

LAKE COUNTY WETLAND RESTORATION AND PRESERVATION PLAN (WRAPP)
 Draft Functional Assessment Criteria (SMC, updated January 20, 2016)

These are example criteria used in other (referenced) studies. The TAG should evaluate each criteria based on its applicability to Lake County wetlands.

Flood Water Storage Criteria

Functional Significance	Criteria	Comments/suggestions
High	<ul style="list-style-type: none"> Wetlands along streams and rivers (PG, TT, MDEQ) Island Wetlands (PG, TT, MDEQ) Ponds that are throughflow, throughflow intermittent (MDEQ), bidirectional, and isolated (PG, TT-all four) Terrene Basin Isolated (MDEQ) *AND are above a size threshold (median wetland size in watershed) (PG, TT) Vegetated wetlands along Streams, Rivers, and Lakes, except Slope wetlands and Unvegetated wetlands (TNC) Ponds and Terrene Basin wetlands that are Inflow, Throughflow, or Throughflow Intermittent, except Slope wetlands and Unvegetated wetlands (TNC) >=5 ac AND at least 50% outside of regulatory riverine floodplain AND potential for significant ponding exists (ADID) 	<ul style="list-style-type: none"> Wetlands that are located in a mapped SFHA Include Fringe & Basin wetlands associated with throughflow/throughflow intermittent ponds
Moderate	<ul style="list-style-type: none"> All wetlands meeting the “High” criteria but under the size threshold (PG, TT) Terrene Basin Isolated (PG, TT) Terrene & Outflow/Outflow Intermittent (PG, TT, MDEQ) Other ponds (MDEQ)/Terrene wetlands associated with ponds connected to hydrography network (PG, TT) Terrene wetlands associated with Ponds (PG, TT, MDEQ) Wetlands adjacent to lakes not already ranked high (PG, TT, MDEQ) All other vegetated non-Slope wetlands (TNC) 	<ul style="list-style-type: none"> Determine if the two “terrene ponds” criteria need to be separate
Low	<ul style="list-style-type: none"> All remaining (PG, TT) 	

NOTE: TNC used “Exceptional” and “High” as the significance categories for this function, which have been changed to “High” and “Moderate”, respectively, for this comparison

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Streamflow Maintenance

Functional Significance	Criteria	Comments/suggestions
High	<ul style="list-style-type: none"> • All headwater (hw) wetlands <ul style="list-style-type: none"> ○ above a size threshold (PG,TT) ○ 1st order & above; 2nd order (MDEQ) ○ 1st order only, except Outflow Intermittent, Throughflow Intermittent (TNC) 	
Moderate	<ul style="list-style-type: none"> • All wetlands meeting the “High” criteria but under the size threshold (PG, TT) • Lotic Stream & River Floodplain and Fringe Wetlands (PG, TT, MDEQ), except Outflow Intermittent and Throughflow Intermittent (TNC) • Throughflow & Outflow Ponds and Lakes (PG, TT, MDEQ, TNC) • Terrene Outflow wetlands associated with a pond (PG, TT, MDEQ, TNC) • Terrene Outflow wetlands outflowing to a stream (PG, TT, MDEQ, TNC) 	
Low	<ul style="list-style-type: none"> • All remaining (PG, TT) 	

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Nutrient Transformation

Functional Significance	Criteria	Comments/suggestions
High	<ul style="list-style-type: none"> • Vegetated Wetlands from NWI P_ (AB, EM, SS, FO, and mixes) with water regime C, E, F, H, G. No open water types (MDEQ) with SSURGO Flood Frequency of “Frequent” or “Occasional” (PG, TT) • >=5 ac AND [presence of a potential point or nonpoint source upstream & wetland is palustrine or riverine & located upstream of a lake or impoundment (>= 6 ac) & hydraulically connected] AND [(no outlet, constricted outlet, or impounded) or vegetated with woody, floating leaved, or persistent emergent vegetation in a low velocity environment] (ADID) 	
Moderate	<ul style="list-style-type: none"> • Seasonally Saturated and Temporarily Flooded Vegetated wetlands P_ (AB, EM, SS, FO, and mixes) with water regime A, B (MDEQ). • Vegetated wetlands P_ (AB, EM, SS, FO, and mixes) with water regime C, E, F, H, G. No open water types – with SSURGO Flood Frequency of “Rare”, “Very Rare”, or “none” (PG, TT) • Lacustrine vegetated wetlands (no open water) (MDEQ) with SSURGO Flood Frequency of “Frequent” or “Occasional” (PG, TT) 	
Low	<ul style="list-style-type: none"> • All remaining (PG, TT) 	

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Sediment and Other Particulate Retention

Functional Significance	Criteria	Comments/suggestions
High	<ul style="list-style-type: none"> Basin Wetlands associated with Lakes (PG, TT, MDEQ) Fringe and Island wetlands associated with Lakes (PG, TT, MDEQ) Floodplain wetlands (PG, TT, MDEQ) Lotic Stream Basin, Flat, and Fringe wetlands that are Throughflow or Throughflow Intermittent (PG, TT, MDEQ) Lotic River Floodplain or Fringe Throughflow wetlands (PG, TT, MDEQ) Throughflow or Throughflow Intermittent Ponds (PG, TT, MDEQ) Island wetlands (PG, TT, MDEQ) Terrene Basin Isolated wetlands (MDEQ) >= 5 ac. AND presence of potential point or nonpoint sources upstream AND [no outlet, constricted outlet or impounded OR vegetated with erect, persistent vegetation in a depositional environment OR evidence of sediment accretion present] (ADID) 	
Moderate	<ul style="list-style-type: none"> Terrene Basin wetlands that are Outflow, Outflow Intermittent, or Outflow Artificial (PG, TT, MDEQ) Natural Ponds not already "High" (MDEQ)/not already rated water regime H (Permanently Flooded) (PG, TT) All wetlands associated with a Pond (PG, TT, MDEQ) Terrene Basin Isolated wetlands (PG, TT) 	
Low	<ul style="list-style-type: none"> All remaining (PG, TT) 	

Shoreline Stabilization

Functional Significance	Criteria	Comments/suggestions
High	<ul style="list-style-type: none"> Vegetated wetlands along water bodies (Rivers, Lakes, Streams), except Island wetlands (PG, TT, MDEQ) [Presence of flowing water (perennial stream, >7 sq. mi. drainage) OR presence of >=100 ft of open water] AND [presence of >=20 ft of erect vegetation, forest of scrub-shrub, or good water and vegetation interspersed along lake OR presence of >=10 ft of erect vegetation, or forest of scrub-shrub, or good water and vegetation interspersed along stream] (ADID) 	
Moderate	<ul style="list-style-type: none"> Terrene vegetated wetlands along Ponds (PG, TT, MDEQ) Terrene Outflow, Outflow Intermittent, and Outflow Artificial wetlands that are Headwater (PG, TT, MDEQ) 	
Low	<ul style="list-style-type: none"> All remaining (PG, TT) 	

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Fish Habitat (& Shellfish)

Functional Significance	Criteria	Comments/suggestions
High	<ul style="list-style-type: none"> • Lentic wetlands (PG, TT, MDEQ) • Stream and River wetlands that are only Throughflow (not Throughflow Artificial or Throughflow Intermittent) (PG, TT, MDEQ) • Wetlands associated with a pond (MDEQ) connected to the hydrography network (PG, TT) • Ponds associated with a wetland (MDEQ) when Pond is connected to hydrography network (PG, TT) • Palustrine Aquatic Bed Outflow wetlands (PG, TT, MDEQ) • Natural Ponds that are Isolated (MDEQ) • Natural Lakes (PG, TT, MDEQ) • All Lakes that are Throughflow, Throughflow Intermittent, or Throughflow Artificial, Outflow, Outflow Intermittent, or Outflow Artificial (PG, TT, MDEQ) • Headwater wetlands except artificial types (MDEQ) connected to the hydrography network (PG, TT) 	
Moderate	<ul style="list-style-type: none"> • Palustrine Aquatic Bed wetlands that are Outflow Artificial, Outflow Intermittent, or Isolated and not already coded water regime H (Permanently Flooded) (MDEQ) • Diked Impounded Ponds not already coded water regime H (Permanently Flooded) (MDEQ) • Palustrine Aquatic Bed Throughflow wetlands (MDEQ) • Lotic Stream Throughflow Intermittent wetlands (MDEQ) • Terrene Outflow Intermittent or Outflow Artificial wetlands (MDEQ) • Excavated Isolated Lakes (MDEQ) • Wetlands associated with a Pond not connected to the hydrography network (PG, TT) • Ponds not connected to the hydrography network associated with a wetland (PG, TT) • Natural Ponds that are Isolated (PG, TT) • Headwater wetlands not connected to the hydrography network, except Artificial types (PG, TT) • Throughflow Ponds (PG, TT, MDEQ) 	
Low	<ul style="list-style-type: none"> • All remaining (PG, TT) 	<p>Not sure ALL remaining wetlands should be included, as many wetlands likely never contain fish or shellfish</p>

