

Site: WL-007

Rater(s): BS

Date: 4/10/18

0

0

max 6 pts.

subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

- ☐ >50 acres (>20.2ha) (6 pts)
☐ 25 to <50 acres (10.1 to <20.2ha) (5 pts)
☐ 10 to <25 acres (4 to <10.1ha) (4 pts)
☐ 3 to <10 acres (1.2 to <4ha) (3 pts)
☐ 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
☐ 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
☒ <0.1 acres (0.04ha) (0 pts)

14

14

max 14 pts.

subtotal

Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- ☒ WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
☐ MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
☐ NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
☐ VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- ☒ VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
☐ LOW. Old field (>10 years), shrub land, young second growth forest. (5)
☐ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
☐ HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

15

29

max 30 pts.

subtotal

Metric 3. Hydrology.

3a. Sources of Water. Score all that apply.

- ☐ High pH groundwater (5)
☐ Other groundwater (3)
☒ Precipitation (1)
☐ Seasonal/Intermittent surface water (3)
☐ Perennial surface water (lake or stream) (5)

3c. Maximum water depth. Select only one and assign score.

- ☐ >0.7 (27.6in) (3)
☐ 0.4 to 0.7m (15.7 to 27.6in) (2)
☒ <0.4m (<15.7in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- ☒ None or none apparent (12)
☐ Recovered (7)
☐ Recovering (3)
☐ Recent or no recovery (1)

3b. Connectivity. Score all that apply.

- ☐ 100 year floodplain (1)
☐ Between stream/lake and other human use (1)
☐ Part of wetland/upland (e.g. forest), complex (1)
☐ Part of riparian or upland corridor (1)

3d. Duration inundation/saturation. Score one or dbl check.

- ☐ Semi- to permanently inundated/saturated (4)
☐ Regularly inundated/saturated (3)
☐ Seasonally inundated (2)
☒ Seasonally saturated in upper 30cm (12in) (1)

Check all disturbances observed

- ☐ ditch
☐ tile
☐ dike
☐ weir
☐ stormwater input
☐ point source (nonstormwater)
☐ filling/grading
☐ road bed/RR track
☐ dredging
☐ other _____

10

39

max 20 pts.

subtotal

Metric 4. Habitat Alteration and Development.

4a. Substrate disturbance. Score one or double check and average.

- ☐ None or none apparent (4)
☒ Recovered (3)
☐ Recovering (2)
☐ Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- ☐ Excellent (7)
☐ Very good (6)
☐ Good (5)
☐ Moderately good (4)
☐ Fair (3)
☐ Poor to fair (2)
☒ Poor (1)

4c. Habitat alteration. Score one or double check and average.

- ☐ None or none apparent (9)
☒ Recovered (6)
☐ Recovering (3)
☐ Recent or no recovery (1)

Check all disturbances observed

- ☐ mowing
☐ grazing
☐ clearcutting
☒ selective cutting
☒ woody debris removal
☐ toxic pollutants
☐ shrub/sapling removal
☐ herbaceous/aquatic bed removal
☐ sedimentation
☐ dredging
☐ farming
☐ nutrient enrichment

39

subtotal this page

Site: WL-007	Rater(s): BS	Date: 4/10/18
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39

subtotal first page

0	39
max 10 pts.	subtotal

Metric 5. Special Wetlands.

Check **all** that apply and score as indicated.

- ☐ Bog (10)
- ☐ Fen (10)
- ☐ Old growth forest (10)
- ☐ Mature forested wetland (5)
- ☐ Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- ☐ Lake Erie coastal/tributary wetland-restricted hydrology (5)
- ☐ Lake Plain Sand Prairies (Oak Openings) (10)
- ☐ Relict Wet Prairies (10)
- ☐ Known occurrence state/federal threatened or endangered species (10)
- ☐ Significant migratory songbird/water fowl habitat or usage (10)
- ☐ Category 1 Wetland. See Question 1 Qualitative Rating (-10)

1	40
max 20 pts.	subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score **all** present using 0 to 3 scale.

- ☐ 0 Aquatic bed
- ☐ 0 Emergent
- ☐ 0 Shrub
- ☐ 0 Forest
- ☐ 0 Mudflats
- ☐ 0 Open water
- ☐ 0 Other _____

6b. horizontal (plan view) Interspersion.

Select **only one**.

- ☐ High (5)
- ☐ Moderately high(4)
- ☐ Moderate (3)
- ☐ Moderately low (2)
- ☒ Low (1)
- ☐ None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- ☐ Extensive >75% cover (-5)
- ☐ Moderate 25-75% cover (-3)
- ☐ Sparse 5-25% cover (-1)
- ☒ Nearly absent <5% cover (0)
- ☐ Absent (1)

6d. Microtopography.

Score **all** present using 0 to 3 scale.

- ☐ 0 Vegetated hummocks/tussucks
- ☐ 1 Coarse woody debris >15cm (6in)
- ☐ 0 Standing dead >25cm (10in) dbh
- ☐ 0 Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

40

End of Quantitative Rating. Complete Categorization Worksheets.

Site: WL-008	Rater(s): BS	Date: 4/10/18
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1	1
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

- ☐ >50 acres (>20.2ha) (6 pts)
- ☐ 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- ☐ 10 to <25 acres (4 to <10.1ha) (4 pts)
- ☐ 3 to <10 acres (1.2 to <4ha) (3 pts)
- ☐ 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- ☒ 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- ☐ <0.1 acres (0.04ha) (0 pts)

8	9
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- ☐ WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- ☒ MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- ☐ NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- ☐ VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- ☒ VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- ☐ LOW. Old field (>10 years), shrub land, young second growth forest. (5)
- ☐ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- ☒ HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

15.5	24.5
max 30 pts.	subtotal

Metric 3. Hydrology.

3a. Sources of Water. Score all that apply.

- ☐ High pH groundwater (5)
- ☐ Other groundwater (3)
- ☒ Precipitation (1)
- ☐ Seasonal/Intermittent surface water (3)
- ☐ Perennial surface water (lake or stream) (5)

3c. Maximum water depth. Select only one and assign score.

- ☐ >0.7 (27.6in) (3)
- ☐ 0.4 to 0.7m (15.7 to 27.6in) (2)
- ☒ <0.4m (<15.7in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- ☒ None or none apparent (12)
- ☐ Recovered (7)
- ☐ Recovering (3)
- ☐ Recent or no recovery (1)

3b. Connectivity. Score all that apply.

- ☐ 100 year floodplain (1)
- ☐ Between stream/lake and other human use (1)
- ☐ Part of wetland/upland (e.g. forest), complex (1)
- ☐ Part of riparian or upland corridor (1)

3d. Duration inundation/saturation. Score one or dbl check.

- ☐ Semi- to permanently inundated/saturated (4)
- ☐ Regularly inundated/saturated (3)
- ☒ Seasonally inundated (2)
- ☒ Seasonally saturated in upper 30cm (12in) (1)

Check all disturbances observed	
<input type="checkbox"/> ditch <input type="checkbox"/> tile <input type="checkbox"/> dike <input type="checkbox"/> weir <input type="checkbox"/> stormwater input	<input type="checkbox"/> point source (nonstormwater) <input type="checkbox"/> filling/grading <input type="checkbox"/> road bed/RR track <input type="checkbox"/> dredging <input type="checkbox"/> other _____

11	25.5
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

4a. Substrate disturbance. Score one or double check and average.

- ☐ None or none apparent (4)
- ☒ Recovered (3)
- ☐ Recovering (2)
- ☐ Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- ☐ Excellent (7)
- ☐ Very good (6)
- ☐ Good (5)
- ☐ Moderately good (4)
- ☐ Fair (3)
- ☒ Poor to fair (2)
- ☐ Poor (1)

4c. Habitat alteration. Score one or double check and average.

