

The following text is an addendum to the SWQM Procedures Manual RG-416, 05/2014 Revision, Appendix B, page B-25.

Table B.11. Statewide benthic Index of Biotic Integrity metrics and scoring criteria for kick samples, rapid bioassessment protocol—benthic macroinvertebrates (Harrison 1996).

Statewide Metrics	Scoring Criteria			
	4	3	2	1
Taxa richness	> 21	15–21	8–14	< 8
Number of EPT Taxa	> 9	7–9	4–6	< 4
Biotic index (HBI)	< 3.77	3.77–4.52	4.53–5.27	>5.27
% Chironomidae	0.79–4.10	4.11–9.48	9.49–16.19	< 0.79 or > 16.19
% Dominant taxon	< 22.15	22.15–31.01	31.02–39.88	> 39.88
% Dominant Functional Group	< 36.50	36.50–45.30	45.31–54.12	> 54.12
% Predators	4.73–15.20	15.21–25.67	25.68–36.14	< 4.73 or >36.14
Ratio of intolerant:tolerant taxa	> 4.79	3.21–4.79	1.63–3.20	< 1.63
% of total Trichoptera as Hydropsychidae	< 25.50	25.50–50.50	50.51–75.50	> 75.50 or no Trichoptera
# of non-insect taxa	> 5	4–5	2–3	< 2
% Collector-gatherers	8.00–19.23	19.24–30.46	30.47–41.68	< 8.00 or > 41.68
% of total number as Elmidae	0.88–10.04	10.05–20.08	20.09–30.12	< 0.88 or > 30.12

Aquatic life use point-score ranges:

- Exceptional: > 36
- High: 29 - 36
- Intermediate: 22 - 28
- Limited: < 22

Table B.11-a. Ecoregion 24 benthic Index of Biotic Integrity metrics and scoring criteria for kick samples, rapid bioassessment protocol.

Ecoregion 24 Metrics	Scoring Criteria			
	4	3	2	1
Taxa Richness	>23	18 - 23	6 - 17	<6
Number of Ephemeroptera Taxa	>5	4 - 5	2 - 3	<2
% Trichoptera	4.55 - 20.99	1.85 - 4.54	0.01 - 1.84	>20.99 or 0
% Chironomidae	7.08 - 24.50	0.92 - 7.07	0.01 - 0.91	>24.50 or 0
% Diptera	0.65 - 2.72	2.73 - 7.99	8.00 - 23.59	<0.65 or >23.59
% of Total Trichoptera as Hydropsychidae	0 - 32.14	32.15 - 63.3	63.4 - 99.99	100 or no Trichoptera
% Collector-Gatherers	<4.83	4.83 - 22.33	22.34 - 37.09	>37.09
Biotic Index (HBI)	<2.28	2.28 - 3.94	3.95 - 4.56	>4.56
Number of Taxa with Tolerance Value <8.5	>10	9 - 10	7 - 8	<7

Aquatic life use point-score ranges:

- Exceptional: > 26
- High: 21 - 26
- Intermediate: 18 - 20
- Limited: < 18

Table B.11-b. Ecoregions 27, 29, and 32 benthic Index of Biotic Integrity metrics and scoring criteria for kick samples, rapid bioassessment protocol.

Ecoregions 27-29-32 Metrics	Scoring Criteria			
	4	3	2	1
Taxa Richness	>24	18 - 24	11 - 17	<11
Number of EPT Taxa	>12	8 - 12	3 - 7	<3
% Diptera and Non-Insect Taxa	2.56 - 13.42	13.43 - 24.28	24.29 - 35.14	<2.56 or >35.14
% Chironomidae	4.57 - 0.45	4.58 - 8.70	8.71 - 12.83	<0.45 or >12.83
Number of Ephemeroptera Taxa	>7	5 - 7	2 - 4	<2
% Dominant Taxon	<27.00	27.00 - 42.54	42.55 - 58.08	>58.08
% Dominant Functional Group	<38.04	38.04 - 49.52	49.53 - 61.00	>61.00
% Predators	5.13 - 11.63	11.64 - 18.13	18.14 - 24.63	<5.13 or >24.63
% Collector-Gatherers	10.93 - 20.77	20.78 - 30.61	30.62 - 40.45	<10.93 or >40.45
Biotic Index (HBI)	<3.48	3.48 - 4.41	4.42 - 5.36	>5.36
Number of Taxa with Tolerance Value <8.5	>22	15 - 22	8 - 14	<8

Aquatic life use point-score ranges:

- Exceptional: > 32
- High: 29 - 32
- Intermediate: 22 - 28
- Limited: < 22

Table B.11-c. Ecoregion 30 benthic Index of Biotic Integrity metrics and scoring criteria for kick samples, rapid bioassessment protocol.

