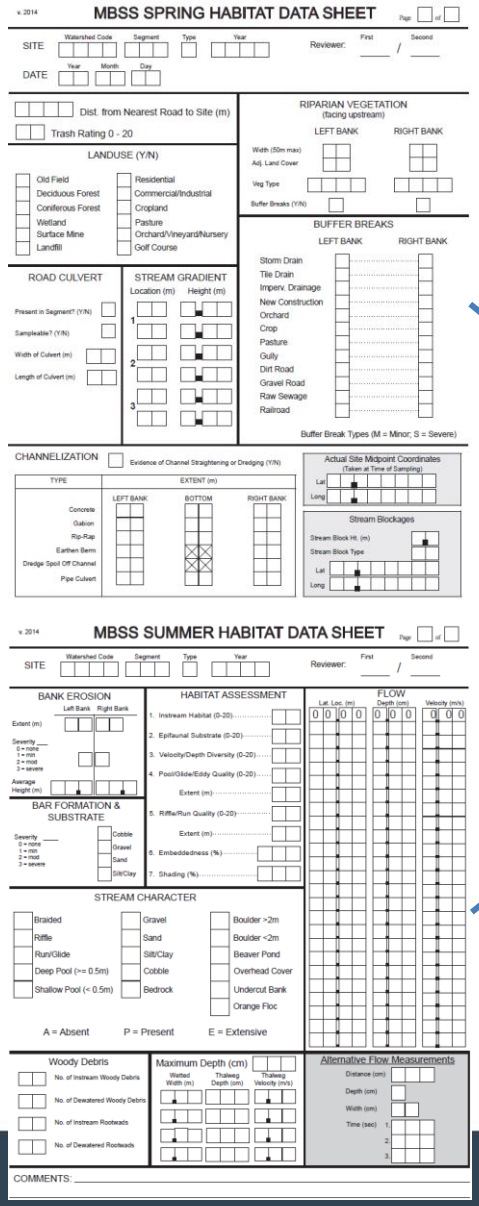
2019 MBSS Habitat Assessment Certification Training

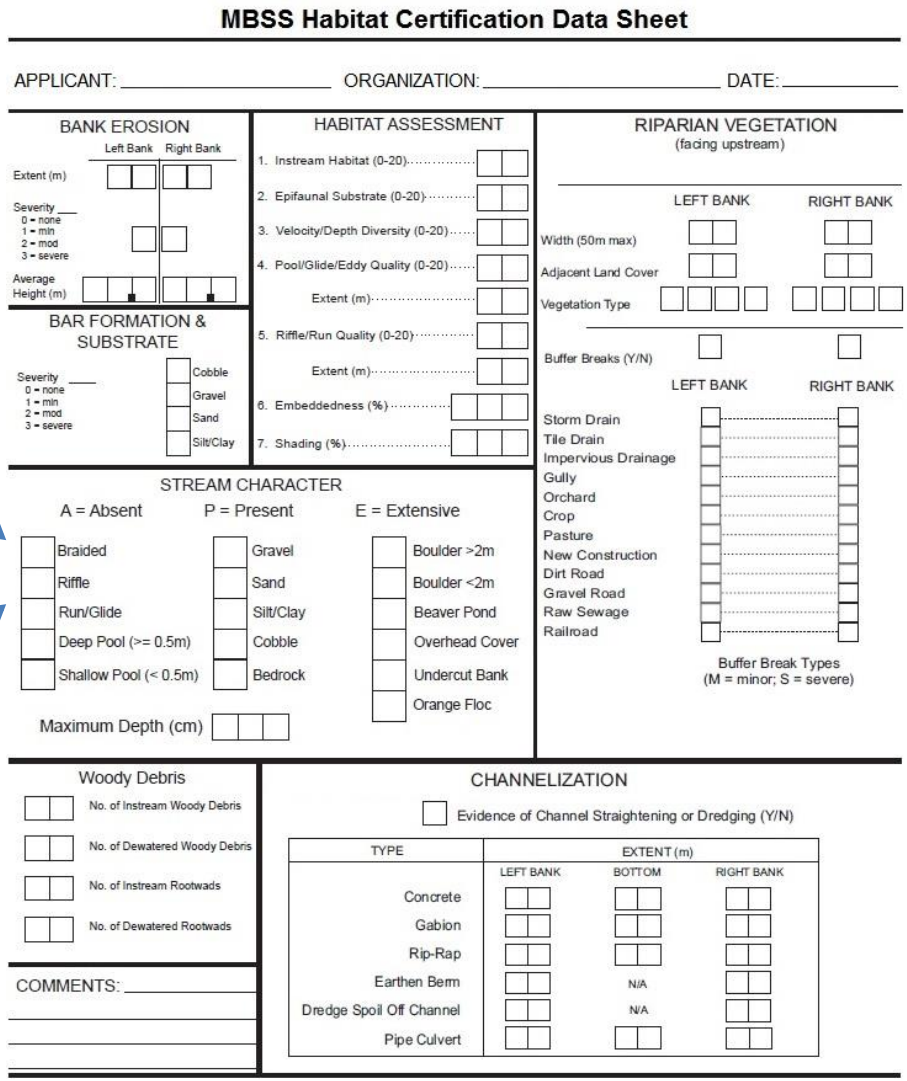
Howard Community College
May 28, 2019

MARYLAND DEPARTMENT OF NATURAL RESOURCES
MONITORING AND NON-TIDAL ASSESSMENT

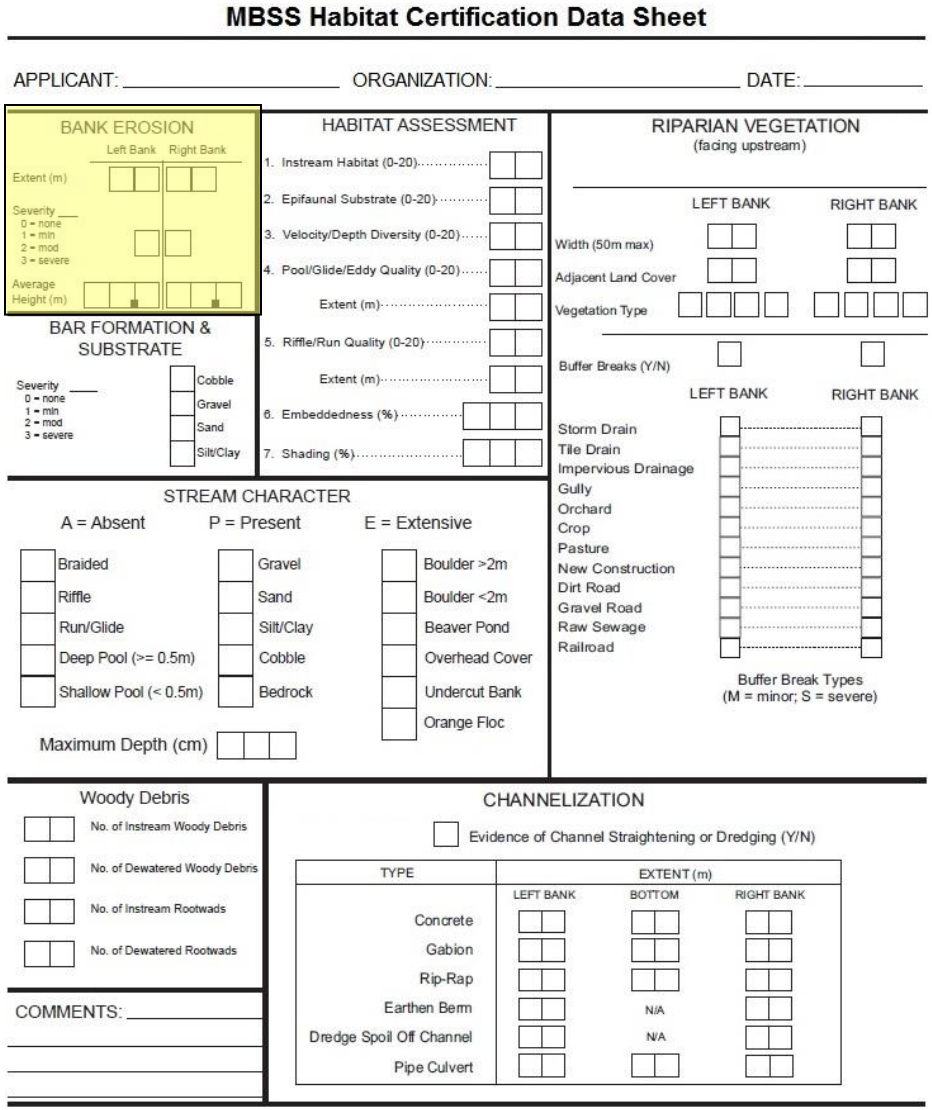
MARYLAND DEPARTMENT OF NATURAL RESOURCES

MBSS Summer Habitat





MBSS Summer Habitat



MBSS Habitat Certification Data Sheet

APPLICANT: _____ ORGANIZATION: _____ DATE: _____

BANK EROSION
Left Bank Right Bank
Extent (m)
Severity
0 = none
1 = min
2 = mod
3 = severe
Average Height (m)

BAR FORMATION & SUBSTRATE
Severity
0 = none
1 = min
2 = mod
3 = severe
Cobble
Gravel
Sand
Silt/Clay

HABITAT ASSESSMENT
1. Instream Habitat (0-20)
2. Epifaunal Substrate (0-20)
3. Velocity/Depth Diversity (0-20)
4. Pool/Glide/Eddy Quality (0-20)
Extent (m)
5. Riffle/Run Quality (0-20)
Extent (m)
6. Embeddedness (%)
7. Shading (%)

RIPARIAN VEGETATION
(facing upstream)
LEFT BANK RIGHT BANK
Width (50m max)
Adjacent Land Cover
Vegetation Type
Buffer Breaks (Y/N)
LEFT BANK RIGHT BANK
Storm Drain
Tile Drain
Impervious Drainage
Gully
Orchard
Crop
Pasture
New Construction
Dirt Road
Gravel Road
Raw Sewage
Railroad
Buffer Break Types
(M = minor; S = severe)

STREAM CHARACTER
A = Absent P = Present E = Extensive
Braided
Riffle
Run/Glide
Deep Pool (>= 0.5m)
Shallow Pool (< 0.5m)
Gravel
Sand
Silt/Clay
Cobble
Bedrock
Boulder >2m
Boulder <2m
Beaver Pond
Overhead Cover
Undercut Bank
Orange Floc
Maximum Depth (cm)

Woody Debris
No. of Instream Woody Debris
No. of Dewatered Woody Debris
No. of Instream Rootwads
No. of Dewatered Rootwads

CHANNELIZATION
Evidence of Channel Straightening or Dredging (Y/N)

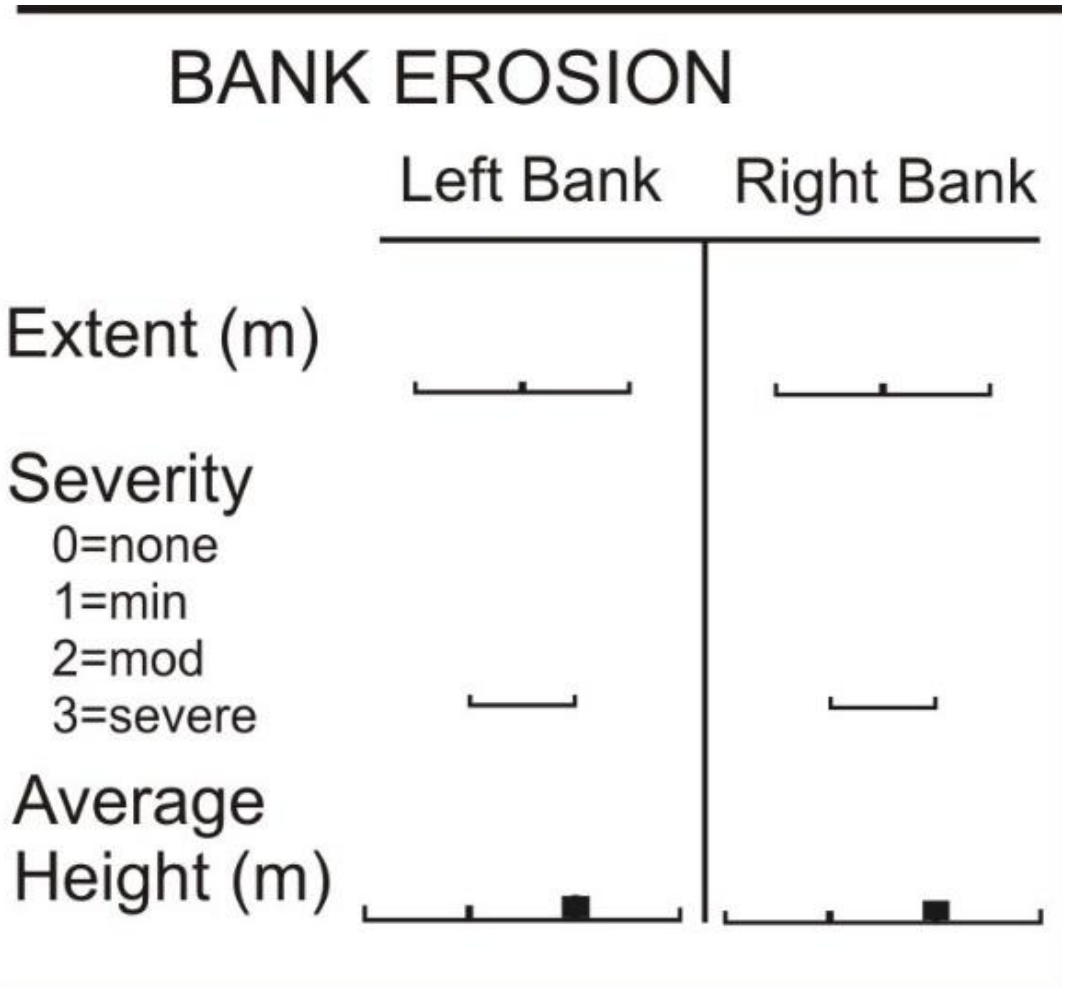
TYPE	EXTENT (m)		
	LEFT BANK	BOTTOM	RIGHT BANK
Concrete			
Gabion			
Rip-Rap			
Earthen Berm		N/A	
Dredge Spoil Off Channel		N/A	
Pipe Culvert			

