

Report No. UT-06.13

**FIELD ANALYSIS OF THE
UDOT WETLAND FUNCTIONAL
ASSESSMENT METHOD**

Prepared For:

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16. Abstract The Utah Department of Transportation (UDOT) Wetland Functional Assessment Method (UDOT Report UT-06.12) has recently been developed to evaluate wetland functions and values along highways and other lineal projects in Utah. This method was developed for UDOT by Utah State University based on a similar method in use by the Montana Department of Transportation. Throughout the development process, concerns have arisen as to whether or not the assessment method will be understood by field evaluators with limited experience and training with regards to wetlands. Additional concerns include whether or not the UDOT Wetland Functional Assessment Method (WFAM) enables evaluators to produce relatively accurate and consistent outcomes that are representative of the wetland sites and to insure compliance with regulatory agency criteria. This report summarizes a field analysis performed to achieve three goals. First, to field test and evaluate the UDOT WFAM and specifically address the concerns of consistency, usability, and relative accuracy. Second, to compare, in a general way, the UDOT method with three other functional assessment methods being used in the field. Third, to identify, with the help of field evaluators, errors and inadequacies within the method and then make any necessary changes to the method and accompanying document.					
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CONTENTS

ACKNOWLEDGMENTS	i
CONTENTS.....	ii
LIST OF FIGURES	iii
LIST OF TABLES.....	iv
INTRODUCTION	1
PROJECT GOAL.....	5
METHODOLOGY	7
THE STUDY	11
CONSISTENCY RESULTS AND DISCUSSION.....	23
USABILITY RESULTS AND DISCUSSION	45
RELATIVE ACCURACY RESULTS AND DISCUSSION	67
COMPARISONS WITH OTHER ASSESSMENT METHODS.....	81
CONCLUSION.....	85
REFERENCES	87
APPENDIX A: SUMMARY OF WETLAND FUNCTIONAL ASSESSMENT METHODS TESTED.....	89
California Rapid Assessment Method (CRAM)	90
[Florida] Wetland Rapid Assessment Procedure ([F]WRAP)	92
Rapid Assessment (RA).....	93
Utah Department of Transportation Wetland Functional Assessment Method (UDOT WFAM)	94
APPENDIX B: FIELD TEST SITES.....	95
APPENDIX C: FIELD TEST NOTES	105
APPENDIX D: FIELD TEST RESULTS.....	111
APPENDIX E: FIELD TEST FORM AND REVISED FORM	133

LIST OF FIGURES

Figure 1: Site 1.....	9
Figure 2: Site 2.....	9
Figure 3: Site 3.....	9
Figure 4: Site 4.....	9
Figure 5: Original Ecoregion Map.....	47
Figure 6: New Ecoregion Map.....	47
Figure 7: Original Sample Assessment Area (AA) Diagrams.....	49
Figure 8: Modified Sample Assessment Area (AA) Diagrams.....	50
Figure 9: Site 1 Results.....	69
Figure 10: Site 2 Results.....	71
Figure 11: Site 3 Results.....	73
Figure 12: Site 4 Results.....	74
Figure 13: Site 1 UDOT vs. UWAG Results.....	77
Figure 14: Site 2 UDOT vs. UWAG Results.....	78

LIST OF TABLES

Table 1: Wetland Sites and Classifications.....	8
Table 2: Sites Evaluated by UDOT Landscape Architects.....	8
Table 3: Sites Evaluated by Utah Wetland Assessment Group (UWAG).....	8
Table 4: Site 1 Group Composition.....	23
Table 5: Site 1 Field Test Date.....	23
Table 6: Site 1 Question 15b. Plant Community Composition Results.....	24
Table 7: Site 1 Question 15c. Listed/Proposed T&E Species Habitat Results.....	25
Table 8: Site 1 Question 15d. UT Natural Heritage Program Species Habitat Results.....	26
Table 9: Site 1 Question 15e. General Wildlife Habitat Results.....	26
Table 10: Site 1 Question 15i. Short and Long Term Surface Water Storage Results.....	27
Table 11: Site 1 Question 15j. Sediment/Nutrient/Toxicant Removal Results.....	28
Table 12: Site 2 Group Composition.....	30
Table 13: Site 2 Field Test Date.....	30
Table 14: Site 2 Question 15b. Plant Community Composition Results.....	30
Table 15: Site 2 Question 15c. Listed/Proposed T&E Species Habitat Results.....	31
Table 16: Site 2 Question 15d. UT Natural Heritage Program Species Habitat Results.....	32
Table 17: Site 2 Question 15e. General Wildlife Habitat Results.....	33
Table 18: Site 2 Question 15i. Short and Long Term Surface Water Storage Results.....	34
Table 19: Site 2 Question 15j. Sediment/Nutrient/Toxicant Removal Results.....	35
Table 20: Site 3 Group Composition.....	37
Table 21: Site 3 Field Test Date.....	37

Table 22: Site 3 Question 15b. Plant Community Composition Results	37
Table 23: Site 3 Question 15c. Listed/Proposed T&E Species Habitat Results	37
Table 24: Site 3 Question 15d. UT Natural Heritage Program Species Habitat Results	38
Table 25: Site 3 Question 15e. General Wildlife Habitat Results	38
Table 26: Site 3 Question 15i. Short and Long Term Surface Water Storage Results	39
Table 27: Site 3 Question 15j. Sediment/Nutrient/Toxicant Removal Results	39
Table 28: Site 4 Group Composition	41
Table 29: Site 4 Field Test Date.....	41
Table 30: Site 4 Question 15b. Plant Community Composition Results	41
Table 31: Site 4 Question 15c. Listed/Proposed T&E Species Habitat Results	41
Table 32: Site 4 Question 15d. UT Natural Heritage Program Species Habitat Results	42
Table 33: Site 4 Question 15e. General Wildlife Habitat Results.....	42
Table 34: Site 4 Question 15f. General Fish/Aquatic Habitat Results.....	42
Table 35: Site 4 Question 15h. Flood Attenuation Results.....	42
Table 36: Site 4 Question 15j. Sediment/Nutrient/Toxicant Removal Results	43
Table 37: Site 4 Question 15k. Sediment/Shoreline Stabilization Results.....	43
Table 38: Original and Modified Wetland Classification Definitions	52
Table 39: Supplemental Diagram A (Title and Instructions).....	56
Table 40: Supplemental Diagram B (Title and Instructions)	62
Table 41: Site 1 Group Composition	68
Table 42: Site 1 Group Percent Total Functional Points and Overall Assessment Category	68
Table 43: Site 2 Group Composition	70
Table 44: Site 2 Group Percent Total Functional Points and Overall Assessment Category	70
Table 45: Site 3 Group Composition	72

Table 46: Site 3 Group Percent Total Functional Points and Overall Assessment Category	72
Table 47: Site 4 Group Composition	74
Table 48: Site 4 Group Percent Total Functional Points and Overall Assessment Category	74
Table 49: Site 1 Comparison Results between Methods Tested	82
Table 50: Site 2 Comparison Results between Methods Tested	82

INTRODUCTION

Within the United States, it has been calculated that between the years of 1950 to 1970 wetlands were being destroyed at the rate of 500,000 acres per year (FHWA 2000). The main causes of this destruction were agriculture, industrial extraction of natural resources, commercial development, urbanization, and the building of highways and roads (Johnson, Groshart, and Grossl 2001; Stein, Tabatabai, and Ambrose 2000). Specifically, the nine most western states, excluding Alaska and Hawaii, have lost 59% of the original wetlands that once existed (Spain 1997).

In the past 35 years, wetlands have become increasingly recognized for providing beneficial functions and values to society. These functions and values provide habitat for wildlife, plant, and macro-invertebrate species, some of which are considered threatened or endangered. Visual quality and aesthetic beauty are acknowledged wetland values, as well as the educational benefits that can be derived from studying these ecosystems (Turner, Van Den Bergh, and Brouwer 2003.) Wetlands also have hydrological and biophysical significance by attenuating flood waters, stabilizing shorelines, removing toxicants, nutrients, and sediments from water, discharging and recharging groundwater, as well as several other important functions (Turner, Van Den Bergh, and Brouwer 2003).

Armed with evidence of water quality degradation, the Federal Water Pollution Control Act Amendment was passed by Congress in 1972 and was followed five years later in 1977 with another amendment that has become known today as the Clean Water Act (USEPA 2002). Section 404 of the Clean Water Act specifically prohibits the

discharge of dredged or fill material into the navigable waters of the United States, which includes wetlands.

In 1993, the Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (COE) expanded the protection of wetlands to also include regulating mechanized land clearing, ditching, channelization, and excavation of wetlands (NAHB 1993). No alterations to the land may be made to any area that is classified as wetlands under government jurisdiction. Exceptions to these regulations are granted through submission of a proper application form, a wetland delineation of the property, and proposed procedures to mitigate any temporal and permanent impacts to the wetland.

Despite regulatory efforts of the EPA and COE, wetlands continue to decline in the United States. Many studies have been conducted to find solutions to this problem. One of the many discoveries of these research studies was that actual wetland functions and values from impacted sites were not being evaluated and recorded through a watershed framework and therefore, were not being replaced (NRC 2001). Mitigation efforts have primarily focused on replacement of acreage and enhancing wetland vegetation, not wetland functions and values.

In an effort to reverse this trend, the regulatory office of the COE in Bountiful, Utah, is soon going to require that a wetland functional assessment be included with all wetland delineation reports submitted to them by the Utah Department of Transportation (UDOT). This will allow both agencies to better ascertain the total acreage of wetland that potentially could be impacted by transportation projects and which functions, if any, the wetland is performing within the context of its environment.

UDOT awarded funding to Utah State University in 2003 to develop a wetland functional assessment method that would be similar to the Montana Department of Transportation's (MDOT) method and, at the same time, address Utah's unique ecological and hydrological conditions. The authors of the assessment method at Utah State University have completed the initial stage of this project and the method has been extensively reviewed by state and federal agencies and other wetland specialists. Throughout the development process, concerns have arisen as to whether or not the final product will be understood by field evaluators with limited experience and training with regards to wetlands. Additional concerns include whether or not the UDOT Wetland Functional Assessment Method enables evaluators to produce relatively accurate and consistent outcomes that are representative of the wetland sites and to insure compliance with regulatory agency criteria.

PROJECT GOAL

The purpose of this project is three fold. First, it is to field test and evaluate the UDOT Wetland Functional Assessment Method (WFAM) and specifically address the concerns of consistency, usability, and relative accuracy. The second objective is to compare, in a general way, the UDOT method with three other functional assessment methods being used in the field. The third objective is (with the help of field evaluators) to identify errors and inadequacies within the method and then make any necessary changes to the method and accompanying document.

METHODOLOGY

The UDOT Wetland Functional Assessment Method was tested on multiple sites by multiple evaluators. It was evaluated by comparing the results generated by different teams of evaluators for consistency, usability, and relative accuracy. Definitions of each of these terms and a discussion of how they are measured occur later in this section.

UDOT landscape architects were utilized to field test the UDOT WFAM. The landscape architects were selected because they perform and/or review the wetland functional assessments for UDOT. The UDOT landscape architects tested the UDOT WFAM at Site 1, Site 2, Site 3, and Site 4 (see Table 2). All results produced by the landscape architects from all four sites will be reported.

To assist in field testing and comparing the UDOT WFAM to other methods, the regulatory office of the COE in Bountiful, Utah, has assembled the Utah Wetland Assessment Group (UWAG), a group of professionals from other government agencies and from the private sector who work with wetlands on a regular basis. UWAG agreed to test the UDOT WFAM along with three additional wetland functional assessment methods at Site 1 and Site 2. The other methods tested were the California Rapid Assessment Method (CRAM), [Florida] Wetland Rapid Assessment Procedure ([F]WRAP), and the Rapid Assessment (RA) designed by Nancy Keate, PhD., Utah Division of Wildlife Resources. (See Appendix A for a summary of each of the wetland functional assessment methods tested.) The results from all four methods at each of the two sites will be reported. Direct comparisons of the results between methods are difficult because each of the methods is unique, analyzes different functions, and

numerically values functions differently. However, comparisons were made where possible and appropriate.

Sites and wetland classifications are also described in Table 1 and a small aerial photograph of each site appear in Figures 1 through 4. Site descriptions and additional site maps can be found in Appendix B of this document. Table 2 and Table 3 illustrate what methods were tested and what sites were visited by each group of evaluators.

Site 1: Skypark, at 2600 South Redwood Road Woods Cross, Utah, a slope wetland.
Site 2: Bountiful Pond, a slope wetland.
Site 3: Plover Playa in Tooele County, a mineral flat wetland.
Site 4: Jordan River at 3900 South, a riverine wetland.

Table 1: Wetland Sites and Classifications.

Methods		Site 1	Site 2	Site 3	Site 4
	UDOT Wetland Functional Assessment Method	x	x	x	x
	California Rapid Assessment Method				
	[Florida] Wetland Rapid Assessment Procedure				
	Rapid Assessment				

Table 2: Sites Evaluated by UDOT Landscape Architects.

Methods		Site 1	Site 2	Site 3	Site 4
	UDOT Wetland Functional Assessment Method	x	x		
	California Rapid Assessment Method	x	x		
	[Florida] Wetland Rapid Assessment Procedure	x	x		
	Rapid Assessment	x	x		

Table 3: Sites Evaluated by Utah Wetland Assessment Group (UWAG).



Figure 1: Site 1 Skypark



Figure 2: Site 2 Bountiful Pond

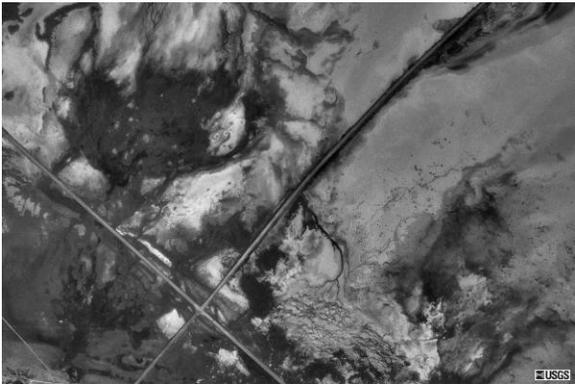


Figure 3: Site 3 Plover Playa



Figure 4: Site 4 Jordan River

Figure 1: Site 1 Skypark-2 km SW of Woods Cross, Utah, United States 10/4/1997. USGS Map provided online through Microsoft TerraServer Imagery. Available at <http://terraserver-usa.com>.

Figure 2: Bountiful Pond-Bountiful, Utah, United States 10/4/1997. USGS Map provided online through Microsoft TerraServer Imagery. Available at <http://terraserver-usa.com>.

Figure 3: Plover Playa-58 km W of Salt Lake City, Utah, United States 8/29/1999. USGS Map provided online through Microsoft TerraServer Imagery. Available at <http://terraserver-usa.com>.

Figure 4: Jordan River-Taylorsville, Utah, United States 9/18/2003. USGS Map provided online through Microsoft TerraServer Imagery. Available at <http://terraserver-usa.com>.

Consistency of the UDOT WFAM was evaluated by comparing the score provided by each evaluator for each question within the method. Variability between answers was calculated and investigated. Based on the results, a determination was made as to whether or not any changes needed to be made to the question to minimize future occurrences. Usability was determined based on concerns expressed by the evaluators with regards to each question within the UDOT WFAM. The relative accuracy of the UDOT WFAM was measured by looking at the overall results that come from compiling scores to individual questions (wetland scores and categorization) of the method produced by each group of evaluators at each site. Results from groups comprised of only UDOT personnel and groups comprised of only UWAG members were compared for relative accuracy. Results from Site 1 and Site 2 will be placed in a table with similar question results from the three other methods tested to determine the degree of similarity in general characterization of wetland functional condition.

All information gathered throughout field testing were used to ascertain the consistency, usability, and relative accuracy of the UDOT WFAM. Corrections and alterations to the UDOT WFAM were made to reflect the shortcomings and errors discovered in the field test, and prepare the method for future implementation.

THE STUDY

The UDOT WFAM process was designed to systematically assess a wetland and evaluate how proficient it is at performing a particular function or set of functions. This systematic process takes evaluators through a series of questions to determine wetland functionality. Each question that directly impacts the final rating is given a numeric value by the evaluator(s). At the end, each of these values are summed together and divided by the maximum total points possible. This result is then converted to a percent by moving the decimal two places to the left. The percent is used to determine which category the wetland belongs to. There are five possible categories, they are: Red Flag Category, Category I, Category II, Category III, and Category IV. The Red Flag Category is the highest possible categorization and Category IV is the lowest.

The Red Flag Category is for Assessment Areas in which a threatened and or endangered species or its habitat has been documented. Category I wetlands are of exceptionally high quality or are important from a regulatory standpoint; total functional points should be greater than 80%. Category II wetlands are more prevalent than Category I wetlands, and are those that provide habitat for sensitive plants or animals, function at very high levels for wildlife/fish/amphibian habitat or are assigned high ratings for many of the assessed functions and values; total functional points should be greater than 65%. Category III wetlands are more prevalent, they generally have moderate to low Plant Community Composition rating and have a higher level of disturbance than Category I and II wetlands. They can provide many functions and values, although they may not be assigned high ratings for as many parameters as are Category I and II wetlands. Total functional points should be between 30-65%.

Category IV wetlands are generally small, isolated, and are rated low for Plant Community Composition. These sites provide little in the way of wildlife habitat. Total functional points should be less than 30%.

For this study, four wetland sites were visited by multiple groups to evaluate their functionality. The following is the UDOT WFAM Evaluation Form (Slope) for recording field data. This form was used in this study for field testing Site 1 and Site 2. Evaluators at Site 3 and Site 4 used a very similar form that specifically addressed functionality particular to mineral flats (Site 3) and riverine (Site 4) wetlands. Revisions to this and all other forms are discussed throughout and a final revised form is included in Appendix E.

UDOT Wetland Assessment Form (Slope)

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.**

Slope



Slope wetlands – Occur at points of surface changes, breaks in slope or stratigraphic changes / groundwater is primary water source / water flow is primarily unidirectional- down gradient / water may discharge to stream, lake, depression.

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

very saline

5-10 dS/m

10-16 dS/m

16-35 dS/m

≥ 35 dS/m

water class and salinity.

Subclass is:

_____ Seasonal and persistent freshwater

_____ Seasonal and persistent saline and

Reference Appendix D for definitions of

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) and Fahrig (1997).

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 (1,200 feet from perimeter of AA)		
	Land managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or buildings.	Land not cultivated, but moderately grazed or hayed or selectively logged; or has been subject to minor clearing; contains few roads, buildings, ditches or canals.	Land cultivated or heavily grazed or logged; 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, logged, or otherwise converted; does not contain roads or occupied buildings.	L	L	M
AA not cultivated, but moderately grazed or hayed or selectively logged; or has been subject to relatively minor clearing, fill placement, or hydrological alteration; contains few roads, buildings, ditches or canals.	M	M	H
AA cultivated or heavily grazed or logged; subject to relatively substantial fill placement, grading, clearing, or hydrological alteration; high road or building density, and or numerous 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).

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

iii. What is the ratio of native plants to non-native 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)	H			M			L			H			M			L		
Native 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 Species (iii)	H	M	L	H	M	L	H	M	L
Rating	1H	.8H	.6M	.8H	.6M	.4M	.6M	.4M	.2L

Comments:

15e. General Wildlife Habitat Rating

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).

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

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 waterbody 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 streambank 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 streambank 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 streambank 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 to the following question. 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 waterbody included on the UDEQ list of waterbodies 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	.8 M	.5 M
Introduced fish	.9 H	.6 M	.4 M
No fish	.3 L	.2 L	.1 L

Comments: reduce the score by .1 if AA has carp present.

15g. General Amphibian Habitat Rating

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

15h. Flood Attenuation

This field assesses the capability of the AA to slow in channel or overbank 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 floodplain of 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?	N	Y	N	Y
Rating	1H	.8H	.9H	.7M

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.				Waterbody on UDEQ list of waterbodies 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.				
	Within the AA, estimate % ground coverage with high to moderate surface roughness*		≥ 50%		<50%		≥ 50%		<50%
Has the wetland’s natural ability to store water been disturbed?	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 Rating			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

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

functional points for that variable when calculating percent of total functional points.

Note: % total functional points = actual functional points ÷ possible 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><input checked="" type="checkbox"/> 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>

CONSISTENCY RESULTS AND DISCUSSION

Consistency in this study is defined as achieving reliable and uniform results for each question by multiple groups. A measurement of consistency was applied to the UDOT WFAM and determined as follows. Each site was individually analyzed for consistency by comparing each group’s response to each question; only questions that influenced the final rating were considered. Variability that existed between responses was investigated and where evident, the causes of variability were explained. Any actions that were taken to modify or alter the functional assessment in order to minimize variability in the future were noted.

Site 1: Skypark, at 2600 South Redwood Road Woods Cross, Utah, a slope wetland.

Site 1 was tested by five groups. Table 4 illustrates the groups evaluating the wetland site and the composition of each. Table 5 illustrates when each group visited the wetland site to conduct field testing.

Group A	One UDOT environmental manager and one UDOT landscape architect.
Group B	Three UDOT landscape architects.
Group C	One government wetland specialist, one government wildlife biologist, and one private wetland consultant. All are members of the UWAG group.
Group D	One government wetland specialist, one government hydrologist, and one government wildlife biologist. All are members of the UWAG group.
Group E	One UDOT landscape architect manager and one landscape architect student.

Table 4: Site 1 Group Composition.

Group A	June 8, 2005
Group B	June 8, 2005
Group C	May 31, 2005
Group D	May 31, 2005
Group E	May 25, 2005

Table 5: Site 1 Field Test Date.

The following discussion presents results from each question that is influential in the final rating.

Question 15b. Plant Community Composition:

Results:

Group	General Evaluation	Actual Functional Points/Rating	Possible Functional Points	Functional Units (Actual Points x Estimated AA Acreage)
A	M	0.6	1	$0.6 \times 2.5 = 1.5$
B	M	0.6	1	$0.6 \times 2.5 = 1.5$
C	M	0.6	1	$0.6 \times 2.5 = 1.5$
D	M	0.4	1	$0.4 \times 2.5 = 1$
E	M	0.6	1	$0.6 \times 2.5 = 1.5$

Table 6: Site 1 Question 15b. Plant Community Composition Results.

Results from question 15b. Plant Community Composition are consistent. All General Evaluation results are identical. The only variability between Actual Functional Points/Rating is with results reported by Group D. It is important to note that the Actual Functional Points/Rating for this question, in this type of a wetland, is a result of two questions. One question asks about percent ground cover and the other about native species. All groups identified the cover as being moderate. Group D also identified the cover as moderate but identified one less native plant species than the other groups. This is what caused the lower Actual Functional Points/Rating for Group D.

Question 15c. Listed/Proposed T&E Species Habitat:

Results:

Group	General Evaluation	Actual Functional Points/Rating	Possible Functional Points	Functional Units (Actual Points x Estimated AA Acreage)
A	L	0.3	.9	$0.3 \times 2.5 = 0.75$
B	L	0.3	.9	$0.3 \times 2.5 = 0.75$
C	L	0.0	.9	$0.0 \times 2.5 = 0.00$
D	L	0.0	.9	$0.0 \times 2.5 = 0.00$
E	L	0.3	.9	$0.3 \times 2.5 = 0.75$

Table 7: Site 1 Question 15c. Listed/Proposed T&E Species Habitat Results.

Results from question 15c. Listed/Proposed T&E Species Habitat are consistent.

All General Evaluation results are identical. The only variability between Actual Functional Points/Rating is with results reported by Groups C and D. These groups responded that the site did not offer any usable habitat for listed and/or proposed threatened and/or endangered species, while Groups A, B, and E responded that the site offered incidental/suspected use by listed and/or proposed threatened and/or endangered species.

