

Appendix 1

Rhode Island Rapid Assessment Method version 2.10 Field Datasheet

A. Wetland Characteristics; apply to the *current* state of the wetland. Not Scored.

1) Assessment Unit Area; select one:

- <0.25 acres
- 0.25 to <1.0 acres
- 1.0 to <3.0 acres
- 3.0 to <10 acres
- 10 to <25 acres
- 25 to 50 acres
- >50 acres

2) Hydrologic Characteristics

Source of water; select main source:

- Precipitation
- Groundwater
- Surface water

Water Regime; select one or two dominant regimes:

- Permanently flooded
- Semi-permanently flooded
- Seasonally flooded
- Temporarily flooded
- Permanently saturated
- Seasonally saturated
- Regularly flooded (tidal)
- Irregularly flooded (tidal)

Maximum water depth, today; select one:

- Dry
- Saturated
- <1 foot
- 1 to 3 feet
- >3 feet

3) Habitat Characteristics

Habitat stratum diversity; estimate total cover of all habitat strata within unit using classes at right:

- | | |
|----------------------------------|-----------------------|
| ___ Trees | <i>Cover Classes:</i> |
| ___ Shrubs | 0.....< 1% |
| ___ Emergent | 1.....1-5% |
| ___ Aquatic bed | 2.....6-25% |
| ___ Sphagnum | 3.....26-50% |
| ___ Surface water, today | 4.....51-75% |
| ___ Unvegetated substrate, today | 5.....>75% |

Microhabitat diversity; rate each present using the scale at right:

- | | |
|------------------------------------|---------------------------------------|
| ___ Vegetated hummocks or tussocks | <i>Ecological Significance Scale:</i> |
| ___ Coarse woody debris | 0.....None Noted |
| ___ Standing dead trees | 1.....Minor Feature |
| ___ Amphibian breeding habitat | 2.....Significant Feature |
| | 3.....Dominant Feature |

4) Wetland Classification

Hydrogeomorphic Class; select main one:

- Isolated Depression
- Connected Depression
- Floodplain (riverine)
- Fringe
- Slope
- Flat

NWI Classes; select all comprising unit and indicate *Dominance Type:*

- Forested _____
- Scrub-shrub _____
- Emergent _____
- Aquatic Bed _____
- Unconsolidated Bottom or Shore _____
- Rock Bottom or Shore _____

RINHP natural community types; select all present within unit:

- | | | |
|---|---|--|
| <input type="checkbox"/> Freshwater tidal marsh* | <input type="checkbox"/> Deep emergent marsh | <input type="checkbox"/> Floodplain Forest* |
| <input type="checkbox"/> Interdunal swale* | <input type="checkbox"/> Shallow emergent marsh | <input type="checkbox"/> Red Maple Swamp |
| <input type="checkbox"/> Intermittent stream | <input type="checkbox"/> Emergent fen* | <input type="checkbox"/> Vernal pool* |
| <input type="checkbox"/> Eutrophic Pond | <input type="checkbox"/> Dwarf shrub bog / fen* | <input type="checkbox"/> Hemlock-hardwood swamp |
| <input type="checkbox"/> Coastal plain pondshore* | <input type="checkbox"/> Dwarf tree bog* | <input type="checkbox"/> Atlantic white cedar swamp* |
| <input type="checkbox"/> Coastal plain quagmire* | <input type="checkbox"/> Scrub-shrub wetland | <input type="checkbox"/> Black Spruce Bog* |
| | | <input type="checkbox"/> Other Type: _____ |

5) Wetland values; select all known or observed:

- Within 100 year flood plain
- Between stream or lake and human use
- Part of a habitat complex or corridor
- Falls in aquifer recharge zone
- Contains known T/E species
- Significant avian habitat
- Contains GCN* habitat type
- Educational or historic significance

*Identified by DEM as habitat of *Greatest Conservation Need*

B. Landscape Stresses. Sum metrics 1 and 2

1) Degradation of Buffers

- Estimate % cultural cover within 100-foot buffer. Select one.
- <5% (10)
 - 6 to 25% (7)
 - 26-50% (4)
 - 51-75% (1)
 - >75% (0)

2) Intensity of Surrounding Land Use

Land Use Intensity weighted average within 500-foot buffer. Estimate proportion of each class to the nearest tenth and multiply.