COMMENTS: _____

MBSS Habitat Certification

- **Bank Erosion**
- Bar Formation
- Habitat Assessment
- Stream Character
- Woody Debris
- Riparian Vegetation
- Channelization

MBSS Summer Habitat



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No bank erosion

Extent = 0

Severity = 0 (none)

Average Height = 0

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Minimum bank erosion

Extent = 10 m

Severity = 1

Average Height = 0.2 m

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Moderate bank erosion

Extent = 40 m

Severity = 2

Average Height = 0.6 m

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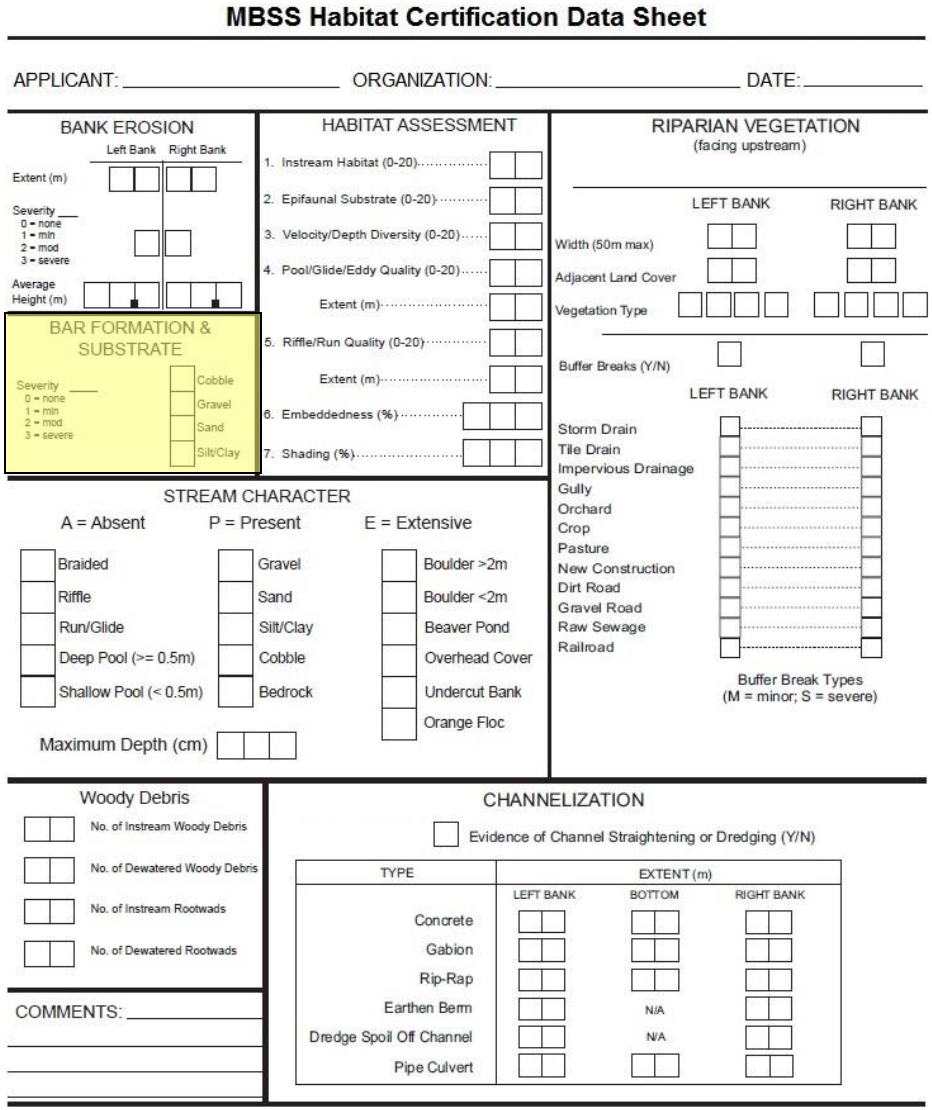
Severe bank erosion

Extent = 75 m

Severity = 3

Average Height = 2 m

MBSS Summer Habitat



MBSS Habitat Certification Data Sheet

APPLICANT: _____ ORGANIZATION: _____ DATE: _____

BANK EROSION

	Left Bank	Right Bank
Extent (m)		
Severity (0 = none, 1 = min, 2 = mod, 3 = severe)		
Average Height (m)		

BAR FORMATION & SUBSTRATE

Severity (0 = none, 1 = min, 2 = mod, 3 = severe)

- Cobble
- Gravel
- Sand
- Silt/Clay

HABITAT ASSESSMENT

1. Instream Habitat (0-20)
2. Epifaunal Substrate (0-20)
3. Velocity/Depth Diversity (0-20)
4. Pool/Glide/Eddy Quality (0-20)
   - Extent (m)
5. Riffle/Run Quality (0-20)
   - Extent (m)
6. Embeddedness (%)
7. Shading (%)

RIPARIAN VEGETATION (facing upstream)

	LEFT BANK	RIGHT BANK
Width (50m max)		
Adjacent Land Cover		
Vegetation Type		
Buffer Breaks (Y/N)		

	LEFT BANK	RIGHT BANK
Storm Drain		
Tile Drain		
Impervious Drainage		
Gully		
Orchard		
Crop		
Pasture		
New Construction		
Dirt Road		
Gravel Road		
Raw Sewage		
Railroad		

Buffer Break Types (M = minor; S = severe)

STREAM CHARACTER

A = Absent P = Present E = Extensive

Braided	Gravel	Boulder >2m
Riffle	Sand	Boulder <2m
Run/Glide	Silt/Clay	Beaver Pond
Deep Pool (>= 0.5m)	Cobble	Overhead Cover
Shallow Pool (< 0.5m)	Bedrock	Undercut Bank
		Orange Floc

Maximum Depth (cm)

Woody Debris

- No. of Instream Woody Debris
- No. of Dewatered Woody Debris
- No. of Instream Rootwads
- No. of Dewatered Rootwads

COMMENTS: _____

CHANNELIZATION

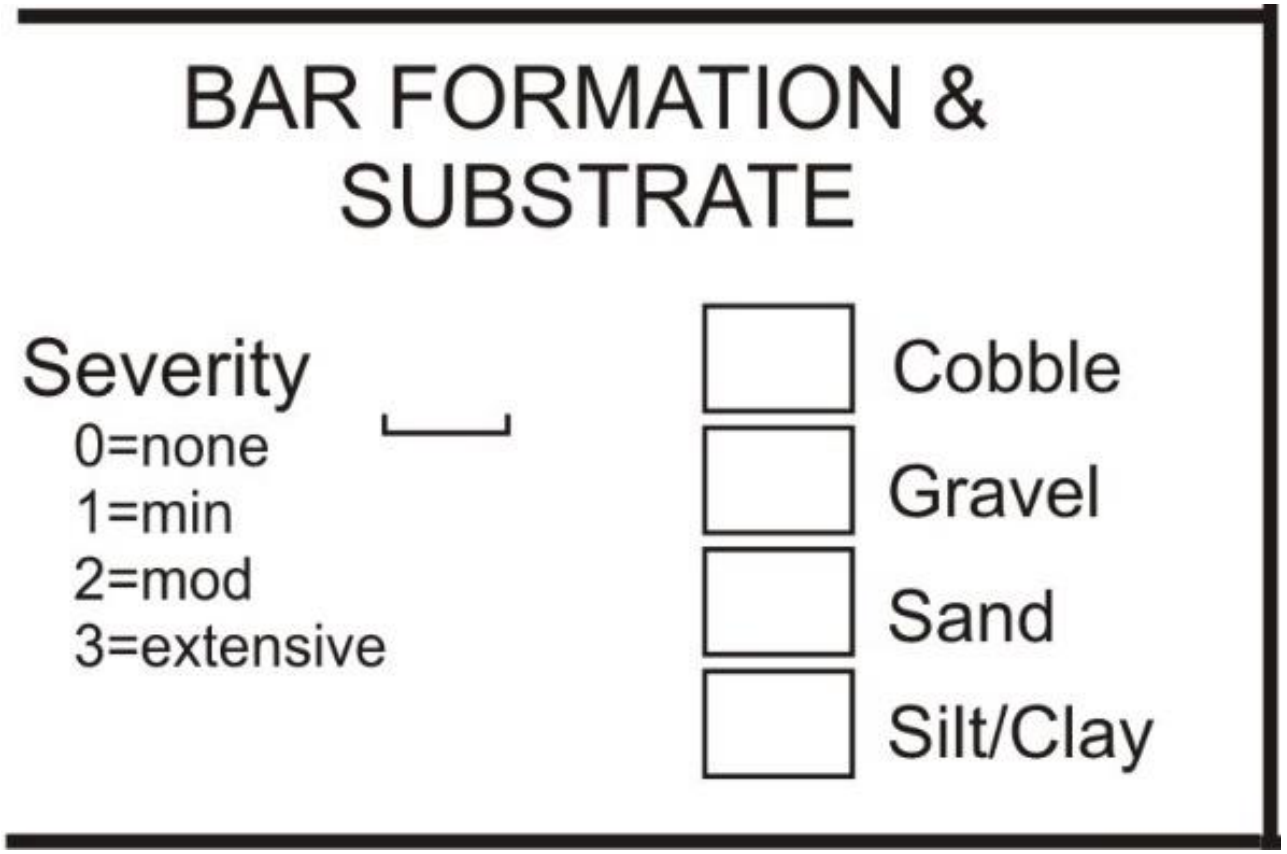
Evidence of Channel Straightening or Dredging (Y/N)

TYPE	EXTENT (m) LEFT BANK	BOTTOM	RIGHT BANK
Concrete			
Gabion			
Rip-Rap			
Earthen Berm		N/A	
Dredge Spoil Off Channel		N/A	
Pipe Culvert			

MBSS Summer Habitat Data Sheet

- Bank Erosion
- **Bar Formation**
- Habitat Assessment
- Stream Character
- Woody Debris
- Riparian Vegetation
- Channelization

MBSS Summer Habitat



Characterize most dominant substrate type

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Bar Formation = None

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Bar Formation = Minor
(Sand, Gravel)

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Bar Formation = Moderate
(Sand, Silt/Clay)

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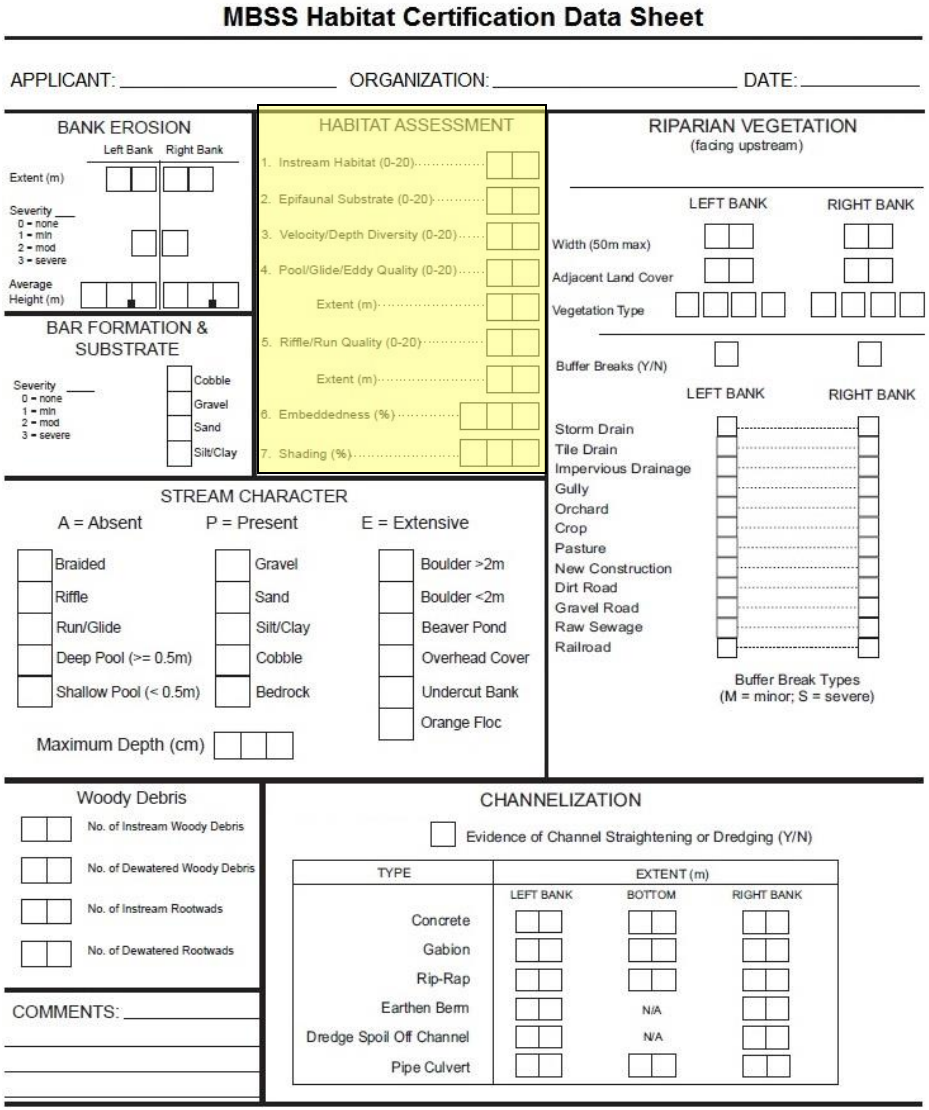
Bar Formation = Extensive
(Cobble, Gravel, Sand, Silt/Clay)

MBSS Summer Habitat



MBSS Habitat Certification Data Sheet

APPLICANT: _____ ORGANIZATION: _____ DATE: _____

BANK EROSION

	Left Bank	Right Bank
Extent (m)		
Severity (0 = none, 1 = min, 2 = mod, 3 = severe)		
Average Height (m)		

BAR FORMATION & SUBSTRATE

Severity (0 = none, 1 = min, 2 = mod, 3 = severe)

