

Montana Ecological Integrity Assessment Field Form 2017

ASSESSMENT AREA (AA) INFORMATION												
Site ID			Visit #			Date						
Site Name			Level 2 _____ Level 3 _____			Observer(s)						
County			Nearest Town			Mitigation wetland? Y N		% Upland in AA:				
Land Ownership			Slope & Aspect: Measure aspect while pointing downhill/down the slope			Pre-construction Visit # _____		(CAN'T be >10%)				
Slope 1 (°)			Aspect 1 (°)			AA is: _____ Centered on original target coordinates _____ Shifted and >60m from original target coordinates _____ Shifted but ≤60 m from original target coordinates _____ No original target coordinates Dimensions of AA: _____ 40 m radius circle _____ Rectangle, width _____ length _____ _____ Other, describe below and take a GPS track						
Slope 2 (°)			Aspect 2 (°)									
Target AA Center Coordinates:												
Latitude (Y)			Longitude (X)									
GPS Unit Info. & Unit #:						Actual AA Center Coordinates:						
Waypoint ID			Latitude (Y)			Longitude (X)						
Datum		Zone		Elevation (m)			Accuracy (m)					
If AA is not a 40 m radius circle, record GPS coordinate information below:												
AA Corner #	Waypoint ID		Latitude (Y)			Longitude (X)			Accuracy (m)			
#1												
#2												
#3												
#4												
AA Track	Track Name:				Comments:							
General AA description, including surrounding uplands						Directions to AA and Access Comments:						
CHECK ONE:		Topographic Position		% AA Covered by Standing Water			Estimated Depth Standing Water			Surface Water Permanence		
slope		floodplain		none	51-75%		< 0.5 m	1-2 m		Saturated		
toeslope		valley bottom		1-25%	76-100%		0.5 - < 1 m	> 2 m		Semipermanent		
basin floor				26-50%							Seasonal	
AA Photos: Taken from AA center in four cardinal directions										Temporary		
Photo #		Aspect	Camera Info:									
		N										
		E										
		S										
		W										
w/board	w/out	Overview:	Waypoint ID		Latitude (Y)		Longitude (X)		Accuracy (m)		Description:	
Other:												

CLASSIFICATION

Ecological System (check one - use Key to Ecological Systems):			Confidence Level:
<input type="checkbox"/> GP Prairie Pothole	<input type="checkbox"/> NRM Wooded Vernal Pool	<input type="checkbox"/> RM Fen (see Soil p.15-16)	<input type="checkbox"/> Very High <input type="checkbox"/> Medium
<input type="checkbox"/> IM Prairie Pothole	<input type="checkbox"/> NRM Conifer Swamp	<input type="checkbox"/> RM Wet Meadow	<input type="checkbox"/> High <input type="checkbox"/> Low
<input type="checkbox"/> WGP Saline Depression	<input type="checkbox"/> RM-SM Riparian Shrubland	<input type="checkbox"/> Other	<u>Reason for selecting confidence level:</u>
<input type="checkbox"/> WGP Open Depression	<input type="checkbox"/> RM-SM Riparian Woodland		
<input type="checkbox"/> WGP Closed Depression	<input type="checkbox"/> NWGP Riparian + Floodplain		
<input type="checkbox"/> NAAW Emergent Marsh	<input type="checkbox"/> NRM-LM + RM-LMF Riparian Woodland/Shrubland		

HGM Class (check one - use Key to Hydrogeomorphic Classes):		Has this wetland been anthropogenically altered (impounded, diked, ditched, drained, etc.)? Has this wetland been artificially created, enhanced, or restored?
<input type="checkbox"/> Slope	<input type="checkbox"/> Lacustrine Fringe <input type="checkbox"/> Flat	
<input type="checkbox"/> Depressional	<input type="checkbox"/> Riverine (floodplain)*Specific classification/metrics apply to Riverine	
Confidence Level:	<u>Reason for selecting confidence level:</u>	
<input type="checkbox"/> Very High	<input type="checkbox"/> Medium	
<input type="checkbox"/> High	<input type="checkbox"/> Low	

Cowardin Classification (check all that apply - use Key to Cowardin Systems):	
Cowardin System:	Cowardin Class: _____ Unconsolidated Bottom (UB): <30% veg cover; ≥25% substrate smaller than stones
<input type="checkbox"/> Palustrine (P)	_____ Unconsolidated Shore (US): <30% veg (other than pioneer plants); <75% substrate are stones, boulders, bedrock
<u>ALL</u> of the following: <2.5m deep at low water, <8ha (20 acres), no wave/bedrock shores	_____ Aquatic Bed (AB): floating/submergent plants are tallest layer <u>with ≥30% veg cover</u>
	_____ Moss-Lichen (ML): moss + lichens with ≥30% veg cover <u>AND</u> emergent + shrubs + trees <30% cover
	_____ Emergent (EM): emergent plants are tallest layer <u>with ≥30% veg cover</u> *IF trees <30% & shrubs <30%, but trees + shrubs ≥30% = SS
	_____ Scrub-Shrub (SS): shrubs & short trees (≤6m) are tallest layer <u>with ≥30% veg cover</u>
	_____ Forested (FO): trees (>6m) are tallest layer WITH ≥30% veg cover