- ☐ None or none apparent (9)
- ☒ Recovered (6)
- ☐ Recovering (3)
- ☐ Recent or no recovery (1)

Check all disturbances observed	
<input type="checkbox"/> mowing <input type="checkbox"/> grazing <input type="checkbox"/> clearcutting <input checked="" type="checkbox"/> selective cutting <input checked="" type="checkbox"/> woody debris removal <input type="checkbox"/> toxic pollutants	<input type="checkbox"/> shrub/sapling removal <input type="checkbox"/> herbaceous/aquatic bed removal <input type="checkbox"/> sedimentation <input type="checkbox"/> dredging <input type="checkbox"/> farming <input type="checkbox"/> nutrient enrichment

25.5
subtotal this page

Site: WL-008	Rater(s): BS	Date: 4/10/18
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25.5

subtotal first page

0	25.5
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max 10 pts.

subtotal

Metric 5. Special Wetlands.

Check **all** that apply and score as indicated.

- ☐ Bog (10)
- ☐ Fen (10)
- ☐ Old growth forest (10)
- ☐ Mature forested wetland (5)
- ☐ Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- ☐ Lake Erie coastal/tributary wetland-restricted hydrology (5)
- ☐ Lake Plain Sand Prairies (Oak Openings) (10)
- ☐ Relict Wet Prairies (10)
- ☐ Known occurrence state/federal threatened or endangered species (10)
- ☐ Significant migratory songbird/water fowl habitat or usage (10)
- ☐ Category 1 Wetland. See Question 1 Qualitative Rating (-10)

4	29.5
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max 20 pts.

subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score **all** present using 0 to 3 scale.

- ☐ 0 Aquatic bed
- ☐ 1 Emergent
- ☐ 0 Shrub
- ☐ 0 Forest
- ☐ 0 Mudflats
- ☐ 0 Open water
- ☐ 0 Other _____

6b. horizontal (plan view) Interspersions.

Select **only one**.

- ☐ High (5)
- ☐ Moderately high(4)
- ☐ Moderate (3)
- ☐ Moderately low (2)
- ☒ Low (1)
- ☐ None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- ☐ Extensive >75% cover (-5)
- ☐ Moderate 25-75% cover (-3)
- ☐ Sparse 5-25% cover (-1)
- ☒ Nearly absent <5% cover (0)
- ☐ Absent (1)

6d. Microtopography.

Score **all** present using 0 to 3 scale.

- ☐ 0 Vegetated hummocks/tussocks
- ☐ 1 Coarse woody debris >15cm (6in)
- ☐ 0 Standing dead >25cm (10in) dbh
- ☐ 1 Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

29.5

End of Quantitative Rating. Complete Categorization Worksheets.

Site: WL-009	Rater(s): BS	Date: 4/10/18
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0	0
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

- ☐ >50 acres (>20.2ha) (6 pts)
- ☐ 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- ☐ 10 to <25 acres (4 to <10.1ha) (4 pts)
- ☐ 3 to <10 acres (1.2 to <4ha) (3 pts)
- ☐ 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- ☐ 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- ☒ <0.1 acres (0.04ha) (0 pts)

1	1
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- ☐ WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- ☐ MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- ☐ NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- ☒ VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- ☐ VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- ☐ LOW. Old field (>10 years), shrub land, young second growth forest. (5)
- ☐ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- ☒ HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

10	11
max 30 pts.	subtotal

Metric 3. Hydrology.

3a. Sources of Water. Score all that apply.

- ☐ High pH groundwater (5)
- ☐ Other groundwater (3)
- ☒ Precipitation (1)
- ☐ Seasonal/Intermittent surface water (3)
- ☐ Perennial surface water (lake or stream) (5)

3c. Maximum water depth. Select only one and assign score.

- ☐ >0.7 (27.6in) (3)
- ☐ 0.4 to 0.7m (15.7 to 27.6in) (2)
- ☒ <0.4m (<15.7in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- ☐ None or none apparent (12)
- ☒ Recovered (7)
- ☐ Recovering (3)
- ☐ Recent or no recovery (1)

3b. Connectivity. Score all that apply.

- ☐ 100 year floodplain (1)
- ☐ Between stream/lake and other human use (1)
- ☐ Part of wetland/upland (e.g. forest), complex (1)
- ☐ Part of riparian or upland corridor (1)

3d. Duration inundation/saturation. Score one or dbl check.

- ☐ Semi- to permanently inundated/saturated (4)
- ☐ Regularly inundated/saturated (3)
- ☐ Seasonally inundated (2)
- ☒ Seasonally saturated in upper 30cm (12in) (1)

Check all disturbances observed	
<input type="checkbox"/> ditch <input checked="" type="checkbox"/> tile <input type="checkbox"/> dike <input type="checkbox"/> weir <input type="checkbox"/> stormwater input	<input type="checkbox"/> point source (nonstormwater) <input type="checkbox"/> filling/grading <input checked="" type="checkbox"/> road bed/RR track <input type="checkbox"/> dredging <input type="checkbox"/> other _____

5	16
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

4a. Substrate disturbance. Score one or double check and average.

- ☐ None or none apparent (4)
- ☒ Recovered (3)
- ☐ Recovering (2)
- ☐ Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- ☐ Excellent (7)
- ☐ Very good (6)
- ☐ Good (5)
- ☐ Moderately good (4)
- ☐ Fair (3)
- ☐ Poor to fair (2)
- ☒ Poor (1)

4c. Habitat alteration. Score one or double check and average.

- ☐ None or none apparent (9)
- ☐ Recovered (6)
- ☐ Recovering (3)
- ☒ Recent or no recovery (1)

Check all disturbances observed	
<input checked="" type="checkbox"/> mowing <input type="checkbox"/> grazing <input type="checkbox"/> clearcutting <input type="checkbox"/> selective cutting <input type="checkbox"/> woody debris removal <input type="checkbox"/> toxic pollutants	<input type="checkbox"/> shrub/sapling removal <input type="checkbox"/> herbaceous/aquatic bed removal <input type="checkbox"/> sedimentation <input type="checkbox"/> dredging <input type="checkbox"/> farming <input type="checkbox"/> nutrient enrichment

16
subtotal this page

Site: WL-009	Rater(s): BS	Date: 4/10/18
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16

subtotal first page

0

16

max 10 pts.

subtotal

Metric 5. Special Wetlands.

Check **all** that apply and score as indicated.

- ☐ Bog (10)
- ☐ Fen (10)
- ☐ Old growth forest (10)
- ☐ Mature forested wetland (5)
- ☐ Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- ☐ Lake Erie coastal/tributary wetland-restricted hydrology (5)
- ☐ Lake Plain Sand Prairies (Oak Openings) (10)
- ☐ Relict Wet Prairies (10)
- ☐ Known occurrence state/federal threatened or endangered species (10)
- ☐ Significant migratory songbird/water fowl habitat or usage (10)
- ☐ Category 1 Wetland. See Question 1 Qualitative Rating (-10)

0

16

max 20 pts.

subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score **all** present using 0 to 3 scale.

- 0

 Aquatic bed
- 0

 Emergent
- 0

 Shrub
- 0

 Forest
- 0

 Mudflats
- 0

 Open water
- 0

 Other _____

6b. horizontal (plan view) Interspersion.

Select **only one**.

- ☐ High (5)
- ☐ Moderately high(4)
- ☐ Moderate (3)
- ☐ Moderately low (2)
- ☐ Low (1)
- ☒ None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- ☐ Extensive >75% cover (-5)
- ☐ Moderate 25-75% cover (-3)
- ☐ Sparse 5-25% cover (-1)
- ☒ Nearly absent <5% cover (0)
- ☐ Absent (1)

6d. Microtopography.

Score **all** present using 0 to 3 scale.

- 0

 Vegetated hummocks/tussocks
- 0

 Coarse woody debris >15cm (6in)
- 0

 Standing dead >25cm (10in) dbh
- 0

 Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

16

End of Quantitative Rating. Complete Categorization Worksheets.