- Cobble
- Gravel
- Sand
- Silt/Clay

HABITAT ASSESSMENT

1. Instream Habitat (0-20)
2. Epifaunal Substrate (0-20)
3. Velocity/Depth Diversity (0-20)
4. Pool/Glide/Eddy Quality (0-20)
   Extent (m)
5. Riffle/Run Quality (0-20)
   Extent (m)
6. Embeddedness (%)
7. Shading (%)

RIPARIAN VEGETATION (facing upstream)

	LEFT BANK	RIGHT BANK
Width (50m max)		
Adjacent Land Cover		
Vegetation Type		
Buffer Breaks (Y/N)		

	LEFT BANK	RIGHT BANK
Storm Drain		
Tile Drain		
Impervious Drainage		
Gully		
Orchard		
Crop		
Pasture		
New Construction		
Dirt Road		
Gravel Road		
Raw Sewage		
Railroad		

Buffer Break Types (M = minor; S = severe)

STREAM CHARACTER

A = Absent P = Present E = Extensive

Braided	Gravel	Boulder >2m
Riffle	Sand	Boulder <2m
Run/Glide	Silt/Clay	Beaver Pond
Deep Pool (>= 0.5m)	Cobble	Overhead Cover
Shallow Pool (< 0.5m)	Bedrock	Undercut Bank
		Orange Floc

Maximum Depth (cm)

Woody Debris

- No. of Instream Woody Debris
- No. of Dewatered Woody Debris
- No. of Instream Rootwads
- No. of Dewatered Rootwads

COMMENTS: _____

CHANNELIZATION

Evidence of Channel Straightening or Dredging (Y/N)

TYPE	EXTENT (m) LEFT BANK	BOTTOM	RIGHT BANK
Concrete			
Gabion			
Rip-Rap			
Earthen Berm		N/A	
Dredge Spoil Off Channel		N/A	
Pipe Culvert			

MBSS Summer Habitat Data Sheet

- Bank Erosion
- Bar Formation
- **Habitat Assessment**
- Stream Character
- Woody Debris
- Riparian Vegetation
- Channelization

MBSS Summer Habitat

HABITAT ASSESSMENT

1. Instream Habitat (0-20) ..... | | |
2. Epifaunal Substrate (0-20) ..... | | |
3. Velocity/Depth Diversity (0-20) ..... | | |
4. Pool/Glide/Eddy Quality (0-20) ..... | | |
   Extent (m) ..... | | |
5. Riffle/Run Quality (0-20) ..... | | |
   Extent (m) ..... | | |
6. Embeddedness (%) ..... | | | |
7. Shading (%) ..... | | | |

MBSS Summer Habitat

MBSS Stream Habitat Assessment Guidance Sheet

Habitat Parameter	Optimal 16-20	Sub-Optimal 11-15	Marginal 6-10	Poor 0-5
1. Instream Habitat[a]	Greater than 50% of a variety of cobble, boulder, submerged logs, undercut banks, snags, rootwads, aquatic plants, or other stable habitat	30-50% of stable habitat. Adequate habitat	10-30% mix of stable habitat. Habitat availability less than desirable	Less than 10% stable habitat. Lack of habitat is obvious
2. Epifaunal Substrate[b]	Preferred substrate abundant, stable, and at full colonization potential (riffles well developed and dominated by cobble; and/or woody debris prevalent, not new, and not transient)	Abund. of cobble with gravel &/or boulders common; or woody de-bris, aquatic veg., undercut banks, or other pro-ductive surfaces common but not prevalent /suited for full colonization	Large boulders and/or bedrock prevalent; cobble, woody debris, or other preferred surfaces uncommon	Stable substrate lacking; or particles are over 75% surrounded by fine sediment or flocculent material
3. Velocity/Depth Diversity[c]	Slow (<0.3 m/s), deep (>0.5 m); slow, shallow (<0.5 m); fast (>0.3 m/s), deep; fast, shallow habitats all present	Only 3 of the 4 habitat categories present	Only 2 of the 4 habitat categories present	Dominated by 1 velocity/depth category (usually pools)
4. Pool/Glide/Eddy Quality[d]	Complex cover/&/or depth > 1.5 m; both deep (> .5 m)/shallows (< .2 m) present	Deep (>0.5 m) areas present; but only moderate cover	Shallows (<0.2 m) prevalent in pool/glide/eddy habitat; little cover	Max depth <0.2 m in pool/glide/eddy habitat; or absent completely
5. Riffle/Run Quality[e]	Riffle/run depth generally >10 cm, with maximum depth greater than 50 cm (maximum score); substrate stable (e.g. cobble, boulder) & variety of current velocities	Riffle/run depth generally 5-10 cm, variety of current velocities	Riffle/run depth generally 1-5 cm; primarily a single current velocity	Riffle/run depth < 1 cm; or riffle/run substrates concreted
6. Embeddedness[f]	Percentage that gravel, cobble, and boulder particles are surrounded by line sediment or flocculent material.			
7. Shading[g]	Percentage of segment that is shaded (duration is considered in scoring). 0% = fully exposed to sunlight all day in summer; 100% = fully and densely shaded all day in summer			

* Use to answer certification test questions

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MBSS Summer Habitat

Instream Habitat - Habitat quality as it relates to fishes

Habitat Parameter	Optimal 16-20	Sub-Optimal 11-15	Marginal 6-10	Poor 0-5
1. Instream Habitat[a]	Greater than 50% of a variety of cobble, boulder, submerged logs, undercut banks, snags, rootwads, aquatic plants, or other stable habitat	30-50% of stable habitat. Adequate habitat	10-30% mix of stable habitat. Habitat availability less than desirable	Less than 10% stable habitat. Lack of habitat is obvious

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Instream Habitat

Optimal 16-20
Greater than 50% of a variety of cobble, boulder, submerged logs, undercut banks, snags, rootwads, aquatic plants, or other stable habitat

Score = 20

Sub-Optimal 11-15
30-50% of stable habitat. Adequate habitat

Score = 14

Instream Habitat

Marginal 6-10
10-30% mix of stable habitat. Habitat availability less than desirable

Score = 8

Poor 0-5
Less than 10% stable habitat. Lack of habitat is obvious

Score = 4

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Epifaunal Substrate - Habitat quality as it relates to benthic macroinvertebrates

MBSS Stream Habitat Assessment Guidance Sheet

Habitat Parameter	Optimal 16-20	Sub-Optimal 11-15	Marginal 6-10	Poor 0-5
2. Epifaunal Substrate[(b)]	Preferred substrate abundant, stable, and at full colonization potential (riffles well developed and dominated by cobble; and/or woody debris prevalent, not new, and not transient)	Abund. of cobble with gravel &/or boulders common; or woody de-bris, aquatic veg., under-cut banks, or other pro-ductive surfaces common but not prevalent /suited for full colonization	Large boulders and/or bedrock prevalent; cobble, woody debris, or other preferred surfaces uncommon	Stable substrate lacking; or particles are over 75% surrounded by fine sediment or flocculent material

Epifaunal Substrate

Preferred substrate abundant, stable, and at full colonization potential (riffles well developed and dominated by cobble; and/or woody debris prevalent, not new, and not transient)	Optimal Score = 19	Abund. of cobble with gravel &/or boulders common; or woody de-bris, aquatic veg., under-cut banks, or other pro-ductive surfaces common but not prevalent /suited for full colonization

Sub-optimal
Score = 14

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Epifaunal Substrate

Large boulders and/or bedrock prevalent; cobble, woody debris, or other preferred surfaces uncommon

Marginal
Score = 8

Stable substrate lacking; or particles are over 75% surrounded by fine sediment or flocculent material

Poor
Score = 2

Velocity/Depth Diversity – Based on the variety of velocity/depth regimes present at a site

MBSS Stream Habitat Assessment Guidance Sheet

Habitat Parameter	Optimal 16-20	Sub-Optimal 11-15	Marginal 6-10	Poor 0-5
3. Velocity/Depth Diversity[(c)]	Slow (<0.3 m/s), deep (>0.5 m); slow, shallow (<0.5 m); fast (>0.3 m/s), deep; fast, shallow habitats all present	Only 3 of the 4 habitat categories present	Only 2 of the 4 habitat categories present	Dominated by 1 velocity/depth category (usually pools)

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Pool/Glide/Eddy Quality – Based on the depth and spatial complexity of slow water habitat present at site

MBSS Stream Habitat Assessment Guidance Sheet				
Habitat Parameter	Optimal 16-20	Sub-Optimal 11-15	Marginal 6-10	Poor 0-5
4. Pool/Glide/Eddy Quality[d]	Complex cover/&/or depth > 1.5 m; both deep (> .5 m)/shallows (< .2 m) present	Deep (>0.5 m) areas present; but only moderate cover	Shallows (<0.2 m) prevalent in pool/glide/eddy habitat; little cover	Max depth <0.2 m in pool/glide/eddy habitat; or absent completely

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MBSS Summer Habitat

Riffle/Run Quality – Based on the depth,complexity, and functional importance of riffle/run habitat present at site

MBSS Stream Habitat Assessment Guidance Sheet

Habitat Parameter	Optimal 16-20	Sub-Optimal 11-15	Marginal 6-10	Poor 0-5
5. Riffle/Run Quality[e]	Riffle/run depth generally >10 cm, with maximum depth greater than 50 cm (maximum score); substrate stable (e.g. cobble, boulder) & variety of current velocities	Riffle/run depth generally 5-10 cm, variety of current velocities	Riffle/run depth generally 1-5 cm; primarily a single current velocity	Riffle/run depth < 1 cm; or riffle/run substrates concreted

Embeddedness – Measured at fastest flowing section in the 75 m site

6.	Embeddedness[f]	Percentage that gravel, cobble, and boulder particles are surrounded by line sediment or flocculent material.

* Measure embeddedness in fastest flowing areas in the site
  - if no riffle within 75m site, riffle near the site can be used