<input type="checkbox"/> Lacustrine Littoral (L2)	<input type="checkbox"/> Aquatic Bed (AB)	<input type="checkbox"/> Unconsolidated Bottom (UB)	<input type="checkbox"/> Unconsolidated Shore (US)
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<p>Cowardin Water Regimes:</p> <p align="center"><u>For L2UB, L2AB, PAB, PUB</u></p> <p>Permanently Flooded (H): water covers the substrate throughout the year in all years.</p> <p>Intermittently Exposed (G): water covers substrate throughout the year except in years of extreme drought</p> <p>Semipermanently Flooded (F): surface water persists through growing season in most years; if surface water absent, water table at/near the surface</p> <p>Artificially Flooded (K): amount & duration of flooding completely controlled by artificial means (pumps or siphons + dikes, berms, or dams)</p>	<p align="center"><u>For PEM, PSS, PFO</u></p> <p>Mineral Soils:</p> <p>Semipermanently Flooded (F): surface water persists through growing season in most years; if surface water absent, water table at/near the surface</p> <p>Seasonally Flooded (C): surface water present for extended periods (>1 month) in growing season, but absent by end of season most years; if surface water absent, depth to water table can vary considerably.</p> <p>Temporarily Flooded (A): surface water present briefly (days to weeks) in growing season; water table lies well below the surface for most of the growing season; both upland and wetland plants present.</p> <p>Intermittently Flooded (J): substrate usually exposed; flooded for variable periods without detectable seasonal periodicity; may have weeks, months, years b/w inundation.</p> <p>Artificially Flooded (K)</p>
<p align="center"><u>For L2US, PUS</u></p> <p>Seasonally Flooded-Saturated (E)</p> <p>Seasonally Flooded (C)</p> <p>Temporarily Flooded (A)</p> <p>Intermittently Flooded (J)</p> <p>Artificially Flooded (K)</p>	<p>Organic Soils:</p> <p>Seasonally Flooded-Saturated (E): surface water present for extended periods (>1 month) in growing season, but absent by end of season most years; if surface water absent, saturated at/near surface.</p> <p>Continuously Saturated (D): saturated at/near surface throughout year in all/most years; widespread surface water rare, but can be in shallow depressions intersecting groundwater, esp. on floating peat mat.</p> <p>Seasonally Saturated (B): saturated at/near surface for extended periods during growing season, but unsaturated by the end of season in most years; surface water typically absent unless after rain/runoff.</p>

Cowardin Special Modifiers:		*Coordinate codes & %'s w/Plant Zones (p.3)	
<input type="checkbox"/> Beaver (b)	<input type="checkbox"/> Farmed (f)	Cowardin Code	% of AA
<input type="checkbox"/> Partially ditched/drained (d)	<input type="checkbox"/> Managed (m)		
<input type="checkbox"/> Diked/impounded (h)	<input type="checkbox"/> Excavated (x)		
<input type="checkbox"/> Artificial Substrate (r)	<input type="checkbox"/> Spoil (s)		
		+ Other Cowardin %'s	
		+ Upland (see p.1)	
		TOTAL	100%

PLANT ZONES WITHIN ENTIRE ASSESSMENT AREA

Identify and describe the plant zones that occur within the assessment area. Identify the dominant plant species within each stratum. To be considered a separate plant zone, it must make up more than 5% of the AA (e.g., 250 m² for an AA of 0.5 ha).

Height Class				Cover Class			
1	<0.5 m	6	10-<15 m	1	Trace	6	10-<25%
2	0.5-1 m	7	15-<20 m	2	<1%	7	25-<50%
3	1-<2 m	8	20-<35 m	3	1-<2%	8	50-<75%
4	2-<5 m	9	35-<50 m	4	2-<5%	9	75-<95%
5	5-<10 m	10	≥50 m	5	5-<10%	10	≥95%

Stratum							
(FO) Forest/Woodland (Trees/Shrubs >6 m)		(SH) Shrubland (Shrubs 0.5-6 m)		(SV) Sparsely Vegetated (including bare ground)			
(H) Herbaceous (e.g., Graminoids, Forbs, Ferns)		(DS) Dwarf Shrubland (<0.5 m)		(CW) Coarse Woody Debris (≥ 7.6 cm diameter)			
(SF) Submerged/Floating (Rooted or floating)		(SD) Standing Dead (>45° angle)		(FW) Fine Woody Debris (≤ 7.5 cm diameter)			
(NV) Nonvascular (Bryophytes, cryptogamic crusts)		(V) Vines		Plant Community for Each Plant Zone			
Avg. Water Depth for Each Plant Zone				AB	Aquatic Bed	HF	Herbaceous Fen
1	Dry	8	30-<40 cm	ShMa	Shallow Marsh	SSF	Scrub-Shrub Fen
2	Moist	9	40-<50 cm	DeMa	Deep Marsh	SSW	Scrub-Shrub Wetland
3	Saturated	10	0.5-<0.75 m	SeMe	Sedge Meadow	CF	Coniferous Fen
4	< 5 cm	11	0.75-<1 m	WeMe	Wet Meadow	CW	Coniferous Wetland
5	5-<10 cm	12	1-<1.5 m	WWMP	Wet/Wet Mesic Prairie	FF	Floodplain Forest
6	10-<20 cm	13	1.5-<2.5 m	SFM	Seasonally Flooded Mudflat	SD	Saline Depression
7	20-<30 cm	14	≥2.5 m	SFBDF	Seasonally Flooded Basin/Depression/Flat		

Summary of Each Plant Zone Within the AA					
Plant Zone	% of AA	Cowardin Code	Avg. H2O Depth	Plant Community	Comments
1					
2					
3					
4					
5					
Other		---		---	
Upland		---	---	---	
TOTAL	100%	*Coordinate Plant Zone codes & %'s w/Cowardin info (p.2) *Other = Zones <5% of AA + non-P & L Systems			

Plant Zone #1 (indicate location on site drawing)				
Stratum	Dominant Species	Height Class	Cover Class	Comments

Plant Zone #2 (indicate location on site drawing)				
Stratum	Dominant Species	Height Class	Cover Class	Comments
Plant Zone #3 (indicate location on site drawing)				
Stratum	Dominant Species	Height Class	Cover Class	Comments
Plant Zone #4 (indicate location on site drawing)				
Stratum	Dominant Species	Height Class	Cover Class	Comments
Plant Zone #5 (indicate location on site drawing)				
Stratum	Dominant Species	Height Class	Cover Class	Comments

ASSESSMENT AREA DRAWING – Darken the below circle IF it's used for AA assessment. Otherwise, draw own AA dimensions.

Check these off as they are added to the AA drawing:		
<input type="checkbox"/> North arrow	<input type="checkbox"/> Plant zones	<input type="checkbox"/> Surface water inlets and outlets w/SOLID arrows
<input type="checkbox"/> Veg plot/modules	<input type="checkbox"/> Soil pits (S1 & S2)	<input type="checkbox"/> Groundwater/subsurface drainage w/DASHED arrows
<input type="checkbox"/> Anthropogenic features, i.e., culverts, berms, roads...		

***ALSO INDICATE ALL PLANT ZONES ON AERIAL PHOTO, IF POSSIBLE**



Notes:

Blank space for notes.

List of Physical Patch Types within the Assessment Area

PHYSICAL PATCH TYPE	Present in AA	Percent Cover within AA	Description
Cover Classes 1: trace 2: <1% 3: 1-<2% 4: 2-<5% 5: 5-<10% 6: 10-<25% 7: 25-<50% 8: 50-<75% 9: 75-<95% 10: ≥95%			
Open water-pond or lake			Medium to large natural water body
Open water -pools			Areas that hold stagnant or slow moving water from groundwater discharge but are not associated with a defined channel.
Open water-river/stream			Areas of flowing water associated with a sizeable channel.
Open water-small rivulet			Areas of flowing water associated with a narrow stream channel.
Open water-oxbow/backwater channel			Areas holding stagnant or slow moving water that have been partially or completely disassociated from the primary river channel.
Open water-tributary/secondary channel			Areas of flowing water entering the main channel from a secondary source.
Open water-beaver pond			Areas that hold stagnant or slow moving water behind a beaver dam.
Active beaver dam			Debris damming a stream clearly constructed by beaver (note gnawed ends of branches)
Beaver canals			Canals cut through emergent vegetation by beaver.
Braided river channel			River channel consisting of a network of small channels separated by small and often temporary islands or bars.
Adjacent or onsite springs/seeps			Localized point of emerging groundwater, often on or at the base of a sloping hillside.
Debris jams/woody debris			Aggregated woody debris in a stream channel deposited by high flows.
Pool/riffle complex			Deep, slow-moving pools alternating with shallow, fast-moving riffles along the relatively straight course of a stream or river.
Point bars			A low ridge of sediment (sand or gravel) formed on the inner bank of a meandering stream.
Bank slumps or undercut banks in channel or along shoreline			A bank slump is the portion of a stream or other wetland bank that has broken free from the rest of the bank but has not eroded away. Undercut banks are areas along the bank or shoreline of a wetland that have been excavated by waves or flowing water.
Mudflats			An accumulation of mud at the edge of shallow waters, such as a lake or pond. Often intermittently flooded or exposed.
Salt flat/alkali flat			Dry open area of fine-grained sediment and accumulated salts. Often wet in the winter months or with heavy precipitation.
Animal mounds or burrows			Mounds or holes associated with animal foraging, denning, predation, or other behaviors.
Plant hummocks			A mound composed of plant material resulting in a raised pedestal of persistent roots or rhizomes.
Water tracks/hollows			Depressions between hummocks or mounds that remain permanently saturated or inundated with slow moving surface water.
Natural island			Naturally occurring islands surrounded by water. Island can be dominated by either wetland or upland vegetation.
Anthropogenic island			Island created by artificial means, often for nesting waterfowl.
Floating mat			Mats of peat held together by roots and rhizomes of sedges. Floating mats are underlain by water and /or very loose peat.
Marl/limonite beds			Marl is a calcium carbonate precipitate often found in calcareous fens. Limonite forms in iron-rich fens when iron precipitates from the groundwater incorporating organic matter.
Other:			

