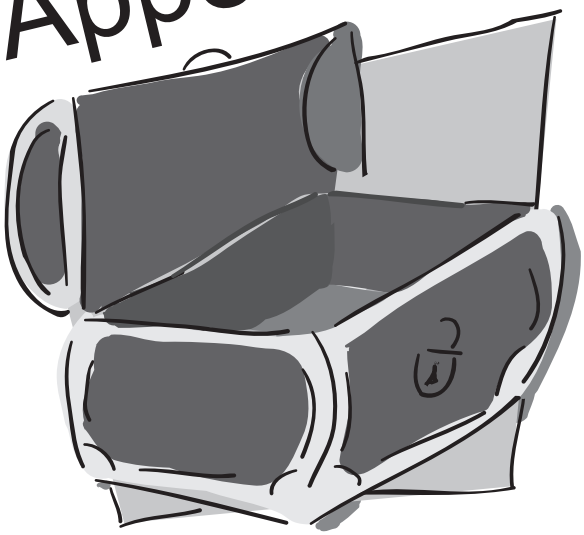
Appendix



Site Definition Sheet

*** Required Field**

School Name: _____ Site Name:_____

Choose a unique name based on location, e.g. "Grassy area - Front of School"

Names of students completing Site Definition Sheet: _____

Date: Year_____ Month_____ Day____ Check one: ❑ New Site ❑ Metadata Update

***Coordinates:** Latitude: _____˚ ❑ N or ❑ S Longitude: _____˚ ❑ E or ❑ W
Elevation: _____ meters

***Source of Location Data** (check one): ❑ GPS ❑ Other _____

Comments: _____

_____

Site Type (select all that apply based on intended measurements, then complete the necessary fields below): ❑ Atmosphere ❑ Surface Temperature ❑ Hydrosphere
❑ Biosphere Land Cover ❑ Biosphere Greening ❑ Biosphere Phenological Gardens
❑ Biosphere Lilacs ❑ Soil (Pedosphere) Characteristics
❑ Soil (Pedosphere) Moisture and Temperature ❑ Soil (Pedosphere) Frost Tube

Cover type (Select one): ❑ Short grass (< 0.5m) ❑ Tall grass (> 0.5m) ❑ Barren land
❑ Sand ❑ Closed Forest (Trees interlocking) ❑ Woodland (Trees not interlocking)
❑ Shrubs ❑ Dwarf Shrubs ❑ Flowering Plants ❑ Wetland ❑ Cultivated Agricultural
❑ Cultivated Recreational ❑ Open Water ❑ Bare Rock ❑ Urban Residential
❑ Urban Commercial ❑ Asphalt ❑ Concrete ❑ Other ❑ Land Cover site

If you selected Closed Forest or Woodland, indicate the ground cover (Select one)**:**
❑ Leaf Litter ❑ Moss ❑ Peat

Atmosphere

List any obstacles (Check one): ❑ No obstacles ❑ Obstacles (describe below)
(Obstacles are trees, buildings, etc. that appear above 14˚ elevation when viewed from the site)

Description:_____

_____

Buildings within 10 meters of instrument shelter (Check one):
❑ No buildings ❑ Buildings (describe below)

Description:_____

_____

Other Site Data:

Steepest Slope: _____ Compass Angle (facing up slope): _____

Rain Gauge Height ____ cm Ozone Clip Height ____ cm Thermometer Height ____ cm

****Thermometer Type*** (Check one):
- ❑ Other, Soil or Air
- ❑ Liquid-filled, Current Temperature Only
- ❑ Digital Single-Day Min/Max
- ❑ Digital Multi-Day Min/Max
- ❑ Reset Digital Multi-Day Min/Max Thermometer

Note: reset is required before data collection and entry, when batteries are changed or every 6 months

*** Required Field**

School Name: _____Study Site: _____ Date: _____

Date: Year____ Month____ Day___ Universal Time (hour:min): _____

Was this reset due to a battery change? ❑ Yes ❑ No

❑ Earth Networks Station (Automated Station ID _____)
❑ Davis Instrument (Davis Thermometer Type _____)
❑ Data Logger (HOBO)
❑ Rainwise
❑ WeatherHawk
❑ No Thermometer

Surface Cover Description under instrument shelter (Check one): ❑ Pavement
❑ Bare ground ❑ Short grass (< 10 cm) ❑ Long grass (> 10 cm) ❑ Sand
❑ Roof (describe below) ❑ Other (describe below)

Description:_____

Overall comments on the site (metadata): _____
_____

Surface Temperature

Homogeneous site size (Select one): ❑ 90m x 90m ❑ 30m x 30m
❑ Smaller than 30 x 30m (specify size: __ m x __ m)

Type of IRT Instrument: ❑ Raytech ST20 ❑ Other (specify instrument manufacturer and model) _____)

Overall comments on the site (metadata): _____
_____

Hydrosphere

***Name of Body of Water:** _____ (the name commonly used on maps; if the body of water does not have a common name, provide a description of the water body it comes from or flows into or both.)