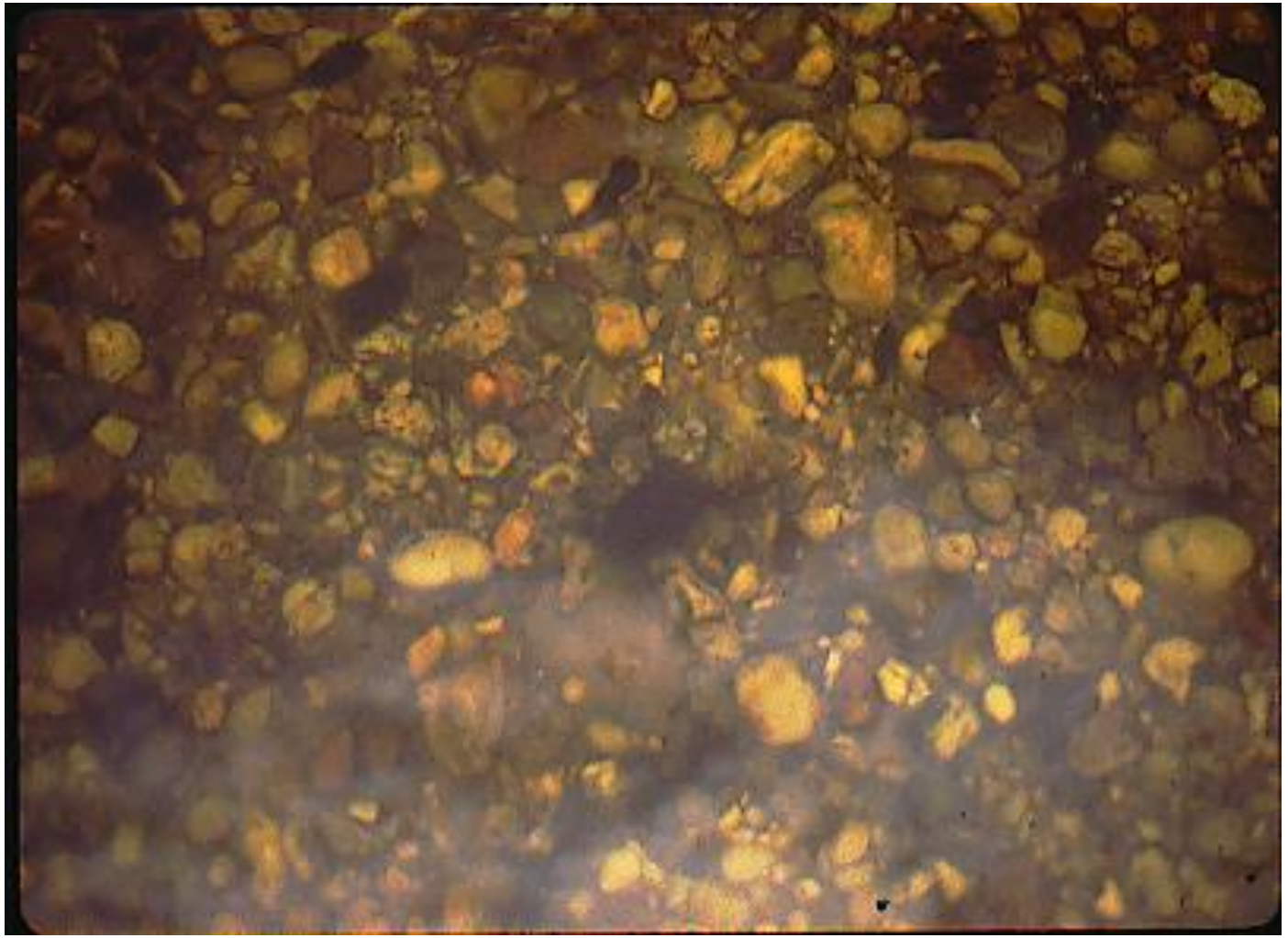
MBSS Summer Habitat

0%

MBSS Summer Habitat

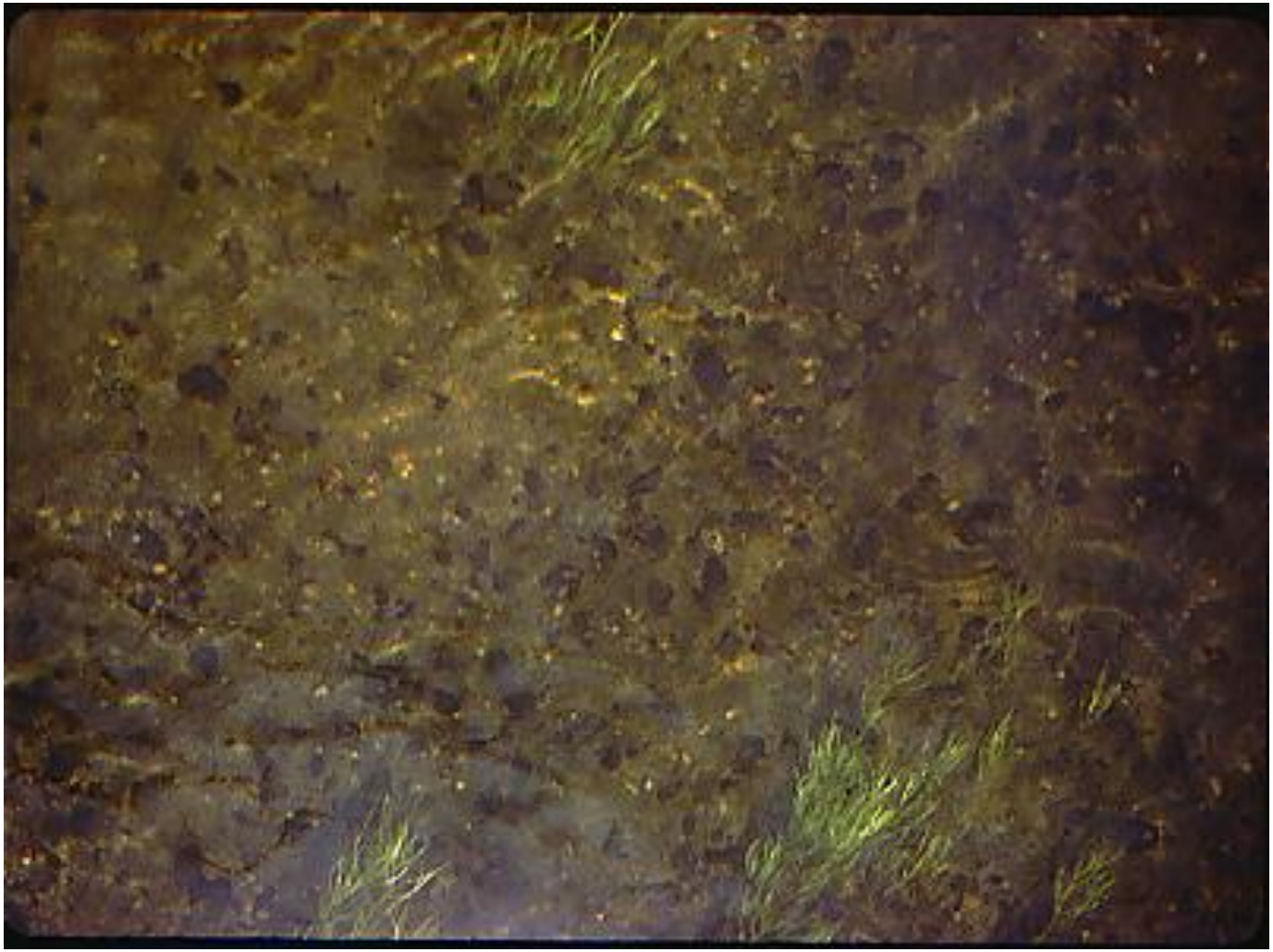
20%

MBSS Summer Habitat



50%

MBSS Summer Habitat



85%

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100%

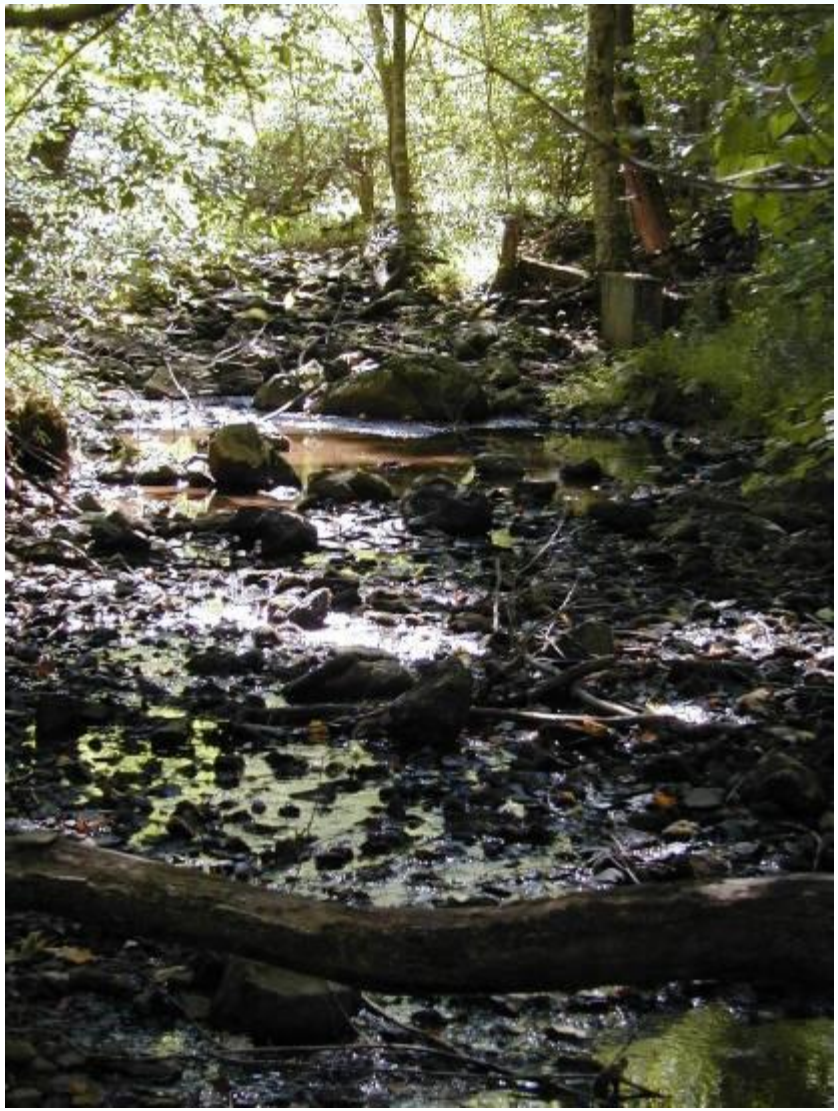
Percent Shading – Rated based on degree and duration of shading at a site throughout the day

7.	Shading[g]	Percentage of segment that is shaded (duration is considered in scoring). 0% = fully exposed to sunlight all day in summer; 100% = fully and densely shaded all day in summer

MBSS Summary Habitat

100%

MBSS Summer Habitat

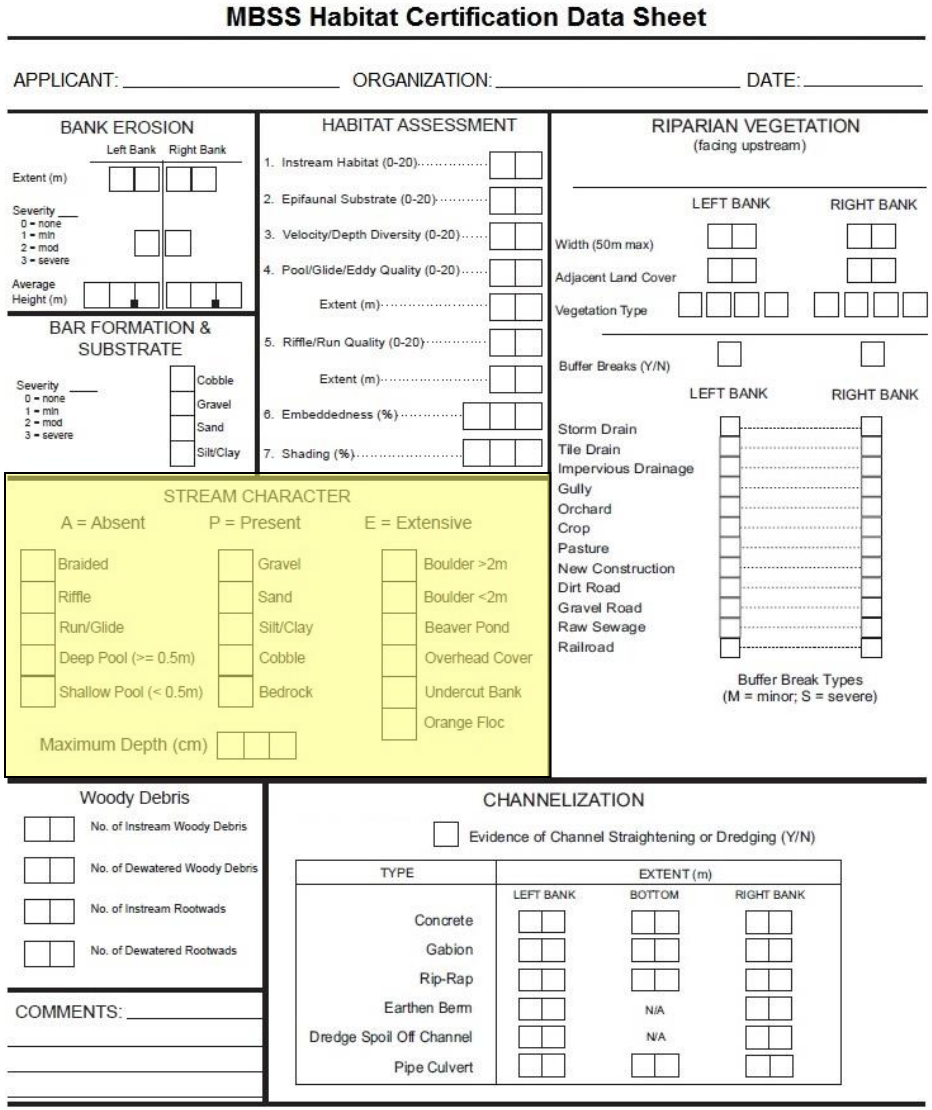


75%

MBSS Summer Habitat

0%

MBSS Summer Habitat



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APPLICANT: _____ ORGANIZATION: _____ DATE: _____

BANK EROSION

	Left Bank	Right Bank
Extent (m)		
Severity (0 = none, 1 = min, 2 = mod, 3 = severe)		
Average Height (m)		

BAR FORMATION & SUBSTRATE

Severity (0 = none, 1 = min, 2 = mod, 3 = severe) ___

- Cobble
- Gravel
- Sand
- Silt/Clay

HABITAT ASSESSMENT

1. Instream Habitat (0-20)
2. Epifaunal Substrate (0-20)
3. Velocity/Depth Diversity (0-20)
4. Pool/Glide/Eddy Quality (0-20)
   - Extent (m)
5. Riffle/Run Quality (0-20)
   - Extent (m)
6. Embeddedness (%)
7. Shading (%)

RIPARIAN VEGETATION (facing upstream)

	LEFT BANK	RIGHT BANK
Width (50m max)		
Adjacent Land Cover		
Vegetation Type		

Buffer Breaks (Y/N)

	LEFT BANK	RIGHT BANK
Storm Drain		
Tile Drain		
Impervious Drainage		
Gully		
Orchard		
Crop		
Pasture		
New Construction		
Dirt Road		
Gravel Road		
Raw Sewage		
Railroad		

Buffer Break Types (M = minor; S = severe)

STREAM CHARACTER

A = Absent P = Present E = Extensive

Braided	Gravel	Boulder >2m
Riffle	Sand	Boulder <2m
Run/Glide	Silt/Clay	Beaver Pond
Deep Pool (>= 0.5m)	Cobble	Overhead Cover
Shallow Pool (< 0.5m)	Bedrock	Undercut Bank
		Orange Floc

Maximum Depth (cm)

Woody Debris

- No. of Instream Woody Debris
- No. of Dewatered Woody Debris
- No. of Instream Rootwads
- No. of Dewatered Rootwads

COMMENTS: _____

CHANNELIZATION

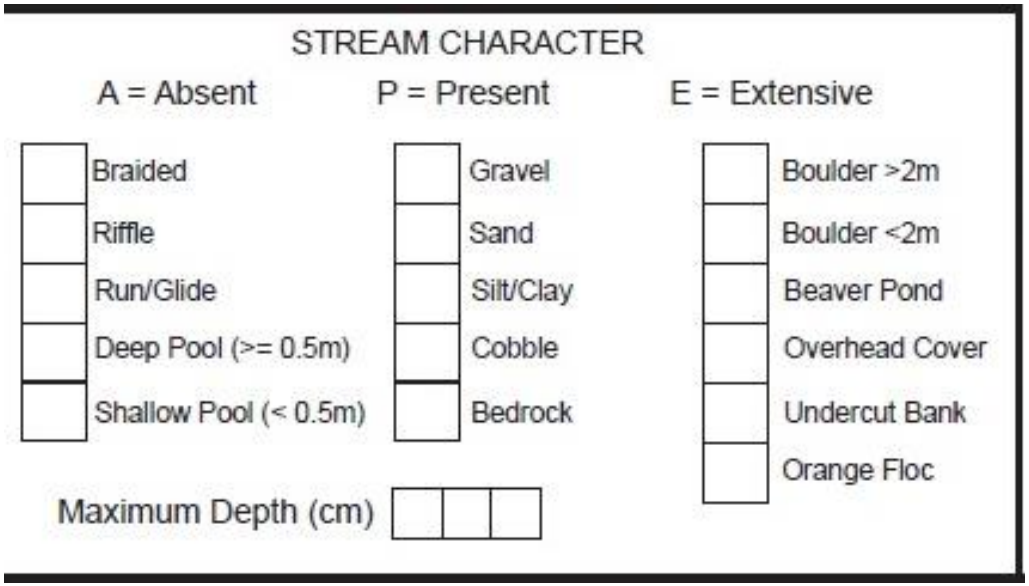
Evidence of Channel Straightening or Dredging (Y/N)

TYPE	EXTENT (m)		
	LEFT BANK	BOTTOM	RIGHT BANK
Concrete			
Gabion			
Rip-Rap			
Earthen Berm		N/A	
Dredge Spoil Off Channel		N/A	
Pipe Culvert			