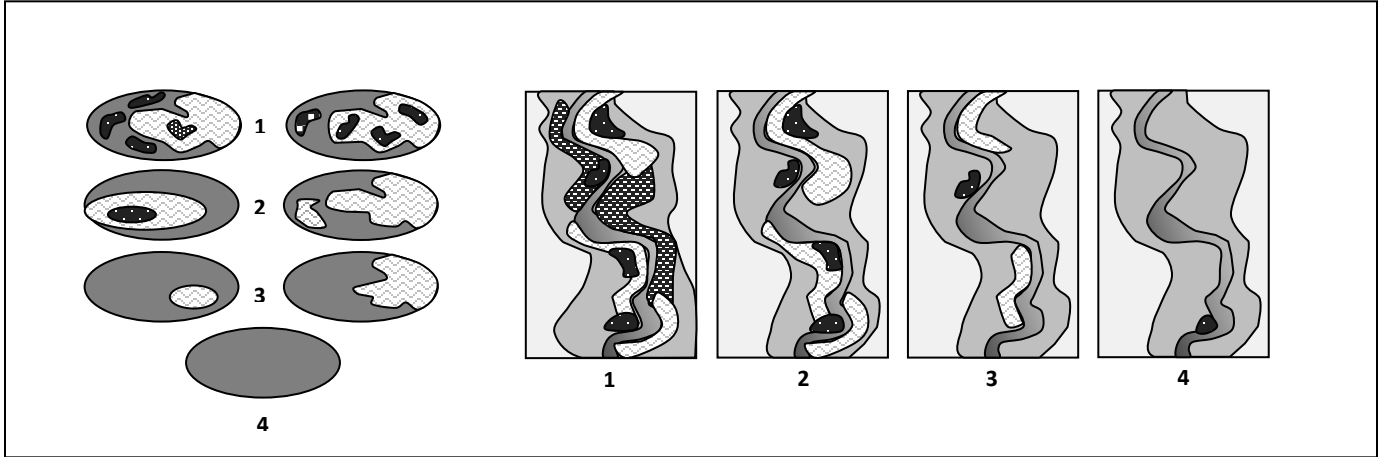
1. Landscape Context Metrics —Circle the applicable number

LANDSCAPE CONTEXT			
Landscape Connectivity within 200 m of the AA perimeter			
<i>For non-riverine wetlands, select the statement that best describes the landscape connectivity within a 200 m envelope around the AA perimeter (refer to site map).</i>	Intact: AA embedded in >90-100% unfragmented, natural landscape.		1
	Variegated: AA embedded in >75-90% unfragmented, natural landscape.		2
	Fragmented: AA embedded in >50-75% unfragmented, natural landscape.		3
	Severely fragmented: AA embedded in 25-50% unfragmented, natural landscape.		4
	Relictual: AA embedded in <25 % unfragmented, natural landscape.		5
<i>For riverine wetlands, select the statement that best describes the landscape connectivity within a 200 m envelope upstream and downstream of the AA perimeter (refer to the site map).</i>	Intact: AA embedded in >90-100% unfragmented, natural landscape.		1
	Variegated: AA embedded in >75-90% unfragmented, natural landscape.		2
	Fragmented: AA embedded in >50-75% unfragmented, natural landscape.		3
	Severely fragmented: AA embedded in 25-50% unfragmented, natural landscape.		4
	Relictual: AA embedded in <25 % unfragmented, natural landscape.		5
Buffer Length			
<i>Select the statement that best describes the buffer length around the AA perimeter.</i>	A buffer of at least 30 m occurs around 76-100% of the AA perimeter.		1
	A buffer of at least 30 m occurs around 51-75% of the AA perimeter.		2
	A buffer of at least 30 m occurs around 25-50% of the AA perimeter.		3
	A buffer of at least 30 m occurs around <25% of the AA perimeter, OR NO BUFFER EXISTS.		4
Buffer Width: Select the statement that best describes the buffer width of the AA. Estimate width up to 200 m from AA perimeter at eight evenly spaced intervals. Draw a 'pie' on your aerial photo and determine buffer width for each section.			
N	S	Average buffer width between edge of the AA and the edge of the buffer is >200 m.	1
NE	SW	Average buffer width between edge of AA and the edge of the buffer is >100-200 m.	2
E	W	Average buffer width between edge of the AA and the edge of the buffer is 50-100 m.	3
SE	NW	Average buffer width between edge of the AA and the edge of the buffer is <50 m, OR no buffer exists.	4
Average Buffer Width: _____			
Buffer Condition within 200 m of the AA perimeter			
<i>Select the statement that best describes the plant species composition within a 200 m envelope around the AA perimeter.</i>	Abundant (>95%) native vegetation cover and little or no (<5%) cover of non-native plants.		1
	Substantial (>75–95%) native vegetation cover and low (5–25%) cover of non-native plants.		2
	Moderate (50-75%) native vegetation cover.		3
	Low (<50%) cover of native vegetation, OR NO BUFFER EXISTS.		4
<i>Select the statement that best describes the extent of soil disturbance composition within a 200 m envelope around the AA perimeter.</i>	Soils are intact.		1
	Soils are slightly to moderately disturbed.		2
	Soils are moderately to extensively disturbed.		3
	Soils are highly disturbed OR ground is unnaturally bare, OR NO BUFFER EXISTS.		4
<i>Select the statement that best describes the extent of trash or evidence of human visitation within 200 m of the AA perimeter.</i>	No trash present OR no evidence of human visitation or recreation.		1
	Little trash OR evidence of minor human visitation or recreation.		2
	Moderate or greater amounts of trash OR evidence of moderate human visitation/recreation.		3
	Excessive amounts of trash OR evidence of high intensity human visitation/recreation, OR NO BUFFER EXISTS.		4

