

APPENDIX F

Reference Guide: Utah Wetlands Classification, Subclassification and Plant Information

Riverine

Subclassification

Subclasses--Single Channel Systems: (be aware that there may be more than one subclass in the AA)

- A Very steep gradient, very entrenched (no floodplain), very narrow valley, narrow channel
Entrenchment ratio < 1.4
Width/depth ratio < 12
Gradient 2. .04
- G Deeply incised, grade control problems (headcuts), much bank erosion, high sediment supply, virtually no floodplain.
Entrenchment ratio <1.4
Width/depth ratio < 12
Gradient 2. .02
- F Entrenched, little floodplain development, low gradient, unstable banks, significant bar deposition, increasing channel width, high sediment supply, channel wide and shallow.
Entrenchment ratio S 1.5
Width/depth ratio 2. 12
Gradient S .02
- B Narrow, gently sloping valleys, colluvial deposition from side slopes and/or structural control restrict width of floodplain but there is a small, relatively flat floodplain, low sediment supply, well-vegetated. Entrenchment ratio 1.5-2.0 Width/depth ratio 2. 12
Gradient 2. .02 B
Gradient < .02 Be
- C Low gradient, slightly entrenched, well-defined floodplain with terraces, point bars, cut banks, developed in alluvial material, often bare below bankfull/ cottonwood-willow complexes.
Entrenchment ratio 2. 2.0
Gradient < .02
Width/depth ratio 2. 12 C
Width/depth ratio < 12 CG
- E Low gradient, narrow, deep channels in broad valleys/meadows, large floodplains, little sediment deposition, well-vegetated willow/sedges, sinuous, overhanging banks.
Entrenchment ratio 2. 2.0
Width/depth ratio < 12
Gradient < .01

Subclasses--Multichannel Systems

- D Abundant sediment supply, shifting channels, very broad floodplains. Bold subclass in riparian class may have wetlands

Dominant Bed Material	A	B	C	D	DA	E	F	G
1 BEDROCK								
2 BOULDER								
3 COBBLE								
4 GRAVEL								
5 SAND								
6 SILT/CLAY								
ENTRH.	<1.4	1.4-2.2	>2.2	N/A	>2.2	>2.2	<1.4	<1.4
SIN.	<1.2	>1.2	>1.4	<1.1	1.1-1.6	>1.5	>1.4	>1.2
W/D	<12	>12	>12	>40	<40	<12	>12	<12
SLOPE	.04-.099	.02-.039	<.02	<.02	<.005	<.02	<.02	.02-.039

Fig. 4. Illustrative guide showing cross-sectional configuration, composition and delineative criteria of major stream types.

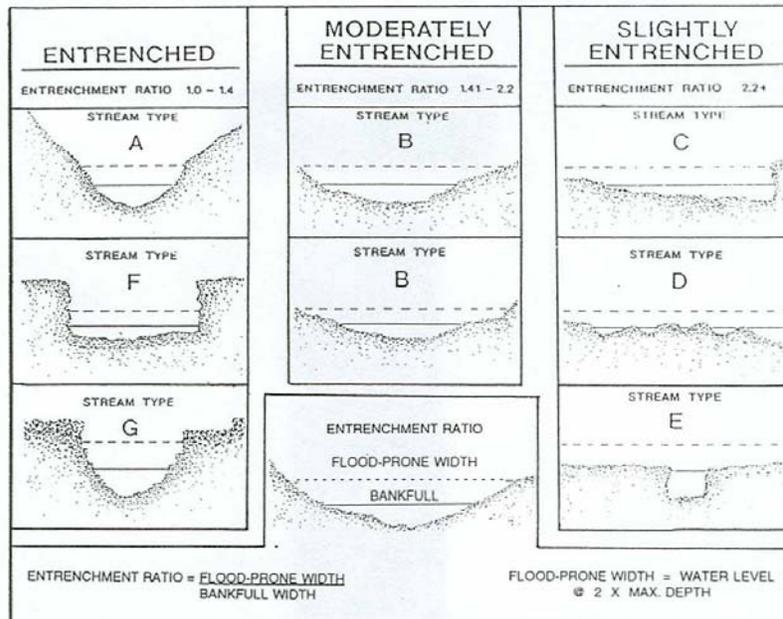


Fig. 6. Examples and calculations of channel entrenchment.

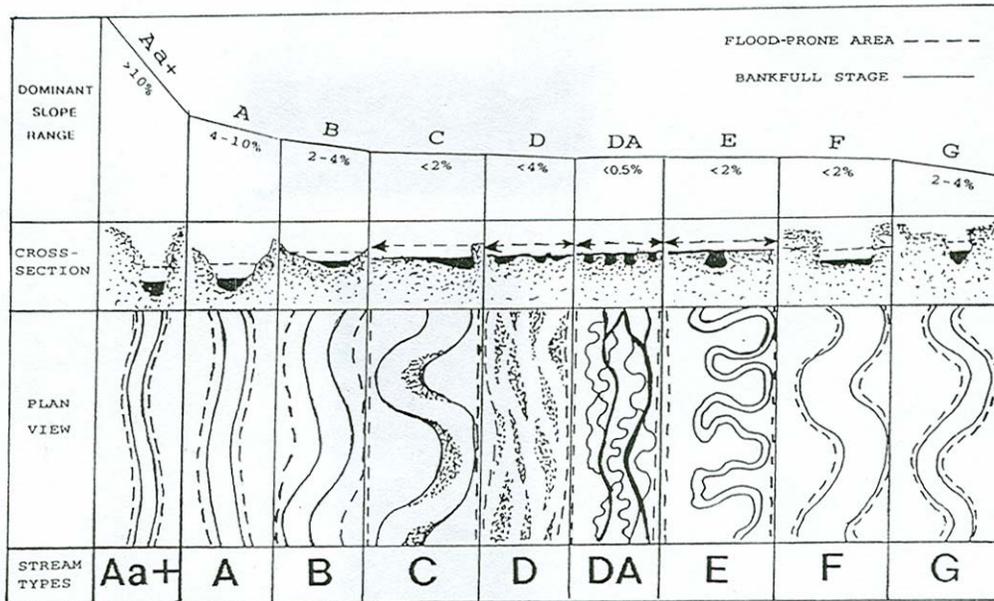


Fig. 1. Longitudinal, cross-sectional and plan views of major stream types.

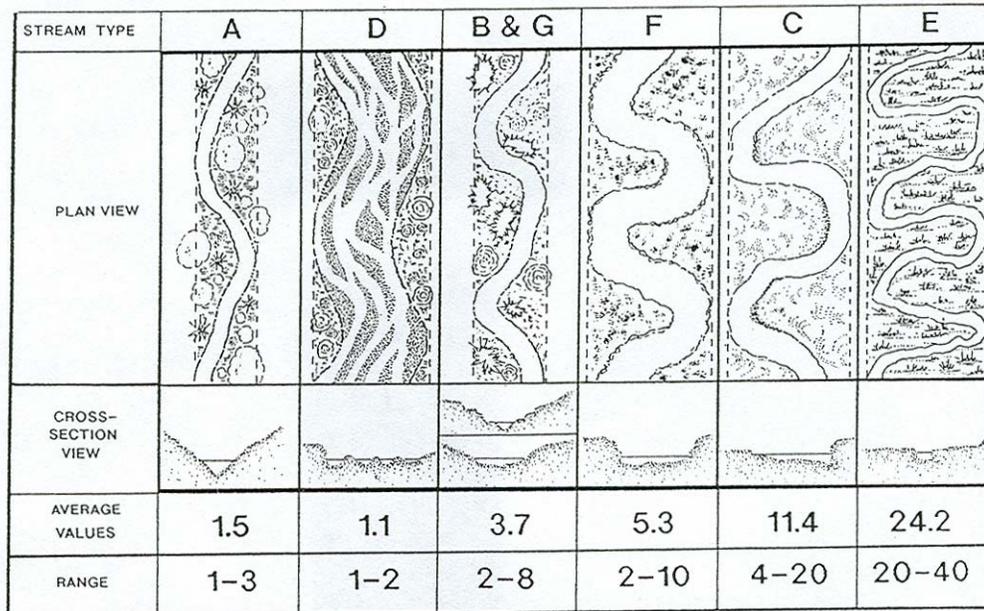
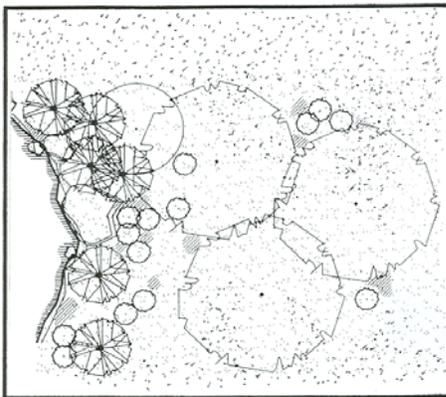
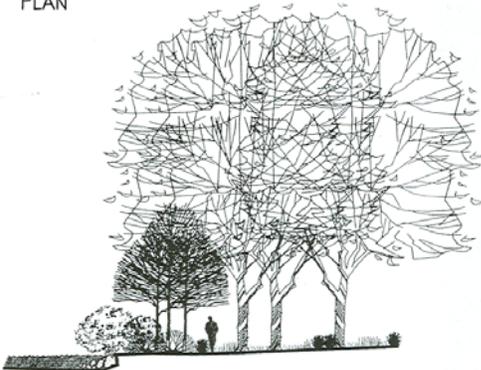


Fig. 3. Meander width ratio (belt width/bankfull width) by stream type categories.

Dominant Native Riverine and Lacustrine Plants organized by life form and elevation 750m – 1500m



PLAN



ELEVATION

RIVERINE AND LACUSTRINE PLANTS -
ELEVATION 750M-1500M

Trees

- *Acer negundo*
- *Betula occidentalis*
- *Crataegus douglasii*
- *Populus acuminata*
- *Populus fremontii*
- *Prunus virginiana*

Shrubs

- *Cornus sericea*
- *Ribes aureum*
- *Rosa woodsii*
- *Salix sp.*

Grasses, rushes, sedges and forbs

- *Carex sp.*
- *Distichlis spicata*
- *Eleocharis sp.*
- *Equisetum sp.*
- *Juncus sp.*

Average expected ground cover is highly variable – estimate the percent ground cover observed (0-1).

Dominant Native Riverine and Lacustrine Plants organized by life form and elevation 1500m – 2500m



PLAN



ELEVATION

RIVERINE AND LACUSTRINE PLANTS - ELEVATION 1500M-2500M

Trees

- *Acer negundo*
- *Alnus incana*
- *Betula occidentalis*
- *Populus acuminata*
- *Populus angustifolia*

Shrubs

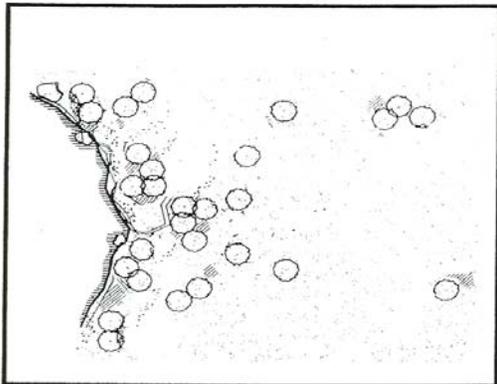
- *Cornus sericea*
- *Potentilla fruticosa*
- *Prunus virginiana*
- *Salix sp.*
- *Shepherdia argentea*

Grasses, rushes, sedges, and forbs

- *Calamagrostis sp.*
- *Carex sp.*
- *Deschampsia cespitosa*
- *Eleocharis sp.*
- *Equisetum sp.*
- *Juncus sp.*

Average expected ground cover is highly variable – estimate the percent ground cover observed (0-1).

Dominant Native Riverine and Lacustrine Plants organized by life form and elevation 2500m – 3500m



PLAN



ELEVATION

**RIVERINE AND LACUSTRINE PLANTS -
ELEVATION 2500M-3500M**

Trees

- *Alnus incana*
- *Betula occidentalis*

Shrubs

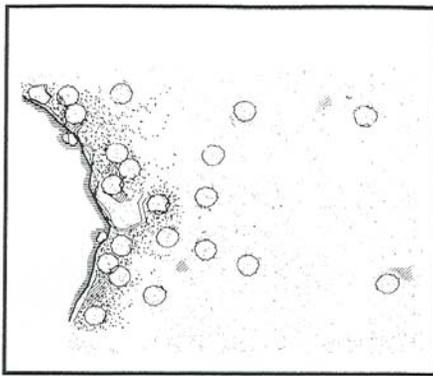
- *Artemisia cana*
- *Cornus sericea*
- *Potentilla fruticosa*
- *Salix sp.*

Grasses, rushes, sedges and forbs

- *Carex sp.*
- *Deschampsia cespitosa*

Average expected ground cover is highly variable – estimate the percent ground cover observed (0-1).

Dominant Native Riverine and Lacustrine Plants organized by life form and elevation 3500m



PLAN

Shrubs

- *Salix sp.*

Grasses, rushes, sedges and forbs

- *Carex sp.*
- *Deshampsia cespitosa*

Average expected ground cover is highly variable – estimate the percent ground cover observed (0-1).



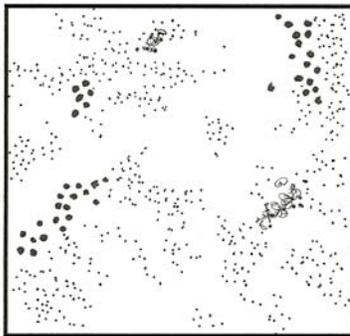
ELEVATION

RIVERINE AND LACUSTRINE
PLANTS - ELEVATION 3500M

[Great Basin] Seasonal or semipermanent depressions [mineral flat] these sites may be highly saline (7.5 – 22.5 dS)



Plover Playa, Tooele County



PLAN



Dominant species

1st dominant - *Distichlis stricta* is always the first dominant in reference sites with average cover of .26 and it makes up an average of 84% of the total vegetative cover

2nd dominant – *Salicornia utahensis* or more often, *Salicornia europaea* are the second dominant in all reference sites with average cover of .03.

3rd dominant - *Triglochin maritimum* or *Cordylanthus maritimus* with average cover of .01 *Scirpus maritimus* at .01 with some disturbance

4th dominant – *Suaeda depressa*, *Triglochin palustre* with average cover of .01

5th dominant – *Sporobolus airoides* and *Triglochin maritimum* with average cover of .01

Vegetation species richness

Average species richness is 4 (range 1-5), often including *Distichlis stricta*, *Salicornia europaea* and *Triglochin maritimum*. Species richness tends to increase with disturbance, with average species richness increasing to between 6 and 7 species.

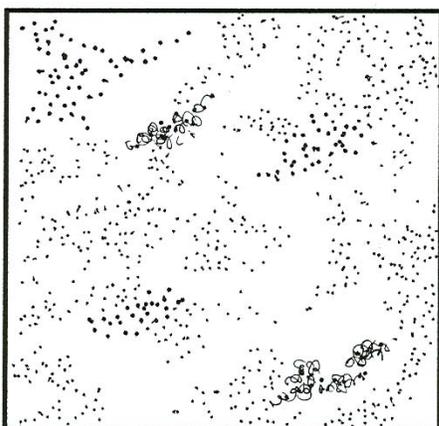
Typical invasive species

Hordeum jubatum, *Phragmites australis*, *Kochia scoparia*

Sites surveyed are located in Box Elder, Salt Lake, Tooele and Utah Counties. All sites in Salt Lake and Tooele Counties are below 4217’.

[See Appendix D for Rocky Mountain / High Plateaus photographs and species data.]

[Great Basin] Seasonal depressions slightly to strongly saline (7.5 – 22.5 dS)



PLAN



ELEVATION

SEMIPERMANENT AND PERMANENT DEPRESSIONS SLIGHTLY TO STRONGLY SALINE (MEAN COVER .69 RANGE .56-.79)

Dominant species

1st dominant - *Distichlis stricta* is always the first dominant in reference sites with average cover of .28. 2nd / 3rd dominant – *Salicornia utahensis* (average cover .01) in 67% of sites, *Scirpus maritimus* (average cover .02) in 83% of sites or *Salicornia europaea* (average cover .05) in 33 % of sites. 4th and 5th dominant – *Triglochin spp* (average cover .01) in 50% of sites, *Allenrolfea occidentalis* (average cover .01) in 16 %, *Sarcobatus vermiculatus* (average cover .01) in 16% of sites.

Other species occurring

Puccinellia nuttalliana, *Scirpus acutus* and *americanus*

Nonnative/ invasive species

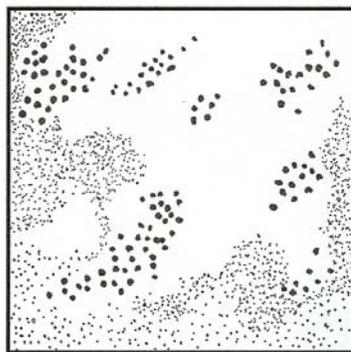
Hordeum jubatum, *Polypogon monspeliensis*

Vegetation species richness

Species richness of plants in reference sites averages 7 species, ranging from 5-7. In disturbed sites, it falls to 3 and climbs as high as 11.

[See Appendix D for Rocky Mountain / High Plateaus photographs and species data.]

[Great Basin] Seasonal, semi-permanent and permanent freshwater depressions (EC < 7.5 dS)



PLAN



ELEVATION
SEMIPERMANENT AND PERMA-
NENT FRESHWATER DEPRES-
SIONS (MEAN COVER .76
RANGE .65-.84)

Semi-permanent and permanent freshwater depressions

Dominant species

1st dominant - *Eleocharis palustris* (average cover .29) in 75% reference sites

2nd dominant - *Scirpus spp.*, usually *Scirpus americanus* (average cover .23) in all reference sites

3rd *Juncus arcticus* in 75% reference sites (average cover .09)

4th / 5th dominant - In 50 % of sites *Distichlis stricta* (average cover .14)

Species occasionally occurring

Alisma plantago-aquatica, *Potamogeton spp.*, *Carex praegracilis*, *Iris missouriensis*, *Asclepias speciosa*

Common nonnative and invasive species

Polypogon monspeliensis, *Hordeum jubatum*, *Phragmites australis*, *Typha spp.*, *Rumex crispus*, *Nasturtium officinale*, *Trifolium repens*, *Lythrum salicaria*** (*Purple loosestrife*)

Vegetation species richness

In reference standard sites average species richness is 11-12. In disturbed sites it climbs as high as 22-23 or drops as low as 5 species.

Note: There are virtually no natural, unimpacted sites in this subclass. All natural sites are impacted to some degree and all other sites are created or 'enhanced'.

The percent cover of vegetation is markedly different for those sites that are seasonal and those that are semi-permanent and permanent.

[See Appendix D for Rocky Mountain / High Plateaus photographs and species data.]

[Great Basin] Seasonal freshwater depressions

Dominant species

1st dominant - *Distichlis stricta* (average cover .22) in all reference sites

2nd dominant - *Scirpus americanus* and/or *Scirpus maritimus* (average cover .11) in all reference sites

3rd dominant - *Salicornia europaea* in all reference sites (cover .06)

4th / 5th dominant - In 50 % of sites *Sarcobatus vermiculatus* and/or *Allenrolfia occidentalis* (cover .01)

Species occasionally occurring

Puccinellia nuttalliana, *Agrostis stolonifera*, *Poa palustris*

Common nonnative and invasive species

Polypogon monspeliensis, *Hordeum jubatum*, *Phragmites australis*, *Typha spp*

Vegetation species richness

In reference standard sites average species richness is 6. In disturbed sites it climbs as high as 15 species. In general, disturbance increases the species diversity.