This question specifically requires consultation with a wildlife biologist. Groups C and D both included such an individual. The remaining groups did not have access to a wildlife biologist and the responses reflect this fact. This inconsistency illustrates the importance of requiring field evaluators to consult with a wildlife biologist as required by the UDOT WFAM.

Question 15d. UT Natural Heritage Program Species Habitat:

Results:

Group	General Evaluation	Actual Functional Points/Rating	Possible Functional Points	Functional Units (Actual Points x Estimated AA Acreage)
A	L	0.1	.9	$0.1 \times 2.5 = 0.25$
B	L	0.1	.9	$0.1 \times 2.5 = 0.25$
C	L	0.1	.9	$0.1 \times 2.5 = 0.25$
D	L	0.1	.9	$0.1 \times 2.5 = 0.25$
E	L	0.1	.9	$0.1 \times 2.5 = 0.25$

Table 8: Site 1 Question 15d. UT Natural Heritage Program Species Habitat Results.

Results from question 15d. UT Natural Heritage Program Species Habitat are consistent. All General Evaluation results are identical as well as Actual Functional Points/Rating results.

Question 15e. General Wildlife Habitat:

Results:

Group	General Evaluation	Actual Functional Points/Rating	Possible Functional Points	Functional Units (Actual Points x Estimated AA Acreage)
A	L	0.2	1	$0.2 \times 2.5 = 0.5$
B	L	0.2	1	$0.2 \times 2.5 = 0.5$
C	L	0.2	1	$0.2 \times 2.5 = 0.5$
D	L	0.3	1	$0.3 \times 2.5 = 0.75$
E	L	0.3	1	$0.3 \times 2.5 = 0.75$

Table 9: Site 1 Question 15e. General Wildlife Habitat Results.

Results from question 15e. General Wildlife Habitat are consistent. All General Evaluation results are identical. The only variability between Actual Functional Points/Rating is with results reported by Groups D and E. It is important to note that the Actual Functional Points/Rating for this question is based on site disturbance level (question 15a.) and the plant community (question 15b.). However, the difference between 0.2 and 0.3 Actual Functional Points/Rating is because Groups D and E added

0.1 to the Wildlife Habitat features rating based on descriptive categories for high, moderate, and low wildlife use; thus resulting in 0.1 higher rating for the Modified wildlife habitat features rating. Descriptive categories are listed below.

High use:

AA is regularly used in high numbers relative to local or transient populations.

Moderate use:

AA is regularly used in small to moderate numbers relative to local populations, or infrequently or sporadically used in any numbers relative to local or transient populations.

Low to No use:

AA regularly, infrequently or sporadically used by extremely small numbers relative to local populations, or receives chance, inconsequential use in any numbers relative to local or transient populations.

Question 15f. General Fish/Aquatic Habitat:

This question was not applicable to Site 1 and did not receive any responses.

Question 15g. General Amphibian Habitat:

This question was not applicable to Site 1 and did not receive any responses.

Question 15h. Flood Attenuation:

This question was not applicable to Site 1 and did not receive any responses.

Question 15i. Short and Long Term Surface Water Storage:

Results:

Group	General Evaluation	Actual Functional Points/Rating	Possible Functional Points	Functional Units (Actual Points x Estimated AA Acreage)
A	H	0.8	1	0.8 x 2.5 = 2.0
B	H	0.8	1	0.8 x 2.5 = 2.0
C	H	0.8	1	0.8 x 2.5 = 2.0
D	H	0.8	1	0.8 x 2.5 = 2.0
E	H	0.8	1	0.8 x 2.5 = 2.0

Table 10: Site 1 Question 15i. Short and Long Term Surface Water Storage Results.

Results from question 15i. Short and Long Term Surface Water Storage are consistent. All General Evaluation results are identical as well as Actual Functional Points/Rating results.

Question 15j. Sediment/Nutrient/Toxicant Removal:

Results:

Group	General Evaluation	Actual Functional Points/Rating	Possible Functional Points	Functional Units (Actual Points x Estimated AA Acreage)
A	M	0.5	1	$0.5 \times 2.5 = 1.25$
B	H	0.9	1	$0.9 \times 2.5 = 2.25$
C	H	0.9	1	$0.9 \times 2.5 = 2.25$
D	H	0.9	1	$0.9 \times 2.5 = 2.25$
E	M	0.5	1	$0.5 \times 2.5 = 1.25$

Table 11: Site 1 Question 15j. Sediment/Nutrient/Toxicant Removal Results.

Results from question 15j. Sediment/Nutrient/Toxicant Removal are not consistent. General Evaluation results are not identical nor are the Actual Functional Points/Rating. The variability was found in the first of three questions in the matrix. The first question asks if the water body is on the Utah Department of Environmental Quality's (UDEQ) list of impaired water bodies or if the wetland receives or has the potential to receive high levels of sediments, nutrients, or compounds that may substantially impair other functions. This site does not contain a water body that is on the UDEQ's list (EPA 2006). However, Groups A and E responded that the wetland receives or has the potential to receive high levels of sediments, nutrients or compounds that may substantially impair other functions. Groups B, C, and D responded that the wetland receives or has the potential to receive low to moderate levels of sediments, nutrients or compounds such that other functions are not substantially impaired.

To improve consistency of evaluator response for this question additional text has been added to the question (see Usability Results and Discussion). Also, another step has been added to the UDOT WFAM to improve consistency of evaluator response for this question and other hydrological/biophysical questions. The functional assessment now requires that field evaluators draw a simple boundary that describes the assessment area (AA) and illustrate the hydrological conditions found within that area. This additional step will aid allow evaluators to become more familiar with site hydrology and in turn, be able to better respond to this question. A more detailed description of this modification can be found in Usability Results and Discussion.

Question 15k. Sediment/Shoreline Stabilization:

This question was not applicable to Site 1 and did not receive any responses.

Site 1: Conclusion

Results from Site 1 show that consistency can be achieved with the UDOT WFAM. Responses are reliable and uniform for all but one question, 15j. Sediment/Nutrient/Toxicant Removal. In response to the inconsistency, this question has been modified to help improve future results.

Site 2: Bountiful Pond, a slope wetland.

Site 2 was tested by the same groups as Site 1. Table 12 illustrates the groups evaluating the wetland site and the composition of each. Table 13 illustrates when each group visited the wetland site to conduct field testing.

Group A	One UDOT environmental manager and one UDOT landscape architect.
Group B	Three UDOT landscape architects.
Group C	One government wetland specialist, one government wildlife biologist, and one private wetland consultant. All are members of the UWAG group.
Group D	One government wetland specialist, one government hydrologist, and one government wildlife biologist. All are members of the UWAG group.
Group E	One UDOT landscape architect manager and one landscape architect student.

Table 12: Site 2 Group Composition.

Group A	June 8, 2005
Group B	June 8, 2005
Group C	May 31, 2005
Group D	May 31, 2005
Group E	May 25, 2005

Table 13: Site 2 Field Test Date.

Question 15b. Plant Community Composition:

Group	General Evaluation	Actual Functional Points/Rating	Possible Functional Points	Functional Units (Actual Points x Estimated AA Acreage)
A	M	0.6	1	$0.6 \times 0.5 = 0.3$
B	M	0.6	1	$0.6 \times 0.5 = 0.3$
C	M	0.6	1	$0.6 \times 0.5 = 0.3$
D	M	0.6	1	$0.6 \times 0.5 = 0.3$
E	M	0.6	1	$0.6 \times 0.5 = 0.3$

Table 14: Site 2 Question 15b. Plant Community Composition Results.

Results from question 15b. Plant Community Composition are consistent. All General Evaluation results are identical as well as Actual Functional Points/Rating results.

Question 15c. Listed/Proposed T&E Species Habitat:

Group	General Evaluation	Actual Functional Points/Rating	Possible Functional Points	Functional Units (Actual Points x Estimated AA Acreage)
A	M	0.5	.9	$0.5 \times 0.5 = 0.75$
B	L	0.3	.9	$0.3 \times 0.5 = 0.15$
C	L	0.3	.9	$0.3 \times 0.5 = 0.15$
D	M	0.5	.9	$0.5 \times 0.5 = 0.75$
E	M	0.5	.9	$0.5 \times 0.5 = 0.75$

Table 15: Site 2 Question 15c. Listed/Proposed T&E Species Habitat Results.

Results from question 15c. Listed/Proposed T&E Species Habitat are not consistent. General Evaluation results are not identical nor are the Actual Functional Points/Rating; however, variability between responses is small. The difference between a Moderate 0.5 rating and a Low 0.3 rating is because the AA is identified as having documented incidental use by a listed and/or proposed threatened and/or endangered species rather than merely suspected incidental use.

This question specifically requires consultation with a wildlife biologist. Groups C and D both included such an individual, yet their responses to the question were not identical. The remaining groups did not have access to such an individual and the responses were just as varied. This variability may illustrate that one wildlife biologist may not be as familiar with a particular area as another or it may suggest that a definitive answer to this question may be impossible to obtain at every site being evaluated.

The UDOT WFAM requires a wildlife biologist (the USFWS biologist most familiar with wildlife use of habitat where the site exists) to answer this question. They are most likely to know levels of habitat use and whether or not it is documented or suspected.

Question 15d. UT Natural Heritage Program Species Habitat:

Group	General Evaluation	Actual Functional Points/Rating	Possible Functional Points	Functional Units (Actual Points x Estimated AA Acreage)
A	L	0.2	.9	0.2 x 0.5 = 0.1
B	L	0.1	.9	0.1 x 0.5 = 0.05
C	L	0.1	.9	0.1 x 0.5 = 0.05
D	M	0.6	.9	0.6 x 0.5 = 0.3
E	L	0.2	.9	0.2 x 0.5 = 0.1

Table 16: Site 2 Question 15d. UT Natural Heritage Program Species Habitat Results.

Results from question 15d. UT Natural Heritage Program Species Habitat are not consistent. General Evaluation results are not identical nor are the Actual Functional Points/Rating; however, the major inconsistency is with Group D. Through review of their evaluation form and reading the notes that were assembled afterwards by a member of UWAG the discrepancy with Group D can clearly be identified. A member of Group D, who is a wildlife biologist, considered the site to have secondary/suspected use by bald eagles (*Haliaeetus leucocephalus*). However, the site has no old-growth woody vegetation, typically required for nesting and or roosting (Buehler 2000). The only potential use of the site by bald eagles, although very suspect due to the close proximity of development, would be for hunting (Buehler 2000). Any wetland however, may receive incidental use by bald eagles as they prey on waterfowl during the fall and winter seasons. It is suspected that the evaluator may have considered the landscape well beyond the AA, which this question does not address.

This question specifically requires consultation with a wildlife biologist. Groups C and D both included such an individual while in the field, yet their responses to the question were not identical. The remaining groups did not have access to such an individual and the responses were consistent with Group C. The inconsistency appears to

be the result of the wildlife biologist participating with Group D. This result suggests the same concerns that were discussed with the previous question.

Question 15e. General Wildlife Habitat:

Group	General Evaluation	Actual Functional Points/Rating	Possible Functional Points	Functional Units (Actual Points x Estimated AA Acreage)
A	M	0.7	1	$0.7 \times 0.5 = 0.35$
B	M	0.7	1	$0.7 \times 0.5 = 0.35$
C	M	0.6	1	$0.6 \times 0.5 = 0.3$
D	H	1.0	1	$1.0 \times 0.5 = 0.5$
E	M	0.7	1	$0.7 \times 0.5 = 0.35$

Table 17: Site 2 Question 15e. General Wildlife Habitat Results.

Results from question 15e. General Wildlife Habitat are somewhat consistent. General Evaluation results are not identical nor are the Actual Functional Points/Rating; however, the largest variability comes again from one group, Group D. It is important to note that the Actual Functional Points/Rating for this question are based on site disturbance level (question 15a.) and the plant community (question 15b.). Responses to question 15b. Plant Community Composition is identical. Therefore the variability is associated with evaluators' decision about the level of disturbance. Group D identified the level of disturbance as Low, while all remaining groups identified the disturbance as Moderate.

The inconsistency [0.6 (Group C) and 0.7 (Groups A, B, and E)] for Actual Functional Points/Rating is explained by the fact that Groups A, B, and E added 0.1 to the Wildlife Habitat features rating based on descriptive categories (see page 24 to read the descriptive categories) for high, moderate, and low wildlife use; thus resulting in 0.1 higher rating for the Modified wildlife habitat features rating.

Question 15f. General Fish/Aquatic Habitat:

This question was not applicable to Site 2 and did not receive any responses.

Question 15g. General Amphibian Habitat:

This question was not applicable to Site 2 and did not receive any responses.

Question 15h. Flood Attenuation:

This question was not applicable to Site 2 and did not receive any responses.

Question 15i. Short and Long Term Surface Water Storage:

Group	General Evaluation	Actual Functional Points/Rating	Possible Functional Points	Functional Units (Actual Points x Estimated AA Acreage)
A	H	0.8	1	$0.8 \times 0.5 = 0.4$
B	H	1.0	1	$1.0 \times 0.5 = 0.5$
C	M	0.7	1	$0.7 \times 0.5 = 0.35$
D	H	0.9	1	$0.9 \times 0.5 = 0.45$
E	M	0.9	1	$0.9 \times 0.5 = 0.45$

Table 18: Site 2 Question 15i. Short and Long Term Surface Water Storage Results.

Results from question 15i. Short and Long Term Surface Water Storage are not consistent. General Evaluation results are not identical nor are the Actual Functional Points/Rating. This question is comprised of two questions in a matrix. By answering each of the two questions, the evaluator arrives at a rating. The first question asks about the frequency of inundation. Groups A and B answered that the wetland was inundated greater or equal to 5 out of 10 years. Groups C, D, and E answered that inundation occurred less frequently. The inconsistency can be attributed to field evaluators not conducting research about the area prior to the field investigation. Pre-site visit research (e.g. review of aerial photography taken over time, contact individuals living near or who are familiar with the site, study topographic maps, etc.) is recommended in the UDOT WFAM Manual and is general protocol as a matter of course prior to conducting field

work. Unfortunately, it was not done prior to this field test study. Doing pre-site visit research should reduce or eliminate this inconsistency.

The second question in the matrix reads: “Has the wetland’s natural ability to store water been disturbed?” Difficulties with the wording of this question arose at the site during the field test and members within each group struggled to arrive at a definitive answer. Groups B, D, and E responded that the wetlands natural ability to store water had not been disturbed and Groups A and C responded that it had. The difficulty is that the question lowers the rating score if evaluators answer in the affirmative, yet some disturbance may actually improve the value of this function. This question has been modified to help increase consistency. (The original and modified questions can be found in Usability Results and Discussion.)

Question 15j. Sediment/Nutrient/Toxicant Removal:

Group	General Evaluation	Actual Functional Points/Rating	Possible Functional Points	Functional Units (Actual Points x Estimated AA Acreage)
A	H	0.9	1	$0.9 \times 0.5 = 0.45$
B	H	1.0	1	$1.0 \times 0.5 = 0.5$
C	H	0.9	1	$0.9 \times 0.5 = 0.45$
D	H	0.9	1	$0.9 \times 0.5 = 0.45$
E	H	1.0	1	$1.0 \times 0.5 = 0.5$

Table 19: Site 2 Question 15j. Sediment/Nutrient/Toxicant Removal Results.

Results from question 15j. Sediment/Nutrient/Toxicant Removal are consistent. All General Evaluation results are identical. The only variability between Actual Functional Points/Rating is with results reported by Groups B and E. The variability is with the response to the whether or not the wetland’s natural ability to store water had been disturbed. As previously stated, this question elicited much confusion and has been

modified to help increase the consistency of this question. The modified question can be found in Usability Results and Discussion.

Question 15k. Sediment/Shoreline Stabilization:

This question was not applicable to Site 2 and did not receive any responses.

Site 2: Conclusion

Results from Site 2 show inconsistency with responses to questions 15c.

Listed/Proposed T&E Species Habitat, 15d. UT Natural Heritage Program Species Habitat, and 15i. Short and Long Term Surface Water Storage. Questions 15c.

Listed/Proposed T&E Species Habitat and 15d. UT Natural Heritage Program Species Habitat both require consultation with a wildlife biologist familiar with the area for these responses. This consultation will eliminate inconsistencies found in this study.

Inconsistencies with question 15i. Short and Long Term Surface Water Storage will be reduced or eliminated by evaluators conducting pre-site research and through the modifications that have been made to the second question in the matrix.

Site 3: Plover Playa in Tooele County, a mineral flat wetland.

Site 3 was tested by three groups. Table 20 illustrates the groups evaluating the wetland site and the composition of each. Table 21 illustrates when each group visited the wetland site to conduct field testing.

Group A	Two UDOT landscape architects.
Group B	One UDOT landscape architect and one landscape architect student.
Group C	Two hydrologists and a civil engineer from a private consulting firm.

Table 20: Site 3 Group Composition.

Group A	June 9, 2005
Group B	June 9, 2005
Group C	September 7, 2005

Table 21: Site 3 Field Test Date.

Question 15b. Plant Community Composition:

Group	General Evaluation	Actual Functional Points/Rating	Possible Functional Points	Functional Units (Actual Points x Estimated AA Acreage)
A	H	1.0	1	1 x 2.5 = 2.5
B	H	1.0	1	1 x 2.5 = 2.5
C	H	1.0	1	1 x 2.5 = 2.5

Table 22: Site 3 Question 15b Plant Community Composition Results.

Results from question 15b. Plant Community Composition are consistent. All General Evaluation results are identical as well as Actual Functional Points/Rating results.

Question 15c. Listed/Proposed T&E Species Habitat:

Group	General Evaluation	Actual Functional Points/Rating	Possible Functional Points	Functional Units (Actual Points x Estimated AA Acreage)
A	L	0.3	.9	0.3 x 2.5 = 0.15
B	L	0.3	.9	0.3 x 2.5 = 0.15
C	L	0.3	.9	0.3 x 2.5 = 0.15

Table 23: Site 3 Question 15c Listed/Proposed T&E Species Habitat Results.

Results from question 15c. Listed/Proposed T&E Species Habitat are consistent. All General Evaluation results are identical as well as Actual Functional Points/Rating results.

Question 15d. UT Natural Heritage Program Species Habitat:

Group	General Evaluation	Actual Functional Points/Rating	Possible Functional Points	Functional Units (Actual Points x Estimated AA Acreage)
A	L	0.1	.9	$0.1 \times 2.5 = 0.25$
B	L	0.1	.9	$0.1 \times 2.5 = 0.25$
C	L	0.1	.9	$0.1 \times 2.5 = 0.25$

Table 24: Site 3 Question 15d. UT Natural Heritage Program Species Habitat Results.

Results from question 15d. UT Natural Heritage Program Species Habitat are consistent. All General Evaluation results are identical as well as Actual Functional Points/Rating results.

Question 15e. General Wildlife Habitat:

Group	General Evaluation	Actual Functional Points/Rating	Possible Functional Points	Functional Units (Actual Points x Estimated AA Acreage)
A	H	1.0	1	$1.0 \times 2.5 = 2.5$
B	H	1.0	1	$1.0 \times 2.5 = 2.5$
C	H	1.0	1	$1.0 \times 2.5 = 2.5$

Table 25: Site 3 Question 15e. General Wildlife Habitat Results.

Results from question 15e. General Wildlife Habitat are consistent. All General Evaluation results are identical as well as Actual Functional Points/Rating results.

Question 15f. General Fish/Aquatic Habitat:

This question was not applicable to Site 3 and did not receive any responses.

Question 15g. General Amphibian Habitat:

This question was not applicable to Site 3 and did not receive any responses.

Question 15h. Flood Attenuation:

This question was not applicable to Site 3 and did not receive any responses.

Question 15i. Short and Long Term Surface Water Storage:

Group	General Evaluation	Actual Functional Points/Rating	Possible Functional Points	Functional Units (Actual Points x Estimated AA Acreage)
A	H	1.0	1	$1.0 \times 2.5 = 2.5$
B	H	0.8	1	$0.8 \times 2.5 = 2$
C	H	0.8	1	$0.8 \times 2.5 = 2$

Table 26: Site 3 Question 15i Short and Long Term Surface Water Storage Results.

Results from question 15i. Short and Long Term Surface Water Storage are consistent. All General Evaluation results are identical. The variability between Actual Functional Points/Rating is with results reported by Group A. This group answered that the wetland's natural ability to store water had not been disturbed. However, this is not correct because the wetland's natural ability to store water has been disturbed by the placement of a road. Group A did not want to lower the score because in actuality the wetland, due to the road, has the ability to store an increased amount of water. This question has been modified to address the concern of Group A. (The modified question can be found in Usability Results and Discussion.)

Question 15j. Sediment/Nutrient/Toxicant Removal:

Group	General Evaluation	Actual Functional Points/Rating	Possible Functional Points	Functional Units (Actual Points x Estimated AA Acreage)
A	H	0.8	1	$0.8 \times 2.5 = 2$
B	H	0.8	1	$0.8 \times 2.5 = 2$
C	H	0.9	1	$0.9 \times 2.5 = 2.25$

Table 27: Site 3 Question 15j. Sediment/Nutrient/Toxicant Removal Results.

Results from question 15j. Sediment/Nutrient/Toxicant Removal are consistent. All General Evaluation results are identical. The variability between Actual Functional

Points/Rating is with results reported by Group C. Group C responded that there was ground coverage with high to moderate surface roughness equaling or greater than 50%. Groups A and B responded that there was less than 50%. This inconsistency can be attributed to the time of the year when the evaluations of the site occurred. Groups A and B visited the site June 9, 2005 and Group C visited the Site on September 7, 2005. An increase in ground coverage with high to moderate surface roughness can be expected later in the growing season as plants have had an increased amount of time to mature and develop and new plants are recruited into the plant community.

Like question 15i. Short and Long Term Surface Water Storage, question 15j Sediment/Nutrient/Toxicant Removal asks the same question about whether or not the wetland's natural ability to store water has been disturbed. Groups A and B responded that its natural ability to store water had not been disturbed but it clearly has been due to an adjacent road. These groups acknowledged the road, but insisted that it actually improved the wetland's ability to remove sediment, nutrients, and toxicants and therefore, did not want to lower the rating. Group C answered that the wetland's natural ability to store water had been disturbed in the affirmative (lowering the rating) even though its ability to perform this function had actually improved. This question has been modified to address this concern. The modified question can be found in Usability Results and Discussion.

Question 15k. Sediment/Shoreline Stabilization:

This question was not applicable to Site 3 and did not receive any responses.

Site 3: Conclusion

Results from Site 3 show that consistency can be achieved with the UDOT WFAM. All responses to the questions are reliable and uniform.

Site 4: Jordan River at 3900 South, a riverine wetland.

Site 4 was tested by one group. Table 28 illustrates that one group participated at this wetland site and its composition. Table 29 illustrates when the group visited the wetland site to conduct field testing.

Group A	Three UDOT landscape architects, one UDOT landscape architect manager, and one landscape architect student.
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Table 28: Site 4 Group Composition.

Group A	June 9, 2005
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Table 29: Site 4 Field Test Date.

Site 4 was only evaluated by one group and therefore, the questions will not be analyzed and compared to determine consistency. Results will simply be reported.

Question 15b. Plant Community Composition:

Group	General Evaluation	Actual Functional Points/Rating	Possible Functional Points	Functional Units (Actual Points x Estimated AA Acreage)
A	L	0.1	1	$0.1 \times 0.25 = 0.025$

Table 30: Site 4 Question 15b Plant Community Composition Results.