Site: WL-010

Rater(s): BS

Date: 4/10/18

1

1

max 6 pts.

subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

- ☐ >50 acres (>20.2ha) (6 pts)
☐ 25 to <50 acres (10.1 to <20.2ha) (5 pts)
☐ 10 to <25 acres (4 to <10.1ha) (4 pts)
☐ 3 to <10 acres (1.2 to <4ha) (3 pts)
☐ 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
☒ 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
☐ <0.1 acres (0.04ha) (0 pts)

12

13

max 14 pts.

subtotal

Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- ☒ WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
☐ MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
☐ NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
☐ VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- ☒ VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
☐ LOW. Old field (>10 years), shrub land, young second growth forest. (5)
☒ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
☐ HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

18

31

max 30 pts.

subtotal

Metric 3. Hydrology.

3a. Sources of Water. Score all that apply.

- ☐ High pH groundwater (5)
☐ Other groundwater (3)
☒ Precipitation (1)
☐ Seasonal/Intermittent surface water (3)
☐ Perennial surface water (lake or stream) (5)

3c. Maximum water depth. Select only one and assign score.

- ☐ >0.7 (27.6in) (3)
☐ 0.4 to 0.7m (15.7 to 27.6in) (2)
☒ <0.4m (<15.7in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- ☒ None or none apparent (12)
☐ Recovered (7)
☐ Recovering (3)
☐ Recent or no recovery (1)

3b. Connectivity. Score all that apply.

- ☐ 100 year floodplain (1)
☐ Between stream/lake and other human use (1)
☒ Part of wetland/upland (e.g. forest), complex (1)
☐ Part of riparian or upland corridor (1)

3d. Duration inundation/saturation. Score one or dbl check.

- ☐ Semi- to permanently inundated/saturated (4)
☐ Regularly inundated/saturated (3)
☒ Seasonally inundated (2)
☒ Seasonally saturated in upper 30cm (12in) (1)

Check all disturbances observed

- ☐ ditch
☐ tile
☐ dike
☐ weir
☐ stormwater input

- ☐ point source (nonstormwater)
☐ filling/grading
☐ road bed/RR track
☐ dredging
☐ other _____

11

42

max 20 pts.

subtotal

Metric 4. Habitat Alteration and Development.

4a. Substrate disturbance. Score one or double check and average.

- ☐ None or none apparent (4)
☒ Recovered (3)
☐ Recovering (2)
☐ Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- ☐ Excellent (7)
☐ Very good (6)
☐ Good (5)
☐ Moderately good (4)
☐ Fair (3)
☒ Poor to fair (2)
☐ Poor (1)

4c. Habitat alteration. Score one or double check and average.

- ☐ None or none apparent (9)
☒ Recovered (6)
☐ Recovering (3)
☐ Recent or no recovery (1)

Check all disturbances observed

- ☒ mowing
☐ grazing
☐ clearcutting
☐ selective cutting
☐ woody debris removal
☐ toxic pollutants

- ☐ shrub/sapling removal
☐ herbaceous/aquatic bed removal
☐ sedimentation
☐ dredging
☐ farming
☐ nutrient enrichment

42

subtotal this page

Site: WL-010	Rater(s): BS	Date: 4/10/18
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subtotal first page

0	42
max 10 pts.	subtotal

Metric 5. Special Wetlands.

Check **all** that apply and score as indicated.

- ☐ Bog (10)
- ☐ Fen (10)
- ☐ Old growth forest (10)
- ☐ Mature forested wetland (5)
- ☐ Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- ☐ Lake Erie coastal/tributary wetland-restricted hydrology (5)
- ☐ Lake Plain Sand Prairies (Oak Openings) (10)
- ☐ Relict Wet Prairies (10)
- ☐ Known occurrence state/federal threatened or endangered species (10)
- ☐ Significant migratory songbird/water fowl habitat or usage (10)
- ☐ Category 1 Wetland. See Question 1 Qualitative Rating (-10)

4	46
max 20 pts.	subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score **all** present using 0 to 3 scale.

- ☐ 0 Aquatic bed
- ☐ 1 Emergent
- ☐ 0 Shrub
- ☐ 0 Forest
- ☐ 0 Mudflats
- ☐ 0 Open water
- ☐ 0 Other _____

6b. horizontal (plan view) Interspersions.

Select **only one**.

- ☐ High (5)
- ☐ Moderately high (4)
- ☐ Moderate (3)
- ☐ Moderately low (2)
- ☒ Low (1)
- ☐ None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- ☐ Extensive >75% cover (-5)
- ☐ Moderate 25-75% cover (-3)
- ☐ Sparse 5-25% cover (-1)
- ☒ Nearly absent <5% cover (0)
- ☐ Absent (1)

6d. Microtopography.

Score **all** present using 0 to 3 scale.

- ☐ 0 Vegetated hummocks/tussocks
- ☐ 1 Coarse woody debris >15cm (6in)
- ☐ 0 Standing dead >25cm (10in) dbh
- ☐ 1 Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

46

End of Quantitative Rating. Complete Categorization Worksheets.

Site: WL-011	Rater(s): BS	Date: 4/10/18
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2	2
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

- ☐ >50 acres (>20.2ha) (6 pts)
- ☐ 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- ☐ 10 to <25 acres (4 to <10.1ha) (4 pts)
- ☐ 3 to <10 acres (1.2 to <4ha) (3 pts)
- ☒ 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- ☐ 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- ☐ <0.1 acres (0.04ha) (0 pts)

1	3
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- ☐ WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- ☐ MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- ☐ NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- ☒ VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- ☐ VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- ☐ LOW. Old field (>10 years), shrub land, young second growth forest. (5)
- ☐ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- ☒ HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

10	13
max 30 pts.	subtotal

Metric 3. Hydrology.

3a. Sources of Water. Score all that apply.

- ☐ High pH groundwater (5)
- ☐ Other groundwater (3)
- ☒ Precipitation (1)
- ☐ Seasonal/Intermittent surface water (3)
- ☐ Perennial surface water (lake or stream) (5)

3c. Maximum water depth. Select only one and assign score.

- ☐ >0.7 (27.6in) (3)
- ☐ 0.4 to 0.7m (15.7 to 27.6in) (2)
- ☒ <0.4m (<15.7in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- ☐ None or none apparent (12)
- ☒ Recovered (7)
- ☐ Recovering (3)
- ☐ Recent or no recovery (1)

3b. Connectivity. Score all that apply.

- ☐ 100 year floodplain (1)
- ☐ Between stream/lake and other human use (1)
- ☐ Part of wetland/upland (e.g. forest), complex (1)
- ☐ Part of riparian or upland corridor (1)

3d. Duration inundation/saturation. Score one or dbl check.

- ☐ Semi- to permanently inundated/saturated (4)
- ☐ Regularly inundated/saturated (3)
- ☐ Seasonally inundated (2)
- ☒ Seasonally saturated in upper 30cm (12in) (1)

Check all disturbances observed	
<input type="checkbox"/> ditch <input type="checkbox"/> tile <input checked="" type="checkbox"/> dike <input type="checkbox"/> weir <input type="checkbox"/> stormwater input	<input type="checkbox"/> point source (nonstormwater) <input type="checkbox"/> filling/grading <input type="checkbox"/> road bed/RR track <input type="checkbox"/> dredging <input type="checkbox"/> other _____

12	25
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

4a. Substrate disturbance. Score one or double check and average.

- ☒ None or none apparent (4)
- ☐ Recovered (3)
- ☐ Recovering (2)
- ☐ Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- ☐ Excellent (7)
- ☐ Very good (6)
- ☐ Good (5)
- ☐ Moderately good (4)
- ☐ Fair (3)
- ☒ Poor to fair (2)
- ☐ Poor (1)

4c. Habitat alteration. Score one or double check and average.

