0%	0%	<b>0.80</b>	<b>CI = (Left Side CI + Right Side CI)/2</b>	<b>CI</b>
	Score:	16	0	0	0	0	0	0	0	0			<b>0.80</b>
	Total Sub-score:	<b>16.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.80</b>

**4. INSTREAM HABITAT:** Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

	Condition Category														Comments:								
	Optimal				Suboptimal				Marginal				Poor										
	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.																						
<b>Instream Habitat/ Available Cover</b>	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.														
	<b>CI = (Score)/20</b>										<b>CI</b>												
<b>SCORE</b>	<b>20</b>	<b>19</b>	<b>18</b>	<b>17</b>	<b>16</b>	<b>15</b>	<b>14</b>	<b>13</b>	<b>12</b>	<b>11</b>	<b>10</b>	<b>9</b>	<b>8</b>	<b>7</b>	<b>6</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>SCORE</b>	<b>12</b>	<b>0.60</b>

**5. CHANNEL ALTERATION:** Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

	Condition Category														Comments:								
	Negligible				Minor				Moderate				Severe										
	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.																						
<b>Channel Alteration</b>	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.								
	<b>High</b>				<b>Low</b>				<b>High</b>				<b>Low</b>		<b>High</b>		<b>Low</b>						
<b>SCORE</b>	<b>20</b>	<b>19</b>	<b>18</b>	<b>17</b>	<b>16</b>	<b>15</b>	<b>14</b>	<b>13</b>	<b>12</b>	<b>11</b>	<b>10</b>	<b>9</b>	<b>8</b>	<b>7</b>	<b>6</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>SCORE</b>	<b>18</b>	<b>0.90</b>

## RIVERINE CONDITION INDEX (RCI)

**NOTE:** The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

**0.66**

*If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.*

**General Comments:**



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2/4/2017

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	Condition Category												Comments:								
	Optimal			Suboptimal				Marginal				Poor									
	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.																				
<b>Riparian ZOI</b>	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.			Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, herbaceous trails, recently seeded and stabilized, or other comparable condition.			Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
	<b>High</b>			<b>Low</b>				<b>High</b>				<b>Low</b>			<b>High</b>			<b>Low</b>			
<b>SCORE</b>	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

	Condition Category												Side Sub-Index
<b>Right Side</b>	% Riparian Area:	60%	40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	<b>0.40</b>
	Score:	10	5	0	0	0	0	0	0	0	0	0	
	Total Sub-score:	6.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
<b>Left Side</b>	% Riparian Area:	60%	40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	<b>0.40</b>
	Score:	10	5	0	0	0	0	0	0	0	0	0	
	Total Sub-score:	6.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
												<b>CI = (Left Side CI + Right Side CI)/2</b>	<b>CI</b>
												<b>0.40</b>	<b>0.40</b>

**4. INSTREAM HABITAT:** Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

	Condition Category												Comments:										
	Optimal			Suboptimal				Marginal				Poor											
	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.																						
<b>Instream Habitat/ Available Cover</b>	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.															
	<b>CI = (Score)/20</b>												<b>CI</b>										
<b>SCORE</b>	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	<b>SCORE</b>	<b>6</b>	<b>0.30</b>

**5. CHANNEL ALTERATION:** Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

	Condition Category												Comments:										
	Negligible			Minor				Moderate				Severe											
	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.																						
<b>Channel Alteration</b>	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.			Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.								
	<b>High</b>			<b>Low</b>				<b>High</b>				<b>Low</b>											
<b>SCORE</b>	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	<b>SCORE</b>	<b>18</b>	<b>0.90</b>

**RIVERINE CONDITION INDEX (RCI)** **RCI**

**NOTE:** The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

*If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.*

**General Comments:**



# Riverine Assessment Form 1 - Page 2

2/4/2017

**3. RIPARIAN ZONE OF INFLUENCE:** Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

	Condition Category												Comments:								
	Optimal			Suboptimal				Marginal				Poor									
	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.																				
<b>Riparian ZOI</b>	<b>High Suboptimal:</b> Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.			<b>Low Suboptimal:</b> Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				<b>High Marginal:</b> Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				<b>Low Marginal:</b> Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				<b>High Poor:</b> Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, herbaceous trails, recently seeded and stabilized, or other comparable condition.			<b>Low Poor:</b> Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
	<b>High</b>			<b>Low</b>				<b>High</b>				<b>Low</b>			<b>High</b>			<b>Low</b>			
<b>SCORE</b>	<b>20</b>	<b>19</b>	<b>18</b>	<b>17</b>	<b>16</b>	<b>15</b>	<b>14</b>	<b>13</b>	<b>12</b>	<b>11</b>	<b>10</b>	<b>9</b>	<b>8</b>	<b>7</b>	<b>6</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