Question 15c. Listed/Proposed T&E Species Habitat:

Group	General Evaluation	Actual Functional Points/Rating	Possible Functional Points	Functional Units (Actual Points x Estimated AA Acreage)
A	L	0.0	.9	$0.0 \times 0.25 = 0.0$

Table 31: Site 4 Question 15c Listed/Proposed T&E Species Habitat Results.

Question 15d. UT Natural Heritage Program Species Habitat:

Group	General Evaluation	Actual Functional Points/Rating	Possible Functional Points	Functional Units (Actual Points x Estimated AA Acreage)
A	L	0.1	.9	$0.1 \times 0.25 = 0.025$

Table 32: Site 4 Question 15d. UT Natural Heritage Program Species Habitat Results.

Question 15e. General Wildlife Habitat:

Group	General Evaluation	Actual Functional Points/Rating	Possible Functional Points	Functional Units (Actual Points x Estimated AA Acreage)
A	L	0.2	1	$0.2 \times 0.25 = 0.05$

Table 33: Site 4 Question 15e. General Wildlife Habitat Results.

Question 15f. General Fish/Aquatic Habitat:

Group	General Evaluation	Actual Functional Points/Rating	Possible Functional Points	Functional Units (Actual Points x Estimated AA Acreage)
A	M	0.3	1	$0.3 \times 0.25 = 0.075$

Table 34: Site 4 Question 15f. General Fish/Aquatic Habitat Results.

Question 15g. General Amphibian Habitat:

This question was not applicable to Site 4 and did not receive any responses.

Question 15h. Flood Attenuation:

Group	General Evaluation	Actual Functional Points/Rating	Possible Functional Points	Functional Units (Actual Points x Estimated AA Acreage)
A	M	0.6	1	$0.6 \times 0.25 = 0.15$

Table 35: Site 4 Question 15h. Flood Attenuation Results.

Question 15i. Short and Long Term Surface Water Storage:

This question was not applicable to Site 4 and did not receive any responses.

Question 15j. Sediment/Nutrient/Toxicant Removal:

Group	General Evaluation	Actual Functional Points/Rating	Possible Functional Points	Functional Units (Actual Points x Estimated AA Acreage)
A	L	0.3	1	$0.3 \times 0.25 = 0.075$

Table 36: Site 4 Question 15j. Sediment/Nutrient/Toxicant Removal Results.

Question 15k. Sediment/Shoreline Stabilization:

Group	General Evaluation	Actual Functional Points/Rating	Possible Functional Points	Functional Units (Actual Points x Estimated AA Acreage)
A	M	0.6	1	$0.6 \times 0.25 = 0.15$

Table 37: Site 4 Question 15k. Sediment/Shoreline Stabilization Results.

Site 4: Conclusion

Unfortunately, Site 4 was not field tested by multiple groups and could not be used as a measurement of consistency. On June 9, 2005, when the group that did evaluate the site made their visit, considerable confusion existed as to how to properly assess the function of a riverine wetland system and therefore it was deemed inappropriate to split into multiple groups. A second date, September 8, 2005 was set to field test the riverine site again with a different group of field evaluators. Due to other evaluator commitments, it was not assessed a second time. In the future, it would be important to field test a riverine and/or a lacustrine fringe site by multiple groups so that a measure of consistency can be obtained with those questions that were not applicable to the wetland types found on Sites 1, 2, and 3, specifically, questions 15f. General Fish/Aquatic Habitat, 15g. General Amphibian Habitat, 15h. Flood Attenuation, and 15k. Sediment/Shoreline Stabilization.

It should be noted that the confusion at Site 4 regards application of UDOT WFAM protocol to riverine wetlands and specifically, on the delineation of the

assessment area (AA). Modifications to the appropriate questions have been made based on field applications of the protocol to riverine wetlands. Further discussion about specific modifications is found in the Usability Results and Discussion section.

Consistency Results and Discussion Conclusion

Overall, the responses to the questions at each site were reliable and uniform and therefore, consistent. Those areas that did have levels of variability have been analyzed and explained where the variability occurred and modifications have been made to minimize these inconsistencies in the future.

USABILITY RESULTS AND DISCUSSION

Usability in this study is defined as a method that is understandable, convenient, and ready for use. The measurement of usability was applied to the UDOT WFAM and determined as follows. Each question was analyzed individually based on concerns expressed by all field evaluators assisting in this study. Some questions did not receive any evaluator comments. However, in this discussion the questions themselves will be included in this section for consistency but no discussion will follow. Other questions received several comments from evaluators about their usability in this functional assessment method. These concerns have been summarized and will be included below each question that the concern addresses. In some instances, modifications and/or additions to the functional assessment method and the form have been made to best respond to the concerns made by field evaluators. These modifications will be included, if appropriate, in this section. Any editorial changes that needed to be made to the document have taken place.

Question 1. Project Name:

1. Project Name:

No concerns were expressed by field evaluators specific to this question.

Question 2. Project Number:

2. Project Number:

No concerns were expressed by field evaluators specific to this question.

Question 3. USCOE Permit Number and Project Pin Number:

3. USCOE Permit Number:	Project Pin Number:
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No concerns were expressed by field evaluators specific to this question.

Question 4. Evaluation Date:

4. Evaluation Date (MM/DD/YYYY):

No concerns were expressed by field evaluators specific to this question.

Question 5. Evaluating Agency:

5. Evaluating Agency:

No concerns were expressed by field evaluators specific to this question.

Question 6. Evaluator(s):

6. Evaluator(s):

No concerns were expressed by field evaluators specific to this question.

Question 7. Purpose of Evaluation:

7. Purpose of Evaluation (check one): Wetlands potentially affected by UDOT project
 Mitigation wetlands, pre-construction
 Mitigation wetlands, post-construction
 Other (explain):

No concerns were expressed by field evaluators specific to this question.

Question 8. Wetland/Site Number(s):

8. Wetland/Site Number(s):

No concerns were expressed by field evaluators specific to this question.

Question 9. Wetland Location(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: _____

This question requires the evaluator(s) to determine where the wetland being evaluated is located; this includes: the Ecoregion, Watershed, and County. Evaluators had a difficult time interpreting some of this information based on the maps (Figure 5) provided in Appendix A of the UDOT Wetland Functional Assessment Method Manual. A new Ecoregion map (Figure 6) has been included in the manual that includes major

highways and interstate roads. This will help to reduce the difficulty encountered by the field evaluators. However, it is important that field evaluators research answers to this question prior to going into the field.

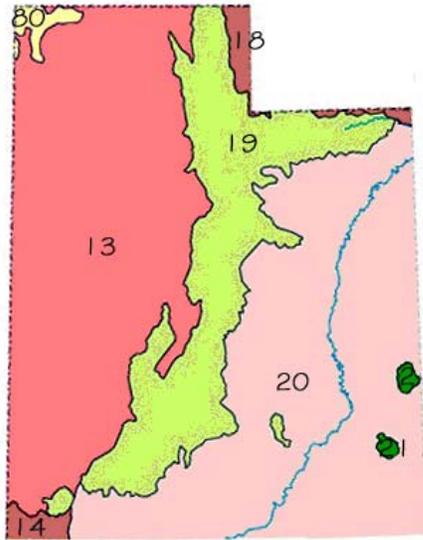


Figure 5: Original Ecoregion Map.

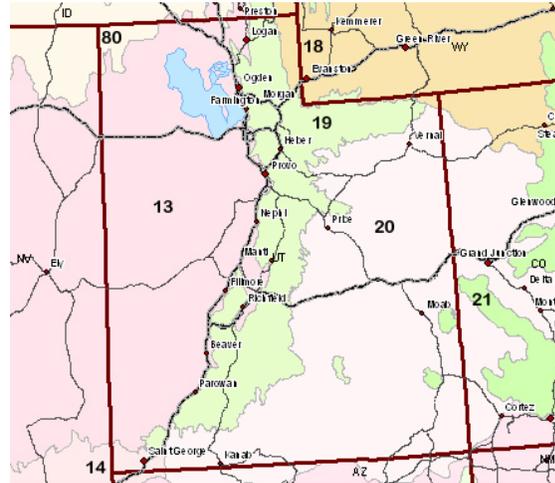


Figure 6: New Ecoregion Map.

Figure 5 - From: National Health and Environmental Effects Research Laboratory
U.S. Environmental Protection Agency

Figure 6 - From: Native Seed Network

Question 10. Wetland Size:

10. Wetland Size (total acres, measured by GPS if applicable):

No concerns were expressed by field evaluators specific to this question.

Question 11. Assessment Area (AA):

11. Assessment Area (AA) (total acres, measured by GPS if applicable, see appendix):

This question asks the evaluator(s) to determine the assessment area (AA) that will be considered on the evaluation form. Some field evaluators were confused about how this is determined. The AA can only include the wetland that has been delineated as jurisdictional wetland according to Section 404 of the Clean Water Act and regulated by

the U.S. Army Corps of Engineers. In some instances, if multiple wetland types are present in the same delineation, then multiple forms may need to be used. In cases where open water is present, if it has been delineated as jurisdictional wetland, then it should be included. If the open water has not been delineated as jurisdictional, it should not be included. Open water, in the truest sense of the word, is also regulated by the U.S. Army Corps of Engineers but under Section 10 of the Rivers and Harbors Act, not Section 404 and is therefore not considered as part of the assessment area.

In Appendix B of the UDOT WFAM manual there is a sample assessment area diagrams page (Figure 7) to aid evaluators in determining the assessment area. This page has been modified (Figure 8) to better represent possible assessment areas. It also was modified to address concerns about question 15a. Level of Disturbance, which are discussed later in this section.

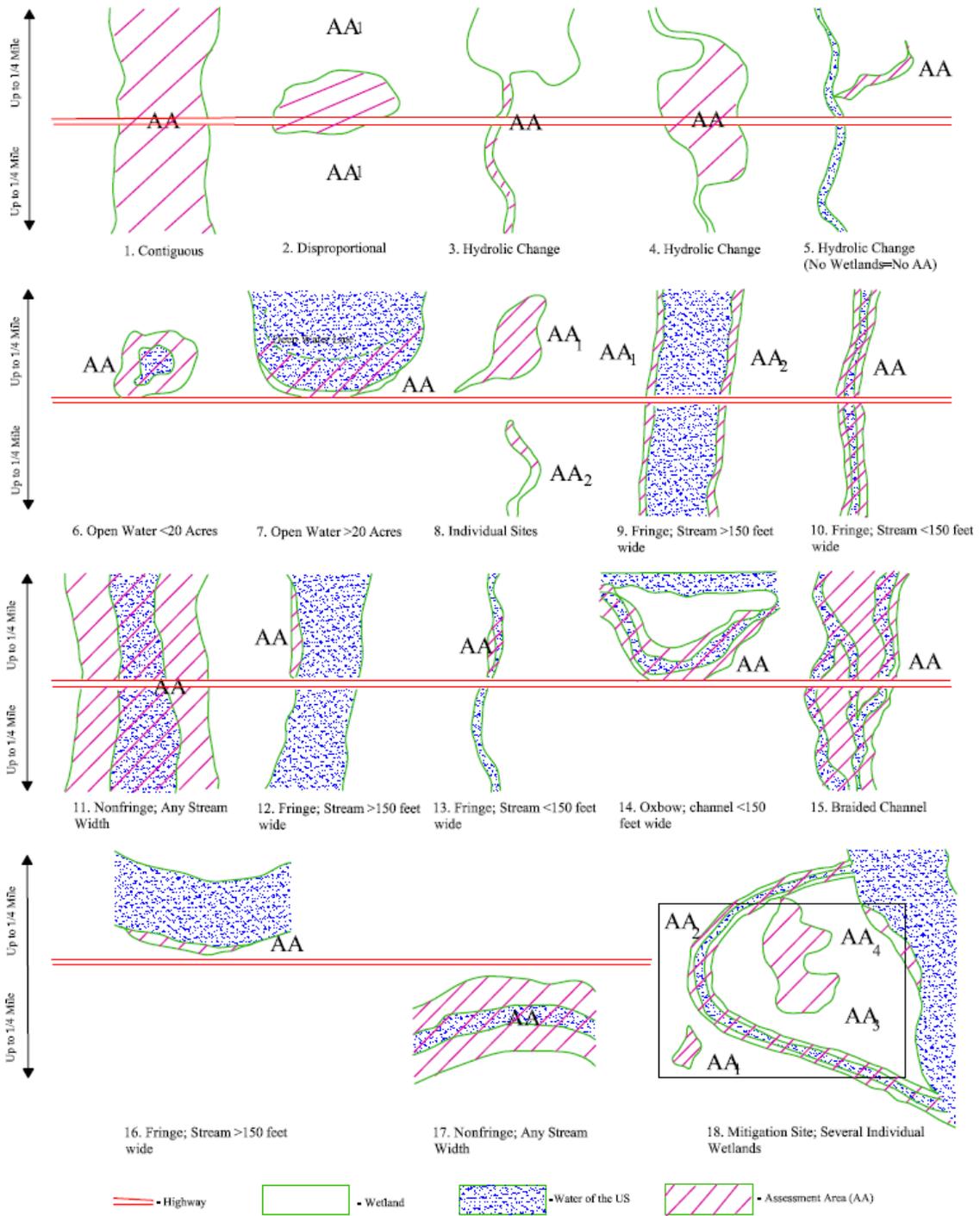


Figure 7: Original Assessment Area (AA) Diagrams

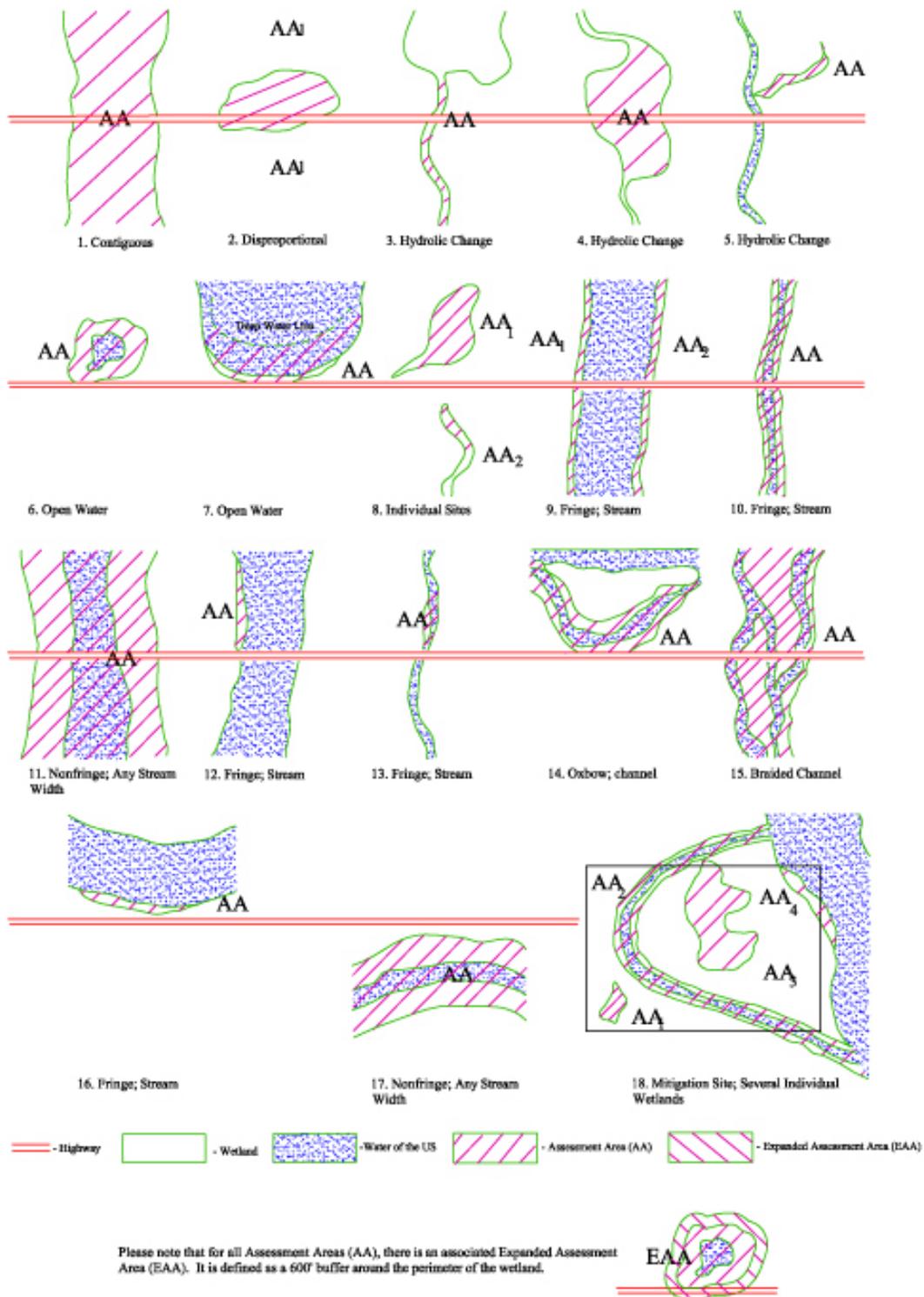


Figure 8: Modified Assessment Area (AA) Diagrams

Question 12. Habitat for Federally Listed or Proposed Threatened or Endangered Plants or Animals or State Listed S1 Species:

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? ____ Yes ____ 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.)

No concerns were expressed by field evaluators specific to this question.

Question 13. Selecting a Wetland Classification:

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.

The definitions that existed in the manual that was used for field testing were inadequate. Evaluators struggled to determine the difference between a slope and depressional wetland. These definitions, along with the definition for riverine and mineral flat wetlands, have been improved by adding more specific information that will aid in making this determination. These modifications are highlighted and can be seen in the following table.

Original Wetland Classification Definitions	Modified Wetland Classification Definitions
<p>Riverine wetlands: Occur in floodplains and riparian corridors in association with stream channels. Water source is overbank flow or hydraulic connection between the wetland and the stream. Dominant hydrodynamics are unidirectional and horizontal.</p>	<p>Riverine wetlands: Occur in floodplains and riparian corridors in association with stream channels. Water source is river or stream flow or overbank 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.</p>
<p>Slope wetlands: Occur at points of surface changes, breaks in slope or stratigraphic changes. Groundwater runoff and canal seepage are the primary water sources. Water flow is unidirectional (down slope/gradient). Water may discharge to a stream, lake or depression.</p>	<p>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.</p>
<p>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.</p>	<p>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.</p>
<p>Mineral Flat wetlands: Occur on large relict lakebeds. Dominant water source is precipitation. Dominant hydrodynamics are vertical. Example: Great Salt Lake mud flats and salt flats. Subclasses are not known.</p>	<p>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.</p>

Table 38: Original and Modified Wetland Classification Definitions

Question 14. Identify subclass

14. Identify subclass

This question asks the evaluator(s) to collect information about the wetland that is not scored. Some evaluators expressed concern that if something is not going to be given a value, then time should not be spent to collect this data.

The response to this concern is that by collecting sub-classification information the evaluator will be able to more accurately identify which plant list to refer to in Appendix D and E of the manual. This information will also aid the evaluator and the reviewer of the functional assessment to better understand the site and how to best manage the site in the future.

Question 15a. Level of Disturbance:

15a. Level of Disturbance

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

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

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

Conditions within AA	Predominant conditions found in EAA (1,200 feet from perimeter of AA)		
	Land managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or buildings.	Land not cultivated, but moderately grazed or hayed or selectively logged; or has been subject to minor clearing; contains few roads, buildings, ditches or canals.	Land cultivated or heavily grazed or logged; 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, logged, or otherwise converted; does not contain roads or occupied buildings.	L	L	M
AA not cultivated, but moderately grazed or hayed or selectively logged; or has been subject to relatively minor clearing, fill placement, or hydrological alteration; contains few roads, buildings, ditches or canals.	M	M	H
AA cultivated or heavily grazed or logged; subject to relatively substantial fill placement, grading, clearing, or hydrological alteration; high road or building density, and or numerous ditches or canals.	H	H	H

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

This question asks evaluator(s) to assess the assessment area (AA) and the expanded assessment area (EAA) for disturbances. Throughout field testing, evaluators were asked to add 1,200 feet to the perimeter of the AA as a buffer to arrive at the EAA. Evaluators were concerned that a 1,200 foot buffer around the AA was too far and not necessary to properly evaluate site disturbance.

To respond to these concerns expressed by field evaluators, the 1200 foot distance was reduced to 600 feet. Buffer (2005) states that most pollutants, including nitrogen, are minimized within 60 to 120 feet. Specific site characteristics (soil, slope, vegetation, and ground and surface water) will vary the distance required to adequately protect a water body. In a study conducted by Spackman and Hughes (1995), it is reported that riparian buffers 225 feet to 525 feet in width included 90% of avian species found in the area. Therefore, assessing wetland disturbances at a distance beyond 600 feet would probably not produce additional information sufficient to change the rating of this question. It is believed that an accurate evaluation of site disturbance can be achieved by assessing a 600 foot buffer.

Another concern of field evaluators was that the words used to describe the types of disturbance that might occur did not portray present day disturbances in wetland areas in most Utah landscapes. The wording used to describe the types of disturbances that might occur on or near a site have been updated to more accurately portray potential present day disturbances. Modifications are highlighted below.

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 selectively landscaped; or has been subject to relatively minor clearing, fill placement, or hydrological alteration; contains few human induced trails, buildings, ditches or canals.	M	M	H
AA cultivated or heavily grazed or landscaped; subject to relatively substantial fill placement, grading, clearing, or hydrological alteration; and numerous human induced trails, ditches or canals.	H	H	H

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

Question 15b. Plant Community Composition:

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).

- 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 vegetation? High ≥ 80%, Moderate 79-60%, Low < 60%
- iii. What is the ratio of native plants to non-native plants observed using the transect protocol? (High ≥ 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 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 Species (iii)	H	M	L	H	M	L	H	M	L
Rating	1H	.8H	.6M	.8H	.6M	.4M	.6M	.4M	.2L

Comments:

Evaluators expressed concern that they were not sure how to set up and sample vegetation along a plant transect. Instructions on how to do this were included in the manual but few evaluators had taken the time to familiarize themselves with the protocol prior to field testing. Another concern expressed by field evaluators was that there was no space on the form to illustrate where the transect(s) they were establishing were located in relation to the entire AA. To address both of these concerns, an additional page was added to the form (page 11). The title and instructions to this new page as it is shown on the form is in Table 39.

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.

Table 39: Supplemental Diagram A (Title and Instructions).

Another concern expressed by evaluators was use of the word “ratio” appeared in question 15b. iii. The word “ratio” has now been revised with the word “percent”.

It was also pointed out that the protocol implies that all native plants were considered to be desirable, even if the native plant species found in the AA were not considered to be a wetland obligate or facultative species. To address this concern, the word “wetland” has been included to indicate that only native obligate or facultative wetland species will increase the Plant Community Composition rating. All non-native species and non-wetland species will decrease the Plant Community Composition rating. Indeed, the presence of native upland species in a wetland typically suggests wetland degradation (Keate 2001).

Evaluators pointed out that in some instances, it will not be possible to use the transect protocol method as described in the appendix of the manual, due to heavily wooded areas along a riparian corridor, the small size of the AA or fragmented pieces of jurisdictional wetland scattered throughout the site. In these circumstances the evaluator(s) must visually assess the vegetation and use their best professional judgment. This information has been added to the updated assessment method.

Changes to the form are highlighted in the question below.

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 ≥ 80%, Moderate 79-60%, Low < 60%

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

High ≥ 80%, Moderate 79-60%, Low < 60%

iv. Rating for riverine and lacustrine wetlands.

Layers (i)	Y									N								
Cover (ii)	H			M			L			H			M			L		
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:

Question 15d. asks if there is “Primary or critical habitat” present for species appearing on the Utah Natural Heritage list. Evaluators asked that the word “critical” be removed from this question, for reasons explained previously. The word “critical” has now been removed from this question on the form.

Question 15e. General Wildlife Habitat:

15e. General Wildlife Habitat Rating

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).

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

No concerns were expressed by field evaluators specific to this question.

Question 15f. General Fish/Aquatic Habitat:

15f. General Fish/Aquatic Habitat Rating

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 waterbody 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 streambank 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 streambank 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 streambank 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 to the following question. 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 waterbody included on the UDEQ list of waterbodies 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	.8 M	.5 M
Introduced fish	.9 H	.6 M	.4 M
No fish	.3 L	.2 L	.1 L

Comments: reduce the score by .1 if AA has carp present.

No concerns were expressed by field evaluators specific to this question.

Question 15g. General Amphibian Habitat:

15g. General Amphibian Habitat Rating

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.

No concerns were expressed by field evaluators specific to this question.

Question 15h. Flood Attenuation:

15h. Flood Attenuation

This field assesses the capability of the AA to slow in channel or overbank 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 floodplain of 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:

No concerns were expressed by field evaluators specific to this question.

Question 15i. Short and Long Term Surface Water Storage:

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?	N	Y	N	Y
Rating	1H	.8H	.9H	.7M

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:

Evaluators expressed concern with all questions regarding site hydrology because the method did not ask them to illustrate hydrological conditions. Evaluators said it would be difficult, no matter what an individual's level of expertise, to answer hydrological questions without walking the site, illustrating what they found, and making notes about the conditions observed. To address this concern an additional page was added to the form (page 12). The title and instructions for this new page are shown in Table 40.

<p>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.</p>
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Table 40: Supplemental Diagram B (Title and Instructions)

As previously mentioned in the Consistency Results and Discussion section, this question caused usability concerns for several evaluators. The question is about whether or not the wetland being evaluated serves as short and long term surface water storage. The second question in the matrix asks "Has the wetland's natural ability to store water been disturbed?" If the evaluator was to respond in the affirmative to this question, the

point value was lower than if they responded in the negative. However, evaluators felt that when a wetland's natural ability to store water has been disturbed it does not always negatively affect the wetland's ability to perform this function. To address this concern the question has been modified. It now reads "Has the wetland's natural ability to store water been disturbed negatively?" This modification allows the evaluator to use best professional judgment to assess the disturbance, if any, occurred and make a judgment about the positive or negative impact of the disturbance of the water storage function.

Question 15j. Sediment/Nutrient/Toxicant Removal:

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.				Waterbody on UDEQ list of waterbodies 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?	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:

The same concern was expressed with this question as with question 15i. Short and Long Term Surface Water Storage. Evaluators felt that disturbance to the wetland's natural ability to store water may or may not affect its capacity to remove sediments, nutrients, and toxicants. In response to evaluator concerns, the question has been

modified in the same way and now reads “Has the wetland’s natural ability to store water been disturbed negatively?”

Additionally, more descriptive wording has been added to the box that asks whether or not a water body is considered to be impaired. The additional wording that has been added to the form is highlighted in the question below.

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

Question 15k. Sediment/Shoreline Stabilization:

No concerns were expressed by field evaluators specific to this question.

Question 16. Visual Quality

This question asks the evaluator(s) to answer a series of questions about the wetland but responses to these questions are only recorded, not scored. Some evaluators expressed concern that if something is not going to be given a value, then time should not be spent assessing it.

The response to this concern is that by answering this series of questions the evaluator(s) in the field and those reviewing the functional assessment will better understand the significance of whether or not any impacts to this site could potentially have social implications that might not otherwise be considered. Often the general public

is more concerned about the visual aspects of a wetland in their neighborhood than their function. Answering the questions gives the reviewing agencies an estimate of the visual sensitivity of the site and thus potential public concerns.

Question 17. Recreational/Educational Quality:

This question asks the evaluator(s) to answer a series of questions about the wetland but responses to these questions are only recorded, not scored. Some evaluators expressed concern that if something is not going to be given a value, then time should not be spent assessing it.

The response to this concern is that by answering this series of questions the evaluator(s) in the field and those reviewing the functional assessment will better understand the significance of whether or not any impacts to this site could potentially have social implications that might not otherwise be considered. Answers to these questions provide a relative measure of public recreational use of the area and indirectly suggest potential issues of public concern about wetland loss. It may also suggest that if sensitive plant or wildlife species are present and recreational use of the wetland is high that it may be necessary to exclude the public to protect the resource.

Usability Results and Discussion Conclusion

Usability of the wetland assessment method is important. If it does not appear logical or the questions are overly complicated, if detail beyond what is needed to make an accurate assessment is required or if the method is unnecessarily cumbersome, the method will not get used or it will not be used in the manner in which it was designed. Evaluators of this method felt that it was excellent and that the usability issues that were found could be easily overcome. They also reported that the method is generally

understandable and easy to follow because of its format. Test evaluators considered the method to be convenient, in that it can be completed with relative ease. They stated that it is not too time consuming nor is it overly burdensome.

RELATIVE ACCURACY RESULTS AND DISCUSSION

Determining the accuracy of a wetland functional assessment method can be difficult. Ideally, reference wetland sites that have been studied for an extended period of time would be used as a baseline measurement. Reference wetland sites are well understood and evaluating these sites with a new method would produce results that can be compared to what is already known. This provides a level of accuracy when field testing a new method. Unfortunately, none of the sites evaluated for this study can be considered reference sites. In fact, there are few, if any, reference sites in Utah that have been studied over an extended period of time. Therefore, an evaluation of relative accuracy will be conducted, as opposed to accuracy because no measures of “exact” wetland functions on previously studied sites exist.

Relative accuracy for this study is defined as the similarity in final results gathered at each site. Relative accuracy of the UDOT WFAM was measured by looking at the overall results (wetland scores and categorization) produced by each group of evaluators at each site. Results from groups comprising of only UDOT personnel and groups comprising of only UWAG members were also compared.

Site 1: Skypark, at 2600 South Redwood Road Woods Cross, Utah, a slope wetland.

Site 1 was tested by five groups. Table 41 illustrates how many groups participated at the wetland site and the composition of each. Table 42 shows group results as Percent Total Functional Points and the Overall Assessment Category assigned.

Group A	One UDOT environmental manager and one UDOT landscape architect.
Group B	Three UDOT landscape architects.
Group C	One government wetland specialist, one government wildlife biologist, and one private wetland consultant. All are members of the UWAG group.
Group D	One government wetland specialist, one government hydrologist, and one government wildlife biologist. All are members of the UWAG group.
Group E	One UDOT landscape architect manager and one landscape architect student.

Table 41: Site 1 Group Composition.

	Percent	Category
Group A	43%	III
Group B	50%	III
Group C	45%	III
Group D	43%	III
Group E	45%	III

Table 42: Site 1 Group Percent Total Functional Points and Overall Assessment Category.

Site 1 results show that Groups A, B, C, D, and E all arrived at similar Percent Total Functional Points and placed the wetland in the same Overall Assessment Category, Category III. Group B gave the wetland a 50%. This is 5% higher than any of the other groups. This higher score is attributed to that fact that this group rated functions slightly higher throughout the assessment process. There was no score for a single question that varied significantly from the other four groups. Groups A and D gave the wetland 43% and Groups C and E gave the wetland 45%.

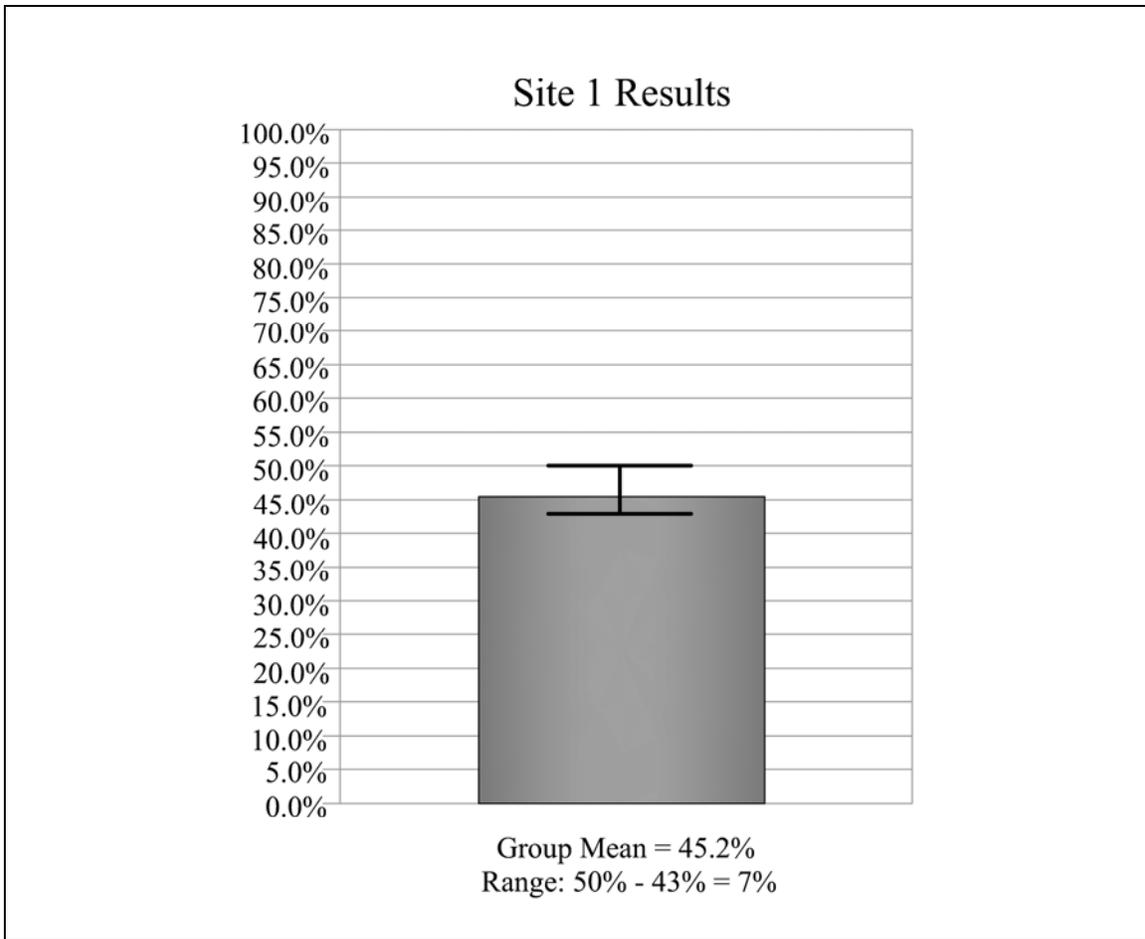


Figure 9: Site 1 Results

Figure 9 shows the mean and the range for Total Functional Assessment points for Site 1. Four of the five groups score the wetland within a couple of percentage points and another group only slightly higher. This shows that the UDOT UFAM can achieve relative accurate results.

Site 2: Bountiful Pond, a slope wetland.

Site 2 was tested by five groups. Table 43 illustrates how many groups participated at the wetland site and the composition of each. Table 44 shows group results as Percent Total Functional Points and the Overall Assessment Category assigned.

Group A	One UDOT environmental manager and one UDOT landscape architect.
Group B	Three UDOT landscape architects.
Group C	One government wetland specialist, one government wildlife biologist, and one private wetland consultant. All are members of the UWAG group.
Group D	One government wetland specialist, one government hydrologist, and one government wildlife biologist. All are members of the UWAG group.
Group E	One UDOT landscape architect manager and one landscape architect student.

Table 43: Site 2 Group Composition.

	Percent	Category
Group A	64%	III
Group B	64%	III
Group C	55%	III
Group D	78%	II
Group E	67%	II

Table 44: Site 2 Group Percent Total Functional Points and Overall Assessment Category.

Site 2 results show that Groups A, B, and E all arrived at similar Percent Total Functional Points but placed the wetland in the two different Overall Assessment Categories, Category III and Category II. The reason the wetland ratings were separated into two different categories is because 65% is the transition between Category III and Category II. It could be stated that this wetland was scored as a very high Category III for Groups A and B and a low Category II for Group E. Results from these three groups can all be considered relatively accurate. Groups C and D produced the largest spread between any two groups at all of the sites tested. Group C gave the wetland a 55%, Category III and Group D gave the wetland a 78%, Category II.

It is interesting to note the both Group C and D were comprised of UWAG members, yet the results of testing this site were different. This variability can be attributed to the fact that Group D scored questions 15d. UT Natural Heritage Program Species Habitat and 15e. General Wildlife Habitat considerably higher than the other UWAG group.

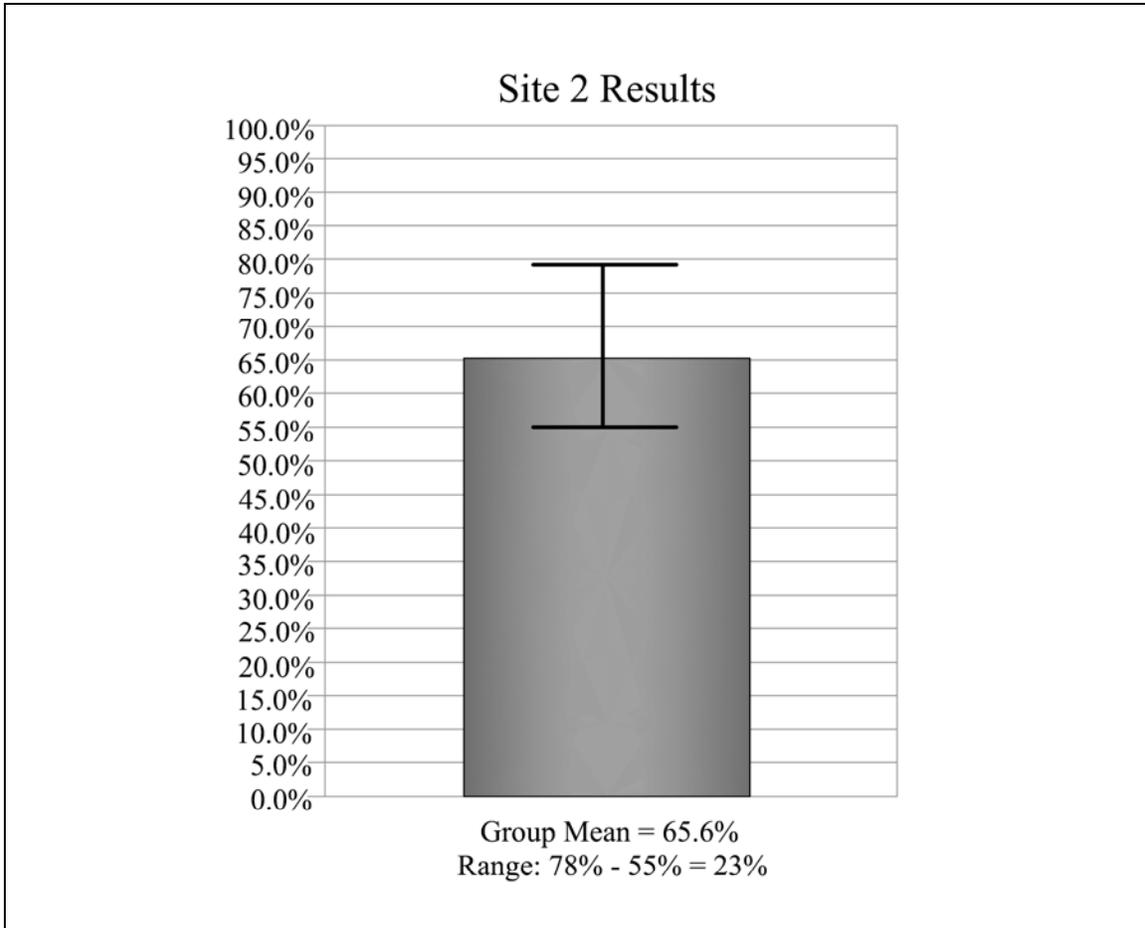


Figure 10: Site 2 Results

Figure 10 shows the mean and the range for Total Functional Assessment points for Site 2.

Site 3: Plover Playa in Tooele County, a mineral flat wetland.

Site 3 was tested by three groups. Table 45 illustrates how many groups participated at the wetland site and the composition of each. Table 46 shows group results as Percent Total Functional Points and the Overall Assessment Category assigned.

Group A	Two UDOT landscape architects.
Group B	One UDOT landscape architect and one landscape architect student.
Group C	Two hydrologists and a civil engineer from a private consulting firm.

Table 45: Site 3 Group Composition.

	Percent	Category
Group A	72%	I
Group B	69%	I
Group C	71%	I

Table 46: Site 3 Group Percent Total Functional Points and Overall Assessment Category.

Site 3 results show that Groups A, B, and C all arrived at similar Percent Total Functional Points and placed the wetland in the same Overall Assessment Category, Category I. These results reflect a relative accurate assessment of the site. Strictly looking at the Percent Total Functional Points given, the site would be categorized as a Category II. However, all three groups scored question 15b. Plant Community Composition a perfect 1.0, thus superceding the Percent Total Functional Points, making it a Category II.

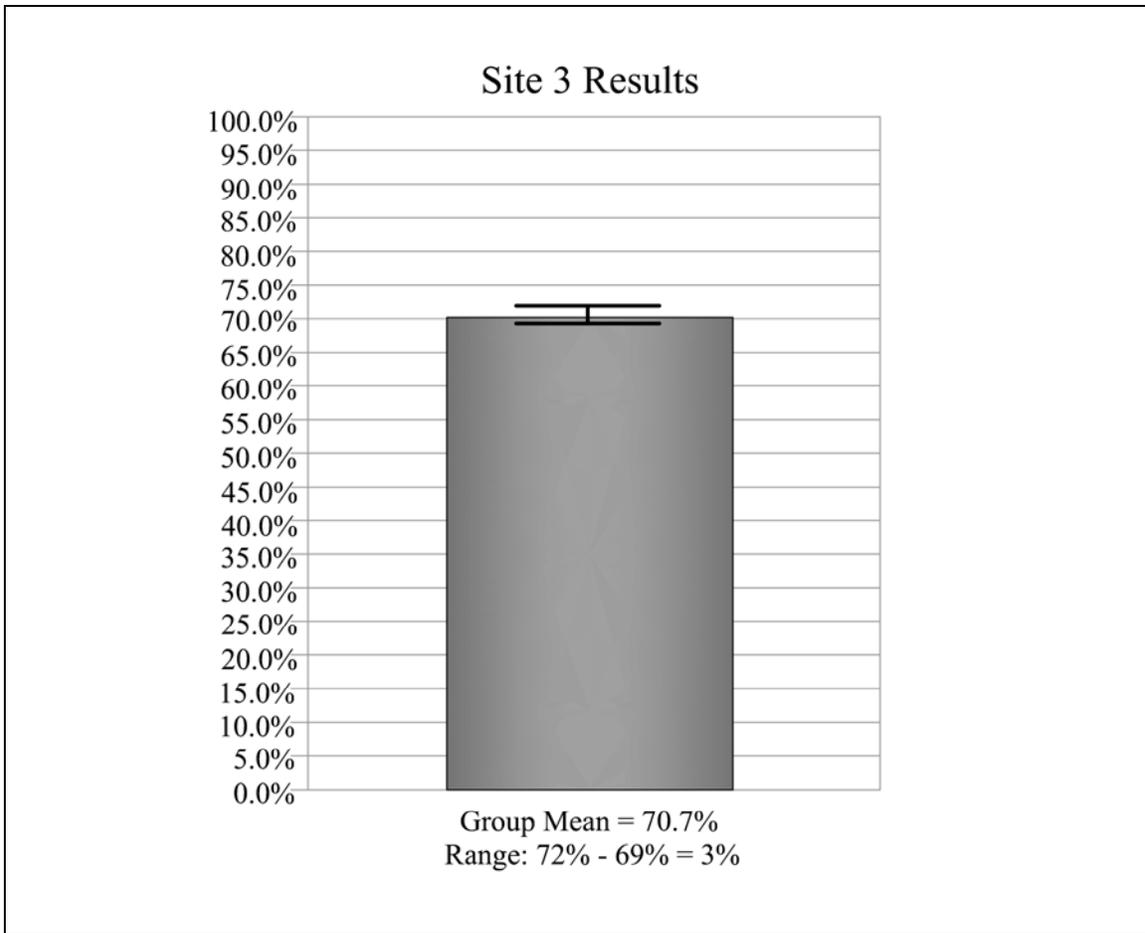


Figure 11: Site 3 Results

Figure 11 shows the mean and the range for Total Functional Assessment points for Site 3.

Site 4: Jordan River at 3900 South, a riverine wetland.

Site 4 was tested by one group. Table 47 illustrates that one group participated at this wetland site and its composition. Table 48 shows the group result as Percent Total Functional Points and the Overall Assessment Category assigned.

Group A	Three UDOT landscape architects, one UDOT landscape architect manager, and one landscape architect student.
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Table 47: Site 4 Group Composition.

	Percent	Category
Group A	28%	IV

Table 48: Site 4 Group Percent Total Functional Points and Overall Assessment Category.

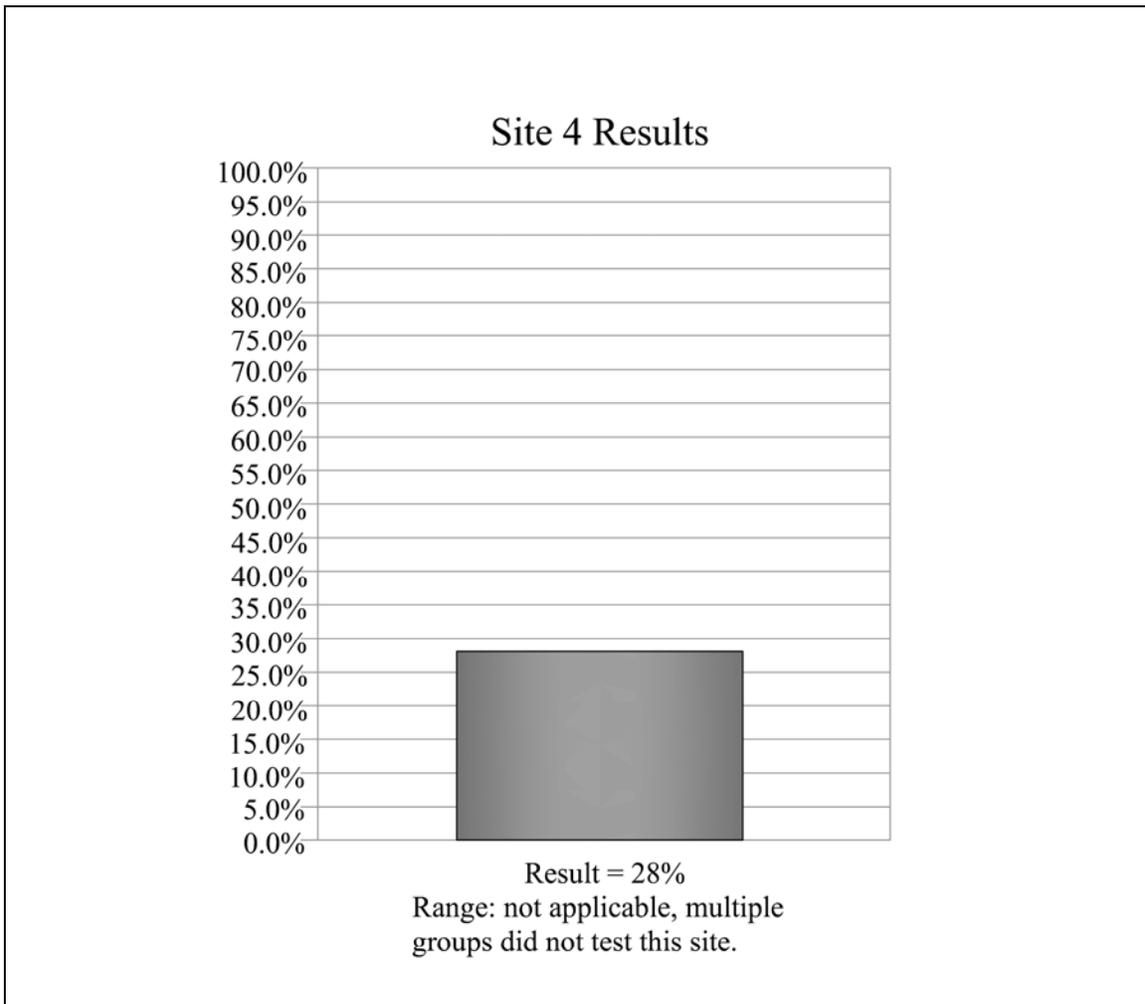


Figure 12: Site 4 Results

It is unfortunate that only one group was able to evaluate Site 4. The final result has been reported but no analysis can be done as to whether or not the results achieved are relatively accurate.