***Water Body Type** (Select one): ❑ Unknown ❑ Saltwater ❑ Freshwater ❑ Brackish

Water Body Source (Select one):

❑ Pond (Area of standing water ___ km^2; Average Depth of Standing Water ___ m)
❑ Lake (Area of standing water ___ km^2; Average Depth of Standing Water ___ m)
❑ Reservoir (Area of standing water ___ km^2; Average Depth of Standing Water ___ m)
❑ Bay (Area of standing water ___ km^2; Average Depth of Standing Water ___ m)
❑ Ditch (Area of standing water ___ km^2; Average Depth of Standing Water ___ m)
❑ Ocean
❑ Estuary (Area of standing water ___ km^2; Average Depth of Standing Water ___ m)
❑ Stream (Width of Moving water ___ m)
❑ River (Width of Moving water ___ m)
❑ Marsh/Swamp
❑ Agriculture

*** Required Field**

School Name: _____Study Site: _____ Date: _____

❑ Puddles, animal and vehicle tracks

❑ Other (Width of Moving water ___ m; Area of standing water ___ km^2;
Average Depth of Standing Water __ m)

Water Sample Location: ❑ Outlet ❑ Bank ❑ Bridge ❑ Boat ❑ Inlet ❑ Pier

Can you see the bottom? ❑ Yes ❑ No

Channel/Bank Material: ❑ Soil ❑ Rock ❑ Concrete ❑ Vegetated Bank

Bedrock: ❑ Granite ❑ Limestone ❑ Volcanics ❑ Mixed Sediments ❑ Unknown

Freshwater Habitats Present: ❑ Rocky Substrate ❑ Vegetated Banks ❑ Mud Substrate
❑ Sand Substrate ❑ Submersed Vegetation ❑ Logs

Saltwater Habitats Present: ❑ Rocky Shore ❑ Sandy Shore ❑ Mud Flats/Estuary

Overall comments on the site (metadata): _____
_____

Biosphere

Land Cover

MUC Description: Level 1: _____ Level 2: _____
Level 3: _____ Level 4: _____

***MUC Code:** _____ **Note:** *Use the MUC Guide to determine the greatest level possible within the MUC system*

Overall comments on the site (metadata): _____
_____

Greening

Are there multiple dominant species? ❑ Yes ❑ No

Primary Plant

Is this plant in the understory? ❑ Yes ❑ No

Vegetation Type (Select one): ❑ Grass Genus: _____
❑ Tree Genus: _____ Species: _____
❑ Shrub Genus: _____ Species: _____

Label: _____

Secondary Plant

Is this plant in the understory? ❑ Yes ❑ No

Vegetation Type (Select one): ❑ Grass Genus: _____
❑ Tree Genus: _____ Species: _____
❑ Shrub Genus: _____ Species: _____

Label: _____

Tertiary Plant

Is this plant in the understory? ❑ Yes ❑ No

*** Required Field**

School Name: _____Study Site: _____ Date: _____

Vegetation Type (Select one): ❑ Grass Genus: _____
❑ Tree Genus: _____ Species: _____
❑ Shrub Genus: _____ Species: _____

Label: _____

If additional plants will be monitored record the information on another sheet or in your Science Log.

Overall comments on the site (metadata): _____
_____

Phenological Gardens

Soil Texture (Select one): ❑ Unknown ❑ Sandy Clay ❑ Sandy Clay Loam ❑ Sandy Loam ❑ Silty Clay ❑ Silty Clay Loam ❑ Silt Loam ❑ Loamy Sand ❑ Sand ❑ Silt ❑ Clay ❑ Clay Loam ❑ Loam ❑ Organic

Soil pH: _____; **pH Method**: ❑ pH Maper ❑ pH Meter

Shrub Name	Date Planted
Witch Hazel 'Jelena'	
Witch Hazel 'Genuine'	
Lilac	
Mock-Orange	

Shrub Name	Date Planted
Forsythia	
Heather 'Allegro'	
Heather 'Long White'	
Snowdrops	

Cloned and Common Lilac

Lilac Shrub Name	Cloned or Common	Date Planted/Died	Height (cm)

Soil (Pedosphere)

Soil Characteristics

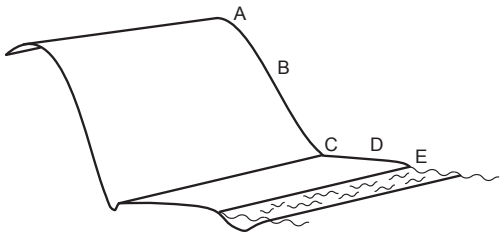
Slope angle (North, Northeast, etc.): _____

Method (select one): ❑ Soil Pit ❑ Auger Hole ❑ Near Surface ❑ Excavation ❑ Road Cut ❑ Erosion Cut

Land Use (Select one): ❑ Urban ❑ Agricultural ❑ Recreation ❑ Wilderness ❑ Other _____

Landscape Position (Select one):

❑ A. Summit
❑ B. Slope
❑ C. Depression
❑ D. Large Flat Area
❑ E. Stream Bank



School Name: _____ Study Site: _____ Date: _____

*** Required Field**

Soil Horizon Definitions

Horizon Number	**Date** (YYYY, MM, DD)	***Top Depth** (cm)	***Bottom Depth** (cm)	**Moisture Estimate** (Select one: Unknown, Dry, Moist, Wet)	**Structure Estimate** (Select one: Unknown, Granular, Blocky, Platy, Prismatic, Columnar, Single Grained, Massive)	**Main color** (code from soil color book)	**Secondary Color** (code from soil color book)	**Consistence Estimate** (Select one: Extremely Firm, Firm, Friable, Loose, Unknown)	**Texture Field Estimate** (Select one: Unknown, Sandy Clay, Sandy Clay Loam, Sandy Loam, Silty Clay, Silty Clay Loam, Silt Loam, Loamy Sand, Sand, Silt, Clay, Clay Loam, Loam, Organic)	**Root Quantity Estimate** (Select one: Unknown, None, Few, Many)	**Rock Quantity Estimate** (Select one: Unknown, None, Few, Many)	**Carbonates** (Select one: Unknown, None, Slight, Strong)

Note: The Top Depth of any horizon must be the same depth or lower than the Bottom Depth of the horizon above it; it cannot be higher that the bottom depth above it.

