Utah Interim Wetland Functional Assessment Procedure

Background - NRCS Policy on Wetland Functional Assessments

The Food Security Act (FSA) of 1985, as amended, grants the Secretary of Agriculture responsibility and authority to provide exemptions to the wetland conservation provisions. The Secretary delegates this responsibility to Natural Resources Conservation Service (NRCS) State Conservationists. In carrying out these responsibilities, the published rules mandate that wetland functions be considered prior to granting either a Minimal Effect Exemption [7-CFR-12; Section 12.5 (b) (1) (v)] or a Mitigation Exemption [7-CFR-12; Section 12.5 (b) (4)]. The CFR requires the use of a functional assessment for decisionmaking. These rules, as well as additional information on wetland conservation programs, can be found at http://www.nrcs.usda.gov/programs/farmbill/1996/HELRule.html.

In addition to decisions related to the Food Security Act, functional assessments are required by the NRCS Wetland Protection Policy found in the General Manual (GM 190, Part 410.26) "(6) Functional Assessment: As part of the mitigation process, the functions of the affected wetland and the amount of function lost must, in most cases, be determined. The State Conservationist will establish an appropriate assessment procedure to evaluate wetland functions and impacts, determine the type and extent of compensatory mitigation required, and evaluate the success of the compensatory mitigation."

In 1997 a strategic plan regarding the HGM Approach was developed by NRCS, the Environmental Protection Agency (EPA), Department of Transportation (DOT), and the US Army Corps of Engineers (COE) regarding mitigation decisions associated with Section 404 permits and wetland conversions requiring USDA approval under the Wetland Conservation (WC) provisions of the 1985 FSA. This effort, titled A National Action Plan, was published in the Federal Register. The action plan directs that "the Corps and other Federal agencies will develop a policy statement clarifying how the HGM Approach will be used within the Section 404 and Swampbuster programs to improve regulatory decision making…." The policy statement will be published in the Federal Regulations for public review (Federal Register 1997). To date, no such policy statement has been published. The National Action Plan can be found at http://www.usace.army.mil/cw/cecwo/reg/hydrogeo.htm.

In the absence of a published NRCS "policy statement," the National Food Security Act Manual (NFSAM) takes precedence. NFSAM requires the use of HGM Regional Guidebooks, if available. If unavailable, the use of existing functional assessments or the development of interim HGM-based models is recommended. This policy is supported by regulation [7-CFR-12, Section 12.31 (d)] which requires minimal effect determinations to be "based upon a functional assessment of functions and values."

Introduction

In 2003, the Utah Department of Transportation (UDOT) and an advisory team that included representatives from UDOT, Utah Division of Wildlife Resources (UDWR), United States Fish and Wildlife Service (USFWS), and the COE, developed a wetland evaluation method to be applied to highway projects in Utah. The method is based extensively on the Montana Department of Transportation's (MDT), Montana Wetland Assessment Method. The MDT method has been extensively field tested and reviewed favorably by wetland professionals.

A draft form was presented in 2004 to the Utah Interagency Group with representatives from UDOT, UDWR, COE, USFWS, the EPA, private consultants and NRCS. The Utah Natural Heritage Program (UNHP) and the Utah Geological Survey were also consulted. The MDT method, upon which this UDOT method is based, was revised in the fall of 2004 based on comments received, meeting results and a literature review. Changes were made in the MDT method to accommodate Utah wetland types, wildlife and other Utah-specific issues.

The objective of the UDOT method is to provide a science-based, rapid, economical and repeatable wetland evaluation method applicable to Utah that:

- meets the needs of local regulatory agencies for quantifying jurisdictional wetland functions and values inherent in the majority of proposed wetland disturbance-related projects in the state, particularly highway projects.

- minimizes subjectivity and variability between evaluators.

- provides a means of assigning wetlands overall ratings to facilitate avoidance priorities (avoiding where feasible wetlands of highest functional value).

- uses some of the principles of the hydro geomorphic (HGM) assessment method in the evaluation form as an interim method if and until HGM is implemented in Utah and as an alternative once HGM is implemented. No HGM guidebook for assessing the function of Utah's wetlands has been completed.

In 2006, the UDOT Wetland Functional Assessment Method was released as Report Number UT-06-12. Much of the Procedure section below is copied directly from that document. The authors were: Craig Johnson, Ryan Pitts, Lori Porreca, and David Frey.

NRCS Utah has modified the UDOT method to simplify use by field office personnel and to incorporate other aspects of the NRCS Conservation Planning process into the method. NRCS Utah proposes to use the following procedure as an interim HGM-based functional assessment procedure to meet policy requirements associated with administering the Wetland Conservation Provisions of the Food Security Act (as amended) and General Manual Policy on the Protection of Wetlands. The State Technical Advisory Committee recommended adoption of this procedure by the State Conservationist on April 7, 2009.

Procedure

Step 1
Before starting a wetland functional assessment, the conservation planner must have first determined that adverse effects on the wetland to be assessed are unavoidable, i.e. there is no technically and economically feasible alternative to impacting the wetland. A wetland delineation, including data forms, shall have been completed by a qualified person (someone who has received training in both the COE 1987 Wetland Delineation Manual and Regional Supplements and the NFSAM.) In addition, the conservation planner must have completed an effects determination for federally listed and proposed threatened, endangered, and candidate species and State species of concern, which could use the wetland, in accordance with policy.

Step 2
Determine in which of the five Utah Wetland Classification types the wetland to be assessed belongs:

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

- 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.

- 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.

- 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 the Great Basin ecoregion. Example: Great Salt Lake mud flats and salt flats.

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

Step 3
Proceed to the appropriate functional assessment form in Appendix A (page 13) for the wetland classification type assigned above and complete the assessment for the wetland prior to adverse impacts using the instructions below. If the wetland has already been impacted, estimate the functions of the wetland prior to the impact by using a nearby reference wetland.

Function 1: Maintenance of Characteristic Plant and Animal Communities

1a Level of Disturbance
Disturbance: This field assesses the level of disturbance within the wetland and the surrounding area. The surrounding area is a 600 foot buffer around the perimeter of the wetland. Disturbance at the wetland is defined based on land use both at the wetland and in the surrounding area. Land use in surrounding areas can provide a measure of disturbance within wetlands and negatively influence their habitat quality even though the wetlands themselves may be relatively undisturbed.

Circle the description of the level of disturbance that most closely reflects conditions observed within the wetland and the surrounding area.

Comments: Provide a brief (1 to 2 sentence) descriptive summary of the wetland and surrounding area. The description may include dominant species, adjacent land use, proximity to other wetlands, etc.

1b Plant Community Composition
Use the information in the Vegetation section of the wetland delineation data form to determine plant community composition for the wetland. Plant community composition is defined as layers of vegetation (riverine and lacustrine only), percent ground coverage dominated by native wetland vegetation, and the percent of native wetland to non-native or non-wetland plant species. Observation and absolute percent cover of species listed in the Vegetation section of the wetland delineation data form is used determine layers of vegetation (riverine and lacustrine only) as well as to estimate percent ground cover dominated by native wetland species. Native wetland plants are vegetation that is considered to be native and categorized as an obligate wetland (OBL), facultative wetland (FACW), or facultative (FAC) in the intermountain region (Region 8). Facultative - (FAC-), facultative upland (FACU), and obligate upland (UPL) species are considered non-wetland plants.