UDOT vs. UWAG Results

In Johnson, Groshart, and Grossl (2001), it is reported that teams of professionals from various disciplines were more successful in design and implementing mitigation wetlands that met the Army Corps of Engineers success criteria after five years than wetlands designed and implemented by individuals within a single discipline. It is reasonable to assume that an interdisciplinary team would also produce a more accurate result of wetland functional assessment than assessments done by a single discipline. Because of this, it may be assumed that results produced by the UWAG groups will be relatively more accurate than results produced by the groups comprising of only UDOT landscape architects.

Site 1: Skypark, at 2600 South Redwood Road Woods Cross, Utah, a slope wetland.

At Site 1 all groups produced very similar results. Comparing results produced by UDOT groups (Groups A and B) with results produced by UWAG groups (Groups C and D), the most similar results were achieved by the two UWAG groups.

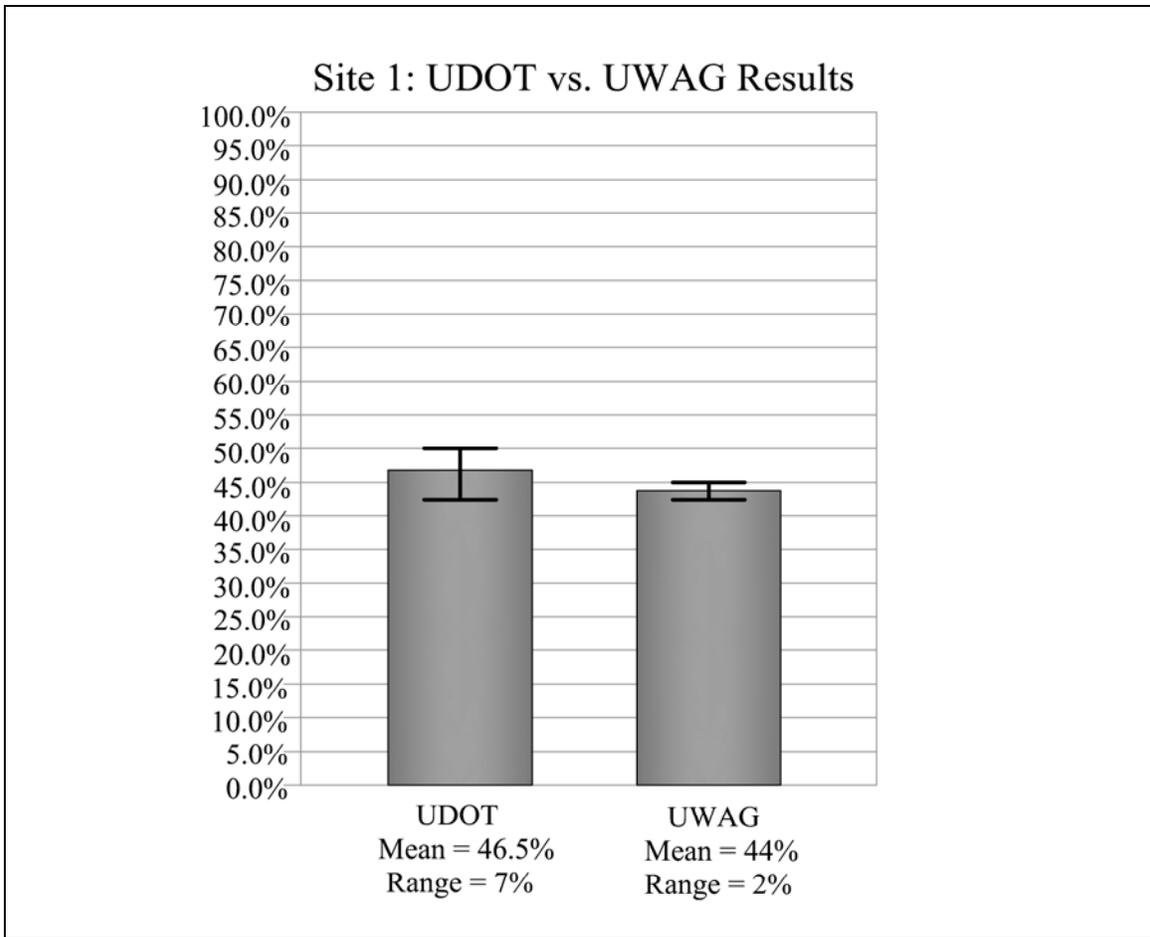


Figure 13: Site 1 UDOT vs. UWAG Results

Figure 13 shows the mean and range for UDOT groups and the mean and range for UWAG groups at Site 1.

Site 2: Bountiful Pond, a slope wetland.

At Site 2 more variability between results were produced than at Site 1. The two UDOT groups (Groups A and B) had less variability then the two UWAG groups (Group C and D).

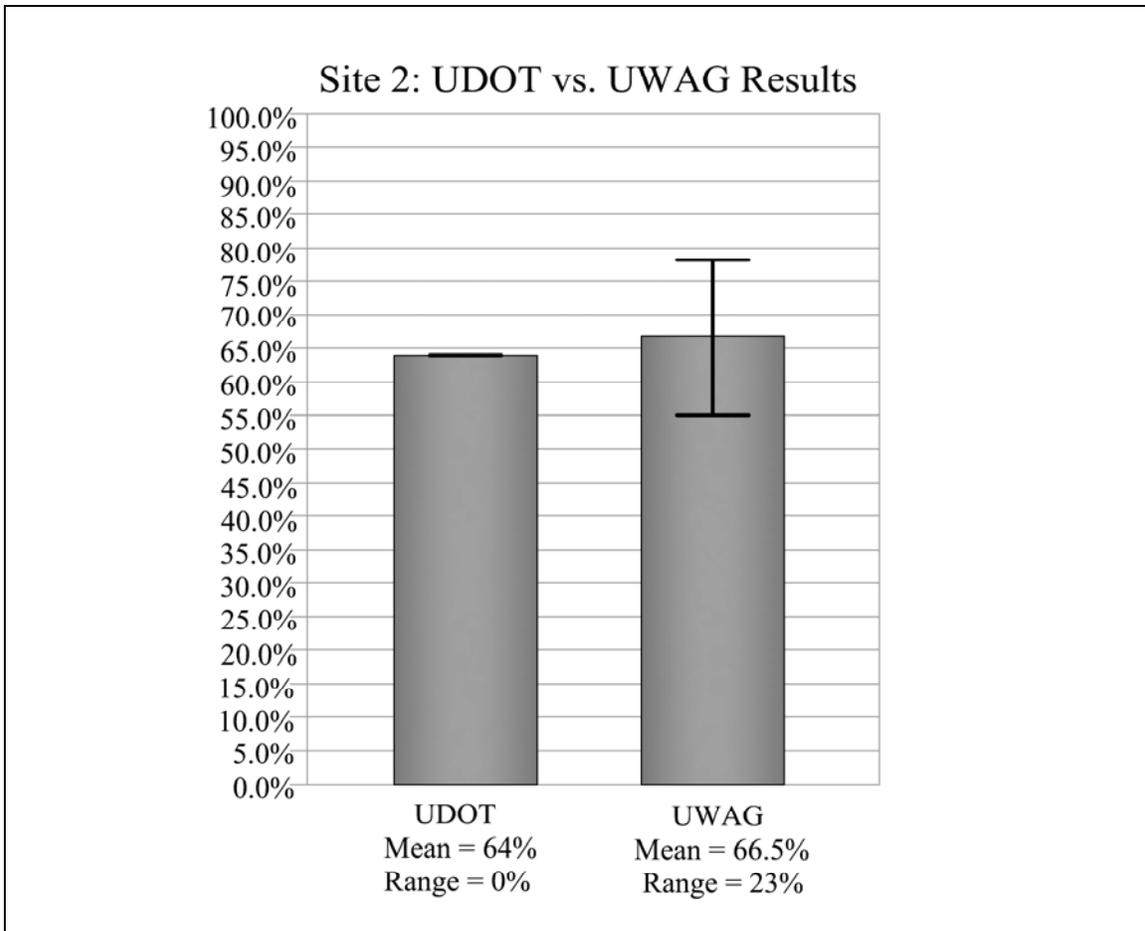


Figure 14: Site 2: UDOT vs. UWAG Results

Figure 14 shows the mean and range for UDOT groups and the mean and range for UWAG groups at Site 2. As previously discussed, this variability can be attributed to the fact that UWAG Group D scored questions 15d. UT Natural Heritage Program Species Habitat and 15e. General Wildlife Habitat considerably higher than the other UWAG group.

The UDOT WFAM was intended to be used by various professionals from natural resources, design, and engineering backgrounds. The creators were aware of inadequacies that some professionals might face when answering some of the questions. That is the reason that it is required that a wildlife biologist be consulted when answering questions 15c., 15d., and 15e.

Results from this study show that UDOT landscape architects (the professional group who does wetland functional assessment for the agency) using the UDOT WFAM achieved functional ratings and categorizations very similar to those achieved by the UWAG interdisciplinary groups. These findings are encouraging and should help alleviate some regulatory agency concerns about consistency and accuracy. They should also answer some of UDOT's concerns about usability. However, this was conducted with a relatively small sample with few replications and should not be seen as a reason to ignore the recommendation in Johnson, Groshart, and Grossl (2001) that UDOT should assemble interdisciplinary teams to conduct wetland related work.

COMPARISONS WITH OTHER ASSESSMENT METHODS

Along with the UDOT WFAM, three other methods were tested at Site 1 and Site 2. These methods were the California Rapid Assessment Method (CRAM), [Florida] Wetland Rapid Assessment Procedure ([F]WRAP), and the Rapid Assessment (RA).

The CRAM was developed in 2004 to help with wetland monitoring and assessment in California. Each function being tested is graded with a letter A, B, C, or D. This is the only method that was tested that uses letters instead of numbers. To aid in the comparison process, numeric values were assigned to each of the letters as follows: A=95%, B=85%, C=75%, and D=65%. Each letter grade remains independent.

The [F]WRAP was developed in the late 1990's to provide a standardized rating index for wetlands throughout the South Florida Water Management District. This method only evaluates six functions. Each is scored between 0 and 3, with 0.5 increments. Each of the six scores is summed and then divided by the total possible maximum score. The final rating is between 0 and 1.

The RA was first developed in 2003 and has undergone many revisions as the author has continued to gather additional field data. This method evaluates a wetland's functional capacity loss, as opposed to its ability to perform a particular function. It specifically evaluates the capacity loss of four functions. These four scores remain independent. A summary of each method can be found in Appendix A and all test results are reported in Appendix D.

It is difficult to make comparisons between methods because each method asks different questions and prescribes different protocols on how to derive an answer. Some of the methods evaluate wetland functions that other methods do not consider.

To compare results for all four methods at Site 1 and Site 2, results have been categorized into four broad wetland functions; they are: plant community, wildlife, hydrology, and water contaminants. Some results have been modified (an average has been used for the UDOT WFAM, the CRAM results have been converted from letters to numbers, and RA results have been subtracted from 1.00 to show actual capacity, instead of capacity loss) in the manner in which they would normally be displayed. This has helped to determine the degree of similarity in general characterization of wetland functional condition. Table 49 and Table 50 have not been made to determine if one method is better or more accurate than another. They are to show how each method rated wetland functionality at the same site.

Site 1: Skypark, at 2600 South Redwood Road Woods Cross, Utah, a slope wetland.

	WFAM	CRAM	[F]WRAP	RA
Plant Community	0.56	0.74	0.33	0.31
Wildlife	0.24	NA	0.33	0.56
Hydrology	0.80	0.65	0.67	0.77
Water Contaminants	0.74	0.85	0.5	0.83

Table 49: Site 1 Comparison Results between Methods Tested.

Site 2: Bountiful Pond, a slope wetland.

	WFAM	CRAM	[F]WRAP	RA
Plant Community	0.60	0.68	0.67	0.50
Wildlife	0.74	NA	0.67	0.61
Hydrology	0.86	0.65	0.33	0.49
Water Contaminants	0.94	0.95	0.37	0.95

Table 50: Site 2 Comparison Results between Methods Tested.

Results show that the UDOT WFAM produced results very similar to at least one of the other methods, in all categories at both sites. At Site 1 the UDOT WFAM reported the highest score by 0.03 points for hydrology and the lowest score by 0.09 points for wildlife. The other two scores reported for Site 1 were not the highest or the lowest in the remaining categories. At Site 2, the UDOT WFAM reported the highest score for wildlife and hydrology by 0.07 and 0.21 respectively. The other two scores reported for Site 2 were not the highest or the lowest in the remaining categories.

These results suggest that the UDOT WFAM tends to score wetland hydrology functions slightly higher than the other methods tested in this study. Although the UDOT WFAM scored the wildlife category the lowest at Site 1 and the highest at Site 2, results do not show a propensity towards scoring the wildlife category too high or too low in comparison to the other methods. Finally, the results show that 7 out of 8 times the UDOT WFAM scored these wetland categories either higher or in the middle in comparison to the other wetland functional assessment methods tested.

CONCLUSION

Through this study, the UDOT WFAM was tested in the field at four different sites by different groups of evaluators. All results have been reported and an analysis was done where appropriate. Overall, the method proved to be consistent, usable and relatively accurate. Inadequacies discovered have been addressed and appropriate modifications to the method have occurred.

Four general conclusions about the method can be made from this study.

1. Requiring a consultation with a wildlife biologist for questions 15c. Listed/Proposed T&E Species Habitat, 15d. UT Natural Heritage Program Species Habitat, and 15e. General Wildlife Habitat is necessary. This requirement allows the experts in this field of study to respond. Even if wildlife biologists differ in their opinions with regards to a particular site, the responses are more reliable than non-experts trying to decide how best to respond.
2. The need for training, pre-site research, and good field investigation while on site became apparent during this study. Field evaluators must be adequately trained on the method they will use in the field and carry out research on or at a particular site before conducting field investigation work. Then on site evaluators must take the time necessary to thoroughly understand what is occurring within and around the wetland to best achieve the most accurate results possible.
3. All results from this study were produced by groups. No site was evaluated by one individual. Concluding that all wetland functional assessments should be conducted by groups, rather than an individual would not be an accurate

conclusion. No individual results were produced to compare to group results. This was not a part of this study. However, the value of having multiple individuals, with different but applicable professional backgrounds work together in groups was easy to recognize in the field. The team approach specifically helped in plant identification and to better understand site hydrology. This conclusion supports the Johnson, Groshart, and Grossl (2001) recommendation that UDOT employ an interdisciplinary team to conduct wetland assessment and prepare mitigation plans.

The results of this study helped to enhance the UDOT WFAM and the method is now considered ready for use in the field. However, all results from future field use should be recorded and evaluated to help determine if future revisions to the method are needed. This will ensure continued consistency, usability, and relative accuracy and will help to accommodate new wetland scientific research data.

REFERENCES

- Buehler, D. A. 2000. Bald Eagle (*Haliaeetus leucocephalus*). In *The Birds of North America*, No. 506 (A. Poole and F. Gill, eds.). The Birds of North America, Inc., Philadelphia, PA. Online at: <http://library.usu.edu:2244/BNA/>
- Buffler, S. 2005. *Synthesis of Design Guidelines and Experimental Data for Water Quality Function in Agricultural Landscapes in the Intermountain West*. Master Thesis, Department of Landscape Architecture and Environmental Planning, Utah State University. Logan, UT.
- Federal Highway Administration (FHWA). 2000. *Guidelines for Federal-aid Participation in the Establishment of Support of Wetland Mitigation Banks*. United States Department of Transportation. Online at: <http://www.fhwa.dot.gov/environment/bankpoll.htm>
- Johnson, C.W., G.M. Groshart, and C.J. Grossl. 2001. *A Comparative Review of Wetland Mitigation Practices: Evaluation, Monitoring, Maintenance, Inventory, Staffing, and Funding*. Prepared for the Utah Department of Transportation Research and Development Division. Department of Landscape Architecture and Environmental Planning, Utah State University: Logan, UT.
- Johnson, C.W., R.J. Pitts, and L. Porreca. 2005. *Utah Department of Transportation Wetland Functional Assessment Method*. Prepared for the Utah Department of Transportation. Department of Landscape Architecture and Environmental Planning, Utah State University: Logan, UT.
- Keate, N. 2001. Functional Assessment of Great Salt Lake Ecosystem Slope and Depressional Wetlands.
- National Association of Home Builders State and Local Government Affairs Department (NAHB). 1993. *Analysis of State Freshwater Wetlands Laws*. Second Edition. Washington D.C.
- National Research Council. (NRC) 2001. *Compensating for Wetland Losses Under the Clean Water Act*. National Academy Press. Washington D.C.
- Spackman, S. C. and J. W. Hughes. 1995. *Assessment of Minimum Corridor Width for Biological Conservation: Species richness and distribution along mid-order streams in Vermont, USA*. Biological Conservation 71: 325-332.
- Spain, G. 1997. *Statement to House Committee of Transportation and Infrastructure*. Pacific Coast Federation of Fisherman's Association, Northwest.

Stein, E.D., F. Tabatabai, R.F. Ambrose. 2000. *Wetland Mitigation Banking: A framework for crediting and debiting*. Environmental Management. Vol. 26 No. 3, pp 233-250.

Turner, R.K., J.C.J.M. Van Den Bergh, R. Brouwer. 2003. *Managing Wetlands: An ecological economics approach*. Edward Elgar Publishing, Inc. Northampton, MA

U. S. Environmental Protection Agency (USEPA). 2002. *Clean Water Act History*. Online at: <http://www.epa.gov/region5/water/cwa.htm>

U. S. Environmental Protection Agency (USEPA). 2006. List of Impaired Waters. Online at: http://oaspub.epa.gov/pls/tmdl/waters_list.control

APPENDIX A

SUMMARY OF

WETLAND FUNCTIONAL ASSESSMENT METHODS TESTED

California Rapid Assessment Method (CRAM)

Developed:

Joshua N. Collins, Ph.D., San Francisco Estuary Project

Eric Stein, Dr. Env., Southern California Coastal Water Research Project

Martha Sutula, Ph.D., Southern California Coastal Water Research Project

Funded:

U.S. Environmental Protection Agency, State Wetland Development Grants

Date:

2004

Purpose:

“To provide a rapid, scientifically defensible, and repeatable assessment methodology that can be used routinely in wetland monitoring and assessment programs. CRAM should be applicable to wetlands and streams throughout the state of California. The general framework of CRAM should be consistent across wetland types and regions, yet allow for customization to address special characteristics of different regions and wetland classes.”

This method specifically identifies six different wetland classifications found in California. They include: riverine, depressionnal, seeps and springs, lacustrine, costal lagoon, and estuarine. Each of these classifications are recognized within the scoring matrices and address specific attributes that may or may not be present in all wetland types.

Functions and Values Evaluated:

Landscape Context

Connectivity
% of AA with buffer
Avg. Buffer Width
Buffer Condition

Hydrology

Source of Water
Hydroperiod
Hydrologic Connectivity/Upland Connection

Abiotic Structure

Abiotic Patch Richness
Topographic Complexity

Biotic Structure

Organic Matter Accumulation
Biotic Patch Richness
Vertical Biotic Structure
Interspersion and Zonation
Percent Invasive Plant Species
Native Plant Species Richness

Each of these factors is given a rating A, B, C, or D. An A rating represents near pristine or optimal conditions where as a D rating represents something that is severely impaired or not functioning.

Stressor Index

Hydrology
Abiotic Structure
Biotic Structure
Adjacent Land Use

The stressor index gives a numeric value to the four broad categories listed above. These categories are rated on a scale of 0-10 with 0 representing the absence of stressors and 10 representing the maximum amount of stressors possible.

All letter and numeric scores remain separate.

[Florida] Wetland Rapid Assessment Procedure ([F]WRAP)

Developed:

Raymond E. Miller Jr., Senior Environmental Analyst

Boyd E. Gunsalus, Staff Environmental Analyst

Natural Resource Management Division, Regulation Department, South Florida Water Management District.

Funded:

Natural Resource Management Division, Regulation Department, South Florida Water Management District.

Date:

September 1997 with updates in 1999

Purpose:

To establish a standardized rating index to evaluate wetland sites that have been enhanced, preserved, or restored throughout the South Florida Water Management District. This procedure is to aid regulators and those who work with wetlands to determine successful permit compliance (Miller and Gunsalus 1999).

Functions and Values Evaluated:

- Wildlife Utilization

- Wetland Overstory/Shrub Canopy

- Wetland Vegetative Ground Cover

- Adjacent Upland Support/Wetland Buffer

- Field Indicators of Wetland Hydrology

- Water Quality Input and Treatment Systems

Each of the six functions and values evaluated is scored, summed, and then divided by the total possible maximum score for each variable. Scores can range from 0 to 3 with .5 increments between. The final score will be a number between zero and one.

Rapid Assessment (RA)

Developed:
Nancy Keate, PhD

Funded:
U.S. Environmental Protection Agency, Region 8, Wetland Protection Grants Program
May 2001-2003

Date:
Revised 12- 2003, Revised 04-2004, 06-2004, 08-2004, 02-2005, 07-2005

Purpose:
To develop a rapid wetland functional assessment protocol based on reference sites that are pristine or considered to be pristine.

Functions and Values Evaluated:
Hydrologic Functional Capacity Lost (HFC)
Hydrologic modifications
Runoff from adjacent land uses

Geochemical Functional Capacity Lost (GFC)
Dissolved load from land uses adjacent to the wetland
Point source impacts on water quality

Connectivity Functional Capacity Lost (CFC)
Habitat quality adjacent to the wetland
Habitat fragmentation

Vegetation Integrity Lost (VIL)

After deriving answers for each of these losses, the evaluator then multiplies each number by the total acreage of the wetland being evaluated to get the Functional Capacity Units Lost. This unit is how all scores remain. Scores for the four major functions are not combined.

It is important to note that this method evaluates a wetland's functional loss, as opposed to its ability or remaining ability to function.

Utah Department of Transportation Wetland Functional Assessment Method (UDOT WFAM)

Developed:

Craig Johnson, Professor, Utah State University, Department of Landscape Architecture and Environmental Planning.

Funded:

Utah Department of Transportation 2003-2006

Date:

2003 - 2005

Purpose:

To provide UDOT with a science-based, economical, and repeatable rapid wetland functional assessment method that specifically addresses Utah wetland classifications (Johnson 2005).