Comments on the site (metadata): _____ _____

*** Required Field**

School Name: _____Study Site: _____ Date: _____

Parent Material (Select one): ❑ Bedrock ❑ Organic Material ❑ Construction Material ❑ Marine Deposits ❑ Lake Deposits ❑ Stream Deposits (Alluvium) ❑ Wind Deposits (Loess) ❑ Glacial Deposits (Glacial Till) ❑ Volcanic Deposits ❑ Loose Materials on Slope (Colluvium) ❑ Don't Know ❑ Other _____

Distance from Major Features: _____

Soil Moisture and Temperature

Surface State (Select one): ❑ Natural ❑ Plowed ❑ Graded ❑ Backfill ❑ Compacted ❑ Other _____

Canopy Cover (Select one): ❑ Open ❑ Some Trees (within 30m) ❑ Canopy Overhead

Overall comments on the site (metadata): _____

_____

Frost Tube:

We recommend you also complete the atmosphere and surface temperature sections.

Date installed: _____

Height above ground (cm): _____ Depth below ground (cm): _____ Total length (cm): ____

Water body within 100m of site: ❑ No ❑Yes (complete below)

Water body type (Select one): ❑ Unknown ❑ Saltwater ❑ Freshwater ❑ Brackish

Direction to closest point of water: ❑ N ❑ NE ❑ E ❑ SE ❑ S ❑ SW ❑ W ❑ NW

Landscape Position (Choose one, see above in **Soil Characteristics**)

Overall comments on the site (metadata): _____

_____

Site Photos

(record the appropriate photo number for easy identification during data entry)

North	South	East	West
Photo number _____	Photo number _____	Photo number _____	Photo number _____

Overall comments on the site (metadata): _____

_____

Hydrosphere Investigation

Quality Control Procedure Data Sheet

Not for submission into the GLOBE database

School name: _____ Student group: _____
Date: _____

Dissolved Oxygen Kits:

Temperature of distilled water: _____˚C; Elevation of your site: _____ meters

Dissolved Oxygen for the shaken distilled water:

Observer 1: ____ mg/L Observer 2: ____ mg/L Observer 3: ____ mg/L Average: ____ mg/L

Solubility of oxygen in water for your temperature at sea level from Table HY-DO-1: _____ mg/L X Calibration value for your elevation from Table HY-DO-2: _____ = Expected value for DO in your distilled water: _____ mg/L

Salinity

Salinity of Standard: Observer 1: ____ ppt Observer 2: ____ ppt Observer 3: ____ ppt

Average Salinity: ____ ppt

Alkalinity

Standard used (check one): Baking soda standard: ____ Purchased standard: ____

Alkalinity of standard: ____ mg/L

For kits that read alkalinity directly:

Observer 1: ___ mg/L $CaCO_3$ Observer 2: ___ mg/L $CaCO_3$ Observer 3: ___ mg/L $CaCO_3$

Average: ____ mg/L $CaCO_3$

For kits in which drops are counted:

	Observer 1	Observer 2	Observer 3	Average
Number of drops:				
Conversion constant for your kit and protocol				
Total Alkalinity (mg/L as CaCO3)				

Nitrate-Nitrogen

Observer 1: ____ mg/L NO_3^- - N Observer 2: ____ mg/L NO_3^-- N Observer 3: ____ mg/L NO_3^- N

Average: ____ mg/L NO_3^-- N

Hydrosphere Investigation

Data Sheet

School name: _____ Class or group name: _____

Name(s) of Student(s) collecting data: _____

Measurement Time: *

Year: _____ Month: ____ Day: ____ Time: __:__ (UT) Time: __:__ (Local)

Name of Site : _____

Water State: (check one) *

❒ Normal ❒ Flooded ❒ Dry ❒ Frozen ❒ Unreachable

Note: If Normal is selected, continue below; all other selections stop here

Transparency

Enter data below, depending on whether you are using the Secchi Disk or the Transparency Tube method.

Secchi Disk

Secchi Disk Test 1:
Distance from observer to:

to water surface ____ m

where disk disappears ____m where disk reappears ____ m

OR

❒ Secchi Disk reaches the bottom and does not disappear.
to water surface ____ m depth to the bottom of the water site ___

Secchi Disk Test 2:
Distance from observer to:

to water surface ____ m

where disk disappears ____m where disk reappears ____ m

OR

❒ Secchi Disk reaches the bottom and does not disappear.
to water surface ____ m depth to the bottom of the water site ___

Secchi Disk Test 3:
Distance from observer to:

to water surface ____ m

where disk disappears ____m where disk reappears ____ m

OR

❒ Secchi Disk reaches the bottom and does not disappear.
to water surface ____ m depth to the bottom of the water site ___

Transparency Tube

Transparency Tube Test 1: ____ cm
❒ Greater than depth of Transparency Tube

Transparency Tube Test 2: ____ cm
❒ Greater than depth of Transparency Tube

Transparency Tube Test 3: ____ cm
❒ Greater than depth of Transparency Tube

Comments: _____
_____

Water Temperature: Measured with (check one) __ alcohol-filled thermometer __ probe

Temperature Test 1: ____ °C

Temperature Test 2: ____ °C

Temperature Test 3: ____ °C

Comments: _____
_____

Dissolved Oxygen:

Dissolved Oxygen kit: Manufacturer _____ Model _____ Salinity _____ (ppt)

Dissolved Oxygen Test 1: ____ (mg/L)

Dissolved Oxygen Test 2: ____ (mg/L)

Dissolved Oxygen Test 3: ____ (mg/L)

Dissolved Oxygen probe: Manufacturer _____ Model _____

	Probe Measure	Salinity Correction Factor	Dissolved Oxygen (mg/L)
Test 1			
Test 2			
Test 3			

Note: Salinity correction factor is taken from the manufacturer's instructions for the probe.

Comments: _____
_____

Electrical Conductivity:

Temperature of water sample being tested: ___°C
Conductivity of standard: ____ MicroSiemens/cm (µS/cm)

Conductivity Test 1: ____ µS/cm

Conductivity Test 2: ____ µS/cm

Conductivity Test 3: ____ µS/cm

Comments: _____

_____

Salinity

Tide Information

Time of High or Low Tide before Salinity Measurement (UTC 24hr): _____

Check one: ❒ High Tide: ❒ Low Tide

Time of High or Low Tide after Salinity Measurement (UTC 24hr): _____

Check one: ❒ High Tide: ❒ Low Tide

Location of tide: _____

Latitude of Measurement: _____ ❒ North ❒ South (of the equator)

Longitude of Measurement: _____ ❒ East ❒ West (of the prime meridien)

Salinity kit *(for Salinity Titration samples)* manufacturer _____ model _____

Salinity (Complete for method used)

Hydrometer Method

	Temperature of water sample in 500 mL tube (˚C)	Specific Gravity	Salinity of Sample (ppt)
Test 1			
Test 2			
Test 3			

Salinity Titration Method

Salinity Test 1: ____ ppt

Salinity Test 2: ____ ppt

Salinity Test 3: ____ ppt

Comments: _____

_____

Water pH: Measured with: (check one) ❒ pH Paper ❒ pH Meter

If salt added, conductivity (µS/cm)	pH
1.	
2.	
3.	

Value of buffers used: ❒ pH 4 ❒ pH 7 ❒ pH 10 (Check all used)

Comments: _____

_____

Alkalinity:

Alkalinity kit: manufacturer _____ model _____

Kit used reads alkalinity directly

Alkalinity Test 1: ____ mg/L as CaCO3

Alkalinity Test 2: ____ mg/L as CaCO3

Alkalinity Test 3: ____ mg/L as CaCO3

Kit used counts drops

	Number of drops	X	Conversion constant for your kit	=	Alkalinity (mg/L as $CaCO_3$)
Test 1					
Test 2					
Test 3					

Comments: _____

_____

Nitrate

Nitrate kit: manufacturer _____ model _____

	Nitrate and Nitrite (mg/L NO_3^-N + NO_2^-N)	Nitrate (mg/L NO2-N) *Optional*
Test 1		
Test 2		
Test 3		

Comments: _____

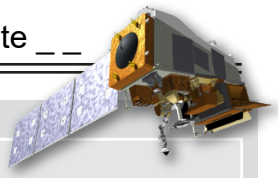
_____

SEE GLOBE CLOUD CHART FOR VISUAL REFERENCE

School/Observer Name:_____ Study Site:_____

Date (ex. 2017 01 13): Year: _ _ _ _ Month: _ _ Day: _ _

Time (ex. 24 Hour Clock: 14 26): Local: Hour _ _ Minute _ _ Universal: Hour _ _ Minute _ _



1. What is in Your Sky?

Total Cloud/Contrail Cover:

- ○ Sky is Obscured →
- ○ None (Go to box 2)
- ○ Few(<10%)
- ○ Isolated (10-25%)
- ○ Scattered (25-50%)
- ○ Broken (50-90%)
- ○ Overcast (90-100%)

- ○ Fog
- ○ Heavy Rain
- ○ Heavy Snow
- ○ Blowing Snow
- ○ Sand
- ○ Spray
- ○ Smoke
- ○ Dust
- ○ Haze
- ○ Volcanic Ash

Go to box 6

*If you can observe sky color or visibility, complete box 2

2. Sky Color and Visibility

Color (Look Up): ○ Cannot Observe ○ Deep Blue ○ Blue ○ Light Blue ○ Pale Blue ○ Milky

Visibility (Look Across): ○ Cannot Observe ○ Unusually Clear ○ Clear ○ Somewhat Hazy ○ Very Hazy ○ Extremely Hazy

3. High Level Clouds

○ No High Level Clouds Observed (Go to box 4)

Cloud Type:

- ○ Contrails (number of): → #
- ○ Cirrus #
- ○ Cirrocumulus #
- ○ Cirrostratus #

short-lived

persistent

persistent spreading

Cloud Cover:

- ○ Few (<10%)
- ○ Isolated (10%-25%)
- ○ Scattered (25%-50%)
- ○ Broken (50%-90%)
- ○ Overcast (>90%)

