

Getting the Most Out of Your Marsh

Restoration and Enhancement
Techniques to Improve Wildlife
Habitat on Your Property

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What's the Difference Between Restoration and Enhancement?

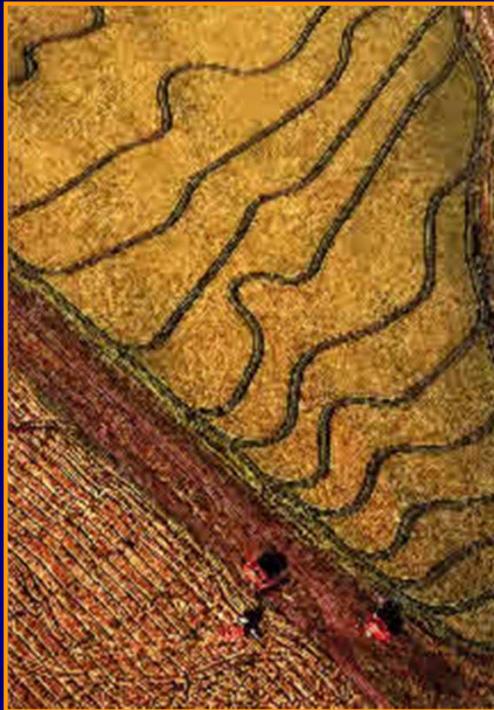


Wetland Enhancement



What's the Difference Between Restoration and Enhancement?

Ag Restoration



Common Types of Wetland Habitat Restorations

Semi-Permanent

Seasonal



Permanent



Permanent Wetlands

Pro's

- Provides brood habitat for locally nesting waterfowl
- Benefits many state/federally listed species and species of concern
- Provides thermal cover to wintering waterfowl
- Generally produces the least amount of mosquitoes compared to other wetland types



Permanent Wetlands

Con's

- High water costs (11-12acft/ac)
- High maintenance costs (disking, spraying, burning, etc.)
- High restoration costs (>\$1,200/ac)
- Typically provides the least food value to wintering waterfowl
- Will need to be rotated out every 3-4 years to control rank vegetation (cattails, tules, primrose, azolla, etc.) and fish.
- Comparatively lower use by wintering waterfowl



Semi-Permanent Wetlands

Pro's

- Generally provides better brood habitat for locally nesting waterfowl (due to higher productivity)
- Benefits many state/federally listed species and species of concern
- Provides good thermal cover for wintering waterfowl
- Provides some food value to wintering waterfowl



Semi-Permanent Wetlands

Con's

- High water costs (7-8acft/ac)
- High maintenance costs (discing, spraying, burning, etc.)
- Moderately high restoration costs (~\$1,000/ac).
- Needs to be rotated out every 3-4 years to control rank vegetation (cattails, tules, water primrose and azolla)
- Comparatively lower use by wintering waterfowl



Seasonal Wetlands

Pro's

- Provides critical wintering waterfowl habitat
- Benefits other species besides waterfowl
- Provides vast majority of non-agricultural feed to wintering waterfowl
- Cheapest water costs (4-5acft/ac)
- Cheapest restoration costs (~\$700/ac)



Seasonal Wetlands

Con's

- A lot of effort goes into growing waterfowl food (irrigations, drawdowns, plantings, mowing, etc)
- Irrigating waterfowl food plants can promote the undesirables (cocklebur, joint grass, bermuda grass)
- Generally produces the most mosquitoes
- The timing and effort springtime drawdowns and summer irrigations aren't for everyone



The Typical Restoration Project

Whether it's a Restoration or an Enhancement Project....the Design Phase is the Most Important!

An Initial Site Visit with the Landowner

- Identify the Problem
- What is the Recent History of the Project Area? (Bird use, vegetation, etc.)
- What's the landowner interested in doing with the Project?



Duck Club

Rusted out
Needs Replacing

Rusted
Pipe &
Riser

drain ditch
needs cleaning

Rusted
out
pipe &
riser

Notes

- Interested in upland hunting
- All roads are currently 12' crown w/ 1:1 slopes
- Landowners would like a brood pond
- Well = electric good shape 2,700 gpm
- Needs a disturbance barrier on West side of property & around cow pound area