Functions and Values Evaluated:

Functions

Biological

- Level of disturbance

- Plant community composition

- Federally listed or proposed Threatened or Endangered Plants or Animals or Plants or Animals rated S1 by the Utah Natural Heritage Program

- Plants or animals rated S2, or S3 by the Utah Natural Heritage Program

- General wildlife species

- General fish/aquatic Species

- Amphibians

Hydrological

- Flood attenuation

- Short and long-term water storage

- Sediment/nutrient/toxicant retention and removal

- Sediment/shoreline stabilization

Values

- Visual quality

- Recreation/education

Evaluators use matrices to scores each of the functions. Scores range from 0 to 1. All scores are calculated, added, and then divided by the total functional points possible. Results are shown as a percentage. This percentage, along with individual functional scores, allows evaluators to place the wetland in one of five categories. Values are not scored; they only assist in better understanding the site and possible social implications.

APPENDIX B
FIELD TEST SITES

Site 1: Skypark, at 2600 South Redwood Road Woods Cross, Utah, a slope wetland.

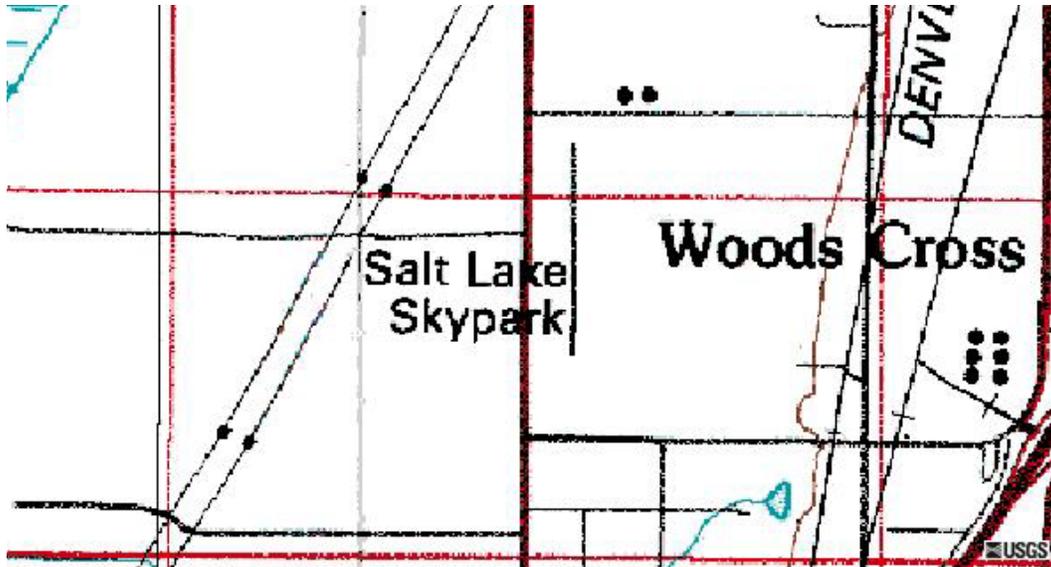
Site Description: This parcel of land is located on the corner of 2600 South and Redwood Road in Woods Cross, Utah. Evaluators at the site investigated the property and determined that historically, the predominant source of water was shallow groundwater and a natural spring near the eastern boundary of the site. Extensive ditching has occurred along the South and West edges of the property that have appeared to significantly lower the water table. Despite this, standing water was present during all site visits.



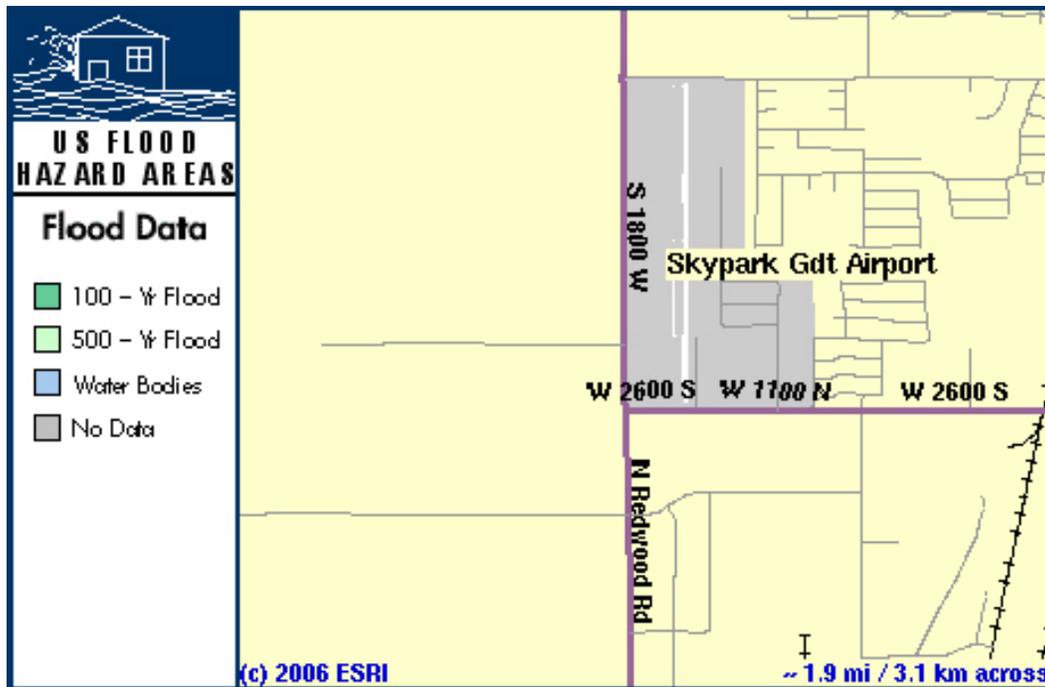
2 km SW of Woods Cross, Utah, United States 10/4/1997.

USGS Map provided online through Microsoft TerraServer Imagery.

Available at: <http://terraserver-usa.com>.



2 km SW of Woods Cross, Utah, United States 7/1/1980.
 USGS Map provided online through Microsoft TerraServer Imagery.
 Available at: <http://terraserver-usa.com>.



Map provided online through ESRI/FEMA Project Impact Hazard Site.
 Available at: <http://www.esri.com/hazards/makemap.html>.

Site 2: Bountiful Pond, a slope wetland.

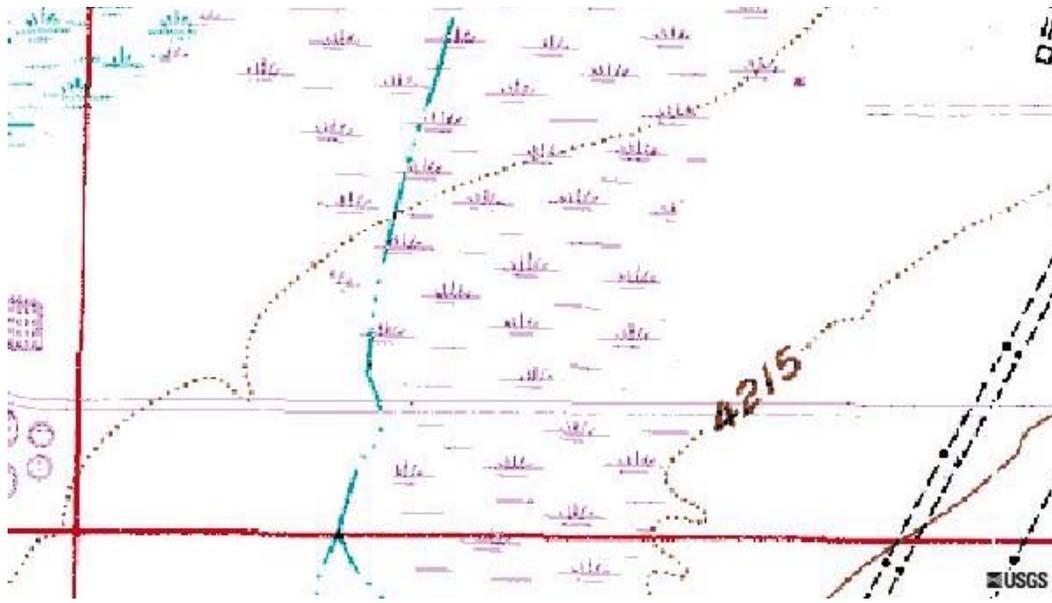
Site Description: This site is located west of Bountiful, Utah near the Bountiful Pond. Evaluators at the site investigated the property and determined that shallow groundwater and surface flows move in a northwesterly direction towards the Bountiful Pond and the Great Salt Lake. The road near the bottom of in the aerial photograph has greatly limited the water reaching the site. Extensive ditching has occurred along the South side of the road and the West edge of the property this also influences site hydrology. Despite this, evidence of recent standing water was present along with abundant wetland vegetation.



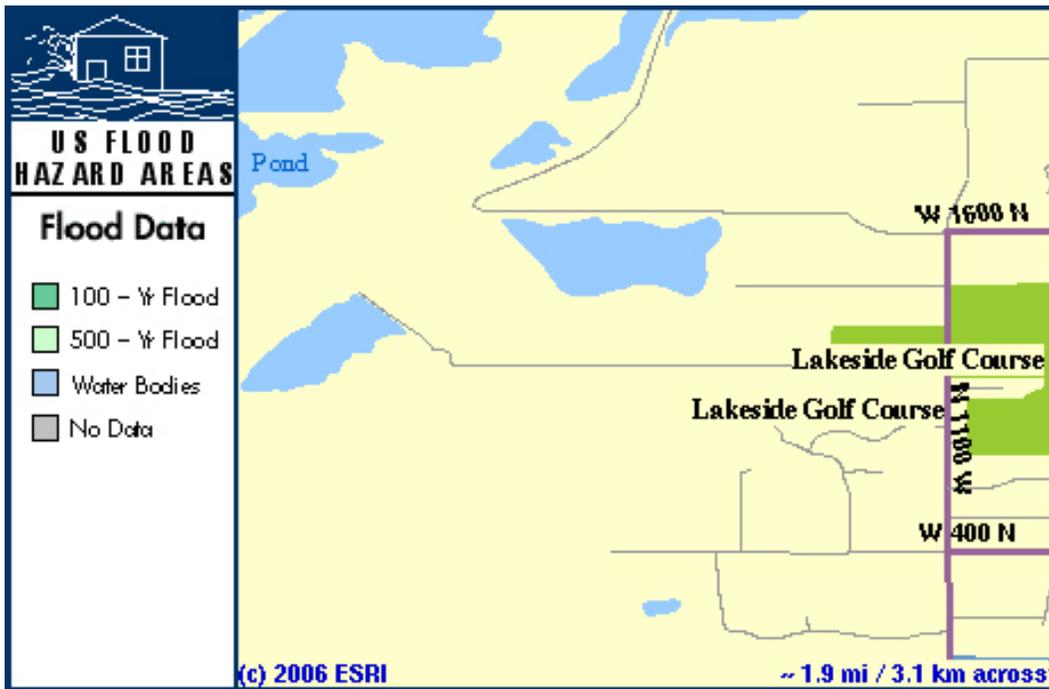
Bountiful, Utah, United States 10/4/1997.

USGS Map provided online through Microsoft TerraServer Imagery.

Available at: <http://terraserver-usa.com>.



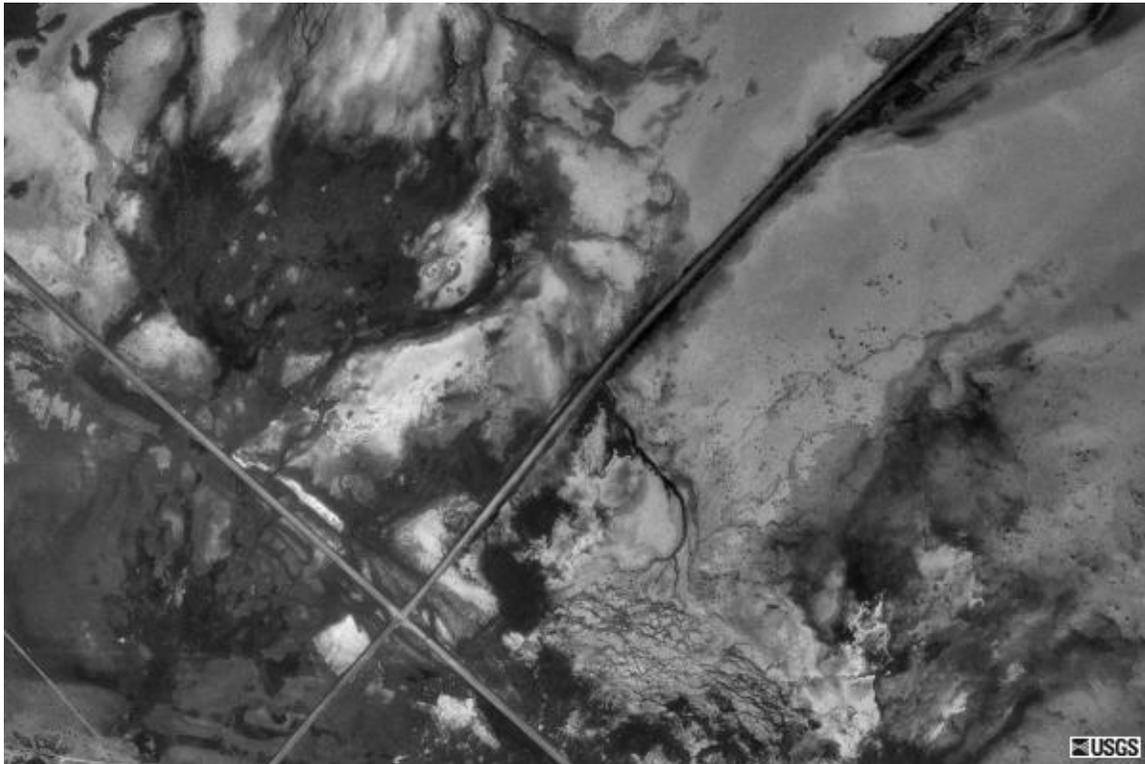
Bountiful, Utah, United States 7/1/1975.
 USGS Map provided online through Microsoft TerraServer Imagery.
 Available at: <http://terraserver-usa.com>.



Map provided online through ESRI/FEMA Project Impact Hazard Site.
 Available at: <http://www.esri.com/hazards/makemap.html>.

Site 3: Plover Playa in Tooele County, a mineral flat wetland.

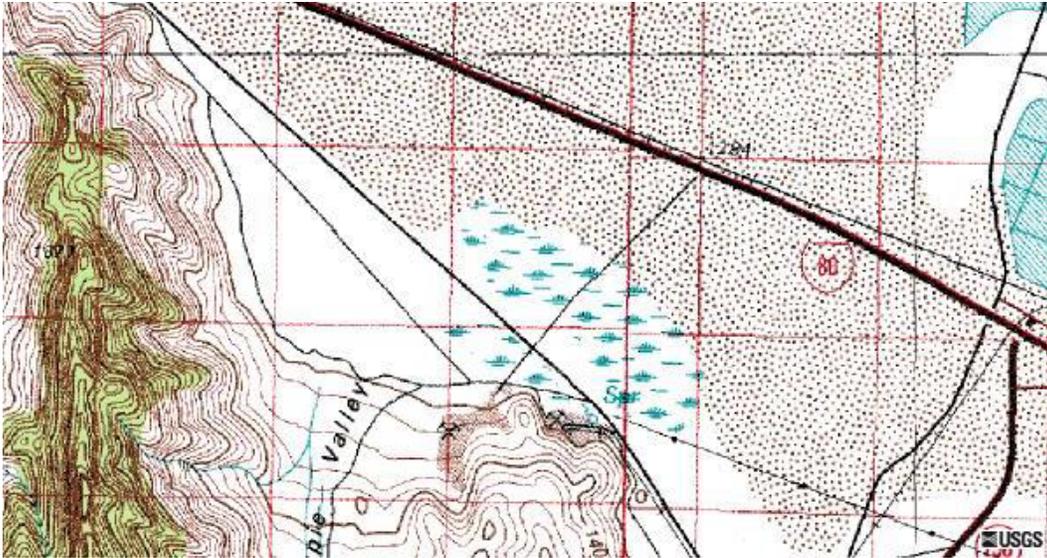
Site Description: This site is located west of Salt Lake City in Tooele County, Utah. It is a large mineral flat complex associated with the Great Salt Lake. Evaluators at the site investigated the property and determined that shallow groundwater and surface flows move in a northerly direction towards Great Salt Lake. The road bisecting the site is a gravel road that has been built on 8 to 12 feet of fill material. This has restricted the flow of water in the wetland, creating deeper flows in some areas and limiting them in others. Standing water was present at each site visit and abundant wetland vegetation tolerant to alkaline soils was also present.



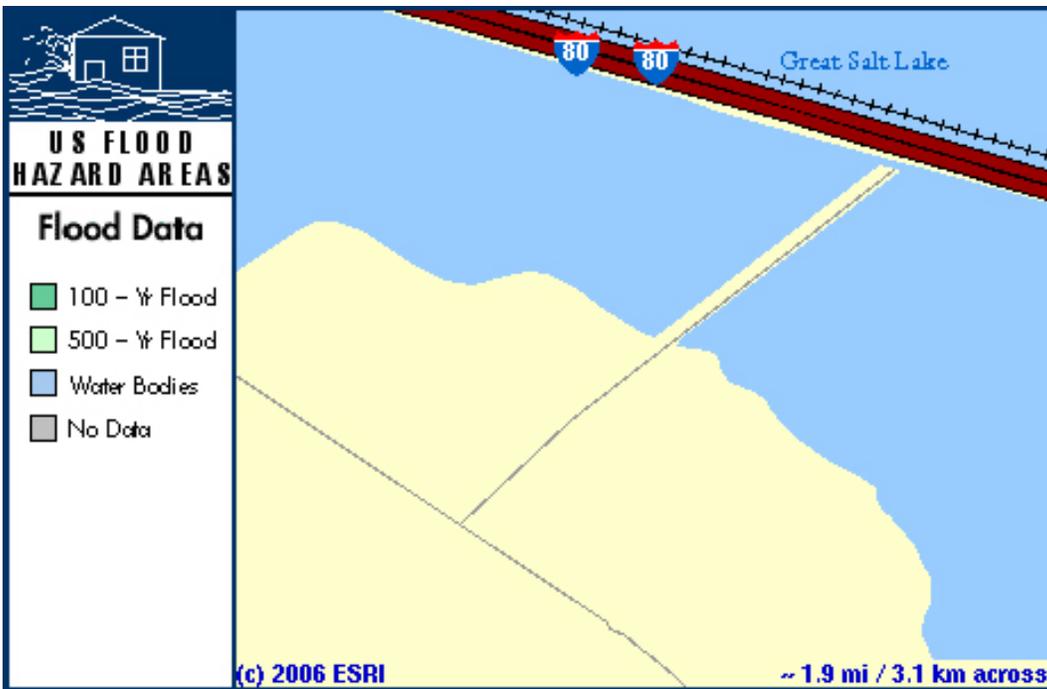
58 km W of Salt Lake City, Utah, United States 8/29/1999.

USGS Map provided online through Microsoft TerraServer Imagery.

Available at: <http://terraserver-usa.com>.



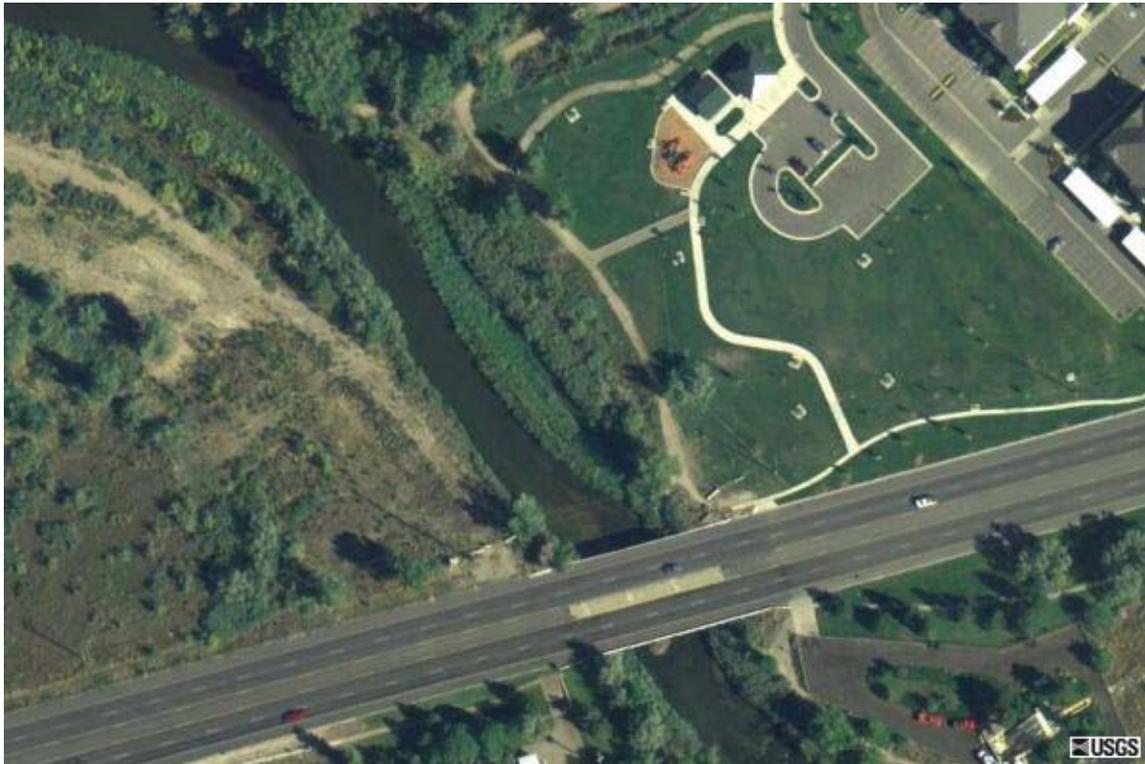
58 km W of Salt Lake City, Utah, United States 7/1/1985.
 USGS Map provided online through Microsoft TerraServer Imagery.
 Available at: <http://terraserver-usa.com>.



Map provided online through ESRI/FEMA Project Impact Hazard Site.
 Available at: <http://www.esri.com/hazards/makemap.html>.

Site 4: Jordan River at 3900 South, a riverine wetland.

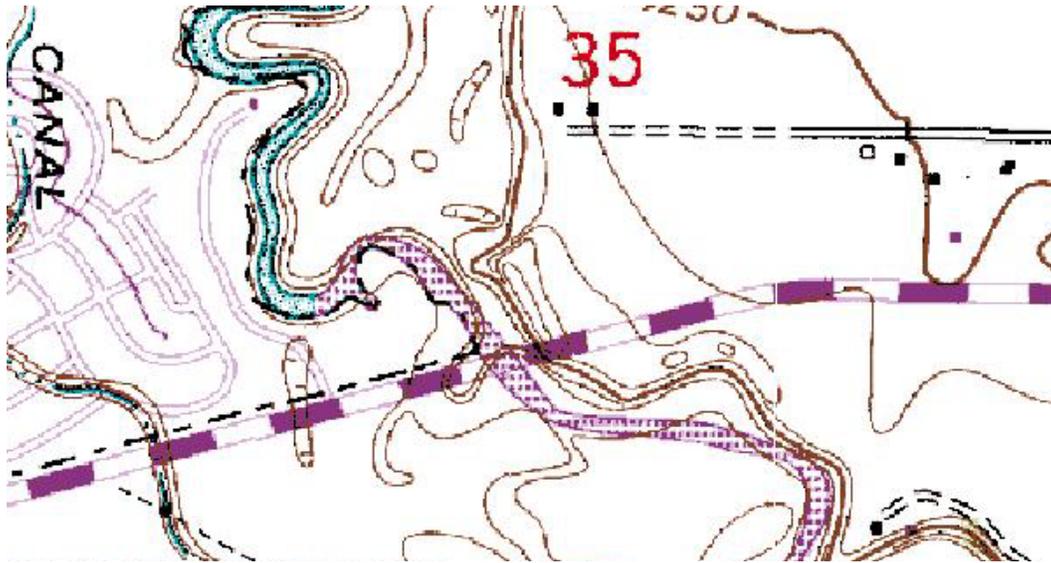
Site Description: This site is located Taylorsville, Utah at the Jordan River and 3900 South. Evaluators at the site investigated the property and determined that the river is deeply incised near the bridge and narrow wet edges are all that remain on some portions of the site. Old floodplains no longer exist near the bridge or access to them with over-bank flows are no longer possible due to the depth of the channel in which the river flows. A long narrow island is present in the river at this site. It was estimated that it has been unaltered by river flows for several years due to the abundant wetland vegetation, including small woody shrubs present.



