

Wetland Enhancement

Conservation Practice WV Job Sheet

Code 659



DEFINITION

The modification of an existing wetland that targets specific functions or values; possibly at the expense of other functions or values.

PURPOSE

This document is intended to be used as a tool to assist in the planning of wetland enhancements; and provide guidance to favor specific wetland functions and species through:

- hydrologic enhancement (depth, duration, and season of inundation; and/or duration and season of soil saturation).
- vegetative enhancement (including the elimination or removal of undesired species, and/or seeding or planting of desired species).

CONDITIONS WHERE PRACTICE APPLIES

This practice applies on any degraded or existing wetland where the objective is to specifically enhance a selected wetland value(s).

Wetlands may be either enhanced by altering the hydrology of the wetland or enhancing the vegetative community associated with the wetland or both.

VEGETATIVE ENHANCEMENT

Wetland plant communities may be enhanced by supplementing the existing communities or adding additional plant communities to enhance specific functions of the wetland.

This may be accomplished by planting, transplanting, sod mats, donor soil, or other methods. For trees and shrubs suitable for establishment, the establishment methods, and the operation and maintenance required refer to conservation practice standard (612) Tree/Shrub Establishment.

Planted vegetation should mimic the natural community. Therefore, vegetation should be planted as randomly as possible to mimic a more natural setting. Native plants that are endemic to the area should be utilized wherever feasible. They should be compatible with the planned uses and site characteristics.

HYDROLOGIC ENHANCEMENT

Enhancement of the hydrology may be achieved through a variety of methods including the alteration of the landscape to increase the timing, amounts or duration of water levels.

Macrotopographical Depression Basins (MDB's)

Undisturbed wetland systems consist of complexes that contain a wide variety of topographic relief from extremely shallow areas with minor ridges to deeper wetland habitats that include some upland characteristics (macrotopography).

Macrotopographic features are wetland "ridge and swale" complexes or depressional basins that occur on terraces and in floodplains. The basin areas are normally from 0.1 acre to 5 acres in size with depths running from 0 - 36 inches, depending on the landscape position. These types of wetlands can be found in a multitude of shapes ranging

from simple circular basins, to complex amoeba-like outlines, to meandering scours. Ridges and mounds make up the "upland" component of macrotopographic features that normally do not exceed 30" in height. Together, the ridge and swale features form ephemeral wetlands that hold water from only a few weeks to several months during the year.

The development of macrotopographic complexity creates a diversity of water levels which can improve water quality, provide flood storage, and promote the development of a more diverse vegetative community.

Low Embankments or Dikes

Wetlands may be enhanced by creation of a low dam or dike across natural drainage ways. These structures shall only be installed where there is no risk to life or property.

Criteria for the design of low embankments will differ depending on factors such as watershed size, drainage area slope, and soil types. Site specific designs must be completed on an individual basis. Contact NRCS prior to implementing this practice to obtain a design.

Level Ditches

Level ditches or "duck ditches" are intended to mimic abandoned stream channels and designed to provide habitat for waterfowl and other wildlife. While level ditches are designed to be very random and variable, some general criteria apply to their creation:

- appropriate in areas having a high water table and in areas where the natural slope does not exceed 2% (e.g. floodplains);
- uncompacted but generally trapezoidal in shape;
- not less than 100 feet in length, 25 feet min. width and not to exceed 3 feet in depth. Varying depths and widths are desirable;
- side slopes are not steeper than 3 to 1;
- constructed at right angles to the natural drainage with undisturbed blocks of land separating the ditch from the natural drainage (i.e. no outlet);
- fashioned in a random meander or zigzag pattern at 20-30 degree angles every 100 feet;
- patterns should be random to mimic an abandoned stream channel; and
- randomly spaced at a minimum distance of 50 feet and a maximum distance of 200 feet.

Combining level ditches and macrotopographical depression basins may be suitable depending on the project goals and objectives.

CONSIDERATIONS FOR ESTABLISHMENT

Many factors should be considered when applying this practice. Most importantly, permits may be required prior to implementing this practice from other Federal and State Agencies including but not limited to:

US Army Corps of Engineers
Pittsburgh District
William S. Moorhead Federal Building
1000 Liberty Avenue
Pittsburgh, PA 15222
Phone: (412) 395-7154

OR

US Army Corps of Engineers
Huntington District
WV Permits Section
502 Eighth Street
Huntington, WV 25701
Phone: (304) 399-5710

WV Division of Environmental Protection
Director Division of Water and Waste Management
601 - 57th Street
Charleston, WV 25304
Phone: (304) 926-0495

WV Public Land Corporation
State Capitol Complex
Building 3, Room 643
1900 Kanawha Blvd., East
Charleston, WV 25305-0665
Phone: (304) 558-3225

OPERATION AND MAINTENANCE

Actions should be carried out to insure that this practice functions as intended throughout its expected life. Contact NRCS for a specific Operation and Maintenance plan on a site specific basis or refer to the last page of this job sheet for more information.