Wooden Pipe
Pumps

Compound
Area

delivery ditch

well

delivery ditch



150 0 150 300 Feet

Survey Grade Trimble GPS

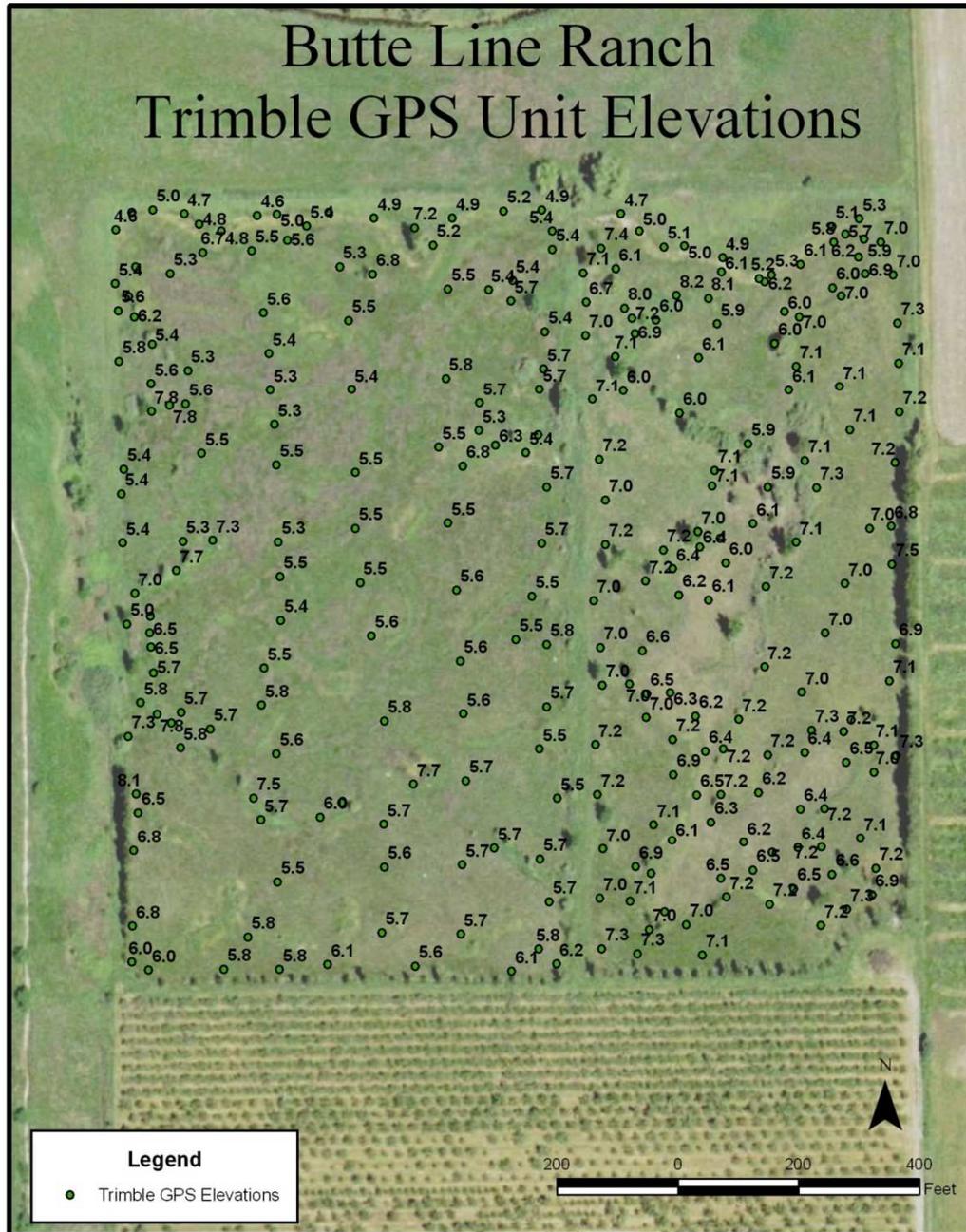