	Condition Category										Side Sub-Index	Side Sub-Index = SUM(%Areas*Scores)/20	
<b>Right Side</b>	% Riparian Area:	80%	20%	0%	0%	0%	0%	0%	0%	0%	<b>0.86</b>		
	Score:	18	14	0	0	0	0	0	0	0			
	Total Sub-score:	<b>14.40</b>	<b>2.80</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	
<b>Left Side</b>	% Riparian Area:	60%	40%	0%	0%	0%	0%	0%	0%	0%	<b>0.40</b>	<b>CI = (Left Side CI + Right Side CI)/2</b>	<b>CI</b>
	Score:	10	5	0	0	0	0	0	0	0			<b>0.63</b>
	Total Sub-score:	<b>6.00</b>	<b>2.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	

**4. INSTREAM HABITAT:** Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

	Condition Category												Comments:										
	Optimal			Suboptimal				Marginal				Poor											
	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.																						
<b>Instream Habitat/ Available Cover</b>	<b>Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.</b>			<b>Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.</b>				<b>Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.</b>				<b>Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.</b>											
	<b>CI = (Score)/20</b>											<b>CI</b>											
<b>SCORE</b>	<b>20</b>	<b>19</b>	<b>18</b>	<b>17</b>	<b>16</b>	<b>15</b>	<b>14</b>	<b>13</b>	<b>12</b>	<b>11</b>	<b>10</b>	<b>9</b>	<b>8</b>	<b>7</b>	<b>6</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>SCORE</b>	<b>6</b>	<b>0.30</b>

**5. CHANNEL ALTERATION:** Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

	Condition Category												Comments:										
	Negligible			Minor				Moderate				Severe											
	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.																						
<b>Channel Alteration</b>	<b>Minor High:</b> Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			<b>Minor Low:</b> Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				<b>Moderate High:</b> Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				<b>Moderate Low:</b> Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.			Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.								
	<b>High</b>			<b>Low</b>				<b>High</b>				<b>Low</b>			<b>High</b>			<b>Low</b>					
<b>SCORE</b>	<b>20</b>	<b>19</b>	<b>18</b>	<b>17</b>	<b>16</b>	<b>15</b>	<b>14</b>	<b>13</b>	<b>12</b>	<b>11</b>	<b>10</b>	<b>9</b>	<b>8</b>	<b>7</b>	<b>6</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>SCORE</b>	<b>10</b>	<b>0.50</b>

**RIVERINE CONDITION INDEX (RCI)**

<b>NOTE:</b> The CIs and RCI should be rounded to 2 decimal places.	<b>RCI = (Sum of all CI's)/5</b>	<b>RCI</b>
		<b>0.41</b>

*If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.*

**General Comments:**





# Riverine Assessment Form 1 - Page 2

2/4/2017

**3. RIPARIAN ZONE OF INFLUENCE:** Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

	Condition Category												Comments:								
	Optimal			Suboptimal				Marginal				Poor									
	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.																				
<b>Riparian ZOI</b>	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.			Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, herbaceous trails, recently seeded and stabilized, or other comparable condition.			Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
	<b>High</b>			<b>Low</b>				<b>High</b>				<b>Low</b>			<b>High</b>			<b>Low</b>			
<b>SCORE</b>	<b>20</b>	<b>19</b>	<b>18</b>	<b>17</b>	<b>16</b>	<b>15</b>	<b>14</b>	<b>13</b>	<b>12</b>	<b>11</b>	<b>10</b>	<b>9</b>	<b>8</b>	<b>7</b>	<b>6</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

	Condition Category																						
<b>Right Side</b>	% Riparian Area:	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	<b>Side Sub-Index = SUM(%Areas*Scores)/20</b>	
	Score:	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		<b>0.80</b>
	Total Sub-score:	<b>16.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>
<b>Left Side</b>	% Riparian Area:	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	<b>CI = (Left Side CI + Right Side CI)/2</b>	
	Score:	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		<b>0.80</b>
	Total Sub-score:	<b>16.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>