Wetlands are dynamic communities that may require disturbance to maintain the desired composition. The use of fertilizers, mechanical treatments, pesticides and other chemicals to assure the desired wetland function shall not compromise the intended purpose.

The timing and level setting of any water control structures may require a separate schedule for the maintenance of desired hydrologic conditions and the management of vegetation and optimization for wildlife use.

Unwanted vegetation must be controlled including monitoring of noxious and invasive species by various chemical, mechanical or biological methods.

Removal of accumulated sediment may be required periodically to maintain the desired functions. A separate schedule specifying the depth of sediment accumulation allowed before removal is required and recommended methods of removal.

Contact NRCS for information regarding acceptable uses including the timing and intensities of these activities (e.g. grazing, haying and timber harvest). For wildlife habitat purposes, haying and grazing could be used for a wildlife/wetland management tool. Disturbance to ground nesting species should be minimized (March 15-July 15).

Specifications

Site-specific requirements are listed on the following pages of this job sheet. Specifications are prepared in accordance with the WV NRCS Field Office Technical Guide. Information in this job sheet is considered part of the conservation plan.

MACROTOPOGRAPHIC BASINS

The macrotopographic basins are described in abbreviated format as: shape/size/depth.

Where:

- 1) the shape is described below
- 2) the size is in acres
- 3) the depth is in feet

For example, a macrotopographic basin described as Oxbow / 1.5 / 0.5-1.0-2.0:

- 1) has shape #2 below,
- 2) is 1.5 acres in size, and
- 3) is composed of 3 depths (0.5ft, 1.0ft and 2.0ft)

BASIN SHAPE DESCRIPTION

Basins should be irregular in shape. Irregular shapes increase edge and provide additional cover for waterfowl and other wildlife utilizing the site.

1) Shape: **Oval**

Description: Generally circular or egg shaped

2) Shape: **Oxbow**

Description: Kidney shaped with 2 lobes

3) Shape: **Amoeba**

Description: Multiple lobes with random shape, high perimeter to surface area ratio

4) Shape: **Meander**

Description: This shape includes level ditches which mimic an abandoned stream channel meander



DEPTH DESCRIPTIONS

SECTION

When one (1) depth is indicated:

- the basin is primarily 1 depth

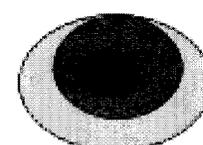
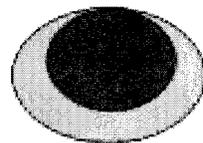
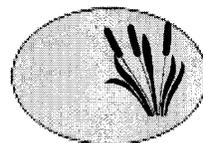
When two (2) depths are indicated:

- each depth composes approximately 50% of the area

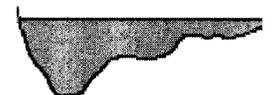
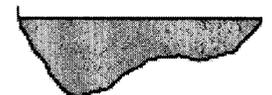
When three (3) depths are indicated the depths compose approximately:

- deepest depth = 20% of the area
- middle depth = 30% of the area
- shallowest depth = 50% of the area

AERIAL VIEW



CROSS



Wetland Enhancement – WV Job Sheet

Client:	Farm #:
Field(s):	Tract #:
Designed By:	Date:
Project Goals & Objectives:	
Targeted Wildlife Specie(s):	
Existing Wetland Type¹:	
WVWRAP:	Results Attached _____

Purpose (check all that apply)	
<input type="checkbox"/> Create macrodepressional basins within an existing wetland for waterfowl and other wildlife	<input type="checkbox"/> Create habitat for reptiles and amphibians (see also 646 Shallow Water Management)
<input type="checkbox"/> Creation of low embankments or dikes or similar structures for waterfowl and other wildlife	<input type="checkbox"/> Enhancement of wetland vegetation for waterfowl and other wildlife
<input type="checkbox"/> Enhancement of hydrology for waterfowl and other wildlife	<input type="checkbox"/> This enhancement is planned as part of the Wetland Reserve Program (WRP), Conservation Security Program (CSP) or other Farm Bill program

