

MARYLAND WETLAND ECOLOGICAL INTEGRITY ASSESSMENT

| | | |
|--|--------------------|--|
| Project/Site Name: _____ | City/County: _____ | Sampling Date: _____ |
| Assessment Area Name (if >1 AA): _____ | Observer(s): _____ | |
| Delineation performed: <input type="checkbox"/> previously <input type="checkbox"/> concurrently | | Lat/Long: _____ AA size: _____ units _____ |
| Site Description: (general setting, topography, vegetation patterns, human and natural disturbance, photos, etc.) | | |
| | | |

LANDSCAPE ASSESSMENT FOR PROJECT AREA (Section 3; office or office/field assessment):

| METRIC | SCORE (use tables in Section 3 to assign scores) |
|---|--|
| Buffer Perimeter: %Natural: <input type="checkbox"/> >95% <input type="checkbox"/> 85-95% <input type="checkbox"/> 75-84% <input type="checkbox"/> <75% | |
| Buffer Condition: %Natural: <input type="checkbox"/> >90% <input type="checkbox"/> 75-90% <input type="checkbox"/> 50-74% <input type="checkbox"/> <50% | |
| Aquatic Context: <input type="checkbox"/> 4 or more aquatic resources <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 0-1 | |
| Comparative Size: <input type="checkbox"/> Very large <input type="checkbox"/> Large <input type="checkbox"/> Medium to small <input type="checkbox"/> Small to very small | |
| Source(s) of size reduction: <input type="checkbox"/> Beaver dam or lodge <input type="checkbox"/> Trail <input type="checkbox"/> Road <input type="checkbox"/> Railroad <input type="checkbox"/> Development <input type="checkbox"/> Agriculture <input type="checkbox"/> Impoundment <input type="checkbox"/> Human-constructed drainage (into or out of wetland) <input type="checkbox"/> Excavation <input type="checkbox"/> Fill <input type="checkbox"/> Groundwater extraction <input type="checkbox"/> Other _____ | |

WETLAND ASSESSMENT AREA ONLY:

ENVIRONMENTAL INFORMATION (Section 4.2)

Slope (deg/%): _____ Aspect: _____

Landscape Position: Circle all features present

| | | | |
|--|---|--|---|
| <input type="checkbox"/> Active floodplain (depression or terrace) | <input type="checkbox"/> Beaver pond/Natural impoundment | <input type="checkbox"/> Riparian-Depression (in floodplain) | <input type="checkbox"/> Riparian terrace (outside seasonal flooding; historic floodplain or current terrace) |
| <input type="checkbox"/> Headwater stream/spring | <input type="checkbox"/> Saddle/Drainage Divide | <input type="checkbox"/> Swale | <input type="checkbox"/> Isolated Depression |
| <input type="checkbox"/> Oxbow | <input type="checkbox"/> Seep/groundwater discharge site | <input type="checkbox"/> Streambank | <input type="checkbox"/> Point bar |
| <input type="checkbox"/> Flats | <input type="checkbox"/> Wetland charged by groundwater seeps | <input type="checkbox"/> Other- describe | |

Water Source: If more than one source is present, label as P (primary), S (Secondary), T (tertiary)

| | | | |
|---|--|---|---|
| <input type="checkbox"/> Direct precipitation | <input type="checkbox"/> Groundwater discharge | <input type="checkbox"/> Natural surface flow | <input type="checkbox"/> Urban run-off/culverts |
| <input type="checkbox"/> Overbank flooding | <input type="checkbox"/> Alluvial aquifer | <input type="checkbox"/> Irrigation | <input type="checkbox"/> Pipes/outfall (directly feeding wetland) |

Hydrological Regime: Circle the regime that best matches the conditions in the AA

| | | | | |
|-----------------------|--------------------------|---------------------------|--------------------------|--------------------------------|
| H Permanently Flooded | G Intermittently Exposed | F Semipermanently Flooded | C Seasonally Flooded | E Seasonally Flooded-Saturated |
| B Saturated | D Continuously Saturated | A Temporarily Flooded | I Intermittently Flooded | K Artificially Flooded |

CLASSIFICATION OF AA TO KEY WILDLIFE HABITAT AND HGM CLASS (Section 4.3)

Key Wildlife Habitat: _____ HGM Class: _____

Optional: NVC Community Type/Plant Association: _____

SOIL/SUBSTRATE (Use tables in Section 4.4 to assign score; if the floodplain does not naturally have hydric soils, and still does not have hydric soils under current conditions, skip this metric.)