2. Vegetation Metrics—Circle the applicable number

VEGETATION		
Relative cover of native plant species within the AA		
Select the statement that best describes the relative cover of native plant species within the AA.	>99% of the vegetation cover within the AA is comprised of native vegetation.	1
	95-99% of the vegetation cover within the AA is comprised of native vegetation.	2
	80-94% of the vegetation cover within the AA is comprised of native vegetation.	3
	50-79% of the vegetation cover within the AA is comprised of native vegetation.	4
	<50% of the vegetation cover within the AA is comprised of native vegetation.	5
Relative cover of listed noxious weed species within the AA (see State/County Noxious Weed list)		
Select the statement that best describes the relative cover of listed noxious weed species within the AA. Identify and rank the three most common noxious weed species observed in the AA. 1) _____ 2) _____ 3) _____	No noxious weed species are present in the AA.	1
	<1-3% of the vegetation cover within the AA is comprised of noxious weed species. If weeds occur in patches, then patches are small and isolated (1-2 patches) within the AA.	2
	>3-10% of the vegetation cover within the AA is comprised of noxious weed species. If weeds occur in patches, then patches are moderate in size and common (3-5 patches) within the AA.	3
	>10% of the vegetation cover within the AA is comprised of noxious weed species. If weeds occur in patches, then patches are relatively large and abundant (>5 patches) within the AA.	4
Relative cover of aggressive graminoids within the AA		
Select the statement that best describes the relative cover of aggressive graminoids within the AA. Identify and rank the three most common aggressive graminoids observed in the AA. 1) _____ 2) _____ 3) _____	No aggressive graminoid species are present in the AA.	1
	Aggressive graminoids are present in the AA, but with low cover (<10% relative cover of cattails or <5% cover of reed canarygrass, common reed, smooth brome, Kentucky bluegrass, common timothy, or meadow foxtail).	2
	Aggressive graminoids are common in the AA (10-25% relative cover of cattails or 5-10% relative cover of reed canarygrass, common reed, smooth brome Kentucky bluegrass, common timothy, or meadow foxtail).	3
	Aggressive graminoids are abundant in the AA (>25-50% relative cover of cattails or 10-25% relative cover of reed canarygrass, common reed, smooth brome, Kentucky bluegrass, common timothy, or meadow foxtail).	4
	Aggressive graminoids are dominant in the AA (>50% relative cover of cattails or >25% relative cover of reed canarygrass, common reed, smooth brome, Kentucky bluegrass, common timothy, or meadow foxtail).	5
Herbaceous Litter/Woody Debris Accumulation within the AA		
Select the statement that best describes the herbaceous litter/woody debris accumulation of the site. Note: Site must have the potential to accumulate woody debris (i.e., woody plant species should be present at the site).	Site has moderate amount of fine litter/woody debris. New growth is more prevalent than previous years' growth. Layers of litter in pools or areas of topographic lows are thin.	1
	Site is characterized by small amounts of litter/woody debris, with little plant recruitment, OR litter/woody debris is somewhat excessive.	2
	Site has scant litter/woody debris OR litter/woody debris is excessive and is blocking plant recruitment.	3
Interspersion of Plant Zones within the AA		
Select the statement that best describes the patch interspersion of the site (use the associated schematics).	Horizontal structure consists of a very complex array of nested or interspersed irregular biotic patches with no single dominant type.	1
	Horizontal structure consists of a moderately complex array of nested or interspersed irregular biotic patches with no single dominant type.	2
	Horizontal structure consists of a simple array of nested or interspersed irregular biotic patches with no single dominant type.	3
	Horizontal structure consists of one dominant patch type with no interspersion.	4

