Basic Information: Vernal Pool Systems

Assessment Area Name:	
Project Name:	
Assessment Area ID #:	
Project ID #:	**Date:**
Assessment Team Members for This AA	
AA Location: **Latitude:** **Longitude:** **Datum:**	
Wetland Category: □ Natural □ Constructed □ Restoration (Rehabilitation OR Enhancement)	
If Created or Restored, does the action encompass: □ entire wetland □ portion of the wetland	
What best describes the hydrologic state of the wetland at the time of assessment? □ ponded/inundated □ saturated soil, but no surface water □ dry	
What is the apparent hydrologic regime of the wetland? □ long-duration □ medium-duration □ short-duration	
Does the vernal pool system connect with the floodplain of a nearby stream? □ yes □ no	

Photo Identification Numbers and Description:

	Photo ID No.	Description	Latitude	Longitude	Datum
1		**North**			
2		**South**			
3		**East**			
4		**West**			
5					
6					

Comments:

Scoring Sheet: Vernal Pool Systems

AA Name:				**Date:**
Attributes and Metrics		Alpha.	Numeric	**Comments/Scores**
Attribute 1: Buffer and Landscape Context (pg. 7-15)				
(A) Aquatic Area Abundance				
(B): *Percent of AA with Buffer*	Alpha. / Numeric			
(C): *Average Buffer Width*				
(D): *Buffer Condition*				
Initial Attribute Score = A + [D x (B x C)$^{1/2}$]$^{1/2}$				**Final Attribute Score = (Initial Score/24) x 100**
Attribute 2: Hydrology (pg. 16-18)				
Water Source				
Hydroperiod				
Hydrologic Connectivity				
Initial Attribute Score= sum of metric scores				**Final Attribute Score = (Initial Score/36) x 100**
Attribute 3: Physical Structure (pg. 19-25)				
Structural Patch Richness				
Pool and Swale Density				
Topographic Complexity				
Initial Attribute Score= sum of metric scores				**Final Attribute Score = (Initial Score/36) x 100**
Attribute 4: Biotic Structure (pg. 26-31)				
Horizontal Interspersion and Zonation				
	Alpha. / Numeric			
Plant Community submetric A: Number of Co-dominant species				
Plant Community submetric B: Percent Non Native				
Plant Community submetric C: Endemic Species Richness				
Plant Community Composition Metric *(numeric average of submetrics A-C)*				
Initial Attribute Score= sum of metric scores				**Final Attribute Score = (Initial Score/24) x 100**
Overall AA Score (Average of four Final Attribute Scores)				

Worksheet 1: Aquatic Area Abundance for Vernal Pool Systems.

Percentage of Each Transect Line Crossing Wetland or Other Aquatic Habitat	
Transect	Percent Crossing Aquatic Area
North	
South	
East	
West	
Average value for all Four Transects *Round to the nearest integer*	

Worksheet 2: Percent of AA with Buffer

In the space provided below make a quick sketch of the AA, or on aerial the imagery, indicate where buffer is present, and record the total amount in the space provided.

Percent of AA with Buffer: _____ **%**

Worksheet 3: Calculating average buffer width of AA.

Transect	Buffer Width (m)
A	
B	
C	
D	
E	
F	
G	
H	
Average Buffer Width ***Round to nearest integer***	

Worksheet 4: Structural Patch Type for Vernal Pool Systems.

Identify each type of patch that is observed in the AA and use the total number of observed patch types in Table 15. Patch type definitions are provided on the next page.

Structural Patch Type	Check for Presence
Adjacent shrub or tree cover	
Animal mounds and burrows	
Bare soil (minimum 3 m^2)	
Cobble and boulders	
Complexly-shaped pools	
Drainage branches (more than 1 drainage branch)	
Islands	
Large individual pools	
Large swales	
Mima mounds	
Patches of dense vegetation	
Pool Cluster	
Simply-shaped pools	
Small individual pools	
Small swales	
Soil cracks	
Within Pool Mounds	
Total Possible	**17**
No. Observed Patch Types (enter here and use in Table 15)	

Worksheet 5: Pool and Swale Density for Vernal Pool Systems.

Percentage of Each Transect Line Crossing A Vernal Pool or a Vernal Swale	
Transect	Percent Crossing a Pool or Swale
North	
South	
East	
West	
Average value for all Four Transects ***Round to nearest integer***	

Worksheet 6g: Rating of Topographic Complexity for Vernal Pool Systems.

Replicate Number	**Replicate Score (A = 12; B = 9; C = 6; D = 3)**	
	Alpha.	*Numeric*
Replicate 1		
Replicate 2		
Replicate 3		
Replicate 4		
Replicate 5		
Replicate 6		
Overall Average Score for All Pool Replicates ***Round to nearest integer*** **(enter here and use in Table 19)**		

Worksheet 7g: Rating of Horizontal Interspersion for Vernal Pool Systems.