LAKE COUNTY WETLAND RESTORATION AND PRESERVATION PLAN (WRAPP)
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Waterfowl & Waterbird Habitat

Functional Significance	Criteria	Comments/suggestions
High	<ul style="list-style-type: none"> Palustrine Aquatic Bed Emergent and Scrub-Shrub wetlands that are seasonally flooded, seasonally flooded/saturated, Semi-permanently flooded, intermittently exposed, and permanently flooded. No Coniferous (PG, MDEQ) and are Frequently Flooded as defined by SSURGO dataset (TT). 	
Moderate	<ul style="list-style-type: none"> Palustrine Forested wetlands that are seasonally flooded, seasonally flooded/saturated, Semi-permanently flooded, intermittently exposed, and permanently flooded. No Coniferous (PG, TT, MDEQ) 	
Low	<ul style="list-style-type: none"> All remaining (PG, TT) 	

Shorebird Habitat

Functional Significance	Criteria	Comments/suggestions
High	<ul style="list-style-type: none"> Wetlands that are not intermittently exposed or permanently flooded and are: <ul style="list-style-type: none"> Palustrine Aquatic Bed (MDEQ) Palustrine Aquatic Bed Emergent and Scrub-Shrub (PG) Palustrine Aquatic Bed Emergent and Scrub-Shrub and Frequently Flooded, as defined by SSURGO dataset (TT) Non-persistent wetlands (PEM2) (PG, TT, MDEQ) Lacustrine Unconsolidated shore that is partially flooded (PG, TT, MDEQ) 	
Moderate	<ul style="list-style-type: none"> Palustrine Emergent, Scrub-Shrub, and Forested wetlands that are not intermittently exposed or permanently flooded (PG, TT, MDEQ) 	
Low	<ul style="list-style-type: none"> All remaining (PG, TT) 	

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Amphibian Habitat

Functional Significance	Criteria	Comments/suggestions
High	<ul style="list-style-type: none"> • Palustrine emergent, scrub-shrub, and forested wetlands along with those mixed types less than 5 acres in size, isolated, and only seasonally flooded, seasonally flooded/saturated, or semipermanently flooded (MDEQ); and not frequently flooded as defined by SSURGO (PG) or less than 2 acres in size in Illinois (TT). • Outflowing wetlands (PG, TT, MDEQ) • Palustrine aquatic beds that are isolated and not intermittently exposed or permanently flooded; and not frequently flooded as defined by SSURGO. (PG, TT, MDEQ) • Wetlands adjacent to rivers (PG, TT, MDEQ) • Lakeside wetlands (PG, TT, MDEQ) • Ponds and any wetlands that are associated with those ponds (TT) • Natural ponds and wetlands associated with those ponds (PG, MDEQ) 	
Moderate	<ul style="list-style-type: none"> • Palustrine emergent, scrub-shrub, and forested wetlands with those mixed types that are less than 5 acres in size and Throughflow and only seasonally flooded, seasonally flooded/ saturated, or semi-permanently flooded (MDEQ) and not frequently flooded as defined by SSURGO (PG), or less than 2 acres in size in Illinois (TT). • Palustrine emergent, scrub-shrub, and forested wetlands along with those mixed types that less than 5 acres in size and outflowing artificially or intermittently and only seasonally flooded, seasonally flooded/ saturated, or semi-permanently flooded (MDEQ); and not frequently flooded as defined by SSURGO (PG), or less than 2 acres in size in Illinois (TT). • Palustrine emergent, scrub-shrub, and forested wetlands along with those mixed types that are isolated and only seasonally flooded, seasonally flooded/ saturated, or semi-permanently flooded (MDEQ); and not frequently flooded as defined by SSURGO (PG, TT). • Palustrine aquatic bed isolated wetlands that are permanently flooded (PG, TT, MDEQ) • Scrub-shrub and forested wetlands less than less than 5 acres in size (must be PFO1) (PG, MDEQ), or less than 2 acres in size in Illinois (TT). • Rivers (PG, TT, MDEQ) • Ponds and the wetlands associated with them not already coded water regime H (Permanently Flooded) (PG, MDEQ) 	
Low	<ul style="list-style-type: none"> • All remaining (PG, TT) 	