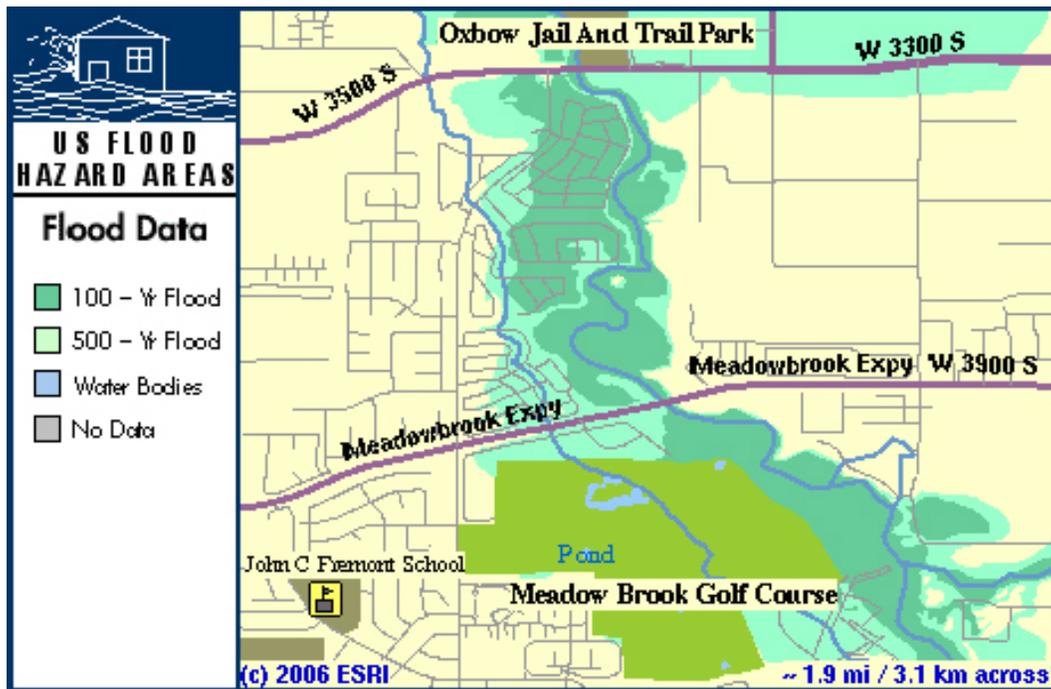
Taylorsville, Utah, United States 9/18/2003.

USGS Map provided online through Microsoft TerraServer Imagery.

Available at: <http://terraserver-usa.com>.



Taylorsville, Utah, United States 7/1/1975.
 USGS Map provided online through Microsoft TerraServer Imagery.
 Available at: <http://terraserver-usa.com>.



Map provided online through ESRI/FEMA Project Impact Hazard Site.
 Available at: <http://www.esri.com/hazards/makemap.html>.

APPENDIX C
FIELD TEST NOTES

May 31, 2005
UWAG Field Test Day

1. Would be helpful to number form pages, just in case they get out of order in the field.
2. Identify useful map and aerial photograph websites.
3. Number 13, wetland classification definitions need to be better defined. Specifically when dealing with the difference between a slope, depression and mineral flat. We need to come up with a universally accepted definition for a playa and determine where it belongs. Cross section illustrations may help to show some of the different classifications. How much of an elevation change is needed in order to consider an area a closed contour?
4. Number 15a, specifically identify the source for using 1200 feet as the distance for the EAA.
5. 15b, give examples of a reasonable number of transects/points for sized of wetlands. Example: Small wetland 2 transects with 20 points.
6. Appendix F, footer is wrong and numbering is off!
7. 15b, discuss and give room for evaluators to draw where plant transects were established.
8. Remove the word “critical” from numbers 15c and 15d.
9. Number 15e, add a sentence or two expanding the assessment area to include at least the EAA and in some case may need to be expanded beyond the 1200 ft. The example was of a nesting Bald Eagle and that it requires a 1 mile buffer around it.
10. May want to consider adding a question similar to 15g for migratory bird species and award points if highly sensitive species frequent the site. Partners in Flight website could be a good resource.
11. Field evaluators need to do their homework about the potential wildlife in the AA and surrounding area, than approach the regional wildlife biologist. The concern is that the regional biologist will not have time to respond to the UDOT project as a top priority.
12. Terry Johnson should keep a list of wildlife biologist contacts that each region should contact when conducting an evaluation.
13. Number 15a, it may be wise to consider the differences between temporary disturbances and permanent or long term disturbances. Example: grazing, cultivation and logging can be considered temporary disturbances while roads, buildings and other permanent features are long term disturbances. If temporary disturbances were to be eliminated, the wetland in theory would improve and or be enhanced.
14. State specifically on each question what geographic area is being evaluated, the AA or the EAA.
15. Numbers 15i and 15j in a round about way are asking the same question. Potentially these could be combined but not reducing the point value.
16. Number 15j, it may not be important as to the levels of input but as to whether or not the wetland is able to hold the water long enough for the sediments, toxicants and or nutrients to settle out.
17. Numbers 15i and 15j are really about the hydrology and what is going on with it. It appears that vegetation and topography are two good indicators of these things.

18. Number 16, visually who cares who owns it, remove 16i. Evaluators questioned the differences between urban and rural wetlands. Evaluator's judgment, even after reading the definitions, was highly subjective at best.
19. Evaluators expressed concern with the subjectivity in knowing whether or not one AA or multiple exist for a site. It is clear that you have two AA's if you have a riverine and a depression but what if you have two slope wetlands that have different hydrology sources and vegetation.
20. Method perhaps is a little heavy on wildlife. Testers want to know how a wetland would score if it's pristine site but doesn't have any wildlife.
21. Relying primarily on a regional biologist potentially could be difficult; every square inch of the State is not mapped and some data that is available isn't current.
22. Numbers 15c and 15d could be combined and weighting the outcome less would be important. Currently, the two questions are weighted at .9 each. Perhaps the two together should be weighted at 1.0, instead of the present 1.8.
23. Number 15i, not enough point spread. Your answer really doesn't matter!
24. Hydrology is a key component when evaluating wetland functions. Evaluators must be familiar with hydrology and understand how it works and relates to the big picture. More questions should be asked to require evaluators to do a more in depth analysis of site hydrology. These additional questions don't need to be assigned a value and point system but require simple mapping and field study of the site.
25. Require sketching of site hydrology and vegetation. Use aerial photography and topographic maps to aid in this step.
26. Number 15b, remove the word ratio, should be a percentage.

June 8, 2005 and June 9, 2005

UDOT Landscape Architects Field Test Days

1. Include county lines and major roads on ecoregion and watershed maps
2. Appendix B should be changed to feet, not miles.
3. Number 12, remove the words "habitat for"
4. Number 15b, change ratio to percentage.
5. Number 15c, call UDWR not, USFWS
6. Number 15j, update
7. Number 16iii, will this question ever get a "no" response?
8. Number 15a, disturbance question must be more descriptive.
9. Number 15b, When working with your plant transect, native upland plants should count against your percentage. Example: 6 natives, 4 non-natives = 60%; if one of the natives is classified as an upland species, 6 natives, 4 non natives minus the native upland plant = 50%.
10. Why 1200 feet? For riverine system this is too long or not necessary.
11. Riverine systems are handled differently within UDOT. This method was designed to address those riverine systems that are classified as jurisdictional wetland, not just the "wet edge".

September 7, 2005

Comment received from a private consulting firm that participated at Site 3: Plover Playa in Tooele County, a mineral flat wetland.

1. In the category section gray out lines that are not applicable.

September 26, 2005

Comments produced by the principal investigator of the project.

1. 1200 feet requirement below and above the AA will be changed to 600 feet. All 1200 feet requirements will be changed to 600 feet. Sedimentation and toxicants drop out of systems within the 600 feet. Look at Susan Buffler's thesis. 1200 feet was more for wildlife, however, in linear transportation projects where disturbance has likely already occurred 600 feet is adequate.
2. 15a. Change the wording under "conditions within the AA". Exclude items that would never be found and add the word trails the matrix. Remove the physical elements.
3. 15b.iii. Not all AA's will allow the evaluator to conduct the step point transect. For example, heavily wooded areas along a riverine corridor, small size of the AA, or broken up fragments of small wetland pieces, wetland vegetation is submerged in deep, mucky water. In these instances or others where it is not possible to conduct the prescribed step point transect the evaluator should use their best professional judgment and visually assess the vegetation.
4. 15b. ii. This question needs to clearly state that this is a visual assessment, just as the literature states in the beginning of this manual.
5. 15b. iii. The word "ratio" needs to be changed to percentage and an example should be included in the literature. For example: number of natives divided by points sampled should give the evaluator the correct percentage. 30 native species divided by 55 sample points = 55%.
6. 15b. iii. If multiple hits are gathered at one point. Each of those hits should count as a sample point. For example, at the first point only a herbaceous layer was found, that species is recorded and is one point. The next sample point has an herbaceous layer and a tree canopy. This point should record two hits and count as two points sampled.
7. 15b. iii. Water of a river or lake should not be included when estimating percent cover.
8. 11. AA need to exclude the river or lake. Open water in a wetland is fine, but if the open water was not delineated as jurisdictional wetland then that area should not be included in the AA. Literature in the manual needs to be updated. It needs to reflect this change as well as the AutoCAD drawing in the appendix.
9. An acceptable list of native and non native plants needs to be used by evaluators. For example, is typha native or not? Nancy's info in the appendices could help. (need to look into it)
10. 15b. iii. Terry's comment about a plant found in the transect that is not an OBL, FACW or FAC+ should not count as a native needs to be incorporated.
11. 15f. Include in matrix additional room for the minus .1 if carp present.

12. 15h. Change the wording of the first box in the matrix from “Within the floodplain of the AA, estimate % ground coverage with high surface roughness” to “Within the AA (part of the floodplain), estimate % ground coverage with high surface roughness”.
13. 15i. Second box in matrix needs to be revised from “Has the wetlands’ natural ability to store water been disturbed?” to “Has the wetlands’ natural ability to store water been disturbed negatively?”
14. Hydrological/Biophysical Assessment. Addition explanation about the need to walk the entire site, map it, and truly understand what is happening with the hydrology needs to be included. If an evaluator doesn’t understand the hydrology of the site it would be difficult to answer questions accurately in this portion of the assessment. The evaluator should map the “micro” watershed that is surrounding the wetland.
15. 13. When determining the wetland classification the evaluator must be familiar with the site (i.e.-already walked and mapped the site). It is clear that choosing the right wetland classification can be unclear. The thought is to add the salinity measurement to determine if a sight is a mineral flat or not. In other words, high salinity would become an indicator that the site is a mineral flat as opposed to a slope. The difference between a slope and a depression must be determined after the site has been studied and any other contiguous wetlands. Depressions on a site that continue beyond the project boundary really may be a part of a larger slope complex.
16. 15j. Change question in the third box down in the matrix from asking about water storage to asking about soils.
17. 15f. In second matrix 3M needs to be changed to 3L.
18. The overall assessment area category on the last page of the form needs to be edited very carefully. There some confusing and unclear statements.

January 12, 2006

Comments received from a private consulting firm that did not participate in field testing.

1. Need to focus on efficiency and ease of use.
2. Need to complete a thorough technical edit.
3. Consistency and redundancy are problems.
4. Need thorough testing and calibration.
5. Question 15b. Plant Community Composition. This variable must consider vegetative structure to effectively characterize the community. Currently the only way to get a low rating for this function is to have less than 60% cover. A site with cover this low is close to not meeting the definition of a wetland. Subsequently, many degraded wetlands with relatively poorly developed plant communities will be rated too high.

Also why is there such a concern about invasive species? Some invasive are a problem, but others are naturalized and provide good cover and forage. Examples of non-native species that do not pose a real problem and that are listed in the method are *Agrostis stolonifera*, *Bromus inermis*, *Poa pratensis*, etc. The functional rating of a wetland should not be decreased due to the presence of plants like these.

6. Supporting technical data (14) and Values (16 and 17). There is no point in collecting/recording these data if they are not considered in the decision matrices or in the ratings.
7. Wetland classification (13) – the “Utah System” only considers the position in the landscape. The Cowardin System may be a better choice because it considers the position in the landscape and the dominant vegetation communities.
8. Technical Appendices – These need to contain the same amount and kind of information for each wetland type. The riverine appendix is very weak and inadequate for 15b. Also, what is the point of all the background data (especially for slope wetlands)? It is not reference and only adds confusion to the method.
9. Data Sheets - Why include non-applicable information when the data sheets have been created to be specific to each type? Isn't that the point of having five separate sheets?
10. Short and Long Term Surface Water Storage (15i) – Why doesn't this function apply to riverine sites. If riverine includes wetlands on floodplains (according to your classification system), then this function should be included. Although the primary water source for these wetlands may be overbank flooding, they regularly receive water from precipitation (sheet flow), groundwater discharge, and other sources.
11. Level of Disturbance (15a) – What about including or mentioning more contemporary land uses like landscaping, urban recreation areas, mining, pipeline right of ways, etc.
12. Assessment Area (11) – the EAA is confusing. This should be the standard for the AA to properly assess functions – buffers must be considered.
13. General Wildlife (15e) – How to choose a final rating.

APPENDIX D
FIELD TEST RESULTS

Site 1: Skypark, at 2600 South Redwood Road Woods Cross, Utah, a slope wetland.
Method: California Rapid Assessment Method

Functions	Letter Score	Descriptor
Landscape Context		
Connectivity	C	At least some portion of one other area of aquatic resources exists within a 500 m zone surrounding the wetland being assessed, with no intervening barriers to wildlife movement.
% of AA with buffer	C	Buffer is 25-50% of AA perimeter.
Avg. Buffer Width	D	Average buffer width of AA is <30 m (model assumes that functions of a buffer do not increase significantly beyond an avg width of 100m. A "D" is the worst score, whereas an "A" is the best with an avg buffer width of >100 m).
Buffer Condition	C	Buffer for AA is characterized by a prevalence of invasive plants and either moderate or extensive soil disruption, moderate or greater amounts of trash or refuse, and moderate intensity of human visitation or recreation.
Hydrology		
Source of Water	B	Dry-season freshwater source is primarily natural; but AA receives occasional or small amounts of inflow from anthropogenic sources, such as urban runoff, agriculture, or publicly owned treatment works
Hydroperiod	D	The filling or inundation patterns in the AA are of substantially lower magnitude or duration than would be expected under natural conditions (or compared to comparable natural wetlands), but thereafter, the AA is subject to natural draw down or drying.
Hydrologic Connectivity/Upland Connection	N/A	Only considered for riverine, estuarine, or lagoon wetlands & adjacent uplands
Abiotic Structure		
Abiotic Patch Richness	A/B	A: >15% (Score for a slope/seep wetlands), B: 44-85% (Score for a depressional wetland); Score is obtained by determining how many physical patch types exist on site. This number is then divided by the expected patch type for the wetland class.
Topographic Complexity	C	AA has a single, uniform slope or elevation. However, that slope, or elevation, has a variety of physical patch types.
Biotic Structure		
Organic Matter Accumulation	C	The AA is characterized by occasional small amounts of coarse organic debris, such as leaf litter or thatch, with only traces of fine debris, and with little evidence of organic matter recruitment.
Biotic Patch Richness	D	<53%; Score is obtained by 1) determining size of AA and therefore appropriate patch size. For Site 1, the AA>100m ² , and therefore the minimum patch size is 3m ² . Compare number of patches within Site 1 for the number expected in a seep/spring/wet meadow class. Five patches exist at Site 1 (Diatom, Groundcover herbs/forbs, medium emergent monocot beds, short emergent monocot beds, tall herbs/forbs/ferns) of 15 possible = 33%.
Vertical Structure	C+	C: >= 25-50% of the AA supports 3 height classes, or >= 50-75% supports 2 height classes; 50% of Site 1 has 3 height classes represented: tall (loosestrife), medium (scirpus), and short (herb layer).

Interspersion/Zonation	B	Wetland has a moderate degree of plan-view interspersion; Score is obtained by 1)Assessing from a plan view perspective the degree of interspersion (the number of plant zones and how they are dispersed across the landscape).
Percent Invasive Plant Species	D	>25%; Score is obtained by assessing the similarity b/w the dominant species composition of the plant community and what is expected based on regional botanical surveys and historical resources. Specifically, we determined that Site 1 had 6 co-dominant species and 4 invasive co-dominants for the short herbs stratum. $4/6 = 67\%$. Within the tall herb stratum, we found 3 co-dominant species, two of which were invasive species. $2/3 = 67\%$. Averaged across all strata, the co-dominants express 67% invasive species.
Native Plant Species Richness	C	3-4 (this number represents the sum of native co-dominants across all strata present).
Stressor Index		
Hydrology	3	Non-point discharge (horses), artesian well (dewatering effect), and groundwater extraction
Abiotic Structure	3	Fill of sediment or soils (large fill area), Vegetation management (horses), trash or refuse (bricks at north end).
Biotic Structure	1	Mowing and excessive grazing within AA
Adjacent Land Use	4	Industrial/commercial, military training/air traffic, transportation corridor, rangeland

Site 2: Bountiful Pond, a slope wetland.
Method: California Rapid Assessment Method

Functions	Letter Score	Descriptor
Landscape Context		
Connectivity	B	At least some portion of two areas of aquatic resources exists within a 500-m zone surrounding the wetland being assessed, with no intervening barriers to wildlife movement.
% of AA with buffer	A	Buffer is >75-100% of AA perimeter
Avg. Buffer Width	B	Average buffer width of AA is >60-99 m (model assumes that functions of a buffer do not increase significantly beyond an avg width of 100m). A "D" is the worst score, whereas an "A" is the best with an avg buffer width of >=100 m.
Buffer Condition	B	Buffer for AA is characterized by moderate cover of native vegetation, moderate cover of invasive plants, intact or moderately disrupted soils, moderate or lesser amounts of trash or refuse, and minor intensity of human visitation or recreation.
Hydrology		
Source of Water	A	Dry-season freshwater source for AA is precipitation, groundwater, and/or natural runoff, or an adjacent freshwater body, with no indications of artificial water sources
Hydroperiod	D	The filling or inundation patterns in the AA are of substantially lower magnitude or duration than would be expected under natural conditions (or compared to comparable natural wetlands), but thereafter, the AA is subject to natural drawdown or drying.
Hydrologic Connectivity/Upland Connection	NA	Only considered for riverine, estuarine, or lagoon wetlands & adjacent uplands
Abiotic Structure		
Abiotic Patch Richness	A/C	A: >15% (Score for a slope/seep wetlands), C: 33-44% (Score for a depressional wetland); Score is obtained by determining how many physical patch types exist on site. This number is then divided by the expected patch type for the wetland class.
Topographic Complexity	D	AA has a single, uniform slope or elevation, with few physical patch types.
Biotic Structure		
Organic Matter Accumulation	D	The AA contains essentially no significant amounts of coarse plant debris, and only scant amounts of fine debris.
Biotic Patch Richness	D	<53%; Score is obtained by 1) determining size of AA and therefore appropriate patch size. For Site 2, the AA>100m ² , and therefore the minimum patch size is 3m ² . Compare number of patches within Site 2 for the number expected in a seep/spring/wetmdw. class. One patch type exists at Site 2 (short emergent monocot beds) of 15 possible = 7%.
Vertical Structure	D	D: <25% of the AA supports 3 height classes, or < 50% supports 2 height classes; The entire AA at site 2 supports one height class.

Interspersion/Zonation	C	Wetland has a low degree of plan-view interspersion; Score is obtained by 1) Assessing from a plan view perspective the degree of interspersion (the number of plant zones and how they are dispersed across the landscape).
Percent Invasive Plant Species	C	16-25%; Score is obtained by assessing the similarity b/w the dominant species composition of the plant community and what is expected based on regional botanical surveys and historical resources. Specifically, we determined that Site 2 had 4 co-dominant species and 1 invasive co-dominant for the short herbs stratum. $1/4 = 25\%$. Averaged across all strata, the co-dominants express 25% invasive species.
Native Plant Species Richness	D	<3 (this number represents the sum of native co-dominants across all strata present).
Stressor Index		
Hydrology	3	Non-point source (farm drainage), dike/levee (road), drainage ditch
Abiotic Structure	0	None
Biotic Structure	0	None
Adjacent Land Use	3	Transportation corridor, rangeland, passive recreation (hiking to the north at Bountiful pond)

Site 1: Skypark, at 2600 South Redwood Road Woods Cross, Utah, a slope wetland.
 Method: [Florida] Wetland Rapid Assessment Procedure

Functions	Score	Descriptor
Wildlife Utilization	$1 \div 3 = 0.33$	Existing wetland exhibits minimal evidence of wildlife utilization. Observed one lone mallard drake, killdeer pair, kestrel, goose scat
Wetland Overstory/Shrub Canopy	NA	Only vegetation layer is herbaceous
Wetland Vegetative Ground Cover	$1 \div 3 = 0.33$	Minimal desirable vegetative ground cover is present
Adjacent Upland Support/Wetland Buffer	$0 \div 3 = 0.00$	No buffer exists for any part of the site
Field Indicators of Wetland Hydrology	$2 \div 3 = 0.67$	Hydrologic regime adequate to maintain a viable wetland system. External features may affect wetland hydrology
Water Quality Input and Treatment Systems	$1.5 \div 3 = 0.50$	
Total:	$1.83 \div 5 = 0.366$	

Site 2: Bountiful Pond, a slope wetland.
 Method: [Florida] Wetland Rapid Assessment Procedure

Functions	Score	Descriptor
Wildlife Utilization	$2 \div 3 = 0.67$	Existing wetland exhibits moderate evidence of wildlife utilization
Wetland Overstory/Shrub Canopy	NA	No canopy cover or shrub layer
Wetland Vegetative Ground Cover	$2 \div 3 = 0.67$	Moderate amount of desirable vegetative ground cover is present
Adjacent Upland Support/Wetland Buffer	$1.75 \div 3 = 0.58$	75% of site scored a 2 and 25% of site scored a 1
Field Indicators of Wetland Hydrology	$1 \div 3 = 0.33$	Hydrologic regime inadequate to maintain a viable wetland system. External features may affect wetland hydrology
Water Quality Input and Treatment Systems	$1.125 \div 3 = 0.375$	
Total:	$2.62 \div 5 = 0.524$	

Site 1: Skypark, at 2600 South Redwood Road Woods Cross, Utah, a slope wetland.
 Method: Rapid Assessment

Functions	Functional Capacity Lost	Wetland Acreage	Functional Capacity Units Lost
Hydrologic Functional Capacity Lost (HFC)	0.23	2.5	$0.23 \times 2.5 = 0.575$
Geochemical Functional Capacity Lost (GFC)	0.17	2.5	$0.17 \times 2.5 = 0.425$
Connectivity Functional Capacity Lost (CFC)	0.44	2.5	$0.44 \times 2.5 = 1.1$
Vegetation Integrity Lost (VIL)	0.69	2.5	$0.69 \times 2.5 = 1.725$
Total Functional Capacity Units Lost			3.825

Site 2: Bountiful Pond, a slope wetland.
 Method: Rapid Assessment

Functions	Functional Capacity Lost	Wetland Acreage	Functional Capacity Units Lost
Hydrologic Functional Capacity Lost (HFC)	0.51	0.5	$0.51 \times 0.5 = 0.255$
Geochemical Functional Capacity Lost (GFC)	0.054	0.5	$0.054 \times 0.5 = 0.027$
Connectivity Functional Capacity Lost (CFC)	0.39	0.5	$0.39 \times 0.5 = 0.195$
Vegetation Integrity Lost (VIL)	0.5	0.5	$0.5 \times 0.5 = 0.25$
Total Functional Capacity Units Lost			0.727

Site 1: Skypark, at 2600 South Redwood Road Woods Cross, Utah, a slope wetland.
 Method: Utah Department of Transportation-Wetland Functional Assessment Method
 Group A: One UDOT environmental manager and one UDOT landscape architect.