Plant Zone Interspersion Schematic



Woody Species Establishment and Regeneration within the AA		
<i>Select the statement that best describes woody species establishment and regeneration within the AA.</i>	All age classes of native woody species present OR woody species are naturally uncommon or absent.	1
	Middle age group(s) absent with all other well-represented OR early successional saplings only.	2
	Seedlings and saplings and middle age group(s) absent. The stand is comprised mainly of mature species.	3
	Woody species predominately consist of relict or dying individuals or AA has a > 5% canopy cover of Russian Olive and/or Salt Cedar.	4
Tree and Shrub Utilization within the AA		
<i>Select the statement that best describes the utilization of trees and shrubs in the AA.</i>	0-5% of the available second year and older stems are browsed OR woody species are naturally uncommon or absent.	1
	>5%-25% of the available second year and older stems are browsed.	2
	>25%-50% of the available second year and older stems are browsed.	3
	More than 50% of the available second year and older stems are browsed.	4

3. Physicochemical Metrics—Circle the applicable number.

PHYSICOCHEMICAL		
Soil Surface Integrity within the AA		
<i>Select the statement that describes the soil surface integrity within the AA.</i>	Soil disturbance is limited to naturally caused disturbances such as flood deposition or game trails.	1
	Soil disturbance due to human causes (including livestock) is present but minimal. Depth of disturbance is limited to a few inches and does not show evidence of ponding or channeling water. Site will recover within a few years after disturbance removal.	2
	Soil disturbance due to human causes is common and will be slow to recover. Damage is not excessive and the site will recover with the removal of degrading human influences and moderate recovery times.	3
	Soil disturbance is widespread and substantially degrades the site. Water, if present, would be channeled or ponded. The site will not recover without restoration and/or long recovery times.	4

Water Quality: Select the statements that best describe the following water quality indicators within the AA. If there is no water in the AA, then leave these metrics blank.		
<i>Algae</i>	No visual evidence of degraded water quality. No potential source of water quality degradation observed. Water is clear with minimal algae growth.	1
	Some negative water quality indicators are present and/or some potential sources of water quality degradation observed. Algae are limited to small and localized areas within the wetland. Water may have a minimal greenish tint, cloudiness, or sheen.	2
	Algal growth occurs in large patches throughout the AA. Potential sources of water quality degradation are apparent. Water may have a moderate greenish tint or sheen.	3
	Algal mats may be extensive, blocking light to the bottom. Potential sources of water quality degradation are apparent. Water has strong greenish tint, sheen, or turbidity. The bottom is difficult to see during the growing season.	4
<i>Turbidity</i>	No visual evidence of degraded water quality. No potential source of water quality degradation observed.	1
	Water is slightly cloudy and/or some potential sources of water quality degradation observed, but there is no obvious source of sedimentation	2
	Water is cloudy, but the bottom is still visible. Potential sources of water quality degradation are apparent.	3
	Water is milky and/or muddy. The bottom is no longer visible. Potential sources of water quality degradation are apparent.	4
<i>Sheen (petroleum-based)</i> Note: Sheens can be caused by bacteria. When disturbed, a bacterial sheen will break up into small platelets; petroleum sheens will quickly reform.	No visual evidence of degraded water quality. No potential source of water quality degradation observed. Water is clear with no sheen.	1
	Some negative water quality indicators are present and/or some potential sources of water quality degradation observed. Sheen on the water is limited to small and localized areas within the AA.	2
	Sheen occurs in large patches throughout the surface water of the AA. Potential sources of water quality degradation are apparent. Water may have a moderate sheen.	3
	Sheen is extensive throughout the surface of the water in the AA. Potential sources of water quality degradation are apparent. Water has a strong sheen.	4