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Carbon Sequestration/Storage

Functional Significance	Criteria	Comments/suggestions
High	<ul style="list-style-type: none"> • Vegetated wetlands that are seasonally flooded, semi-permanently flooded, intermittently exposed, or permanently saturated (Tiner 2011). • Vegetated wetlands with one or more of the following characteristics: Isolated, Inflow, Deep Organic Soils (limited to wetlands with >60" of much and/or peat), or saturated water regime (B), excluding Open waters (Lakes, Ponds, Rivers) and unvegetated wetlands (TNC) • 	
Moderate	<ul style="list-style-type: none"> • Vegetated wetlands that are temporarily flooded or seasonally saturated (Tiner 2011). • Nonvegetated/vegetated wetlands (Tiner 2011). • Ponds, excluding aquaculture, commercial, industrial, residential-stormwater, sewage treatment, and isolated impoundments (Tiner 2011) • All other vegetated wetlands, excluding Open waters (Lakes, Ponds, Rivers) and unvegetated wetlands (TNC) 	

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Unique Wetland Resources/Conservation of Rare and Imperiled Wetlands and Species (MDEQ)/Conservation of Rare Wetlands and Species (TT)/Provision of Unique, Uncommon, or Highly Diverse Wetland Plant Communities (Tiner 2011)

Functional Significance	Criteria	Comments/suggestions
High	<ul style="list-style-type: none"> • MI Natural Features Inventory's Biological Rarity Index and Probably value layer to identify wetlands and species of rarity (MDEQ). • Wetland has at least one occurrence of a Federal or State-listed threatened or endangered species (TT) • Wetland is identified as locally rare by local assessment work (TT) • Wetland type viewed as potentially significant for the provision of habitat for unique or diverse wetland plant communities in coastal Georgia (Tiner 2011) 	Add wetlands classified as "Great Lakes Coastal", ADID, & HQARs (if feasible) to this list
Moderate	<ul style="list-style-type: none"> • 	
Low	<ul style="list-style-type: none"> • All remaining (TT) 	

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Great Lakes Coastal Wetlands

Functional Significance	Criteria	Comments/suggestions
High	<ul style="list-style-type: none"> • 	No existing method for this function. SMC staff recommendation to classify wetland polygons as "Great Lakes Coastal" and include this wetland type in other functions
Moderate	<ul style="list-style-type: none"> • 	
Low	<ul style="list-style-type: none"> • 	

Coastal Storm Surge Protection

Functional Significance	Criteria	Comments/suggestions
High	<ul style="list-style-type: none"> • Estuarine wetlands that are Basin, Island, or Fringe (Tiner 2011) • Lotic Tidal wetlands that are Island or Floodplain (Tiner 2011) • Marine wetlands that are Fringe or Island (Tiner 2011) 	Does not appear in other assessment work in Midwest US. SMC staff recommendation to add wetlands classified as "Great Lakes Coastal" to criteria under "Shoreline Stabilization"
Moderate	<ul style="list-style-type: none"> • Other tidal wetlands (Tiner 2011) • Terrene wetlands, excluding Slope, that are Estuarine Discharge or Overwash (Tiner 2011) 	
Low	<ul style="list-style-type: none"> • 	

Open Wetlands and Waters Habitat

Functional Significance	Criteria	Comments/suggestions
High	<ul style="list-style-type: none"> • Inland Lakes, Ponds, and Impoundments (TNC) • Emergent wetlands >10ha (TNC) 	TNC model based on target habitat types for American Bittern, Blue-Winged Teal, and Black Tern as "umbrella species" indicative of this habitat type
Moderate	<ul style="list-style-type: none"> • Shrub bog (TNC) 	TNC model also includes upland habitats & proximity analysis
Low	<ul style="list-style-type: none"> • 	