- Accuracy = +/- 1 cm
- Can take hundreds of data points



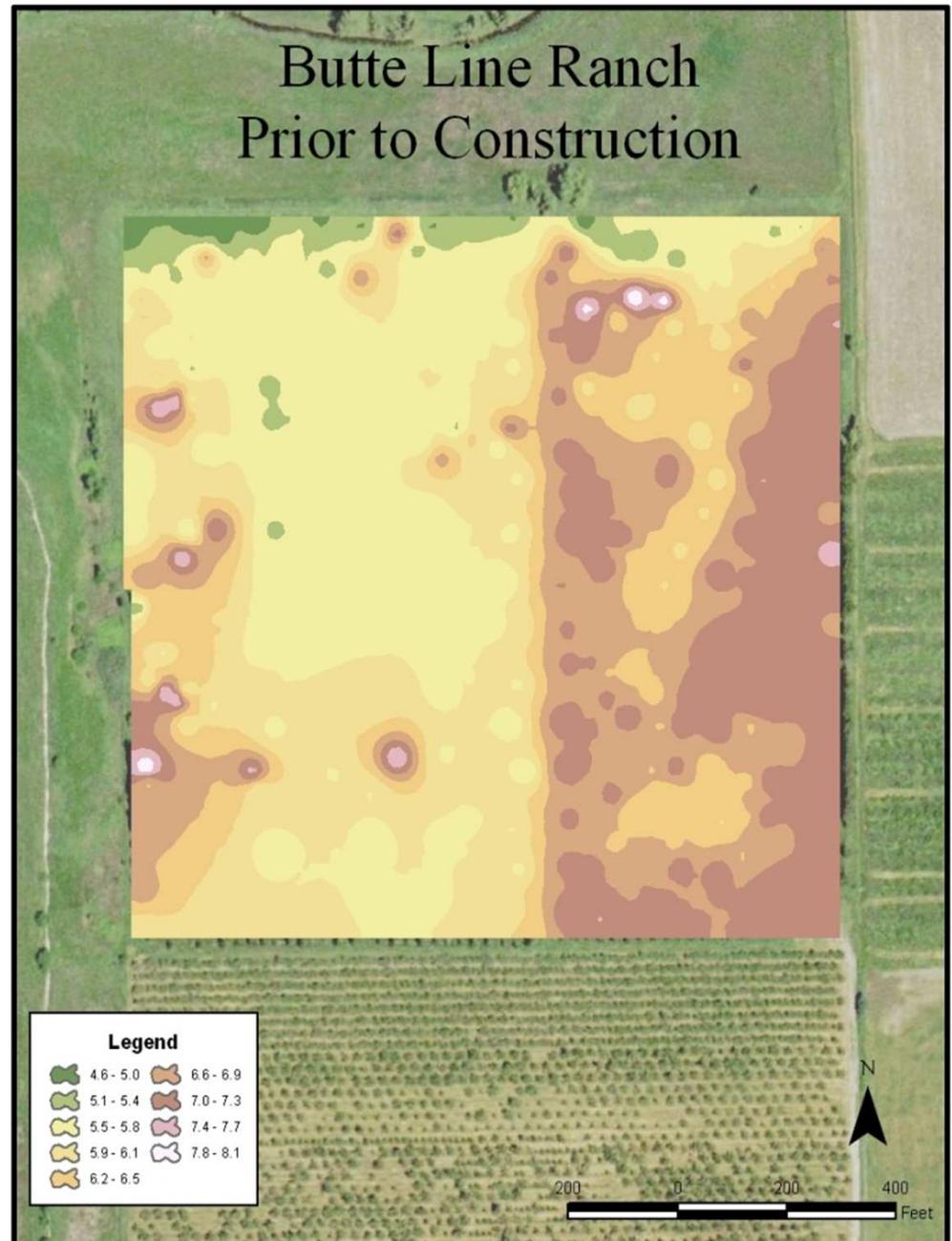
Butte Line Ranch

Trimble GPS Unit Elevations