4. Hydrologic Metrics—Circle the applicable number.

HYDROLOGY		
Water Inputs into the AA		
<p>Select the statement that best describes the water sources into the AA during the growing season.</p>	Sources are precipitation, groundwater, and/or natural runoff, or natural flow from an adjacent freshwater body, or the AA naturally lacks water in the growing season.	1
	Sources are mostly natural but can include occasional or small effects of modified hydrology. No large point sources or dams control the overall hydrology.	2
	Sources are primarily from anthropogenic sources (e.g., urban runoff, pumped water, impoundments, regulated releases through a dam).	3
	Natural sources have been eliminated based on the following indicators: impoundment of all possible wet season inflows, diversions of all dry-season inflows, predominance of xeric vegetation, etc.	4
<p>Rank major water sources observed in the AA, or observed to potentially impact the AA, starting with 1 being the most dominant through 3. Mark all others present with a 4 and those not present as NA.</p>	Natural Sources/Inflow:	Count of Discrete Inlets:
	Overbank flooding	Channels
	Alluvial storage/hyporheic flow	Spring
	Throughflow (if yes, rank in Outputs)	Ditches
	Non-channelized flow from contiguous wetland area	Culvert
	Groundwater discharge	Pipes
	Precipitation	Pumps
	Snowmelt	Other/Comments:
	Anthropogenic Sources/Inflow:	
	Irrigation run-off/ditches	
	Urban run-off	
	Pipes directly feeding into wetland	
	Culvert	
Pumps		
Other:		
Water Outputs from the AA		
<p>Select the statement that best describes the water outlet of the AA during the growing season.</p>	Water leaves the site through natural runoff, natural flow, evaporation, or outlet is blocked by natural features (e.g., beaver dam), OR the site naturally lacks water in the growing season.	1
	Outflow is mostly natural, but there is some modification due to anthropogenic restrictions (e.g., filling or development, channelization).	2
	Withdrawals are primarily from anthropogenic sources, and outflow has been significantly altered by flow obstructions (culverts, paved stream crossings, impoundments, ditching).	3
	Natural outflow has been completely eliminated due to the following indicators: dike/levees, railroads, or roads with no culverts.	4
<p>Rank major water outlets observed in the AA, or observed to potentially impact the AA, starting with 1 being the most dominant through 3. Mark all others present with a 4 and those not present as NA.</p>	Natural Outflow:	Count of Discrete Outlets:
	Channelized flow (headwater wetland)	Channels
	Recharge to adjacent stream	Culvert
	Throughflow (if yes, rank in Sources/Inflow)	Ditches
	Non-channelized flow to contiguous wetland area	Pumps
	No natural outlet	Other/Comments:
	Anthropogenic Outflow:	
	Culverts under roadways / trails	
	Ditches established to drain wetland	
	Natural outlet blocked/bermed	
	Water is being pumped out of wetland	
Other:		

Hydroperiod of the AA (for depressional, lacustrine, and slope wetlands--NOT fens)		
<i>Select the statement that best describes the hydroperiod of the AA.</i>	Hydroperiod of the AA is characterized by natural patterns of filling or inundation and drying or drawdowns.	1
	The filling or inundation patterns in the AA are of greater magnitude or duration than would be expected under natural conditions, but thereafter the AA is subject to natural drawdown or drying.	2
	Hydroperiod of the AA is characterized by natural patterns of filling or inundation, but thereafter, is subject to more rapid or extreme drawdown or drying, as compared to more natural wetlands. OR the filling or inundation patterns in the AA are of substantially lower magnitude or duration than would be expected under natural conditions, but thereafter, the AA is subject to natural drawdown or drying.	3
	Both the inundation and drawdown of the AA deviate from natural conditions (either increased or decreased in magnitude and/or duration).	4
Hydroperiod of the AA (for fens)		
<i>Select the statement that best describes the hydroperiod of the AA.</i>	Hydroperiod of the AA is characterized by stable, saturated hydrology, or by naturally damped cycles of saturation and partial drying.	1
	Hydroperiod of the AA experiences minor altered inflows or drawdown/drying, as compared to more natural wetlands (e.g., ditching).	2
	Hydroperiod of the AA is somewhat altered by greater increased inflow from runoff, or experiences moderate drawdown or drying, as compared to more natural wetlands (e.g., ditching).	3
	Hydroperiod of the AA is greatly altered by increased inflow from runoff or experiences large drawdown or drying, as compared to more natural wetlands (e.g., ditching).	4
Surface Water Connectivity of the AA (for depressional, lacustrine, and slope wetlands--NOT isolated fens)		
<i>Select the statement that best describes the surface water connectivity of the site.</i>	Water, when present, has unrestricted access into or out of the wetland. There are no artificial obstructions to surface water flow.	1
	Artificial obstructions limit the access of surface water into or out of the wetland, but the limitations exist for < 50% of the AA perimeter.	2
	Artificial obstructions limit the access of surface water into or out of the wetland for 50–90% of the AA perimeter. Flood flows may exceed the obstructions, but drainage into or out of the AA is probably obstructed.	3
	Artificial obstructions limit the access of surface water into or out of the wetland for >90% of the AA perimeter.	4
Surface Water Connectivity of the AA (for naturally isolated fens)		
<i>Select the statement that best describes the surface water connectivity of the site.</i>	No natural surface water connectivity with surrounding water bodies.	1
	Partial surface water connectivity with surrounding water bodies exists via artificial means (e.g., ditching or draining to dry the fen).	2
	Substantial to full surface water connectivity exists via artificial means that has obvious drying effects on the peat body.	3

Onsite and Surrounding Disturbances—Indicate the Scope and Impact of disturbances (see tables on p. 14).