Expected layers of vegetation and percent ground coverage dominated by native wetland plants are compared with reference standard sites with subclasses as described by Keate (2004) for slope, depressional, and mineral flat wetland classes and for riverine and lacustrine by Pagette et al. (1989). See Appendix B (page 33) for lists of native and non-native or non-wetland plants. For riverine and lacustrine wetlands, first determine site elevation then reference Appendix B.

The native wetland to non-native or non-wetland plant percent is obtained by dividing the total number of native wetland plant species by the total number of plants in the Vegetation section of the wetland delineation data form.

1c Habitat for Federally Listed or Proposed Threatened or Endangered Plants or Animals

This field assesses primary documented or suspected, secondary documented or suspected or incidental documented or suspected use of the wetland by federally listed or proposed threatened or endangered (T&E) species and Conservation Agreement species, or documents the wetland as unsuitable habitat for these species. Minimal Effect cannot be approved for wetlands that support T&E habitat; mitigation will be required. Use the T&E information completed for the UT-CPA-52. Seek assistance from an NRCS or UDWR biologist if necessary.

i. Circle D or S to indicate whether habitat for listed or proposed T&E species is documented or suspected within the wetland at the ascertained level using the definitions provided below. It may be appropriate to indicate more than one use level for multiple species. List the species that correspond to each habitat level determined to apply to the wetland.

Primary Habitat: Habitat essential to the short or long-term viability of individuals or populations. The presence of traditional breeding, spawning, nesting, denning or critical migratory habitat, large seasonal congregations (including communal roosts, staging habitat, traditional foraging congregations, etc.), or USFWS or UDWR - designated critical habitat or core areas in the wetland indicates primary habitat, as does any occurrence of a T&E species or State of Utah Conservation Agreement species.

Secondary Habitat:

Habitat that is occasionally or semi-regularly used by a given species, but that is not necessarily essential to the short or long-term viability or individuals or populations. Examples would include non-specific migration areas and occasional forage or perch sites. Primary habitat, as defined above, may occur in the general vicinity (e.g., within the project area, section, drainage, watershed, etc.), but not in the wetland.

Incidental Habitat:

Habitat that receives chance, inconsequential use by a given species or habitat conditions or the known distribution of the species would indicate this level of use. This term implies that, while it may be conceivable that a given species may occur at a wetland at a given point in time, the chance is remote and the use is not likely to be repeated.

ii. Rating: Use the highest level habitat (e.g., the level that corresponds to the highest functional point value) determined under **i** to determine the functional point value. If T&E or Conservation Agreement species habitat is documented at the wetland, indicate the source of the documentation.

1d Habitat for State of Utah Species of Concern
This field assesses use of or existence in the wetland by species of concern to the State of Utah. To avoid duplication, do not include Conservation Agreement species listed above under 1c. Minimal Effect may not be approved for wetlands that support State species of concern; mitigation is likely to be required. Use the State species of concern information completed for the UT-CPA-52. Seek assistance from an NRCS or UDWR biologist if necessary.

i. Circle D or S to indicate whether habitat for these species is documented or suspected within the wetland at the ascertained level using the definitions provided above under 1c. As discussed above, it may be appropriate to indicate more than one habitat level for multiple species. List the species that correspond to each habitat level applying to the wetland.

ii. Rating: Use the highest level habitat (e.g., the level that corresponds to the highest functional point value) determined under **i** to determine the functional point value. If sensitive species habitat is documented at the wetland, indicate the source of the documentation.

1e General Wildlife Habitat
This field assesses general wildlife habitat potential within the wetland based upon Plant Community and Disturbance Level. Degree of disturbance at a wetland and in the adjacent landscape can greatly influence its use by wildlife. Examples of disturbance include direct conversion, conversion of upland supporting habitats, and encroachment and fragmentation by human activity sources, such as buildings, trails, roads, canals and ditches. Plant community composition relates to the number of niches in a wetland class as well as its vertical and horizontal structural characteristics as described in the reference standard site. More niches are potentially available as more layers of habitat occur within the range of expected layers for native vegetation and structural characteristics in a given wetland class, so more wildlife species potentially are supported by more structurally complex habitats.

Working from top to bottom within the double vertical lines, circle the appropriate attributes in the matrix provided on the data form to arrive at a high (H), moderate (M), or low (L) rating. The first variable considered is the level of disturbance. The second variable is plant community composition.

1f General Fish/ Aquatic Habitat (riverine and lacustrine wetlands only)
This field assesses general fish and aquatic habitat at the wetland based upon the presence of certain groups of fish and habitat features. Assess this function only if the wetland is used by fish or the existing situation is “correctable” such that the wetland could be used

by fish (e.g., fish use is precluded by perched culvert or other barrier, etc.). If the wetland is not or was not historically used by fish due to lack of habitat (including duration of surface water), excessive gradient, etc. (e.g., the wetland does not have the opportunity to provide habitat for fish), circle **NA** where indicated on the data form and proceed to the next function.

Surface water durations are as defined as follows:

Permanent/ perennial: Surface water is present throughout the year except during years of extreme drought.
Seasonal/ intermittent: Surface water is present for extended periods, especially early in the growing season, or may persist throughout the growing season, but may be absent at the end of the growing season; or surface water does not flow continuously, as when water losses from evaporation or seepage exceed the available stream flow.
Temporary/ ephemeral: Surface water is present for brief periods during the growing season, but the water table is well below the surface for most of the year; or surface water flows briefly in response to precipitation in the immediate vicinity and the channel is above the water table.

Variables assessed to determine a rating for habitat quality include duration of surface water, structural cover, shading, and habitat availability. Presence of surface water is an obvious critical component of fish habitat. Seasonally flooded areas can be important nursery and foraging areas for fish (and can result in "high" habitat quality ratings using this assessment); however, longer duration of surface water generally results in higher ratings because surface waters of such duration are available to fish for greater periods and varieties of life stages. Flow or water level stability is an important habitat component for a variety of fish species.

Abundant structural cover and well-vegetated stream banks and shorelines are also important habitat components for several fish species. Structural cover such as submerged logs and vegetation, other woody debris, floating-leaved vegetation, and large rocks provides resting areas, refuge from predators, hiding areas from predators, and functions as a substrate for insect larva; an important food source for many fish species. High water temperatures that result from removal of streamside vegetation can render habitat as unsuitable for fish that are sensitive to higher temperatures, such as Bonneville cutthroat trout. Vegetation along streams, ponds, and lakes also provides insect habitat, an important food source for many fish species.

Although the physical habitat attributes of a site may be attractive to fish, use of the area may be significantly reduced or precluded due to the presence of inadequately sized culverts, dikes, continual sources of degradation, or other causes. Consequently, potential "habitat modifiers" are also considered in the assessment.

The presence of certain groups of fish in the wetland is considered along with habitat features to derive an overall fish/ aquatic habitat rating. UDWR seeks to preserve and enhance all desirable aquatic species and their supporting ecosystems. To accomplish this

UDWR continues to develop and implement policies and programs that foster sound management of wild fish populations and their habitats, at the same time that it monitors and regulates angler harvests, maintains recreational activities for anglers, and provides improved access to fisheries.

Given these management priorities (managing for wild fish populations **and** recreational opportunities), the following groups of fish are considered in the assessment in order of descending "rank:" native game sport fish; introduced game fish; non-game fish; and no fish.

