



**NATIONAL
MARINE
SANCTUARY
FOUNDATION**

Final Report

2017 NOAA 21st Century Community Learning Center Watershed STEM Grant Program

Organization Name: Milwaukee Metropolitan Sewerage District

Award Number: #17-03-B-103

Project Title: Journeys into the Watershed: Making Connections

APPENDIX G – Additional Activities Developed for Journeys into the Watershed

DOTS Data Collection Form

Date: _____ Time: _____ Site: _____

Data Collector

Name: _____

Site Description: _____

Media Specialist (*Video App on Camera*)

Name: _____

Who did you interview? _____

Navigator (*GPS Unit*)

Name: _____

Latitude Coordinates: _____

Altitude/Elevation (ft.): _____

Longitude Coordinates: _____

Image Archivist (*Camera*)

Name: _____

What images did you capture? _____

Meteorologist (*Kestrel Weather Meter*)

Name: _____

Air Temperature (°F): _____

Wind Speed (AVG mph): _____

Wind Direction: _____

Canopy Cover (%): _____

Cloud Cover (%): _____

Thermal Investigator (*Infrared Thermometer*)

Name: _____

Temperature of Warmest Object (°F): _____

Temperature of Coldest Object (°F): _____

Object Description: _____

Object Description: _____

Vision Extender (*Binoculars/Hand-Held Magnifiers*)

Name: _____

What did you see while using these tools? _____

Water Quality Technician (*Oakton Water Meter*)

Name: _____

Water Body Type: _____

pH: _____

Water Temperature (°F): _____

Dissolved Solids (ppm): _____

Macroinvertebrate Tally

Name of Collector _____
 Location _____
 Date of Collection _____

GROUP 1 - Sensitive to pollutants

GROUP 2 - Semi-Sensitive to pollutants

Circle each animal that is found.

Stonefly Nymph
 Dobsonfly Larva
 Water Snipe Fly Larva
 Alderfly Larva

Number of GROUP 1 animals circled:

Circle each animal that is found.

Crane fly Larva
 Caddisfly Larva
 Dragonfly Nymph
 Mayfly Nymph
 Riffle Beetle
 Damselfly Nymph
 Water Penny

Number of GROUP 2 animals circled:

GROUP 3 - Semi-Tolerant of pollutants

GROUP 4 - Tolerant of pollutants

Circle each animal that is found.

Blackfly Larva
 Non-red Midge Larva
 Snail: Gilled or Orb

Number of GROUP 3 animals circled:

Circle each animal that is found.

Pouch Snail (left-side opening)
 Bloodworm Midge Larva (red)
 Leech
 Aquatic Sowbug
 Worms: Tubifex or Threadworm

Number of GROUP 4 animals circled:

Crayfish
 Ringneck Puss
 Ringneck Mussel

Tally animals circled in each category. Then multiply by number given.

Group 1	Sensitive	x 4 =	_____
Group 2	Semi-Sensitive	x 3 =	_____
Group 3	Semi-Tolerant	x 2 =	_____
Group 4	Tolerant	x 1 =	_____
Total		(E)	_____ (F)

Divide (F) by (E): _____ + _____
 Index Score (F + E)

How healthy is the stream?

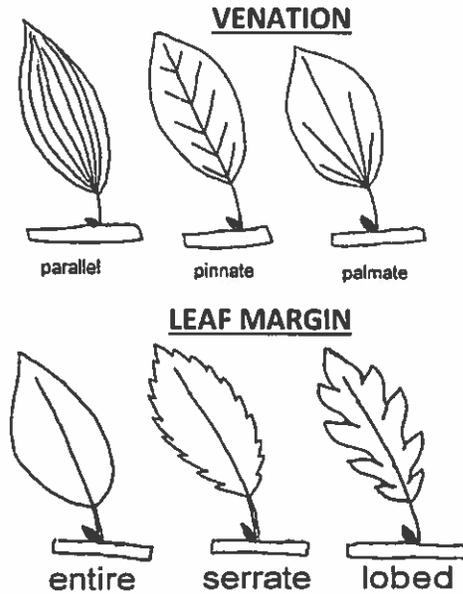
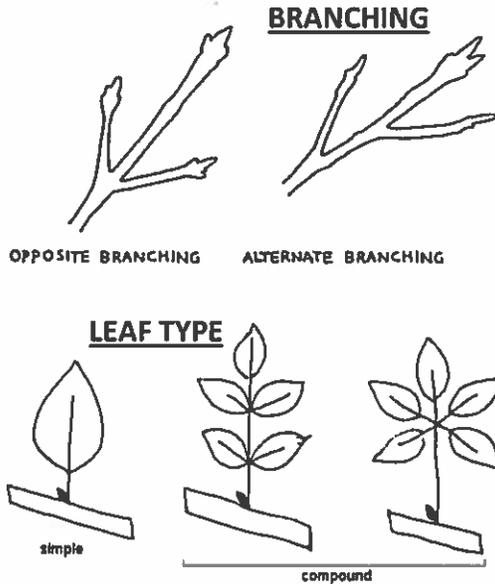
3.6 and up	Excellent
2.6 - 3.5	Good
2.1 - 2.5	Fair
1.0 - 2.0	Poor

For more information, contact the Water Action Volunteers Coordinator at 608-764-8918

Neutral Network

WAV materials, revised Spring, © 1999

Lakeshore State Park – Prairie Flower Identification



1. Purple Prairie Clover (*P. purpureum*)

Leaf type: Compound (3 leaflets)
 Branching: Alternate
 Flowers clustered in a spike
 Leaf margin: _____
 Leaf venation: _____

2. Bird's Foot Trefoil (*L. corniculatus*)

Leaf type: Compound (5 leaflets)
 Branching: _____
 Yellow flowers appearing to have 3 petals
 Leaf venation: _____