Disturbances Observed <i>and</i> Expected to Impact the Site	Scope		Impact		Field Indicator Observed
	200 m	AA	200 m	AA	
Transportation Disturbances					
Paved surfaces (e.g., roads, parking lots)					
Unpaved roads					
Railroads					
Land Use Disturbances-Development or Recreation					
Domestic or commercial development					
Intensively managed sports fields, golf courses					
Recreation or human visitation					
Filling or dumping of sediment or fill					
Trash or refuse dumping					
Land Use Disturbances-Agriculture					
Dryland farming (e.g., wheat, barley, etc.)					
Open range livestock grazing					
Horse paddock or private barnyard					
Feedlot operation					
Irrigated cropland					
Irrigated hay pasture					
Irrigation ditches affecting wetland					
Permanent tree plantation					
Cropland treated with pesticides					
Disturbed fallow lands dominated by exotic species					
Haying of native grassland					
Fallow fields (no human use in past 10 years)					
Fields with recent plowing or discing					
Shelterbelts					
Fences that impede wildlife					
Land Use Disturbances-Resource Extraction					
Gravel pits, open pit mining					
Small scale mining activity or abandoned mines					
Abandoned oil/gas wells					
Oil/gas pump jacks (active)					
Injection wells, tank batteries, collection facilities, or other oil/gas-associated infrastructure					
Intensive logging (50-75% trees of >50 cm diameter removed)					
Selective logging (<50% of trees >50 cm diameter removed)					

Disturbances Observed <i>and</i> Expected to Impact the Site	Scope		Impact		Field Indicator Observed
	200 m	AA	200 m	AA	
Land Use Disturbances-Vegetation Removal/Conversion					
Chemical vegetation control					
Evidence of intentional burning					
Mechanical vegetation removal					
Vegetation conversion (e.g., from shrubland to grassland)					
Natural or Environmental Disturbances					
Beetle-killed <i>Pinus</i> species					
Other diseased conifers					
Evidence of recent fire (<5 years)					
Beaver activity					
Evidence of prolonged drought					
Browsing of woody vegetation by native ungulates					
Hydrologic Disturbances					
Upstream spring box					
Impoundment of flowing water					
Potential for agricultural runoff					
Potential for urban runoff					
Culvert					
Upstream dam					
Reservoir/stock pond					
Weir or drop structure					
Dredged inlet/outlet channel					
Engineered channel (e.g., riprap)					
Pumps, diversions, or ditches that move water <i>into</i> wetland					
Pumps, diversions, or ditches that move water <i>out of</i> wetland					
Berms/Dikes/Levees					

Scope and Impact Ratings

Scope of Disturbances	
5	Pervasive – Affects nearly all (>75%) of the envelope or AA.
4	Large – Affects most (>50-75%) of the envelope or AA.
3	Moderate – Affects much (>25-50%) of the envelope or AA.
2	Restricted – Affects some (>10-25%) of the envelope or AA.
1	Small – Affects a small (1-10%) portion of the envelope or AA.
0	Nil – Affects little to none (<1%) of the envelope or AA.
Impact of Disturbances	
4	Extreme – likely to extremely modify, degrade, destroy, or eliminate the wetland.
3	Serious – likely to seriously modify, degrade or reduce wetland function or condition.
2	Moderate – likely to moderately modify, degrade or reduce wetland function or condition.
1	Slight – likely to only slightly modify, degrade, or reduce wetland function or condition.

Soil Pit #: _____	SOIL PROFILE DATA FORM — Dig soil pit to a least 80 cm depth if possible. Draw soil pit locations on site drawing.		
Located in: Module OR Plant Zone (circle ONE) #: _____	GPS Waypoint ID: _____	Accuracy (m): _____	Depth of Standing Surface Water (cm): _____
	Latitude (Y): _____	Longitude (X): _____	Depth to Saturation (cm): _____
Depth to free water in pit (cm) (NP=not present): _____			

SOIL PROFILE DESCRIPTION

Soil Layer	Depth to Lower Boundary of Layer	Soil Texture (Mineral Soils ONLY)	Soil Texture Modifier	Organic Soil Texture: P = Peat M = Muck MP = Mucky Peat	% Visible plant fibers	Soil Matrix Color*			Redox Concentrations Features			Redox Depletion Features					
						H**	V	C	Redox Conc. Abundance (%)	Redox Conc. Color			Redox Depletion Abundance (%)	Redox Depletion Color			
										H	V	C		H	V	C	

**Hydric Soil Indicators Observed (check all that apply):	Soil Profile Photos	Photo Description
<input type="checkbox"/> Histosol (≥40 cm of upper 80 cm is organic soil, i.e., P, MP, or M)	Photo #	
<input type="checkbox"/> Histic Epipedon (Top layer is ≥20 cm of organic soil, i.e., P, MP, or M)	Photo #	
<input type="checkbox"/> Sulfidic (rotten eggs) odor	Photo #	
<input type="checkbox"/> Organic streaking (dark vertical streaks in the subsurface layers)	Photo #	
<input type="checkbox"/> Gleyed or Low Chroma Colors	Photo #	

Remarks:

‡Redoximorphic features cannot form in soils with parent materials that are low in iron and manganese
 *To determine the soil matrix color: if soils are dry, wet sample until it no longer changes color. Always have the sun at your back when comparing to color chart to find best match.
 **Munsell Soil Color Chart: H = Hue, V = Value, C = Chroma

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