[See Appendix D for Rocky Mountain / High Plateaus photographs and species data.]

[Great Basin] Ephemeral depressions [mineral flat]



PLAN

ELEVATION
EPHEMERAL DEPRESSION (MEAN
COVER .21 RANGE .05-.29)

Dominant species

Salicornia europaea is the dominant species in all reference sites with an average cover of .20. *Sarcobatus vermiculatus* occurs in 33% of sites with an average cover of .01

Invasive species

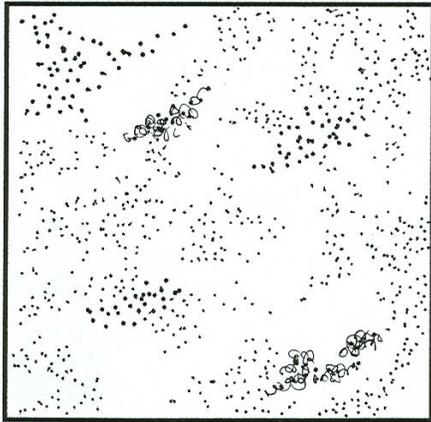
Hordeum jubatum and *murinum*, *Kochia scoparia*, *Puccinellia distans*

Species richness

Average species richness is 1-2 species. With disturbance richness climbs to 5-6 species.

[See Appendix D for Rocky Mountain / High Plateaus photographs and species data.]

[Great Basin] Semi-permanent and permanent depressions slightly to strongly saline (7.5 – 22.5 dS)



PLAN



ELEVATION
SEMIPERMANENT AND PERMA-
NENT DEPRESSIONS SLIGHTLY
TO STRONGLY SALINE (MEAN
COVER .69 RANGE .56-.79)

Dominant species

1st dominant - *Distichlis stricta* is always the first dominant in reference sites with average cover of .56.

2nd / 3rd dominant – *Salicornia utahensis* (average cover .02) in 18 of sites, *Scirpus americanus* (average cover .07) in 73% of sites, *Juncus arcticus* (average cover .11) in 18% or *Eleocharis palustris* (average cover .07) in 27 % of sites.

4th and 5th dominant – *Triglochin spp* (average cover .01) in 27% of sites, *Sporobolus airoides* (average cover .02) in 27% of sites and *Cordylanthus maritimus* (average cover .01) in 18% of sites

Other species occurring

Puccinellia nuttalliana, *Allenrolfia occidentalis*, *Suaeda depressa*

Nonnative/ invasive species

Bromus tectorum, *Hordeum jubatum* and *glaucum/murinum*, *Phragmites australis*

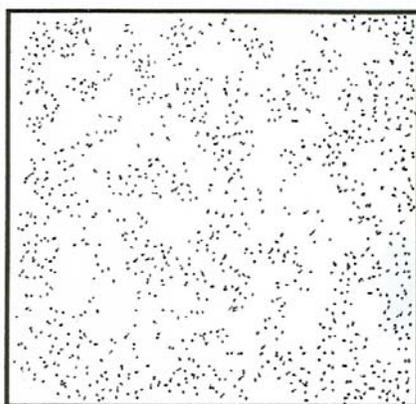
Vegetation species richness

In reference sites, average is 4 species, ranging from 1-7. In disturbed sites, it climbs as high as 11.

[See Appendix D for Rocky Mountain / High Plateaus photographs and species data.]

[Great Basin] Saline and Non Saline Slopes Seasonal and persistent non saline slopes

Seasonal non saline slopes – all sites are irrigation/ surface water induced. Persistent non saline slopes – all reference standard sites are spring/groundwater fed, while others are often irrigation/ surface water induced.



PLAN



ELEVATION

SEASONAL AND PERSISTENT
NON SALINE SLOPE (MEAN
COVER .90 RANGE .80-.90)

Dominant species

1st dominant - *Eleocharis palustris* in all reference sites

2nd dominant - *Distichlis stricta* 70% of sites

3rd dominant - *Juncus arcticus* 60% of sites

4th dominant - *Carex nebrascensis* and *Scirpus americanus* 50% of sites

5th dominant - *Carex lanuginose*, *praegracilis* or *microptera* 40% of sites

Others species

Agrostis stolonifera, *Puccinellia nuttalliana*, *Poa pretense*, *Carex simulata*, *Scirpus acutus*, *Mentha arvensis*, *Mimulus guttatus*, *Sagattaria cuneta*, *Ranunculus spp*

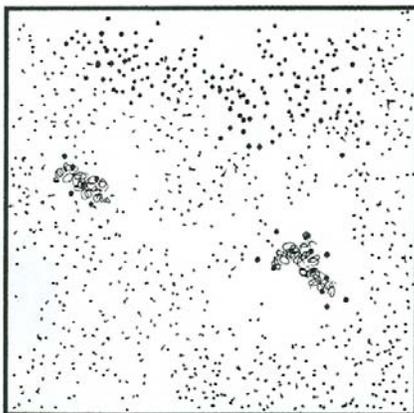
Invasive species – *Trifolium repens*, *Polypogon monspeliensis*, *Polypogon interruptis*, *Hordeum marinum*, *Nasturtium officinale*, *Rumex crispus*, *Xanthium strumarium*, *Lactuca serriola*, various species of *Elymus/Agropyron* and their hybrids.

Vegetation species richness

In reference sites, species richness averages 7 and ranges from 3-10 species.

[See Appendix D for Rocky Mountain / High Plateaus photographs and species data.]

[Great Basin] Persistent saline slope



PLAN



ELEVATION
PERSISTENT SALINE SLOPE
(MEAN COVER .73 RANGE .63-.73)

Dominant species

1st dominant - *Distichlis stricta* in all reference standard sites

2nd dominant - *Scirpus americanus* in 83% of sites

3rd dominant - *Juncus arcticus* in 42% of sites

4th dominant - *Scirpus maritimus*, *Sporobolus airoides*, *Triglochin spp.* in 25% of sites

5th dominant - *Salicornia utahensis*, *Cordylanthus maritimus*, *Eleocharis palustris* in 17% of sites

Other species

Helianthus annuus, *Suaeda depressa*, *Scirpus acutus*, *Allenrolfia occidentalis*

Invasive species

Hordeum jubatum, *Kochia scoparia*, *Elaeagnus angustifolia*

Vegetation species richness

In reference sites average species richness is 5 species, ranging from 1-9 species.

[See Appendix D for Rocky Mountain / High Plateaus photographs and species data.]

APPENDIX G

Point Sampling Protocol

Reference: Mitchell, Wilma A and H Glen Hughes. 1995. Point Sampling, US Army Corps of Engineers, Washington, D.C.

Study Design

The study design presented below is not unique to point sampling but is a general design that may be used with other vegetation sampling techniques. It is a combination of random and systematic sampling and may be altered to fit project needs.

Site Selection

Aerial photographs should be studied and a ground reconnaissance should be conducted to determine the size and characteristics (e.g., terrain, heterogeneity) of the study area. The sites to be sampled should be selected and located on a map of the study area prior to data collection. If the area is large and homogeneous, sites may be randomly selected by using a numbered grid and random number selection. However, if the study area consists of diverse habitats, it may be preferable to select sites representative of the vegetation types in proportion to the amount of area occupied by each.

Transects

Although points may be randomly located across a site, it is logistically easier to establish randomly located transects and to sample at regular intervals along each transect. The random location of transects meets the statistical assumption of sampling unit independence, and systematic sampling along each transect facilitates rapid sampling. Transects selected for sampling should be indicated on the site map. Transects may be of predetermined or indefinite length, and sample points may be continuous or located at stations equally spaced along the transects. If statistical tests are not needed, it may be appropriate to use a grid design in which sampling units are evenly distributed over the entire area (Goodall 1952, Evans and Love 1957).

Sampling Design

At each site, data are collected at 20 stations located at constant intervals along the transects. The distance between stations will be determined by the size of the study area and should be great enough to distribute points over the area. At each station, 10 points of data are collected at 2-m intervals (approximately a man's pace length) along the transect. If other data are being collected on the transect, the points may be located on a line parallel to the main transect and 1 pace to the right or left of it. This procedure may be used with any single-point sampling design.

Sample Size

Sample size is extremely important in habitat studies and should be determined by specific research objectives and the types of habitat sampled. The number of sampling points should be based on the approximate acreage to be included in the study area; at least 10 (preferably 20) samples per unit should be taken (Severinghaus 1980). **Evans and Love (1957) used 100 points per acre for sampling rangeland vegetation with the step-point method.***

Severinghaus (1980) suggested the following guide for determining the number of sample points:

- 0 to 40 acres (0 to 16 ha) = 1 point/acre (0.5 ha)
- 41 to 80 acres (16 to 32 ha) = 1 point/2 acres (1 ha)
- 81 to 200 acres (32 to 80 ha) = 1 point/4 acres (1.6 ha)
- >200 acres (80 ha) = 1 point/10 acres (4 ha)

*100 sample points per acre should be collected within the AA. (Example: if AA equals .25 acres, then 25 sample points should be taken.) Never use less than 10 sample points within any AA, even when AA is less than .10 acres in size. Placement of transect(s) should accurately represent the AA. Be sure to place transect(s) through different water regimes, vegetative structure, and topographic changes that may exist within the AA. Please note to draw a simple boundary of the AA and illustrate all plant transect locations and approximate distances on page 11 of the form.

Sample size can be calculated if data are separated by points. A formula commonly used to calculate sample size (Snedecor 1950) is:

$$N = \frac{s^2 t^2}{d^2}$$

N = number of sample points required
s = standard deviation
t = t-value with n-1 degree of freedom
d = allowable error (i.e., arithmetic mean of the sample total times the designated percent accuracy)

If a study encompasses many vegetation types, sample size should be determined for each type (e.g., old field, shrub steppe, or evergreen forest) rather than for the total acreage of the study area. Sample size may be modified by increasing or decreasing the number of sites or the number of samples collected at each site. The latter may be achieved by altering the number or length of transects or by changing the number of points sampled at each station.

Preparation

Users should be proficient with point sampling before data collection begins because results may be biased if the technique is learned during the study. The observer should use a compass to pace straight transect lines and practice consistent pacing between points. Consistent pacing is essential for preventing over or underestimation of vegetative cover (Hays et al. 1981). It ensures that intervals between stations and among sample points are consistent throughout the study, thus providing reliable data for statistical analysis.

The sampling procedure should be practice so users can gain confidence with the technique before actual data collection begins. It is recommended that field personnel gain experience with point sampling be conducting trial runs in the types(s) of vegetation that will be sampled in the study. Practice sites should be randomly located in a variety of vegetation types to familiarize personnel with using the technique in diverse habitat conditions.

Sampling Procedures

Cover Categories

Three categories of vegetative cover are herbaceous vegetation, shrubs, and trees. These categories are defined as follows:

1. Herbaceous vegetation: Grasses, grasslike plants such as sedges and rushes, and forbs (broad-leaved flowering plants).
2. Shrubs: Woody plants, branched at or near the base and usually less than 15 ft (4.6 m) in height (Preston 1961); woody vines may be classed as shrubs or placed in a separate category.
3. Trees: Woody plants with a main stem (trunk), numerous branches, and a height of 20 ft (6.1 m) or more (Petrides 1972). A tree may be placed in the shrub category if it is less than 20 ft tall. Criteria for trees and shrubs will be determined by study objectives.

Step Point

Equipment

The only equipment needed is the observer's boot with an indicator to define the sampling point. The tip of one boot should be marked with a small V-shaped notch or narrow permanent line. The marker is placed at the boot tip to provide a consistent sampling point and to minimize disturbance to the vegetation before sampling. The notch or line should be as narrow as possible to avoid overestimation of cover.

Data Collection

The procedure for collecting data at each point on the transect is given below.

1. Pace to the sample point.
2. Examine the vegetation at the tip of your boot.
3. Record the presence (hit) or absence (miss) of each cover category, with 1="hit" 0="miss" (see data recording). If sampling is conducted in non-forested vegetation types, data will be collected for only the first two categories.
 - a. Herbaceous vegetation: Record a hit if the mark or notch on your boot tip is touching a grass or forb, identify and record the species "hit". If it is not touching herbaceous vegetation, record a miss. (If the herbaceous vegetation is growing under a shrub canopy, move aside the shrub limbs and foliage to sample the herbs.)
 - b. Shrub: Record a hit if the marker on your boot is touching a shrub or is under its canopy, identify and record the species "hit". If not, record a miss.
 - c. Tree: Look directly overhead. Record a hit if you are under the canopy of a tree, identify and record the species "hit". If not, record a miss.
4. Visually estimate the percent ground cover of native vegetation in the AA.

Data Recording

Point data from each sampling site can be recorded and calculations can be performed on a single data sheet. The cover data for each point should be placed under the appropriate point number. Hit/miss tabulations should be recorded diagonally for each sample point, with herbaceous at the top, shrub in the middle, and tree at the bottom. If more than one data sheet is needed, it may be convenient to total the numbers on each sheet and do the final calculations on the last sheet.

Data Analysis

Data analysis consists of determining the average percentage herbaceous, shrub, tree, and total cover at a site. This is done by dividing the total number of hits for each cover category or the site by the total number of points sampled and converting the result to percentage.

The calculations for data analysis are given in a stepwise outline.

1. Add the number of hits for each cover category (herbaceous, shrub, tree) at each sampling station and enter these values in the summation columns (H, S, T) under Hits/Station.
2. Add the data in each summation column to find the total number of hits in each cover category and the total number of points with cover at each site. Enter the totals at the bottom of the data sheet.
3. Find the total number of points sampled at each site by multiplying the number of points per station by the total number of stations.
Total points = Number of points per station X number of stations.
4. Calculate the average percent cover for each cover category by dividing the total number of hits for the category by the total number of points sampled and multiplying by 100.

$$X\% \text{ cover} = \frac{\text{Total number of hits}}{\text{Total number of points sampled}} \times 100$$

5. Calculate the average percent total cover for the site by dividing the total number of points with hits by the total number of points sampled and multiplying by 100.

$$X\% \text{ cover} = \frac{\text{Total number of points with hits} \times 100}{\text{Total number of points sampled}}$$

Cautions and Limitations

To prevent error resulting from over or underestimation of cover, attention should be given to detail. The mark on the boot used in step point may fade with exposure to moisture and need to be repenned. This narrow mark should be maintained at exactly the same width throughout the data collection.

Pace length tends to increase with more rapid movement and to shorten as pace slows. Therefore, it may be difficult to maintain consistent pacing over uneven terrain or in vegetation with a high brush component. The observer should check his pace length in such habitat types and readjust it to the standard distances used in the study design.

For best results, point sampling should be suspended when light intensity becomes too low for accurate determination of cover.

Point Sampling

1. Project Name:	2. Project Number:
3. USCOE Permit Number:	Project Pin Number:
4. Evaluation Date:	5. Evaluating Agency:
6. Evaluators:	7. Purpose of Evaluation:
8. Wetland/Site Number(s):	9. Wetland Location(s):
10. Wetland Size:	11. Assessment Area:

Station	Species	Hits			Native	Non-Native
		H	S	T		
Station 1	Herbaceous					
	Shrub					
	Tree					
Station 2	Herbaceous					
	Shrub					
	Tree					
Station 3	Herbaceous					
	Shrub					
	Tree					
Station 4	Herbaceous					
	Shrub					
	Tree					
Station 5	Herbaceous					
	Shrub					
	Tree					
Station 6	Herbaceous					
	Shrub					
	Tree					
Station 7	Herbaceous					
	Shrub					
	Tree					
Station 8	Herbaceous					
	Shrub					
	Tree					
Station 9	Herbaceous					
	Shrub					
	Tree					
Station 10	Herbaceous					
	Shrub					
	Tree					

% Cover = $\frac{\text{Total Hits}}{\text{Total Points Sampled}} \times 100$

% Native Species = $\frac{\text{Total Number of Native Species}}{\text{Total Number of Plants Sampled}} \times 100$

Total Hits			
% Cover			
Total % Cover			

% Native Species	
------------------	--

UDOT WETLAND ASSESSMENT FORMS

RIVERINE (BLUE)

SLOPE (PINK)

DEPRESSIONAL (YELLOW)

MINERAL FLAT (GREEN)

LACUSTRINE FRINGE (PURPLE)

UDOT Wetland Assessment Form (Riverine)

1. Project Name:
2. Project Number:
3. USCOE Permit Number: _____ Project Pin Number: _____
4. Evaluation Date (MM/DD/YYYY): _____
5. Evaluating Agency: _____
6. Evaluator(s): _____
7. Purpose of Evaluation (check one): <input type="checkbox"/> Wetlands potentially affected by UDOT project <input type="checkbox"/> Mitigation wetlands, pre-construction <input type="checkbox"/> Mitigation wetlands, post-construction <input type="checkbox"/> Other (explain): _____
8. Wetland/Site Number(s): _____
9. Wetland Location(s): Ecoregion (see map Appendix A): _____ Watershed (see map Appendix A): _____ County (see map Appendix A): _____ Legal: T _____ N or S; R _____ E or W; S _____; T _____ N or S; R _____ E or W; S _____ Approximate Stationing or Mileposts: _____ _____ GPS Reference Number: _____ Other Location information: _____
10. Wetland Size (total acres, measured by GPS if applicable): _____
11. Assessment Area (AA) (total acres, measured by GPS if applicable, see appendix): _____
12. Habitat for Federally Listed or Proposed Threatened or Endangered Plants or Animals or State Listed S1 Species It is required that the evaluator contact USFWS with regards to the presence or absence of threatened or endangered (T or E) species and UDWR concerning the presence or absence of a state listed S1, S2 or S3 species. The documented habitat of a federally listed or proposed threatened or endangered plant or animal species or a state listed S1 species results in an automatic Red Flag categorization of the assessed site. Coordination with USFWS and UDWR is required. (However, the evaluation proceeds as normal so that the COE receives an assessment of function and value consistent with the UDOT assessment method.) Is the AA documented to contain primary habitat for T or E or S-1 species? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, list the species: (This field assesses habitat for species receiving protection under provision of the Endangered Species Act and Utah critically imperiled species.)
13. Selecting a Wetland Classification Refer to the glossary to determine the correct wetland class. Refer to Appendix E for reference photos and lists of the most common native species in each classification. Turn to appropriate colored pages to continue functional assessment as noted below. Riverine: Blue Slope: Pink Depressional: Yellow Mineral Flat: Green Lacustrine Fringe: Purple Roadside Ditch Wetland: If AA qualifies as a non-jurisdictional 'roadside ditch wetland', AA is classified as Category IV. Further assessment is not necessary, although all documentation must be completed.

***Toned questions or functional categories on the assessment form do not apply to this wetland class, do not answer. They are excluded from the individual function rating as well as the final overall functional assessment rating.**

Riverine



Riverine wetlands: Occur in floodplains and riparian corridors in association with stream channels. Water source is river or stream flow or over bank flow at peak hydrological periods. (Overbank flow should occur once every two years or 50% of the time. If flooding does not occur at this minimal rate, it is probably not a riverine based wetland). Dominant hydrodynamics are unidirectional and horizontal. A subsurface hydraulic connection between the wetland and stream does not necessarily indicate a riverine system.

14. Identify subclass _____ (Classification after Rosgen...check appendix for graphic representations)

The evaluator uses the information below together with information in Appendix E to identify the AA subclass. This information is not used directly to rate the AA.