3. Field Bindweed (*C. arvensis*)

Leaf type: _____
 Leaf margin: _____
 Leaf shape: Arrow
 White funnel-shaped flowers with hint of purple

4. Butterflyweed (*A. tuberosa*)

Stem: Hairy
 Leaf shape: Long and narrow
 Leaf type: Simple with single central vein
 Branching: _____
 Leaf margin: _____

5. Common Milkweed (*A. syriaca*)

Leaf type: _____
 Flower color: _____
 Leaf venation: Large leaves with pinnate venation; red central vein

6. White Clover (*T. repens*)

White, 'puff-like' flowers growing near the ground
 Leaf venation: _____
 Leaf type: Compound (3 leaflets)
 Leaf margin: _____

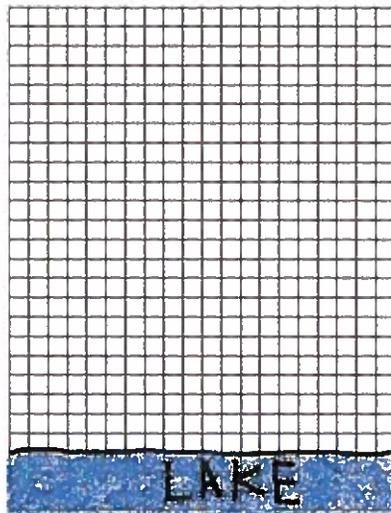
Measuring Tidelines and Mapping the Beach

Materials:

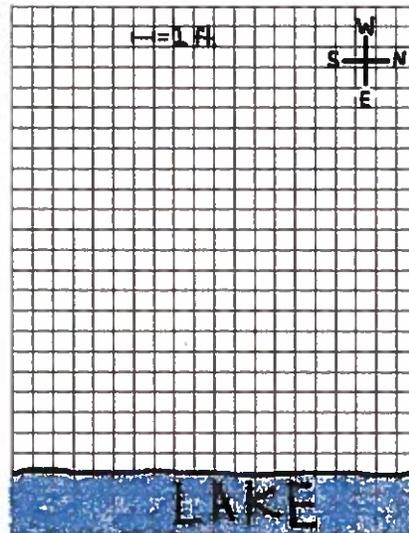
- Measuring Tape (at least 30 ft.)
- Beach Flags
- Graph Paper
- Pencil/ Pen

Procedure:

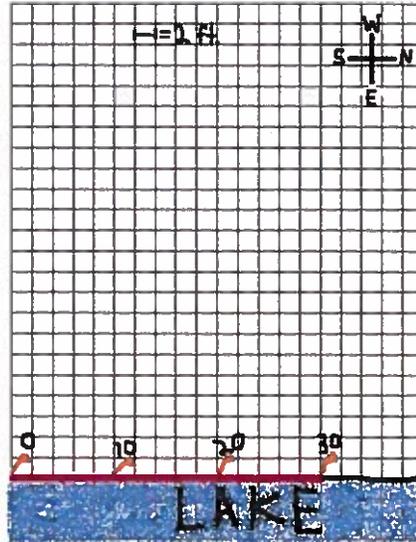
1. Have students stand on the shoreline with their backs to the water. Ask the group to scan up and down the beach. What do you see on the sand? Are debris lines perfectly straight? Do they occur at even/ similar intervals?
2. Draw a line across the bottom of the graph paper to represent the shoreline.



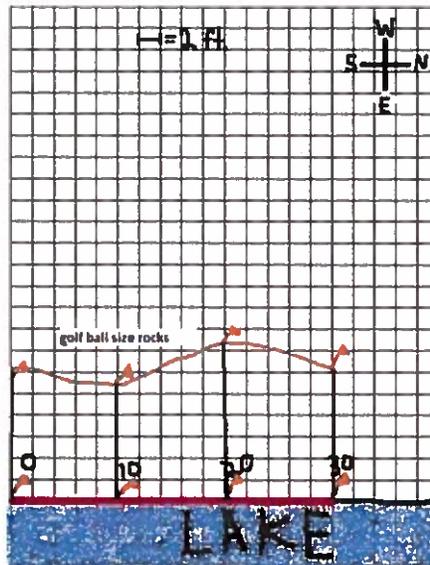
3. Using the shoreline as a reference point, have students figure out which way is north. Draw a compass rose near the top of the graph paper.
 4. Explain that each square on the graph paper represents 2 feet on the beach. Ask students, "How many squares on the graph paper would represent a 10-foot line along the shore?"
- (5)



5. Have two students measure 30 feet along the shore and a third student place a beach flag at zero, 10, 20 and 30 feet.
6. Next, ask a fourth student to draw the 30-foot line and the location of each flag on the graph paper.



7. Ask the group to locate the debris line closest to the shore.
8. Have two students measure the distance from the flag at 0 feet on the shoreline to the nearest debris line. Place a flag at the debris line and record the distance from the shore on the graph paper.
9. Repeat step nine for the same debris line but measure from the 10, 20 and 30 feet points on the shoreline. Using the four points on the first debris line, draw the debris line on the graph paper.



10. Before moving to the next, have students observe what materials make up the first debris line. Are there rocks, sticks, and/or garbage in the line? What everyday objects can you

compare the sticks/stones to in order to effectively communicate its contents to someone who hasn't been to the beach? For example, strawberry or golf ball-sized rocks.

11. Continue measuring distances between debris lines until the entire 30-foot section of the beach is mapped.
12. Additionally, students may mark other beach objects on the graph paper (i.e. trees, river, logs). The key is to make distances between objects on the map proportional to the actual distances between objects on the beach.

The Great Lakes Basin