**4. INSTREAM HABITAT:** Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

	Condition Category												Comments:										
	Optimal			Suboptimal				Marginal				Poor											
	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.																						
<b>Instream Habitat/ Available Cover</b>	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.											
	<b>CI = (Score)/20</b>												<b>CI</b>										
<b>SCORE</b>	<b>20</b>	<b>19</b>	<b>18</b>	<b>17</b>	<b>16</b>	<b>15</b>	<b>14</b>	<b>13</b>	<b>12</b>	<b>11</b>	<b>10</b>	<b>9</b>	<b>8</b>	<b>7</b>	<b>6</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>SCORE</b>	<b>16</b>	<b>0.80</b>

**5. CHANNEL ALTERATION:** Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

	Condition Category												Comments:										
	Negligible			Minor				Moderate				Severe											
	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.																						
<b>Channel Alteration</b>	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.			<b>Minor High:</b> Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				<b>Minor Low:</b> Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				<b>Moderate High:</b> Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				<b>Moderate Low:</b> Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.							
	<b>High</b>			<b>Low</b>				<b>High</b>				<b>Low</b>											
<b>SCORE</b>	<b>20</b>	<b>19</b>	<b>18</b>	<b>17</b>	<b>16</b>	<b>15</b>	<b>14</b>	<b>13</b>	<b>12</b>	<b>11</b>	<b>10</b>	<b>9</b>	<b>8</b>	<b>7</b>	<b>6</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>SCORE</b>	<b>14</b>	<b>0.70</b>

**RIVERINE CONDITION INDEX (RCI)**

**NOTE:** The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

*If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.*

**General Comments:**

# Riverine Assessment Form 1

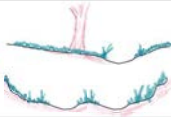
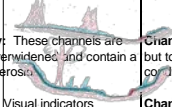
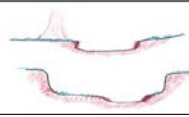
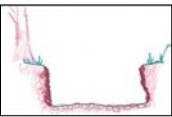
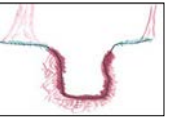
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	River Pointe Logistics Center	Upper Mount Bethel	10/02/22	Ch 93 Classification CW: CWF, MF Existing: CWF, MF	WA-8	2,442
Latitude	40.902838	Longitude	-75.095972	FGM Level 1 Channel Classification		A
Evaluator(s)		Stream Name and Information		Notes:		
Stephen Dadio		UNT to Delaware River				

**1. CHANNEL/FLOODPLAIN:** Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal			Marginal			Poor		Severe									
<b>Channel / Floodplain</b>																				
	<p><b>Channel Geometry:</b> These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p><b>Channel Stability:</b> Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, it covers less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p><b>Active Floodplain Connection:</b> The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p><b>Channel Geometry:</b> These channels are slightly incised or overwidened, and contain a few areas of active erosion.</p> <p><b>Channel Stability:</b> Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p><b>Active Floodplain Connection:</b> The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>			<p><b>Channel Geometry:</b> These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p><b>Channel Stability:</b> Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p><b>Active Floodplain Connection:</b> The bankfull stream flows have infrequent connection to the active floodplain.</p>			<p><b>Channel Geometry:</b> These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p><b>Channel Stability:</b> Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p><b>Active Floodplain Connection:</b> The bankfull stream flows are not connected to the active floodplain.</p>		<p><b>Channel Geometry:</b> These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p><b>Channel Stability:</b> Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p><b>Active Floodplain Connection:</b> The bankfull stream flows are never connected to the active floodplain.</p>									
<b>SCORE</b>	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

**Comments:**

	<b>CI = (Score)/20</b>	<b>CI</b>
<b>SCORE</b>	13	0.65

**2. RIPARIAN VEGETATION:** Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal			Marginal				Poor										
<b>Riparian Vegetation (Floodplain)</b>	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) &gt; 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p><b>Comments:</b></p>											
			<p><b>High Suboptimal:</b> Riparian area vegetation consists of a tree stratum (dbh &gt; 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p><b>Low Suboptimal:</b> Riparian area vegetation consists of a tree stratum (dbh &gt; 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p><b>High Marginal:</b> Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh &gt; 3 inches) present, with less than 30% tree canopy cover.</p>	<p><b>Low Marginal:</b> Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (&lt; 10 acres). If trees are present, tree stratum (dbh &gt; 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p><b>High Poor:</b> Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p><b>Low Poor:</b> Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>												
<b>SCORE</b>	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category								
	Side Sub-Index = SUM(%Areas*Scores)/20								
	CI = (Left Side CI + Right Side CI)/2								
<b>Right Side</b>	Condition Category	50%	50%	0%	0%	0%	0%	<b>0.75</b>	<b>CI</b>
	% Riparian Area:	50%	50%	0%	0%	0%	0%		
	Score:	18	12	0	0	0	0		
<b>Total Sub-score:</b>		<b>9.00</b>	<b>6.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		
<b>Left Side</b>	Condition Category	50%	50%	0%	0%	0%	0%	<b>0.75</b>	<b>CI</b>
	% Riparian Area:	50%	50%	0%	0%	0%	0%		
	Score:	18	12	0	0	0	0		
<b>Total Sub-score:</b>		<b>9.00</b>	<b>6.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.75</b>	