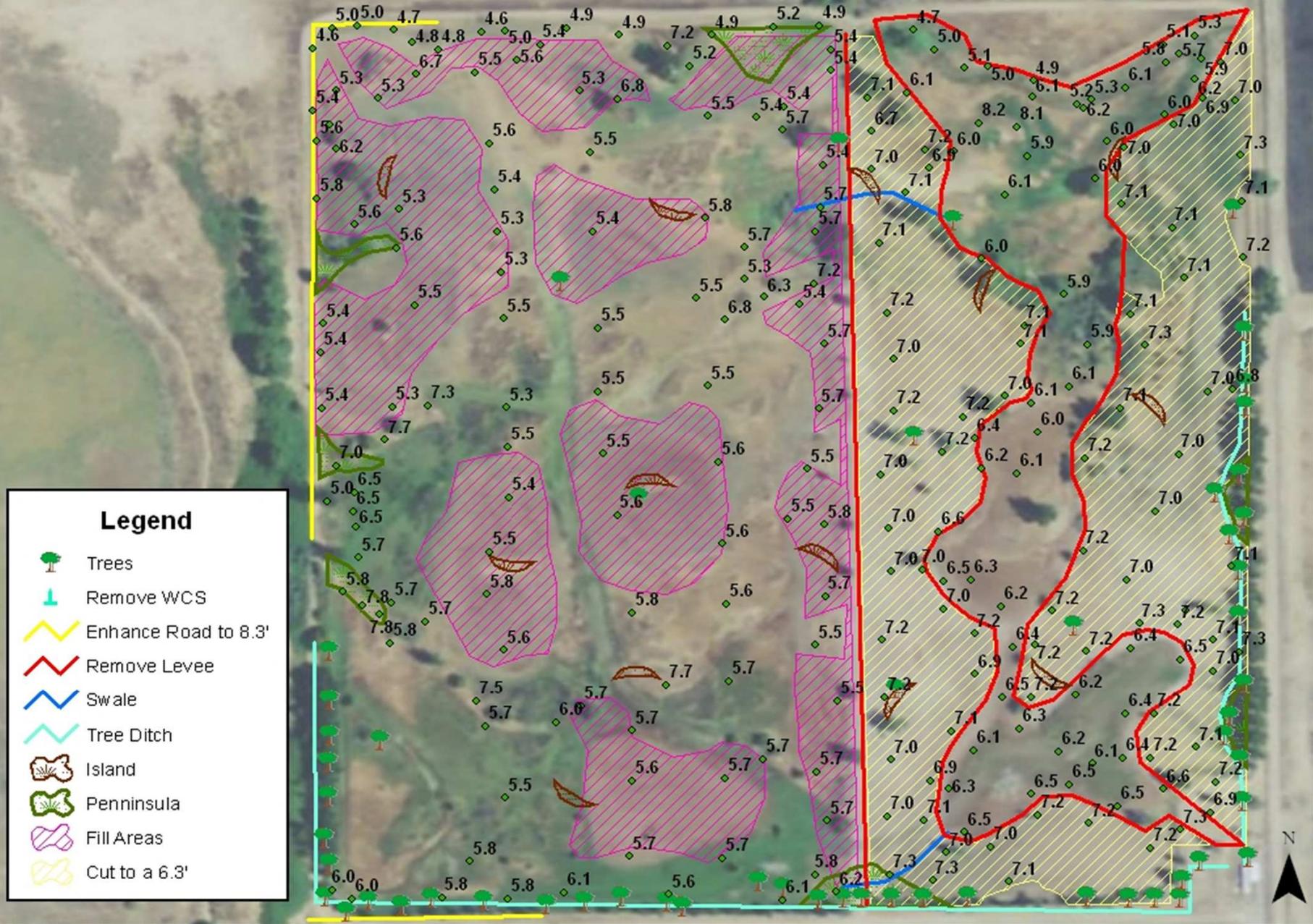


Spatial Analyst

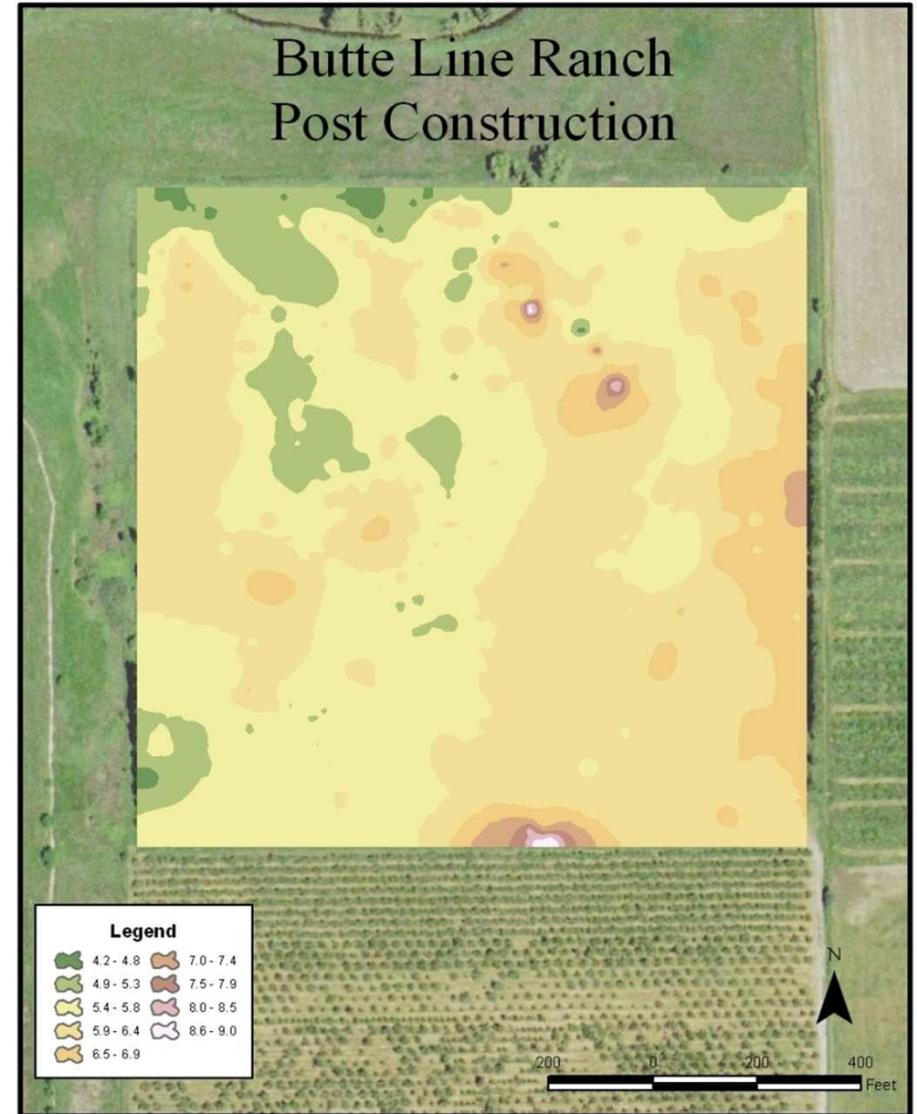
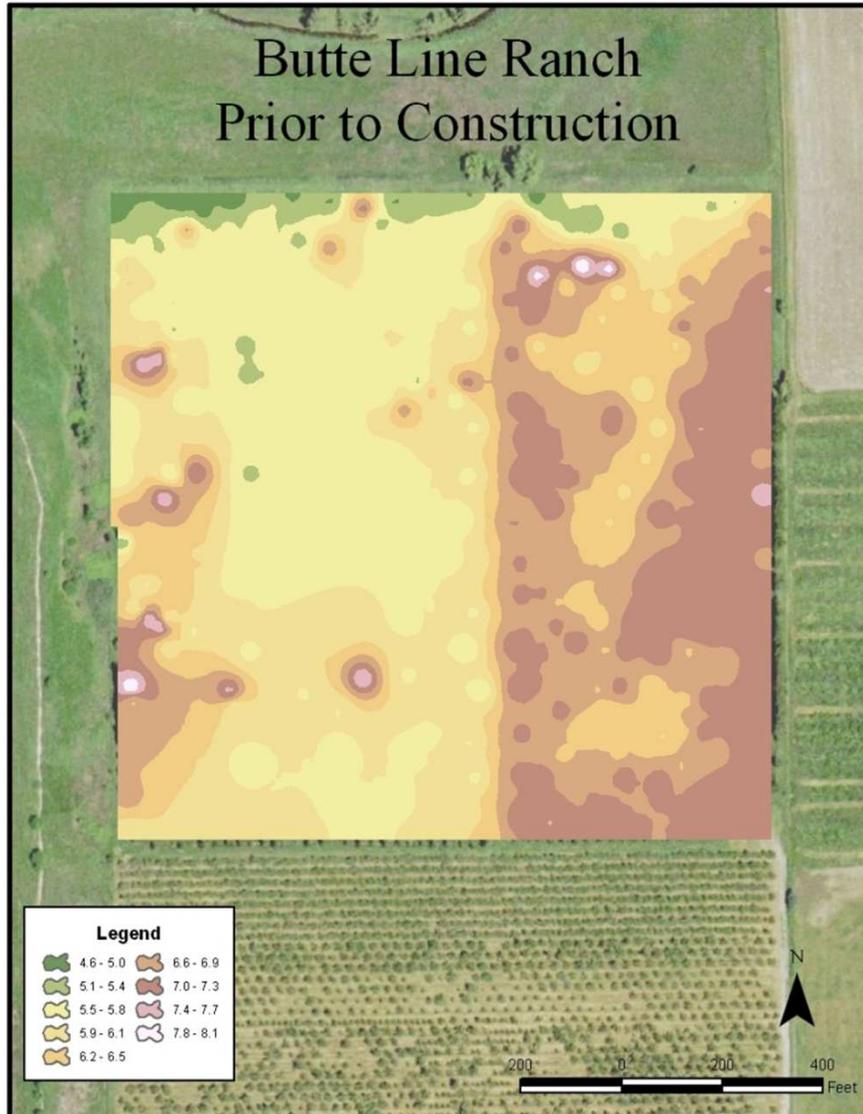
- Helps out with the cut and fill calculations
- Aids in setting the designed water surface elevation for optimal foraging depth of waterfowl/shorebirds



