

# Wetland types in Louisiana

- ▶ Bottomland Hardwood
- ▶ Swamp
- ▶ Marsh





# Bottomland Hardwood

(BLHW)

# Bottomland Hardwood Model

- ▶ This community model was developed to determine the suitability of BLHW habitat in providing resting, foraging, and nesting habitat for an assemblage of wildlife species.
- ▶ Area that consists of at least 40% of woody vegetation canopy comprising of species such as oaks, hickories, American Elm, green ash, sweetgum, sugarberry, boxelder, persimmon, honey locust, red mulberry, eastern cottonwood, American sycamore.

# Oaks Water oak (*Quercus nigra*) FAC

## ▶ Leaf



Highly variable, typically with 3 lobes. Shade leaves vary in size.

## ▶ Bark



Somewhat smooth with silver streaks on the trunk.

# Nuttall Oak (*Quercus texana*) FACW

## ▶ Leaf



alternate, simple, deciduous; 5-7 deep, asymmetrical lobes, bristle tipped; lower surface glabrous except for tufts at vein axils

## ▶ Bark



smooth, gray, furrowed with age

# Bitternut hickory (*Carya cordiformis*)

## FACW

### ▶ Leaf



alternate, deciduous, pinnately compound; 7–11 sessile lanceolate leaflets, terminal leaflet larger

### ▶ Trunk



gray, smooth, with interlacing ridges on older trees

# American elm (*Ulmus Americana*) FACW

## ▶ Leaf



alternate, simple, deciduous; 4-6" length, asymmetrical base, doubly serrate margin;

## ▶ Trunk



gray, furrowed, scaly

# Green ash (*Fraxinus pennsylvanica*) FACW

## ▶ Leaf



opposite, deciduous, pinnately compound; 5–9, usually 7 leaflets

## ▶ Trunk



gray, tight, furrowed; diamond pattern



# Sweetgum (*Liquidambar styraciflua*)

## FAC

### ▶ Leaf



simple, alternate, deciduous, 5-lobed star-shaped leaves; yellow to red in the fall

### ▶ Trunk



gray with corky ridges and furrows

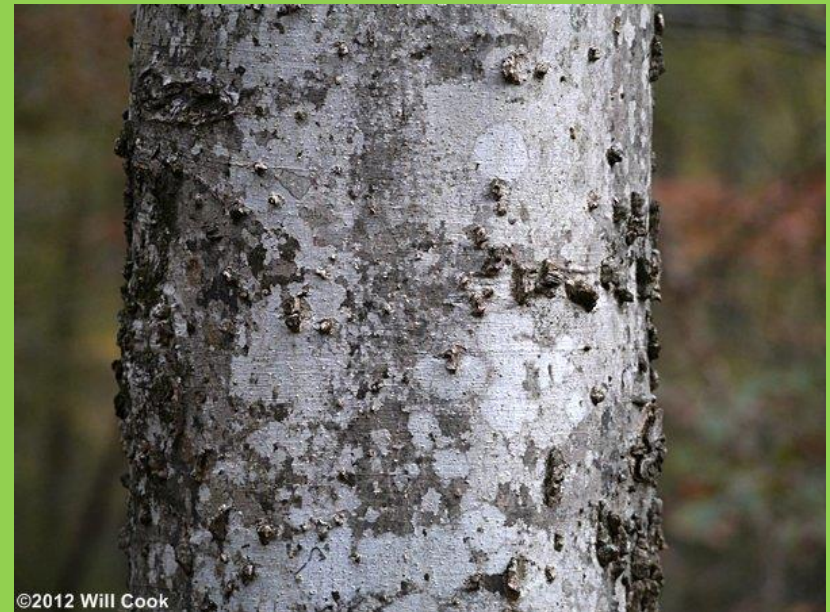
# Sugarberry/Hackberry (*Celtis laevigata*) FACW

## ▶ Leaf



alternate, simple, deciduous; ovate to lanceolate (very variable), asymmetrical base, margin entire or toothed near apex

## ▶ Trunk



smooth, light gray, mottled, corky warts

# Boxelder (*Acer negundo*) FAC

## ▶ Leaves



opposite, pinnately compound, deciduous;  
3–5 leaflets, occasionally 7, coarsely-toothed  
margins near tips

## ▶ Trunk



Grayish brown with ridges in  
mature trees

# Persimmon (*Diospyros virginiana*) FAC

## ▶ Leaves



alternate, simple, deciduous; oblong, 2–3"; tomentose; lower surface pale green with numerous veins

## ▶ Bark



dark, small squares (blocky) pattern; alligator pattern

# Honeylocust (*Gleditsia triacanthos*) FAC

## ▶ Leaves



alternate, pinnately or bipinnately compound; deciduous; leaflets about 1" long x 1/2" wide

## ▶ Bark



smooth, dark, curling into long hard plates; branched thorns

# Red Mulberry (*Morus rubra*) FACU except in the Atlantic and Gulf Plain Region

## ▶ Leaves



alternate, simple, deciduous; ovate, acuminate tip; symmetrical cordate or truncate base; serrate margins, upper surface smooth or rough;

## ▶ Bark



smooth gray-brown when young; long, thin fissures when old

# Eastern Cottonwood (*Populus deltoides*) FAC

## ▶ Leaves



alternate, simple, deciduous;  
deltoid shape, blunt teeth, crenate  
margin; flat petiole

## ▶ Bark



gray, deeply furrowed, with  
prominent ridges

# American sycamore (*Platanus occidentalis*) FACW

## ▶ Leaves



alternate, simple, deciduous 3–7 lobed; base of the petiole encloses the lateral bud; leaf-like stipules encircle the twig.

## ▶ Bark



cream to green colored mottled bark; outer surface exfoliates



# Tips for filling out the Parameter Sheet

- ▶ % overstory cover



# BLHW Parameter Sheet

## **% midstory**

- ▶ Sapling <20 foot in height – typically more shade tolerant growth. Indicator of where the habitat is its succession.

## **% understory**

- ▶ Ground cover – an indicator of how much light is allowed penetrate the canopy. The more mature the stand, the less light gets through to the floor.

# BLHW Parameter Sheet

## **% overstory consisting of hard mast**

\*Hard mast producers: oaks, pecans and hickories

\*Soft mast or other edible seed producers: boxelder, swamp red maple, sugarberry, green ash, persimmon, mayhaw, sweetgum, honeylocust, red mulberry, baldcypress, tupelogum, American elm, cedar elm, etc.

## **Forced Drainage:**

Yes or No

## **Water table position:**

At, near, etc.

## **Is the Natural Hydrology unaltered allowing for natural wetting and drying cycles?**

State site condition whether there is a levee, fill present, a ditch that may alter the hydrology.



Swamp

# Swamp Model

- ▶ The swamp model was developed to determine the suitability of swamp habitat in providing resting, foraging, and nesting habitat for a diverse assemblage of wildlife species.
- ▶ Definition: Areas supporting or capable of supporting a canopy of woody vegetation which covers at least 33% of the areas surface with at least 60% of that canopy consisting of any combination of bald cypress, tupelogum, red maple, buttonbush, and/or planertree.

# Baldcypress (*Taxodium distichum*) OBL

## ▶ Leaves



feather-like needles, 2-ranked;  
sharp pointed, awl-shaped needles  
on strobili bearing branches

## ▶ Bark



light brown to dark reddish brown;  
shreddy, 1-1.5" thick

# Baldcypress (*Taxodium distichum*) OBL

▶ Knee



Typical

▶ In Lake Pontchartrain



Weathered by wave action

# Tupelogum (*Nyssa aquatica*) OBL

## ▶ Leaves



alternate, simple, deciduous; 5–12” long, narrow elliptic, margin usually entire, silvery lower surface

## ▶ Bark



gray, furrowed



# Tupelogum (*Nyssa aquatica*) OBL



# Red Maple (*Acer rubrum* var. *drummondii*) FAC

## ▶ Leaves



opposite, simple, deciduous; silvery below; 3-5 lobes, V-shaped sinuses; red to green petiole

## ▶ Bark



light to dark gray, smooth when young; long scaly plates when older

# Buttonbush (*Cephalanthus occidentalis*)

## OBL

### ▶ Leaves



simple, deciduous, opposite or whorled (3's) leaves; ovate-oblong, acuminate, entire, short stipules

### ▶ Fruit



spherical head of tiny nutlets

# Planertree (*Planera aquatica*) OBL

## ▶ Leaves



alternate, simple, deciduous; two-ranked; ovate to deltoid-ovate; asymmetrical base, irregularly serrate margin

## ▶ Bark



gray-brown with thin, loose scales; exfoliating to expose characteristic reddish-brown inner bark

# Tips for filling out the Swamp parameter sheet

- ▶ % Overstory Cover
- ▶ % Midstory Cover
- ▶ % Herbaceous cover



# Tips continued

DBH–Diameter at Breast Height (4” minimum) dbh is measured 12” above the swell

Baldcypress > 16” dbh and tupelogum > 12” dbh is optimal when evaluating stand maturity.

## ▶ Water Regime

1. Is the area part of forced drainage system?
2. Is it permanently flooded with little or no water exchange?
3. Is the area permanently flooded but receives consistent riverine input and/or water exchange?
4. Is the are under natural hydrology that produces temporarily, seasonally, or semi permanent flooded conditions

# Tips continued

- ▶ Water Regime

The optimal water regime is assumed to be seasonal flooding with abundant and consistent riverine/tidal input and water flow-through.





# Marsh



# Emergent Vegetation

- ▶ Emergent: Wetland characterized by rooted herbaceous and grass like plants which stand erect above the water or ground surface (excluding mosses or lichens). Vegetation is present for most of the growing season in most years.
- ▶ Persistent: Plant species that normally remain standing until the beginning of the next growing season in most years.
- ▶ Non-persistent: Plant species that fall below the surface of the water at the end of the growing season so that at certain seasons of the year there is no obvious sign of emergent vegetation.

# Persistent Vegetation

- ▶ Persistent emergent vegetation (i.e., emergent marsh) plays an important role in coastal wetlands by providing foraging, resting, and breeding habitat for a variety of fish and wildlife species; and by providing a source of detritus and energy for lower trophic organisms that form the basis of the food chain.
- ▶ An area with no emergent vegetation (i.e., shallow open water) is assumed to have minimal habitat suitability in terms of this variable, and is assigned an SI of 0.1. Optimal vegetative coverage (i.e., percent marsh) is assumed to occur at 100 percent (SI=1.0).

# Open Water Component

- ▶ Fresh and intermediate marshes often support diverse communities of floating-leaved and submerged aquatic plants that provide important food and cover to a wide variety of fish and wildlife species.
- ▶ A fresh/intermediate open water area with no aquatics is assumed to have low suitability ( $SI=0.1$ ). Optimal conditions ( $SI=1.0$ ) are assumed to occur when 100 percent of the open water is dominated by aquatic vegetation.

# Shallow water

- ▶ Shallow water areas are assumed to be more biologically productive than deeper water due to a general reduction in sunlight, oxygen, and temperature as water depth increases. Also, shallower water provides greater bottom accessibility for certain species of waterfowl, better foraging habitat for wading birds, and more favorable conditions for aquatic plant growth.
- ▶ Optimal open water conditions in a fresh/intermediate marsh are assumed to occur when 80 to 90 percent of the open water area is less than or equal to 1.5 feet deep.

# Interspersion

- ▶ Interspersion is especially important when considering the value of an area as foraging and nursery habitat for freshwater and estuarine fish and shellfish and associated predators (e.g., wading birds); the marsh/open water interface represents an ecotone where prey species often concentrate, and where post-larval and juvenile organisms can find cover. Isolated marsh ponds are often more productive in terms of aquatic vegetation than are larger ponds due to decreased turbidity, and, thus, may provide more suitable waterfowl habitat.

# Access

- ▶ Access by estuarine aquatic organisms (i.e., transient and resident species), is considered to be a critical component in assessing the quality of a given marsh system. Additionally, a marsh with a relatively high degree of access by default also exhibits a relatively high degree of hydrologic connectivity with adjacent systems, and therefore may be considered to contribute more to nutrient exchange than would a marsh exhibiting a lesser degree of access.

# Types of Marsh Habitats

- ▶ Fresh
- ▶ Intermediate
- ▶ Brackish
- ▶ Saline



Salinity

# Fresh Marsh

- ▶ Maidencane (*Panicum hemitomon*) (Dominant)
- ▶ Alligator weed (*Alternanthera philoxeroides*)
- ▶ Roseau cane (*Phragmites communis*)
- ▶ Wire grass (*Spartina patens*)
- ▶ Cattail (*Typha*)
- ▶ Pennyworts (*Hydrocotyle*)
- ▶ Water Hyacinth (*Eichhornia crassipes*)



# Fresh Marsh



# Fresh Marsh



Water Hyacinth

# Intermediate Marsh

- ▶ ~~Maidencane (*Panicum hemitomon*)~~
- ▶ Alligator weed (*Alternanthera philoxeroides*)
- ▶ Roseau cane (*Phragmites communis*)
- ▶ Wire grass (*Spartina patens*)
- ▶ ~~Cattail (*Typha*)~~
- ▶ ~~Pennyworts (*Hydrocotyle*)~~
- ▶ ~~Water Hyacinth (*Eichhornia crassipes*)~~
- ▶ Giant Bulrush (*Scirpus californicus*)
- ▶ Gulf Cordgrass (*Spartina spartineae*)
- ▶ Bull tongue (*Sagittaria lancifolia*)

# Intermediate Marsh



Roseau cane



Alligator weed



Wire grass

# Intermediate Marsh

Gulf Cordgrass



Giant Bulrush



Bull tongue



# Brackish Marsh

- ▶ ~~Alligator weed (*Alternanthera philoxeroides*)~~
- ▶ ~~Roseau cane (*Phragmites communis*)~~
- ▶ Wire grass (*Spartina patens*) (Dominant)
- ▶ ~~Giant Bulrush (*Scirpus californicus*)~~
- ▶ ~~Gulf Cordgrass (*Spartina spartineae*)~~
- ▶ ~~Bull tongue (*Sagittaria lancifolia*)~~
- ▶ Three-cornered grass (*Schoenoplectus olneyi*)
- ▶ Big cordgrass (*Spartina cynosuroides*)
- ▶ Seashore paspalum (*Paspalum vaginatum*)
- ▶ Black rush (*Juncus roemariarius*)
- ▶ Smooth cordgrass (*Spartina alterniflora*)

# Brackish Marsh

Wire grass



Three-cornered grass



Big cordgrass



# Brackish Marsh

Black rush



Seashore paspalum



Smooth cordgrass





# Salt Marsh

- ▶ Wire grass (*Spartina patens*)
- ▶ ~~Giant Bulrush (*Scirpus californicus*)~~
- ▶ ~~Gulf Cordgrass (*Spartina spartineae*)~~
- ▶ ~~Three-cornered grass (*Schoenoplectus olneyi*)~~
- ▶ ~~Big cordgrass (*Spartina cynosuroides*)~~
- ▶ ~~Seashore paspalum (*Paspalum vaginatum*)~~
- ▶ Black rush (*Juncus roemaniarius*)
- ▶ Smooth cordgrass (*Spartina alterniflora*) (Dominant)
- ▶ Salt grass (*Distichlis spicata*)

# Salt Marsh

Smooth cordgrass



Salt grass



Wire grass



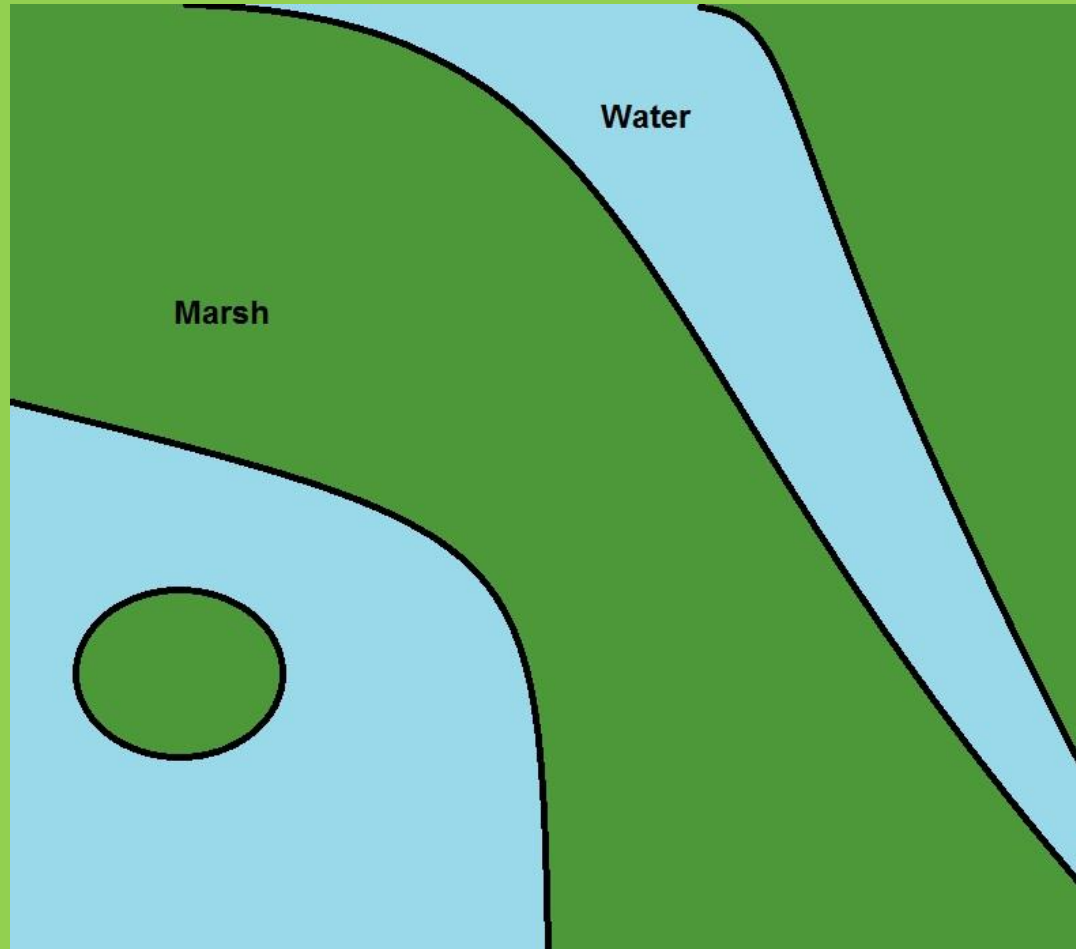
Black rush



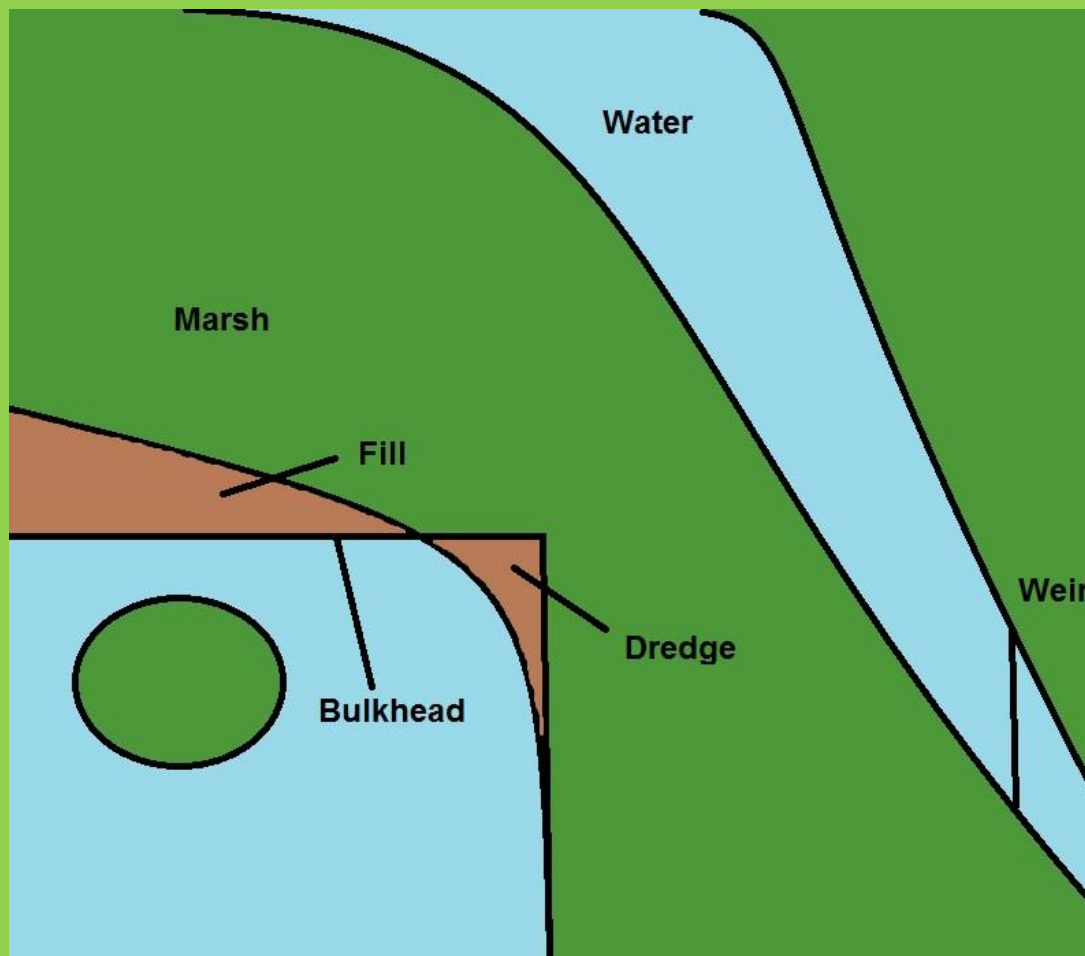
# Tips for Marsh Parameter sheet

- ▶ Percent of wetland covered by emergent vegetation:
- ▶ Percent open water dominated by aquatic vegetation:
- ▶ Percent of open water less than or equal to 1.5' deep in relation to marsh surface:
- ▶ Mean Salinity
- ▶ Aquatic access sites
- ▶ Location of weirs, plugs culverts in the near vicinity of the project.

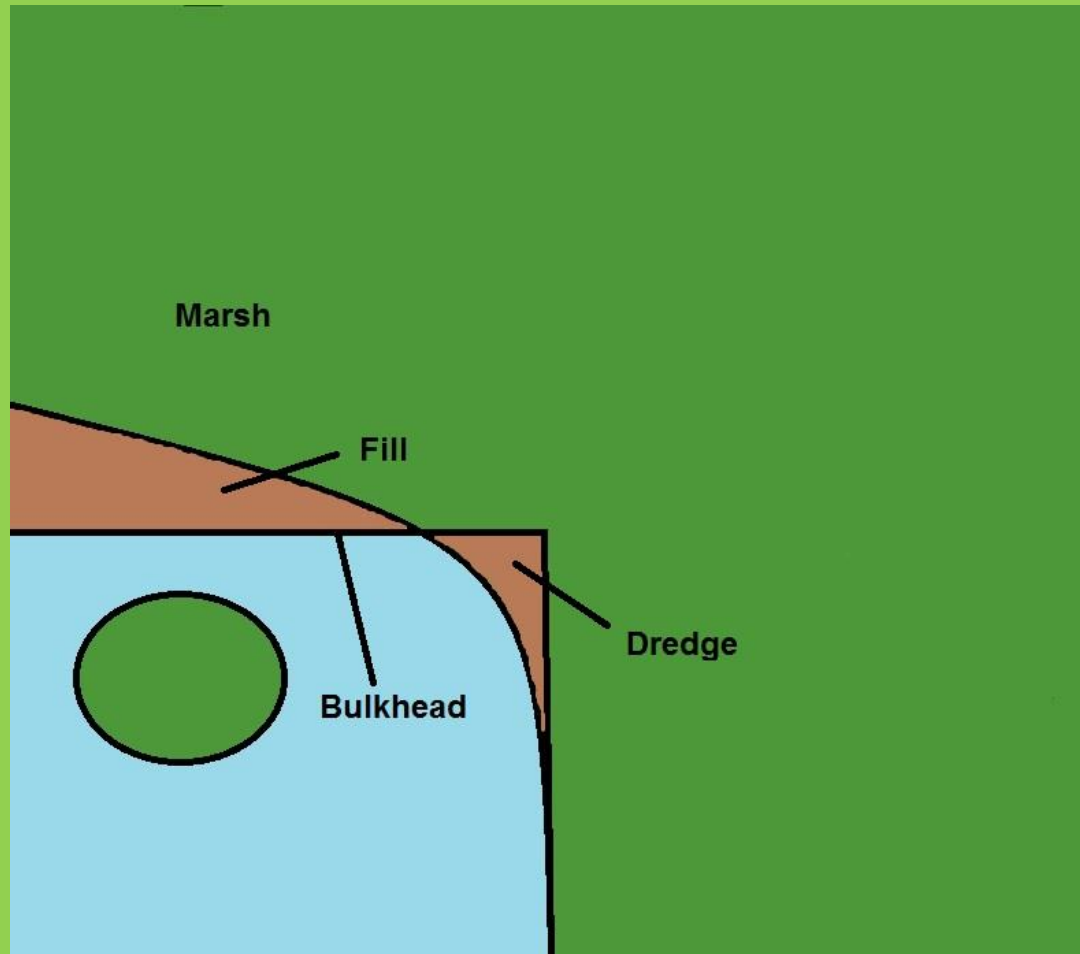
# Marsh



# Marsh with Weir and a proposed bulkhead



# Marsh with proposed bulkhead



# Questions