# Riverine Assessment Form 1 - Page 2

2/4/2017

**3. RIPARIAN ZONE OF INFLUENCE:** Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

	Condition Category														Comments:														
	Optimal					Suboptimal					Marginal					Poor													
	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					<b>High Suboptimal:</b> Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					<b>Low Suboptimal:</b> Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					<b>High Marginal:</b> Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				<b>Low Marginal:</b> Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				<b>High Poor:</b> Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, herbaceous trails, recently seeded and stabilized, or other comparable condition.				<b>Low Poor:</b> Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
						<b>High</b>					<b>Low</b>				<b>High</b>				<b>Low</b>										
<b>SCORE</b>	<b>20</b>	<b>19</b>	<b>18</b>	<b>17</b>	<b>16</b>	<b>15</b>	<b>14</b>	<b>13</b>	<b>12</b>	<b>11</b>	<b>10</b>	<b>9</b>	<b>8</b>	<b>7</b>	<b>6</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>									

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

	Condition Category																						
<b>Right Side</b>	% Riparian Area:	50%	30%	20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	<b>Side Sub-Index = SUM(%Areas*Scores)/20</b>	
	Score:	16	8	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		<b>0.64</b>
	Total Sub-score:	<b>8.00</b>	<b>2.40</b>	<b>2.40</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>
<b>Left Side</b>	% Riparian Area:	50%	30%	20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	<b>CI = (Left Side CI + Right Side CI)/2</b>	
	Score:	16	8	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		<b>0.64</b>
	Total Sub-score:	<b>8.00</b>	<b>2.40</b>	<b>2.40</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>

**4. INSTREAM HABITAT:** Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

	Condition Category														Comments:								
	Optimal					Suboptimal					Marginal					Poor							
	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.							
															<b>High</b>					<b>Low</b>			
<b>SCORE</b>	<b>20</b>	<b>19</b>	<b>18</b>	<b>17</b>	<b>16</b>	<b>15</b>	<b>14</b>	<b>13</b>	<b>12</b>	<b>11</b>	<b>10</b>	<b>9</b>	<b>8</b>	<b>7</b>	<b>6</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>SCORE</b>	<b>10</b>	<b>0.50</b>

**5. CHANNEL ALTERATION:** Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

	Condition Category														Comments:										
	Negligible					Minor					Moderate					Severe									
	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.					<b>Minor High:</b> Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.					<b>Minor Low:</b> Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.					<b>Moderate High:</b> Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				<b>Moderate Low:</b> Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.	
															<b>High</b>										
<b>SCORE</b>	<b>20</b>	<b>19</b>	<b>18</b>	<b>17</b>	<b>16</b>	<b>15</b>	<b>14</b>	<b>13</b>	<b>12</b>	<b>11</b>	<b>10</b>	<b>9</b>	<b>8</b>	<b>7</b>	<b>6</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>SCORE</b>	<b>12</b>	<b>0.60</b>		

**RIVERINE CONDITION INDEX (RCI)**

<b>NOTE:</b> The CIs and RCI should be rounded to 2 decimal places.	<b>RCI = (Sum of all CI's)/5</b>	<b>0.63</b>
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*If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.*

**General Comments:**

# Riverine Assessment Form 1

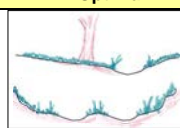
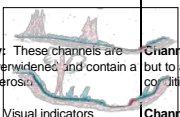
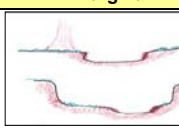
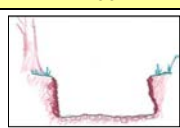
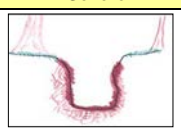
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	River Pointe Logistics Center	Upper Mount Bethel	10/02/22	Ch 93 Classification CW Existing: CWF, MF	WA-9	1,412
Latitude	40.901089	Longitude	-75.084967		FGM Level 1 Channel Classification	
Evaluator(s)		Stream Name and Information			Notes:	
Stephen Dadio		UNT to Delaware River				