Existing Functions and Planned Enhancements (check all that apply)							
FUNCTION	ENHANCEMENT PLANNED	FUNCTION	ENHANCEMENT PLANNED	FUNCTION	ENHANCEMENT PLANNED	FUNCTION	ENHANCEMENT PLANNED
<input type="checkbox"/> Temporary surface water storage (flood storage)	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> Removal of imported elements and compounds	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> Soil water storage (aquifer and/or ground-water recharge)	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> Critical component of landscape complexity and diversity	<input type="checkbox"/> YES <input type="checkbox"/> NO
<input type="checkbox"/> Sediment retention	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> Connectivity (habitat or landscape)	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> Nutrient Cycling	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> Wildlife habitat	<input type="checkbox"/> YES <input type="checkbox"/> NO
OTHER FUNCTION (Specify):							ENHANCEMENT PLANNED <input type="checkbox"/> YES <input type="checkbox"/> NO

Low Embankments (preliminary planned quantities). These figures should not be used for final quantities. Refer to the final design(s) for specifics. Note: PERMITS MAY BE REQUIRED.

Field	Approximate Length (ft)	Approximate Height (ft)	Upstream Embankment Slope (ratio)	Downstream Embankment Slope (ratio)	Top Width (ft)	Drainage Area (ac)	Approximate Drainage Area Average Slope (%)	Control Structure Required ¹

¹ Enter information such as: rock facing of the embankment, water control structure, etc.

Macrotopographical Depression Basins (preliminary planned quantities). These figures should not be used for final quantities. Refer to the final design(s) for specifics. Note: PERMITS MAY BE REQUIRED.

Field No.	Basin Description ¹	Size ² (ac)	Number of Depth(s) ³	Depth(s) ⁴ (ft)	Approximate Amount of Area Each Depth Composes ⁵	Width(s) ⁶ (ft) Linear and Level Ditches only	Soil Type ⁷	Existing Water Table Depth(s) ⁸ (in)

¹ **Basin Description** – Identify the basic shape of the planned basin; **Oval, Oxbow, Amoeba, Meander or Level Ditch.**
² **Size** – Identify the size of the planned basin in acres.
³ **Number of Depths** – Identify the number of different depths planned within the basin.
⁴ **Depth(s)** – Identify the depth(s) of the planned basin in acres.
⁵ **Amount of Area Each Depth Composes**– Identify the approximate amount of area within each basin that a particular depth will occupy. (OPTIONAL)
⁶ **Width(s)** – For linear shapes and level ditches, identify the planned width(s) of each structure. All other shapes should be listed as **N/A.**
⁷ **Soil Type** – List the predominant soil type of the project area as shown in the local soil survey.
⁸ **Existing Water Table Depth(s)** – If known, identify the existing average water table depth before the project (e.g. 0-6 inches). Refer to the soil description in the local soil survey.

Vegetative Enhancement (Refer to 612 Tree and Shrub Establishment for information regarding establishment of woody vegetation)

Field	Acres	Vegetation Type ¹	Species ²	Herbaceous Only (Refer to the Tree and Shrub Establishment and/or Forest Site Preparation Job Sheet(s) for information regarding woody vegetation.)				
				Stock Type ³	Method ⁴	Planting Date	Average Spacing (ft)	Quantity
			1					
			2					
			3					
			4					
			5					
			6					
			1					
			2					
			3					
			4					
			5					
			6					

¹ **Vegetation Type** – Vegetation type should be identified as **herbaceous, woody or both.**
² **Species** - A minimum of three (3) species will be planned for enhancement of herbaceous wetlands. A minimum of six (6) species will be identified for enhancement of forested or shrub dominated wetlands. For methods, rates spacing and all other guidelines for establishment of trees and shrubs refer to (612) Tree and Shrub Establishment. For herbaceous vegetation refer to (314) Critical Area Seeding or (512) Pasture and Hayland Planting for establishment criteria. *No variety of tall fescue or reed canarygrass shall be used in conjunction with this practice.*
³ **Stock Type** – Identify the herbaceous stock type as; **tuber, seed, rhizome, transplant, donor soil, sod mats, cuttings, seedling or other** acceptable source. If other, identify in the “Additional Specifications” section of this document.
⁴ **Method** – Identify the method of herbaceous establishment as; **hand, mechanical or natural colonization.** For natural colonization, an existing seed source must be present within reasonable proximity.

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If needed, an aerial view, map or a sketch of the practice can be shown below. Other relevant information, complementary practices and measures, and additional specifications may be included.

Additional Specifications and Notes: (i.e. required permits or conditions, herbicide application, operation and maintenance specifics, etc.)

Questions regarding the establishment, operation or maintenance of this practice should be directed to:

at _____

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