Ecoregion 30 Metrics	Scoring Criteria			
	4	3	2	1
Taxa Richness	>24	19 - 24	12 - 18	<12
Number of EPT Taxa	>13	9 - 13	4 - 8	<4
% Diptera and Non-Insect Taxa	1.50 - 20.08	20.09 - 38.66	38.67 - 57.24	<1.50 or >57.24
% Dominant Taxon	<19.98	19.98 - 32.24	32.25 - 44.50	>44.50
% Dominant Functional Group	<38.00	38.00 - 48.80	48.81 - 59.60	>59.60
% Predators	2.53 - 16.63	16.64 - 30.75	30.76 - 45.11	<2.53 or >45.11
% Collector-Gatherers	3.17 - 15.97	15.98 - 28.76	28.77 - 41.57	<3.17 or >41.57
Biotic Index (HBI)	<2.38	2.38 - 3.51	3.52 - 4.65	>4.65
% Tolerant Organisms (Tol. ≥8.5)	<2.61	2.61 - 5.21	5.22 - 7.82	>7.82
Number of Taxa with Tolerance Value <8.5	>21	16 - 21	10 - 15	<10

Aquatic life use point-score ranges:

- Exceptional: > 35
- High: 31 - 35
- Intermediate: 25 - 30
- Limited: < 25

Table B.11-d. Ecoregions 33 and 35 benthic Index of Biotic Integrity metrics and scoring criteria for kick samples, rapid bioassessment protocol.

Ecoregion 33-35 Metrics	Scoring Criteria			
	4	3	2	1
Taxa Richness	>28	18-28	8-17	<8
Number of EPT Taxa	>13	9-13	4-8	<4
% Diptera and Non-Insect Taxa	1.92-18.92	18.93-35.93	35.93-52.93	<1.92 or >52.93
% Dominant Taxon	<21.46	21.46-32.58	32.59-43.71	>43.71
% Dominant Functional Group	<36.68	36.68-45.68	45.69-54.69	>54.69
% Shredders	0.31-3.84	3.85-7.36	7.37-10.87	<0.31 or >10.87
% Scrapers	0.21-7.92	7.92-15.63	15.64-23.34	<0.21 or >23.34
Biotic Index (HBI)	<4.26	4.26-5.18	5.19-6.12	>6.12
% Tolerant Organisms (Tol. ≥ 8.5)	<2.69	2.69-5.38	5.39-8.07	>8.07
Number of Taxa with Tolerance Value <8.5	>28	22-28	15-21	<15

Aquatic life use point-score ranges:

- Exceptional: > 34
- High: 30 - 34
- Intermediate: 23 - 29
- Limited: < 23

Table B.11-e. Ecoregion 34 benthic Index of Biotic Integrity metrics and scoring criteria for kick samples, rapid bioassessment protocol.

Ecoregion 34 Metrics	Scoring Criteria			
	4	3	2	1
Taxa Richness	>27	22 - 27	16 - 21	<16
Number of EPT Taxa	>9	6 - 9	2 - 5	<2
% Diptera and Non-Insect Taxa	6.58 - 20.15	20.16 - 33.72	33.73 - 47.29	<6.58 or >47.29
% Ephemeroptera	>48.34	31.65 - 48.34	14.94 - 31.64	<14.94
% Dominant Taxon	<23.25	23.25 - 32.43	32.44 - 41.62	>41.62
% Scrapers	4.95 - 15.96	15.97 - 26.98	26.99 - 38.00	<4.95 or >38.00
% Predators	5.57 - 12.18	12.19 - 18.79	18.80 - 25.40	<5.57 or >25.4
% Collector-Gatherers	27.93 - 37.87	37.88 - 47.81	47.82 - 57.75	<27.93 or >57.75
Biotic Index (HBI)	<5.10	5.10 - 5.90	5.91 - 6.71	>6.71
Number of Taxa with Tolerance Value <8.5	>23	18 - 23	12 - 17	<12

Aquatic life use point-score ranges:

- Exceptional: > 32
- High: 29 - 32
- Intermediate: 22 - 28
- Limited: < 22