Utah native sport fish include: Mountain, Bonneville and Bear Lake Whitefish, Bonneville Cisco and four subspecies of Cutthroat Trout, Bear Lake, Bonneville, Colorado and Yellowstone. **Non-native coldwater sport species include:** Rainbow Trout, Lake Trout, Brook Trout, Arctic Grayling, Kokanee Salmon and Brown Trout. **Cool and warm water sport fish include:** Walleye, Yellow Perch, Striped Bass, White Bass, Smallmouth Bass, Largemouth Bass, Bullhead, Channel, Catfish, Black Crappie, Green Sunfish and Bluegill. **Hybrid sport fish include:** Tiger Muskelunge, Tiger Trout and Splake. **Non-game fish include:** Carp, Utah Sucker and Utah Chub.

i. Habitat Quality: Working from top to bottom within the double vertical lines, circle the appropriate attributes in the matrix provided on the data form to arrive at a high (H), moderate (M), or low (L) rating. The first variable considered is the maximum duration of surface water in the wetland. Use the definitions provided above. The second variable is structural cover. Estimate the percentage of the waterbody within the wetland that contains cover objects such as submerged logs, large rocks and boulders, overhanging banks, and submerged and floating-leaved vegetation. The final variable is shading, as determined by estimating the percent of stream bank or shoreline within the wetland that contains wetland or riparian scrub-shrub or forested communities. This will determine the rating for habitat quality.

ii. Modified Habitat Quality: Circle the appropriate response to the following question: Is fish use of the wetland 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? If the answer is yes, then reduce the habitat quality rating determined in **i** above by one level (H = M, M = L, L = L). If the answer is no, then do not modify the habitat quality rating determined in **i**.

iii. Rating: Determine and circle the general fish/ aquatic rating and functional points by applying the results of **i** and **ii** to the matrix provided in the data form. The term "native" as used here means a species indigenous to Utah; not necessarily to a given drainage or water body.

Function 2: Flood Attenuation (riverine wetlands only)
This field assesses the capability of the wetland to slow in-channel or overbank flow during high water/flood events. The variable used to assess this function is surface

roughness. Surface roughness features for riverine wetlands include emergent wetland, deep rooted woody and or tall sturdy herbaceous vegetation (e.g. stream bank wheatgrass) and may also include course woody debris, litter, boulders, rock outcroppings and micro topography. Riverine wetlands with a high percentage of aerial coverage of these features are better able to retard flood waters than are wetlands with moderate or low surface roughness.

Surface Roughness Features:
Emergent wetland, deep rooted woody and or herbaceous vegetation and for riverine and lacustrine wetlands may also include coarse woody debris, litter, boulders and micro-topography.

i. Rating: Working from top to bottom, use the matrix on the data form to arrive at [circle] the functional points and rating [H=high, M=moderate, or L=low] for this function.

ii. Indicate whether there are residences, businesses, or other features (parks, sports fields, historic sites, roads, etc.) that could be damaged by floodwater located within 0.5 miles downstream of the wetland. Describe these features in the comments section.

Function 2: Short and Long Term Surface Water Storage (non-riverine wetlands only)

This field assesses the potential of the wetland to capture and hold surface water originating from precipitation, upland surface (sheetflow) or subsurface (groundwater) flow. If the wetlands are not subject to inundation or ponding, circle **NA** where indicated on the data form and proceed with the evaluation.

Variables used to assess this function are: frequency of inundation or ponding and whether or not the wetlands natural ability to store water has been disturbed negatively. Wetlands that pond frequently provide water storage functions more often than do wetlands that pond less frequently. Duration of water retention is implied in the wetland class or subclass definition. Also wetlands whose natural hydrology has not been modified by dikes or drains retain their inherent ability to store surface water.

i. Rating: Working form top to bottom, use the matrix on the data form to arrive at [circle] the functional points and rating [H=high, M=moderate, or L=low] for this function. First estimate (based on photographs, soil survey data, interviews, knowledge of the area, etc.) whether the wetlands that flood or pond do so at a frequency greater than or less than five out of every 10 years and circle the appropriate functional points and rating. Then determine whether the wetland's natural ability to store water has been disturbed negatively.

Function 3: Sediment/Nutrient/Toxicant Retention and Removal
This field assesses the ability of the wetland to retain sediments and retain and remove excess nutrients and toxicants. This field only applies to wetlands which could receive

sediments and excess nutrients or toxicants through influx of surface or ground water or direct input. If the wetland is not subject to such input, circle **NA** where indicated on the data form and proceed with the evaluation. Nitrogen and phosphorus are the two nutrients most often associated with water pollution; both occur in high concentrations in fertilizers and discharges from sewage treatment plants and livestock operations, and excessive amounts of either can result in algal blooms and subsequent oxygen deficiencies in receiving waters. Toxicants include pesticides, herbicides, petroleum products, metals and other potentially harmful constituents.

The assessment is based on the site's proximity to sediment/nutrient/toxicant sources; plant community composition; evidence of flooding or ponding; and presence or absence of an outlet. Wetlands which could receive and successfully process sediment, nutrients, and toxicants provide these functions at a higher capacity than do wetlands that receive excessive amounts of these constituents such that other functions are impaired. Generally, a wetland's ability to uptake nutrients and toxicants and filter sediment increases with the density of its vegetation within its expected range of percent cover. Flooded or ponded wetlands are indicative of sites that retain water; these areas allow sediments to settle out and increase nutrient/toxicant contact time with vegetation, facilitating uptake. Sites whose natural ability to store water has not been altered in a negative way, retain their ability to perform settling and uptake functions.

i. Rating: Working from top to bottom, use the matrix on the data form to arrive at [circle] the functional points and rating [H=high, M=moderate, or L=low] for this function. First, determine if the wetland receives or surrounding lands have the potential to deliver low to moderate levels of sediments, nutrients, or toxicants such that other functions in the wetland are not substantially impaired (e.g., the wetland is processing these inputs but is not significantly affected by them). Observation of some sedimentation, relatively minor potential sources of nutrients or toxicants, or signs of minor to moderate eutrophication would be indicative of this input level.

If the wetland is in close proximity to or receives input from or is listed on the list of Utah's 303(d) List of Impaired Waters with listed "probable causes" related to sediment, nutrients or toxicants (e.g., not based exclusively on flow alteration, other habitat alterations, etc.), then the second column of the matrix should be used. Such related probable causes include "metals," "nutrients." "organic enrichment/DO", "suspended solids", "unionized ammonia." "priority organics," "siltation," "other inorganic," "salinity/TDS/chlorides," etc. The impaired waterbody list is lengthy and dynamic and is available at: http://waterquality.utah.gov.

If the wetland is not included on the UDEQ TMDL list, but high levels of these inputs are observed or expected and are impairing other functions at the wetland, as evidenced by observations of land use, major sedimentation, major contaminant sources, major eutrophication, etc., then the second column of the matrix should be used. The next variable addresses the percent of high to moderate surface roughness. The final variable determines if the wetland's ability to store water has been altered in a negative manner.

Surface Roughness Features:
Emergent wetland, deep rooted woody and or herbaceous vegetation and for riverine and lacustrine wetlands may also include coarse woody debris, litter, boulders and micro-topography.
Surface Roughness (High): 65% by aerial coverage of the wetland contains surface roughness features.
Surface Roughness (Moderate): Between 35% and 65% by aerial coverage of the wetland contains surface roughness features.
Surface Roughness (Low): <35% by aerial coverage of the wetland contains surface roughness features.