- ☐ None or none apparent (9)
- ☒ Recovered (6)
- ☐ Recovering (3)
- ☐ Recent or no recovery (1)

Check all disturbances observed	
<input checked="" type="checkbox"/> mowing <input type="checkbox"/> grazing <input type="checkbox"/> clearcutting <input type="checkbox"/> selective cutting <input type="checkbox"/> woody debris removal <input type="checkbox"/> toxic pollutants	<input type="checkbox"/> shrub/sapling removal <input type="checkbox"/> herbaceous/aquatic bed removal <input type="checkbox"/> sedimentation <input type="checkbox"/> dredging <input type="checkbox"/> farming <input type="checkbox"/> nutrient enrichment

25
subtotal this page

Site: WL-011	Rater(s): BS	Date: 4/10/18
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25

subtotal first page

0	25
max 10 pts.	subtotal

Metric 5. Special Wetlands.

Check **all** that apply and score as indicated.

- ☐ Bog (10)
- ☐ Fen (10)
- ☐ Old growth forest (10)
- ☐ Mature forested wetland (5)
- ☐ Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- ☐ Lake Erie coastal/tributary wetland-restricted hydrology (5)
- ☐ Lake Plain Sand Prairies (Oak Openings) (10)
- ☐ Relict Wet Prairies (10)
- ☐ Known occurrence state/federal threatened or endangered species (10)
- ☐ Significant migratory songbird/water fowl habitat or usage (10)
- ☐ Category 1 Wetland. See Question 1 Qualitative Rating (-10)

2	27
max 20 pts.	subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score **all** present using 0 to 3 scale.

- ☐ 0 Aquatic bed
- ☐ 1 Emergent
- ☐ 1 Shrub
- ☐ 0 Forest
- ☐ 0 Mudflats
- ☐ 0 Open water
- ☐ 0 Other _____

6b. horizontal (plan view) Interspersion.

Select **only one**.

- ☐ High (5)
- ☐ Moderately high(4)
- ☐ Moderate (3)
- ☐ Moderately low (2)
- ☒ Low (1)
- ☐ None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- ☐ Extensive >75% cover (-5)
- ☐ Moderate 25-75% cover (-3)
- ☒ Sparse 5-25% cover (-1)
- ☐ Nearly absent <5% cover (0)
- ☐ Absent (1)

6d. Microtopography.

Score **all** present using 0 to 3 scale.

- ☐ 0 Vegetated hummocks/tussucks
- ☐ 0 Coarse woody debris >15cm (6in)
- ☐ 0 Standing dead >25cm (10in) dbh
- ☐ 0 Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

27

End of Quantitative Rating. Complete Categorization Worksheets.

Site: WL-012

Rater(s): BS

Date: 10/2/18

0

0

max 6 pts.

subtotal

Metric 1. Wetland Area (size).

Select one size class and assign score.

- ☐ >50 acres (>20.2ha) (6 pts)
☐ 25 to <50 acres (10.1 to <20.2ha) (5 pts)
☐ 10 to <25 acres (4 to <10.1ha) (4 pts)
☐ 3 to <10 acres (1.2 to <4ha) (3 pts)
☐ 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
☐ 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
☒ <0.1 acres (0.04ha) (0 pts)

3

3

max 14 pts.

subtotal

Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- ☐ WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
☐ MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
☒ NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
☐ VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- ☐ VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
☐ LOW. Old field (>10 years), shrub land, young second growth forest. (5)
☒ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
☐ HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

16

19

max 30 pts.

subtotal

Metric 3. Hydrology.

3a. Sources of Water. Score all that apply.

- ☐ High pH groundwater (5)
☐ Other groundwater (3)
☒ Precipitation (1)
☐ Seasonal/Intermittent surface water (3)
☐ Perennial surface water (lake or stream) (5)

3c. Maximum water depth. Select only one and assign score.

- ☐ >0.7 (27.6in) (3)
☐ 0.4 to 0.7m (15.7 to 27.6in) (2)
☒ <0.4m (<15.7in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- ☒ None or none apparent (12)
☐ Recovered (7)
☐ Recovering (3)
☐ Recent or no recovery (1)

3b. Connectivity. Score all that apply.

- ☒ 100 year floodplain (1)
☐ Between stream/lake and other human use (1)
☐ Part of wetland/upland (e.g. forest), complex (1)
☐ Part of riparian or upland corridor (1)

3d. Duration inundation/saturation. Score one or dbl check.

- ☐ Semi- to permanently inundated/saturated (4)
☐ Regularly inundated/saturated (3)
☐ Seasonally inundated (2)
☒ Seasonally saturated in upper 30cm (12in) (1)

Check all disturbances observed

- ☐ ditch
☐ tile
☐ dike
☐ weir
☐ stormwater input
☐ point source (nonstormwater)
☐ filling/grading
☐ road bed/RR track
☐ dredging
☐ other _____

12

31

max 20 pts.

subtotal

Metric 4. Habitat Alteration and Development.

4a. Substrate disturbance. Score one or double check and average.

- ☒ None or none apparent (4)
☐ Recovered (3)
☐ Recovering (2)
☐ Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- ☐ Excellent (7)
☐ Very good (6)
☐ Good (5)
☐ Moderately good (4)
☐ Fair (3)
☐ Poor to fair (2)
☒ Poor (1)

4c. Habitat alteration. Score one or double check and average.

- ☐ None or none apparent (9)
☒ Recovered (6)
☐ Recovering (3)
☐ Recent or no recovery (1)

Check all disturbances observed

- ☐ mowing
☐ grazing
☐ clearcutting
☒ selective cutting
☐ woody debris removal
☐ toxic pollutants
☐ shrub/sapling removal
☐ herbaceous/aquatic bed removal
☐ sedimentation
☐ dredging
☐ farming
☐ nutrient enrichment

31

subtotal this page

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31

subtotal first page

0	31
max 10 pts.	subtotal

Metric 5. Special Wetlands.

Check **all** that apply and score as indicated.

- ☐ Bog (10)
- ☐ Fen (10)
- ☐ Old growth forest (10)
- ☐ Mature forested wetland (5)
- ☐ Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- ☐ Lake Erie coastal/tributary wetland-restricted hydrology (5)
- ☐ Lake Plain Sand Prairies (Oak Openings) (10)
- ☐ Relict Wet Prairies (10)
- ☐ Known occurrence state/federal threatened or endangered species (10)
- ☐ Significant migratory songbird/water fowl habitat or usage (10)
- ☐ Category 1 Wetland. See Question 1 Qualitative Rating (-10)

0	31
max 20 pts.	subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score **all** present using 0 to 3 scale.

- ☐ 0 Aquatic bed
- ☐ 1 Emergent
- ☐ 0 Shrub
- ☐ 0 Forest
- ☐ 0 Mudflats
- ☐ 0 Open water
- ☐ 0 Other _____

6b. horizontal (plan view) Interspersion.

Select **only one**.

- ☐ High (5)
- ☐ Moderately high(4)
- ☐ Moderate (3)
- ☐ Moderately low (2)
- ☐ Low (1)
- ☒ None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- ☐ Extensive >75% cover (-5)
- ☐ Moderate 25-75% cover (-3)
- ☒ Sparse 5-25% cover (-1)
- ☐ Nearly absent <5% cover (0)
- ☐ Absent (1)

6d. Microtopography.

Score **all** present using 0 to 3 scale.

- ☐ 0 Vegetated hummocks/tussucks
- ☐ 0 Coarse woody debris >15cm (6in)
- ☐ 0 Standing dead >25cm (10in) dbh
- ☐ 0 Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

31

End of Quantitative Rating. Complete Categorization Worksheets.

Site: WL-012

Rater(s): BS

Date: 10/2/18

2

2

Metric 1. Wetland Area (size).

max 6 pts.

subtotal

Select one size class and assign score.

- ☐ >50 acres (>20.2ha) (6 pts)
☐ 25 to <50 acres (10.1 to <20.2ha) (5 pts)
☐ 10 to <25 acres (4 to <10.1ha) (4 pts)
☐ 3 to <10 acres (1.2 to <4ha) (3 pts)
☒ 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
☐ 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
☐ <0.1 acres (0.04ha) (0 pts)

4

6

Metric 2. Upland buffers and surrounding land use.

max 14 pts.

subtotal

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- ☐ WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
☐ MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
☒ NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
☐ VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- ☐ VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
☒ LOW. Old field (>10 years), shrub land, young second growth forest. (5)
☒ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
☐ HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

22

28

Metric 3. Hydrology.

max 30 pts.

subtotal

3a. Sources of Water. Score all that apply.