Subclasses--Single Channel Systems: (be aware that there may be more than one subclass in the AA)

- A Very steep gradient, very entrenched (no floodplain), very narrow valley, narrow channel
Entrenchment ratio < 1.4 Width/depth ratio < 12 Gradient \geq .04

- G Deeply incised, grade control problems (headcuts), much bank erosion, high sediment supply, virtually no floodplain
Entrenchment ratio <1.4 Width/depth ratio < 12 Gradient \geq .02

- F Entrenched, little floodplain development, low gradient, unstable banks, significant bar deposition, increasing channel width, high sediment supply, channel wide and shallow
Entrenchment ratio \leq 1.5 Width/depth ratio \geq 12 Gradient \leq .02

- B Narrow, gently sloping valleys, colluvial deposition from side slopes and/or structural control restrict width of floodplain but there is a small, relatively flat floodplain, low sediment supply, well-vegetated
Entrenchment ratio 1.5-2.0 Width/depth ratio \geq 12 Gradient \geq .02 B Gradient < .02 B_C

- C Low gradient, slightly entrenched, well-defined floodplain with terraces, point bars, cut banks, developed in alluvial material, often bare below bankfull/ cottonwood-willow complexes
Entrenchment ratio \geq 2.0 Gradient < .02 Width/depth ratio \geq 12 C Width/depth ratio < 12 C_G

- E Low gradient, narrow, deep channels in broad valleys/meadows, large floodplains, little sediment deposition, well-vegetated willow/sedges, sinuous, overhanging banks
Entrenchment ratio \geq 2.0 Width/depth ratio < 12 Gradient < .01

Subclasses--Multichannel Systems

- D Abundant sediment supply, shifting channels, very broad floodplains. Bold subclass in riparian class may have wetlands

Identify soil type: organic or mineral

Refer to glossary for definitions of organic and mineral soils.

Determine the pH range _____

Organic soils	Mineral soils
\leq 4.9	\leq 6.0
5.0 - 6.5	6.1-7.3
> 6.5	\geq 7.4 - 8.4
	\geq 8.5

Presence of heavy metals or toxicants?

Yes

No

Subclass is:

- _____ Single channel A
- _____ Single channel G
- _____ Single channel F
- _____ Single channel B
- _____ Single channel C
- _____ Single channel E
- _____ Multichannel Systems D

Measure the water salinity _____

- < 5 dS/m
- 5-10 dS/m
- 10-16 dS/m
- 16-35 dS/m
- \geq 35 dS/m

Reference Appendix D for definitions of water class and salinity.

Soil type, pH range, salinity and presence of heavy metals are determined using accepted wetland science protocols.

Biological Assessment

Sources of assessment criteria for each field are adopted from MDT, *Montana Wetland Assessment Method* and are listed under methods on page 5. Additional criteria sources are listed with each assessment field.

15a. Level of Disturbance

This field assesses the level of disturbance in the AA and EAA. Source: Soule (1991), Forman and Godron (1986), Fahrig (1997), Buffler (2005), and Spackman and Hughes (1995).

Use matrix below to determine level of disturbance (H = high, M = moderate, or L = low). Circle the appropriate answer.

Conditions within AA	Predominant conditions found in EAA (600 feet from perimeter of AA)		
	Land managed in predominantly natural state; is not grazed, hayed, landscaped, or otherwise converted; does not contain roads or buildings.	Land not cultivated, but moderately grazed or hayed; or has been subject to minor clearing, fill placement or hydrological alteration; contains few roads, buildings, ditches or canals.	Land cultivated or heavily grazed or landscaped; subject to substantial fill placement, grading, clearing, or hydrological alteration; high road or building density, and or numerous ditches or canals.
AA occurs and is managed in predominantly natural state; is not grazed, hayed, landscaped, or otherwise converted; does not contain human induced trails.	L	L	M
AA not cultivated, but moderately grazed or hayed; or has been subject to relatively minor clearing or hydrological alteration; contains few human induced trails, ditches or canals.	M	M	H
AA cultivated or heavily grazed or landscaped; subject to relatively substantial grading, clearing, or hydrological alteration; and numerous human induced trails, ditches or canals.	H	H	H

Comments: Note types of disturbance, intensity, season, etc.

15b. Plant Community Composition

This field assesses the plant community within the AA. Source: Keate (2004) and Padgett et al. (1989).

Refer to Appendix E for photographs, plan views, cross sectional diagrams, the range of expected coverage and wetland specific vegetation lists. Refer to Appendix F for transect protocol (step point). Draw a simple boundary of the AA and illustrate all plant transect locations and approximate distances on page 11 of this form. See glossary for definition of native wetland plants.

i. Do you find all layers of vegetation that are expected for this wetland type? Circle: Y N

ii. What is the percent ground cover (within the AA) dominated by native wetland vegetation?

High \geq 80%, Moderate 79-60%, Low < 60%

iii. What is the percent of native wetland plants to non-native or non-wetland plants observed using the transect protocol?

High \geq 80%, Moderate 79-60%, Low < 60%

iv. Rating for riverine and lacustrine wetlands.

Layers (i)	Y									N									
	H			M			L			H			M			L			
Cover (ii)																			
Native Wetland Species (iii)	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L	
Rating	1H	.9H	.8H	.7M	.6M	.5M	.4M	.3L	.2L	.9H	.8H	.7M	.6M	.5M	.4M	.3L	.2L	.1L	

iv. Rating for depressional, mineral flat, and slope wetlands.

Cover (ii)	H			M			L		
	Native Wetland Species (iii)	H	M	L	H	M	L	H	M
Rating	1H	.8H	.6M	.8H	.6M	.4M	.6M	.4M	.2L

Comments:

15c. Habitat for Federally Listed or Proposed Threatened or Endangered Plants or Animals

This field assesses documented or suspected use of the AA by Federally listed or proposed threatened or endangered plants or animals.

Source: Consultation with USFWS biologist.

Refer to the U.S. Fish and Wildlife Services website at www.fws.gov or visit the Utah Data Conservation Center website at <http://dwrcdc.nr.utah.gov/ucdc/>. Circle one category below based on definitions contained in the instructions and after consultation with USFWS biologist.

i. AA is Documented (D) or Suspected (S) to contain:

*Documented primary habitat for T or E or State listed S-1 species has been addressed in #12

- Primary habitat (list species) * S _____
- Secondary habitat (list species) D S _____
- Incidental habitat (list species) D S _____
- No usable habitat D S _____

ii. Rating

Evaluator uses the conclusions from i above and the matrix below to arrive at the functional points and rating (H = high, M = moderate, or L = low) for this function. Circle the appropriate answer.

Highest Habitat Level	Primary/S	Secondary/D	Secondary/S	Incidental/D	Incidental/S	None
Rating	.9 H	.8 H	.7 M	.5 M	.3 L	0 L

Sources for documented use (e.g. observations, records, etc):

15d. Habitat for plant or animals rated S2 or S3 by the Utah Natural Heritage Program

This field assesses documented or suspected use of the AA by S2 or S3 species listed by the Utah Natural Heritage Program (UNHP).

Source: Consultation with UDWR regional biologist.

Refer to the UNHP website or the Utah Sensitive Species List at <http://dwrcdc.nr.utah.gov/ucdc/>.

Do not include species listed in 15c from above. Circle one category below based on definitions contained in the instructions and after consultation with UDWR biologist.

i. AA is Documented (D) or Suspected (S) to contain:

- Primary habitat (list species and S rating) D S _____
- Secondary habitat (list species and S rating) D S _____
- Incidental habitat (list species and S rating) D S _____
- No usable habitat D S _____

ii. Rating

Evaluator uses the conclusions from i above and the matrix below to arrive at the functional points and rating (H = high, M = moderate, or L = low).

Highest Habitat Level	Primary/D	Primary/S	Secondary/D	Secondary/S	Incidental/D	Incidental/S	None
Rating	.9 H	.8 H	.7 M	.6 M	.2 L	.1 L	0 L

Sources for documented use (e.g. observations, records, etc.):

15e. General Wildlife Habitat

This field assesses general wildlife habitat conditions in the AA. Source: Hammer (1992), Mitch and Gosselink (1993) and Weller and Spatcher (1965).

i. Wildlife habitat features

Working from top to bottom, circle appropriate AA attributes in matrix to arrive at a rating (H = high, M = moderate, or L = low).

Disturbance Level (15a)	L			M			H		
Plant Community (15b)	H	M	L	H	M	L	H	M	L
Rating	H	H	M	H	M	L	M	L	L

Wildlife habitat features rating.	1H	.6M	.2L
-----------------------------------	----	-----	-----

ii. Modified Wildlife Habitat Rating

The wildlife habitat features rating may be modified based on documented wildlife use and levels of use of the AA. Consult with the UDWR regional wildlife biologist to determine the level of wildlife use in the AA using the procedures detailed below.

UDWR biologist consulted: Name(s) _____ Date(s) _____

First circle the appropriate answer to the following question: Does the UDWR have sufficient knowledge of the AA to determine a level of general wildlife use. Yes No

If the answer is No do not modify your answer to 15e(i) above. If you answer is Yes and after further consultation with a UDWR biologist and using the level of use descriptive categories on page 14. Select the descriptive category (H, M or L) that best describes the level of wildlife use in the AA. Circle the appropriate answer. H M L

If the level of use circled is:

H – add .2 to the wildlife habitat features rating 15e(i)

M – add .1 to the wildlife habitat features rating

L – do not modify the wildlife habitat features rating

iii. Rating

Use the conclusions from i and ii above and the matrix below to arrive at the functional points and rating (H = high, M = moderate, or L = low) for this function. Circle the appropriate answer.

Modified wildlife habitat features rating	1H			.6M			.2L		
Rating	1.2H	1.1H	1H	.8H	.7M	.6M	.4M	.3L	.2L

Comments:

15f. General Fish/Aquatic Habitat

This field assesses general fish and aquatic habitat in the AA. Source: Sigler and Miller (1963), Gore (1985), Williams et al (1997) and National Research Council (1992).

Assess this function if the AA is used by fish or the existing situation is “correctable” such that the AA could be used by fish [i.e., fish use is precluded by perched culvert or other barrier, etc.]. If the AA is not or was not historically used by fish due to lack of habitat, excessive gradient, etc., circle NA here and proceed to the next function. If fish use occurs in the AA but is not desired from a resource management perspective [such as fish use within an irrigation canal], then Habitat Quality [i below] should be marked as “Low”, applied accordingly in ii below, and noted in the comments.)

i. Habitat Quality

Refer to the glossary for further definitions of these terms. Circle appropriate AA attributes in matrix to arrive at the quality rating (H = high, M = moderate, or L = low).

Duration of surface water in AA	Permanent / Perennial			Seasonal / Intermittent			Temporary / Ephemeral		
Cover: % of water body in AA containing cover objects such as submerged logs, large rocks & boulders, overhanging banks, floating-leaved vegetation, etc.	>25%	10–25%	<10%	>25%	10–25%	<10%	>25%	10–25%	<10%
Shading: >75% of stream bank or shoreline within AA contains riparian or wetland scrub-shrub or forested communities	H	H	H	H	H	M	M	M	M
Shading: 50 to 75% of stream bank or shoreline within AA contains riparian or wetland scrub-shrub or forested communities	H	H	M	M	M	M	M	L	L
Shading: < 50% of stream bank or shoreline within AA contains riparian or wetland scrub-shrub or forested communities	H	M	M	M	L	L	L	L	L

ii. Modified Habitat Quality

Circle the appropriate response. If answer is Y, then reduce rating in i above by one level (H = M, M = L, L = L)

Is fish use of the AA precluded or significantly reduced by a culvert, dike, or other man-made structure or activity or is the water body included on the UDEQ list of water bodies in need of TMDL development with listed “Probable Impaired Uses” including cold or warm water fishery or aquatic life support? Y N
 Modified habitat quality rating = (circle) H M L

iii. Rating

Refer to the Utah Division of Wildlife Resource website for fish species. Use the conclusions from i and ii above and the matrix below to arrive at the functional points and rating (H = high, M = moderate, or L = low) for this function. Circle the appropriate answer.

Types of fish known or suspected within AA	Modified Habitat Quality (ii)						
	H	M	L				
Native fish	1 H	.8H	.6 M				
Introduced fish*	.5 M	.4 M	.3 L				
No fish	.3 L	.2 L	.1 L				
Note: reduce the score by .1 if the AA has carp present.							
.9H	.7M	.5M	.4M	.3L	.2L	.1L	0L

*Many rivers and streams in Utah have both native and introduced fish species present. For example, non native brown trout introduced into Blacksmith Fork River have become established as a self sustaining population that provides an ecological function to the system as do the native cutthroat trout which persist. Other streams are stocked with hatchery raised rainbow trout on a “put and take” basis for sport fishing. These fish are short lived, seldom reproduce and do not provide ecological function equivalent to native fish species. In AA’s where a native/non native mix of fish species exists the evaluator is required to consult with USFWS and UDWR fisheries biologists to determine the appropriate fish/aquatic habitat rating.

15g. General Amphibian Habitat

This field assesses general amphibian habitat within the AA. Source: Consultation with UDWR regional biologist.

UDWR biologist(s) consulted: Name(s) _____ Date(s) _____

Circle the appropriate answer to the following question after consulting with UDWR regional biologist. The UDWR has documented the presence of amphibians in the AA or, habitat and water quality characteristics are such that they would support amphibians.

Rating: Yes No

If the answer is Yes, add .2 under the functional points/rating column in the Functional Assessment Rating Section at the end of this form.

Hydrological/Biophysical Assessment

Draw a simple boundary of the AA on page 12 of this form and illustrate the hydrological conditions found within the AA. Include water source locations, directions of flow (if applicable), approximate depths, and any significant site features that influence site hydrology.

15h. Flood Attenuation

This field assesses the capability of the AA to slow in channel or over bank flow during high water/flood events. This applies to riverine wetlands only. Source: Kleinschmidt Associates (1993), Munson (1974) and Strom et al (2004).

i. Rating

Working from top to bottom, use the matrix below to arrive at the functional points and rating (H = high, M = moderate, or L = low) for this function. Circle the appropriate answer.

Within the AA, estimate % ground coverage with high surface roughness*	≥65%	64%-50%	49%-35%	>35%
Rating	1H	.8H	.6M	.4M

*See glossary for definition of surface roughness rating criteria.

ii. There are residences, businesses, or other features, which may be significantly damaged by floods located within 0.5 miles downstream of the AA. Yes No

Comments:

15i. Short and Long Term Surface Water Storage

This field assesses the potential of the AA to capture and hold surface water originating from inundation, precipitation, upland surface (sheet flow) or subsurface (groundwater flow). Source: Munson (1974), Strom et al (2004), Hammer (1986) and Mitch and Gosselink (1993).

i. Rating

Working from top to bottom, use the matrix below to arrive at the functional points and rating (H = high, M = moderate, or L = low) for this function. Duration of surface water is implied in the definition of wetland class or of the subclass and thus reflects the natural function. Circle the appropriate answer.

Wetlands are inundated	≥ 5 out of 10 years		< 5 out of 10 years	
Has the wetland's natural ability to store water been disturbed negatively?	N	Y	N	Y
Rating	1H	.8H	.6M	.4M

In order to properly assess this function, examination of the area down gradient from the AA may aid in determining whether or not dams, water control structures, overflow aprons, ditches, canals, drain tiles or other forms of outlet or modification exist.

Comments:

15j. Sediment/Nutrient/Toxicant Retention and Removal

This field assesses the ability of the AA to retain and capture sediments, nutrients and toxicants. Source: Kleinschmidt Associates (1999), Hammer (1986) and Hammer and Kadlec (1983).

This function applies to wetlands which could receive excess sediments, nutrients or toxicants through influx of surface or groundwater or direct input. If no wetlands in the AA are subject to such input, circle NA here and proceed with evaluation.

i. Rating

Working from top to bottom, use the matrix below to arrive at the functional points and rating (H = high, M = moderate, or L = low) for this function. Circle the appropriate answer.

Sediment, nutrient, and toxicant input levels within AA	AA receives or surrounding land use with potential to deliver low to moderate levels of sediments, nutrients, or compounds such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.				AA is in close proximity to or receives input from or is on UDEQ list of water bodies in need of TMDL development for “probable causes” related to sediment, nutrients, or toxicants or AA receives or surrounding land use with potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.			
	≥ 50%		<50%		≥ 50%		<50%	
Within the AA, estimate % ground coverage with high to moderate surface roughness*								
Has the wetland’s natural ability to store water been disturbed negatively?	N	Y	N	Y	N	Y	N	Y
Rating	1H	.9H	.8H	.7M	.6M	.5M	.4M	.3L

*See glossary for definition of surface roughness.

Comments:

15k. Sediment/Shoreline Stabilization

This field assesses the ability of the AA to dissipate flow or wave energy in order to reduce erosion. This applies to riverine and lacustrine wetlands only. Source: Kleinschmidt Associates (1999), Keate (2004), Padgett et al (1989) and Mitch and Gosselink (1993).

Applies only if AA occurs on or within the banks or a river, stream, or other natural (vegetated swale) or man-made drainage, or on the shoreline of a standing water body, which is subject to wave action. It does not apply, circle NA here and proceed to next function)

i. Rating

Working from top to bottom, use the matrix below to arrive at the functional points and rating (H = high, M = moderate, or L = low) for this function.

Within the AA, estimate % ground coverage with high surface roughness*	Duration of surface water adjacent to rooted vegetation	
	Permanent	Seasonal
≥ 65%	1H	.7M
64% - 50%	.8H	.5M
49% - 35%	.6M	.3L
< 35%	.4M	.1L

Comments:

Social Value Assessment

The following are not functions but values, which are important to society. Plus answers would suggest important societal assets, which should guide any future mitigation planning.

16. Visual Quality*

Refer to the glossary to distinguish between “wildland wetland” and “urban/exurban wetland”.

If AA is considered “wildland wetland” answer the following three questions based on information gathered from suggested sources. Each ‘yes’ answer receives a plus (+) rating in the space provided.

- i. Is the wetland in public ownership (city, county, state or federal)? _____
- ii. Has wetland experienced moderate to low level of disturbance (refer to glossary)? _____
- iii. Is there an absence of human structures or other human induced disturbances (refer to glossary)? _____

If AA is considered to be an “urban/exurban wetland”, answer the following six questions based on information gathered from suggested sources. Each ‘yes’ answer receives a plus (+) rating in the space provided.

- i. Is the wetland in public ownership (city, county, state or federal)? _____
- ii. Is there potentially a large number of viewers? _____
- iii. Is the viewing distance in the fore or middle grounds for most viewers (refer to glossary)? _____
- iv. Has the wetland experienced a moderate to low level of disturbance (refer to glossary)? _____
- v. Is there an absence of human structures or other human induced disturbances (refer to glossary)? _____
- vi. Is the wetland a part of a larger open space, green space, park, buffer or corridor? _____

17. Recreational/Educational Quality*

Answer the following seven questions for both “wildland wetlands” and “urban/exurban wetlands”. Each ‘yes’ answer receives a plus (+) rating in the space provided.

- i. Is the wetland in public ownership (city, county, state or federal)? _____
- ii. Is the wetland presently used for recreation/education? _____
- iii. Is the wetland ¼ mile or less from an elementary school? _____
- iv. Is the wetland five miles or less from a high school? _____
- v. Is there vehicular, trail, boat or canoe access to the site? _____
- vi. Has the wetland experienced a moderate to low level of disturbance (refer to glossary)? _____
- vii. Is the wetland visible from a county, state or federal highway, heavily used recreation trail, residential development or other situations where large numbers of people would have visual access to the wetland? _____

*Note: In some cases wetlands may contain plant or wildlife species or perform functions that would be diminished by human activity. In these cases recreational and educational activities would be prohibited.

Summary Comments for entire Wetland AA Evaluated

Functional Assessment Rating

Function Variables	General Evaluation	Actual Functional Points/Rating	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)
15b. Plant Community Composition			1	
15c. Listed/Proposed T&E Species Habitat			.9	
15d. UT Natural Heritage Program Species Habitat			.9	
15e. General Wildlife Habitat			1	
15f. General Fish/Aquatic Habitat			1	
15g. General Amphibian Habitat			0	
15h. Flood Attenuation			1	
15i. Short and Long Term Surface Water Storage			1	
15j. Sediment/Nutrient/Toxicant Removal			1	
15k. Sediment/Shoreline Stabilization			1	
Totals:				

If functional variables other than those toned are not applicable (NA) to the AA of concern, enter NA in the possible functional points box and subtract the possible functional points for that variable when calculating percent of total functional points.

Note: % total functional points = actual functional points ÷ possible functional points.

	% total functional points
--	---------------------------

Overall Assessment Area Category

Circle appropriate category based on the criteria outlined below. **I II III IV**

<p>Red Flag Category</p> <p>___ Documented habitat for a federally listed or proposed threatened or endangered plant or animal species was found. (Yes response to question 12)</p> <p>___ Documented habitat for a species rated S1 by the Utah Natural Heritage Program. (Yes response to question 12)</p> <p>___ Wetlands in this category are a special case and require consultation with the COE, USFWS, and UDWR throughout the entire application process.</p>
<p>Category I Wetland: (Must satisfy one of the following criteria; if it does not meet criteria, go to Category II)</p> <p>___ Score of .9 functional point for Species Rated primary documented S2 by the Utah Natural Heritage Program or</p> <p>___ .8 for primary suspected S2 species, level of disturbance is also rated low; or</p> <p>___ Score of 1 functional point for Flood Attenuation (riverine only) and answer to Question 15i. ii is "yes"; or</p> <p>___ Score 1 function point for Plant Community Composition; or</p> <p>___ Total actual functional points > 80% (round to nearest whole #) of total possible functional points.</p>
<p>Category II Wetland: (Criteria for Category I not satisfied and meets any one of the following criteria; if not satisfied, go to Category IV)</p> <p>___ Score of .9 functional point for Species Rated primary documented S3 by the Utah Natural Heritage Program, or</p> <p>___ .8 functional point for Species Rated primary suspected S3 species; level of disturbance is rated low or</p> <p>___ Score of ≥.9 functional point for General Wildlife Habitat; or</p> <p>___ Score of ≥.9 functional point for General Fish/Aquatic Habitat (riverine and lacustrine only); or</p> <p>___ Score of >.7 ≤.8 functional point for Plant Community Composition</p> <p>___ Total Actual Functional Points > 65% (round to nearest whole #) of total possible functional points.</p>
<p>Category III Wetland: (Criteria for Categories I, II or IV not satisfied)</p>
<p>Category IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; if it does not satisfy criteria, place wetland in Category III)</p> <p>___ Total actual functional points < 30% (round to nearest whole #) of total possible functional points</p> <p>___ Roadside Ditch Wetland Classification</p>

Supplemental Diagram A

15b. Plant Community Composition Diagram

Draw a simple boundary of the AA and illustrate all plant transect locations and approximate distances.

Please note that 100 sample points per acre should be collected within the AA. (Example: if AA equals .25 acres, then 25 sample points should be taken.) Never use less than 10 sample points within any AA, even when AA is less than .10 acres in size. Placement of transect(s) should accurately represent the AA. Be sure to place transect(s) through different water regimes, vegetative structure, and topographic changes that may exist within the AA.

Supplemental Diagram B

Hydrological/Biophysical Assessment Diagram

Draw a simple boundary of the AA and illustrate the hydrological conditions found within the AA. Include water source locations, directions of flow (if applicable), approximate depths, and any significant site features that influence site hydrology.

Slope



Slope wetlands: Occur at points of surface changes, breaks in slope or stratigraphic changes. Surface water runoff and groundwater outflow (i.e. – spring or seep) are the primary water sources. Water flow is unidirectional (down slope/gradient). Water may discharge to a stream, lake or depression. Wetland complexes can be comprised of a slope wetland with several depressions or low-points interspersed throughout. Relying on topographic maps, aerial photographs, and field evaluation will help determine which classification is dominant and or most appropriate.

14. Identify subclass

The evaluator uses the information below together with information in Appendix D to identify the AA subclass. This information is not used directly to rate the AA.

Identify the soil type (circle): organic or mineral

Refer to glossary for definitions of organic and mineral soils.

What is the depth water table?

Circle appropriate answer.

Water table < 20 in.

Water table ≥ 20 in.

Presence of heavy metals or toxicants?

Yes

No

Determine the pH range _____

Soil and water pH range

Organic soils

≤ 4.9

5.0 - 6.5

> 6.5

≥ 8.5

Mineral soils

≤ 6.0

6.1-7.3

≥ 7.4 - 8.4

Determine the salinity _____

Water salinity

< 5 dS/m

5-10 dS/m

10-16 dS/m

16-35 dS/m

≥ 35 dS/m

Subclass is:

_____ Seasonal and persistent freshwater

_____ Seasonal and persistent saline and very saline

Reference Appendix D for definitions of water class and salinity.

Depth to water table, pH range, salinity and presence of heavy metals are determined using accepted wetland science protocols.

For montane wetlands, salinity is not listed as all are nonsaline.

Biological Assessment

Sources of assessment criteria for each field are adopted from MDT, *Montana Wetland Assessment Method* and are listed under methods on page 5. Additional criteria sources are listed with each assessment field.

15a. Level of Disturbance

This field assesses the level of disturbance in the AA and EAA. Source: Soule (1991), Forman and Godron (1986), Fahrig (1997), Buffler (2005), and Spackman and Hughes (1995).

Use matrix below to determine level of disturbance (H = high, M = moderate, or L = low). Circle the appropriate answer.

Conditions within AA	Predominant conditions found in EAA (600 feet from perimeter of AA)		
	Land managed in predominantly natural state; is not grazed, hayed, landscaped, or otherwise converted; does not contain roads or buildings.	Land not cultivated, but moderately grazed or hayed; or has been subject to minor clearing, fill placement or hydrological alteration; contains few roads, buildings, ditches or canals.	Land cultivated or heavily grazed or landscaped; subject to substantial fill placement, grading, clearing, or hydrological alteration; high road or building density, and or numerous ditches or canals.
AA occurs and is managed in predominantly natural state; is not grazed, hayed, landscaped, or otherwise converted; does not contain human induced trails.	L	L	M
AA not cultivated, but moderately grazed or hayed; or has been subject to relatively minor clearing or hydrological alteration; contains few human induced trails, ditches or canals.	M	M	H
AA cultivated or heavily grazed or landscaped; subject to relatively substantial grading, clearing, or hydrological alteration; and numerous human induced trails, ditches or canals.	H	H	H

Comments: Note types of disturbance, intensity, season, etc.

15b. Plant Community Composition

This field assesses the plant community within the AA. Source: Keate (2004) and Padgett et al. (1989).

Refer to Appendix F for photographs, plan views, cross sectional diagrams, the range of expected coverage and wetland specific vegetation lists. Refer to Appendix G for transect protocol (step point). Draw a simple boundary of the AA and illustrate all plant transect locations and approximate distances on page 11 of this form. See glossary for definition of native wetland plants.

i. Do you find all layers of vegetation that are expected for this wetland type? Circle: Y N

ii. What is the percent ground cover (within the AA) dominated by native wetland vegetation?

High \geq 80%, Moderate 79-60%, Low $<$ 60%

iii. What is the percent of native wetland plants to non-native or non-wetland plants observed using the transect protocol?

High \geq 80%, Moderate 79-60%, Low $<$ 60%

iv. Rating for riverine and lacustrine wetlands.

Layers (i)	Y									N									
	H			M			L			H			M			L			
Cover (ii)																			
Native Wetland Species (iii)	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L	
Rating	1H	.9H	.8H	.7M	.6M	.5M	.4M	.3L	.2L	.9H	.8H	.7M	.6M	.5M	.4M	.3L	.2L	.1L	

iv. Rating for depression, mineral flat, and slope wetlands.

Cover (ii)	H			M			L		
	Native Wetland Species (iii)	H	M	L	H	M	L	H	M
Rating	1H	.8H	.6M	.8H	.6M	.4M	.6M	.4M	.2L

Comments:

15c. Habitat for Federally Listed or Proposed Threatened or Endangered Plants or Animals

This field assesses documented or suspected use of the AA by Federally listed or proposed threatened or endangered plants or animals.

Source: Consultation with USFWS biologist.

Refer to the U.S. Fish and Wildlife Services website at www.fws.gov or visit the Utah Data Conservation Center website at <http://dwrcdc.nr.utah.gov/ucdc/>. Circle one category below based on definitions contained in the instructions and after consultation with USFWS biologist.

i. AA is Documented (D) or Suspected (S) to contain:

*Documented primary habitat for T or E or State listed S-1 species has been addressed in #12

- Primary habitat (list species) * S _____
- Secondary habitat (list species) D S _____
- Incidental habitat (list species) D S _____
- No usable habitat D S _____

ii. Rating

Evaluator uses the conclusions from i above and the matrix below to arrive at the functional points and rating (H = high, M = moderate, or L = low) for this function. Circle the appropriate answer.

Highest Habitat Level	Primary/S	Secondary/D	Secondary/S	Incidental/D	Incidental/S	None
Rating	.9 H	.8 H	.7 M	.5 M	.3 L	0 L

Sources for documented use (e.g. observations, records, etc):

15d. Habitat for plant or animals rated S2 or S3 by the Utah Natural Heritage Program

This field assesses documented or suspected use of the AA by S2 or S3 species listed by the Utah Natural Heritage Program (UNHP).

Source: Consultation with UDWR regional biologist.

Refer to the UNHP website or the Utah Sensitive Species List at <http://dwrcdc.nr.utah.gov/ucdc/>.

Do not include species listed in 15c from above. Circle one category below based on definitions contained in the instructions and after consultation with UDWR biologist.

i. AA is Documented (D) or Suspected (S) to contain:

- Primary habitat (list species and S rating) D S _____
- Secondary habitat (list species and S rating) D S _____
- Incidental habitat (list species and S rating) D S _____
- No usable habitat D S _____

ii. Rating

Evaluator uses the conclusions from i above and the matrix below to arrive at the functional points and rating (H = high, M = moderate, or L = low).

Highest Habitat Level	Primary/D	Primary/S	Secondary/D	Secondary/S	Incidental/D	Incidental/S	None
Rating	.9 H	.8 H	.7 M	.6 M	.2 L	.1 L	0 L

Sources for documented use (e.g. observations, records, etc.):

15e. General Wildlife Habitat

This field assesses general wildlife habitat conditions in the AA. Source: Hammer (1992), Mitch and Gosselink (1993) and Weller and Spatcher (1965).

i. Wildlife habitat features

Working from top to bottom, circle appropriate AA attributes in matrix to arrive at a rating (H = high, M = moderate, or L = low).

Disturbance Level (15a)	L			M			H		
Plant Community (15b)	H	M	L	H	M	L	H	M	L
Rating	H	H	M	H	M	L	M	L	L

Wildlife habitat features rating,	1H	.6M	.2L
-----------------------------------	----	-----	-----

ii. Modified Wildlife Habitat Rating

The wildlife habitat features rating may be modified based on documented wildlife use and levels of use of the AA. Consult with the UDWR regional wildlife biologist to determine the level of wildlife use in the AA using the procedures detailed below.

UDWR biologist consulted: Name(s) _____ Date(s) _____

First circle the appropriate answer to the following question: Does the UDWR have sufficient knowledge of the AA to determine a level of general wildlife use. Yes No

If the answer is No do not modify your answer to 15e(i) above. If you answer is Yes and after further consultation with a UDWR biologist and using the level of use descriptive categories on page 14. Select the descriptive category (H, M or L) that best describes the level of wildlife use in the AA. Circle the appropriate answer. H M L

If the level of use circled is:

H – add .2 to the wildlife habitat features rating 15e(i)

M – add .1 to the wildlife habitat features rating

L – do not modify the wildlife habitat features rating

iii. Rating

Use the conclusions from i and ii above and the matrix below to arrive at the functional points and rating (H = high, M = moderate, or L = low) for this function. Circle the appropriate answer.

Modified wildlife habitat features rating	1H			.6M			.2L		
Rating	1.2H	1.1H	1H	.8H	.7M	.6M	.4M	.3L	.2L

Comments:

15f. General Fish/Aquatic Habitat

This field assesses general fish and aquatic habitat in the AA. Source: Sigler and Miller (1963), Gore (1985), Williams et al (1997) and National Research Council (1992).

Assess this function if the AA is used by fish or the existing situation is “correctable” such that the AA could be used by fish [i.e., fish use is precluded by perched culvert or other barrier, etc.]. If the AA is not or was not historically used by fish due to lack of habitat, excessive gradient, etc., circle NA here and proceed to the next function. If fish use occurs in the AA but is not desired from a resource management perspective [such as fish use within an irrigation canal], then Habitat Quality [i below] should be marked as “Low”, applied accordingly in ii below, and noted in the comments.)

i. Habitat Quality

Refer to the glossary for further definitions of these terms. Circle appropriate AA attributes in matrix to arrive at the quality rating (H = high, M = moderate, or L = low).

Duration of surface water in AA	Permanent / Perennial			Seasonal / Intermittent			Temporary / Ephemeral		
Cover: % of water body in AA containing cover objects such as submerged logs, large rocks & boulders, overhanging banks, floating-leaved vegetation, etc.	>25%	10–25%	<10%	>25%	10–25%	<10%	>25%	10–25%	<10%
Shading: >75% of stream bank or shoreline within AA contains riparian or wetland scrub-shrub or forested communities	H	H	H	H	H	M	M	M	M
Shading: 50 to 75% of stream bank or shoreline within AA contains riparian or wetland scrub-shrub or forested communities	H	H	M	M	M	M	M	L	L
Shading: < 50% of stream bank or shoreline within AA contains riparian or wetland scrub-shrub or forested communities	H	M	M	M	L	L	L	L	L

ii. Modified Habitat Quality

Circle the appropriate response. If answer is Y, then reduce rating in i above by one level (H = M, M = L, L = L)

Is fish use of the AA precluded or significantly reduced by a culvert, dike, or other man-made structure or activity or is the water body included on the UDEQ list of water bodies in need of TMDL development with listed “Probable Impaired Uses” including cold or warm water fishery or aquatic life support? Y N

Modified habitat quality rating = (circle) H M L

iii. Rating

Refer to the Utah Division of Wildlife Resource website for fish species. Use the conclusions from i and ii above and the matrix below to arrive at the functional points and rating (H = high, M = moderate, or L = low) for this function. Circle the appropriate answer.

Types of fish known or suspected within AA	Modified Habitat Quality (ii)							
	H	M	L					
Native fish	1 H	.8H	.6 M					
Introduced fish*	.5 M	.4 M	.3 L					
No fish	.3 L	.2 L	.1 L					
Note: reduce the score by .1 if the AA has carp present.								
	.9H	.7M	.5M	.4M	.3L	.2L	.1L	0L

15g. General Amphibian Habitat

This field assesses general amphibian habitat within the AA. Source: Consultation with UDWR regional biologist.

UDWR biologist(s) consulted: Name(s) _____ Date(s) _____

Circle the appropriate answer to the following question after consulting with UDWR regional biologist. The UDWR has documented the presence of amphibians in the AA or, habitat and water quality characteristics are such that they would support amphibians.

Rating: Yes No

If the answer is Yes, add .2 under the functional points/rating column in the Functional Assessment Rating Section at the end of this form.

Hydrological/Biophysical Assessment

Draw a simple boundary of the AA on page 12 of this form and illustrate the hydrological conditions found within the AA. Include water source locations, directions of flow (if applicable), approximate depths, and any significant site features that influence site hydrology.

15h. Flood Attenuation

This field assesses the capability of the AA to slow in channel or over bank flow during high water/flood events. This applies to riverine wetlands only. Source: Kleinschmidt Associates (1993), Munson (1974) and Strom et al (2004).

i. Rating

Working from top to bottom, use the matrix below to arrive at the functional points and rating (H = high, M = moderate, or L = low) for this function. Circle the appropriate answer.

Within the AA, estimate % ground coverage with high surface roughness*	≥65%	64%-50%	49%-35%	<35%
Rating	1H	.8H	.6M	.4M

*See glossary for definition of surface roughness rating criteria.

ii. There are residences, businesses, or other features, which may be significantly damaged by floods located within 0.5 miles downstream of the AA. Yes No

Comments:

15i. Short and Long Term Surface Water Storage

This field assesses the potential of the AA to capture and hold surface water originating from inundation, precipitation, upland surface (sheet flow) or subsurface (groundwater flow). Source: Munson (1974), Strom et al (2004), Hammer (1986) and Mitch and Gosselink (1993).

i. Rating

Working from top to bottom, use the matrix below to arrive at the functional points and rating (H = high, M = moderate, or L = low) for this function. Duration of surface water is implied in the definition of wetland class or of the subclass and thus reflects the natural function. Circle the appropriate answer.

Wetlands are inundated	≥ 5 out of 10 years		< 5 out of 10 years	
Has the wetland's natural ability to store water been disturbed negatively?	N	Y	N	Y
Rating	1H	.8H	.6M	.4M

In order to properly assess this function, examination of the area down gradient from the AA may aid in determining whether or not dams, water control structures, overflow aprons, ditches, canals, drain tiles or other forms of outlet or modification exist.

Comments:

15j. Sediment/Nutrient/Toxicant Retention and Removal

This field assesses the ability of the AA to retain and capture sediments, nutrients and toxicants. Source: Kleinschmidt Associates (1999), Hammer (1986) and Hammer and Kadlec (1983).

This function applies to wetlands which could receive excess sediments, nutrients or toxicants through influx of surface or groundwater or direct input. If no wetlands in the AA are subject to such input, circle NA here and proceed with evaluation.

i. Rating

Working from top to bottom, use the matrix below to arrive at the functional points and rating (H = high, M = moderate, or L = low) for this function. Circle the appropriate answer.

Sediment, nutrient, and toxicant input levels within AA	AA receives or surrounding land use with potential to deliver low to moderate levels of sediments, nutrients, or compounds such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.				AA is in close proximity to or receives input from or is on UDEQ list of water bodies in need of TMDL development for “probable causes” related to sediment, nutrients, or toxicants or AA receives or surrounding land use with potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.			
	≥ 50%		<50%		≥ 50%		<50%	
Within the AA, estimate % ground coverage with high to moderate surface roughness*								
Has the wetland’s natural ability to store water been disturbed negatively?	N	Y	N	Y	N	Y	N	Y
Rating	1H	.9H	.8H	.7M	.6M	.5M	.4M	.3L

*See glossary for definition of surface roughness.

Comments:

15k. Sediment/Shoreline Stabilization

This field assesses the ability of the AA to dissipate flow or wave energy in order to reduce erosion. This applies to riverine and lacustrine wetlands only. Source: Kleinschmidt Associates (1999), Keate (2004), Padgett et al (1989) and Mitch and Gosselink (1993).

Applies only if AA occurs on or within the banks or a river, stream, or other natural (vegetated swale) or man-made drainage, or on the shoreline of a standing water body, which is subject to wave action. It does not apply, circle NA here and proceed to next function)

i. Rating

Working from top to bottom, use the matrix below to arrive at the functional points and rating (H = high, M = moderate, or L = low) for this function.

Within the AA, estimate % ground coverage with high surface roughness*	Duration of surface water adjacent to rooted vegetation	
	Permanent	Seasonal
≥ 65%	1H	.7M
64% - 50%	.8H	.5M
49% - 35%	.6M	.3L
< 35%	.4M	.1L

Comments:

Social Value Assessment

The following are not functions but values, which are important to society. Plus answers would suggest important societal assets, which should guide any future mitigation planning.