Function 4: Sediment/Shoreline Stabilization (riverine and lacustrine wetlands only)

This field assesses the ability of the wetland to dissipate flow or wave energy, reducing erosion. Complete this field only if the wetland occurs on the shoreline of a standing water body that is subject to wave action or on the banks of a river stream or, other natural or manmade channel. Variables to consider when determining if a waterbody is subject to wave action include estimated wind velocity, water depth and fetch (distance across the water). If this field does not apply, circle NA where indicated on the data form and proceed to the next function.

The variable used to assess this function is surface roughness. Surface roughness for lacustrine wetlands include emergent wetland, deep rooted woody, and or tall hardy herbaceous vegetation (e.g. stream bank wheatgrass) and may also include coarse woody debris, litter, boulders, rock outcroppings and micro topography. Lacustrine wetlands with a high percentage of aerial coverage of these features are better able to dissipate wave energy than are wetlands with moderate or low surface roughness. Estimate surface roughness using the definitions above. Next, determine the duration of surface water in the rooted zone. Lakes, reservoirs, and rivers or streams where water in the root zone is permanent have more vigorous plant communities which provide better shoreline stabilization than reservoirs or streams where summer draw-downs stress vegetation increasing plant mortality and unvegetated slopes are exposed to wave and flow induced erosion.

i. Rating: Working from top to bottom, use the matrix and the data form to arrive at [circle] the functional points and rating [H=high, M=moderate, or L=low] for this function. First, estimate surface roughness with respect to herbaceous species. Annual plants are considered individually. Sedges and rushes, for example, are considered to provide deep, binding root-masses, while Kentucky bluegrass is not. Next, determine whether the duration of surface water adjacent to rooted vegetation in the wetland using the definitions provided above is permanent or seasonal and circle the appropriate functional points and rating.

Groundwater Discharge/Recharge
Groundwater discharge and recharge only occur in some subclasses of Utah wetlands. Playas provide neither discharge nor recharge. Slope wetlands are usually groundwater

discharge. Neither discharge nor recharge are common in Utah and hence have not been included in this functional assessment procedure.

Function & Value Summary and Overall Rating

Transfer the ratings and functional points assigned for each of the functions assessed to the appropriate fields on the summary form. Circle Actual if assessing wetland prior to impact. Circle Estimated if assessing wetland after impact. For functions that do not apply to a given wetland (e.g., flood attenuation), enter "NA" under each of the column headings. Record the totals from the Actual or Estimated Functional Points and Possible Functional Points columns in the Totals row. Calculate the total functional points that the wetland achieved using the following equation: total actual or estimated functional points / total possible functional points.

Step 4

Repeat the functional assessment procedure in Step 3, estimating the ratings and functional points the wetland will have after the proposed impact. If the wetland was already impacted, assess its functions based on current conditions.

Step 5

Determine if the effect of the impact on wetland functions was minimal. A 10 percent decrease of functional capacity units for one or more functions exceeds the threshold for a minimal effect. Mitigation that replaces the acres and all functions diminished by the impact is required. After mitigation wetlands are restored, enhanced, or created, the functional assessment procedure will be used to document that impacted functions were replaced by the mitigation wetlands and for monitoring functions over time as required by the mitigation agreement.

APPENDIX A.

FUNCTIONAL ASSESSMENT FORMS

Depressional/Mineral Flat/Slope Wetland Functional Assessment……Pages 14 - 18

Lacustrine Fringe Wetland Functional Assessment…….....…….Pages 19 – 25

Riverine Wetland Functional Assessment…….....…….Pages 26 – 32

Depressional/Mineral Flat/Slope Wetland Functional Assessment

Function 1: Maintenance of Characteristic Plant and Animal Community

1a. Level of Disturbance
This field assesses the level of disturbance in the wetland and surrounding area.

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

	Land Use within 600' Buffer Area around Wetland		
Conditions within Wetland	Land managed in predominantly natural state; is not grazed, hayed, landscaped, or otherwise converted from natural vegetation; 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.
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
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
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.			

1b. Plant Community Composition

This field assesses the plant community within the wetland. See Appendix B for lists of native and non-native or non-wetland plants. Refer to Wetland Delineation Data Form Vegetation Section to answer the questions and complete the matrix below.

i. What is the percent ground cover in the wetland dominated by native wetland vegetation?
High ≥ 80%, Moderate 79-60%, Low < 60%

ii. What is the ratio of native wetland plants to non-native or non-wetland plants observed in the wetland?
High ≥ 0.80, Moderate 0.79-0.60, Low < 0.60

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

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

1c. Habitat for Federally Listed or Proposed Threatened or Endangered Plants or Animals

This field assesses documented or suspected use of the wetland by federally listed or proposed threatened or endangered plants or animals. Refer to the T&E information in the UT-CPA-52. Seek assistance from NRCS or UDWR Biologist if necessary. Circle one category below based on definitions contained in the instructions.

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

Primary habitat (list species) D 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/D	Primary/S	Secondary/ D	Secondary/S	Incidental/D	Incidental/S	None
Rating	1H	.9 H	.8 H	.7 M	.5 M	.3 L	0 L

1d. Habitat for Species of Concern to the State of Utah

This field assesses documented or suspected use of the wetland by Species of Concern to the State of Utah. Refer to the State species of concern information in the UT-CPA-52. Seek assistance from NRCS or UDWR Biologist if necessary. Circle one category below based on definitions contained in the instructions.

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

Primary habitat (list species) D 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/D	Primary/S	Secondary/ D	Secondary/S	Incidental/D	Incidental/S	None
Rating	1H	.9 H	.8 H	.7 M	.5 M	.3 L	0 L

1e. General Wildlife Habitat
This field assesses general wildlife habitat conditions in the wetland.

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

Disturbance Level (1a)	L			M			H		
Plant Community (1b)	H	M	L	H	M	L	H	M	L
Rating	1H	.9H	.7M	.8H	.6M	.3L	.6M	.3L	.2L

Function 2: Short and Long Term Surface Water Storage

This field assesses the potential of the wetland to capture and hold surface water originating from inundation, precipitation, upland surface (sheet flow) or subsurface (groundwater flow).

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

Function 3: Sediment/Nutrient/Toxicant Retention and Removal

This field assesses the ability of the wetland to retain and capture sediments, nutrients and toxicants.

This function applies to wetlands which could receive excess sediments, nutrients or toxicants through influx of surface or groundwater or direct input. If wetland is not 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 wetland	Wetland 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.				Wetland 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** Wetland 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 wetland, 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

Depressional/Mineral Flat/Slope Wetland Functional Assessment Rating

Function Variables	Actual or Estimated Functional Points/Rating[1]	Possible Functional Points[2]
1b. Plant Community Composition		1
1c. Listed/Proposed T&E Species Habitat		1
1d. UT Species of Concern Habitat		1
1e. General Wildlife Habitat		1
2. Short and Long Term Surface Water Storage		1
3. Sediment/Nutrient/Toxicant Removal		1
Totals:		
Total Functional Points (Sum of Actual Functional Points/Possible Functional Points)		

[1] Circle Actual if assessing wetland prior to impact. Circle Estimated if assessing wetland after impact.

[2] If functional variables are not applicable (NA) to the wetland, enter NA in the Possible Functional Points box and do not use to calculate the Total Possible Functional Points.