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Stream Shading

Functional Significance	Criteria	Comments/suggestions
High	<ul style="list-style-type: none"> Lotic Stream wetlands that are Palustrine Forested and Palustrine Scrub-Shrub and Headwater (TT, MDEQ) Terrene headwater wetlands that are Palustrine Forested and Scrub-Shrub (PG) Headwater wetlands that are Forested and Scrub-Shrub and within 50 feet of the hydrography network (TT) 	Determine if criteria should be “forested AND scrub-shrub” (needs to be both) or “forested OR scrub-shrub” (could be either)
Moderate	<ul style="list-style-type: none"> Stream wetlands that are Palustrine forested and Palustrine scrub-shrub and NOT Headwater (PG, TT, MDEQ) All other wetlands that are forested and scrub-shrub (PG) All other wetlands that are not forested and scrub-shrub and within 50 feet of the hydrography network (TT) 	See comment on Boolean logic above
Low	<ul style="list-style-type: none"> All remaining (PG, TT) 	

Riparian Habitat

Functional Significance	Criteria	Comments/suggestions
High	<ul style="list-style-type: none"> Shrub swamp or Floodplain Forest <300 m from non-impaired (303d-listed) channels (TNC) Stream (Cold, Cool, and Warm), or River (Warm) adjacent to natural land cover and <300 m from non-impaired (303d-listed) channels (TNC) 	TNC model based on target habitat types for Wood Turtle as “umbrella species” indicative of this habitat type; TNC model includes upland habitat types as well
Moderate	<ul style="list-style-type: none"> Forested wetland (Broadleaf deciduous) <300 m from non-impaired (303d-listed) channels (TNC) 	
Low	<ul style="list-style-type: none"> Shrub bog, Forested wetland (evergreen), Forested wetland (tamarack), Forested wetland (ridge & swale), Emergent wetland <300 m from non-impaired (303d-listed) channels (TNC) Inland Lakes, Ponds, Impoundments <1ha and <300 m from non-impaired (303d-listed) channels (TNC) 	

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Influence of Groundwater on Stream Recharge (TT)/Ground Water Influence (MDEQ)

Functional Significance	Criteria	Comments/suggestions
High	<ul style="list-style-type: none"> Use "DARCY" tool (Darcy's equation) to determine areas of groundwater influence (MDEQ) Wetland with "0" depth to water table (annual or seasonal) and is Outflow or Throughflow (TT) 	This category should be used to indicate wetlands that are heavily influenced by groundwater sources (groundwater discharge), NOT wetlands that are groundwater recharge areas
Moderate	<ul style="list-style-type: none"> Use "DARCY" tool (Darcy's equation) to determine areas of groundwater influence (MDEQ) All remaining wetlands with "0" depth to water table (annual or seasonal) (TT) 	
Low	<ul style="list-style-type: none"> All remaining wetlands 	

Beach Habitat

Functional Significance	Criteria	Comments/suggestions
High	<ul style="list-style-type: none"> Coast: beach (TNC) 	TNC model based on target habitat types for Caspian Tern and Common Tern as "umbrella species" indicative of this habitat type
Moderate	<ul style="list-style-type: none"> 	
Low	<ul style="list-style-type: none"> Emergent wetland, Inland Lake, Pond, or Impoundment within 2 miles of beach habitat (TNC) 	

Invertebrate Species Habitat

Functional Significance	Criteria	Comments/suggestions
High	<ul style="list-style-type: none"> 	No existing method/criteria for assessment, SMC staff recommendation to leave out of WRAPP for future study phase
Moderate	<ul style="list-style-type: none"> 	
Low	<ul style="list-style-type: none"> 	

REFERENCES

ADID: NIPC, USEPA, SMC. 1992. Advanced Identification Study, Lake County, Illinois: Final Report.

MDEQ: Michigan Dept. of Environmental Quality. 2011. Landscape Level Wetland Functional Assessment: Methodology Report.

TT: Tetra Tech. 2014. Final Methodology Memo for Wetland Management Opportunities (Lower Fox, WI, & Upper Des Plaines, IL).

PG: PG Consultants. 2014. Methods and Results for a Geographic Information System Landscape Model of Wetland Functions in the Sandusky Subbasin (OH).

Tiner2011: Tiner, Ralph W. 2011. Predicting Wetland Functions at the Landscape Level for Coastal Georgia Using NWIPlus Data. USFWS.

TNC: The Nature Conservancy. 2012. The Duck-Pensaukee Watershed Approach (WI).