Proportion	Score	Weighted Value
Very Low	× 10 =	_____
Low	× 7 =	_____
Moderately High	× 4 =	_____
High	× 1 =	_____
Sum weighted values for score = _____		

- Associated Stressors:* Check all that apply
- Commercial or industrial development
 - Unsewered Residential development
 - Sewered Residential development
 - New construction
 - Landfill or waste disposal
 - Channelized streams or ditches
 - Raised road beds
 - Foot paths / trails
 - Row crops, turf, or nursery plants
 - Poultry or livestock operations
 - Orchards, hay fields, or pasture
 - Piers, docks, or boat ramps
 - Golf courses / recreational development
 - Sand and gravel operations
 - Other _____

Very Low.....Natural areas, open water
 Low.....Recovering natural lands, passive recreation, low trails/dirt roads
 Mod High.....Residential, pasture/hay, mowed areas, raised roads to 2-lane
 High.....Urban, impervious land cover, new construction, row crops, turf crops, mining operations, paved roads > 2-lane

Sum of Metrics 1 and 2 = **B. Landscape Stress Score**

C. Wetland Stresses. Sum metrics 3 to 9 and subtract from 70.

3) Impoundment.

- Sum a and b (Max = 10)
- a. Increase in depth or hydroperiod. Select one and multiply by the proportion of the unit affected to the nearest tenth. = _____
- None (0)
 - Wetland was *created* by impoundment (1)
 - Change in velocity only (2)
 - Change of less than one water regime (4)
 - Change of one water regime (6)
 - Change of two or more water regimes (8)
 - Change to deepwater (10)

Proportion of unit affected (circle one)
 0 .1 .2 .3 .4 .5 .6 .7 .8 .9 1.0

- b. Artificial barrier to movement of resources through water. Select all that apply and sum. = _____
- None (0)
 - Barrier to upstream movement at low water (1)
 - Barrier to downstream movement at low water (1)
 - Barrier to upstream or downstream movement above low water (1)

- Evidence:* check all that apply
- Physical barrier across flow downstream of wetland
 - Abrupt and unnatural edge downstream of wetland
 - Dam or restricting culvert downstream of wetland
 - Deepening of wetland upstream of barrier
 - Widening of wetland upstream of barrier
 - Change in vegetation across barrier
 - Dead or dying vegetation

- Primary Associated Stressor;* check one:
- Road
 - Railway
 - Weir / Dam
 - Raised Trail
 - Development Fill
 - Other

Water Regimes
 (Upland).....Temporarily Flooded.....Irregularly Flooded
 Seasonally SaturatedSeasonally Flooded.....Regularly Flooded
 Permanently SaturatedSemi-permanently Flooded
 Permanently Flooded

- Primary Source of Stress;* indicate as current (C) or historic (H):
- ___ Private / Residential
 - ___ Commercial
 - ___ Agricultural
 - ___ Public transportation
 - ___ Public utilities
 - ___ Public recreation
 - ___ Undetermined

4) Draining or diversion of water from wetland.

Decrease in depth or hydroperiod. Select one and multiply by the proportion of the unit affected to the nearest tenth.

- None (0)
- Change in velocity only (3)
- Change of less than one water regime (5)
- Change of one water regime (7)
- Change of two or more water regimes or to upland (10)

Water Regimes

(Upland).....Temporarily Flooded..... Irregularly Flooded
 Seasonally SaturatedSeasonally Flooded.....Regularly Flooded
 Permanently SaturatedSemi-Permanently Flooded
 Permanently Flooded

Proportion of unit affected (circle one)

0 .1 .2 .3 .4 .5 .6 .7 .8 .9 1.0

Evidence: check all that apply

- Drainage ditches or tiles evident
- Evident impoundment upstream of wetland
- Severe root exposure
- Moderate root exposure
- Soil fissures
- Uncharacteristically dry groundcover
- Dead or dying vegetation
- Change in vegetation across barrier

Primary Associated Stressor;
Check one:

- Road
- Railway
- Dike
- Fill
- Drainage ditch / tile
- Major well withdrawals
- Surface water pumps
- Other

Primary Source of Stress;
indicate as current (C) or historic (H):

- Private / Residential
- Commercial
- Agricultural
- Public transportation
- Public utilities
- Public recreation
- Undetermined

5) Anthropogenic fluvial inputs.

Rank the evidence of impact for each and sum (Max = 10).

- _____ a. Nutrients
- _____ b. Sediments / Solids
- _____ c. Toxins / Salts
- _____ d. Increased flashiness

Evidence-of-Impact Ranks

0.....No evidence
 1.....Sources evident, only
 3.....Slight impact evident
 5.....Moderate to strong impact evident

Evidence: check all that apply

- Runoff sources evident
- Point sources evident
- Excessive algae or floating vegetation
- Excessive rooted submerged or emergent vegetation
- Uncharacteristic sediments
- Obvious plumes or suspended solids
- Chemical smell
- Strangely tinted water
- Dead, dying, or patchy vegetation
- Dead fauna or stark lack of life
- Root exposure or bank erosion due to scouring

Primary Associated Stressor;
Check one:

- Point runoff
- Sheet runoff
- Effluent discharge
- Organic / yard waste
- Other point _____
- Riverine (up-stream)
- Multiple / non-point
- Channelization

Primary Source of Stress;
indicate as current (C) or historic (H):

- Private / Residential
- Commercial
- Agricultural
- Public transportation
- Public utilities
- Public recreation
- Multiple / non-point
- Undetermined

6) Filling and dumping within wetland. Select one and multiply by the proportion of the unit affected to the nearest tenth (Max = 10).

- Intensity of filling
- None (0)
 - Affects aesthetics only (2)
 - Affects water regime, vegetation, or soil quality (6)
 - Changes area to upland (10)
 - Fill is above surrounding upland grade (12)

Proportion of unit (or perimeter) affected (circle one)

0 .1 .2 .3 .4 .5 .6 .7 .8 .9 1.0

Evidence: check all that apply

- Unnaturally abrupt change in ground level
- Abrupt change in soil texture or content
- Unnaturally straight or abrupt wetland edge
- Unnatural items on or within the sediments

Primary Associated Stressor;
Check one:

- Road
- Raised Trail
- Railway
- Trash
- Fill
- Organic / yard waste
- Dam
- Dike
- Other

Primary Source of Stress;
indicate as current (C) or historic (H):

- Private / Residential
- Commercial
- Agricultural
- Public transportation
- Public utilities
- Public recreation
- Undetermined

7) Excavation and other substrate disturbances within wetland. Select one and multiply by the proportion of the unit affected to the nearest tenth.

- Intensity of disturbance
- None (0)
 - Wetland unit was *created* by excavation (1)
 - Soil quality or vegetation disturbed (4)
 - Changes water regime (7)
 - Excavated to deep water (10)

Proportion of unit (or perimeter) affected (circle one)
0 .1 .2 .3 .4 .5 .6 .7 .8 .9 1.0

- Evidence:* check all that apply
- Unnaturally abrupt lowering in ground level
 - Loss of vegetation
 - Unnaturally straight and abrupt wetland edge
 - Direct evidence of disturbance

- Primary Associated Stressor;*
Check one:
- Vehicle disturbance
 - Plowing / cultivation
 - Excavation / Grading
 - Channelization / Dredging
 - Ditching
 - Footpaths
 - Trampling
 - Other

- Primary Source of Stress;*
indicate as current (C) or historic (H):
- ___ Private / Residential
 - ___ Commercial
 - ___ Agricultural
 - ___ Public transportation
 - ___ Public utilities
 - ___ Public recreation
 - ___ Undetermined

8) Vegetation and detritus removal within wetland. Rank extent and multiply by the estimated proportion affected for each layer; then sum (Max = 10).