| | |
|---|--------------|
| Redox concentrations: >10% surface area and <input type="checkbox"/> start 0-6" from soil surface <input type="checkbox"/> start >6-12" <input type="checkbox"/> start >12-18" | |
| <10% surface area and <input type="checkbox"/> start 0-6" from soil surface <input type="checkbox"/> start >6-12" <input type="checkbox"/> None within 18" | Score: _____ |
| Microtopography: <input type="checkbox"/> ≥50% of Assessment Area <input type="checkbox"/> 30-49% of AA <input type="checkbox"/> 10-29% of AA <input type="checkbox"/> <10% of AA | Score: _____ |
| Soil Organic Matter: <input type="checkbox"/> Horizon present (any thickness) <input type="checkbox"/> Mineral surface layer(s) ≥ 4" thick | |
| <input type="checkbox"/> Mineral surface layer <4" thick and <input type="checkbox"/> Matrix value ≤3 and chroma ≤2 <input type="checkbox"/> Matrix value >3 and ≤4 or chroma >2 and ≤3 | Score: _____ |
| Organic Matter Accumulation (root turnover): Ground cover of herbaceous plants: <input type="checkbox"/> >75% <input type="checkbox"/> >50-74% <input type="checkbox"/> >25-50% <input type="checkbox"/> ≤25% | Score: _____ |

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HYDROLOGY (Use tables in Section 4.5 to assign scores)

Water Source – Identify dominant water source and natural/unnatural influence for the AA.

Natural Unnatural/Manipulated: Impoundment Inflow from anthropogenic sources Irrigation/pumping Fill Ditching/Channelization Other
Point Source Discharge (into or adjacent to site): Lacking Minor Moderate Major
Unnatural Obstructions: None Minor (<25%) Moderate (25-75%) Major (>75%)
Alteration to: Overland Flow Groundwater Overbank Flooding Plant Community Wetland Extent
Timing: Recent (within 5 years) Historic Permanent hydrologic change
Negative effect: flow and circulation within AA redirects or confines flows into/through AA reduced water table reduced inundation None
Score: _____

Channel – Identify evidence of alteration to the stream channel in the project area.

Features present: Braided channels coalesced Banks undercut, slides, and/or slumps Riparian vegetation declining Shrub/trees falling into channel
Evidence of channel instability/migration: None/minimal Minor Moderate Substantial
Sources of channel instability/migration: Active incision/downcutting Lacks vertical controls (vegetation, wood, rock, etc.) Excessive channel deposition/bar development Historic channel alteration Proximity and landscape position presents potential impact to AA hydrology
Evidence of bank instability: None/minimal Minor Moderate Substantial
Sources of bank instability: Vertical banks Highly erodible materials Raw unvegetated banks Excessive bedload Other _____
If available: Bank Erosion Hazard Index _____ Near Bank Stress _____
Score: _____

Hydroperiod and Hydrologic Connectivity – Determine the natural variability and/or recent alteration of the duration, frequency, and magnitude of inundation/saturation in the AA by KWH type.

Natural variation of hydroperiod: Low High
Information Sources: Visual indicators Monitoring Wells Hydrology/Hydraulic analysis Bank Height Ratio _____ Entrenchment Ratio _____
Overbank flooding (if available): 2-year storm 10-year 100-year
Degree of connection to floodplain: Complete Disconnection/entrenchment: Minimal Moderate Disconnected and/or severely entrenched
Evidence of overbank flooding: Recent Evidence of overbank flooding Some evidence, likely during large storm events Generally no longer occurs
Change/Alteration of hydroperiod: None Due to natural events Human influences (Minor Moderate Substantial)
Backwater flooding from restrictions: List restrictions: _____
Score: _____

KEY WILDLIFE HABITAT (Use tables and figures in section 4.6 to assign scores)

Interspersion/Patch Richness – interspersion of vegetation patches and number of different obvious types of physical surfaces or features that may provide habitat for aquatic, wetland, or riparian animal species.

Interspersion of habitats/physical features (see examples in field manual): High Moderate Low Minimal/None
Features present: Spring or upwelling groundwater Depression Vegetated pool Unvegetated pool Unvegetated flat Island Animal mound or burrow Beaver dam or lodge Oxbow, swale, secondary channel Wind-thrown tree hole Mound Bank overhang with tree roots Tip-up tree root mound Brush piles Abundant deciduous leaf litter Partially buried natural debris Debris jam Plant hummock/tussocks
 Other wildlife habitat: _____
Score: _____

Vertical Structure – Refer to metrics for selected Key Wildlife Habitat Type for scoring.