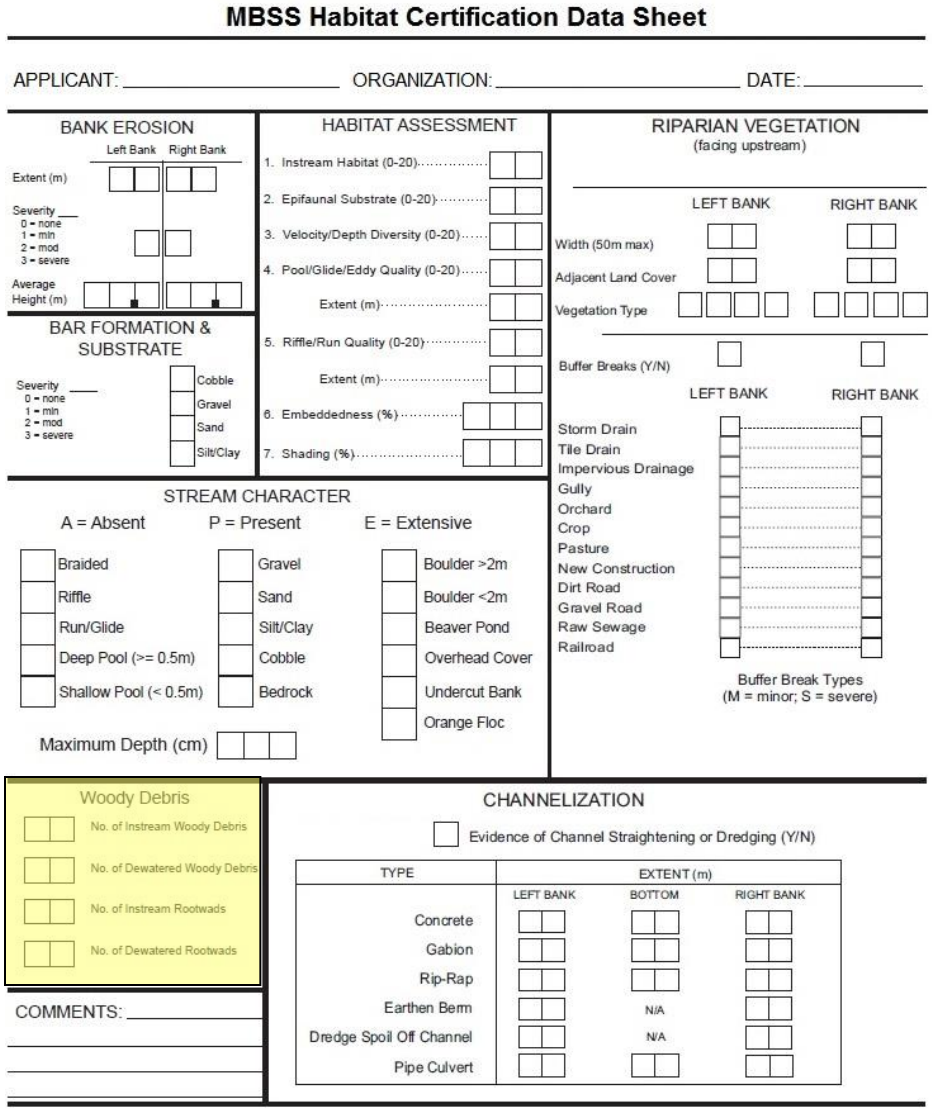
MBSS Summer Habitat Data Sheet

- Bank Erosion
- Bar Formation
- Habitat Assessment
- **Stream Character**
- Woody Debris
- Riparian Vegetation
- Channelization

MBSS Summer Habitat



MBSS Summer Habitat



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Average Height (m)		

BAR FORMATION & SUBSTRATE

Severity (0 = none, 1 = min, 2 = mod, 3 = severe) ____

- Cobble
- Gravel
- Sand
- Silt/Clay

HABITAT ASSESSMENT

1. Instream Habitat (0-20)
2. Epifaunal Substrate (0-20)
3. Velocity/Depth Diversity (0-20)
4. Pool/Glide/Eddy Quality (0-20)
   - Extent (m)
5. Riffle/Run Quality (0-20)
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6. Embeddedness (%)
7. Shading (%)

RIPARIAN VEGETATION (facing upstream)

	LEFT BANK	RIGHT BANK
Width (50m max)		
Adjacent Land Cover		
Vegetation Type		

Buffer Breaks (Y/N)

	LEFT BANK	RIGHT BANK
Storm Drain		
Tile Drain		
Impervious Drainage		
Gully		
Orchard		
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New Construction		
Dirt Road		
Gravel Road		
Raw Sewage		
Railroad		

Buffer Break Types (M = minor; S = severe)

STREAM CHARACTER

A = Absent P = Present E = Extensive

- Braided
- Riffle
- Run/Glide
- Deep Pool (>= 0.5m)
- Shallow Pool (< 0.5m)
- Gravel
- Sand
- Silt/Clay
- Cobble
- Bedrock
- Boulder >2m
- Boulder <2m
- Beaver Pond
- Overhead Cover
- Undercut Bank
- Orange Floc

Maximum Depth (cm)

Woody Debris

- No. of Instream Woody Debris
- No. of Dewatered Woody Debris
- No. of Instream Rootwads
- No. of Dewatered Rootwads

CHANNELIZATION

Evidence of Channel Straightening or Dredging (Y/N)

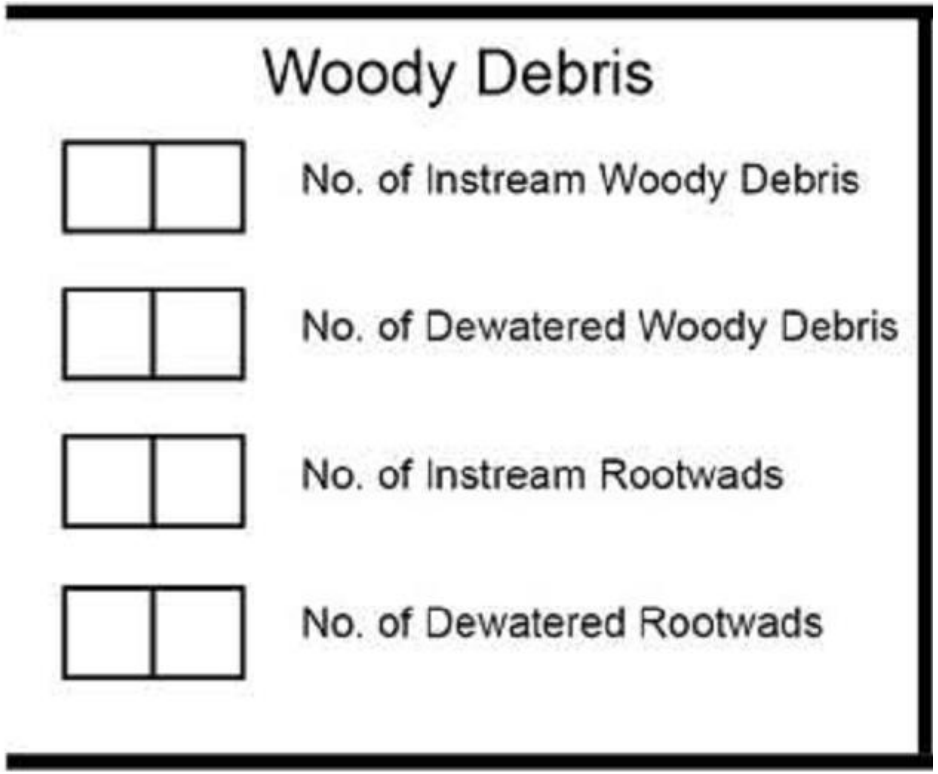
TYPE	EXTENT (m) LEFT BANK	BOTTOM	RIGHT BANK
Concrete			
Gabion			
Rip-Rap			
Earthen Berm		N/A	
Dredge Spoil Off Channel		N/A	
Pipe Culvert			

COMMENTS: _____

MBSS Summer Habitat Data Sheet

- Bank Erosion
- Bar Formation
- Habitat Assessment
- Stream Character
- **Woody Debris**
- Riparian Vegetation
- Channelization

MBSS Summer Habitat



Large Woody Debris

- 10 cm diameter
- 1.5 m long

Rootwads

- 15 cm DBH

Instream

- In direct contact with water

Dewatered

- Potential to enter stream

MBSS Summer Habitat

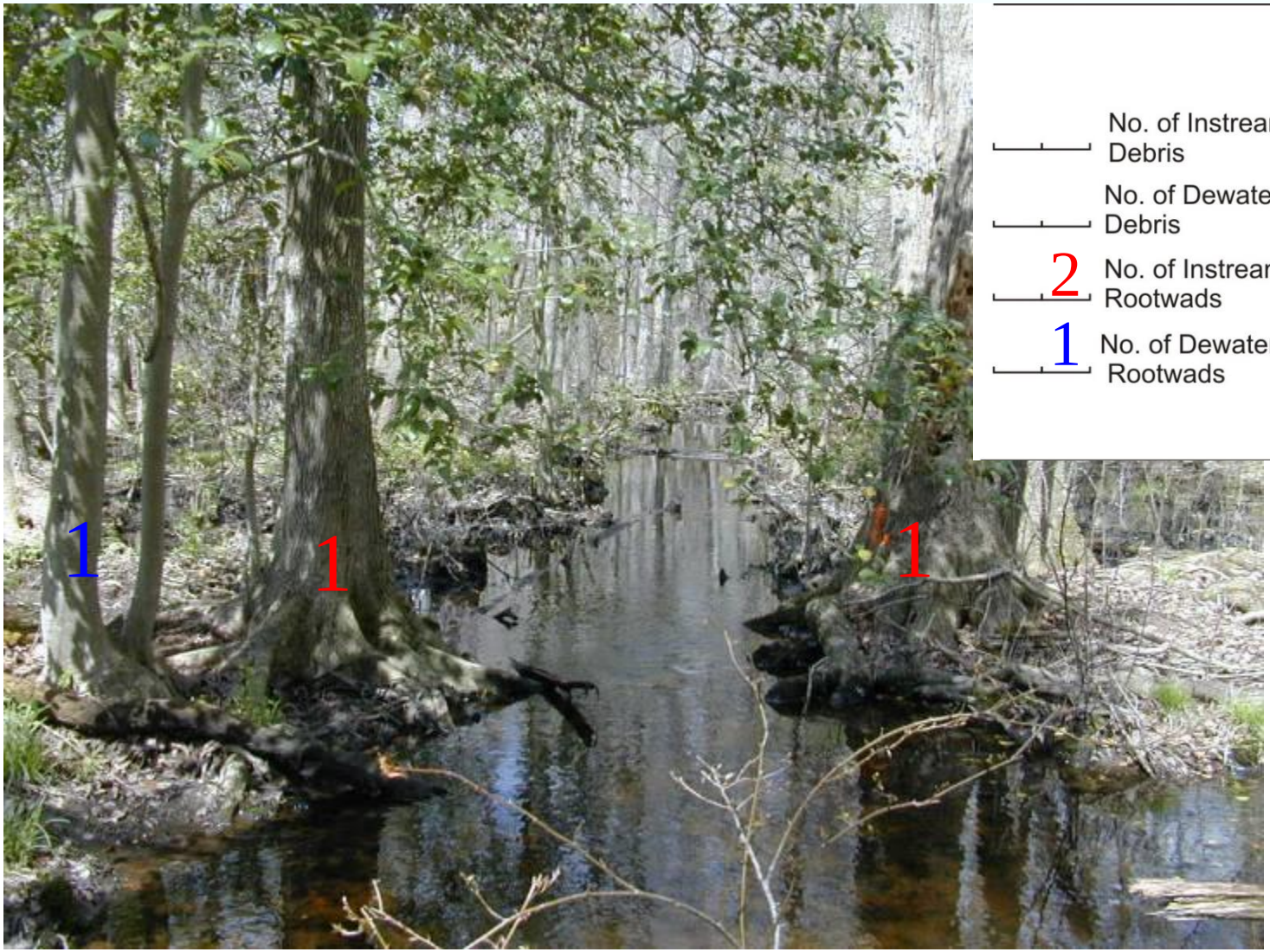
2 No. of Instream Woody Debris

1 No. of Dewatered Woody Debris

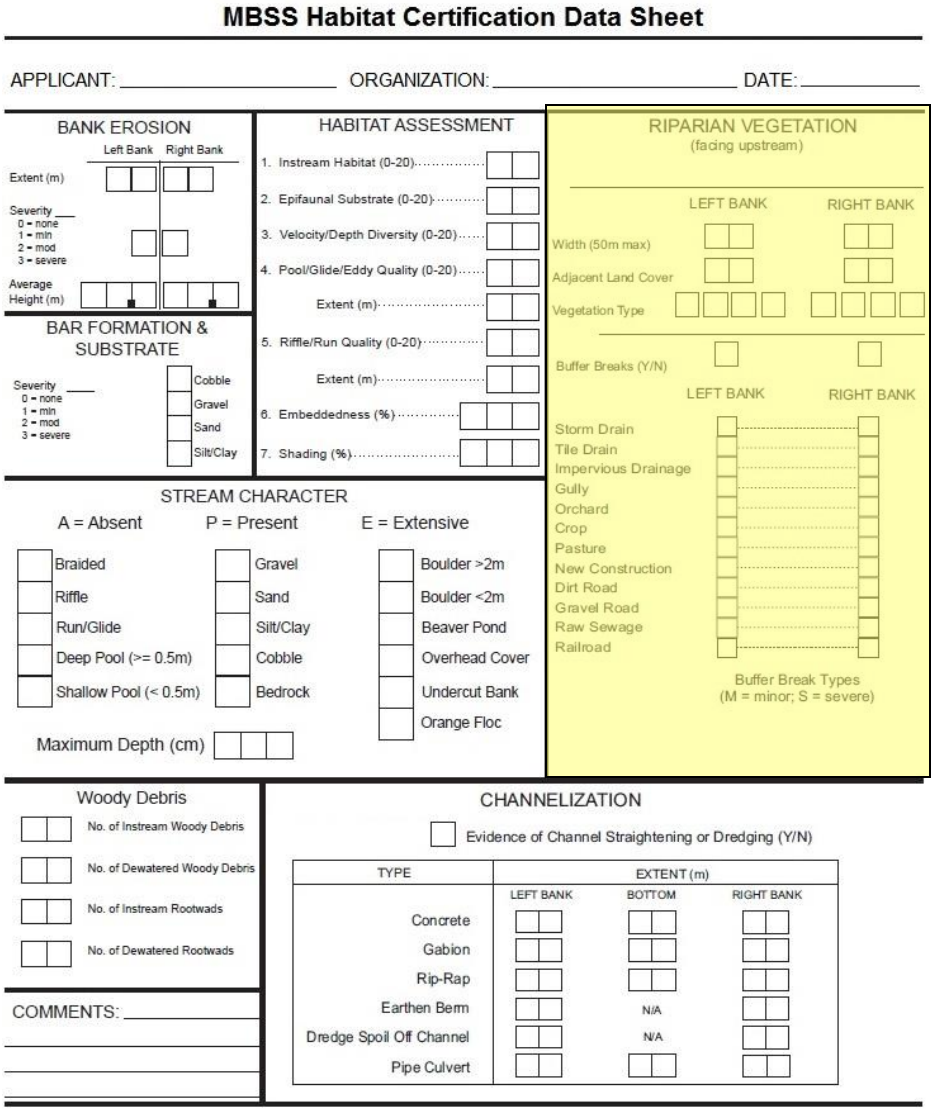
No. of Instream Rootwads

No. of Dewatered Rootwads

MBSS Summer Habitat



MBSS Summer Habitat



MBSS Habitat Certification Data Sheet

APPLICANT: _____ ORGANIZATION: _____ DATE: _____

BANK EROSION

	Left Bank	Right Bank
Extent (m)		
Severity (0 = none, 1 = min, 2 = mod, 3 = severe)		
Average Height (m)		