- ☐ High pH groundwater (5)
☐ Other groundwater (3)
☒ Precipitation (1)
☒ Seasonal/Intermittent surface water (3)
☐ Perennial surface water (lake or stream) (5)

3c. Maximum water depth. Select only one and assign score.

- ☐ >0.7 (27.6in) (3)
☐ 0.4 to 0.7m (15.7 to 27.6in) (2)
☒ <0.4m (<15.7in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- ☒ None or none apparent (12)
☐ Recovered (7)
☐ Recovering (3)
☐ Recent or no recovery (1)

3b. Connectivity. Score all that apply.

- ☒ 100 year floodplain (1)
☐ Between stream/lake and other human use (1)
☒ Part of wetland/upland (e.g. forest), complex (1)
☐ Part of riparian or upland corridor (1)

3d. Duration inundation/saturation. Score one or dbl check.

- ☐ Semi- to permanently inundated/saturated (4)
☐ Regularly inundated/saturated (3)
☒ Seasonally inundated (2)
☒ Seasonally saturated in upper 30cm (12in) (1)

Check all disturbances observed

- ☐ ditch
☐ tile
☐ dike
☐ weir
☐ stormwater input

- ☐ point source (nonstormwater)
☐ filling/grading
☐ road bed/RR track
☐ dredging
☐ other _____

13

41

Metric 4. Habitat Alteration and Development.

max 20 pts.

subtotal

4a. Substrate disturbance. Score one or double check and average.

- ☐ None or none apparent (4)
☒ Recovered (3)
☐ Recovering (2)
☐ Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- ☐ Excellent (7)
☐ Very good (6)
☐ Good (5)
☒ Moderately good (4)
☐ Fair (3)
☐ Poor to fair (2)
☐ Poor (1)

4c. Habitat alteration. Score one or double check and average.

- ☐ None or none apparent (9)
☒ Recovered (6)
☐ Recovering (3)
☐ Recent or no recovery (1)

Check all disturbances observed

- ☐ mowing
☐ grazing
☐ clearcutting
☒ selective cutting
☐ woody debris removal
☐ toxic pollutants

- ☐ shrub/sapling removal
☐ herbaceous/aquatic bed removal
☐ sedimentation
☐ dredging
☐ farming
☐ nutrient enrichment

41

subtotal this page

Site: WL-012	Rater(s): BS	Date: 10/2/18
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41

subtotal first page

0	41
max 10 pts.	subtotal

Metric 5. Special Wetlands.

Check **all** that apply and score as indicated.

- ☐ Bog (10)
- ☐ Fen (10)
- ☐ Old growth forest (10)
- ☐ Mature forested wetland (5)
- ☐ Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- ☐ Lake Erie coastal/tributary wetland-restricted hydrology (5)
- ☐ Lake Plain Sand Prairies (Oak Openings) (10)
- ☐ Relict Wet Prairies (10)
- ☐ Known occurrence state/federal threatened or endangered species (10)
- ☐ Significant migratory songbird/water fowl habitat or usage (10)
- ☐ Category 1 Wetland. See Question 1 Qualitative Rating (-10)

8	49
max 20 pts.	subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score **all** present using 0 to 3 scale.

- ☐ 0 Aquatic bed
- ☐ 1 Emergent
- ☐ 1 Shrub
- ☐ 1 Forest
- ☐ 0 Mudflats
- ☐ 0 Open water
- ☐ 0 Other _____

6b. horizontal (plan view) Interspersions.

Select **only one**.

- ☐ High (5)
- ☐ Moderately high(4)
- ☐ Moderate (3)
- ☒ Moderately low (2)
- ☐ Low (1)
- ☐ None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- ☐ Extensive >75% cover (-5)
- ☐ Moderate 25-75% cover (-3)
- ☒ Sparse 5-25% cover (-1)
- ☐ Nearly absent <5% cover (0)
- ☐ Absent (1)

6d. Microtopography.

Score **all** present using 0 to 3 scale.

- ☐ 0 Vegetated hummocks/tussocks
- ☐ 1 Coarse woody debris >15cm (6in)
- ☐ 2 Standing dead >25cm (10in) dbh
- ☐ 1 Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

49

End of Quantitative Rating. Complete Categorization Worksheets.

Alamo Solar Project

APPENDIX

D

STREAM ASSESSMENT FORMS



Primary Headwater Habitat Evaluation Form

47

HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION **Alamo Solar Farm**SITE NUMBER **WB-001**RIVER BASIN **Beasley Run**DRAINAGE AREA (mi²) **0.72**LENGTH OF STREAM REACH (ft) **1,792**LAT. **39.71641**LONG. **-84.64734**

RIVER CODE

RIVER MILE

DATE **11/02/17**SCORER **BJS**

COMMENTS

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL
MODIFICATIONS:☐ NONE / NATURAL CHANNEL☐ RECOVERED☒ RECOVERING☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> SILT [3 pt]	<input type="text" value="40%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="30%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="30%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of
Bldr Slabs, Boulder, Cobble, Bedrock **0.00%**

(A)

Substrate Percentage
Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **9**TOTAL NUMBER OF SUBSTRATE TYPES: **3**HHEI
Metric
PointsSubstrate
Max = 40**12**

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input checked="" type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH (centimeters): **25**Pool Depth
Max = 30**30**

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS

AVERAGE BANKFULL WIDTH (meters): **0.90**Bankfull
Width
Max=30**5**

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

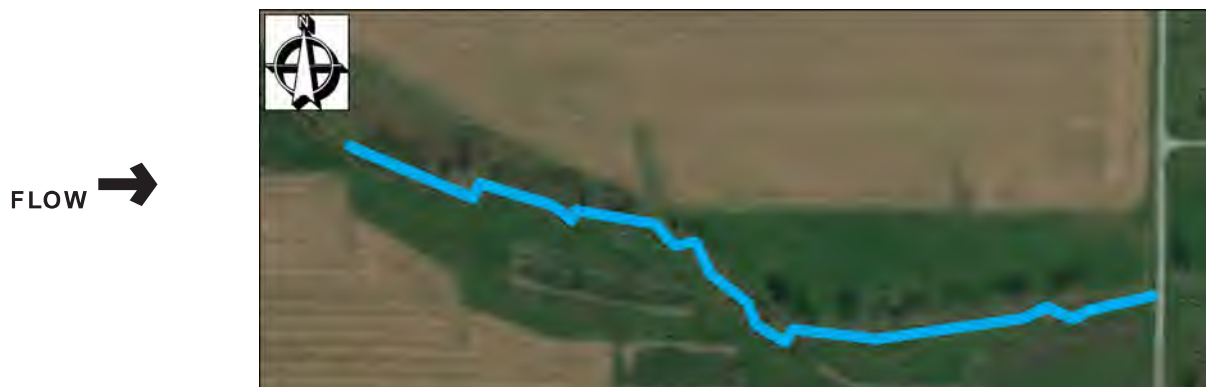
☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input type="checkbox"/> WWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATIONUSGS Quadrangle Name: NRCS Soil Map Page: NRCS Soil Map Stream Order
County: Township / City: **MISCELLANEOUS**Base Flow Conditions? (Y/N): Date of last precipitation: Quantity:
Photograph Information:
Elevated Turbidity? (Y/N): Canopy (% open):
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) If not, please explain: Additional comments/description of pollution impacts: **BIOTIC EVALUATION**Performed? (Y/N): (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) Voucher? (Y/N)
Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N)
Comments Regarding Biology: **DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