Lacustrine Fringe Wetland Functional Assessment

Function 1: Maintenance of Characteristic Plant and Animal Community

1a. Level of Disturbance
This field assesses the level of disturbance in the wetland and surrounding area.

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

	Land Use within 600' Buffer Area around Wetland		
Conditions within Wetland	Land managed in predominantly natural state; is not grazed, hayed, landscaped, or otherwise converted from natural vegetation; 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.
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
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
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.			

1b. Plant Community Composition

This field assesses the plant community within the wetland. See Appendix B for lists of native and non-native or non-wetland plants. Refer to Wetland Delineation Data Form Vegetation Section to answer the questions and complete the matrix below.

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 in the wetland dominated by native wetland vegetation?
High ≥ 80%, Moderate 79-60%, Low < 60%

iii. What is the ratio of native wetland plants to non-native or non-wetland plants observed in the wetland?
High ≥ 0.80, Moderate 0.79-0.60, Low < 0.60

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	1 H	.9 H	.8 H	.7 M	.6 M	.5 M	.4 M	.3 L	.2 L	.9 H	.8 H	.7 M	.6 M	.5 M	.4 M	.3 L	.2 L	.1 L
Comments																		

1c. Habitat for Federally Listed or Proposed Threatened or Endangered Plants or Animals

This field assesses documented or suspected use of the wetland by federally listed or proposed threatened or endangered plants or animals. Refer to the T&E information in the UT-CPA-52. Seek assistance from NRCS or UDWR Biologist if necessary. Circle one category below based on definitions contained in the instructions.

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

Primary habitat (list species) D 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/D	Primary/S	Secondary/ D	Secondary/S	Incidental/D	Incidental/S	None
Rating	1H	.9 H	.8 H	.7 M	.5 M	.3 L	0 L

1d. Habitat for Species of Concern to the State of Utah

This field assesses documented or suspected use of the wetland by Species of Concern to the State of Utah. Refer to the State species of concern information in the UT-CPA-52. Seek assistance from NRCS or UDWR Biologist if necessary. Circle one category below based on definitions contained in the instructions.

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

Primary habitat (list species) D 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/D	Primary/S	Secondary/ D	Secondary/S	Incidental/D	Incidental/S	None
Rating	1H	.9 H	.8 H	.7 M	.5 M	.3 L	0 L

1e. General Wildlife Habitat
This field assesses general wildlife habitat conditions in the wetland.

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

Disturbance Level (1a)	L			M			H		
Plant Community (1b)	H	M	L	H	M	L	H	M	L
Rating	1H	.9H	.7M	.8H	.6M	.3L	.6M	.3L	.2L

1f. General Fish/Aquatic Habitat
This field assesses general fish and aquatic habitat in the wetland.

Assess this function if the wetland is used by fish or the existing situation is "correctable" such that the wetland could be used by fish [i.e., fish use is precluded by perched culvert or other barrier, etc.]. If the wetland 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.

i. Habitat Quality
Refer to the procedure instructions for further definitions of these terms. Circle appropriate wetland attributes in matrix to arrive at the quality rating (H = high, M = moderate, or L = low).

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

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 wetland	Modified Habitat Quality (ii)		
	H	M	L
Native fish	1 H	.8H	.6 M
Introduced fish*	.5 M	.4 M	.3 L
No fish	.3 L	.2 L	.1 L
Note: reduce the score by .1 if the wetland has carp present.			

.9H	.7M	.5M	.4M	.3L	.2L	.1L	0L

Function 2: Short and Long Term Surface Water Storage

This field assesses the potential of the wetland to capture and hold surface water originating from inundation, precipitation, upland surface (sheet flow) or subsurface (groundwater flow).

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

Function 3: Sediment/Nutrient/Toxicant Retention and Removal

This field assesses the ability of the wetland to retain and capture sediments, nutrients and toxicants.

This function applies to wetlands which could receive excess sediments, nutrients or toxicants through influx of surface or groundwater or direct input. If wetland is not 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 wetland	Wetland 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.				Wetland 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** Wetland 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 wetland, 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

Function 4: Sediment/Shoreline Stabilization

This field assesses the ability of the wetland to dissipate flow or wave energy in order to reduce erosion. This applies to riverine and lacustrine wetlands only.

Applies only if wetland occurs on or within the banks of a river, stream, or other natural (vegetated swale) or man-made drainage, or on the shoreline of a standing water body, which is subject to wave action. If 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 wetland, 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

Lacustrine Fringe Wetland Functional Assessment Rating

Function Variables	Actual or Estimated Functional Points/Rating[3]	Possible Functional Points[4]
1b. Plant Community Composition		1
1c. Listed/Proposed T&E Species Habitat		1
1d. UT Species of Concern Habitat		1
1e. General Wildlife Habitat		1
1f. General Fish/Aquatic Habitat		1
2. Short and Long Term Surface Water Storage		1
3. Sediment/Nutrient/Toxicant Removal		1
4. Sediment/Shoreline Stabilization		1
Totals:		
Total Functional Points (Sum of Actual Functional Points/Possible Functional Points)		

[3] Circle Actual if assessing wetland prior to impact. Circle Estimated if assessing wetland after impact.

[4] If functional variables are not applicable (NA) to the wetland, enter NA in the Possible Functional Points box and do not use to calculate the Total Possible Functional Points.

Riverine Wetland Functional Assessment

Function 1: Maintenance of Characteristic Plant and Animal Community

1a. Level of Disturbance
This field assesses the level of disturbance in the wetland and surrounding area.

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

	Land Use within 600' Buffer Area around Wetland		
Conditions within Wetland	Land managed in predominantly natural state; is not grazed, hayed, landscaped, or otherwise converted from natural vegetation; 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.
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
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
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.			

1b. Plant Community Composition

This field assesses the plant community within the wetland. See Appendix B for lists of native and non-native or non-wetland plants. Refer to Wetland Delineation Data Form Vegetation Section to answer the questions and complete the matrix below. See procedure instructions 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 in the wetland dominated by native wetland vegetation?
High ≥ 80%, Moderate 79-60%, Low < 60%

iii. What is the ratio of native wetland plants to non-native or non-wetland plants observed in the wetland?
High ≥ 0.80, Moderate 0.79-0.60, Low < 0.60

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	1 H	.9 H	.8 H	.7 M	.6 M	.5 M	.4 M	.3 L	.2 L	.9 H	.8 H	.7 M	.6 M	.5 M	.4 M	.3 L	.2 L	.1 L
Comments																		

1c. Habitat for Federally Listed or Proposed Threatened or Endangered Plants or Animals

This field assesses documented or suspected use of the wetland by federally listed or proposed threatened or endangered plants or animals. Refer to the T&E Help Sheet Procedure in the UT-CPA-52. Seek assistance from NRCS or UDWR Biologist if necessary. Circle one category below based on definitions contained in the instructions.

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

Primary habitat (list species) D 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/D	Primary/S	Secondary/ D	Secondary/S	Incidental/D	Incidental/S	None
Rating	1H	.9 H	.8 H	.7 M	.5 M	.3 L	0 L

1d. Habitat for Species of Concern to the State of Utah

This field assesses documented or suspected use of the wetland by Species of Concern to the State of Utah. Refer to the T&E Help Sheet Procedure in the UT-CPA-52. Seek assistance from NRCS or UDWR Biologist if necessary. Circle one category below based on definitions contained in the instructions.