**1. CHANNEL/FLOODPLAIN:** Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal			Marginal			Poor		Severe									
<b>Channel / Floodplain</b>																				
	<p><b>Channel Geometry:</b> These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p><b>Channel Stability:</b> Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, it covers less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p><b>Active Floodplain Connection:</b> The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p><b>Channel Geometry:</b> These channels are slightly incised or overwidened, and contain a few areas of active erosion.</p> <p><b>Channel Stability:</b> Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p><b>Active Floodplain Connection:</b> The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>			<p><b>Channel Geometry:</b> These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p><b>Channel Stability:</b> Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p><b>Active Floodplain Connection:</b> The bankfull stream flows have infrequent connection to the active floodplain.</p>			<p><b>Channel Geometry:</b> These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p><b>Channel Stability:</b> Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p><b>Active Floodplain Connection:</b> The bankfull stream flows are not connected to the active floodplain.</p>		<p><b>Channel Geometry:</b> These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p><b>Channel Stability:</b> Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p><b>Active Floodplain Connection:</b> The bankfull stream flows are never connected to the active floodplain.</p>									
<b>SCORE</b>	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

**Comments:**

	<b>CI = (Score)/20</b>	
<b>SCORE</b>	14	0.70

**2. RIPARIAN VEGETATION:** Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
<b>Riparian Vegetation (Floodplain)</b>	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) &gt; 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p><b>Comments:</b></p>											
	<p><b>High Suboptimal:</b> Riparian area vegetation consists of a tree stratum (dbh &gt; 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>		<p><b>Low Suboptimal:</b> Riparian area vegetation consists of a tree stratum (dbh &gt; 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>		<p><b>High Marginal:</b> Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh &gt; 3 inches) present, with less than 30% tree canopy cover.</p>		<p><b>Low Marginal:</b> Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (&lt; 10 acres). If trees are present, tree stratum (dbh &gt; 3 inches) present, with less than 30% tree canopy cover with maintained</p>			<p><b>High Poor:</b> Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>		<p><b>Low Poor:</b> Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>								
<b>SCORE</b>	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category									
		100%	0%	0%	0%	0%	0%			<b>0.90</b>
	<b>Right Side</b>	Score:	18	0	0	0	0			
		<b>Total Sub-score:</b>	18.00	0.00	0.00	0.00	0.00			
		<b>Left Side</b>	Score:	18	0	0	0	<b>0.90</b>		
		<b>Total Sub-score:</b>	18.00	0.00	0.00	0.00	0.00		<b>CI = (Left Side CI + Right Side CI)/2</b>	
		<b>CI</b>								<b>0.90</b>

# Riverine Assessment Form 1 - Page 2

2/4/2017

**3. RIPARIAN ZONE OF INFLUENCE:** Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

	Condition Category														Comments:					
	Optimal				Suboptimal				Marginal				Poor							
	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.																			
<b>Riparian ZOI</b>	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with		High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, herbaceous trails, recently seeded and stabilized, or other comparable condition.		Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.			
	<b>High</b>				<b>Low</b>				<b>High</b>				<b>Low</b>		<b>High</b>		<b>Low</b>			
<b>SCORE</b>	<b>20</b>	<b>19</b>	<b>18</b>	<b>17</b>	<b>16</b>	<b>15</b>	<b>14</b>	<b>13</b>	<b>12</b>	<b>11</b>	<b>10</b>	<b>9</b>	<b>8</b>	<b>7</b>	<b>6</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

	Condition Category																					
<b>Right Side</b>	% Riparian Area:	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	<b>Side Sub-Index = SUM(%Areas*Scores)/20</b>	
	Score:	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		<b>0.80</b>
	Total Sub-score:	<b>16.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>
<b>Left Side</b>	% Riparian Area:	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	<b>CI = (Left Side CI + Right Side CI)/2</b>	
	Score:	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		<b>0.80</b>
	Total Sub-score:	<b>16.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>