BAR FORMATION & SUBSTRATE

Severity (0 = none, 1 = min, 2 = mod, 3 = severe) ____

- Cobble
- Gravel
- Sand
- Silt/Clay

HABITAT ASSESSMENT

1. Instream Habitat (0-20)
2. Epifaunal Substrate (0-20)
3. Velocity/Depth Diversity (0-20)
4. Pool/Glide/Eddy Quality (0-20)
   - Extent (m)
5. Riffle/Run Quality (0-20)
   - Extent (m)
6. Embeddedness (%)
7. Shading (%)

STREAM CHARACTER

A = Absent P = Present E = Extensive

Braided	Gravel	Boulder >2m
Riffle	Sand	Boulder <2m
Run/Glide	Silt/Clay	Beaver Pond
Deep Pool (>= 0.5m)	Cobble	Overhead Cover
Shallow Pool (< 0.5m)	Bedrock	Undercut Bank
		Orange Floc

Maximum Depth (cm)

RIPARIAN VEGETATION
(facing upstream)

	LEFT BANK	RIGHT BANK
Width (50m max)		
Adjacent Land Cover		
Vegetation Type		
Buffer Breaks (Y/N)		

	LEFT BANK	RIGHT BANK
Storm Drain		
Tile Drain		
Impervious Drainage		
Gully		
Orchard		
Crop		
Pasture		
New Construction		
Dirt Road		
Gravel Road		
Raw Sewage		
Railroad		

Buffer Break Types
(M = minor; S = severe)

Woody Debris

- No. of Instream Woody Debris
- No. of Dewatered Woody Debris
- No. of Instream Rootwads
- No. of Dewatered Rootwads

COMMENTS: _____

CHANNELIZATION

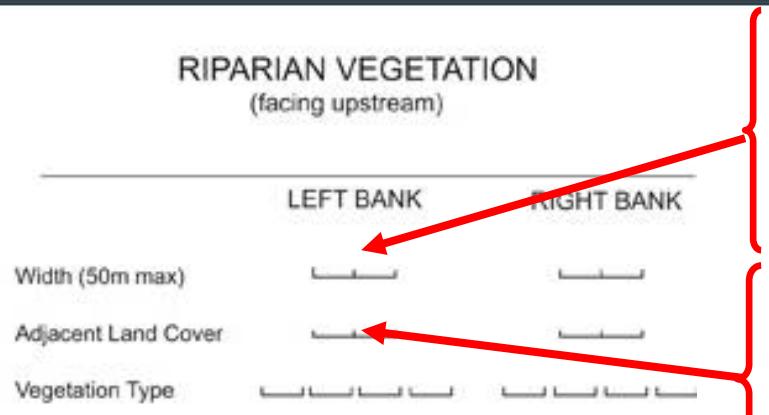
Evidence of Channel Straightening or Dredging (Y/N)

TYPE	EXTENT (m) LEFT BANK	BOTTOM	RIGHT BANK
Concrete			
Gabion			
Rip-Rap			
Earthen Berm		N/A	
Dredge Spoil Off Channel		N/A	
Pipe Culvert			

MBSS Summer Habitat Data Sheet

- Bank Erosion
- Bar Formation
- Habitat Assessment
- Stream Character
- Woody Debris
- **Riparian Vegetation**
- Channelization

MBSS Summer Habitat



Measure the average width of vegetated riparian buffer on each side of stream. (Max width = 50m)

No vegetation = No Buffer

Record the dominant type of land cover directly adjacent to the riparian buffer.

Riparian Buffer Zone / Adjacent Land Cover Types

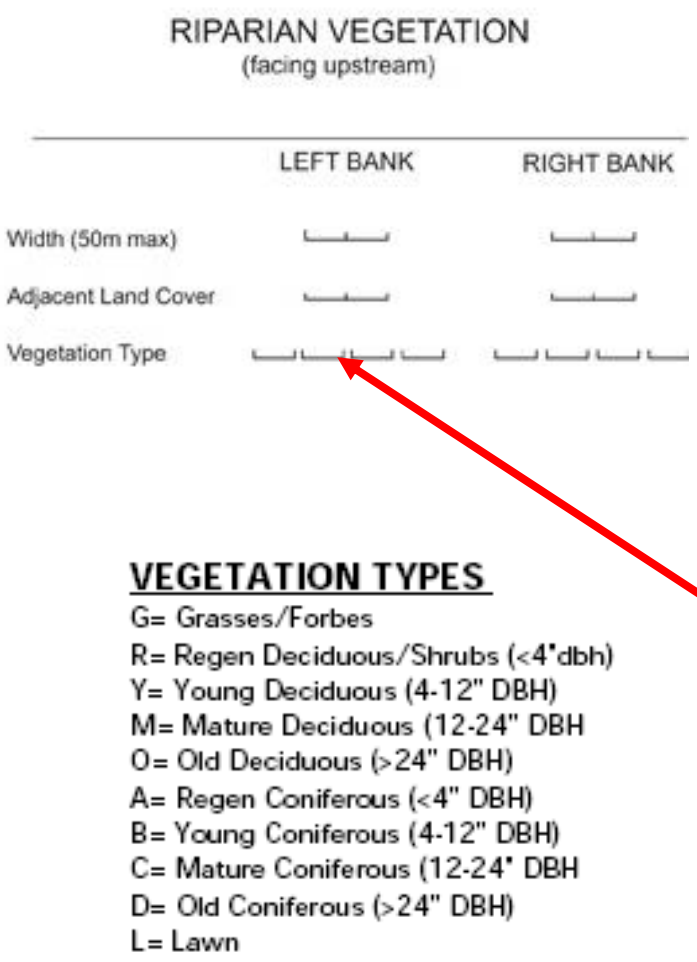
Riparian Buffer vegetation

Adjacent land cover

FR = Forest
OF = Old Field
EM = Emergent Vegetation
LN = Mowed Lawn
TG = Tall Grass
LO = Logged Area
SL = Bare Soil
RR = Railroad
PV = Paved Road
PK = Parking Lot/ Industrial/ Commerical
GR = Gravel Road
DI = Dirt Road
PA = Pasture
OR = Orchard
CP = Cropland
HO = Housing

If a non-buffer landcover is encountered within 50m of the stream/site, the buffer ends: record average buffer width to that location and adjacent land cover as the appropriate type encountered

MBSS Summer Habitat

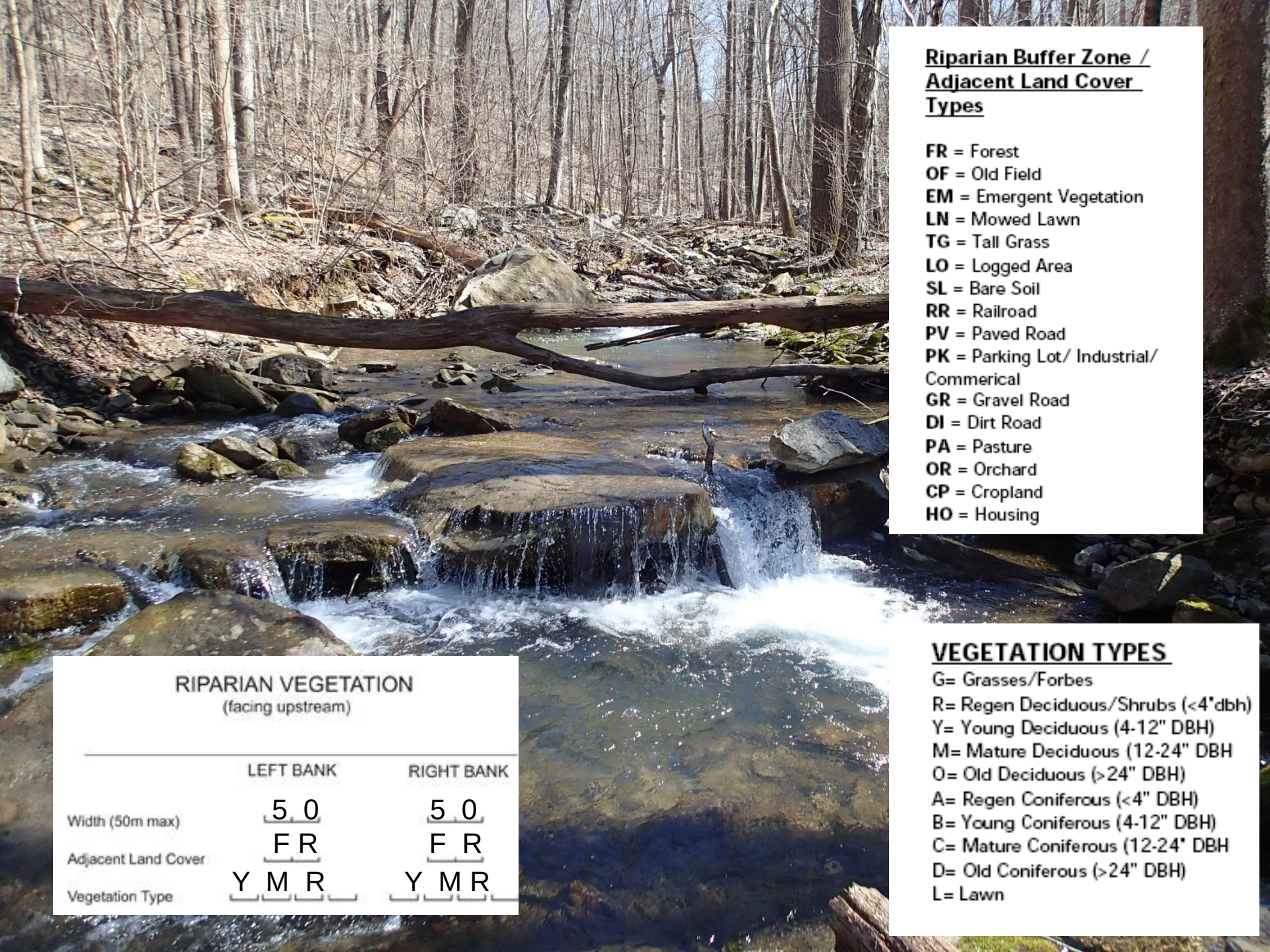


Record the dominant vegetation in the buffer

List vegetation type in order of dominance

Dominance based on combination of stem density and canopy density.


03/12/2019



Riparian Buffer Zone / Adjacent Land Cover Types

FR = Forest
OF = Old Field
EM = Emergent Vegetation
LN = Mowed Lawn
TG = Tall Grass
LO = Logged Area
SL = Bare Soil
RR = Railroad
PV = Paved Road
PK = Parking Lot/ Industrial/ Commerical
GR = Gravel Road
DI = Dirt Road
PA = Pasture
OR = Orchard
CP = Cropland
HO = Housing