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

Primary habitat (list species) D 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/D	Primary/S	Secondary/ D	Secondary/S	Incidental/D	Incidental/S	None
Rating	1H	.9 H	.8 H	.7 M	.5 M	.3 L	0 L

1e. General Wildlife Habitat
This field assesses general wildlife habitat conditions in the wetland.

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

Disturbance Level (1a)	L			M			H		
Plant Community (1b)	H	M	L	H	M	L	H	M	L
Rating	1H	.9H	.7M	.8H	.6M	.3L	.6M	.3L	.2L

1f. General Fish/Aquatic Habitat
This field assesses general fish and aquatic habitat in the wetland.

Assess this function if the wetland is used by fish or the existing situation is "correctable" such that the wetland could be used by fish [i.e., fish use is precluded by perched culvert or other barrier, etc.]. If the wetland 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.

i. Habitat Quality
Refer to the procedure instructions for further definitions of these terms. Circle appropriate wetland attributes in matrix to arrive at the quality rating (H = high, M = moderate, or L = low).

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

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 wetland	Modified Habitat Quality (ii)		
	H	M	L
Native fish	1 H	.8H	.6 M
Introduced fish*	.5 M	.4 M	.3 L
No fish	.3 L	.2 L	.1 L
Note: reduce the score by .1 if the wetland has carp present.			

.9H	.7M	.5M	.4M	.3L	.2L	.1L	0L

Function 2: Flood Attenuation

This field assesses the capability of the wetland to slow in channel or over bank flow during high water/flood events. This applies to riverine wetlands only.

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

*See procedure instructions 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 wetland. Yes No

Describe:

Function 3: Sediment/Nutrient/Toxicant Retention and Removal

This field assesses the ability of the wetland to retain and capture sediments, nutrients and toxicants.

This function applies to wetlands which could receive excess sediments, nutrients or toxicants through influx of surface or groundwater or direct input. If wetland is not 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 wetland	Wetland 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.				Wetland 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** Wetland 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 wetland, 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

Function 4: Sediment/Shoreline Stabilization

This field assesses the ability of the wetland to dissipate flow or wave energy in order to reduce erosion. This applies to riverine and lacustrine wetlands only.

Applies only if wetland occurs on or within the banks of a river, stream, or other natural (vegetated swale) or man-made drainage, or on the shoreline of a standing water body, which is subject to wave action. If 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 wetland, 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

Riverine Wetland Functional Assessment Rating

Function Variables	Actual or Estimated Functional Points [5]	Possible Functional Points[6]
1b. Plant Community Composition		1
1c. Listed/Proposed T&E Species Habitat		1
1d. UT Species of Concern Habitat		1
1e. General Wildlife Habitat		1
1f. General Fish/Aquatic Habitat		1
2. Flood Attenuation		1
3. Sediment/Nutrient/Toxicant Removal		1
4. Sediment/Shoreline Stabilization		1
Totals:		
Total Functional Points (Sum of Actual Functional Points/Possible Functional Points)		

[5] Circle Actual if assessing wetland prior to impact. Circle Estimated if assessing wetland after impact.
[6] If functional variables are not applicable (NA) to the wetland, enter NA in the Possible Functional Points box and do not use to calculate the Total Possible Functional Points.

APPENDIX B.

PLANT COMMUNITY COMPOSITION

Native and Non-native/Non-wetland Plant Lists from Reference Sites

Depressional/Mineral Flat/Slope Plants Lists based on:

Keate, Nancy. 2004. Great Basin Slope and Depressional Wetlands in Utah by Subclass. Utah Division of Wildlife Resources, Salt Lake City, UT

Keate, Nancy. 2004. Rocky Mountain/High Plateau Slope and Depressional Wetlands in Utah by Subclass. Utah Division of Wildlife Resources, Salt Lake City, UT

Riverine/Lacustrine Plant Lists based on:

Padgett, W.G., A.P. Youngblood and A.H. Winward. 1989. Riparian Community Type Classification of Utah and Southeastern Idaho. USDA Forest Service Intermountain Region R4-Ecol-89-01. Fort Collins, CO.

Key to Plant Lists:

1a. – Wetland Classification is Depressional, Mineral Flat, or Slope…….2
1b. – Wetland Classification is Riverine or Lacustrine Fringe……3

2a. – Wetland is located in the Central Basin and Range, Mojave Basin and Range, Wyoming Basin, or Northern Basin and Range Ecoregion…..…….4
2b. – Wetland is located in the Wasatch and Uinta Mountains, Colorado Plateaus, or Southern Rockies Ecoregion……..5

3a. – Elevation of wetland is 2460 – 4900 feet…….…….…….List C1, page 42
3b. - Elevation of wetland is 4900 – 8200 feet …….……..List C2, page 42
3c. - Elevation of wetland is 8200 – 11,500 feet…….List C3, page 43
3d. - Elevation of wetland is > 11,500 feet ……...…….List C4, page 43

4a. - Wetland classification is Depressional or Mineral Flat…..……List A1., pages 34-35
4b. – Wetland classification is Slope……..…….List A2., pages 36-37

5a. - Wetland classification is Depressional or Mineral Flat……...List B1., pages 38-39
5b. – Wetland classification is Slope……...……List B2., pages 40-41

Great Basin Depressional, Mineral Flat, and Slope Wetland Plant Lists

The plant lists below apply to wetlands in the Central Basin and Range, Mojave Basin and Range, Wyoming Basin, and Northern Basin and Range Ecoregions.

List A1. - Great Basin Depressional and Mineral Flat Wetlands

Native plant list

Agropyron trachycaulum	slender wheatgrass
Alisma plantago-aquatica	water plantain
Allenrolfea occidentalis	iodine bush
Aster chilensis	common California daisy
Asceplias speciosa	showy milkweed
Carex praegracilis	clustered field sedge
Carex nebrascensis	Nebraska sedge
Cordylanthus maritimus	alkali birdsbeak
Distichlis stricta	desert salt grass
Eleocharis palustris	common spikerush
Elymus triticoides	creeping wildrye
Iris missouriensis	Missouri iris
Juncus arcticus	Arctic rush, wiregrass
Juncus balticus	Baltic rush, wiregrass
Mentha arvensis	field mint
Nitrophila occidentalis	western boraxweed
Poa palustris	fowl bluegrass
Potamogeton spp.	pondweed
Potentilla anserina	common silverweed
Puccinellia nuttalliana	Nuttall's alkaligrass
Ranunculus spp.	buttercup
Sagitteria cuneata	arrowleaf
Sarcobatus vermiculatus	greasewood
Salicornia europea / utahensis	annual and Utah samphire
Scirpus acutus	hardstem bulrush
Scirpus americanus	Olney's threesquare
Scirpus maritimus	alkali bulrush
Senecio hydrophilus	water groundsel
Solidago missouriensis	goldenrod
Sporobolus airoides	alkali sacaton
Suaeda depressa	broom seepweed
Triglochin maritime / palustris	maritime and marsh arrowgrass

List A1. - Great Basin Depressional and Mineral Flat Wetlands (continued)

Non-native and/or non-wetland plant list

Agrostis stolonifera	redtop bentgrass
Bromus tectorum	cheatgrass
Hordeum jubatum	foxtail barley
Hordeum murinum	rabbit barley
Kochia scoparia	summer cypress
Lythrum salicaria	purple loosestrife
Nasturtium officinale	watercress
Phragmites australis	common reed
Polypogon monspeliensis	rabbitfoot grass
Puccinellia distans	weeping alkaligrass
Rumex crispus	curley dock
Trifolium repens	white clover