<input type="checkbox"/>	<u>Layers affected</u>	<u>Extent</u>	<u>Proportion</u>
<input type="checkbox"/>	Aquatic Bed	_____ x _____ = _____	
<input type="checkbox"/>	Detritus	_____ x _____ = _____	
<input type="checkbox"/>	Emergent	_____ x _____ = _____	
<input type="checkbox"/>	Shrub	_____ x _____ = _____	
<input type="checkbox"/>	Canopy	_____ x _____ = _____	

Proportion of unit affected
0 .1 .2 .3 .4 .5 .6 .7 .8 .9 1.0

- Evidence:* check all that apply
- Cut stems or stumps
 - Immature vegetation strata
 - Missing vegetation strata
 - Mowed areas
 - Browsing or grazing

Sum = _____

Extent of removal
0.....None
2.....Partial or recovering
3.....Complete

- Primary Associated Stressor;*
Check one:
- Power lines
 - Grazing
 - Cultivation
 - Timber Harvest
 - Development clearing
 - Trails / non-raised roads
 - Excavation / ditching
 - Other

- Primary Source of Stress;*
indicate as current (C) or historic (H):
- ___ Private / Residential
 - ___ Commercial
 - ___ Agricultural
 - ___ Public transportation
 - ___ Public utilities
 - ___ Public recreation
 - ___ Undetermined

9) Invasive species within wetland.

- 9a. Select one class for total coverage.
- None noted (0)
 - Nearly absent <5% cover (2).....Cover Class 1
 - Low 6-25% cover (4).....Cover Class 2
 - Moderate 26-50% cover (6).....Cover Class 3
 - High 51-75% cover (8).....Cover Class 4
 - Extensive >75% cover (10).....Cover Class 5

9b. List and select a cover class for each invasive plant species noted.

<u>Cover Class</u>	<u>Species</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

- Primary Abutting Stressor;*
Check one:
- Road
 - Railway
 - Raised Trail
 - Footpath
 - Dam / Dike
 - Organic / yard waste
 - Other Fill
 - Drainage ditch / tile
 - Stormwater input
 - Clearing
 - Multiple
 - Other

- Primary Source of Stress;* indicate as current (C) or historic (H):
- ___ Private / Residential
 - ___ Commercial
 - ___ Agricultural
 - ___ Undetermined
 - ___ Public transportation
 - ___ Public utilities
 - ___ Public recreation

Sum of C3 to C9 Scores = 70 Minus Sum = **C. Wetland Stress Score**

D. Observed State of Wetland Characteristics. Circle one score for each characteristic and sum. Refer to Sections A through C to inform scores. Consider current wetland types.

<u>Characteristics</u>	<u>Characteristic</u>	<u>*</u>	<u>Degraded</u>	<u>Destroyed</u>	
Hydrologic Integrity.....	2	1.5	1	0.5	0
Water and Soil Quality.....	2	1.5	1	0.5	0
Vegetation/microhabitat Structure.....	2	1.5	1	0.5	0
Vegetation Composition.....	2	1.5	1	0.5	0
Habitat Connectivity.....	2	1.5	1	0.5	0

SUM = **D. Observed State Score**

B. Landscape Stress Score (max 20) _____ +

C. Wetland Stress Score (max 70) _____ =

B+C. Total Stress Score (max 90)

D. Observed State Score (max 10) _____ =

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* Characteristic of wetland type in an unstressed setting