Butte Line Ranch Conceptual Design

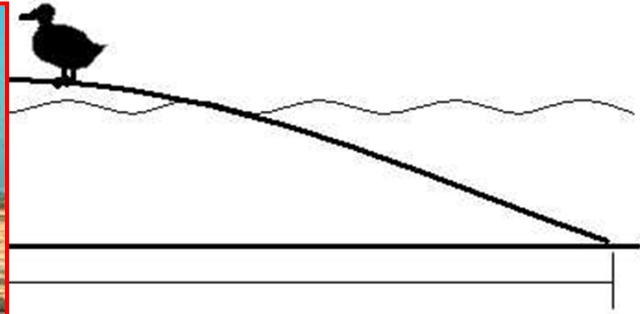


Before and After Construction

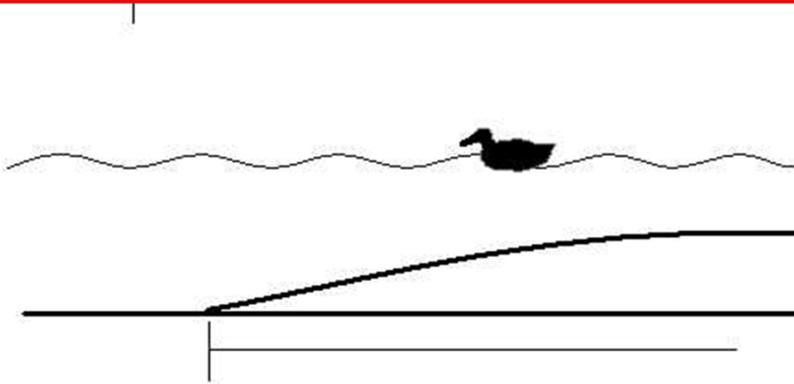
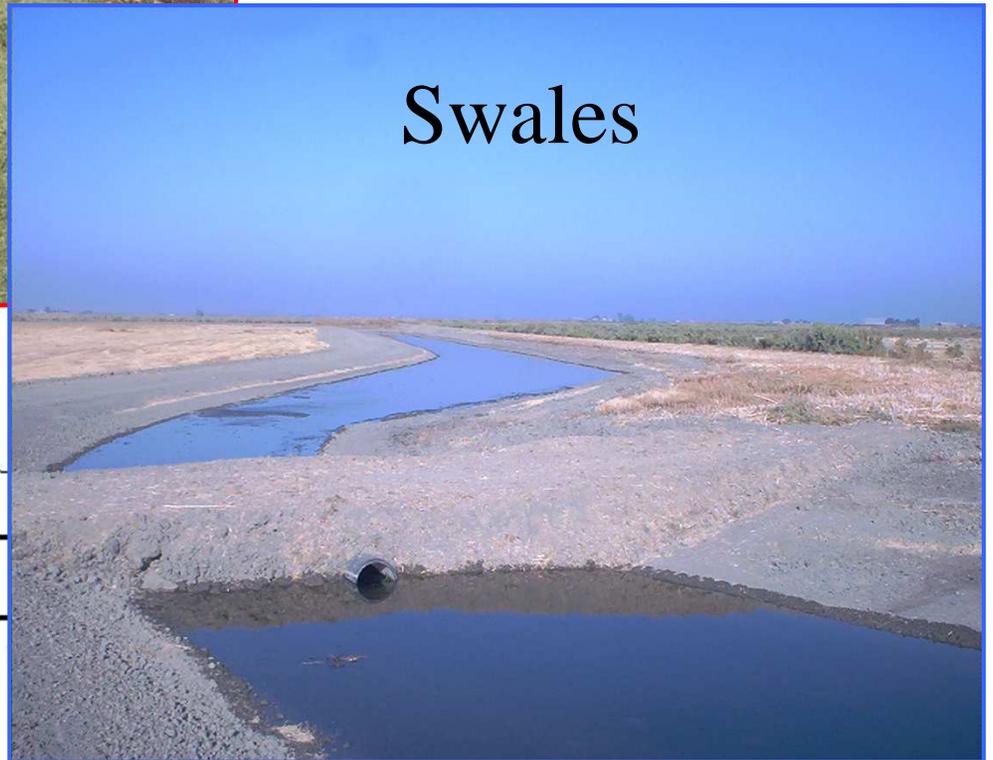


Typical Loafing Islands

Levees and Penninsulas



Swales



Watercontrol Structures are the Key!



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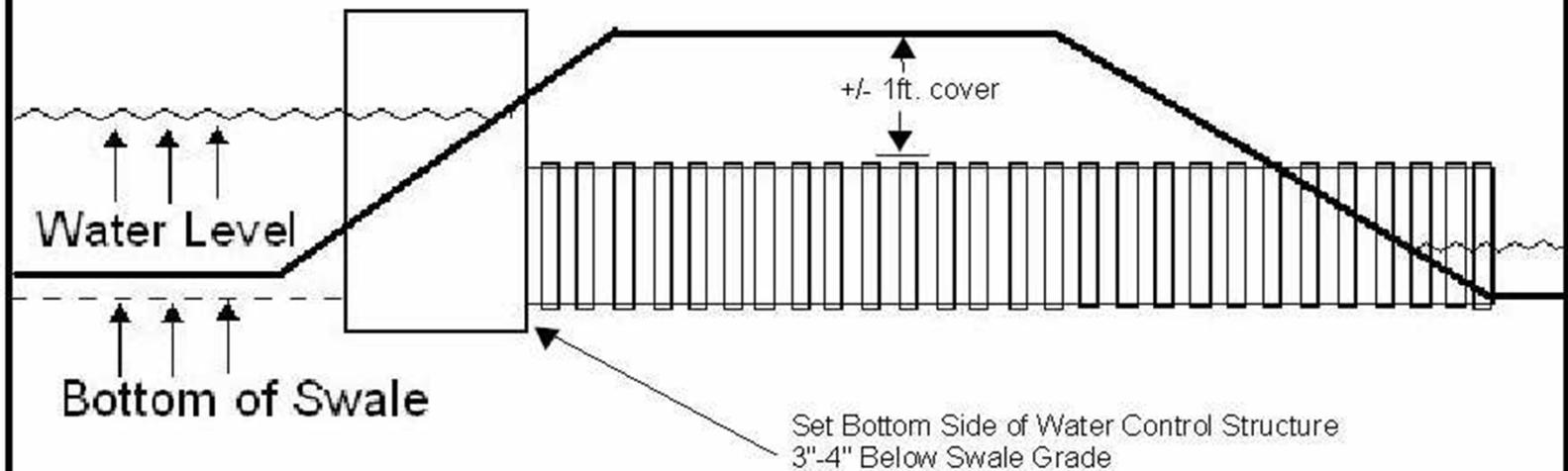
OUCH!!!