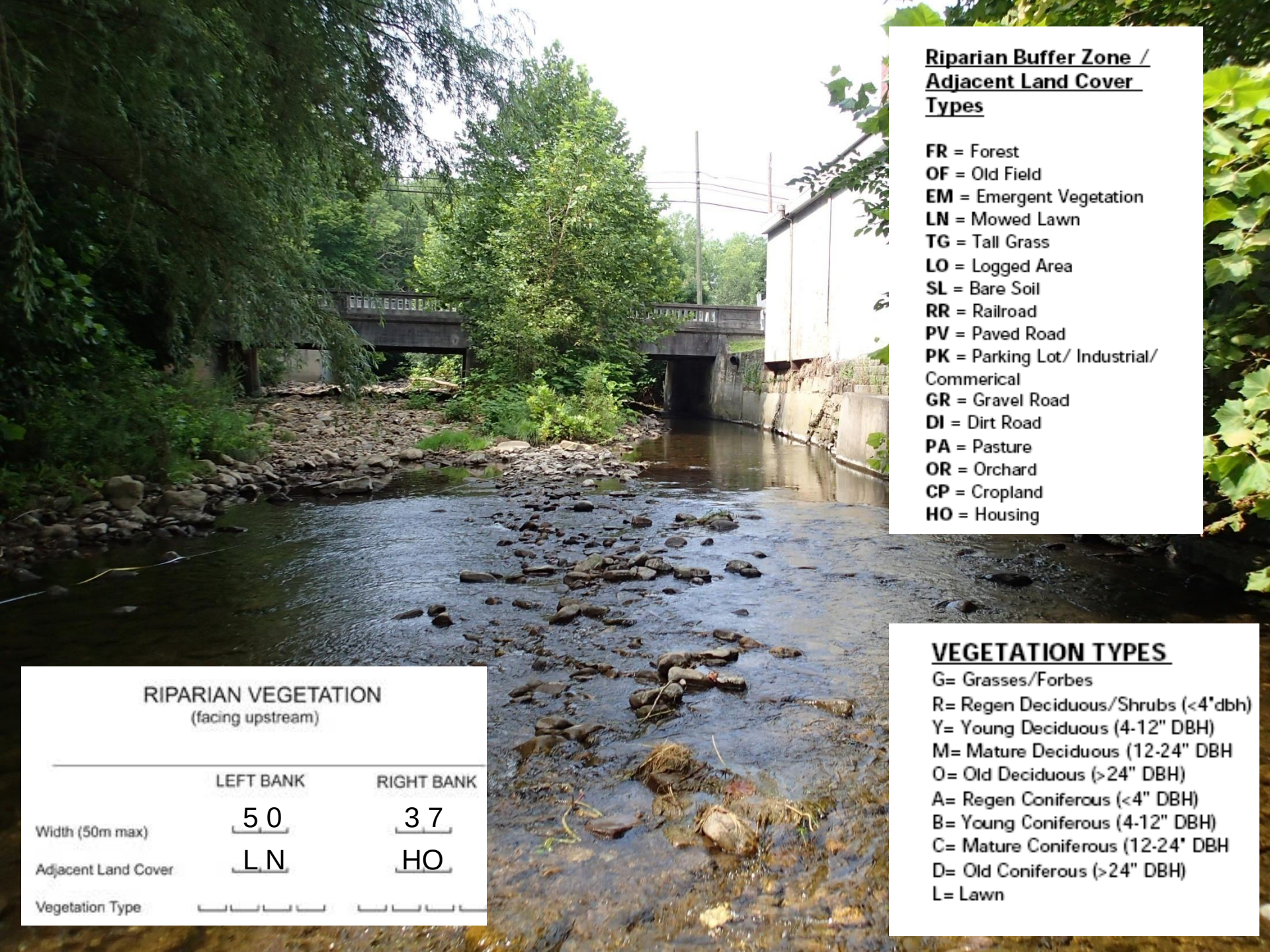
RIPARIAN VEGETATION
(facing upstream)

	LEFT BANK	RIGHT BANK
Width (50m max)	5 0	5 0
Adjacent Land Cover	F R	F R
Vegetation Type	Y M R	Y M R

VEGETATION TYPES

G= Grasses/Forbes
R= Regen Deciduous/Shrubs (<4"dbh)
Y= Young Deciduous (4-12" DBH)
M= Mature Deciduous (12-24" DBH
O= Old Deciduous (>24" DBH)
A= Regen Coniferous (<4" DBH)
B= Young Coniferous (4-12" DBH)
C= Mature Coniferous (12-24" DBH
D= Old Coniferous (>24" DBH)
L= Lawn


07/29/2015



Riparian Buffer Zone / Adjacent Land Cover Types

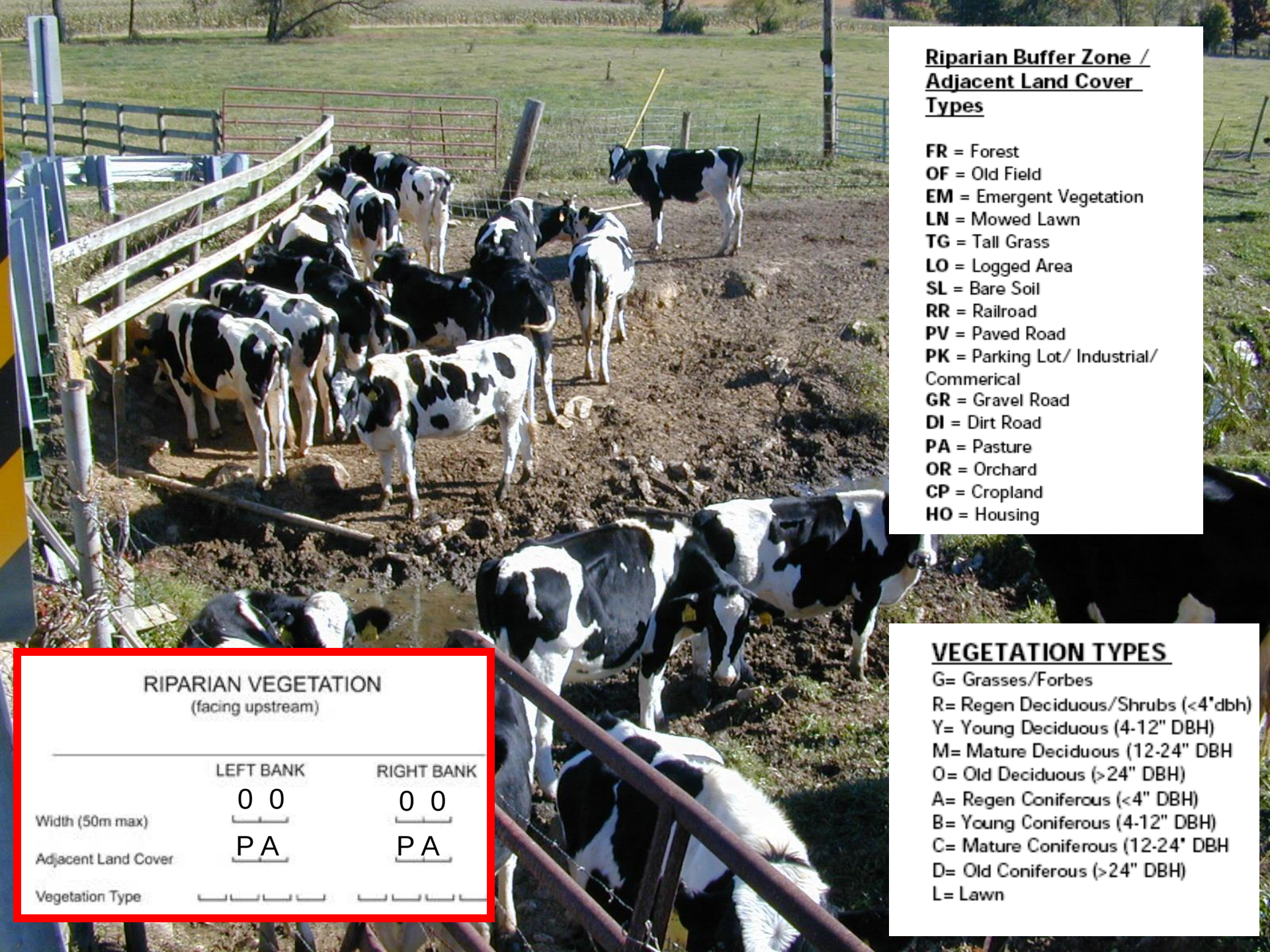
FR = Forest
OF = Old Field
EM = Emergent Vegetation
LN = Mowed Lawn
TG = Tall Grass
LO = Logged Area
SL = Bare Soil
RR = Railroad
PV = Paved Road
PK = Parking Lot/ Industrial/ Commerical
GR = Gravel Road
DI = Dirt Road
PA = Pasture
OR = Orchard
CP = Cropland
HO = Housing

RIPARIAN VEGETATION
(facing upstream)

	LEFT BANK	RIGHT BANK
Width (50m max)	50	37
Adjacent Land Cover	LN	HO
Vegetation Type		

VEGETATION TYPES

G= Grasses/Forbes
R= Regen Deciduous/Shrubs (<4"dbh)
Y= Young Deciduous (4-12" DBH)
M= Mature Deciduous (12-24" DBH
O= Old Deciduous (>24" DBH)
A= Regen Coniferous (<4" DBH)
B= Young Coniferous (4-12" DBH)
C= Mature Coniferous (12-24" DBH
D= Old Coniferous (>24" DBH)
L= Lawn



Riparian Buffer Zone / Adjacent Land Cover Types

FR = Forest
OF = Old Field
EM = Emergent Vegetation
LN = Mowed Lawn
TG = Tall Grass
LO = Logged Area
SL = Bare Soil
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PV = Paved Road
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VEGETATION TYPES

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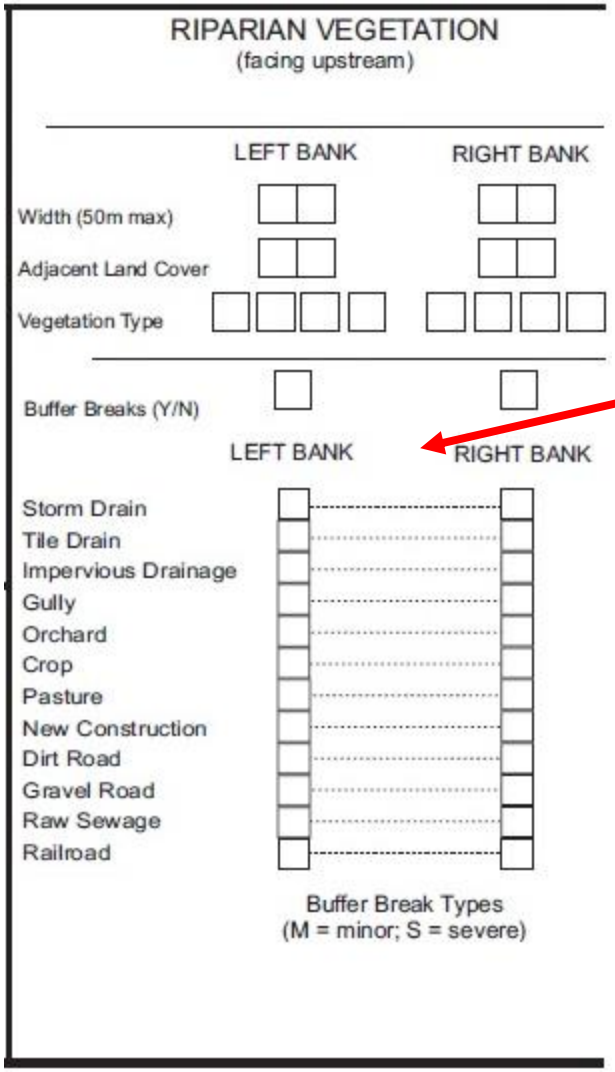
C= Mature Coniferous (12-24" DBH
D= Old Coniferous (>24" DBH)
L= Lawn

RIPARIAN VEGETATION

(facing upstream)

	LEFT BANK	RIGHT BANK
Width (50m max)	0 0	0 0
Adjacent Land Cover	P A	P A
Vegetation Type		

MBSS Summer Habitat



Buffer Breaks

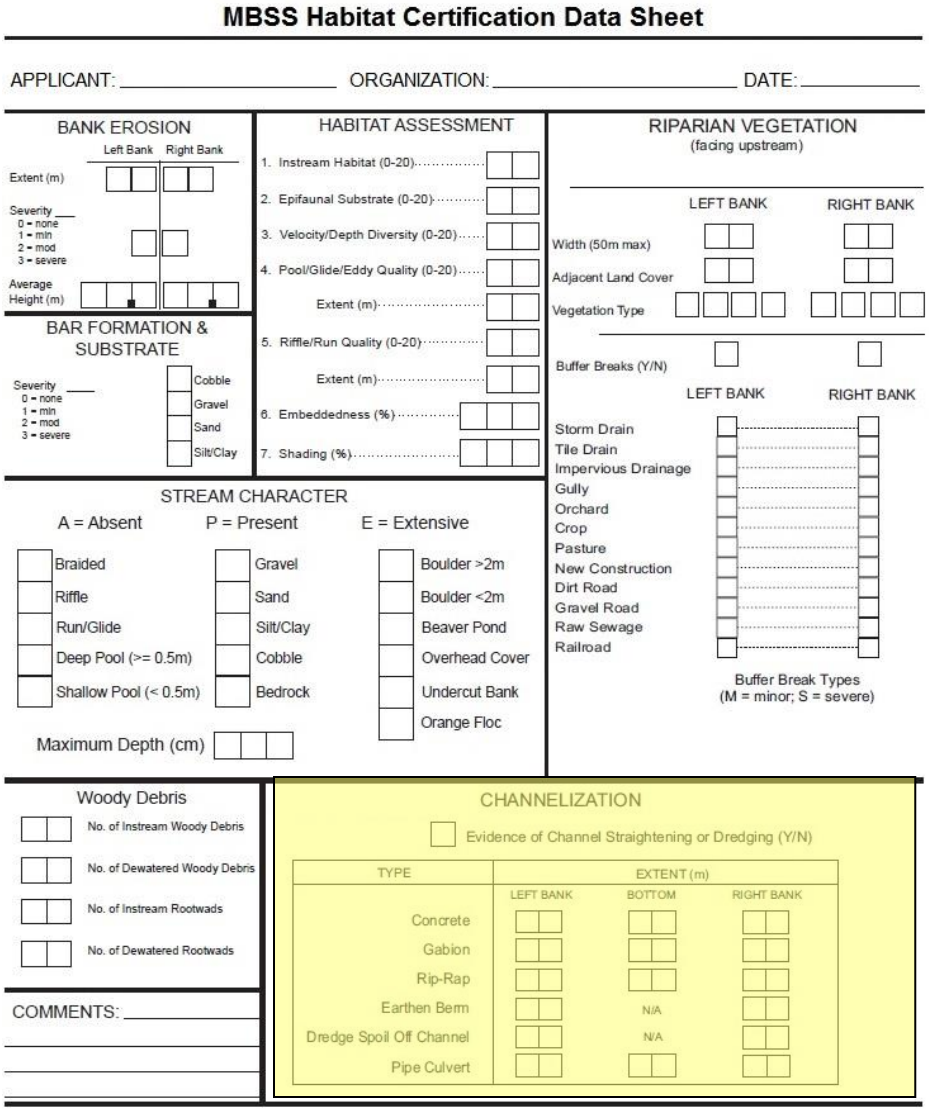
Note any functional breaks in the riparian buffer on each side of the stream.
Indicate the type and severity of break.