16. Visual Quality*

Refer to the glossary to distinguish between “wildland wetland” and “urban/exurban wetland”.

If AA is considered “wildland wetland” answer the following three questions based on information gathered from suggested sources. Each ‘yes’ answer receives a plus (+) rating in the space provided.

- i. Is the wetland in public ownership (city, county, state or federal)? _____
- ii. Has wetland experienced moderate to low level of disturbance (refer to glossary)? _____
- iii. Is there an absence of human structures or other human induced disturbances (refer to glossary)? _____

If AA is considered to be an “urban/exurban wetland”, answer the following six questions based on information gathered from suggested sources. Each ‘yes’ answer receives a plus (+) rating in the space provided.

- i. Is the wetland in public ownership (city, county, state or federal)? _____
- ii. Is there potentially a large number of viewers? _____
- iii. Is the viewing distance in the fore or middle grounds for most viewers (refer to glossary)? _____
- iv. Has the wetland experienced a moderate to low level of disturbance (refer to glossary)? _____
- v. Is there an absence of human structures or other human induced disturbances (refer to glossary)? _____
- vi. Is the wetland a part of a larger open space, green space, park, buffer or corridor? _____

17. Recreational/Educational Quality*

Answer the following seven questions for both “wildland wetlands” and “urban/exurban wetlands”. Each ‘yes’ answer receives a plus (+) rating in the space provided.

- i. Is the wetland in public ownership (city, county, state or federal)? _____
- ii. Is the wetland presently used for recreation/education? _____
- iii. Is the wetland ¼ mile or less from an elementary school? _____
- iv. Is the wetland five miles or less from a high school? _____
- v. Is there vehicular, trail, boat or canoe access to the site? _____
- vi. Has the wetland experienced a moderate to low level of disturbance (refer to glossary)? _____
- vii. Is the wetland visible from a county, state or federal highway, heavily used recreation trail, residential development or other situations where large numbers of people would have visual access to the wetland? _____

*Note: In some cases wetlands many contain plant or wildlife species or perform functions that would be diminished by human activity. In these cases recreational and educational activities would be prohibited.

Summary Comments for entire Wetland AA Evaluated

Functional Assessment Rating

Function Variables	General Evaluation	Actual Functional Points/Rating	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)
15b. Plant Community Composition			1	
15c. Listed/Proposed T&E Species Habitat			.9	
15d. UT Natural Heritage Program Species Habitat			.9	
15e. General Wildlife Habitat			1	
15f. General Fish/Aquatic Habitat			1	
15g. General Amphibian Habitat			0	
15h. Flood Attenuation			1	
15i. Short and Long Term Surface Water Storage			1	
15j. Sediment/Nutrient/Toxicant Removal			1	
15k. Sediment/Shoreline Stabilization			1	
Totals:				

If functional variables other than those toned are not applicable (NA) to the AA of concern, enter NA in the possible functional points box and subtract the possible functional points for that variable when calculating percent of total functional points.

Note: % total functional points = actual functional points ÷ possible functional points.

	% total functional points
--	---------------------------

Overall Assessment Area Category

Circle appropriate category based on the criteria outlined below. **I II III IV**

<p>Red Flag Category</p> <p><input type="checkbox"/> Documented habitat for a federally listed or proposed threatened or endangered plant or animal species was found. (Yes response to question 12)</p> <p><input type="checkbox"/> Documented habitat for a species rated S1 by the Utah Natural Heritage Program. (Yes response to question 12)</p> <p>Wetlands in this category are a special case and require consultation with the COE, USFWS, and UDWR throughout the entire application process.</p>
<p>Category I Wetland: (Must satisfy one of the following criteria; if it does not meet criteria, go to Category II)</p> <p><input type="checkbox"/> Score of .9 functional point for Species Rated primary documented S2 by the Utah Natural Heritage Program or</p> <p><input type="checkbox"/> .8 for primary suspected S2 species, level of disturbance is also rated low; or</p> <p><input type="checkbox"/> Score of 1 functional point for Flood Attenuation (riverine only) and answer to Question 15i. ii is "yes"; or</p> <p><input type="checkbox"/> Score 1 function point for Plant Community Composition; or</p> <p><input type="checkbox"/> Total actual functional points > 80% (round to nearest whole #) of total possible functional points.</p>
<p>Category II Wetland: (Criteria for Category I not satisfied and meets any one of the following criteria; if not satisfied, go to Category IV)</p> <p><input type="checkbox"/> Score of .9 functional point for Species Rated primary documented S3 by the Utah Natural Heritage Program, or</p> <p><input type="checkbox"/> .8 functional point for Species Rated primary suspected S3 species; level of disturbance is rated low or</p> <p><input type="checkbox"/> Score of ≥.9 functional point for General Wildlife Habitat; or</p> <p><input type="checkbox"/> Score of ≥.9 functional point for General Fish/Aquatic Habitat (riverine and lacustrine only); or</p> <p><input type="checkbox"/> Score of >.7 ≤.8 functional point for Plant Community Composition</p> <p><input type="checkbox"/> Total Actual Functional Points > 65% (round to nearest whole #) of total possible functional points.</p>
<p>Category III Wetland: (Criteria for Categories I, II or IV not satisfied)</p>
<p>Category IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; if it does not satisfy criteria, place wetland in Category III)</p> <p><input type="checkbox"/> Total actual functional points < 30% (round to nearest whole #) of total possible functional points</p> <p><input type="checkbox"/> Roadside Ditch Wetland Classification</p>

Supplemental Diagram A

15b. Plant Community Composition Diagram

Draw a simple boundary of the AA and illustrate all plant transect locations and approximate distances.

Please note that 100 sample points per acre should be collected within the AA. (Example: if AA equals .25 acres, then 25 sample points should be taken.) Never use less than 10 sample points within any AA, even when AA is less than .10 acres in size. Placement of transect(s) should accurately represent the AA. Be sure to place transect(s) through different water regimes, vegetative structure, and topographic changes that may exist within the AA.

Supplemental Diagram B

Hydrological/Biophysical Assessment Diagram

Draw a simple boundary of the AA and illustrate the hydrological conditions found within the AA. Include water source locations, directions of flow (if applicable), approximate depths, and any significant site features that influence site hydrology.

UDOT Wetland Assessment Form (Depressional)

1. Project Name:
2. Project Number:
3. USCOE Permit Number: _____ Project Pin Number: _____
4. Evaluation Date (MM/DD/YYYY): _____
5. Evaluating Agency: _____
6. Evaluator(s): _____
7. Purpose of Evaluation (check one): <input type="checkbox"/> Wetlands potentially affected by UDOT project <input type="checkbox"/> Mitigation wetlands, pre-construction <input type="checkbox"/> Mitigation wetlands, post-construction <input type="checkbox"/> Other (explain): _____
8. Wetland/Site Number(s): _____
9. Wetland Location(s): Ecoregion (see map Appendix A): _____ Watershed (see map Appendix A): _____ County (see map Appendix A): _____ Legal: T _____ N or S; R _____ E or W; S _____; T _____ N or S; R _____ E or W; S _____ Approximate Stationing or Mileposts: _____ _____ GPS Reference Number: _____ Other Location information: _____
10. Wetland Size (total acres, measured by GPS if applicable): _____
11. Assessment Area (AA) (total acres, measured by GPS if applicable, see appendix): _____
12. Habitat for Federally Listed or Proposed Threatened or Endangered Plants or Animals or State Listed S1 Species It is required that the evaluator contact USFWS with regards to the presence or absence of threatened or endangered (T or E) species and UDWR concerning the presence or absence of a state listed S1, S2 or S3 species. The documented habitat of a federally listed or proposed threatened or endangered plant or animal species or a state listed S1 species results in an automatic Red Flag categorization of the assessed site. Coordination with USFWS and UDWR is required. (However, the evaluation proceeds as normal so that the COE receives an assessment of function and value consistent with the UDOT assessment method.) Is the AA documented to contain primary habitat for T or E or S-1 species? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, list the species: (This field assesses habitat for species receiving protection under provision of the Endangered Species Act and Utah critically imperiled species.)
13. Selecting a Wetland Classification Refer to the glossary to determine the correct wetland class. Refer to Appendix E for reference photos and lists of the most common native species in each classification. Turn to appropriate colored pages to continue functional assessment as noted below. Riverine: Blue Slope: Pink Depressional: Yellow Mineral Flat: Green Lacustrine Fringe: Purple Roadside Ditch Wetland: If AA qualifies as a non-jurisdictional 'roadside ditch wetland', AA is classified as Category IV. Further assessment is not necessary, although all documentation must be completed.

***Toned questions or functional categories on the assessment form do not apply to this wetland class, do not answer. They are excluded from the individual function rating as well as the final overall functional assessment rating.**

Depressional



Depressional wetlands: Occur in topographic depressions with closed contours. Water sources are precipitation, runoff and groundwater. Water flow vectors are toward the center of the depression. Dominant hydrodynamics are vertical. May or may not have inlets or outlets. Depressions that are full, may release water down slope/gradient and tend to be a part of a larger slope complex. Relying on topographic maps, aerial photographs, and field evaluation will help determine which classification is dominant and or most appropriate.

14. Identify subclass

The evaluator uses the information below together with information in Appendix D to identify the AA subclass. This information is not used directly to rate the AA.

Identify water class _____

- Ephemeral – surface water is present for brief periods in some years (< 3 mo/yr)
- Seasonal – surface water is present for longer periods in most years (3-6 mo/yr)
- Semi-permanent – surface water is common to persistent in all years (6-12 mo/yr)
- Permanent – surface water is continuously present in all years

Identify the soil Organic or Mineral

Refer to glossary for definitions of organic and mineral soils.

Determine the pH range _____

Organic soils	Mineral soils
≤ 4.9	≤ 6.0
5.0 - 6.5	6.1-7.3
> 6.5	≥ 7.4 - 8.4
≥ 8.5	

Determine the salinity _____

- Water Salinity
- < 5 dS/m
- 5-10 dS/m
- 10-16 dS/m
- 16-35 dS/m
- ≥ 35 dS/m

Presence of heavy metals or toxicants?

- Yes
- No

Subclass is:

- _____ Ephemeral
- _____ Seasonal Freshwater
- _____ Semi-permanent and permanent freshwater
- _____ Semi-permanent and permanent slightly to strongly saline
- _____ Seasonal and semi-permanent hypersaline

Water class, soil type, pH range, salinity and presence of heavy metals are determined using accepted wetland science protocols.

Reference Appendix D for definitions of water class and salinity.

Biological Assessment

Sources of assessment criteria for each field are adopted from MDT, *Montana Wetland Assessment Method* and are listed under methods on page 5. Additional criteria sources are listed with each assessment field.

15a. Level of Disturbance

This field assesses the level of disturbance in the AA and EAA. Source: Soule (1991), Forman and Godron (1986), Fahrig (1997), Buffler (2005), and Spackman and Hughes (1995).

Use matrix below to determine level of disturbance (H = high, M = moderate, or L = low). Circle the appropriate answer.

Conditions within AA	Predominant conditions found in EAA (600 feet from perimeter of AA)		
	Land managed in predominantly natural state; is not grazed, hayed, landscaped, or otherwise converted; does not contain roads or buildings.	Land not cultivated, but moderately grazed or hayed; or has been subject to minor clearing, fill placement or hydrological alteration; contains few roads, buildings, ditches or canals.	Land cultivated or heavily grazed or landscaped; subject to substantial fill placement, grading, clearing, or hydrological alteration; high road or building density, and or numerous ditches or canals.
AA occurs and is managed in predominantly natural state; is not grazed, hayed, landscaped, or otherwise converted; does not contain human induced trails.	L	L	M
AA not cultivated, but moderately grazed or hayed; or has been subject to relatively minor clearing or hydrological alteration; contains few human induced trails, ditches or canals.	M	M	H
AA cultivated or heavily grazed or landscaped; subject to relatively substantial grading, clearing, or hydrological alteration; and numerous human induced trails, ditches or canals.	H	H	H

Comments: Note types of disturbance, intensity, season, etc.

15b. Plant Community Composition

This field assesses the plant community within the AA. Source: Keate (2004) and Padgett et al. (1989).

Refer to Appendix E for photographs, plan views, cross sectional diagrams, the range of expected coverage and wetland specific vegetation lists. Refer to Appendix F for transect protocol (step point). Draw a simple boundary of the AA and illustrate all plant transect locations and approximate distances on page 11 of this form. See glossary for definition of native wetland plants.

i. Do you find all layers of vegetation that are expected for this wetland type? Circle: Y N

ii. What is the percent ground cover (within the AA) dominated by native wetland vegetation?

High \geq 80%, Moderate 79-60%, Low < 60%

iii. What is the percent of native wetland plants to non-native or non-wetland plants observed using the transect protocol?

High \geq 80%, Moderate 79-60%, Low < 60%

iv. Rating for riverine and lacustrine wetlands.

Layers (i)	Y									N									
	H			M			L			H			M			L			
Cover (ii)																			
Native Wetland Species (iii)	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L	
Rating	1H	.9H	.8H	.7M	.6M	.5M	.4M	.3L	.2L	.9H	.8H	.7M	.6M	.5M	.4M	.3L	.2L	.1L	

iv. Rating for depressionnal, mineral flat, and slope wetlands.

Cover (ii)	H			M			L		
	Native Wetland Species (iii)	H	M	L	H	M	L	H	M
Rating	1H	.8H	.6M	.8H	.6M	.4M	.6M	.4M	.2L

Comments:

15c. Habitat for Federally Listed or Proposed Threatened or Endangered Plants or Animals

This field assesses documented or suspected use of the AA by Federally listed or proposed threatened or endangered plants or animals.

Source: Consultation with USFWS biologist.

Refer to the U.S. Fish and Wildlife Services website at www.fws.gov or visit the Utah Data Conservation Center website at <http://dwrcdc.nr.utah.gov/ucdc/>. Circle one category below based on definitions contained in the instructions and after consultation with USFWS biologist.

i. AA is Documented (D) or Suspected (S) to contain:

*Documented primary habitat for T or E or State listed S-1 species has been addressed in #12

- Primary habitat (list species) * S _____
- Secondary habitat (list species) D S _____
- Incidental habitat (list species) D S _____
- No usable habitat D S _____

ii. Rating

Evaluator uses the conclusions from i above and the matrix below to arrive at the functional points and rating (H = high, M = moderate, or L = low) for this function. Circle the appropriate answer.

Highest Habitat Level	Primary/S	Secondary/D	Secondary/S	Incidental/D	Incidental/S	None
Rating	.9 H	.8 H	.7 M	.5 M	.3 L	0 L

Sources for documented use (e.g. observations, records, etc):

15d. Habitat for plant or animals rated S2 or S3 by the Utah Natural Heritage Program

This field assesses documented or suspected use of the AA by S2 or S3 species listed by the Utah Natural Heritage Program (UNHP).

Source: Consultation with UDWR regional biologist.

Refer to the UNHP website or the Utah Sensitive Species List at <http://dwrcdc.nr.utah.gov/ucdc/>.

Do not include species listed in 15c from above. Circle one category below based on definitions contained in the instructions and after consultation with UDWR biologist.

i. AA is Documented (D) or Suspected (S) to contain:

- Primary habitat (list species and S rating) D S _____
- Secondary habitat (list species and S rating) D S _____
- Incidental habitat (list species and S rating) D S _____
- No usable habitat D S _____

ii. Rating

Evaluator uses the conclusions from i above and the matrix below to arrive at the functional points and rating (H = high, M = moderate, or L = low).

Highest Habitat Level	Primary/D	Primary/S	Secondary/D	Secondary/S	Incidental/D	Incidental/S	None
Rating	.9 H	.8 H	.7 M	.6 M	.2 L	.1 L	0 L

Sources for documented use (e.g. observations, records, etc.):

15e. General Wildlife Habitat

This field assesses general wildlife habitat conditions in the AA. Source: Hammer (1992), Mitch and Gosselink (1993) and Weller and Spatcher (1965).

i. Wildlife habitat features

Working from top to bottom, circle appropriate AA attributes in matrix to arrive at a rating (H = high, M = moderate, or L = low).

Disturbance Level (15a)	L			M			H		
Plant Community (15b)	H	M	L	H	M	L	H	M	L
Rating	H	H	M	H	M	L	M	L	L

Wildlife habitat features rating.	1H	.6M	.2L
-----------------------------------	----	-----	-----

ii. Modified Wildlife Habitat Rating

The wildlife habitat features rating may be modified based on documented wildlife use and levels of use of the AA. Consult with the UDWR regional wildlife biologist to determine the level of wildlife use in the AA using the procedures detailed below.

UDWR biologist consulted: Name(s) _____ Date(s) _____

First circle the appropriate answer to the following question: Does the UDWR have sufficient knowledge of the AA to determine a level of general wildlife use. Yes No

If the answer is No do not modify your answer to 15e(i) above. If you answer is Yes and after further consultation with a UDWR biologist and using the level of use descriptive categories on page 14. Select the descriptive category (H, M or L) that best describes the level of wildlife use in the AA. Circle the appropriate answer. H M L

If the level of use circled is:

H – add .2 to the wildlife habitat features rating 15e(i)

M – add .1 to the wildlife habitat features rating

L – do not modify the wildlife habitat features rating

iii. Rating

Use the conclusions from i and ii above and the matrix below to arrive at the functional points and rating (H = high, M = moderate, or L = low) for this function. Circle the appropriate answer.

Modified wildlife habitat features rating	1H			.6M			.2L		
Rating	1.2H	1.1H	1H	.8H	.7M	.6M	.4M	.3L	.2L

Comments:

15f. General Fish/Aquatic Habitat

This field assesses general fish and aquatic habitat in the AA. Source: Sigler and Miller (1963), Gore (1985), Williams et al (1997) and National Research Council (1992).

Assess this function if the AA is used by fish or the existing situation is “correctable” such that the AA could be used by fish [i.e., fish use is precluded by perched culvert or other barrier, etc.]. If the AA is not or was not historically used by fish due to lack of habitat, excessive gradient, etc., circle NA here and proceed to the next function. If fish use occurs in the AA but is not desired from a resource management perspective [such as fish use within an irrigation canal], then Habitat Quality [i below] should be marked as “Low”, applied accordingly in ii below, and noted in the comments.)

i. Habitat Quality

Refer to the glossary for further definitions of these terms. Circle appropriate AA attributes in matrix to arrive at the quality rating (H = high, M = moderate, or L = low).

Duration of surface water in AA	Permanent / Perennial			Seasonal / Intermittent			Temporary / Ephemeral		
Cover: % of water body in AA containing cover objects such as submerged logs, large rocks & boulders, overhanging banks, floating-leaved vegetation, etc.	>25%	10–25%	<10%	>25%	10–25%	<10%	>25%	10–25%	<10%
Shading: >75% of stream bank or shoreline within AA contains riparian or wetland scrub-shrub or forested communities	H	H	H	H	H	M	M	M	M
Shading: 50 to 75% of stream bank or shoreline within AA contains riparian or wetland scrub-shrub or forested communities	H	H	M	M	M	M	M	L	L
Shading: < 50% of stream bank or shoreline within AA contains riparian or wetland scrub-shrub or forested communities	H	M	M	M	L	L	L	L	L

ii. Modified Habitat Quality

Circle the appropriate response. If answer is Y, then reduce rating in i above by one level (H = M, M = L, L = L)

Is fish use of the AA precluded or significantly reduced by a culvert, dike, or other man-made structure or activity or is the water body included on the UDEQ list of water bodies in need of TMDL development with listed “Probable Impaired Uses” including cold or warm water fishery or aquatic life support? Y N

Modified habitat quality rating = (circle) H M L

iii. Rating

Refer to the Utah Division of Wildlife Resource website for fish species. Use the conclusions from i and ii above and the matrix below to arrive at the functional points and rating (H = high, M = moderate, or L = low) for this function. Circle the appropriate answer.