You Need Precise Water Management Capabilities!



Proper Structure Installation





Why Is Water Management So Important?



Why Is Water Management So Important?

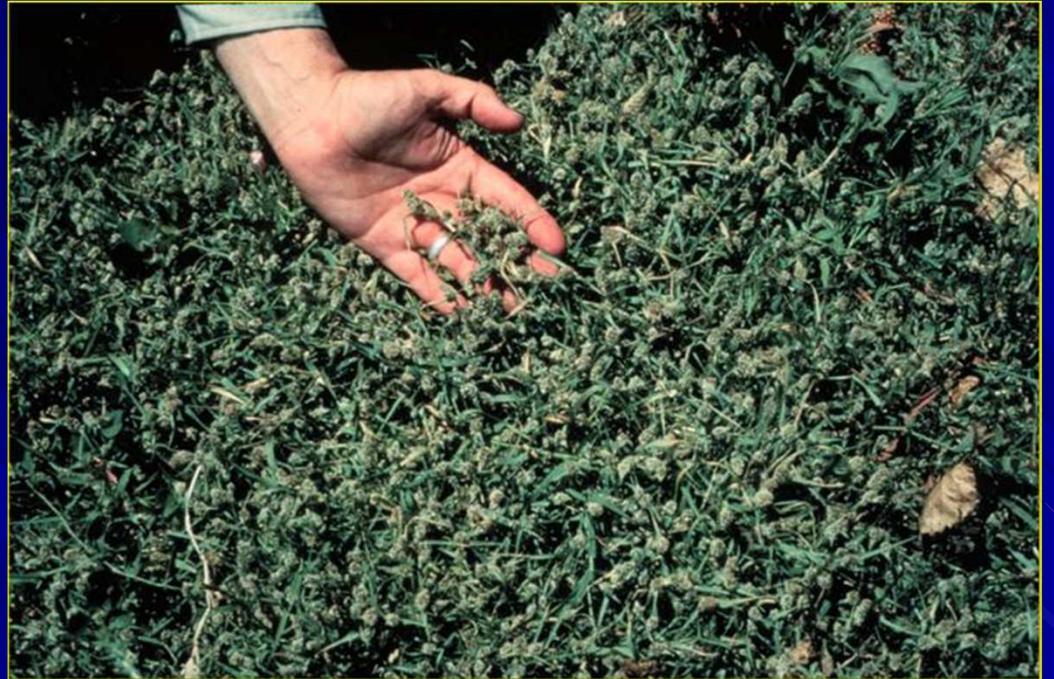
Watergrass



Smartweed

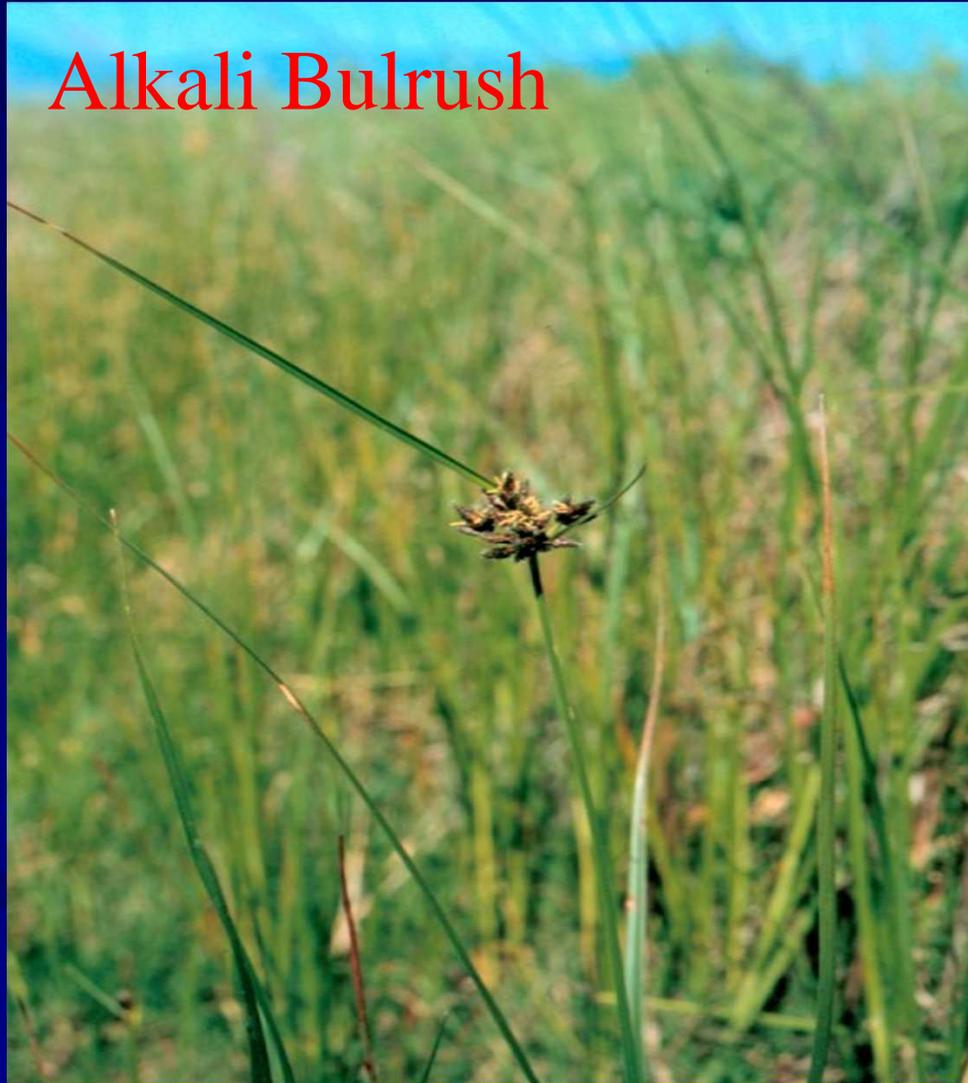


Swamp Timothy



Lack of Water Control Leads to....

Alkali Bulrush



Lack of Water Control Leads to....

Cocklebur



Lack of Water Control Leads to....