Visual Opacity:

- ○ Opaque
- ○ Translucent
- ○ Transparent

4. Mid Level Clouds

○ No Mid Level Clouds Observed (Go to box 5)

Cloud Type:

- ○ Altostratus
- ○ Altocumulus

Cloud Cover:

- ○ Few (<10%)
- ○ Isolated (10%-25%)
- ○ Scattered (25%-50%)
- ○ Broken (50%-90%)
- ○ Overcast (>90%)

Visual Opacity:

- ○ Opaque
- ○ Translucent
- ○ Transparent

5. Low Level Clouds

○ No Low Level Clouds Observed (Go to box 6)

Cloud Type:

- ○ Fog
- ○ Nimbostratus
- ○ Cumulonimbus
- ○ Stratus
- ○ Cumulus
- ○ Stratocumulus

Cloud Cover:

- ○ Few (<10%)
- ○ Isolated (10%-25%)
- ○ Scattered (25%-50%)
- ○ Broken (50%-90%)
- ○ Overcast (>90%)

Visual Opacity:

- ○ Opaque
- ○ Translucent
- ○ Transparent

6. Surface Conditions

Mandatory:

	Yes	No		Yes	No
Snow/Ice	○	○	Dry Ground	○	○
Standing Water	○	○	Leaves on Trees	○	○
Muddy	○	○	Raining/Snowing	○	○

Optional:
You may submit any or all

Temperature: ___°C
Barometric Pressure: ___mb
Relative Humidity: ___%

Comments:

Freshwater Macroinvertebrate Identification

Data Sheet

School name: _____ Class or group name: _____

Name(s) of Student(s) collecting data: _____

Measurement Date: *

Year: _____ Month: ____ Day: ____

Name of Site : _____

Choose habitat types *

❒ All Habitats Combined

or

❒ Riffles, Number of Samples ___
❒ Runs, Number of Samples ___
❒ Pools, Number of Samples ___

❒ Submersed vegetation, Number of Samples ___ Estimate of Percent of Site Area ___ %
❒ Vegetated banks, Number of Samples ___ Estimate of Percent of Site Area ___ %
❒ Muddy bottom, Number of Samples ___ Estimate of Percent of Site Area ___ %
❒ Gravel or Sand, Number of Samples ___ Estimate of Percent of Site Area ___ %

Season *

❒ Dry ❒ Wet ❒ Spring ❒ Fall

Habitat Type	Phylum, Class or Order *	Family, Genus or Species (if known)	Common Name	Number: Total count	Did you sub-sample? (Yes or No)

Table continued on next page

* required to most detailed level possible of Phylum, Class or Order

Habitat Type	Phylum, Class or Order *	Family, Genus or Species (if known)	Common Name	Number: Total count	Did you sub-sample? (Yes or No)