Replicate Number	Replicate Score (A = 12; B = 9; C = 6; D = 3)	
	Alpha.	*Numeric*
Replicate 1		
Replicate 2		
Replicate 3		
Replicate 4		
Replicate 5		
Replicate 6		
Overall Average Score for All Pool Replicates *Round to nearest integer* (enter here and use in Table 21)		

Worksheet 8g: Plant Community Metric-
Calculation of Average Number of Co-dominants in all Replicate Pools.

Pool Replicate	Number of Co-dominants
Pool 1	
Pool 2	
Pool 3	
Pool 4	
Pool 5	
Pool 6	
Average Number of Co-Dominants *Round to nearest integer* (enter here and use in Table 22)	

Worksheet 8h: Plant Community Metric –
List of Unique Co-dominant Plant Species from all Vernal Pools Combined.

Plant Name	Check if non-native	Check if in Appendix I
Total number of co-dominant species (A)		
Total number of co-dominant species that are non-native (B)		
Percent non-native [(B)/(A) x 100] *Round to nearest integer* (enter here and use in Table 23)		
Total number of co-dominant species that are endemic (enter here and use in Table 24)		

Pool Replicate 1

Worksheet 6a: Sketches of Vernal Pool Profiles

Along the long axis of the pool and perpendicular to the long axis across the middle, make a sketch of the profile of each of the six pools from its outside edge (1-3m landward or away from the saturated zone of the pool) to its deepest areas then back out to the outside margin. Try to capture the major breaks in slope and the intervening micro-topographic relief. Based on the sketches, choose a single profile from Figure 7 that best represents the pool overall.

Profile 1
Profile 2

Worksheet 7a: Sketch of Vernal Pool Interspersion.	**Worksheet 8a: Co-dominant Plant Species in Vernal Pool** Note: A dominant species represents ≥10% *relative cover*.

Pool Replicate 2

Worksheet 6b: Sketches of Vernal Pool Profiles

Along the long axis of the pool and perpendicular to the long axis across the middle, make a sketch of the profile of each of the six pools from its outside edge (1-3m landward or away from the saturated zone of the pool) to its deepest areas then back out to the outside margin. Try to capture the major breaks in slope and the intervening micro-topographic relief. Based on the sketches, choose a single profile from Figure 7 that best represents the pool overall.

Profile 1
Profile 2

Worksheet 7b: Sketch of Vernal Pool Interspersion.	**Worksheet 8b: Co-dominant Plant Species in Vernal Pool** Note: A dominant species represents ≥10% *relative cover*.

Pool Replicate 3

Worksheet 6c: Sketches of Vernal Pool Profiles

Along the long axis of the pool and perpendicular to the long axis across the middle, make a sketch of the profile of each of the six pools from its outside edge (1-3m landward or away from the saturated zone of the pool) to its deepest areas then back out to the outside margin. Try to capture the major breaks in slope and the intervening micro-topographic relief. Based on the sketches, choose a single profile from Figure 7 that best represents the pool overall.

Profile 1
Profile 2

Worksheet 7c: Sketch of Vernal Pool Interspersion.	**Worksheet 8c: Co-dominant Plant Species in Vernal Pool** Note: A dominant species represents ≥10% *relative cover*.

Pool Replicate 4

Worksheet 6d: Sketches of Vernal Pool Profiles

Along the long axis of the pool and perpendicular to the long axis across the middle, make a sketch of the profile of each of the six pools from its outside edge (1-3m landward or away from the saturated zone of the pool) to its deepest areas then back out to the outside margin. Try to capture the major breaks in slope and the intervening micro-topographic relief. Based on the sketches, choose a single profile from Figure 7 that best represents the pool overall.

Profile 1
Profile 2

Worksheet 7d: Sketch of Vernal Pool Interspersion.	**Worksheet 8d: Co-dominant Plant Species in Vernal Pool** Note: A dominant species represents ≥10% *relative cover*.

Pool Replicate 5

Worksheet 6e: Sketches of Vernal Pool Profiles

Along the long axis of the pool and perpendicular to the long axis across the middle, make a sketch of the profile of each of the six pools from its outside edge (1-3m landward or away from the saturated zone of the pool) to its deepest areas then back out to the outside margin. Try to capture the major breaks in slope and the intervening micro-topographic relief. Based on the sketches, choose a single profile from Figure 7 that best represents the pool overall.

