3.7 Surface Drainage Reroutes

Wetlands targeted for restoration commonly contain surface ditching that disrupts their natural hydrology. This ditching can extend upslope and downslope of the restoration area, as well as onto neighboring lands. Discharge from ditching into the restoration area is not always desired (e.g. water quality concerns), and for these cases a reroute of the approaching drainage system can be implemented. Here, the wetland restoration area would need to have other sources of hydrology to support the restoration effort. This practice is not intended for stream channels and may require consulting or engineering oversight.

Drainage Reroute

GOALS

Relocate or realign a drainage system so that it no longer flows through or impacts the wetland restoration area

BENEFITS

Improved water quality

1. Identify & Stake Out New Drainage Path
2. Identify Soil Stockpile Location
3. Identify Staging and Access
4. Excavate Channel
5. Stabilize Site
6. Monitor for Success

DEFINITIONS

Ditch: Channel or swale constructed in the ground, intended primarily for drainage.

Stream: A stream has a channel that periodically or continuously contains moving water, has a defined bed, transports sediment, and has banks that serve to confine water at low to moderate flows.

Surface Drainage Reroute, Ryan Creehan, USFWS

Surface Drainage Reroute, Shayne Jaquith, TNC

Pre-Construction Planning

Drainage Channel Siting

A new drainage section should be as far as possible from the wetland restoration area to avoid unintended lateral drainage impacts. Avoid significant ground elevation rise, which can result in increased cut depths, lengths, and costs.

Drainage Channel Design

Identify dimensions of the new drainage segment based on cross sectional dimensions of upslope and downslope connection points to the existing drainage system. Establish upslope and downslope elevations to blend into the existing system, avoiding steep slopes. Match grades in the new segment to grades in the existing system.

Locate Underground Utilities

Mark locations of underground utilities in or adjacent to the excavation area.

Identify Disposal Area

Identify where the excavated soils will be disposed of in an upland location.

Identify Staging Location

Find an upland staging location for the temporary storage of excavated fill material and parking of equipment.

Identify Access Routes

Use of existing roads and trails without improvement is allowed. Temporary use of swamp mats is also allowed if removed within one growing season, provided their use meets the US Army Corps of Engineers General Permit conditions (see chapter 5).

Select a Contractor & Equipment

Choose a contractor with previous experience working in wetlands and low ground pressure equipment such as an excavator with wide tracks. Meet with the contractor to review project details including site access and staging location, the specifications for drainageway construction, and NNIS control/management procedures (see Invasive Species Control and Management). Plan work for dry field conditions.

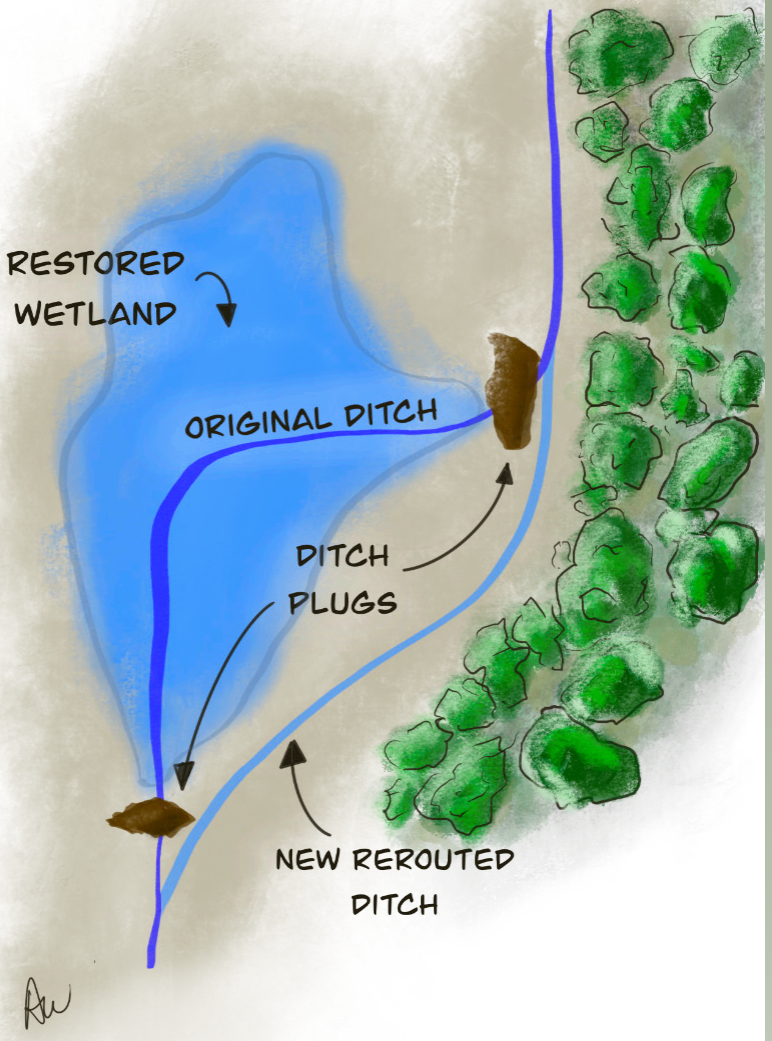
Construction Sequencing

1. Stake out limits of new drainage segment.
2. Excavate new drainage segment to match depth, width, and grade of upslope and downslope drainage connection. Do not make final connection with existing ditch system.
3. Securely stabilize new segment through appropriate erosion control measures. Secure the bed and walls of the channel with appropriate materials, and seed and mulch all disturbed soils (see Erosion Control).
4. Construct ditch plugs on abandoned portion of ditch upslope and downslope of wetland restoration area (see Ditch Plugs).
5. Connect new drainage segment into existing network after stabilization has been achieved.
6. Securely stabilize remainder of new segment through appropriate erosion control measures. Seed and mulch all disturbed soils. (see Erosion Control).
7. Proceed with restoration practices in area of abandoned segment (i.e. Ditch Plugs and/or Fill Drainage Ditches Practices).

Challenges and Solutions

- Construction costs: Hauling and disposing of excavated soil material can be expensive. Identifying nearby disposal sites is most economical.
- Maintaining wetland restoration area hydrology: It is important to understand the water inputs to the restoration area to make sure rerouting of a drainage does not starve the wetland of the hydrology needed for successful restoration.
- Controlling adverse impacts to upslope and downslope ditch property owners: If the subject ditch is not confined to the project property, leave 25' sections intact before the property line. This will allow a buffer to the neighboring property from any unanticipated impacts from the ditch rerouting.
- Erosion of the new drainage segment: Properly stabilize new channel segment before connecting into the existing network.
- Introduction of invasive species: If work crews are used, ask them to clean tools and boots, and to power-wash equipment before entering restoration site. Work with your contractor to minimize soil disturbance.

Drainage Reroute Example



Poorly executed surface water reroutes can lead to significant erosion problems, both upslope and downslope. In some cases, erosion risks may be too great to overcome, and a reroute should not be attempted.

Additional permitting may be required for the construction of new access roads or trails, for the stockpiling of soil in a wetland or wetland buffer, or for the addition of fill to a floodplain.

Complementary Practices: