

*Prepared for*



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**Wetland Mitigation Plan**  
**Legend 230-kV Substation Expansion**  
**Jefferson County, Texas**

*Prepared by*



engineers | scientists | innovators

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Project Number GXE10588

22 July 2025

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## **1. INTRODUCTION**

This Compensatory Mitigation Plan (CMP) has been prepared on behalf of Entergy Texas, Inc. (Entergy) in support of the proposed Legend 230-kV Substation Expansion Project in Port Arthur, Jefferson County, Texas. This CMP was prepared in accordance with the U.S. Army Corps of Engineers (USACE) Mitigation Rule, Compensatory Mitigation for Losses of Aquatic Resources; Final Rule (33 Code of Federal Regulations, Parts 325 and 332, as originally published in the Federal Register, Vol. 73, No. 70, April 10, 2008, and as amended through July 17, 2025). Since Entergy proposes to provide compensatory mitigation for wetlands by purchasing credits from a USACE-approved Mitigation Bank, the CMP has been written to specifically comply with the requirements of 33 CFR 332.4(c).

### **1.1. Project Description**

The substation is needed to supplement Entergy's recently permitted Legend Power Station and 230-kV transmission line (SWG-2024-00302). The proposed Project will involve clearing, grading, and filling a 5.20-acre area directly adjacent to the existing substation, to accommodate the expansion of the substation pad, and the construction of associated permanent laydown and parking areas. The expansion will add to the existing substation footprint and support the installation of transformers, other electrical equipment, and parking. Construction will require the placement of approximately 32,300 cubic yards of fill material to elevate the pad to a height of 5 feet above sea level, consistent with the existing substation. Additional information about the project can be found in Attachment 3 of the Clean Water Act (CWA) Section 404 Individual Permit (IP) application package: Legend Substation Alternatives Analysis & Supplemental Information.

### **1.2. Mitigation Bank Selection**

Project construction will result in permanent impacts to both palustrine emergent (PEM) and palustrine shrub-scrub (PSS) wetlands. To offset unavoidable impacts to these waters of the U.S. (WOTUS), Entergy proposes to purchase compensatory mitigation credits from Seabreeze Mitigation Bank. The Project is located in the Sabine Lake 8-digit Hydrologic Unit Code (HUC) 12040201, which is the secondary service area for Sea Breeze Mitigation Bank. Entergy has already contacted the Sea Breeze Mitigation Bank sponsor to confirm credit availability and is prepared to proceed with the purchase.

## 2. EXISTING CONDITIONS AND PROJECT IMPACTS

Field investigations to identify and delineate aquatic resources in the Project area, including WOTUS, were conducted by POWER Engineers, Inc. (POWER) ecologists on October 30 to November 1, (2023); November 17, (2023); January 2 and 3, (2024); January 25, (2024); and March 5 and 6, (2024). The complete POWER Preliminary Jurisdictional Determination (PJD) Report (POWER 2024) is included in Appendix A of the Legend Substation Supplemental & Information Alternatives Analysis (Geosyntec 2025), which is provided in the previously provided permit application package. Existing conditions of wetlands and waters identified by POWER are summarized below and detailed in **Table 1**.

The Project area is approximately 8.53-acres, comprising the existing substation and access roads, and the 5.20-acre expansion area. The wetland delineation identified a mosaic of PEM and PSS wetlands across the Project area, with two shallow manmade canals traversing the site to facilitate drainage. In total, the proposed project will result in 5.20 acres of impacts to wetlands and waters as described in the Section 404 IP application.

### 2.1. Palustrine Scrub-shrub (PSS) – 3.63 acres

#### *Wetland Vegetation*

The impacted PSS wetlands include WET11, WET12, WET14, WET15, WET16, and WET17. These wetlands were dominated by groundsel bush (*Baccharis halimifolia*; FAC), saltmeadow cordgrass (*Spartina patens*; FACW), seaside goldenrod (*Solidago sempervirens*; FACW), and broadleaf cattail (*Typha latifolia*; OBL).

#### *Wetland Hydrology*

Primary hydrologic indicators observed in these wetlands included surface water, saturation, saturation visible on aerial imagery, geomorphic position, and FAC-neutral test.

#### *Hydric Soils*

Hydric soils located within the PSS wetlands are described as clay and possess Redox Dark Surface indicators of hydric soils.

**2.2. Palustrine Emergent (PEM) – 1.58 acres**

***Wetland Vegetation***

The impacted PEM wetlands were dominated by saltmeadow cordgrass, low spearwort (*Ranunculus pusillus*; FACW) and common rush (*Juncus effusus*; OBL).

***Wetland Hydrology***

Primary hydrologic indicators observed in these wetlands included surface water, saturation, saturation visible on aerial imagery, geomorphic position, and FAC-neutral test.

***Hydric Soils***

Hydric soils located within the PSS wetlands are described as clay and possess Redox Dark Surface indicators of hydric soils.

**2.3. Other Waters – 0.08 acres**

Two constructed drainage canals cross the Project Area and will be affected by the proposed work. Entergy proposes to mitigate for these impacts by purchasing PEM credits.

**Table 1. Legend Substation Expansion Wetland and Waters Impact Summary**

Resource ID	Resource Type	Total Acreage	Impact Acreage (Permanent)	Avoidance Acreage
WET08	PEM	0.70	0.67	0.04
WET11	PSS	0.27	0.21	0.05
WET12	PSS	0.65	0.52	0.13
WET13	PEM	0.88	0.83	0.05
WET14	PSS	0.30	0.30	0.00
WET15	PSS	0.81	0.81	0.00

Resource ID	Resource Type	Total Acreage	Impact Acreage (Permanent)	Avoidance Acreage
WET16	PSS	1.63	1.63	0.00
WET17	PSS	0.19	0.16	0.03
CAN15	CANAL	0.06	0.06	0.00
CAN16	CANAL	0.02	0.02	0.00

### 3. CREDIT DETERMINATION

To compensate for unavoidable permanent loss of wetlands, Entergy proposes to purchase compensatory mitigation credits from Sea Breeze Mitigation Bank which is a USACE-approved mitigation bank that services HUC 12040201 as a secondary service area. The following sections outline the calculations for determining the number of wetland mitigation credits required to offset impacts.

#### 3.1. Hydrogeomorphic Method

USACE Galveston District's Riverine Herbaceous/Scrub-Shrub Interim Hydrogeomorphic (iHGM) model was used to assess the functional capacity of wetlands at the project site and to determine the appropriate number of mitigation credits required to offset the loss of wetland functions (**Appendix A**). The iHGM model evaluates each wetland type's ability to perform three key ecological functions:

- Physical: Temporarily stores and detains surface water
- Biological: Maintains plant and animal community
- Chemical: Removes and sequesters elements and compounds

The iHGM model yields a dimensionless Functional Capacity Index (FCI) ranging from 0.0 to 1.0 for each assessed wetland function. An FCI of 1.0 represents optimal or reference-level functional capacity, while 0.0 indicates no measurable capacity to perform that function. FCI values are calculated by evaluating a set of individual functional variables (e.g., Vwood, Vmid, Vherb) and their associated sub-indices, which are assigned to each variable based on empirical data.

The sub-index value for each variable was derived from data collected during functional field assessments and, where applicable, supplemented with desktop resources. All field assessments and associated data collection were conducted by POWER in accordance with the iHGM methodology. Detailed descriptions of each variable and its role in the functional assessment are provided below.

- Duration of flooding (Vdur) is estimated using hydrology indicators listed in the *1987 Manual and the Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Atlantic and Gulf Coastal Region (Version 2.0)*.
- Frequency of flooding (Vfreq) uses indicators listed in the *1987 Manual, the Regional Supplement*, and in Federal Emergency Management Agency (FEMA) floodplain maps.
- Topography (Vtopo) relies on visual estimates collected during the field survey to determine what percentage of the Project area is composed of heterogeneous topographic features (e.g., dips, hummocks, channel sloughs).
- Woody vegetation (Vwood) estimates the amount of woody cover within the WAA and includes both field survey data and an assessment of aerial imagery. The woody cover does not include the presence of invasive species.
- Midstory (Vmid) describes the shrub and sapling vegetation layer found between ground level and an upper forest canopy. The shrub and sapling cover does not include the presence of invasive species.
- Herbaceous (Vherb) describes the average herbaceous vegetation cover in each wetland. The herbaceous cover does not include the presence of invasive species.
- Connectivity to other habitat types (Vconnect) was assessed using aerial field data and imagery of the Project area.
- Detritus (Vdetritus) refers to the presence of either an O or A soil horizon associated with each wetland. Frequent flooding within the wetland can saturate soils and decrease the rate at which organic carbon is naturally decomposed and cycled. This creates an accumulation of organic matter and can form an O or A horizon.
- Redoximorphic process (Vredox) is based on the extent to which soils within each wetland exhibit redoximorphic features as an indication of oxidation and reduction conditions. Periodic flooding of soils can cause cyclical anaerobic and aerobic conditions, which allow the reduction and translocation of iron and manganese within the upper portions of the soil.

- Sorptive soil properties ( $V_{sorpt}$ ) are determined using field survey data paired with the Natural Resources Conservation Service Soil Survey.

### 3.1.1. Calculated Wetland FCUs

Functional Capacity Units (FCUs) are calculated by multiplying the FCI value by the number of acres of each wetland type (i.e., forested, shrub-scrub, or herbaceous wetland) within the project area. The FCU represents the functional impacts at a project site, and they represent the base units of mitigation credit that must be purchased from a mitigation bank in order to balance or compensate for impacts. Base units may be adjusted upward when a proposed project is located within a mitigation bank’s secondary service area. For the Sea Breeze Mitigation Bank, a FCU multiplier of 1.50 is applied due to the location of the project within this secondary service area.

The iHGM method was used to calculate the FCIs and resulting FCUs for the 5.20 acres of PSS and PEM wetland impacts. The proposed substation expansion will require mitigation for a total of 7.95 FCUs. Applying the 1.5 multiplier for impacts within the Sea Breeze Mitigation Bank’s secondary service area, Entergy will provide 11.9 PEM/PSS credits ( $7.95 \times 1.5$ , rounded to the nearest tenth) to fully offset the unavoidable wetland losses. The FCI and FCU numbers are detailed in **Table 2**.

**Table 2. Functional Assessment Metrics (FCI/FCU) for Wetland Impacts Associated with the Proposed Legend 230-kV Substation Expansion.**

FCU Type	PSS		PEM		Total
	FCI (3.63 acres)	FCU	FCI (1.57 acres)	FCU	
Phys	0.43	1.56	0.45	0.70	2.26
Bio	0.50	1.82	0.53	0.84	2.66
Chem	0.64	2.32	0.46	0.72	3.04
<b>Total FCU Loss</b>		<b>5.69</b>		<b>2.25</b>	<b>7.95</b>
<b>Total FCU Loss x 1.5</b>		<b>8.54</b>		<b>3.38</b>	<b>11.92</b>

### 3.2. Avoidance and Minimization

Based on local-scale physiography, complete avoidance of impacts to aquatic resources would present considerable challenges with respect to the purpose and need of the

proposed Project. The applicant has selected the proposed site based on its suitability to accommodate the Project activity while minimizing the site footprint and environmental impacts. The proposed Project will minimize impacts to the greatest extent practicable by expanding an already existing substation and by constructing only the necessary Project components to meet the purpose and need of the Project. The substation expansion has been designed to maintain the integrity of the existing site drainage, thereby minimizing direct and indirect impacts to the Salt Bayou and Sabine Lake watersheds.

#### 4. REFERENCES

- Geosyntec Consultants. *Supplemental Information & Alternatives Analysis*. Prepared for U.S. Army Corps of Engineers, Galveston District, in support of the Legend Substation Expansion project, File No. SWG-2017-00321. June 2025.
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- U.S. Army Corps of Engineers, Galveston District. Riverine Herbaceous/Shrub HGM Interim Model. Accessed July 17, 2025. <https://www.swg.usace.army.mil/Missions/Regulatory/Functional-Assessments/>.

# APPENDIX A

## ***Riverine Herbaceous/Shrub HGM Interim (FCI formulas)***

Temporary Storage & Detention of Storage Water:

$$[\{V_{dur} \times V_{freq}\}^{1/2} \times \{V_{topo} + \{V_{herb} + V_{mid}/2\}/2\}]^{1/2}$$

Maintain Plant and Animal Community:

$$\{V_{mid} + V_{herb} + V_{connect}\}/3$$

Removal & Sequestration of Elements & Compounds:

$$[[V_{wood} + V_{freq} + V_{dur} + [\{V_{topo} + V_{herb} + V_{mid}\}/3] + [\{V_{detritus} + V_{redox} + V_{sorpt}\}/3]]/5$$

---

$V_{dur}$

$V_{freq}$

$V_{topo}$

$V_{wood}$

$V_{mid}$

$V_{herb}$

$V_{connect}$

$V_{detritus}$

$V_{redox}$

$V_{sorpt}$

\* The Riverine model is designed to be used to produce an assessment of the potential function of wetlands that share a surface hydrologic connection (at least periodically during anticipated high flows) with a riverine system {i.e. it is limited to wetlands located in the floodplain and/or floodway}. This model is to be used for a rapid non-controversial estimate of the potential impacts to herbaceous riparian wetlands and to see if the proposed mitigation will adequately address the wetland functions that are being impacted.

## ***Riverine Herbaceous/Shrub HGM Interim***

The techniques used to determine which functional capacity index (FCI) will be used for each variable are typically based on standard techniques described in detail in the 1987 Corps Wetland Delineation Manual, the NRCS 3<sup>rd</sup> Edition to the National Food Security Act Manual (NFSAM) and/or the “A Regional Guidebook for Application of Hydrogeomorphic Assessments to Riverine Low Gradient Wetlands (Ainslie et al. 1997). These sources will hereafter be referred to as the 87 WDM, NFSAM, and the Kentucky Riverine Guidebook, respectively.

Documentation should be made for each variable as to which method, indicator, plot size was used for each variable. The number of sample plots is related to the variability of the site. Significantly different timber age classes or species types should be sampled separately. One or two sample plots might be sufficient in a small uniform site, whereas, numerous sample plots would be required for a large diverse site. The following is a general definition and guidance on the methodology for each variable.

**V<sub>dur</sub>: Duration of Flooding:** Indicators as described in the Wetland Hydrology Section of the 87 WDM (paragraphs 46-49) will be utilized to estimate duration of flooding. NOTE: unlike the criteria for hydrology for wetland delineation, growing season is not a factor in the variable. Those indicators associated with saturation should not be used.

**V<sub>freq</sub>: Frequency of Flooding:** Indicators as described in the Wetland Hydrology Section of the 87 WDM (paragraphs 46-49) will be utilized to estimate frequency of flooding. Utilization of the county soil survey is a particularly good tool. NOTE: unlike the criteria for hydrology for wetland delineation, growing season is not a factor in the variable.

**V<sub>topo</sub>: Topography:** To determine percent for these criteria, visual estimate will be conducted. Those areas with significant topographic features will be shown on a reference map, briefly described (i.e. ridge/slough, mounds, undulations, channels/burn, etc.) and measured to determine acreage. Percent of site containing topographic features can then be determined.

**V<sub>wood</sub>: Woody vegetation:** Percentage of the WAA that is covered by woody vegetation will be determined by the use of recent aerial photography. Field verification is needed to ensure land use changes have not occurred. Size and density of woody vegetation impedes water flow. For example; a few large trees in a pasture would NOT constitute “covered with woody vegetations” nor would 1 year old seedlings. It should also be noted that an area clear cut with stumps, sprouts and shrubs removed would NOT constitute “woody vegetation” and the functions should be assessed using a herbaceous model.

**V<sub>mid</sub>: Midstory (Shrubs/saplings/woody vines):** The midstory layer is the layer of botanical species located between the herbaceous and forest/tree canopy. This would include shrubs, saplings, smaller trees, small trees, and large woody vines. A measure is taken at each plot and/or a visual estimate is performed at each sample location(s).

**V<sub>herb</sub> : Herbaceous layer:** Herbaceous layers are made at each data location/plot as is described in the 87 WDM. It is recommended that 2-5 sub plots be taken at each location to account for vegetative variability.

**V<sub>detritus</sub>: Detritus:** This variable is a measure of the percentage of areas with detritus at the soil surface. Plowed areas or areas “washed” by high velocity flood water should not be considered as areas having detritus. Determination of an A (with organic) or O horizon should be determined for the entire site by on site field information. For this variable, the A (with organic) must have a Munsell value of 4 or less. Refer to the Kentucky Riverine Model for additional details regarding this variable.

**V<sub>redox</sub>: Redoximorphic process:** This variable is an indicator of periodic aerobic and anaerobic process within the top 10-12 inches of the soil surface. Redox features should be document for each sample plot/location and any other soil investigation conducted on the site. At least 50% of the must meet this criteria to be a 1 in the sub index.

**V<sub>sorpt</sub>: Sorptive Soil Properties:** This variable is a general indicator of the potential that the soil has in regards to it’s absorptive properties. This information can be obtained by the use of the county soil survey in conjunction with the field data.

**V<sub>connect</sub>: Connectivity to other habitat types:** This variable concentration on the geo-location of the WAA in relationship to other habitat type within 600 feet from the perimeter of the WAA.

## *Variables for HGM (Interim) Herbaceous/Shrub Riverine*

$V_{dur}$ : The % of the WAA that is flooded and/or ponded due to the hydrology (i.e. flooding overbank flow) of the nearby waterway

Criteria	Variable Sub index
In an average year at 80% of the WAA either floods and/or ponds for at least 14 consecutive days	1.00
In an average year at 80% of the WAA either floods and/or ponds for at least 7 consecutive days	0.75
In an average year at 50-79% of the WAA either floods and/or ponds for at least 7 consecutive days	0.50
In an average year at 25-50% of the WAA either floods and/or ponds for at least 7 consecutive days	0.25
In an average year all or portions of the WAA either floods and/or ponds for at least 1-7 consecutive days	0.10
The area is NOT subject to flooding	0.00

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 $V_{freq}$ : The frequency that the WAA is flooded and/or ponded by nearby waterway .

Criteria	Variable Sub index
Floods or pond annually 5 out of 5 years (floodway)	1.00
Floods or ponds 3 or 4 out of 5 years (elevation data reveals in floodway and mapped w/n 100 yr floodplain)	0.75
Floods or ponds 2 out of 5 years (100- year floodplain)	0.50
Floods or ponds less than 2 out of 5 years (100-500 yr floodplain grey w/out elevations)	0.25
The area is not subject to flooding or ponding (500 yr floodplain)	0.00

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 $V_{topo}$ : The roughness associated with the WAA

Criteria	Variable Sub Index
Greater than 30% of the WAA is represented by dips, hummocks, channel sloughs and/or other topographic features	1.00
15 - 30% of the WAA is represented by dips, hummocks, channel sloughs and/or other topographic features	0.70
Less than 15% of the WAA is represented by dips, hummocks, channel sloughs and/or other topographic features	0.40
Smooth, flat, or very gentle undulating with little or no topographic features	0.10

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 $V_{wood}$ : Percentage of the WAA that is covered by woody vegetation

Criteria	Variable Sun Index
Greater than 90% of the WAA is covered with woody vegetation	1.00
67 to 90 % of the WAA is covered with woody vegetation	0.75
34 to 66% of the WAA is covered with woody vegetation	0.50
11 to 33% of the WAA is covered with woody vegetation	0.25
0-10% if the WAA is covered with woody vegetation	0.10

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V<sub>mid</sub>: The average/mean coverage of the midstory (shrub/sapling) layer in the WAA

Criteria	Variable Sub Index
Midstory coverage of the WAA is more than 75%	1.00
Midstory coverage of the WAA is between 50-75 %	0.75
Midstory coverage of the WAA is between 25-50%	0.50
Midstory coverage of the WAA is between 1-25%	0.25
Midstory coverage of the WAA is equal to or less than 1%	0.10

V<sub>herb</sub>: The average/mean coverage of the WAA by the herbaceous layer

Criteria	Variable Sub Index
Herbaceous cover in the WAA averages greater than 75%	1.00
Herbaceous cover in the WAA averages between 50-75%	0.75
Herbaceous cover in the WAA averages between 25-50%	0.50
Herbaceous cover in the WAA average is between 1-25%	0.25
Herbaceous cover in the WAA is equal to or less than 1% (barren soil or all shrub)	0.10

V<sub>connect</sub>: the number of habitat types within a 600' of the parameter of the WAA  
(Habitat to be counted has to be at a minimum 5% of the size of the WAA)

Habitat Types:

Forested	Shrub/Sapling
Herbaceous/Prairie/Abandoned Ag field	Active Agricultural Field
Open water	Wetland
Mudflat	Lawn

Criteria:	Variable Sub Index
Wetland plus four habitats and/or surrounded by forested	1.00
Wetland plus two or more habitat type (other than forested) OR three or more habitat types	0.75
Wetland plus one other habitat types or two other habitat types	0.50
One other habitat types other than urban habitat	0.25
Surround by urban (homes, lawn, concrete, etc.)	0.10

V<sub>detritus</sub>: The amount of the detritus on the WAA  
(A horizon has to have a value of 4 or less)

Criteria	Variable Sub Index
Greater than 85% of the area possesses an O or A horizon	1.00
From 11-84% of the area possesses an O or A horizon	0.50
Less than 10% of the area possesses an O or A horizon	0.30
Site is plowed	0.10

V<sub>redox</sub>: The amount of the WAA that exhibits redox features an indication of the chemical exchange

Criteria	Variable Sub Index
Redox concentrations represent at least 20% of the pedon within the top 4 inches of the soil surface, or feature masked due to parent material but conditions are conducive to redoximorphic processes. (many mottles)	1.0
Redox features less than 20%	0.1

V<sub>sort</sub>: The absorptive properties of the soils in the WAA

Criteria	Variable Sub Index
The WAA is dominated by montmorillonitic clayey soils (clay, clay loams, silty clay loams) or soils with high organic (2/1, 2/2, or 3/1)	1.00
WAA is dominated by loamy (silt loams, very fine sandy loams, loam) or non-montmorillonitic clays	0.50
The WAA is dominated by sandy soils (sands, loamy fine sands, loamy sands)	0.10

*Riverine Herb/Shrub HGM (Interim) Worksheet*

WAA #

Variable	Subindex
V <sub>dur</sub>	
V <sub>freq</sub>	
V <sub>topo</sub>	
V <sub>wood</sub>	
V <sub>mid</sub>	
V <sub>herb</sub>	
V <sub>detritus</sub>	
V <sub>redox</sub>	
V <sub>sorpt</sub>	
V <sub>connect</sub>	

WAA #

Variable	Subindex
V <sub>dur</sub>	
V <sub>freq</sub>	
V <sub>topo</sub>	
V <sub>wood</sub>	
V <sub>mid</sub>	
V <sub>herb</sub>	
V <sub>detritus</sub>	
V <sub>redox</sub>	
V <sub>sorpt</sub>	
V <sub>connect</sub>	

WAA #

Variable	Subindex
V <sub>dur</sub>	
V <sub>freq</sub>	
V <sub>topo</sub>	
V <sub>wood</sub>	
V <sub>mid</sub>	
V <sub>herb</sub>	
V <sub>detritus</sub>	
V <sub>redox</sub>	
V <sub>sorpt</sub>	
V <sub>connect</sub>	

***Riverine Herb/Shrub (Interim HGM) Worksheet  
Functional Capacity Index (FCI)***

**Temporary Storage & Dentention of Storage Water:**

$$[\{V_{dur} \times V_{freq}\}^{1/2} \times \{V_{topo} + \{V_{herb} + V_{mid}/2\} / 2\}^{1/2}]^{1/2}$$

$$[\{ \_ \times \_ \}^{1/2} \times \{ \_ + \{ \_ + \_ / 2 \} / 2 \}^{1/2}]^{1/2} = FCI$$

$$[\{ \_ \times \_ \}^{1/2} \times \{ \_ + \{ \_ + \_ / 2 \} / 2 \}^{1/2}]^{1/2} = FCI$$

-----  
**Maintain Plant and Animal Communities:**

$$\{V_{mid} + V_{herb} + V_{connect}\} / 3$$

$$\{ \_ + \_ + \_ \} / 3 = FCI$$

$$\{ \_ + \_ + \_ \} / 3 = FCI$$

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**Removal & Sequestrian of Elements & Compounds:**

$$[[V_{wood} + V_{freq} + V_{dur} + \{V_{topo} + V_{herb} + V_{mid}\} / 3] + [\{V_{detritus} + V_{redox} + V_{sorp}\} / 3]] / 5$$

$$[[ \_ + \_ + \_ + \{ \_ + \_ + \_ \} / 3] + [\{ \_ + \_ + \_ \} / 3]] / 5 = FCI$$

$$[[ \_ + \_ + \_ + \{ \_ + \_ + \_ \} / 3] + [\{ \_ + \_ + \_ \} / 3]] / 5 = FCI$$

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Functional Capacity Units (FCU); FCI x wetland acres per WAA...

WAA #	Pre-project FCUs	Post Project FCUs
Temp Storage of Water		
Maintain Plant & Animal		
Removal of Elements		

**Riverine Herb/Shrub (Interim) HGM Worksheet  
Functional Capacity Index (FCI)**

Mitigation

**Temporary Storage & Dentention of Storage Water:**

$$[\{V_{dur} \times V_{freq}\}^{1/2} \times \{V_{topo} + \{V_{herb} + V_{mid/2}\} / 2\}]^{1/2}$$

Pre:  $[\{ \_ \times \_ \}^{1/2} \times \{ \_ + \{ \_ + \_ / 2 \} / 2 \}]^{1/2} = FCI$

Post:  $[\{ \_ \times \_ \}^{1/2} \times \{ \_ + \{ \_ + \_ / 2 \} / 2 \}]^{1/2} = FCI$

**Maintain Plant and Animal Communities:**

$$\{V_{mid} + V_{herb} + V_{connect}\} / 3$$

Pre:  $\{ \_ + \_ + \_ \} / 3 = FCI$

Post:  $\{ \_ + \_ + \_ \} / 3 = FCI$

**Removal & Sequestrian of Elements & Compounds:**

$$[[V_{wood} + V_{freq} + V_{dur} + [\{V_{topo} + V_{herb} + V_{mid}\} / 3] + [\{V_{detritus} + V_{redox} + V_{sorpt}\} / 3]] / 5$$

Pre:

$$[[ \_ + \_ + \_ + [\{ \_ + \_ + \_ \} / 3] + [\{ \_ + \_ + \_ \} / 3]] / 5 = FCI$$

Post:

$$[[ \_ + \_ + \_ + [\{ \_ + \_ + \_ \} / 3] + [\{ \_ + \_ + \_ \} / 3]] / 5 = FCI$$

***Mitigation***

Functional Capacity Units (FCU); FCI x wetland acres per WAA...

WAA #	Pre-project	Post 1 yr	Post 5 yr	Post 10 yr
Temporary Storage				
Maintain Plant & Animal				
Sequestrian of Elements				

***Riverine Herb/Shrub (Interim) HGM Worksheet  
Functional Capacity Unit (FCU)  
Impact(s) sheet***

Potential Functional Capacity impacts

*{i.e. WAA 1 FCU biota loss (bl) + WAA 2 bl + WAA 3 bl + WAA 4 bl = net FCU loss}*

Temporary Storage & Detention of Storage Water:

Maintain Plant & Animal Communities:

Removal & Sequestration of Elements & Compounds:

**\* Net FCU loss is calculated by deducting the post project FCU from the pre-project FCU per function capacity. Different functional capacity index should NEVER be summarized.**