Profile 1
Profile 2

Worksheet 7e: Sketch of Vernal Pool Interspersion.	**Worksheet 8e: Co-dominant Plant Species in Vernal Pool** Note: A dominant species represents ≥10% *relative cover*.

Pool Replicate 6

Worksheet 6f: Sketches of Vernal Pool Profiles

Along the long axis of the pool and perpendicular to the long axis across the middle, make a sketch of the profile of each of the six pools from its outside edge (1-3m landward or away from the saturated zone of the pool) to its deepest areas then back out to the outside margin. Try to capture the major breaks in slope and the intervening micro-topographic relief. Based on the sketches, choose a single profile from Figure 7 that best represents the pool overall.

Profile 1
Profile 2

Worksheet 7f: Sketch of Vernal Pool Interspersion.	**Worksheet 8f: Co-dominant Plant Species in Vernal Pool** Note: A dominant species represents ≥10% *relative cover*.

Table 25: Wetland disturbances and conversions.

Has a major disturbance occurred at this wetland?	Yes	No		
If yes, was it a flood, fire, landslide, or other?	flood	fire	landslide	other
If yes, then how severe is the disturbance?	likely to affect site next 5 or more years	likely to affect site next 3-5 years	likely to affect site next 1-2 years	
Has this wetland been converted from another type? If yes, then what was the previous type?	depressional	vernal pool	vernal pool system	
	non-confined riverine	confined riverine	bar-built estuarine	
	perennial saline estuarine	perennial non-saline estuarine	wet meadow	
	lacustrine	seep or spring	playa	

Worksheet 9: Stressor Checklist.

HYDROLOGY ATTRIBUTE (WITHIN 50 M OF AA)	Present	Present and likely to have significant negative effect on AA
Point Source (PS) discharges (POTW, other non-stormwater discharge)		
Non-point Source (Non-PS) discharges (urban runoff, farm drainage)		
Flow diversions or unnatural inflows		
Dams (reservoirs, detention basins, recharge basins)		
Flow obstructions (culverts, paved stream crossings)		
Weir/drop structure, tide gates		
Dredged inlet/channel		
Engineered channel (riprap, armored channel bank, bed)		
Dike/levees		
Groundwater extraction		
Ditches (borrow, agricultural drainage, mosquito control, etc.)		
Actively managed hydrology		
Comments		

PHYSICAL STRUCTURE ATTRIBUTE (WITHIN 50 M OF AA)	Present	Present and likely to have significant negative effect on AA
Filling or dumping of sediment or soils **(N/A for restoration areas)**		
Grading/ compaction **(N/A for restoration areas)**		
Plowing/Discing **(N/A for restoration areas)**		
Resource extraction (sediment, gravel, oil and/or gas)		
Vegetation management		
Excessive sediment or organic debris from watershed		
Excessive runoff from watershed		
Nutrient impaired (PS or Non-PS pollution)		
Heavy metal impaired (PS or Non-PS pollution)		
Pesticides or trace organics impaired (PS or Non-PS pollution)		
Bacteria and pathogens impaired (PS or Non-PS pollution)		
Trash or refuse		
Comments		

BIOTIC STRUCTURE ATTRIBUTE (WITHIN 50 M OF AA)	**Present**	**Present and Likely to Have Significant negative effect on AA**
Mowing, grazing, excessive herbivory (within AA)		
Excessive human visitation		
Predation and habitat destruction by non-native vertebrates (e.g., *Virginia opossum* and domestic predators, such as feral pets)		
Tree cutting/sapling removal		
Removal of woody debris		
Treatment of non-native and nuisance plant species		
Pesticide application or vector control		
Biological resource extraction or stocking (fisheries, aquaculture)		
Excessive organic debris in matrix (for vernal pools)		
Lack of vegetation management to conserve natural resources		
Lack of treatment of invasive plants adjacent to AA or buffer		
Comments		

BUFFER AND LANDSCAPE CONTEXT ATTRIBUTE (WITHIN 500 M OF AA)	**Present**	**Present and likely to have significant negative effect on AA**
Urban residential		
Industrial/commercial		
Military training/Air traffic		
Dams (or other major flow regulation or disruption)		
Dryland farming		
Intensive row-crop agriculture		
Orchards/nurseries		
Commercial feedlots		
Dairies		
Ranching (enclosed livestock grazing or horse paddock or feedlot)		
Transportation corridor		
Rangeland (livestock rangeland also managed for native vegetation)		
Sports fields and urban parklands (golf courses, soccer fields, etc.)		
Passive recreation (bird-watching, hiking, etc.)		
Active recreation (off-road vehicles, mountain biking, hunting, fishing)		
Physical resource extraction (rock, sediment, oil/gas)		
Biological resource extraction (aquaculture, commercial fisheries)		
Comments		