Forested systems: Canopy: Heterogeneous patches of different ages or sizes: Yes Mostly Somewhat No
 Gaps of varying sizes Impacted by beaver activity Impacted by forest pests/pathogens
Woody vertical layers: Multiple layers present One layer missing or homogeneous >1 layer missing, little variation Only 1-2 layers present
Large trees (DBH>60cm or 24") harvested: None/few 10-30% >30% Most/All
Degradation due to cutting, browsing, pests/pathogens: Minimal Moderate Extensive Source(s) of degradation: _____
Bog and Fen systems: Woody layer mortality: Due to natural factors Minor human-caused Moderate human-caused Extensive human-caused
Potential for site recovery: Excellent Likely Uncertain Unlikely
Expected structure: Present Minor alteration Moderate Alteration Extensive Alteration
Score: _____

Standing and Downed Coarse Woody Debris – Refer to metrics for selected Key Wildlife Habitat type for scoring.

Forested systems: Standing snags and downed logs: Size diversity: High Moderate Moderate-low Low
Stage of downed log decay: Variable including advanced stage Variable with few advanced Variable with no advanced Low variability
Source(s) of woody debris if not natural (cutting, pest/pathogens, etc.): _____
Bog and Fen systems: Woody and litter: Typical, peat accumulation Human-caused alteration Minor Moderate Substantial
Ground cover alterations: None Minor Moderate Substantial
Score: _____

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VEGETATION (Section 4.6) (Additional species may be listed on a separate sheet. See manual for %cover examples. Species identified for each layer should meet the minimum required for wetland delineation)

| Species: | Absolute % Cover | Species: | Absolute % Cover |
|---|------------------|----------|------------------|
| Tree Stratum: woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger DBH | | | |
| 1. | | 5. | |
| 2. | | 6. | |
| 3. | | 7. | |
| 4. | | 8. | |
| Sapling Stratum: woody plants, excluding woody vines, approx.. 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH | | | |
| 1. | | 4. | |
| 2. | | 5. | |
| 3. | | 6. | |
| Shrub Stratum: woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height | | | |
| 1. | | 6. | |
| 2. | | 7. | |
| 3. | | 8. | |
| 4. | | 9. | |
| 5. | | 10. | |
| Herb Stratum: all herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody species, except woody vines, less than approximately 3 ft (1 m) in height | | | |
| 1. | | 7. | |
| 2. | | 8. | |
| 3. | | 9. | |
| 4. | | 10. | |
| 5. | | 11. | |
| 6. | | 12. | |
| Woody Vine Stratum: all woody vines, regardless of height | | | |
| 1. | | 4. | |
| 2. | | 5. | |
| 3. | | 6. | |

KWH VEGETATION COMPOSITION (Use tables in Section 4.6 to assign scores).

| | |
|--|---------------------|
| Invasive Species: | |
| Maximum invasive species cover in any one woody layer: <input type="checkbox"/> <1% <input type="checkbox"/> 1- 5% <input type="checkbox"/> >5-10% <input type="checkbox"/> >10% | |
| Absolute cover of invasive/disturbance species in herbaceous layer: <input type="checkbox"/> <1% <input type="checkbox"/> 1-5% <input type="checkbox"/> >5-30% <input type="checkbox"/> >30% | Score: _____ |
| Native Species: Refer to metrics for selected Key Wildlife Habitat Type for scoring. | |
| Woody layer (if present): <input type="checkbox"/> Dominated by diagnostic native species <input type="checkbox"/> Some diagnostic species absent/reduced <input type="checkbox"/> Few diagnostic species <input type="checkbox"/> Few/no diagnostic species present | |
| Herbaceous layer: <input type="checkbox"/> Dominated by diagnostic native species <input type="checkbox"/> Some diagnostic species absent/reduced <input type="checkbox"/> Few diagnostic species <input type="checkbox"/> Few/no diagnostic species present | |
| Bog/Fen/Springs: Sphagnum cover - <input type="checkbox"/> Continuous <input type="checkbox"/> Absent from small areas <input type="checkbox"/> Reduced <input type="checkbox"/> Very low | |
| Cover of native species indicative of disturbance: <input type="checkbox"/> 0-1% <input type="checkbox"/> 2-10% <input type="checkbox"/> >10-30% <input type="checkbox"/> >30% | Score: _____ |
| Floristic Quality Assessment: (see manual for calculation): | |
| Native mean C-value _____ : <input type="checkbox"/> >4 <input type="checkbox"/> 3-4 <input type="checkbox"/> <3-2 <input type="checkbox"/> <2 | |
| Adjusted FQI _____ | Score: _____ |
| Alterations/Stressors: Indicate stressors affecting the vegetation composition of the AA. | |
| <input type="checkbox"/> Timber harvest (clearcut or selective cut) <input type="checkbox"/> Tree plantation <input type="checkbox"/> Mowing or shrub cutting <input type="checkbox"/> Herbicide use <input type="checkbox"/> Trampling/ORV <input type="checkbox"/> Excessive animal herbivory <input type="checkbox"/> Excessive pest damage <input type="checkbox"/> Invasive plant species <input type="checkbox"/> Recently burned/unnatural fire regime <input type="checkbox"/> Other _____ | |