**4. INSTREAM HABITAT:** Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

	Condition Category														Comments:								
	Optimal				Suboptimal				Marginal				Poor										
	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.																						
<b>Instream Habitat/ Available Cover</b>	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.										
	<b>High</b>				<b>Low</b>				<b>High</b>				<b>Low</b>		<b>High</b>		<b>Low</b>						
<b>SCORE</b>	<b>20</b>	<b>19</b>	<b>18</b>	<b>17</b>	<b>16</b>	<b>15</b>	<b>14</b>	<b>13</b>	<b>12</b>	<b>11</b>	<b>10</b>	<b>9</b>	<b>8</b>	<b>7</b>	<b>6</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>SCORE</b>	<b>14</b>	<b>0.70</b>

**5. CHANNEL ALTERATION:** Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

	Condition Category														Comments:								
	Negligible				Minor				Moderate				Severe										
	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.																						
<b>Channel Alteration</b>	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.								
	<b>High</b>				<b>Low</b>				<b>High</b>				<b>Low</b>		<b>High</b>		<b>Low</b>						
<b>SCORE</b>	<b>20</b>	<b>19</b>	<b>18</b>	<b>17</b>	<b>16</b>	<b>15</b>	<b>14</b>	<b>13</b>	<b>12</b>	<b>11</b>	<b>10</b>	<b>9</b>	<b>8</b>	<b>7</b>	<b>6</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>SCORE</b>	<b>17</b>	<b>0.85</b>

**RIVERINE CONDITION INDEX (RCI)**

<b>NOTE:</b> The CIs and RCI should be rounded to 2 decimal places.	<b>RCI = (Sum of all CI's)/5</b>	<b>0.79</b>
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*If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.*

**General Comments:**



# Riverine Assessment Form 1 - Page 2

2/4/2017

**3. RIPARIAN ZONE OF INFLUENCE:** Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

	Condition Category														Comments:														
	Optimal					Suboptimal					Marginal					Poor													
	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					<b>High Suboptimal:</b> Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					<b>Low Suboptimal:</b> Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					<b>High Marginal:</b> Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				<b>Low Marginal:</b> Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				<b>High Poor:</b> Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, herbaceous trails, recently seeded and stabilized, or other comparable condition.				<b>Low Poor:</b> Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
						<b>High</b>					<b>Low</b>				<b>High</b>				<b>Low</b>										
<b>SCORE</b>	<b>20</b>	<b>19</b>	<b>18</b>	<b>17</b>	<b>16</b>	<b>15</b>	<b>14</b>	<b>13</b>	<b>12</b>	<b>11</b>	<b>10</b>	<b>9</b>	<b>8</b>	<b>7</b>	<b>6</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>									

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

	Condition Category																						
<b>Right Side</b>	% Riparian Area:	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	<b>Side Sub-Index = SUM(%Areas*Scores)/20</b>	
	Score:	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		<b>0.60</b>
	Total Sub-score:	<b>12.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>
<b>Left Side</b>	% Riparian Area:	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	<b>CI = (Left Side CI + Right Side CI)/2</b>	
	Score:	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		<b>0.60</b>
	Total Sub-score:	<b>12.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>

**4. INSTREAM HABITAT:** Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

	Condition Category														Comments:									
	Optimal					Suboptimal					Marginal					Poor								
	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.								
															<b>High</b>					<b>Low</b>				<b>High</b>
<b>SCORE</b>	<b>20</b>	<b>19</b>	<b>18</b>	<b>17</b>	<b>16</b>	<b>15</b>	<b>14</b>	<b>13</b>	<b>12</b>	<b>11</b>	<b>10</b>	<b>9</b>	<b>8</b>	<b>7</b>	<b>6</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>SCORE</b>	<b>3</b>	<b>CI</b>	<b>0.15</b>

**5. CHANNEL ALTERATION:** Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

	Condition Category														Comments:									
	Negligible				Minor					Moderate				Severe										
	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.				<b>Minor High:</b> Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.					<b>Minor Low:</b> Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				<b>Moderate High:</b> Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				<b>Moderate Low:</b> Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.						
																							<b>High</b>	
<b>SCORE</b>	<b>20</b>	<b>19</b>	<b>18</b>	<b>17</b>	<b>16</b>	<b>15</b>	<b>14</b>	<b>13</b>	<b>12</b>	<b>11</b>	<b>10</b>	<b>9</b>	<b>8</b>	<b>7</b>	<b>6</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>SCORE</b>	<b>4</b>	<b>CI</b>	<b>0.20</b>

**RIVERINE CONDITION INDEX (RCI)**

<b>NOTE:</b> The CIs and RCI should be rounded to 2 decimal places.	<b>RCI = (Sum of all CI's)/5</b>	<b>0.31</b>
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*If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.*

**General Comments:**