List A2. - Great Basin Slope Wetlands

Native plant list

Agropyron trachycaulum	slender wheatgrass
Allenrolfea occidentalis	iodine bush
Carex lanuginose	wooley sedge
Carex microptera	small wing sedge
Carex nebrascensis	Nebraska sedge
Carex praegracilis	blackcreeper or clustered field sedge
Carex simulate	short beaked sedge
Centaurium exaltatum	Great Basin centaury
Cicuta douglasii	water hemlock
Comandra umbelleta	bastard toadflax
Cordylanthus maritimus	alkali birdsbeak
Distichlis stricta	desert salt grass
Eleocharis palustris	common spikerush
Elymus triticoides	beardless or creeping wild rye
Epilobium ciliatum	northern willowherb
Iris missouriensis	Missouri iris
Juncus arcticus	wiregrass
Juncus ensifolious	swordleaf rush
Juncus torreyi	Torrey's rush
Lycopus asper	rough bungleweed
Mentha arvense	field mint
Mimulus guttatus	common monkey flower
Nitrophilia occidentalis	western boraxweed or niterwort
Potamogeton spp	pondweed
Potentilla anserine	common silverweed
Ranunculus scleleratus/cymbalaria	blister and marsh buttercup
Rosa woodsii	Wood's rose
Sagitteria cuneata	arrowleaf
Salicornia europea/ utahensis	annual and Utah samphire
Scirpus acutus	hardstem bulrush
Scirpus americanus	Olney's threesquare
Scirpus maritimus	alkali bulrush
Senecio hydrophilus	water groundsel
Sium suave	hemlock water parsnip
Solidago missouriensis	Missouri goldenrod
Sphenopholis obtusato	prairie wedgegrass
Sporobolus airoides	alkali sacaton
Suaeda depressa	broom seepweed
Triglochin maritime	annual samphire
Veronica americana	American brookline

List A2. - Great Basin Slope Wetlands (continued)

Non-native and/or non-wetland plant list

Agropyron repens	quackgrass
Agrostis alba	redtop
Agrostis stolonifera	redtop bentgrass
Arctium minus	
Bassia hyssopifolia	five-hook bassia
Berula erecta	cut-leaf water parsnip
Bidens cernua	nodding beggar's-ticks
Bromus tectorum	cheatgrass
Chenipodium spp	goosefoot
Circium spp	thistle
Conium maculatum	poison hemlock
Dipsacus sylvestris	teasel
Elaeagnus angustifolia	Russian olive
Festuca arundinacea, pratensis	Kentucky and meadow fescue
Helianthus annuus	common sunflower
Hordeum jubatum, glaucum, murinum	
Kochia scoparia	summer cypress
Lactuca serriola	prickly lettuce
Lythrum salicaria	purple loosestrife
Melilotus alba, officinalis	white and yellow sweetclover
Nasturtium offinale	watercress
Phleum pratense	timothy
Phragmites australis	common reed
Poa pratensis, compressa	Kentucky and Canada bluegrass
Polypogon monspeliensis, interruptis	rabbitfoot grass
Puccinellia distans	weeping alkaligrass
Rumex crispus	curly dock
Salix babylonica, fragilis	weeping and crack willow
Salsola kali	Russian thistle
Solanum dulcamara	climbing nightshade
Sonchus spp	sowthistle
Stachys palustris	marsh hedgenettle
Tamarisk spp.	salt cedar
Taraxacum officinale	common dandelion
Thlaspi arvense	field penny-cress
Trifolium repens, fragiferum, pretense	white, strawberry, and red clover
Urtica dioica	stinging nettle

Rocky Mountain Depressional and Slope Wetland Plant Lists

The wetland plant lists below apply to wetlands in the Wasatch and Uinta Mountains, Colorado Plateaus, and Southern Rockies Ecoregions.

List B1. - Rocky Mountain Depressional native wetland plants

Sedges/Rushes

Carex aquatilis	water sedge
Carex aurea	golden sedge
Carex canenscens	pale sedge
Carex eleocharis	narrowleaf sedge
Carex ebena	ebony sedge
Carex illota	sheep sedge
Carex lanuginosa	woolly sedge
Carex lasiocarpa	slender sedge
Carex limosa	mud sedge
Carex microptera	small wing sedge
Carex muricata	boreal sedge
Carex nebrascensis	Nebraska sedge
Carex pachystachya	Chamisso's sedge
Carex paupercula	poor sedge
Carex rostrata or C. utriculata	beaked sedge
Carex saxatilis	russet sedge
Carex simulata	short-beaked or lookalike sedge
Carex vescaria	blister sedge
Juncus arcticus	wiregrass
Juncus drummondii	Drummond's rush
Juncus longistylis	longstyle spikerush
Juncus nevadensis	Nevada spikerush
Eleocharis palustris	common spikerush
Eleocharis rostellata	Torrey's spikerush
Eleocharis acicularis	slender spikerush
Scirpus acutus	hardstem bulrush

Graminoids

Agrostis scabra	ticklegrass
Alopecurus aequalis	shortawn foxtail
Bromus ciliatus	fringed brome
Calamagrostis canadensis	bluejoint reedgrass
Calamagrostis neglecta or C. inexpansa	slimstem or northern reedgrass
Danthonia intermedia	timber oatgrass
Deschampsia caespitosa	tufted hairgrass
Glyceria borealis	northern mannagrass
Glyceria stricta	fowl mannagrass
Hierochloe odorata	sweetgrass or vanilla grass
Phleum alpinus	alpine timothy
Poa leptocoma or P. reflexa	bog bluegrass or nodding bluegrass
Trisetum wolfii	Wolf's trisetum

Shrubs

Salix wolfii / planifolia/ geyeriana / boothii	Wolf's, planeleaf, Geyer's, Booth's willow
Potentilla fruticosa / palustris	shrubby cinquefoil / marsh cinquefoil
Vaccinium uliginosum v. occidentale	western huckleberry

List B1. - Rocky Mountain Depressional native wetland plants (continued)

Forbs

Aquilegia spp.	columbine
Aconitum columbianum	monkshood
Aster integrifolius	thickstem aster
Antennaria corymbosa	Plains pussytoes
Achillea millefolium	milfoil yarrow
Anemone patens	Pasque flower, wild crocus
Alisma plantago-aquatica	water plantain
Caltha leptosepala	marsh marigold
Dowingia laeta	downingia
Equisteum arvense	meadow horsetail
Epilobium halleanum	Hall's willowherb
Epilobium hornemannii	Hornemann's willowherb
Erigeron speciosus	Oregon daisy
Erigeron peregrinus	strange daisy
Fragaria vesca	stravling strawberry
Geum macrophyllum	large-leaved avens
Galium bifolium	twinleaf bedstraw
Gentiana affinis / algida / calycosa	prostrate – Rocky Mountain, Arctic, explorer, moss gentian
Helenium hoopesii	orange sneezeweed
Mentha arvensis	field mint
Marsilea vestita	pepperwort, water clover
Mimulus guttatus	common monkey flower
Nuphar polysepalum	yellow pondlily, spatterdock
Polygonum amphibium	water smartweed
Polemonium caeruleum	blue or western Jacob's ladder
Polygonum viviparum	alpine bistort
Pedicularis groenlandica	elephanthead
Polygonum bistortoides	American bistort
Potamogeton gramineus / nodosus/ natans	grass, longleaf, floating pondweed
Pedicularis racemosa	leafy loosewort
Porterella carnuloosa	fleshy porterella
Rorippa carvipes	common yellowcress
Ranunculus sceleratus/ aquatilis	blister buttercup, water crowsfoot
Sium suave	hemlock water parsnip
Swertia perennis	felwort
Sedum rhodanthum	pink stonecrop
Sagittaria cunenata	arrowleaf
Sparganium spp.	bur-reed
Stellaria calycantha, longifolia, obtuse, umbellate	calyx, long-leaved, blunt, umbellate starwort
Senecio spp.	grounsel
Utricularis vulgaris	common bladderwort
Vicia americana	American vetch
Veronica wormskjoldii, peregrine, americana	speedwell