Types of fish known or suspected within AA	Modified Habitat Quality (ii)						
	H	M	L				
Native fish	1 H	.8H	.6 M				
Introduced fish*	.5 M	.4 M	.3 L				
No fish	.3 L	.2 L	.1 L				
Note: reduce the score by .1 if the AA has carp present.							
.9H	.7M	.5M	.4M	.3L	.2L	.1L	0L

15g. General Amphibian Habitat

This field assesses general amphibian habitat within the AA. Source: Consultation with UDWR regional biologist.

UDWR biologist(s) consulted: Name(s) _____ Date(s) _____

Circle the appropriate answer to the following question after consulting with UDWR regional biologist. The UDWR has documented the presence of amphibians in the AA or, habitat and water quality characteristics are such that they would support amphibians.

Rating: Yes No

If the answer is Yes, add .2 under the functional points/rating column in the Functional Assessment Rating Section at the end of this form.

Hydrological/Biophysical Assessment

Draw a simple boundary of the AA on page 12 of this form and illustrate the hydrological conditions found within the AA. Include water source locations, directions of flow (if applicable), approximate depths, and any significant site features that influence site hydrology.

15h. Flood Attenuation

This field assesses the capability of the AA to slow in channel or over bank flow during high water/flood events. This applies to riverine wetlands only. Source: Kleinschmidt Associates (1993), Munson (1974) and Strom et al (2004).

i. Rating

Working from top to bottom, use the matrix below to arrive at the functional points and rating (H = high, M = moderate, or L = low) for this function. Circle the appropriate answer.

Within the AA, estimate % ground coverage with high surface roughness*	≥65%	64%-50%	49%-35%	<35%
Rating	1H	.8H	.6M	.4M

*See glossary for definition of surface roughness rating criteria.

ii. There are residences, businesses, or other features, which may be significantly damaged by floods located within 0.5 miles downstream of the AA. Yes No

Comments:

15i. Short and Long Term Surface Water Storage

This field assesses the potential of the AA to capture and hold surface water originating from inundation, precipitation, upland surface (sheet flow) or subsurface (groundwater flow). Source: Munson (1974), Strom et al (2004), Hammer (1986) and Mitch and Gosselink (1993).

i. Rating

Working from top to bottom, use the matrix below to arrive at the functional points and rating (H = high, M = moderate, or L = low) for this function. Duration of surface water is implied in the definition of wetland class or of the subclass and thus reflects the natural function. Circle the appropriate answer.

Wetlands are inundated	≥ 5 out of 10 years		< 5 out of 10 years	
Has the wetland's natural ability to store water been disturbed negatively?	N	Y	N	Y
Rating	1H	.8H	.6M	.4M

In order to properly assess this function, examination of the area down gradient from the AA may aid in determining whether or not dams, water control structures, overflow aprons, ditches, canals, drain tiles or other forms of outlet or modification exist.

Comments:

15j. Sediment/Nutrient/Toxicant Retention and Removal

This field assesses the ability of the AA to retain and capture sediments, nutrients and toxicants. Source: Kleinschmidt Associates (1999), Hammer (1986) and Hammer and Kadlec (1983).

This function applies to wetlands which could receive excess sediments, nutrients or toxicants through influx of surface or groundwater or direct input. If no wetlands in the AA are subject to such input, circle NA here and proceed with evaluation.

i. Rating

Working from top to bottom, use the matrix below to arrive at the functional points and rating (H = high, M = moderate, or L = low) for this function. Circle the appropriate answer.

Sediment, nutrient, and toxicant input levels within AA	AA receives or surrounding land use with potential to deliver low to moderate levels of sediments, nutrients, or compounds such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.				AA is in close proximity to or receives input from or is on UDEQ list of water bodies in need of TMDL development for “probable causes” related to sediment, nutrients, or toxicants or AA receives or surrounding land use with potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.			
	≥ 50%		<50%		≥ 50%		<50%	
Within the AA, estimate % ground coverage with high to moderate surface roughness*								
Has the wetland’s natural ability to store water been disturbed negatively?	N	Y	N	Y	N	Y	N	Y
Rating	1H	.9H	.8H	.7M	.6M	.5M	.4M	.3L

*See glossary for definition of surface roughness.

Comments:

15k. Sediment/Shoreline Stabilization

This field assesses the ability of the AA to dissipate flow or wave energy in order to reduce erosion. This applies to riverine and lacustrine wetlands only. Source: Kleinschmidt Associates (1999), Keate (2004), Padgett et al (1989) and Mitch and Gosselink (1993).

Applies only if AA occurs on or within the banks or a river, stream, or other natural (vegetated swale) or man-made drainage, or on the shoreline of a standing water body, which is subject to wave action. It does not apply, circle NA here and proceed to next function)

i. Rating

Working from top to bottom, use the matrix below to arrive at the functional points and rating (H = high, M = moderate, or L = low) for this function.

Within the AA, estimate % ground coverage with high surface roughness*	Duration of surface water adjacent to rooted vegetation	
	Permanent	Seasonal
≥ 65%	1H	.7M
64% - 50%	.8H	.5M
49% - 35%	.6M	.3L
< 35%	.4M	.1L
Comments:		

Social Value Assessment

The following are not functions but values, which are important to society. Plus answers would suggest important societal assets, which should guide any future mitigation planning.

16. Visual Quality*

Refer to the glossary to distinguish between “wildland wetland” and “urban/exurban wetland”.

If AA is considered “wildland wetland” answer the following three questions based on information gathered from suggested sources. Each ‘yes’ answer receives a plus (+) rating in the space provided.

- i. Is the wetland in public ownership (city, county, state or federal)? _____
- ii. Has wetland experienced moderate to low level of disturbance (refer to glossary)? _____
- iii. Is there an absence of human structures or other human induced disturbances (refer to glossary)? _____

If AA is considered to be an “urban/exurban wetland”, answer the following six questions based on information gathered from suggested sources. Each ‘yes’ answer receives a plus (+) rating in the space provided.

- i. Is the wetland in public ownership (city, county, state or federal)? _____
- ii. Is there potentially a large number of viewers? _____
- iii. Is the viewing distance in the fore or middle grounds for most viewers (refer to glossary)? _____
- iv. Has the wetland experienced a moderate to low level of disturbance (refer to glossary)? _____
- v. Is there an absence of human structures or other human induced disturbances (refer to glossary)? _____
- vi. Is the wetland a part of a larger open space, green space, park, buffer or corridor? _____

17. Recreational/Educational Quality*

Answer the following seven questions for both “wildland wetlands” and “urban/exurban wetlands”. Each ‘yes’ answer receives a plus (+) rating in the space provided.

- i. Is the wetland in public ownership (city, county, state or federal)? _____
- ii. Is the wetland presently used for recreation/education? _____
- iii. Is the wetland ¼ mile or less from an elementary school? _____
- iv. Is the wetland five miles or less from a high school? _____
- v. Is there vehicular, trail, boat or canoe access to the site? _____
- vi. Has the wetland experienced a moderate to low level of disturbance (refer to glossary)? _____
- vii. Is the wetland visible from a county, state or federal highway, heavily used recreation trail, residential development or other situations where large numbers of people would have visual access to the wetland? _____

*Note: In some cases wetlands may contain plant or wildlife species or perform functions that would be diminished by human activity. In these cases recreational and educational activities would be prohibited.

Summary Comments for entire Wetland AA Evaluated

Functional Assessment Rating

Function Variables	General Evaluation	Actual Functional Points/Rating	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)
15b. Plant Community Composition			1	
15c. Listed/Proposed T&E Species Habitat			.9	
15d. UT Natural Heritage Program Species Habitat			.9	
15e. General Wildlife Habitat			1	
15f. General Fish/Aquatic Habitat			1	
15g. General Amphibian Habitat			0	
15h. Flood Attenuation			1	
15i. Short and Long Term Surface Water Storage			1	
15j. Sediment/Nutrient/Toxicant Removal			1	
15k. Sediment/Shoreline Stabilization			1	
Totals:				

If functional variables other than those toned are not applicable (NA) to the AA of concern, enter NA in the possible functional points box and subtract the possible functional points for that variable when calculating percent of total functional points.

Note: % total functional points = actual functional points ÷ possible functional points.

	% total functional points
--	---------------------------

Overall Assessment Area Category

Circle appropriate category based on the criteria outlined below. **I II III IV**

<p>Red Flag Category <input type="checkbox"/> Documented habitat for a federally listed or proposed threatened or endangered plant or animal species was found. (Yes response to question 12) <input type="checkbox"/> Documented habitat for a species rated S1 by the Utah Natural Heritage Program. (Yes response to question 12) Wetlands in this category are a special case and require consultation with the COE, USFWS, and UDWR throughout the entire application process.</p>
<p>Category I Wetland: (Must satisfy one of the following criteria; if it does not meet criteria, go to Category II) <input type="checkbox"/> Score of .9 functional point for Species Rated primary documented S2 by the Utah Natural Heritage Program or <input type="checkbox"/> .8 for primary suspected S2 species, level of disturbance is also rated low; or <input type="checkbox"/> Score of 1 functional point for Flood Attenuation (riverine only) and answer to Question 15i. ii is "yes"; or <input type="checkbox"/> Score 1 function point for Plant Community Composition; or <input type="checkbox"/> Total actual functional points > 80% (round to nearest whole #) of total possible functional points.</p>
<p>Category II Wetland: (Criteria for Category I not satisfied and meets any one of the following criteria; if not satisfied, go to Category IV) <input type="checkbox"/> Score of .9 functional point for Species Rated primary documented S3 by the Utah Natural Heritage Program, or <input type="checkbox"/> .8 functional point for Species Rated primary suspected S3 species; level of disturbance is rated low or <input type="checkbox"/> Score of ≥.9 functional point for General Wildlife Habitat; or <input type="checkbox"/> Score of ≥.9 functional point for General Fish/Aquatic Habitat (riverine and lacustrine only); or <input type="checkbox"/> Score of >.7 ≤.8 functional point for Plant Community Composition <input type="checkbox"/> Total Actual Functional Points > 65% (round to nearest whole #) of total possible functional points.</p>
<p>Category III Wetland: (Criteria for Categories I, II or IV not satisfied)</p>
<p>Category IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; if it does not satisfy criteria, place wetland in Category III) <input type="checkbox"/> Total actual functional points < 30% (round to nearest whole #) of total possible functional points <input type="checkbox"/> Roadside Ditch Wetland Classification</p>

Supplemental Diagram A

15b. Plant Community Composition Diagram

Draw a simple boundary of the AA and illustrate all plant transect locations and approximate distances.

Please note that 100 sample points per acre should be collected within the AA. (Example: if AA equals .25 acres, then 25 sample points should be taken.) Never use less than 10 sample points within any AA, even when AA is less than .10 acres in size. Placement of transect(s) should accurately represent the AA. Be sure to place transect(s) through different water regimes, vegetative structure, and topographic changes that may exist within the AA.

Supplemental Diagram B

Hydrological/Biophysical Assessment Diagram

Draw a simple boundary of the AA and illustrate the hydrological conditions found within the AA. Include water source locations, directions of flow (if applicable), approximate depths, and any significant site features that influence site hydrology.

UDOT Wetland Assessment Form (Mineral Flat)

1. Project Name:
2. Project Number:
3. USCOE Permit Number: _____ Project Pin Number: _____
4. Evaluation Date (MM/DD/YYYY): _____
5. Evaluating Agency: _____
6. Evaluator(s): _____
7. Purpose of Evaluation (check one): <input type="checkbox"/> Wetlands potentially affected by UDOT project <input type="checkbox"/> Mitigation wetlands, pre-construction <input type="checkbox"/> Mitigation wetlands, post-construction <input type="checkbox"/> Other (explain): _____
8. Wetland/Site Number(s): _____
9. Wetland Location(s): Ecoregion (see map Appendix A): _____ Watershed (see map Appendix A): _____ County (see map Appendix A): _____ Legal: T _____ N or S; R _____ E or W; S _____; T _____ N or S; R _____ E or W; S _____ Approximate Stationing or Mileposts: _____ _____ GPS Reference Number: _____ Other Location information: _____
10. Wetland Size (total acres, measured by GPS if applicable): _____
11. Assessment Area (AA) (total acres, measured by GPS if applicable, see appendix): _____
12. Habitat for Federally Listed or Proposed Threatened or Endangered Plants or Animals or State Listed S1 Species It is required that the evaluator contact USFWS with regards to the presence or absence of threatened or endangered (T or E) species and UDWR concerning the presence or absence of a state listed S1, S2 or S3 species. The documented habitat of a federally listed or proposed threatened or endangered plant or animal species or a state listed S1 species results in an automatic Red Flag categorization of the assessed site. Coordination with USFWS and UDWR is required. (However, the evaluation proceeds as normal so that the COE receives an assessment of function and value consistent with the UDOT assessment method.) Is the AA documented to contain primary habitat for T or E or S-1 species? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, list the species: (This field assesses habitat for species receiving protection under provision of the Endangered Species Act and Utah critically imperiled species.)
13. Selecting a Wetland Classification Refer to the glossary to determine the correct wetland class. Refer to Appendix E for reference photos and lists of the most common native species in each classification. Turn to appropriate colored pages to continue functional assessment as noted below. Riverine: Blue Slope: Pink Depressional: Yellow Mineral Flat: Green Lacustrine Fringe: Purple Roadside Ditch Wetland: If AA qualifies as a non-jurisdictional 'roadside ditch wetland', AA is classified as Category IV. Further assessment is not necessary, although all documentation must be completed.

***Toned questions or functional categories on the assessment form do not apply to this wetland class, do not answer. They are excluded from the individual function rating as well as the final overall functional assessment rating.**

Mineral Flat



Mineral flat wetlands: Occur on large relict lakebeds. Dominant water source is precipitation. Dominant hydrodynamics are vertical. Typically are large features in the landscape, associated with old Lake Bonneville bottom deposits with close proximity to GSL or other large permanent, semi-permanent or ephemeral water bodies. (e.g. – Sevier Lake) Only found in basin and range ecoregions. Example: Great Salt Lake mud flats and salt flats. Subclasses are not known.

14. Subclasses not known

Biological Assessment

Sources of assessment criteria for each field are adopted from MDT, *Montana Wetland Assessment Method* and are listed under methods on page 5. Additional criteria sources are listed with each assessment field.

15a. Level of Disturbance

This field assesses the level of disturbance in the AA and EAA. Source: Soule (1991), Forman and Godron (1986), Fahrig (1997), Buffler (2005), and Spackman and Hughes (1995).

Use matrix below to determine level of disturbance (H = high, M = moderate, or L = low). Circle the appropriate answer.

Conditions within AA	Predominant conditions found in EAA (600 feet from perimeter of AA)		
	Land managed in predominantly natural state; is not grazed, hayed, landscaped, or otherwise converted; does not contain roads or buildings.	Land not cultivated, but moderately grazed or hayed; or has been subject to minor clearing, fill placement or hydrological alteration; contains few roads, buildings, ditches or canals.	Land cultivated or heavily grazed or landscaped; subject to substantial fill placement, grading, clearing, or hydrological alteration; high road or building density, and or numerous ditches or canals.
AA occurs and is managed in predominantly natural state; is not grazed, hayed, landscaped, or otherwise converted; does not contain human induced trails.	L	L	M
AA not cultivated, but moderately grazed or hayed; or has been subject to relatively minor clearing or hydrological alteration; contains few human induced trails, ditches or canals.	M	M	H
AA cultivated or heavily grazed or landscaped; subject to relatively substantial grading, clearing, or hydrological alteration; and numerous human induced trails, ditches or canals.	H	H	H

Comments: Note types of disturbance, intensity, season, etc.

15b. Plant Community Composition

This field assesses the plant community within the AA. Source: Keate (2004) and Padgett et al. (1989).

Refer to Appendix E for photographs, plan views, cross sectional diagrams, the range of expected coverage and wetland specific vegetation lists. Refer to Appendix F for transect protocol (step point). Draw a simple boundary of the AA and illustrate all plant transect locations and approximate distances on page 11 of this form. See glossary for definition of native wetland plants.

i. Do you find all layers of vegetation that are expected for this wetland type? Circle: Y N

ii. What is the percent ground cover (within the AA) dominated by native wetland vegetation?

High \geq 80%, Moderate 79-60%, Low < 60%

iii. What is the percent of native wetland plants to non-native or non-wetland plants observed using the transect protocol?

High \geq 80%, Moderate 79-60%, Low < 60%

iv. Rating for riverine and lacustrine wetlands.

Layers (i)	Y									N									
	H			M			L			H			M			L			
Cover (ii)																			
Native Wetland Species (iii)	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L	
Rating	1H	.9H	.8H	.7M	.6M	.5M	.4M	.3L	.2L	.9H	.8H	.7M	.6M	.5M	.4M	.3L	.2L	.1L	

iv. Rating for depressionnal, mineral flat, and slope wetlands.

Cover (ii)	H			M			L		
	Native Wetland Species (iii)	H	M	L	H	M	L	H	M
Rating	1H	.8H	.6M	.8H	.6M	.4M	.6M	.4M	.2L

Comments:

15c. Habitat for Federally Listed or Proposed Threatened or Endangered Plants or Animals

This field assesses documented or suspected use of the AA by Federally listed or proposed threatened or endangered plants or animals.

Source: Consultation with USFWS biologist.

Refer to the U.S. Fish and Wildlife Services website at www.fws.gov or visit the Utah Data Conservation Center website at <http://dwrcdc.nr.utah.gov/ucdc/>. Circle one category below based on definitions contained in the instructions and after consultation with USFWS biologist.

i. AA is Documented (D) or Suspected (S) to contain:

*Documented primary habitat for T or E or State listed S-1 species has been addressed in #12

- Primary (list species) * S _____
- Secondary habitat (list species) D S _____
- Incidental habitat (list species) D S _____
- No usable habitat D S _____

ii. Rating

Evaluator uses the conclusions from i above and the matrix below to arrive at the functional points and rating (H = high, M = moderate, or L = low) for this function. Circle the appropriate answer.

Highest Habitat Level	Primary/S	Secondary/D	Secondary/S	Incidental/D	Incidental/S	None
Rating	.9 H	.8 H	.7 M	.5 M	.3 L	0 L

Sources for documented use (e.g. observations, records, etc):

15d. Habitat for plant or animals rated S2 or S3 by the Utah Natural Heritage Program

This field assesses documented or suspected use of the AA by S2 or S3 species listed by the Utah Natural Heritage Program (UNHP).

Source: Consultation with UDWR regional biologist.

Refer to the UNHP website or the Utah Sensitive Species List at <http://dwrcdc.nr.utah.gov/ucdc/>.

Do not include species listed in 15c from above. Circle one category below based on definitions contained in the instructions and after consultation with UDWR biologist.

i. AA is Documented (D) or Suspected (S) to contain:

- Primary (list species and S rating) D S _____
- Secondary habitat (list species and S rating) D S _____
- Incidental habitat (list species and S rating) D S _____
- No usable habitat D S _____

ii. Rating

Evaluator uses the conclusions from i above and the matrix below to arrive at the functional points and rating (H = high, M = moderate, or L = low).

Highest Habitat Level	Primary/D	Primary/S	Secondary/D	Secondary/S	Incidental/D	Incidental/S	None
Rating	.9 H	.8 H	.7 M	.6 M	.2 L	.1 L	0 L

Sources for documented use (e.g. observations, records, etc.):

15e. General Wildlife Habitat

This field assesses general wildlife habitat conditions in the AA. Source: Hammer (1992), Mitch and Gosselink (1993) and Weller and Spatcher (1965).

i. Wildlife habitat features

Working from top to bottom, circle appropriate AA attributes in matrix to arrive at a rating (H = high, M = moderate, or L = low).