17

SITE NAME/LOCATION **Alamo Solar Farm**

SITE NUMBER **WB-002** RIVER BASIN **Beasley Run** DRAINAGE AREA (mi²) **0.00**

LENGTH OF STREAM REACH (ft) **1,530** LAT. **39.71402** LONG. **-84.64771** RIVER CODE RIVER MILE

DATE **11/02/17** SCORER **BJS** COMMENTS

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> SILT [3 pt]	<input type="text" value="70%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="5%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="25%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **9**TOTAL NUMBER OF SUBSTRATE TYPES: **3**

HHEI Metric Points

Substrate Max = 40

12

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS MAXIMUM POOL DEPTH (centimeters): **0**

Pool Depth Max = 30

0

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS AVERAGE BANKFULL WIDTH (meters): **0.30**

Bankfull Width Max=30

5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None

COMMENTS

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

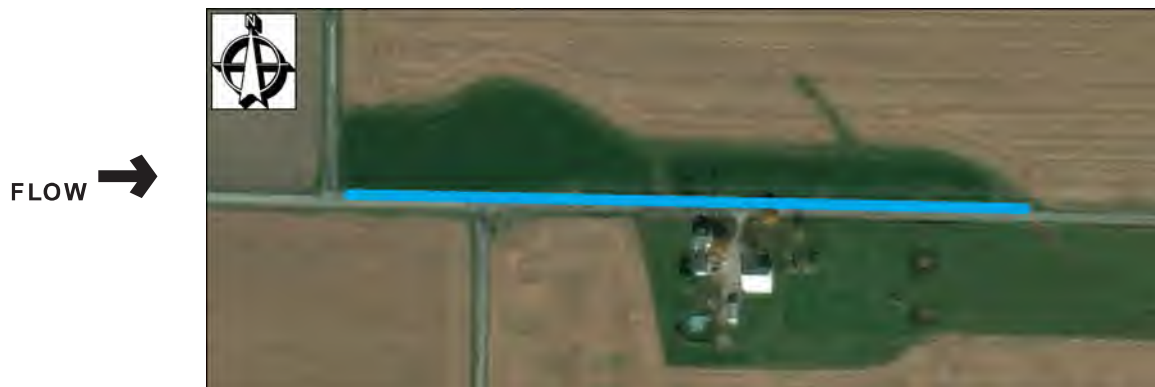
☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input type="checkbox"/> WWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATIONUSGS Quadrangle Name: NRCS Soil Map Page: NRCS Soil Map Stream Order
County: Township / City: **MISCELLANEOUS**Base Flow Conditions? (Y/N): Date of last precipitation: Quantity:
Photograph Information:
Elevated Turbidity? (Y/N): Canopy (% open):
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) If not, please explain: Additional comments/description of pollution impacts: **BIOTIC EVALUATION**Performed? (Y/N): (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) Voucher? (Y/N)
Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N)
Comments Regarding Biology: **DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Primary Headwater Habitat Evaluation Form

67**HHEI Score (sum of metrics 1, 2, 3) :**

SITE NAME/LOCATION **Alamo Solar Farm**

SITE NUMBER **WB-003** RIVER BASIN **Beasley Run** DRAINAGE AREA (mi²) **0.75**

LENGTH OF STREAM REACH (ft) **3,419** LAT. **39.70329** LONG. **-84.65005** RIVER CODE RIVER MILE

DATE **11/02/17** SCORER **BJS** COMMENTS

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☒ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.**

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> SILT [3 pt]	<input type="text" value="40%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="5%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="55%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **5.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **9**

TOTAL NUMBER OF SUBSTRATE TYPES: **3**

HHEI Metric Points

Substrate Max = 40

12

A + B

2. **Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):**

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input checked="" type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS MAXIMUM POOL DEPTH (centimeters): **30**

Pool Depth Max = 30

30

3. **BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):**

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input checked="" type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS AVERAGE BANKFULL WIDTH (meters): **3.70**

Bankfull Width Max=30

25

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH**FLOODPLAIN QUALITY**

L	R	(Per Bank)	L	R	(Most Predominant per Bank)	L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland	<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Moderate 5-10m	<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field	<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m	<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field	<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	None	<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture	<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

FLOW REGIME (At Time of Evaluation) (Check ONLY one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: Distance from Evaluated Stream
☐ CWH Name: Distance from Evaluated Stream
☐ EWH Name: Distance from Evaluated Stream

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Eaton South NRCS Soil Map Page: NRCS Soil Map Stream Order
County: Preble Township / City:

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 11/01/17 Quantity: 0.69
Photograph Information: Representative photos taken
Elevated Turbidity? (Y/N): N Canopy (% open): 5%
Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) Y If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) N Voucher? (Y/N) N Salamanders Observed? (Y/N) N Voucher? (Y/N) N
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) N Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) N
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW →





Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

75

SITE NAME/LOCATION		Alamo Solar Farm				
SITE NUMBER		WB-004	RIVER BASIN	Beasley Run	DRAINAGE AREA (mi ²)	0.75
LENGTH OF STREAM REACH (ft)		2,938	LAT.	39.70054	LONG.	-84.65736
RIVER CODE			RIVER MILE			
DATE		11/03/17	SCORER	BJS	COMMENTS	

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☐ NONE / NATURAL CHANNEL ☒ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	5%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input checked="" type="checkbox"/> COBBLE (65-256 mm) [12 pts]	55%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	30%	<input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	10%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **55.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

21

TOTAL NUMBER OF SUBSTRATE TYPES:

4

HHEI Metric Points

Substrate Max = 40

25

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input checked="" type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH (centimeters):

30

Pool Depth Max = 30

30

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input checked="" type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS

AVERAGE BANKFULL WIDTH (meters):

3.00

Bankfull Width Max=30

20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

NOTE: River Left (L) and Right (R) as looking downstream

RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: Distance from Evaluated Stream
☐ CWH Name: Distance from Evaluated Stream
☐ EWH Name: Distance from Evaluated Stream

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Eaton South NRCS Soil Map Page: NRCS Soil Map Stream Order
County: Preble Township / City:

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 11/03/17 Quantity: 0.28
Photograph Information: Representative photos taken
Elevated Turbidity? (Y/N): N Canopy (% open): 5%
Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) Y If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) N Voucher? (Y/N) N Salamanders Observed? (Y/N) N Voucher? (Y/N) N
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) N Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) N
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Primary Headwater Habitat Evaluation Form

22

HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION		Alamo Solar Farm				
SITE NUMBER		WB-005	RIVER BASIN	Beasley Run	DRAINAGE AREA (mi ²)	0.66
LENGTH OF STREAM REACH (ft)		22	LAT.	39.70070	LONG.	-84.65642
RIVER CODE			RIVER MILE			
DATE		11/03/17	SCORER	BJS	COMMENTS	

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	10%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input checked="" type="checkbox"/> COBBLE (65-256 mm) [12 pts]	90%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	0%	<input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	0%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 90.00%

(A)

Substrate Percentage Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

15

TOTAL NUMBER OF SUBSTRATE TYPES:

2

HHEI Metric Points

Substrate Max = 40

17

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

COMMENTS

MAXIMUM POOL DEPTH (centimeters):

0

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS

AVERAGE BANKFULL WIDTH (meters):

1.00

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH

FLOODPLAIN QUALITY

L	R	(Per Bank)	L	R	(Most Predominant per Bank)	L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland	<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Moderate 5-10m	<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field	<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m	<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field	<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	None	<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture	<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input type="checkbox"/> WWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATIONUSGS Quadrangle Name: NRCS Soil Map Page: NRCS Soil Map Stream Order
County: Township / City: **MISCELLANEOUS**Base Flow Conditions? (Y/N): Date of last precipitation: Quantity: Photograph Information: Elevated Turbidity? (Y/N): Canopy (% open): Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and attach results) Lab Number: Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm) Is the sampling reach representative of the stream (Y/N) If not, please explain: Additional comments/description of pollution impacts: **BIOTIC EVALUATION**Performed? (Y/N): (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) Voucher? (Y/N)
Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) Comments Regarding Biology: **DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Primary Headwater Habitat Evaluation Form