List B2. - Rocky Mountain Slope native wetland plants

Sedges/Rushes

Carex aquatilis	water sedge
Carex aurea	golden sedge
Carex buxbaumii	Buxbaum's sedge
Carex canenscens	pale sedge
Carex eleocharis	narrowleaf sedge
Carex ebena	ebony sedge
Carex illota	sheep sedge
Carex lanuginosa	woolly sedge
Carex lasiocarpa	slender sedge
Carex lenticularis	lens sedge
Carex limosa	mud sedge
Carex microptera	small wing sedge
Carex muricata	boreal sedge
Carex nebrascensis	Nebraska sedge
Carex pachystachya	Chamisso's sedge
Carex paupercula	poor sedge
Carex rostrata or *C. utricularia*	beaked sedge
Carex saxatilis	russet sedge
Carex simulata	short beaked or lookalike sedge
Carex vescaria	blister sedge
Eleocharis palustris	common spikerush
Eleocharis pauciflora	few flowered spikerush
Eleocharis rostellata	Torrey's spikerush
Eleocharis acicularis	slender spikerush
Eriophorum polystachion	cottongrass
Juncus arcticus	wiregrass
Juncus bufonius	toad rush
Juncus drummondii	Drummond's rush
Juncus ensifolius	swordleaf rush
Jincus filiformis	filiform rush
Juncus halli	Hall's rush
Juncus longistylis	longstyle rush
Juncus nevadensis	Nevada rush
Luzula campestris	hairy wood rush
Luzula spicata	spike woodrush
Scirpus acutus	hardstem bulrush

Graminoids

Agrostis scabra	ticklegrass
Calamagrostis canadensis	bluejoint reedgrass
Calamagrostis neglecta or *inexpansa*	slim stem or northern reedgrass
Danthonia intermedia	timber oatgrass
Deschampsia caespitosa	tufted hairgrass
Hierochloe odorata	sweetgrass or vanilla grass
Hordeum brachyantherum	meadow barley
Phleum alpinus	alpine timothy
Trisetum wolfii	Wolf's trisetum

List B2. - Rocky Mountain Slope native wetland plants (continued)

Shrubs

Betula glandulosa	glandular or bog birch
Potentilla fruticosa / palustris	shrubby cinquefoil / marsh cinquefoil
Salix wolfii / planifolia/ geyeriana / boothii	Wolf's, planeleaf, Geyer's, Booth's willow
Vaccinium myrtillus or *scoparium*	dwarf bilberry / grouseberry

Forbs

Antennaria corymbosa, umbrinella	Plains pussytoes, mountain pussytoes
Achillea millefolium	milfoil yarrow
Anemone patens	Pasque flower, wild crocus
Caltha leptosepala	marsh marigold
Equisteum arvense	meadow horsetail
Erigeron speciosus	strange daisy
Fragaria vesca	stravling strawberry
Geum aleppicum	erect avens
Geum macrophyllum	large leaved avens
Galium bifolium	twinleaf bedstraw
Gentiana algida / calycosa / prostrate	Artic, explorer, moss gentian
Geranium richardsonii	Richardson's geranium
Habenaria dilata, sparsiflora, saccata	white, Watson's, slender bog orchid
Ligusticum tenuifolium	small or slenderleaf ligusticum
Mentha arvensis	field mint
Mertensia arizonica, ciliate	tall, mountain bulebells
Polygonum amphibium	water smartweed
Polygonum viviparum	alpine bistort
Pedicularis groenlandica	elephanthead
Polygonum bistortoides	American bistort
Potamogeton gramineus/nodosus/natans	grass, longleaf, floating pondweed
Potentilla gracilis, ovina, diversifolia	slender, sheep, wedgeleaf cinquefoil
Rorippa curvipes	yellow pondlily, spatterdock
Sparganium minimum	small bur reed
Sedum rhodanthum	pink stonecrop
Senecio spp.	groundsel
Sisyrinchium idahoense	Idaho blue eyed grass
Swertia perennis	felwort
Thalictrum fendleri	Fendler's meadowrue
Veratrum californicum	false hellebore, skunk cabbage
Veronica wormskjoldii, peregrine, americana	speedwell

List C1.
Native Riverine and Lacustrine Plants at elevations between 2460 – 4900 feet

Trees

Acer negundo	Box elder
Betula occidentalis	spring birch
Crataegus douglasii	Douglas' hawthorn
Populus acuminata	lance-leaf cottonwood
Populus fremontii	Fremont cottonwood
Prunus virginiana	chokecherry

Shrubs

Cornus sericea	red-osier dogwood
Ribes aureum	golden currant
Rosa woodsi	Wood's rose
Salix sp.	willow

Grasses, rushes, sedges and forbs

Carex sp.	sedges
Distichlis spicata	saltgrass
Eleocharis sp.	spikerush
Equisetum sp.	horsetail
Juncus sp.	rushes

List C2.
Native Riverine and Lacustrine Plants at elevations between 4900 – 8200 feet

Trees

Acer negundo	Box elder
Alnus incana	speckled alder
Betula occidentalis	spring birch
Crataegus douglasii	Douglas' hawthorn
Populus acuminata	lance-leaf cottonwood
Populus angustifolia	narrow-leaf cottonwood

Shrubs

Cornus sericea	red-osier dogwood
Potentilla fruiticosa	shrubby cinquefoil
Prunus virginiana	chokecherry
Salix sp.	willow
Shepherdia argentea	silver buffaloberry

Grasses, rushes, sedges, and forbs

Calamgrostis sp.	reedgrass
Carex sp.	sedges
Deschampsia cespitosa	tufted hairgrass
Eleocharis sp.	spikerush
Equisetum sp.	horsetail
Juncus sp.	rushes

List C3.
Native Riverine and Lacustrine Plants at elevations between 8200 – 11, 500 feet

Trees

Alnus incana	speckled alder
Betula occidentalis	spring birch

Shrubs

Artemisia cana	silver sagebrush
Cornus sericea	red-osier dogwood
Potentilla fruiticosa	shrubby cinquefoil
Salix sp.	willow

Grasses, rushes, sedges and forbs

Carex sp.	sedges
Deschampsia cespitosa	tufted hairgrass

List C4.
Native Riverine and Lacustrine Plants at elevations > 11,500 feet

Shrubs

Salix sp.	willow

Grasses, rushes, sedges and forbs

Carex sp.	sedges
Deschampsia cespitosa	tufted hairgrass