Remarks and scoring rationales (continue on attached sheet I needed):

MARYLAND WETLAND ECOLOGICAL INTEGRITY ASSESSEMENT SCORING FORM

Project/Site Name: _____ City/County: _____ Sampling Date: _____

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Notes: _____ see attached details

Scoring Scale: 3.5- 4 = Excellent 2.5-3.49 = Good 1.5-2.49 = Fair 1-1.49 = Poor

| Core Factor | Metric | Metric Score | Mean Core Factor Score | Calculation for Overall Score | Overall Core Factor Score |
|--|---|--------------|--|-------------------------------|---------------------------|
| Landscape (Assessment for project area) | Buffer Perimeter | | (Sum of metric scores: _____) / 4 = _____ | Mean Core Factor Score x 0.3 | |
| | Buffer Condition | | | | |
| | Aquatic Context | | | | |
| | Comparative Size | | | | |
| Soil/Substrate* | Redox Concentrations | | (Sum of metric scores: _____) / 4 = _____ | Mean Core Factor Score x 0.1* | |
| | Microtopography | | | | |
| | Soil Organic Matter | | | | |
| | Organic Matter Accumulation | | | | |
| Hydrology | Water source | | (Sum of metric scores: _____) / 3 = _____ | Mean Core Factor Score x 0.2 | |
| | Channel | | | | |
| | Hydroperiod and Hydrologic Connectivity | | | | |
| Key Wildlife Habitat and Vegetation Composition | Interspersion/Patch Richness | | (Sum of metric scores: _____) / 6 = _____ | Mean Core Factor Score x 0.4 | |
| | Vertical Structure | | | | |
| | Coarse Woody Debris | | | | |
| | Invasive Species | | | | |
| | Native Species Composition | | | | |
| | Floristic Quality Assessment | | | | |
| Sum of Overall Core Factor Scores = Overall KWH Ecological Integrity Assessment (EIA) Score*: * If Soil/Substrate metric not rated, see manual for adjusted calculation | | | | | |
| <p>Additional points for unique resources in the project area if Overall EIA score not "Excellent": add + 0.2 to the Overall EIA score for each of the following:</p> <p>From WRR layers (see Section 3.):</p> <ul style="list-style-type: none"> <input type="checkbox"/> Non-tidal Wetlands of Special State Concern <input type="checkbox"/> Wetlands adjacent to use III or IV waters <input type="checkbox"/> Biodiversity Conservation Network Tier 1, 2, or 3 <input type="checkbox"/> Occurs in stream reach with "Good" Combined Index of Biotic Integrity <input type="checkbox"/> Stream mitigation framework area with low impervious cover (< 5%) <p>From Field observations:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Other Maryland nontidal wetland(s) with significant plant or wildlife value (as defined by COMAR 26.23.01.01B80) (add + 0.2 for each wetland to the Overall EIA score) <input type="checkbox"/> Areas with state rare plants or state rare natural community noted during field data collection but not mapped in Biodiversity Conservation Network Tier 1, 2, or 3 | | | | | |
| <p>Additional points for limited habitats in the project area if Overall EIA score not "Excellent" : add + 0.1 to the Overall EIA score for each of the following if:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Dominated by native trees greater than 60cm or 24" diameter at breast height <input type="checkbox"/> Dominated by hard mast (i.e., acorns and nuts) producing native species in the tree strata <input type="checkbox"/> Forest Interior Dwelling Species (FIDS) area: Class 1 <input type="checkbox"/> Targeted Ecological Areas | | | | | |
| FINAL KWH EIA SCORE: _____ | | | | | |

Include Representative Site Photographs