53

HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION **Alamo Solar Farm**

SITE NUMBER **WB-006** RIVER BASIN **Sevenmile Creek** DRAINAGE AREA (mi²) **0.05**

LENGTH OF STREAM REACH (ft) **537** LAT. **39.72559** LONG. **-84.65137** RIVER CODE RIVER MILE

DATE **11/03/17** SCORER **BJS** COMMENTS

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> SILT [3 pt]	<input type="text" value="45%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="5%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="10%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="40%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **5.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **9**TOTAL NUMBER OF SUBSTRATE TYPES: **4**

HHEI Metric Points

Substrate Max = 40

13

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input checked="" type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS MAXIMUM POOL DEPTH (centimeters): **20**

Pool Depth Max = 30

25

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS AVERAGE BANKFULL WIDTH (meters): **1.50**

Bankfull Width Max=30

15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

NOTE: River Left (L) and Right (R) as looking downstream

RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None

COMMENTS

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input checked="" type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input type="checkbox"/> WWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATIONUSGS Quadrangle Name: NRCS Soil Map Page: NRCS Soil Map Stream Order
County: Township / City: **MISCELLANEOUS**Base Flow Conditions? (Y/N): Date of last precipitation: Quantity: Photograph Information: Elevated Turbidity? (Y/N): Canopy (% open): Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and attach results) Lab Number: Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm) Is the sampling reach representative of the stream (Y/N) If not, please explain: Additional comments/description of pollution impacts: **BIOTIC EVALUATION**Performed? (Y/N): (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) Voucher? (Y/N)
Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) Comments Regarding Biology: **DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

70

SITE NAME/LOCATION **Alamo Solar Farm**

SITE NUMBER **WB-007** RIVER BASIN **Sevenmile Creek** DRAINAGE AREA (mi²) **1.92**

LENGTH OF STREAM REACH (ft) **2,891** LAT. **39.73245** LONG. **-84.66174** RIVER CODE RIVER MILE

DATE **11/03/17** SCORER **BJS** COMMENTS

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="5%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="60%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="30%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="5%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **60.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

21

TOTAL NUMBER OF SUBSTRATE TYPES:

4

HHEI Metric Points

Substrate Max = 40

25

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):

<input checked="" type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH (centimeters):

38

Pool Depth Max = 30

20

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check ONLY one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input checked="" type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS

AVERAGE BANKFULL WIDTH (meters):

3.70

Bankfull Width Max=30

25

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

NOTE: River Left (L) and Right (R) as looking downstream

RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check ONLY one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input checked="" type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: Distance from Evaluated Stream
☐ CWH Name: Distance from Evaluated Stream
☐ EWH Name: Distance from Evaluated Stream

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Eaton South NRCS Soil Map Page: NRCS Soil Map Stream Order
County: Preble Township / City:

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 11/03/17 Quantity: 0.28
Photograph Information: Representative photos taken
Elevated Turbidity? (Y/N): N Canopy (% open): 15%
Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) Y If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) N Voucher? (Y/N) N Salamanders Observed? (Y/N) N Voucher? (Y/N) N
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) N Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) N
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Primary Headwater Habitat Evaluation Form

51**HHEI Score (sum of metrics 1, 2, 3) :**

SITE NAME/LOCATION **Alamo Solar Farm**

SITE NUMBER **WB-008** RIVER BASIN **Sevenmile Creek** DRAINAGE AREA (mi²) **0.15**

LENGTH OF STREAM REACH (ft) **518** LAT. **39.73294** LONG. **-84.66420** RIVER CODE RIVER MILE

DATE **04/10/18** SCORER **BJS** COMMENTS

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.**

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> SILT [3 pt]	<input type="text" value="95%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="5%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **9**

TOTAL NUMBER OF SUBSTRATE TYPES: **2**

HHEI Metric Points

Substrate Max = 40

11

A + B

2. **Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):**

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input checked="" type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS MAXIMUM POOL DEPTH (centimeters): **15**

Pool Depth Max = 30

25

3. **BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):**

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS **Poorly defined banks in areas** AVERAGE BANKFULL WIDTH (meters): **1.20**

Bankfull Width Max=30

15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH		FLOODPLAIN QUALITY			
L	R	L	R		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
(Per Bank) Wide >10m		(Most Predominant per Bank) Mature Forest, Wetland		<input type="checkbox"/>	<input type="checkbox"/>
Moderate 5-10m		Immature Forest, Shrub or Old Field		<input type="checkbox"/>	<input type="checkbox"/>
Narrow <5m		Residential, Park, New Field		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> None		Fenced Pasture		<input type="checkbox"/>	<input type="checkbox"/>

COMMENTS

- FLOW REGIME (At Time of Evaluation) (Check ONLY one box):**

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input checked="" type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

- SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):**

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input type="checkbox"/> WWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATIONUSGS Quadrangle Name: NRCS Soil Map Page: NRCS Soil Map Stream Order
County: Township / City: **MISCELLANEOUS**Base Flow Conditions? (Y/N): Date of last precipitation: Quantity:
Photograph Information:
Elevated Turbidity? (Y/N): Canopy (% open):
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) If not, please explain: Additional comments/description of pollution impacts: **BIOTIC EVALUATION**Performed? (Y/N): (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) Voucher? (Y/N)
Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N)
Comments Regarding Biology: **DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Primary Headwater Habitat Evaluation Form

66

HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION		Alamo Solar Farm				
SITE NUMBER		WB-010	RIVER BASIN	Beasley Run	DRAINAGE AREA (mi ²)	0.15
LENGTH OF STREAM REACH (ft)		442	LAT.	39.69070	LONG.	-84.65627
RIVER CODE			RIVER MILE			
DATE		04/10/18	SCORER	BJS	COMMENTS	

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input checked="" type="checkbox"/> SILT [3 pt]	50%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	10%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	35%	<input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	5%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 10.00%

(A)

Substrate Percentage Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

12

TOTAL NUMBER OF SUBSTRATE TYPES:

4

HHEI Metric Points

Substrate Max = 40

16

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input checked="" type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH (centimeters):

25

Pool Depth Max = 30

30

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input checked="" type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS

AVERAGE BANKFULL WIDTH (meters):

2.40

Bankfull Width Max=30

20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

NOTE: River Left (L) and Right (R) as looking downstream

RIPARIAN WIDTH

L	R	(Per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input checked="" type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

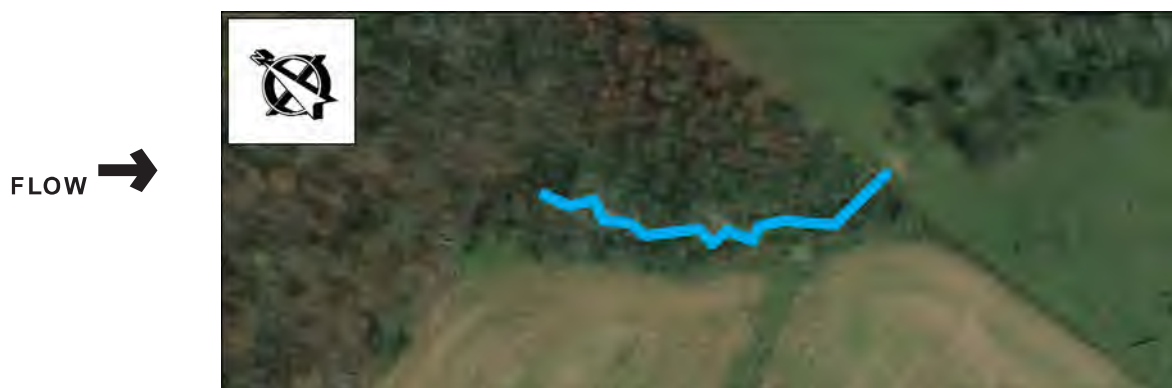
<input checked="" type="checkbox"/> Flat (0.5 ft/100 ft)	<input type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 ft/100 ft)
--	---	---	---	--