Disturbance Level (15a)	L			M			H		
Plant Community (15b)	H	M	L	H	M	L	H	M	L
Rating	H	H	M	H	M	L	M	L	L

Wildlife habitat features rating,	1H	.6M	.2L
-----------------------------------	----	-----	-----

ii. Modified Wildlife Habitat Rating

The wildlife habitat features rating may be modified based on documented wildlife use and levels of use of the AA. Consult with the UDWR regional wildlife biologist to determine the level of wildlife use in the AA using the procedures detailed below.

UDWR biologist consulted: Name(s) _____ Date(s) _____

First circle the appropriate answer to the following question: Does the UDWR have sufficient knowledge of the AA to determine a level of general wildlife use. Yes No

If the answer is No do not modify your answer to 15e(i) above. If you answer is Yes and after further consultation with a UDWR biologist and using the level of use descriptive categories on page 14. Select the descriptive category (H, M or L) that best describes the level of wildlife use in the AA. Circle the appropriate answer. H M L

If the level of use circled is:

H – add .2 to the wildlife habitat features rating 15e(i)

M – add .1 to the wildlife habitat features rating

L – do not modify the wildlife habitat features rating

iii. Rating

Use the conclusions from i and ii above and the matrix below to arrive at the functional points and rating (H = high, M = moderate, or L = low) for this function. Circle the appropriate answer.

Modified wildlife habitat features rating	1H			.6M			.2L		
Rating	1.2H	1.1H	1H	.8H	.7M	.6M	.4M	.3L	.2L

Comments:

15f. General Fish/Aquatic Habitat

This field assesses general fish and aquatic habitat in the AA. Source: Sigler and Miller (1963), Gore (1985), Williams et al (1997) and National Research Council (1992).

Assess this function if the AA is used by fish or the existing situation is “correctable” such that the AA could be used by fish [i.e., fish use is precluded by perched culvert or other barrier, etc.]. If the AA is not or was not historically used by fish due to lack of habitat, excessive gradient, etc., circle NA here and proceed to the next function. If fish use occurs in the AA but is not desired from a resource management perspective [such as fish use within an irrigation canal], then Habitat Quality [i below] should be marked as “Low”, applied accordingly in ii below, and noted in the comments.)

i. Habitat Quality

Refer to the glossary for further definitions of these terms. Circle appropriate AA attributes in matrix to arrive at the quality rating (H = high, M = moderate, or L = low).

Duration of surface water in AA	Permanent / Perennial			Seasonal / Intermittent			Temporary / Ephemeral		
Cover: % of water body in AA containing cover objects such as submerged logs, large rocks & boulders, overhanging banks, floating-leaved vegetation, etc.	>25%	10–25%	<10%	>25%	10–25%	<10%	>25%	10–25%	<10%
Shading: >75% of stream bank or shoreline within AA contains riparian or wetland scrub-shrub or forested communities	H	H	H	H	H	M	M	M	M
Shading: 50 to 75% of stream bank or shoreline within AA contains riparian or wetland scrub-shrub or forested communities	H	H	M	M	M	M	M	L	L
Shading: < 50% of stream bank or shoreline within AA contains riparian or wetland scrub-shrub or forested communities	H	M	M	M	L	L	L	L	L

ii. Modified Habitat Quality

Circle the appropriate response. If answer is Y, then reduce rating in i above by one level (H = M, M = L, L = L)

Is fish use of the AA precluded or significantly reduced by a culvert, dike, or other man-made structure or activity or is the water body included on the UDEQ list of water bodies in need of TMDL development with listed “Probable Impaired Uses” including cold or warm water fishery or aquatic life support? Y N

Modified habitat quality rating = (circle) H M L

iii. Rating

Refer to the Utah Division of Wildlife Resource website for fish species. Use the conclusions from i and ii above and the matrix below to arrive at the functional points and rating (H = high, M = moderate, or L = low) for this function. Circle the appropriate answer.

Types of fish known or suspected within AA	Modified Habitat Quality (ii)						
	H	M	L				
Native fish	1 H	.8H	.6 M				
Introduced fish*	.5 M	.4 M	.3 L				
No fish	.3 L	.2 L	.1 L				
Note: reduce the score by .1 if the AA has carp present.							
.9H	.7M	.5M	.4M	.3L	.2L	.1L	0L

15g. General Amphibian Habitat

This field assesses general amphibian habitat within the AA. Source: Consultation with UDWR regional biologist.

UDWR biologist(s) consulted: Name(s) _____ Date(s) _____

Circle the appropriate answer to the following question after consulting with UDWR regional biologist. The UDWR has documented the presence of amphibians in the AA or, habitat and water quality characteristics are such that they would support amphibians.

Rating: Yes No

If the answer is Yes, add .2 under the functional points/rating column in the Functional Assessment Rating Section at the end of this form.

Hydrological/Biophysical Assessment

Draw a simple boundary of the AA on page 12 of this form and illustrate the hydrological conditions found within the AA. Include water source locations, directions of flow (if applicable), approximate depths, and any significant site features that influence site hydrology.

15h. Flood Attenuation

This field assesses the capability of the AA to slow in channel or over bank flow during high water/flood events. This applies to riverine wetlands only. Source: Kleinschmidt Associates (1993), Munson (1974) and Strom et al (2004).

i. Rating

Working from top to bottom, use the matrix below to arrive at the functional points and rating (H = high, M = moderate, or L = low) for this function. Circle the appropriate answer.

Within the AA, estimate % ground coverage with high surface roughness*	≥65%	64%-50%	49%-35%	<35%
Rating	1H	.8H	.6M	.4M

*See glossary for definition of surface roughness rating criteria.

ii. There are residences, businesses, or other features, which may be significantly damaged by floods located within 0.5 miles downstream of the AA. Yes No

Comments:

15i. Short and Long Term Surface Water Storage

This field assesses the potential of the AA to capture and hold surface water originating from inundation, precipitation, upland surface (sheet flow) or subsurface (groundwater flow). Source: Munson (1974), Strom et al (2004), Hammer (1986) and Mitch and Gosselink (1993).

i. Rating

Working from top to bottom, use the matrix below to arrive at the functional points and rating (H = high, M = moderate, or L = low) for this function. Duration of surface water is implied in the definition of wetland class or of the subclass and thus reflects the natural function. Circle the appropriate answer.

Wetlands are inundated	≥ 5 out of 10 years		< 5 out of 10 years	
Has the wetland's natural ability to store water been disturbed negatively?	N	Y	N	Y
Rating	1H	.8H	.6M	.4M

In order to properly assess this function, examination of the area down gradient from the AA may aid in determining whether or not dams, water control structures, overflow aprons, ditches, canals, drain tiles or other forms of outlet or modification exist.

Comments:

15j. Sediment/Nutrient/Toxicant Retention and Removal

This field assesses the ability of the AA to retain and capture sediments, nutrients and toxicants. Source: Kleinschmidt Associates (1999), Hammer (1986) and Hammer and Kadlec (1983).

This function applies to wetlands which could receive excess sediments, nutrients or toxicants through influx of surface or groundwater or direct input. If no wetlands in the AA are subject to such input, circle NA here and proceed with evaluation.

i. Rating

Working from top to bottom, use the matrix below to arrive at the functional points and rating (H = high, M = moderate, or L = low) for this function. Circle the appropriate answer.

Sediment, nutrient, and toxicant input levels within AA	AA receives or surrounding land use with potential to deliver low to moderate levels of sediments, nutrients, or compounds such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.				AA is in close proximity to or receives input from or is on UDEQ list of water bodies in need of TMDL development for “probable causes” related to sediment, nutrients, or toxicants or AA receives or surrounding land use with potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.			
	≥ 50%		<50%		≥ 50%		<50%	
Within the AA, estimate % ground coverage with high to moderate surface roughness*								
Has the wetland’s natural ability to store water been disturbed negatively?	N	Y	N	Y	N	Y	N	Y
Rating	1H	.9H	.8H	.7M	.6M	.5M	.4M	.3L

*See glossary for definition of surface roughness.

Comments:

15k. Sediment/Shoreline Stabilization

This field assesses the ability of the AA to dissipate flow or wave energy in order to reduce erosion. This applies to riverine and lacustrine wetlands only. Source: Kleinschmidt Associates (1999), Keate (2004), Padgett et al (1989) and Mitch and Gosselink (1993).

Applies only if AA occurs on or within the banks or a river, stream, or other natural (vegetated swale) or man-made drainage, or on the shoreline of a standing water body, which is subject to wave action. It does not apply, circle NA here and proceed to next function)

i. Rating

Working from top to bottom, use the matrix below to arrive at the functional points and rating (H = high, M = moderate, or L = low) for this function.

Within the AA, estimate % ground coverage with high surface roughness*	Duration of surface water adjacent to rooted vegetation	
	Permanent	Seasonal
≥ 65%	1H	.7M
64% - 50%	.8H	.5M
49% - 35%	.6M	.3L
< 35%	.4M	.1L
Comments:		

Social Value Assessment

The following are not functions but values, which are important to society. Plus answers would suggest important societal assets, which should guide any future mitigation planning.

16. Visual Quality*

Refer to the glossary to distinguish between “wildland wetland” and “urban/exurban wetland”.

If AA is considered “wildland wetland” answer the following three questions based on information gathered from suggested sources. Each ‘yes’ answer receives a plus (+) rating in the space provided.

- i. Is the wetland in public ownership (city, county, state or federal)? _____
- ii. Has wetland experienced moderate to low level of disturbance (refer to glossary)? _____
- iii. Is there an absence of human structures or other human induced disturbances (refer to glossary)? _____

If AA is considered to be an “urban/exurban wetland”, answer the following six questions based on information gathered from suggested sources. Each ‘yes’ answer receives a plus (+) rating in the space provided.

- i. Is the wetland in public ownership (city, county, state or federal)? _____
- ii. Is there potentially a large number of viewers? _____
- iii. Is the viewing distance in the fore or middle grounds for most viewers (refer to glossary)? _____
- iv. Has the wetland experienced a moderate to low level of disturbance (refer to glossary)? _____
- v. Is there an absence of human structures or other human induced disturbances (refer to glossary)? _____
- vi. Is the wetland a part of a larger open space, green space, park, buffer or corridor? _____

17. Recreational/Educational Quality*

Answer the following seven questions for both “wildland wetlands” and “urban/exurban wetlands”. Each ‘yes’ answer receives a plus (+) rating in the space provided.

- i. Is the wetland in public ownership (city, county, state or federal)? _____
- ii. Is the wetland presently used for recreation/education? _____
- iii. Is the wetland ¼ mile or less from an elementary school? _____
- iv. Is the wetland five miles or less from a high school? _____
- v. Is there vehicular, trail, boat or canoe access to the site? _____
- vi. Has the wetland experienced a moderate to low level of disturbance (refer to glossary)? _____
- vii. Is the wetland visible from a county, state or federal highway, heavily used recreation trail, residential development or other situations where large numbers of people would have visual access to the wetland? _____

*Note: In some cases wetlands many contain plant or wildlife species or perform functions that would be diminished by human activity. In these cases recreational and educational activities would be prohibited.

Summary Comments for entire Wetland AA Evaluated

Functional Assessment Rating

Function Variables	General Evaluation	Actual Functional Points/Rating	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)
15b. Plant Community Composition			1	
15v. Listed/Proposed T&E Species Habitat			.9	
15d. UT Natural Heritage Program Species Habitat			.9	
15e. General Wildlife Habitat			1	
15f. General Fish/Aquatic Habitat			1	
15g. General Amphibian Habitat			0	
15h. Flood Attenuation			1	
15i. Short and Long Term Surface Water Storage			1	
15j. Sediment/Nutrient/Toxicant Removal			1	
15k. Sediment/Shoreline Stabilization			1	
Totals:				

If functional variables other than those toned are not applicable (NA) to the AA of concern, enter NA in the possible functional points box and subtract the possible functional points for that variable when calculating percent of total functional points.

Note: % total functional points = actual functional points ÷ possible functional points.

	% total functional points
--	---------------------------

Overall Assessment Area Category

Circle appropriate category based on the criteria outlined below. **I II III IV**

<p>Red Flag Category</p> <p>___ Documented habitat for a federally listed or proposed threatened or endangered plant or animal species was found. (Yes response to question 12)</p> <p>___ Documented habitat for a species rated S1 by the Utah Natural Heritage Program. (Yes response to question 12)</p> <p>Wetlands in this category are a special case and require consultation with the COE, USFWS, and UDWR throughout the entire application process.</p>
<p>Category I Wetland: (Must satisfy one of the following criteria; if it does not meet criteria, go to Category II)</p> <p>___ Score of .9 functional point for Species Rated primary documented S2 by the Utah Natural Heritage Program or</p> <p>___ .8 for primary suspected S2 species, level of disturbance is also rated low; or</p> <p>___ Score of 1 functional point for Flood Attenuation (riverine only) and answer to Question 15i. ii is "yes"; or</p> <p>___ Score 1 function point for Plant Community Composition; or</p> <p>___ Total actual functional points > 80% (round to nearest whole #) of total possible functional points.</p>
<p>Category II Wetland: (Criteria for Category I not satisfied and meets any one of the following criteria; if not satisfied, go to Category IV)</p> <p>___ Score of .9 functional point for Species Rated primary documented S3 by the Utah Natural Heritage Program, or</p> <p>___ .8 functional point for Species Rated primary suspected S3 species; level of disturbance is rated low or</p> <p>___ Score of ≥.9 functional point for General Wildlife Habitat; or</p> <p>___ Score of ≥.9 functional point for General Fish/Aquatic Habitat (riverine and lacustrine only); or</p> <p>___ Score of >.7 ≤.8 functional point for Plant Community Composition</p> <p>___ Total Actual Functional Points > 65% (round to nearest whole #) of total possible functional points.</p>
<p>Category III Wetland: (Criteria for Categories I, II or IV not satisfied)</p>
<p>Category IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; if it does not satisfy criteria, place wetland in Category III)</p> <p>___ Total actual functional points < 30% (round to nearest whole #) of total possible functional points</p> <p>___ Roadside Ditch Wetland Classification</p>

Supplemental Diagram A

15b. Plant Community Composition Diagram

Draw a simple boundary of the AA and illustrate all plant transect locations and approximate distances.

Please note that 100 sample points per acre should be collected within the AA. (Example: if AA equals .25 acres, then 25 sample points should be taken.) Never use less than 10 sample points within any AA, even when AA is less than .10 acres in size. Placement of transect(s) should accurately represent the AA. Be sure to place transect(s) through different water regimes, vegetative structure, and topographic changes that may exist within the AA.

Supplemental Diagram B

Hydrological/Biophysical Assessment Diagram

Draw a simple boundary of the AA and illustrate the hydrological conditions found within the AA. Include water source locations, directions of flow (if applicable), approximate depths, and any significant site features that influence site hydrology.

UDOT Wetland Assessment Form (Lacustrine Fringe)

1. Project Name:
2. Project Number:
3. USCOE Permit Number: _____ Project Pin Number: _____
4. Evaluation Date (MM/DD/YYYY): _____
5. Evaluating Agency: _____
6. Evaluator(s): _____
7. Purpose of Evaluation (check one): <input type="checkbox"/> Wetlands potentially affected by UDOT project <input type="checkbox"/> Mitigation wetlands, pre-construction <input type="checkbox"/> Mitigation wetlands, post-construction <input type="checkbox"/> Other (explain): _____
8. Wetland/Site Number(s): _____
9. Wetland Location(s): Ecoregion (see map Appendix A): _____ Watershed (see map Appendix A): _____ County (see map Appendix A): _____ Legal: T _____ N or S; R _____ E or W; S _____; T _____ N or S; R _____ E or W; S _____ Approximate Stationing or Mileposts: _____ _____ GPS Reference Number: _____ Other Location information: _____
10. Wetland Size (total acres, measured by GPS if applicable): _____
11. Assessment Area (AA) (total acres, measured by GPS if applicable, see appendix): _____
12. Habitat for Federally Listed or Proposed Threatened or Endangered Plants or Animals or State Listed S1 Species It is required that the evaluator contact USFWS with regards to the presence or absence of threatened or endangered (T or E) species and UDWR concerning the presence or absence of a state listed S1, S2 or S3 species. The documented habitat of a federally listed or proposed threatened or endangered plant or animal species or a state listed S1 species results in an automatic Red Flag categorization of the assessed site. Coordination with USFWS and UDWR is required. (However, the evaluation proceeds as normal so that the COE receives an assessment of function and value consistent with the UDOT assessment method.) Is the AA documented to contain primary habitat for T or E or S-1 species? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, list the species: (This field assesses habitat for species receiving protection under provision of the Endangered Species Act and Utah critically imperiled species.)
13. Selecting a Wetland Classification Refer to the glossary to determine the correct wetland class. Refer to Appendix E for reference photos and lists of the most common native species in each classification. Turn to appropriate colored pages to continue functional assessment as noted below. Riverine: Blue Slope: Pink Depressional: Yellow Mineral Flat: Green Lacustrine Fringe: Purple Roadside Ditch Wetland: If AA qualifies as a non-jurisdictional 'roadside ditch wetland', AA is classified as Category IV. Further assessment is not necessary, although all documentation must be completed.

***Toned questions or functional categories on the assessment form do not apply to this wetland class, do not answer. They are excluded from the individual function rating as well as the final overall functional assessment rating.**

Lacustrine Fringe



Lacustrine Fringe wetlands: Adjacent to large lakes and reservoirs whose area is greater than 20 acres / dominant water source is lake water level / hydrodynamics are bidirectional / subject to waves and seiches.

14. Identify subclass

The evaluator uses the information below together with information in Appendix D to identify the AA subclass. This information is not used directly to rate the AA.

Saline lacustrine fringe – Great Salt Lake fringe is the current lake level plus 2 feet.

Fresh lacustrine fringe – fringes of lakes and reservoirs

Subclass is:

Saline lacustrine fringe
 Freshwater lacustrine fringe

Presence of heavy metals or toxicants?

Yes No

Presence of heavy metals is determined using accepted wetland science protocols.

Reference Appendix D for definitions of water class and salinity.

Biological Assessment

Sources of assessment criteria for each field are adopted from MDT, *Montana Wetland Assessment Method* and are listed under methods on page 5. Additional criteria sources are listed with each assessment field.

15a. Level of Disturbance

This field assesses the level of disturbance in the AA and EAA. Source: Soule (1991), Forman and Godron (1986), Fahrig (1997), Buffler (2005), and Spackman and Hughes (1995).

Use matrix below to determine level of disturbance (H = high, M = moderate, or L = low). Circle the appropriate answer.

Conditions within AA	Predominant conditions found in EAA (600 feet from perimeter of AA)		
	Land managed in predominantly natural state; is not grazed, hayed, landscaped, or otherwise converted; does not contain roads or buildings.	Land not cultivated, but moderately grazed or hayed; or has been subject to minor clearing, fill placement or hydrological alteration; contains few roads, buildings, ditches or canals.	Land cultivated or heavily grazed or landscaped; subject to substantial fill placement, grading, clearing, or hydrological alteration; high road or building density, and or numerous ditches or canals.
AA occurs and is managed in predominantly natural state; is not grazed, hayed, landscaped, or otherwise converted; does not contain human induced trails.	L	L	M
AA not cultivated, but moderately grazed or hayed; or has been subject to relatively minor clearing or hydrological alteration; contains few human induced trails, ditches or canals.	M	M	H
AA cultivated or heavily grazed or landscaped; subject to relatively substantial grading, clearing, or hydrological alteration; and numerous human induced trails, ditches or canals.	H	H	H

Comments: Note types of disturbance, intensity, season, etc.