Joint Grass



Lack of Water Control Leads to....

Mosquitoes!!!



How To Jump Start Your Marsh



How To Jump Start Your Marsh

Tule Transplants



How To Jump Start Your Marsh

Tule Transplants

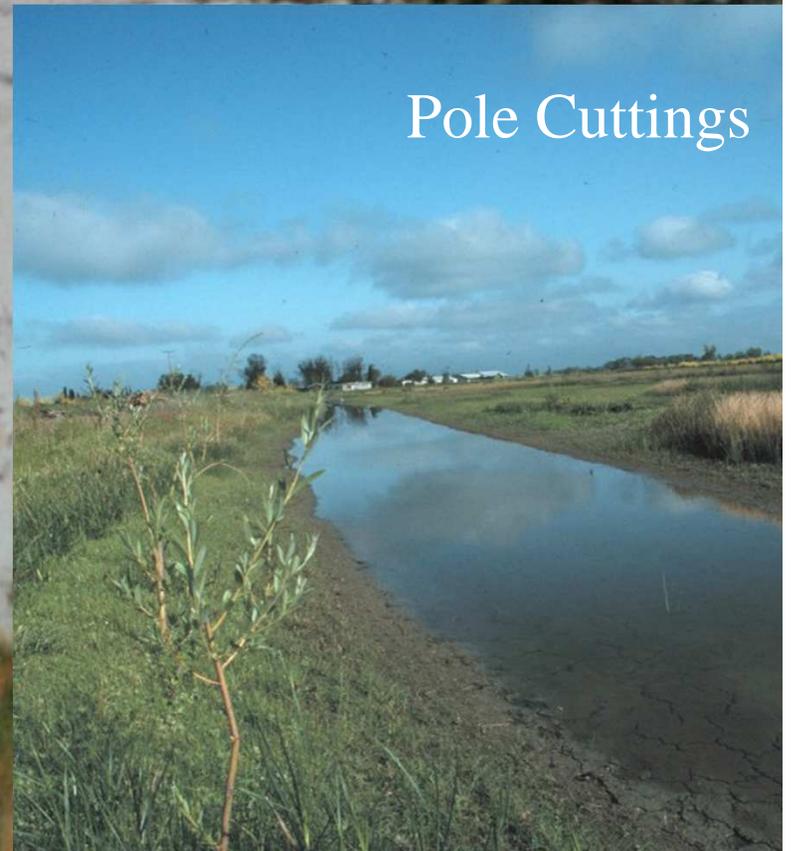


How To Jump Start Your Marsh

Tree Transplants



Potted Stock



Pole Cuttings

Before



During



After



Take Home Message
For the Day....

Don't be afraid to Ask!

The End