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input type="checkbox"/> WWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATIONUSGS Quadrangle Name: NRCS Soil Map Page: NRCS Soil Map Stream Order
County: Township / City: **MISCELLANEOUS**Base Flow Conditions? (Y/N): Date of last precipitation: Quantity: Photograph Information: Elevated Turbidity? (Y/N): Canopy (% open): Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and attach results) Lab Number: Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm) Is the sampling reach representative of the stream (Y/N) If not, please explain: Additional comments/description of pollution impacts: **BIOTIC EVALUATION**Performed? (Y/N): (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) Voucher? (Y/N)
Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) Comments Regarding Biology: **DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Primary Headwater Habitat Evaluation Form

66

HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION **Alamo Solar Farm**SITE NUMBER **WB-010**RIVER BASIN **Beasley Run**DRAINAGE AREA (mi²) **0.27**LENGTH OF STREAM REACH (ft) **916**LAT. **39.69070**LONG. **-84.65627**

RIVER CODE

RIVER MILE

DATE **04/10/18**SCORER **BJS**

COMMENTS

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL
MODIFICATIONS:☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> SILT [3 pt]	<input type="text" value="40%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="10%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="35%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="15%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of
Bldr Slabs, Boulder, Cobble, Bedrock **10.00%**

(A)

Substrate Percentage
Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **12**TOTAL NUMBER OF SUBSTRATE TYPES: **4**HHEI
Metric
PointsSubstrate
Max = 40**16**

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input checked="" type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH (centimeters): **30**Pool Depth
Max = 30**30**

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input checked="" type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS

AVERAGE BANKFULL WIDTH (meters): **2.50**Bankfull
Width
Max=30**20**

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

NOTE: River Left (L) and Right (R) as looking downstream

RIPARIAN WIDTH

L	R	(Per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input checked="" type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input type="checkbox"/> WWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATIONUSGS Quadrangle Name: NRCS Soil Map Page: NRCS Soil Map Stream Order
County: Township / City: **MISCELLANEOUS**Base Flow Conditions? (Y/N): Date of last precipitation: Quantity: Photograph Information: Elevated Turbidity? (Y/N): Canopy (% open): Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and attach results) Lab Number: Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm) Is the sampling reach representative of the stream (Y/N) If not, please explain: Additional comments/description of pollution impacts: **BIOTIC EVALUATION**Performed? (Y/N): (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) Voucher? (Y/N)
Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) Comments Regarding Biology: **DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Primary Headwater Habitat Evaluation Form

29

HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION		Alamo Solar Farm				
SITE NUMBER		WB-011	RIVER BASIN	Beasley Run	DRAINAGE AREA (mi ²)	0.00
LENGTH OF STREAM REACH (ft)		79	LAT.	39.69025	LONG.	-84.65577
RIVER CODE			RIVER MILE			
DATE		04/10/18	SCORER	BJS	COMMENTS	

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input checked="" type="checkbox"/> SILT [3 pt]	40%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input checked="" type="checkbox"/> COBBLE (65-256 mm) [12 pts]	30%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	15%	<input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	15%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 30.00%

(A)

Substrate Percentage Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

15

TOTAL NUMBER OF SUBSTRATE TYPES:

4

HHEI Metric Points

Substrate Max = 40

19

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH (centimeters):

5

Pool Depth Max = 30

5

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS

AVERAGE BANKFULL WIDTH (meters):

0.90

Bankfull Width Max=30

5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

NOTE: River Left (L) and Right (R) as looking downstream

RIPARIAN WIDTH

L	R	(Per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input checked="" type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input checked="" type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

<input checked="" type="checkbox"/> Flat (0.5 ft/100 ft)	<input type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 ft/100 ft)
--	---	---	---	--

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input type="checkbox"/> WWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATIONUSGS Quadrangle Name: NRCS Soil Map Page: NRCS Soil Map Stream Order
County: Township / City: **MISCELLANEOUS**Base Flow Conditions? (Y/N): Date of last precipitation: Quantity:
Photograph Information:
Elevated Turbidity? (Y/N): Canopy (% open):
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) If not, please explain: Additional comments/description of pollution impacts: **BIOTIC EVALUATION**Performed? (Y/N): (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) Voucher? (Y/N)
Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N)
Comments Regarding Biology: **DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Primary Headwater Habitat Evaluation Form

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HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION		Alamo Solar Farm				
SITE NUMBER		WB-012	RIVER BASIN	Beasley Run	DRAINAGE AREA (mi ²)	0.11
LENGTH OF STREAM REACH (ft)		704	LAT.	39.69133	LONG.	-84.65722
RIVER CODE			RIVER MILE			
DATE		04/10/18	SCORER	BJS	COMMENTS	

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input checked="" type="checkbox"/> SILT [3 pt]	30%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	15%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	15%	<input type="checkbox"/> MUCK [0 pts]	0%
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	40%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 15.00%

(A)

Substrate Percentage Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 9

TOTAL NUMBER OF SUBSTRATE TYPES: 4

HHEI Metric Points

Substrate Max = 40

13

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input checked="" type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS: MAXIMUM POOL DEPTH (centimeters): 10

Pool Depth Max = 30

15

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS: AVERAGE BANKFULL WIDTH (meters): 1.20

Bankfull Width Max=30

15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS:

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS:

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input checked="" type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

<input checked="" type="checkbox"/> Flat (0.5 ft/100 ft)	<input type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 ft/100 ft)
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ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input type="checkbox"/> WWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATIONUSGS Quadrangle Name: NRCS Soil Map Page: NRCS Soil Map Stream Order
County: Township / City: **MISCELLANEOUS**Base Flow Conditions? (Y/N): Date of last precipitation: Quantity: Photograph Information: Elevated Turbidity? (Y/N): Canopy (% open): Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and attach results) Lab Number: Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm) Is the sampling reach representative of the stream (Y/N) If not, please explain: Additional comments/description of pollution impacts: **BIOTIC EVALUATION**Performed? (Y/N): (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) Voucher? (Y/N)
Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) Comments Regarding Biology: **DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location





Primary Headwater Habitat Evaluation Form

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HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION		Alamo Solar Farm				
SITE NUMBER		WB-013	RIVER BASIN	Beasley Run	DRAINAGE AREA (mi ²)	0.00
LENGTH OF STREAM REACH (ft)		76	LAT.	39.69111	LONG.	-84.65698
RIVER CODE			RIVER MILE			
DATE		04/10/18	SCORER	BJS	COMMENTS	

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> SILT [3 pt]	<input type="text" value="80%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="5%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="15%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock

(A)

Substrate Percentage Check

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points

Substrate Max = 40

12

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS MAXIMUM POOL DEPTH (centimeters):

Pool Depth Max = 30

5

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS AVERAGE BANKFULL WIDTH (meters):

Bankfull Width Max=30

5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input checked="" type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

<input checked="" type="checkbox"/> Flat (0.5 ft/100 ft)	<input type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 ft/100 ft)
--	---	---	---	--

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input type="checkbox"/> WWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATIONUSGS Quadrangle Name: NRCS Soil Map Page: NRCS Soil Map Stream Order
County: Township / City: **MISCELLANEOUS**Base Flow Conditions? (Y/N): Date of last precipitation: Quantity:
Photograph Information:
Elevated Turbidity? (Y/N): Canopy (% open):
Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N) If not, please explain: Additional comments/description of pollution impacts: **BIOTIC EVALUATION**Performed? (Y/N): (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)
Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) Voucher? (Y/N)
Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N)
Comments Regarding Biology: **DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



This foregoing document was electronically filed with the Public Utilities

Commission of Ohio Docketing Information System on

12/10/2018 2:29:17 PM

in

Case No(s). 18-1578-EL-BGN

Summary: Application Exhibit G (Part 6 of 7) electronically filed by Mr. Michael J. Settineri on behalf of Alamo Solar I, LLC