15b. Plant Community Composition

This field assesses the plant community within the AA. Source: Keate (2004) and Padgett et al. (1989).

Refer to Appendix E for photographs, plan views, cross sectional diagrams, the range of expected coverage and wetland specific vegetation lists. Refer to Appendix F for transect protocol (step point). Draw a simple boundary of the AA and illustrate all plant transect locations and approximate distances on page 11 of this form. See glossary for definition of native wetland plants.

i. Do you find all layers of vegetation that are expected for this wetland type? Circle: Y N

ii. What is the percent ground cover (within the AA) dominated by native wetland vegetation?

High \geq 80%, Moderate 79-60%, Low < 60%

iii. What is the percent of native wetland plants to non-native or non-wetland plants observed using the transect protocol?

High \geq 80%, Moderate 79-60%, Low < 60%

iv. Rating for riverine and lacustrine wetlands.

Layers (i)	Y									N									
	H			M			L			H			M			L			
Cover (ii)																			
Native Wetland Species (iii)	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L	
Rating	1H	.9H	.8H	.7M	.6M	.5M	.4M	.3L	.2L	.9H	.8H	.7M	.6M	.5M	.4M	.3L	.2L	.1L	

iv. Rating for depressional, mineral flat, and slope wetlands.

Cover (ii)	H			M			L		
Native Wetland Species (iii)	H	M	L	H	M	L	H	M	L
Rating	1H	.8H	.6M	.8H	.6M	.4M	.6M	.4M	.2L

Comments:

15c. Habitat for Federally Listed or Proposed Threatened or Endangered Plants or Animals

This field assesses documented or suspected use of the AA by Federally listed or proposed threatened or endangered plants or animals.

Source: Consultation with USFWS biologist.

Refer to the U.S. Fish and Wildlife Services website at www.fws.gov or visit the Utah Data Conservation Center website at <http://dwrcdc.nr.utah.gov/ucdc/>. Circle one category below based on definitions contained in the instructions and after consultation with USFWS biologist.

i. AA is Documented (D) or Suspected (S) to contain:

*Documented primary habitat for T or E or State listed S-1 species has been addressed in #12

- Primary habitat (list species) * S _____
- Secondary habitat (list species) D S _____
- Incidental habitat (list species) D S _____
- No usable habitat D S _____

ii. Rating

Evaluator uses the conclusions from i above and the matrix below to arrive at the functional points and rating (H = high, M = moderate, or L = low) for this function. Circle the appropriate answer.

Highest Habitat Level	Primary/S	Secondary/D	Secondary/S	Incidental/D	Incidental/S	None
Rating	.9 H	.8 H	.7 M	.5 M	.3 L	0 L

Sources for documented use (e.g. observations, records, etc):

15d. Habitat for plant or animals rated S2 or S3 by the Utah Natural Heritage Program

This field assesses documented or suspected use of the AA by S2 or S3 species listed by the Utah Natural Heritage Program (UNHP).

Source: Consultation with UDWR regional biologist.

Refer to the UNHP website or the Utah Sensitive Species List at <http://dwrcdc.nr.utah.gov/ucdc/>.

Do not include species listed in 15c from above. Circle one category below based on definitions contained in the instructions and after consultation with UDWR biologist.

i. AA is Documented (D) or Suspected (S) to contain:

- Primary habitat (list species and S rating) D S _____
- Secondary habitat (list species and S rating) D S _____
- Incidental habitat (list species and S rating) D S _____
- No usable habitat D S _____

ii. Rating

Evaluator uses the conclusions from i above and the matrix below to arrive at the functional points and rating (H = high, M = moderate, or L = low).

Highest Habitat Level	Primary/D	Primary/S	Secondary/D	Secondary/S	Incidental/D	Incidental/S	None
Rating	.9 H	.8 H	.7 M	.6 M	.2 L	.1 L	0 L

Sources for documented use (e.g. observations, records, etc.):

15e. General Wildlife Habitat

This field assesses general wildlife habitat conditions in the AA. Source: Hammer (1992), Mitch and Gosselink (1993) and Weller and Spatcher (1965).

i. Wildlife habitat features

Working from top to bottom, circle appropriate AA attributes in matrix to arrive at a rating (H = high, M = moderate, or L = low).

Disturbance Level (15a)	L			M			H		
Plant Community (15b)	H	M	L	H	M	L	H	M	L
Rating	H	H	M	H	M	L	M	L	L

Wildlife habitat features rating.	1H	.6M	.2L
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ii. Modified Wildlife Habitat Rating

The wildlife habitat features rating may be modified based on documented wildlife use and levels of use of the AA. Consult with the UDWR regional wildlife biologist to determine the level of wildlife use in the AA using the procedures detailed below.

UDWR biologist consulted: Name(s) _____ Date(s) _____

First circle the appropriate answer to the following question: Does the UDWR have sufficient knowledge of the AA to determine a level of general wildlife use. Yes No

If the answer is No do not modify your answer to 15e(i) above. If you answer is Yes and after further consultation with a UDWR biologist and using the level of use descriptive categories on page 14. Select the descriptive category (H, M or L) that best describes the level of wildlife use in the AA. Circle the appropriate answer. H M L

If the level of use circled is:

H – add .2 to the wildlife habitat features rating 15e(i)

M – add .1 to the wildlife habitat features rating

L – do not modify the wildlife habitat features rating

iii. Rating

Use the conclusions from i and ii above and the matrix below to arrive at the functional points and rating (H = high, M = moderate, or L = low) for this function. Circle the appropriate answer.

Modified wildlife habitat features rating	1H			.6M			.2L		
Rating	1.2H	1.1H	1H	.8H	.7M	.6M	.4M	.3L	.2L

Comments:

15f. General Fish/Aquatic Habitat

This field assesses general fish and aquatic habitat in the AA. Source: Sigler and Miller (1963), Gore (1985), Williams et al (1997) and National Research Council (1992).

Assess this function if the AA is used by fish or the existing situation is “correctable” such that the AA could be used by fish [i.e., fish use is precluded by perched culvert or other barrier, etc.]. If the AA is not or was not historically used by fish due to lack of habitat, excessive gradient, etc., circle NA here and proceed to the next function. If fish use occurs in the AA but is not desired from a resource management perspective [such as fish use within an irrigation canal], then Habitat Quality [i below] should be marked as “Low”, applied accordingly in ii below, and noted in the comments.)

i. Habitat Quality

Refer to the glossary for further definitions of these terms. Circle appropriate AA attributes in matrix to arrive at the quality rating (H = high, M = moderate, or L = low).

Duration of surface water in AA	Permanent / Perennial			Seasonal / Intermittent			Temporary / Ephemeral		
Cover: % of water body in AA containing cover objects such as submerged logs, large rocks & boulders, overhanging banks, floating-leaved vegetation, etc.	>25%	10–25%	<10%	>25%	10–25%	<10%	>25%	10–25%	<10%
Shading: >75% of stream bank or shoreline within AA contains riparian or wetland scrub-shrub or forested communities	H	H	H	H	H	M	M	M	M
Shading: 50 to 75% of stream bank or shoreline within AA contains riparian or wetland scrub-shrub or forested communities	H	H	M	M	M	M	M	L	L
Shading: < 50% of stream bank or shoreline within AA contains riparian or wetland scrub-shrub or forested communities	H	M	M	M	L	L	L	L	L

ii. Modified Habitat Quality

Circle the appropriate response. If answer is Y, then reduce rating in i above by one level (H = M, M = L, L = L)

Is fish use of the AA precluded or significantly reduced by a culvert, dike, or other man-made structure or activity or is the water body included on the UDEQ list of water bodies in need of TMDL development with listed “Probable Impaired Uses” including cold or warm water fishery or aquatic life support? Y N

Modified habitat quality rating = (circle) H M L

iii. Rating

Refer to the Utah Division of Wildlife Resource website for fish species. Use the conclusions from i and ii above and the matrix below to arrive at the functional points and rating (H = high, M = moderate, or L = low) for this function. Circle the appropriate answer.

Types of fish known or suspected within AA	Modified Habitat Quality (ii)						
	H	M	L				
Native fish	1 H	.8H	.6 M				
Introduced fish*	.5 M	.4 M	.3 L				
No fish	.3 L	.2 L	.1 L				
Note: reduce the score by .1 if the AA has carp present.							
.9H	.7M	.5M	.4M	.3L	.2L	.1L	0L

*Most of the lacustrine wetlands in Utah, with the exception of the Great Salt Lake are reservoir impoundments. Many of these impoundments have been stocked with warm water non native game fish. These warm water species frequently become established as self sustaining populations that provide ecological functions to the reservoir system. In some reservoirs native fish species persist in this artificial environment. Were native and introduced species coexist in impoundments it is required that the evaluator consult with USFWS and UDWR fisheries biologists to determine the appropriate fish/aquatic habitat rating.

15g. General Amphibian Habitat

This field assesses general amphibian habitat within the AA. Source: Consultation with UDWR regional biologist.

UDWR biologist(s) consulted: Name(s) _____ Date(s) _____

Circle the appropriate answer to the following question after consulting with UDWR regional biologist. The UDWR has documented the presence of amphibians in the AA or, habitat and water quality characteristics are such that they would support amphibians.

Rating: Yes No

If the answer is Yes, add .2 under the functional points/rating column in the Functional Assessment Rating Section at the end of this form.

Hydrological/Biophysical Assessment

Draw a simple boundary of the AA on page 12 of this form and illustrate the hydrological conditions found within the AA. Include water source locations, directions of flow (if applicable), approximate depths, and any significant site features that influence site hydrology.

15h. Flood Attenuation

This field assesses the capability of the AA to slow in channel or over bank flow during high water/flood events. This applies to riverine wetlands only. Source: Kleinschmidt Associates (1993), Munson (1974) and Strom et al (2004).

i. Rating

Working from top to bottom, use the matrix below to arrive at the functional points and rating (H = high, M = moderate, or L = low) for this function. Circle the appropriate answer.

Within the AA, estimate % ground coverage with high surface roughness*	≥65%	64%-50%	49%-35%	>35%
Rating	1H	.8H	.6M	.4M

*See glossary for definition of surface roughness rating criteria.

ii. There are residences, businesses, or other features, which may be significantly damaged by floods located within 0.5 miles downstream of the AA. Yes No

Comments:

15i. Short and Long Term Surface Water Storage

This field assesses the potential of the AA to capture and hold surface water originating from inundation, precipitation, upland surface (sheet flow) or subsurface (groundwater flow). Source: Munson (1974), Strom et al (2004), Hammer (1986) and Mitch and Gosselink (1993).

i. Rating

Working from top to bottom, use the matrix below to arrive at the functional points and rating (H = high, M = moderate, or L = low) for this function. Duration of surface water is implied in the definition of wetland class or of the subclass and thus reflects the natural function. Circle the appropriate answer.

Wetlands are inundated	≥ 5 out of 10 years		< 5 out of 10 years	
Has the wetland's natural ability to store water been disturbed negatively?	N	Y	N	Y
Rating	1H	.8H	.6M	.4M

In order to properly assess this function, examination of the area down gradient from the AA may aid in determining whether or not dams, water control structures, overflow aprons, ditches, canals, drain tiles or other forms of outlet or modification exist.

Comments:

15j. Sediment/Nutrient/Toxicant Retention and Removal

This field assesses the ability of the AA to retain and capture sediments, nutrients and toxicants. Source: Kleinschmidt Associates (1999), Hammer (1986) and Hammer and Kadlec (1983).

This function applies to wetlands which could receive excess sediments, nutrients or toxicants through influx of surface or groundwater or direct input. If no wetlands in the AA are subject to such input, circle NA here and proceed with evaluation.

i. Rating

Working from top to bottom, use the matrix below to arrive at the functional points and rating (H = high, M = moderate, or L = low) for this function. Circle the appropriate answer.

Sediment, nutrient, and toxicant input levels within AA	AA receives or surrounding land use with potential to deliver low to moderate levels of sediments, nutrients, or compounds such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.				AA is in close proximity to or receives input from or is on UDEQ list of water bodies in need of TMDL development for “probable causes” related to sediment, nutrients, or toxicants or AA receives or surrounding land use with potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.			
	≥ 50%		<50%		≥ 50%		<50%	
Within the AA, estimate % ground coverage with high to moderate surface roughness*								
Has the wetland’s natural ability to store water been disturbed negatively?	N	Y	N	Y	N	Y	N	Y
Rating	1H	.9H	.8H	.7M	.6M	.5M	.4M	.3L

*See glossary for definition of surface roughness.

Comments:

15k. Sediment/Shoreline Stabilization

This field assesses the ability of the AA to dissipate flow or wave energy in order to reduce erosion. This applies to riverine and lacustrine wetlands only. Source: Kleinschmidt Associates (1999), Keate (2004), Padgett et al (1989) and Mitch and Gosselink (1993).

Applies only if AA occurs on or within the banks of a river, stream, or other natural (vegetated swale) or man-made drainage, or on the shoreline of a standing water body, which is subject to wave action. It does not apply, circle NA here and proceed to next function)

i. Rating

Working from top to bottom, use the matrix below to arrive at the functional points and rating (H = high, M = moderate, or L = low) for this function.

Within the AA, estimate % ground coverage with high surface roughness*	Duration of surface water adjacent to rooted vegetation	
	Permanent	Seasonal
≥ 65%	1H	.7M
64% - 50%	.8H	.5M
49% - 35%	.6M	.3L
< 35%	.4M	.1L

Comments:

Social Value Assessment

The following are not functions but values, which are important to society. Plus answers would suggest important societal assets, which should guide any future mitigation planning.

16. Visual Quality*

Refer to the glossary to distinguish between “wildland wetland” and “urban/exurban wetland”.

If AA is considered “wildland wetland” answer the following three questions based on information gathered from suggested sources. Each ‘yes’ answer receives a plus (+) rating in the space provided.

- i. Is the wetland in public ownership (city, county, state or federal)? _____
- ii. Has wetland experienced moderate to low level of disturbance (refer to glossary)? _____
- iii. Is there an absence of human structures or other human induced disturbances (refer to glossary)? _____

If AA is considered to be an “urban/exurban wetland”, answer the following six questions based on information gathered from suggested sources. Each ‘yes’ answer receives a plus (+) rating in the space provided.

- i. Is the wetland in public ownership (city, county, state or federal)? _____
- ii. Is there potentially a large number of viewers? _____
- iii. Is the viewing distance in the fore or middle grounds for most viewers (refer to glossary)? _____
- iv. Has the wetland experienced a moderate to low level of disturbance (refer to glossary)? _____
- v. Is there an absence of human structures or other human induced disturbances (refer to glossary)? _____
- vi. Is the wetland a part of a larger open space, green space, park, buffer or corridor? _____

17. Recreational/Educational Quality*

Answer the following seven questions for both “wildland wetlands” and “urban/exurban wetlands”. Each ‘yes’ answer receives a plus (+) rating in the space provided.

- i. Is the wetland in public ownership (city, county, state or federal)? _____
- ii. Is the wetland presently used for recreation/education? _____
- iii. Is the wetland ¼ mile or less from an elementary school? _____
- iv. Is the wetland five miles or less from a high school? _____
- v. Is there vehicular, trail, boat or canoe access to the site? _____
- vi. Has the wetland experienced a moderate to low level of disturbance (refer to glossary)? _____
- vii. Is the wetland visible from a county, state or federal highway, heavily used recreation trail, residential development or other situations where large numbers of people would have visual access to the wetland? _____

*Note: In some cases wetlands may contain plant or wildlife species or perform functions that would be diminished by human activity. In these cases recreational and educational activities would be prohibited.

Summary Comments for entire Wetland AA Evaluated

Functional Assessment Rating

Function Variables	General Evaluation	Actual Functional Points/Rating	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)
15b. Plant Community Composition			1	
15c. Listed/Proposed T&E Species Habitat			.9	
15d. UT Natural Heritage Program Species Habitat			.9	
15e. General Wildlife Habitat			1	
15f. General Fish/Aquatic Habitat			1	
15g. General Amphibian Habitat			0	
15h. Flood Attenuation			1	
15i. Short and Long Term Surface Water Storage			1	
15j. Sediment/Nutrient/Toxicant Removal			1	
15k. Sediment/Shoreline Stabilization			1	
Totals:				

If functional variables other than those toned are not applicable (NA) to the AA of concern, enter NA in the possible functional points box and subtract the possible functional points for that variable when calculating percent of total functional points.

Note: % total functional points = actual functional points ÷ possible functional points.

	% total functional points
--	---------------------------

Overall Assessment Area Category

Circle appropriate category based on the criteria outlined below. **I II III IV**

<p>Red Flag Category</p> <p><input type="checkbox"/> Documented habitat for a federally listed or proposed threatened or endangered plant or animal species was found. (Yes response to question 12)</p> <p><input type="checkbox"/> Documented habitat for a species rated S1 by the Utah Natural Heritage Program. (Yes response to question 12)</p> <p>Wetlands in this category are a special case and require consultation with the COE, USFWS, and UDWR throughout the entire application process.</p>
<p>Category I Wetland: (Must satisfy one of the following criteria; if it does not meet criteria, go to Category II)</p> <p><input type="checkbox"/> Score of .9 functional point for Species Rated primary documented S2 by the Utah Natural Heritage Program or</p> <p><input type="checkbox"/> .8 for primary suspected S2 species, level of disturbance is also rated low; or</p> <p><input type="checkbox"/> Score of 1 functional point for Flood Attenuation (riverine only) and answer to Question 15i. ii is "yes"; or</p> <p><input type="checkbox"/> Score 1 function point for Plant Community Composition; or</p> <p><input type="checkbox"/> Total actual functional points > 80% (round to nearest whole #) of total possible functional points.</p>
<p>Category II Wetland: (Criteria for Category I not satisfied and meets any one of the following criteria; if not satisfied, go to Category IV)</p> <p><input type="checkbox"/> Score of .9 functional point for Species Rated primary documented S3 by the Utah Natural Heritage Program, or</p> <p><input type="checkbox"/> .8 functional point for Species Rated primary suspected S3 species; level of disturbance is rated low or</p> <p><input type="checkbox"/> Score of ≥.9 functional point for General Wildlife Habitat; or</p> <p><input type="checkbox"/> Score of ≥.9 functional point for General Fish/Aquatic Habitat (riverine and lacustrine only); or</p> <p><input type="checkbox"/> Score of >.7 ≤.8 functional point for Plant Community Composition</p> <p><input type="checkbox"/> Total Actual Functional Points > 65% (round to nearest whole #) of total possible functional points.</p>
<p>Category III Wetland: (Criteria for Categories I, II or IV not satisfied)</p>
<p>Category IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; if it does not satisfy criteria, place wetland in Category III)</p> <p><input type="checkbox"/> Total actual functional points < 30% (round to nearest whole #) of total possible functional points</p> <p><input type="checkbox"/> Roadside Ditch Wetland Classification</p>

Supplemental Diagram A

15b. Plant Community Composition Diagram

Draw a simple boundary of the AA and illustrate all plant transect locations and approximate distances.

Please note that 100 sample points per acre should be collected within the AA. (Example: if AA equals .25 acres, then 25 sample points should be taken.) Never use less than 10 sample points within any AA, even when AA is less than .10 acres in size. Placement of transect(s) should accurately represent the AA. Be sure to place transect(s) through different water regimes, vegetative structure, and topographic changes that may exist within the AA.

Supplemental Diagram B

Hydrological/Biophysical Assessment Diagram

Draw a simple boundary of the AA and illustrate the hydrological conditions found within the AA. Include water source locations, directions of flow (if applicable), approximate depths, and any significant site features that influence site hydrology.