Buffer Break = anything that conveys runoff to effectively bypass an intact riparian buffer


04/24/2019


04/15/2013

MBSS Summer Habitat



MBSS Habitat Certification Data Sheet

APPLICANT: _____ ORGANIZATION: _____ DATE: _____

BANK EROSION

	Left Bank	Right Bank
Extent (m)		
Severity (0 = none, 1 = min, 2 = mod, 3 = severe)		
Average Height (m)		

BAR FORMATION & SUBSTRATE

Severity (0 = none, 1 = min, 2 = mod, 3 = severe) ____

- Cobble
- Gravel
- Sand
- Silt/Clay

HABITAT ASSESSMENT

1. Instream Habitat (0-20)
2. Epifaunal Substrate (0-20)
3. Velocity/Depth Diversity (0-20)
4. Pool/Glide/Eddy Quality (0-20)
   - Extent (m)
5. Riffle/Run Quality (0-20)
   - Extent (m)
6. Embeddedness (%)
7. Shading (%)

RIPARIAN VEGETATION (facing upstream)

	LEFT BANK	RIGHT BANK
Width (50m max)		
Adjacent Land Cover		
Vegetation Type		

Buffer Breaks (Y/N)

	LEFT BANK	RIGHT BANK
Storm Drain		
Tile Drain		
Impervious Drainage		
Gully		
Orchard		
Crop		
Pasture		
New Construction		
Dirt Road		
Gravel Road		
Raw Sewage		
Railroad		

Buffer Break Types (M = minor; S = severe)

STREAM CHARACTER

A = Absent P = Present E = Extensive

- Braided
- Riffle
- Run/Glide
- Deep Pool (>= 0.5m)
- Shallow Pool (< 0.5m)
- Gravel
- Sand
- Silt/Clay
- Cobble
- Bedrock
- Boulder >2m
- Boulder <2m
- Beaver Pond
- Overhead Cover
- Undercut Bank
- Orange Floc

Maximum Depth (cm)

Woody Debris

- No. of Instream Woody Debris
- No. of Dewatered Woody Debris
- No. of Instream Rootwads
- No. of Dewatered Rootwads

COMMENTS: _____

CHANNELIZATION

Evidence of Channel Straightening or Dredging (Y/N)

TYPE	EXTENT (m) LEFT BANK	BOTTOM	RIGHT BANK
Concrete			
Gabion			
Rip-Rap			
Earthen Berm		N/A	
Dredge Spoil Off Channel		N/A	
Pipe Culvert			

MBSS Summer Habitat Data Sheet

- Bank Erosion
- Bar Formation
- Habitat Assessment
- Stream Character
- Woody Debris
- Riparian Vegetation
- **Channelization**

MBSS Summer Habitat

CHANNELIZATION

☐ Evidence of Channel Straightening or Dredging (Y/N)

TYPE	EXTENT (m)		
	LEFT BANK	BOTTOM	RIGHT BANK
Concrete	____	____	____
Gabion	____	____	____
Rip-Rap	____	____	____
Earthen Berm	____	N/A	____
Dredge Spoil Off Channel	____	N/A	____
Pipe Culvert	____	____	____

- Survey site for evidence of channel dredging or straightening and
- Indicate presence (Y) or absence (N).
- Indicate the type and linear extent in meters for each bank and for the stream bottom.

MBSS Summer Habitat

Dredge Spoils

Concrete Channel

MBSS Summer Habitat

Gabion

Rip rap

MBSS Summer Habitat

Stone / Imbricated Wall

Culvert

MBSS Summer Habitat

MBSS Habitat Certification Data Sheet

APPLICANT: _____ ORGANIZATION: _____ DATE: _____

BANK EROSION

Left Bank Right Bank

Extent (m)

Severity ___
0 = none
1 = min
2 = mod
3 = severe

Average Height (m)

BAR FORMATION & SUBSTRATE

Severity ___
0 = none
1 = min
2 = mod
3 = severe

- Cobble
- Gravel
- Sand
- Silt/Clay

HABITAT ASSESSMENT

1. Instream Habitat (0-20)
2. Epifaunal Substrate (0-20)
3. Velocity/Depth Diversity (0-20)
4. Pool/Glide/Eddy Quality (0-20)

Extent (m)

5. Riffle/Run Quality (0-20)

Extent (m)

6. Embeddedness (%)
7. Shading (%)

RIPARIAN VEGETATION
(facing upstream)

	LEFT BANK	RIGHT BANK
Width (50m max)		
Adjacent Land Cover		
Vegetation Type		

Buffer Breaks (Y/N)

Buffer Breaks (Y/N)	LEFT BANK	RIGHT BANK
Storm Drain		
Tile Drain		
Impervious Drainage		
Gully		
Orchard		
Crop		
Pasture		
New Construction		
Dirt Road		
Gravel Road		
Raw Sewage		
Railroad		

Buffer Break Types
(M = minor; S = severe)

STREAM CHARACTER

A = Absent P = Present E = Extensive

Braided	Gravel	Boulder >2m
Riffle	Sand	Boulder <2m
Run/Glide	Silt/Clay	Beaver Pond
Deep Pool (>= 0.5m)	Cobble	Overhead Cover
Shallow Pool (< 0.5m)	Bedrock	Undercut Bank
		Orange Floc

Maximum Depth (cm)

Woody Debris

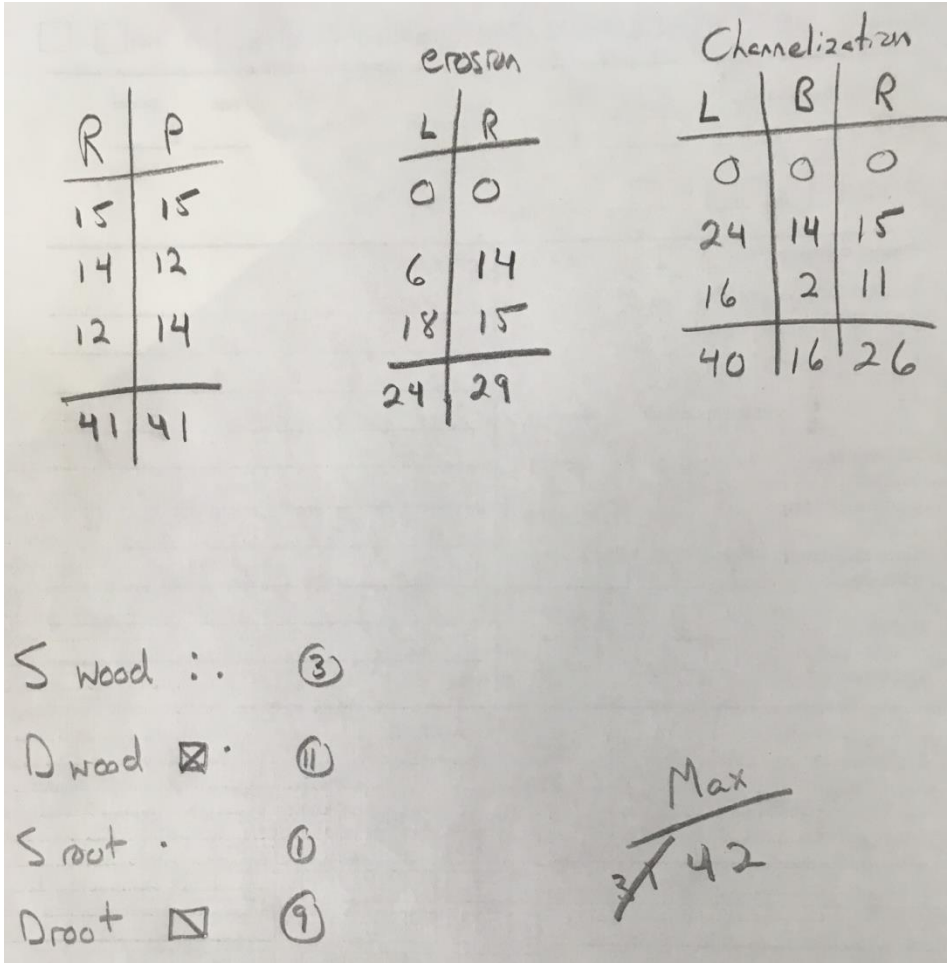
- No. of Instream Woody Debris
- No. of Dewatered Woody Debris
- No. of Instream Rootwads
- No. of Dewatered Rootwads

CHANNELIZATION

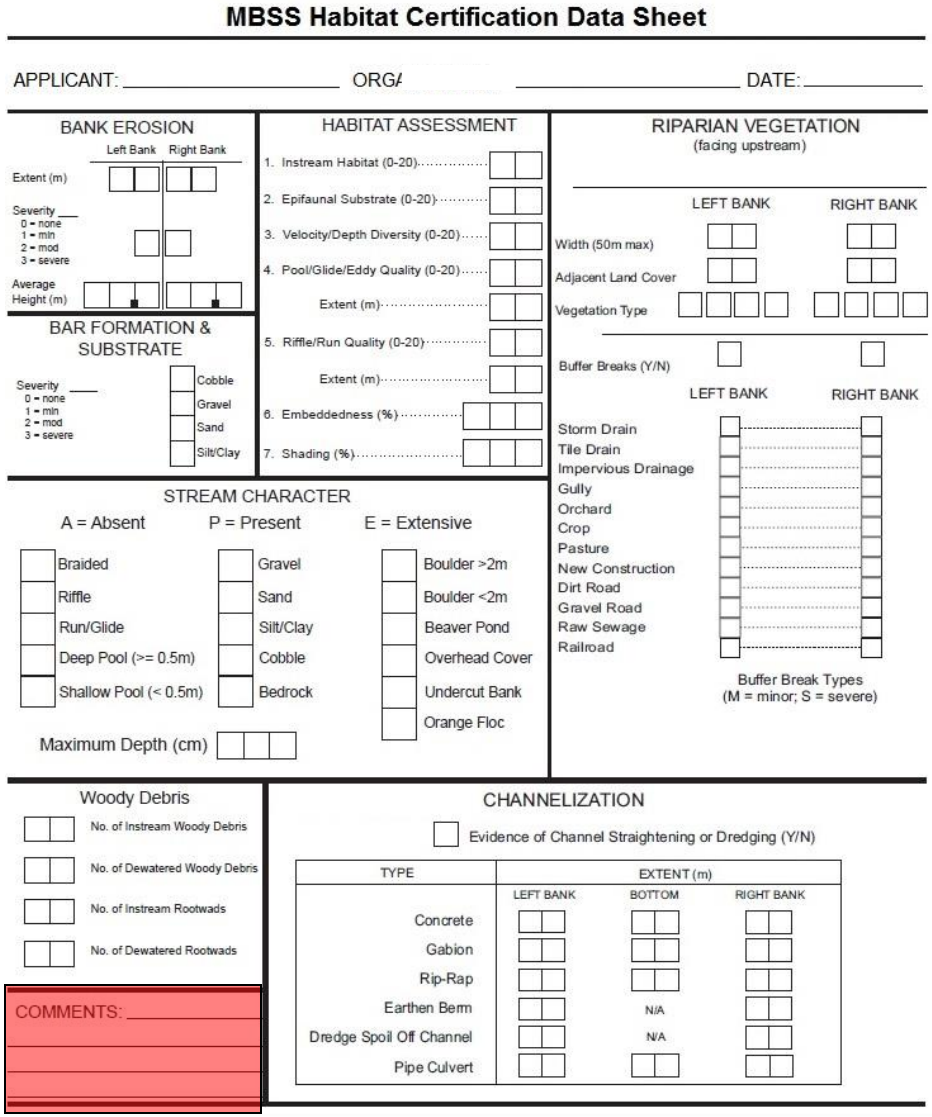
Evidence of Channel Straightening or Dredging (Y/N)

TYPE	EXTENT (m) LEFT BANK	BOTTOM	RIGHT BANK
Concrete			
Gabion			
Rip-Rap			
Earthen Berm		N/A	
Dredge Spoil Off Channel		N/A	
Pipe Culvert			

COMMENTS: _____



MBSS Summer Habitat



MBSS Habitat Certification Data Sheet

APPLICANT: _____ ORG/ _____ DATE: _____

BANK EROSION

	Left Bank	Right Bank
Extent (m)		
Severity (0 = none, 1 = min, 2 = mod, 3 = severe)		
Average Height (m)		

BAR FORMATION & SUBSTRATE

Severity (0 = none, 1 = min, 2 = mod, 3 = severe)

- Cobble
- Gravel
- Sand
- Silt/Clay

HABITAT ASSESSMENT

1. Instream Habitat (0-20)
2. Epifaunal Substrate (0-20)
3. Velocity/Depth Diversity (0-20)
4. Pool/Glide/Eddy Quality (0-20)
   - Extent (m)
5. Riffle/Run Quality (0-20)
   - Extent (m)
6. Embeddedness (%)
7. Shading (%)

STREAM CHARACTER

A = Absent P = Present E = Extensive

Braided	Gravel	Boulder >2m
Riffle	Sand	Boulder <2m
Run/Glide	Silt/Clay	Beaver Pond
Deep Pool (>= 0.5m)	Cobble	Overhead Cover
Shallow Pool (< 0.5m)	Bedrock	Undercut Bank
		Orange Floc

Maximum Depth (cm)

RIPARIAN VEGETATION
(facing upstream)

	LEFT BANK	RIGHT BANK
Width (50m max)		
Adjacent Land Cover		
Vegetation Type		
Buffer Breaks (Y/N)		

	LEFT BANK	RIGHT BANK
Storm Drain		
Tile Drain		
Impervious Drainage		
Gully		
Orchard		
Crop		
Pasture		
New Construction		
Dirt Road		
Gravel Road		
Raw Sewage		
Railroad		

Buffer Break Types
(M = minor; S = severe)

Woody Debris

- No. of Instream Woody Debris
- No. of Dewatered Woody Debris
- No. of Instream Rootwads
- No. of Dewatered Rootwads

COMMENTS: _____

CHANNELIZATION

Evidence of Channel Straightening or Dredging (Y/N)

TYPE	EXTENT (m) LEFT BANK	BOTTOM	RIGHT BANK
Concrete			
Gabion			
Rip-Rap			
Earthen Berm		N/A	
Dredge Spoil Off Channel		N/A	
Pipe Culvert			

Make Comments!

- Any impacts associated with habitat conditions at a site should be documented in the comments section
- Subjective nature of habitat data makes comments valuable