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	M	0.6	1	0.6 x 2.5 acres = 1.5
15c. Listed/Proposed T&E Species Habitat	L	0.3	.9	0.3 x 2.5 = 0.75
15d. UT Natural Heritage Program Species Habitat	L	0.1	.9	0.1 x 2.5 = 0.25
15e. General Wildlife Habitat	L	0.2	1	0.2 x 2.5 = 0.5
15f. General Fish/Aquatic Habitat			1	
15g. General Amphibian Habitat Rating		NA	0	
15h. Flood Attenuation			1	
15i. Short and Long Term Surface Water Storage	H	0.8	1	0.8 x 2.5 = 2.0
15j. Sediment/Nutrient/Toxicant Removal	M	0.5	1	0.5 x 2.5 = 1.25
15k. Sediment/Shoreline Stabilization			1	
Totals:		2.5	5.8	6.25 Functional Units

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

43%	% total functional points
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functional points for that variable when calculating percent of total functional points.

Note: % total functional points = actual functional points ÷ possible 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 .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 .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><input checked="" type="checkbox"/> 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>Roadside Ditch Wetland Classification</p>

Site 1: Skypark, at 2600 South Redwood Road Woods Cross, Utah, a slope wetland.
 Method: Utah Department of Transportation-Wetland Functional Assessment Method
 Group B: Three UDOT landscape architects.

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	M	0.6	1	0.6 x 2.5 acres = 1.5
15c. Listed/Proposed T&E Species Habitat	L	0.3	.9	0.3 x 2.5 = 0.75
15d. UT Natural Heritage Program Species Habitat	L	0.1	.9	0.1 x 2.5 = 0.25
15e. General Wildlife Habitat	L	0.2	1	0.2 x 2.5 = 0.5
15f. General Fish/Aquatic Habitat			1	
15g. General Amphibian Habitat Rating		NA	0	
15h. Flood Attenuation			1	
15i. Short and Long Term Surface Water Storage	H	0.8	1	0.8 x 2.5 = 2.0
15j. Sediment/Nutrient/Toxicant Removal	H	0.9	1	0.9 x 2.5 = 2.25
15k. Sediment/Shoreline Stabilization			1	
Totals:		2.9	5.8	7.25 Functional Units

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

50%	% total functional points
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functional points for that variable when calculating percent of total functional points.

Note: % total functional points = actual functional points ÷ possible 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 .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 .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><input checked="" type="checkbox"/> 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>

Site 1: Skypark, at 2600 South Redwood Road Woods Cross, Utah, a slope wetland.
 Method: Utah Department of Transportation-Wetland Functional Assessment Method
 Group C: One government wetland specialist, one government wildlife biologist, and one private wetland consultant. All are members of the UWAG group.

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	M	0.6	1	0.6 x 2.5 acres = 1.5
15c. Listed/Proposed T&E Species Habitat	L	0.0	.9	0.0 x 2.5 = 0.0
15d. UT Natural Heritage Program Species Habitat	L	0.1	.9	0.1 x 2.5 = 0.25
15e. General Wildlife Habitat	L	0.2	1	0.2 x 2.5 = 0.5
15f. General Fish/Aquatic Habitat			1	
15g. General Amphibian Habitat Rating		NA	0	
15h. Flood Attenuation			1	
15i. Short and Long Term Surface Water Storage	H	0.8	1	0.8 x 2.5 = 2.0
15j. Sediment/Nutrient/Toxicant Removal	H	0.9	1	0.9 x 2.5 = 2.25
15k. Sediment/Shoreline Stabilization			1	
Totals:		2.6	5.8	6.5 Functional Units

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

45%	% total functional points
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functional points for that variable when calculating percent of total functional points.

Note: % total functional points = actual functional points ÷ possible 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>Total Actual Functional Points > 65% (round to nearest whole #) of total possible functional points.</p>
<p><input checked="" type="checkbox"/> 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>Roadside Ditch Wetland Classification</p>

Site 1: Skypark, at 2600 South Redwood Road Woods Cross, Utah, a slope wetland.
 Method: Utah Department of Transportation-Wetland Functional Assessment Method
 Group D: One government wetland specialist, one government hydrologist, and one government wildlife biologist. All are members of the UWAG group.

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	M	0.4	1	0.4 x 2.5 acres = 1
15c. Listed/Proposed T&E Species Habitat	L	0.0	.9	0.0 x 2.5 = 0.0
15d. UT Natural Heritage Program Species Habitat	L	0.1	.9	0.1 x 2.5 = 0.25
15e. General Wildlife Habitat	L	0.3	1	0.3 x 2.5 = 0.75
15f. General Fish/Aquatic Habitat			1	
15g. General Amphibian Habitat Rating		NA	0	
15h. Flood Attenuation			1	
15i. Short and Long Term Surface Water Storage	H	0.8	1	0.8 x 2.5 = 2.0
15j. Sediment/Nutrient/Toxicant Removal	H	0.9	1	0.9 x 2.5 = 2.25
15k. Sediment/Shoreline Stabilization			1	
Totals:		2.5	5.8	6.25 Functional Units

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

43%	% total functional points
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functional points for that variable when calculating percent of total functional points.

Note: % total functional points = actual functional points ÷ possible 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>Total Actual Functional Points > 65% (round to nearest whole #) of total possible functional points.</p>
<p><input checked="" type="checkbox"/> 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>Roadside Ditch Wetland Classification</p>

Site 1: Skypark, at 2600 South Redwood Road Woods Cross, Utah, a slope wetland.
 Method: Utah Department of Transportation-Wetland Functional Assessment Method
 Group E: One UDOT landscape architect manager and one landscape architect student.

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	M	0.6	1	0.6 x 2.5 acres = 1.5
15c. Listed/Proposed T&E Species Habitat	L	0.3	.9	0.3 x 2.5 = 0.75
15d. UT Natural Heritage Program Species Habitat	L	0.1	.9	0.1 x 2.5 = 0.25
15e. General Wildlife Habitat	L	0.3	1	0.3 x 2.5 = 0.75
15f. General Fish/Aquatic Habitat			1	
15g. General Amphibian Habitat Rating		NA	0	
15h. Flood Attenuation			1	
15i. Short and Long Term Surface Water Storage	H	0.8	1	0.8 x 2.5 = 2.0
15j. Sediment/Nutrient/Toxicant Removal	M	0.5	1	0.5 x 2.5 = 1.25
15k. Sediment/Shoreline Stabilization			1	
Totals:		2.6	5.8	6.5 Functional Units

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

45%	% total functional points
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functional points for that variable when calculating percent of total functional points.

Note: % total functional points = actual functional points ÷ possible 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><input checked="" type="checkbox"/> 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>Roadside Ditch Wetland Classification</p>

Site 2: Bountiful Pond, a slope wetland.

Method: Utah Department of Transportation-Wetland Functional Assessment Method

Group A: One UDOT environmental manager and one UDOT landscape architect.

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	M	0.6	1	0.6 x 0.5 acres = 0.3
15c. Listed/Proposed T&E Species Habitat	M	0.5	.9	0.5 x 0.5 = 0.25
15d. UT Natural Heritage Program Species Habitat	L	0.2	.9	0.2 x 0.5 = 0.1
15e. General Wildlife Habitat	M	0.7	1	0.7 x 0.5 = 0.35
15f. General Fish/Aquatic Habitat			1	
15g. General Amphibian Habitat Rating		NA	0	
15h. Flood Attenuation			1	
15i. Short and Long Term Surface Water Storage	H	0.8	1	0.8 x 0.5 = 0.4
15j. Sediment/Nutrient/Toxicant Removal	H	0.9	1	0.9 x 0.5 = 0.45
15k. Sediment/Shoreline Stabilization			1	
Totals:		3.7	5.8	1.85 Functional Units

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

64%	% total functional points
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functional points for that variable when calculating percent of total functional points.

Note: % total functional points = actual functional points ÷ possible 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><input checked="" type="checkbox"/> 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>Roadside Ditch Wetland Classification</p>

Site 2: Bountiful Pond, a slope wetland.

Method: Utah Department of Transportation-Wetland Functional Assessment Method

Group B: Three UDOT landscape architects.

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	M	0.6	1	0.6 x 0.5 acres = 0.3
15c. Listed/Proposed T&E Species Habitat	L	0.3	.9	0.3 x 0.5 = 0.15
15d. UT Natural Heritage Program Species Habitat	L	0.1	.9	0.1 x 0.5 = 0.05
15e. General Wildlife Habitat	M	0.7	1	0.7 x 0.5 = 0.35
15f. General Fish/Aquatic Habitat			1	
15g. General Amphibian Habitat Rating		NA	0	
15h. Flood Attenuation			1	
15i. Short and Long Term Surface Water Storage	H	1.0	1	1 x 0.5 = 0.5
15j. Sediment/Nutrient/Toxicant Removal	H	1.0	1	1 x 0.5 = 0.5
15k. Sediment/Shoreline Stabilization			1	
Totals:		3.7	5.8	1.85 Functional Units

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

64%	% total functional points
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functional points for that variable when calculating percent of total functional points.

Note: % total functional points = actual functional points ÷ possible 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><input checked="" type="checkbox"/> 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>Roadside Ditch Wetland Classification</p>

Site 2: Bountiful Pond, a slope wetland.

Method: Utah Department of Transportation-Wetland Functional Assessment Method

Group C: One government wetland specialist, one government wildlife biologist, and one private wetland consultant. All are members of the UWAG group.

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	M	0.6	1	0.6 x 0.5 acres = 0.3
15c. Listed/Proposed T&E Species Habitat	L	0.3	.9	0.3 x 0.5 = 0.15
15d. UT Natural Heritage Program Species Habitat	L	0.1	.9	0.1 x 0.5 = 0.05
15e. General Wildlife Habitat	M	0.6	1	0.6 x 0.5 = 0.3
15f. General Fish/Aquatic Habitat			1	
15g. General Amphibian Habitat Rating		NA	0	
15h. Flood Attenuation			1	
15i. Short and Long Term Surface Water Storage	M	0.7	1	0.7 x 0.5 = 0.35
15j. Sediment/Nutrient/Toxicant Removal	H	0.9	1	0.9 x 0.5 = 0.45
15k. Sediment/Shoreline Stabilization			1	
Totals:		3.2	5.8	1.6 Functional Units

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

55%	% total functional points
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functional points for that variable when calculating percent of total functional points.

Note: % total functional points = actual functional points ÷ possible 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>Total Actual Functional Points > 65% (round to nearest whole #) of total possible functional points.</p>
<p><input checked="" type="checkbox"/> 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>Roadside Ditch Wetland Classification</p>

Site 2: Bountiful Pond, a slope wetland.

Method: Utah Department of Transportation-Wetland Functional Assessment Method

Group D: One government wetland specialist, one government hydrologist, and one government wildlife biologist. All are members of the UWAG group.

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	M	0.6	1	0.6 x 0.5 acres = 0.3
15c. Listed/Proposed T&E Species Habitat	M	0.5	.9	0.5 x 0.5 = 0.25
15d. UT Natural Heritage Program Species Habitat	M	0.6	.9	0.6 x 0.5 = 0.3
15e. General Wildlife Habitat	H	1.0	1	1 x 0.5 = 0.5
15f. General Fish/Aquatic Habitat			1	
15g. General Amphibian Habitat Rating		NA	0	
15h. Flood Attenuation			1	
15i. Short and Long Term Surface Water Storage	H	0.9	1	0.9 x 0.5 = 0.45
15j. Sediment/Nutrient/Toxicant Removal	H	0.9	1	0.9 x 0.5 = 0.45
15k. Sediment/Shoreline Stabilization			1	
Totals:		4.5	5.8	2.25 Functional Units

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

78%	% total functional points
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functional points for that variable when calculating percent of total functional points.

Note: % total functional points = actual functional points ÷ possible 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 checked="" 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 checked="" type="checkbox"/> Total Actual Functional Points > 65% (round to nearest whole #) of total possible functional points.</p>
<p><input type="checkbox"/> 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>Roadside Ditch Wetland Classification</p>

Site 2: Bountiful Pond, a slope wetland.

Method: Utah Department of Transportation-Wetland Functional Assessment Method

Group E: One UDOT landscape architect manager and one landscape architect student.

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	M	0.6	1	0.6 x 0.5 acres = 0.3
15c. Listed/Proposed T&E Species Habitat	M	0.5	.9	0.5 x 0.5 = 0.25
15d. UT Natural Heritage Program Species Habitat	L	0.2	.9	0.2 x 0.5 = 0.1
15e. General Wildlife Habitat	M	0.7	1	0.7 x 0.5 = 0.35
15f. General Fish/Aquatic Habitat			1	
15g. General Amphibian Habitat Rating		NA	0	
			1	
15i. Short and Long Term Surface Water Storage	H	0.9	1	0.9 x 0.5 = 0.45
15j. Sediment/Nutrient/Toxicant Removal	H	1.0	1	1 x 0.5 = 0.5
15k. Sediment/Shoreline Stabilization			1	
Totals:		3.9	5.8	1.95 Functional Units

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

67%	% total functional points
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functional points for that variable when calculating percent of total functional points.

Note: % total functional points = actual functional points ÷ possible 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 checked="" 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>Roadside Ditch Wetland Classification</p>

Site 3: Plover Playa in Tooele County, a mineral flat wetland.
 Method: Utah Department of Transportation-Wetland Functional Assessment Method
 Group A: Two UDOT landscape architects.

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	H	1.0	1	1 x 2.5 acres = 2.5
15c. Listed/Proposed T&E Species Habitat	L	0.3	.9	0.3 x 2.5 = 0.75
15d. UT Natural Heritage Program Species Habitat	L	0.1	.9	0.1 x 2.5 = 0.25
15e. General Wildlife Habitat	H	1.0	1	1 x 2.5 = 2.5
15f. General Fish/Aquatic Habitat			1	
15g. General Amphibian Habitat Rating		NA	0	
15h. Flood Attenuation			1	
15i. Short and Long Term Surface Water Storage	H	1.0	1	1 x 2.5 = 2.5
15j. Sediment/Nutrient/Toxicant Removal	H	0.8	1	0.8 x 2.5 = 2
			1	
Totals:		4.2	5.8	10.5 Functional Units

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

72%	% total functional points
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functional points for that variable when calculating percent of total functional points.

Note: % total functional points = actual functional points ÷ possible 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 checked="" 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>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>Roadside Ditch Wetland Classification</p>

Site 3: Plover Playa in Tooele County, a mineral flat wetland.

Method: Utah Department of Transportation-Wetland Functional Assessment Method

Group B: One UDOT landscape architect and one landscape architect student.

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	H	1.0	1	1 x 2.5 acres = 2.5
15c. Listed/Proposed T&E Species Habitat	L	0.3	.9	0.3 x 2.5 = 0.75
15d. UT Natural Heritage Program Species Habitat	L	0.1	.9	0.1 x 2.5 = 0.25
15e. General Wildlife Habitat	H	1.0	1	1 x 2.5 = 2.5
15f. General Fish/Aquatic Habitat			1	
15g. General Amphibian Habitat Rating		NA	0	
15h. Flood Attenuation			1	
15i. Short and Long Term Surface Water Storage	H	0.8	1	0.8 x 2.5 = 2
15j. Sediment/Nutrient/Toxicant Removal	H	0.8	1	0.8 x 2.5 = 2
15k. Sediment/Shoreline Stabilization			1	
Totals:		4.0	5.8	10 Functional Units

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

69%	% total functional points
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functional points for that variable when calculating percent of total functional points.

Note: % total functional points = actual functional points ÷ possible 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 checked="" 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>Roadside Ditch Wetland Classification</p>

Site 3: Plover Playa in Tooele County, a mineral flat wetland.
 Method: Utah Department of Transportation-Wetland Functional Assessment Method
 Group C: Two hydrologists and a civil engineer from a private consulting firm.

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	H	1.0	1	1 x 2.5 acres = 2.5
15c. Listed/Proposed T&E Species Habitat	L	0.3	.9	0.3 x 2.5 = 0.75
15d. UT Natural Heritage Program Species Habitat	L	0.1	.9	0.1 x 2.5 = 0.25
15e. General Wildlife Habitat	H	1.0	1	1 x 2.5 = 2.5
15f. General Fish/Aquatic Habitat			1	
15g. General Amphibian Habitat Rating		NA	0	
15h. Flood Attenuation			1	
15i. Short and Long Term Surface Water Storage	H	0.8	1	0.8 x 2.5 = 2
15j. Sediment/Nutrient/Toxicant Removal	H	0.9	1	0.9 x 2.5 = 2.25
15k. Sediment/Shoreline Stabilization			1	
Totals:		4.1	5.8	10.25 Functional Units

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

71%	% total functional points
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functional points for that variable when calculating percent of total functional points.

Note: % total functional points = actual functional points ÷ possible 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 checked="" type="checkbox"/> Score 1 functional 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>Roadside Ditch Wetland Classification</p>

Site 4: Jordan River at 3900 South, a riverine wetland.

Method: Utah Department of Transportation-Wetland Functional Assessment Method

Group A: Three UDOT landscape architects, one UDOT landscape architect manager, and one landscape architect student.

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	L	0.1	1	0.1 x 0.25 acres = 0.025
15c. Listed/Proposed T&E Species Habitat	L	0.0	.9	0.0 x 0.25 = 0.0
15d. UT Natural Heritage Program Species Habitat	L	0.1	.9	0.1 x 0.25 = 0.025
15e. General Wildlife Habitat	L	0.2	1	0.2 x 0.25 = 0.05
15f. General Fish/Aquatic Habitat	M	0.3	1	0.3 x 0.25 = 0.075
15g. General Amphibian Habitat Rating		NA	0	
15h. Flood Attenuation	M	0.6	1	0.6 x 0.25 = 0.15
15j. Sediment/Nutrient/Toxicant Removal	L	0.3	1	0.3 x 0.25 = 0.075
15k. Sediment/Shoreline Stabilization	M	0.6	1	0.6 x 0.25 = 0.15
Totals:		2.2	7.8	1.95 Functional Units

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

28%	% total functional points
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functional points for that variable when calculating percent of total functional points.

Note: % total functional points = actual functional points ÷ possible 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>Total Actual Functional Points > 65% (round to nearest whole #) of total possible functional points.</p>
<p><input type="checkbox"/> 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 checked="" type="checkbox"/> Total actual functional points < 30% (round to nearest whole #) of total possible functional points</p> <p>Roadside Ditch Wetland Classification</p>

APPENDIX E
FIELD TEST FORM AND REVISED FORM

UDOT Wetland Assessment Form (Slope)

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.**

Slope



Slope wetlands – Occur at points of surface changes, breaks in slope or stratigraphic changes / groundwater is primary water source / water flow is primarily unidirectional- down gradient / water may discharge to stream, lake, depression.

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 \geq 20 in.

Presence of heavy metals or toxicants?

Yes

No

Determine the pH range _____

Soil and water pH range

Organic soils

\leq 4.9

5.0 - 6.5

> 6.5

\geq 8.5

Mineral soils

\leq 6.0

6.1-7.3

\geq 7.4 - 8.4

Determine the salinity _____

Water salinity

< 5 dS/m

very saline

5-10 dS/m

10-16 dS/m

16-35 dS/m

\geq 35 dS/m

water class and salinity.

Subclass is:

_____ Seasonal and persistent freshwater

_____ Seasonal and persistent saline and

Reference Appendix D for definitions of

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) and Fahrig (1997).

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 (1,200 feet from perimeter of AA)		
	Land managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or buildings.	Land not cultivated, but moderately grazed or hayed or selectively logged; or has been subject to minor clearing; contains few roads, buildings, ditches or canals.	Land cultivated or heavily grazed or logged; 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, logged, or otherwise converted; does not contain roads or occupied buildings.	L	L	M
AA not cultivated, but moderately grazed or hayed or selectively logged; or has been subject to relatively minor clearing, fill placement, or hydrological alteration; contains few roads, buildings, ditches or canals.	M	M	H
AA cultivated or heavily grazed or logged; subject to relatively substantial fill placement, grading, clearing, or hydrological alteration; high road or building density, and or numerous 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).

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

iii. What is the ratio of native plants to non-native 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 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	.5M	.4M	.3L	.2L	.9H	.7M	.6M	.5M	.4M	.3L	.2L			

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

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

Comments:

15e. General Wildlife Habitat Rating

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).

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

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 waterbody in AA containing cover objects such as submerged logs, large rocks & boulders, overhanging banks, floating-leaved vegetation, etc.	>25%	10–25%		>25%	10–25%	<10%		10–25%	<10%
contains riparian or wetland scrub-shrub or forested communities	H	H		H	H	M	M		M
Shading: 50 to 75% of streambank or shoreline within AA contains riparian or wetland scrub-shrub or forested communities	H		M	M	M	M	M	L	L
Shading: < 50% of streambank 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 to the following question. 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 waterbody included on the UDEQ list of waterbodies 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	.8 M	.5 M
Introduced fish	.9 H	.6 M	.4 M
No fish	.3 L	.2 L	.1 L

Comments: reduce the score by .1 if AA has carp present.

15g. General Amphibian Habitat Rating

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

15h. Flood Attenuation

This field assesses the capability of the AA to slow in channel or overbank 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 floodplain of 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?	N	Y	N	Y
Rating	1H	.8H	.9H	.7M

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.				Waterbody on UDEQ list of waterbodies 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.			
	Within the AA, estimate % ground coverage with high to moderate surface roughness*		<50%		≥ 50%		<50%	
Has the wetland’s natural ability to store water been disturbed?	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	
≥ 65%	1H	
64% - 50%	.8H	.5M
	.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				
15g. General Amphibian Habitat Rating			0	
15h. Flood Attenuation				
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

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

functional points for that variable when calculating percent of total functional points.

Note: % total functional points = actual functional points ÷ possible 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><input checked="" type="checkbox"/> 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>

UDOT Wetland Assessment Form (Slope)

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.**

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

very saline

5-10 dS/m

10-16 dS/m

16-35 dS/m

≥ 35 dS/m

water class and salinity.

Subclass is:

_____ Seasonal and persistent freshwater

_____ Seasonal and persistent saline and

Reference Appendix D for definitions of

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 ≥ 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 ≥ 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
-----------------------------------	----	-----	-----

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%		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
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					
	.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*	≥ 50%		<50%		≥ 50%		<50%	
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	
< 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				
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

	% total functional points
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functional points for that variable when calculating percent of total functional points.

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