* required to most detailed level possible of Phylum, Class or Order

Comments

_____

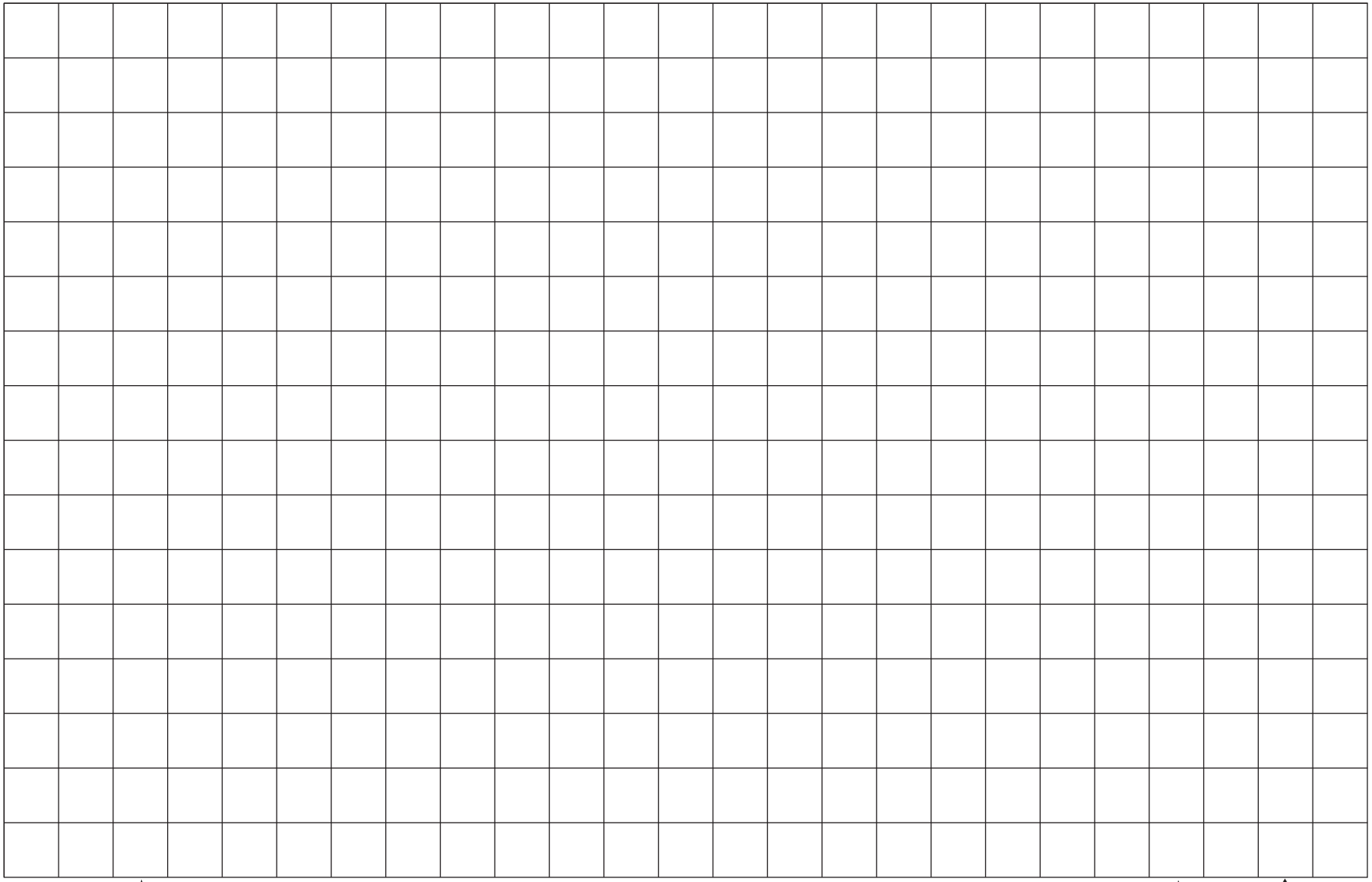
_____

Hydrosphere Study Site Map

Scale: 1:200

North Arrow 

School Name _____ Site Name _____ Water Body Name _____ Date _____



Legend ☆ Hydrology Site Macroinvertebrate Sites △ vegetated ◇ rocky substrate ○ fine substrate ⇨ Direction of Flow **IN** inlet **OUT** outlet ✸ Trees ⌂ House

Mosquito Larvae Protocol

Mosquito Larvae Data Sheet

* Required Field

School Name: _____ Study Site: _____

Observer Name(s): _____

Date: Year_____ Month_____ Day____ Universal Time (hour:min): _____

Current Site Conditions

1. Maximum water depth: □<0.5m □>0.5m

2. Perimeter of water body: □ < 1m, □1-10m, □>10m

3. Area of observation site in shade: □ 0%, □25%, □50%, □75%, □100%

4. Vegetation present: □ Yes □ No Algae present: □ Yes □ No

Water Quality

5. What type of odor the water has, if any: □normal/none, □fishy, □sewage, □chemical, □petroleum, □other

6. Is surface oil on the water? If yes, identify the type: □none, □slick, □sheen, □globs, □flecks, □other

7. Estimate of turbidity (if not measured): □clear, □turbid, □very turbid

Mosquito Larvae Sampling Data

8. Season: □dry, □wet, □spring, □summer, □fall, □winter

9. Did you use the container method? □ Yes □ No

If yes, go to step 13.

10. Size of dipping net (length) _____ cm. Diameter at opening of dipping net _____cm.

11. Number of samples collected: _____

12. Larvae data:

Genus	Species	Count

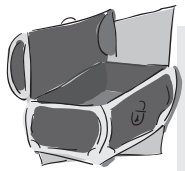
*** Required Field**

School Name: ________________Study Site: _______________ Date: ___________

13. Container data:

#	Habitat Type	Container	Water Level	Lid	Lid Type	Container Color	Cleaning Frequency	No. of Genera	No. of Mosquito Species
	☐ Artificial ☐ Natural	☐ Small jar ☐ Large jar ☐ Cement tank ☐ Plastic tank ☐ Other	☐ 0-25% ☐ 25-50% ☐ 50-75% ☐ 75-100%	☐ Absent ☐ present	☐ Wood ☐ Metal ☐ Plastic ☐ Nylon ☐ Cloth ☐ Other	☐ Dark ☐ Light	☐ None ☐ 1-2 times/ week ☐ > 2 times/ week	☐ Anopheles ☐ Aedes ☐ Culex ☐ Other	☐ Absent ☐ Present Anopheles spp. Aedes spp. Culex spp. Other
	☐ Artificial ☐ Natural	☐ Small jar ☐ Large jar ☐ Cement tank ☐ Plastic tank ☐ Other	☐ 0-25% ☐ 25-50% ☐ 50-75% ☐ 75-100%	☐ Absent ☐ present	☐ Wood ☐ Metal ☐ Plastic ☐ Nylon ☐ Cloth ☐ Other	☐ Dark ☐ Light	☐ None ☐ 1-2 times/ week ☐ > 2 times/ week	☐ Anopheles ☐ Aedes ☐ Culex ☐ Other	☐ Absent ☐ Present Anopheles spp. Aedes spp. Culex spp. Other
	☐ Artificial ☐ Natural	☐ Small jar ☐ Large jar ☐ Cement tank ☐ Plastic tank ☐ Other	☐ 0-25% ☐ 25-50% ☐ 50-75% ☐ 75-100%	☐ Absent ☐ present	☐ Wood ☐ Metal ☐ Plastic ☐ Nylon ☐ Cloth ☐ Other	☐ Dark ☐ Light	☐ None ☐ 1-2 times/ week ☐ > 2 times/ week	☐ Anopheles ☐ Aedes ☐ Culex ☐ Other	☐ Absent ☐ Present Anopheles spp. Aedes spp. Culex spp. Other

Glossary



Abundance
The number of organisms in a sample or taxon

Accuracy
The closeness of a measured value to a true value (See *precision*)

Acid
Any substance that can donate a hydrogen atom or proton (H+) to any other substance.

Acid Rain
Rain characterized by pH values below 6 on the pH scale

Acidic
Characterized by pH < (less than) 7

Acidity
1. The amount of strong base (e.g. Sodium Hydroxide) necessary to titrate a sample to a pH of around 10.3; measures the base neutralizing capacity of a water
2. An acid quality or state (Common Usage)

Aerosols
Liquid or solid particles dispersed or suspended in the air

Alkaline
Characterized by pH > 7

Alkalinity
The amount of strong acid (e.g. Hydrochloric Acid) necessary to titrate a sample to a pH of around 4.5. Measures the acid neutralizing capacity of a water and is often reprinted as ppm $CaCO_3$.

Aqueous
Containing or contained in water

Background Concentration
The level of chemicals present in a water due to natural processes rather than due to human contribution

Base
Any substance that accepts a proton (H+) from another substance

Benthic
Pertaining to bottom dwelling water animals or plants

Biodiversity
The variety of organisms

Brackish Water
Water containing dissolved salts at a concentration less than seawater, but greater than fresh water. The concentration of dissolved salts is usually in the range 1000 - 10,000 ppm.

Buffer Solution
One that resists change in its pH when either hydroxide (OH-) or protons (H+) are added. The stable and known pH value of these solutions make them suitable for calibrating pH measuring devices.

Calibration
To set or check an instrument against an index or standard of known value through some type of proportional or statistical relationship.

Catchment Basin
1. The part of a river-basin from which rain is collected, and from which the river gets its water. Each catchment basin is with the boundary defined by the watershed. The term watershed is often incorrectly used to describe catchment basins.
2. The area drained by a river or stream

Chlorinity
The chlorine concentration of a solution

Colorimetric Method
Many procedures for measuring dissolved substances depend on color determination. The underlying assumption is that the intensity of the color is proportional to the concentration of the dissolved substance in question.

Conductivity
The ability of an aqueous solution to carry an electrical current. Depends upon the concentration of dissolved salts (ions), the type of ions, and the temperature of the solution. Typical units are microSiemens/cm or micromhos/cm. (These are equivalent).

Denitrification
The act or process of reducing nitrate to ammonia. Nitrite may be an intermediate product.

Density
The ratio of the mass of a substance to its volume

Dissolved Oxygen
The mass of molecular oxygen dissolved in a volume of water. The solubility of oxygen is affected non-linearly by temperature; more oxygen can be dissolved in cold water than in hot water. The solubility of oxygen in water is also affected by pressure and salinity; salinity reduces the solubility of oxygen in water.

Dissolved Solids
Solid particles that have become liquid by immersion or dispersion in a liquid (e.g. salts)

Electrode
In GLOBE, an electrode is usually the part on the probe through which electricity is able to flow.

Enrichment
Making a water more productive (e.g. by adding nutrients)

Eutrophication
A high level of productivity in a water body, often due to an increased supply of nutrients

Evaporation (of water)
Change from liquid to vapor at a temperature below the boiling point

Evenness
How equally abundant the taxa are in a sample

Hydrologic Cycle
The series of stages through which water passes from the atmosphere to Earth and returns to the atmosphere. Includes condensation to form clouds, precipitation, accumulation in soil or bodies of water and re-evaporation

Hypothesis
A tentative statement made to test its logical or empirical consequences

In Situ
Situated in its original natural place (Latin)

Lake
A large body of water entirely surrounded by land usually naturally formed, but can be artificially formed. Its original designation was to apply to a body of water large enough to form a geographical feature.

Lentic
Relating to, or living in, standing water (lakes, ponds or swamps)

Logarithmic Scale
A scale in which each unit increment represents a tenfold increase or decrease

Lotic
Relating to, or living in actively moving water (streams or rivers)

Macroinvertebrates
Animals that have no backbone and are visible with the naked eye (>0.5 mm)

Meter
An instrument, usually used in combination with a probe, that translates electronic signals from the probe into units of interest (i.e. µS/cm or mg/L). A meter must be programmed with the proper calibration for the probe of interest before producing sensible results.

MicroSiemens/cm
Metric unit of measurement for conductivity. Equivalent to micromhos/cm

Micromhos/cm
Standard unit of measurement for conductivity. Equivalent to microSiemens cm

Molar
Unit of measurement for concentration (moles per liter of solution).

Molecule
The smallest fundamental unit (usually a group of atoms) of a chemical compound that can take part in a chemical reaction

Natural Waters
Systems that typically consist of the sediments/minerals and the atmosphere as well as the aqueous phase; they almost always involve a portion of the biosphere.

Neutral
Characterized by pH = 7

Nitrate
A salt of nitric acid (HNO_3). Nitrates are often highly soluble and can be reduced to form nitrites or ammonia.

Nitrate-Nitrogen
Concentrations of nitrate (NO_3-) are often expressed as mass of nitrogen per volume of water.

Nitrite
A salt of nitrous acid (HNO_2). Nitrites are often highly soluble and can be oxidized to form nitrates or reduced to form ammonia

Nitrite-Nitrogen
Concentrations of nitrite (NO_2-) are often expressed as mass of nitrogen per volume of water.

pH
The negative logarithm of the molar concentration of protons (H+) in solution

Photosynthesis
The process in which the energy of sunlight is used by organisms, esp. green plants to synthesize carbohydrates from carbon dioxide and water

Pond
A small body of still water formed artificially either by hollowing out of the soil or by damning a natural hollow

Pool
In a stream or river, a deeper region with slower-moving water and smaller sediments

ppm
Usually parts per million. (Equivalent to milligrams per Liter in GLOBE calculations)

ppm Chlorinity
By weight, equal to milligrams of chlorine per Liter, with the assumption that one Liter of water weighs one kilogram

ppt
Usually parts per thousand. (Equivalent to grams per Liter in GLOBE calculations)

Precipitation
1. The falling products of condensation in the atmosphere. e.g. rain, snow, hail
2. Separation in solid form from a solution due to chemical or physical change (e.g. adding a reagent or lowering the temperature)

Precision
A measurement for the degree of agreement between multiple analyses of a sample (See *accuracy*)

Probe
In GLOBE, an instrument used to measure voltage or resistance of a substance. Any small device, especially that holds an electrode, which can penetrate or be placed in or on something for the purpose of obtaining and relaying information or measurements about it. A probe along with a meter must be calibrated in order to produce sensible data.

Productivity
The formation of organic matter averaged over a period of time such as a day or a year

Proton
A positively charged elementary particle found in all atomic nuclei. The positively charged hydrogen atom (H+)

Reagent
A substance used to cause a reaction, especially to detect another substance

Reduce
In chemical terms, to change from a higher to a lower oxidation state (i.e. gain electrons)

Richness
The number of different taxa

Riffle
In a stream or river, a shallower area with faster-flowing water and larger sediments

River
A large stream of water flowing in a channel towards the ocean, a lake, or another river

Run
In a stream or river, an intermediate category between pool and riffle. A run does not have the turbulence of a riffle, but moves faster than in a pool.

Runoff
The component of precipitation that appears as water, flowing in a stream or river

Saline Water
Water containing salt or salts

Salinity
A measure of the concentration of dissolved salts, mainly sodium chloride, in brackish and salty water

Salts
Ionic compounds which in water solution yield positive (excluding H+) and negative (excluding OH-) ions ; the most common of which is sodium chloride, or "table salt"

Saturated Solution
A solution that contains the maximum amount of dissolved substances at a given temperature and pressure

Snag
A tree or branch embedded in the bed of the water body

Solubility
The relative capability of being dissolved

Solute
A substance that dissolves in another to form a solution

Solution
A homogeneous mixture containing two or more substances

Solvent
A substance that dissolves another to form a solution

Specific Heat
The heat in calories required to raise the temperature of one gram of a substance by one degree Celsius

Specific Gravity
The ratio of the density of a substance to the density of water (at 25°C and 1 atmosphere)

Standardization
To cause to conform to a standard

Standard
A measure with a value established through outside means for use in calibration; a known reference

Stream
A course of water flowing continuously along a bed on the Earth, forming a river, rivulet, or brook. Streams can be permanent meaning that water flows in the stream bed all year long; or streams can be intermittent/ephemeral, meaning that the water stops flowing and may even disappear during certain times of the year.

Suboxic Water
Very low levels of dissolved oxygen; denitrification occurs (nitrate is converted to ammonia)

Supersaturated
The characteristic of a substance holding more of another substance that would be predicted under equilibrium conditions. Supersaturated is a term commonly used to describe gases dissolved in water (e.g. if there is a lot of photosynthesis occurring in a lake, the water can become supersaturated in oxygen during the day)

Suspended Solids
Solid particles in a fluid that do not dissolve or settle out

Suspensions
A mixture in which very small particles of a solid remain suspended without dissolving

Taxa
Plural of taxon

Taxon
A group of organisms of any particular rank (such as order, family, genus). Singular of taxa

Tides
The periodic rise and fall of the waters of the ocean and its inlets, produced by the attraction of the moon and sun. Occurs about every 12 hours.

Titrant
The reagent added in a titration

Titration
The process of ascertaining the quantity of a given constituent by addition of a liquid reagent of known strength, and measuring the volume of reagent necessary to convert the constituent through a given reaction

Topography
The surficial relief features of an area

Total Dissolved Solids
The total mass of solids remaining when a given volume of filtered water is evaporated to total dryness following an accepted protocol

Transparency
Having the property of transmitting rays of light through its substance so that bodies located behind can be distinctly seen.

Transparency, when applied to water studies, refers to the distance that an object (e.g. a secchi disk) can be seen looking down through the water under ambient light conditions. Transparency is related to turbidity in that the amount of particles in the water and the characteristics of those particles will affect the distance that an object can be seen, but the two are not directly comparable.

Turbid

Not clear or transparent due to stirred up sediment

Turbidity

Turbidity, when applied to water studies, refers to the degree that the particles in the water can scatter light sent through a water sample. Turbidity is related to transparency, but the two terms are not equivalent, and the relationship depends on the characteristics of a particular water sample. Therefore turbidity measurements cannot be used in place of transparency measurements and vice-versa.

Water Quality

A distinctive attribute or characteristic trait of water, described by physical, chemical, and biological properties

Watershed

The line separating the waters flowing into different rivers, river basins or seas; a narrow elevated tract of ground between two drainage areas.; see *catchment basin*

Water Vapor

Water in the gaseous phase