Today I earned my points by:

- *Being prepared with the necessary materials*
- *Following all safety expectations*
- *Making careful observations*
- *Measuring and recording data carefully*
- *Assisting other students*
- *Listening attentively and asking appropriate questions*
- *Maintaining a positive attitude*

Session:	**Points Possible:**	**My Points:**
Stream Bugs	50	
Stream Flow	50	
Water Chemistry	50	
Riparian Zone/Fish traps	50	
Totals		

Today's trip is supported by grants from the following organizations:

TOYOTA TAPESTRY GRANTS FOR TEACHERS

HP Technology for Teaching

TOSHIBA

LOWE'S Let's Build Something Together

ING UNSUNG HEROES

Hamburger Helper myHometownHelper.com

THE NEA FOUNDATION

intel

PROJECT LEARNING TREE

U.S. FISH & WILDLIFE SERVICE

ALASKA DEPARTMENT OF FISH AND GAME

Wasilla Soil & Water Conservation District

TEELAND MIDDLE SCHOOL RIVER RANGERS

Little Susitna River

Name: _____

Science Teacher: _____ Per:____

Math Teacher: _____ Per: ____

Date: _____Group: _____

Little Susitna River Stream Ecology

Trip Objective**:**

_____

_____

_____

_____

Expectation (Our School Rule)**:**

_____

_____

Guest Names**:**

_____

_____

Checklist-Required items:

- ☐ Waders/hipboots Borrowed from TMS? Pair # _____
- ☐ Sack lunch
- ☐ Water bottle
- ☐ Rain jacket
- ☐ 2 pencils
- ☐ Extra warm clothes

Checklist for written responses: The 6 +1 Traits of Writing

- ☐ Ideas
- ☐ Word choice
- ☐ Sentence fluency
- ☐ Conventions
- ☐ Organization
- ☐ Voice
- ☐ Presentation

5. In the space below, make a DETAILED scientific drawing of any fish sample from the fish traps. Be sure to add measurements (in mm) and label your drawing. If no fish are caught, you will be given an alternate item to draw.

6. Describe 3 questions you have relating to the ecology of the Little Susitna River watershed.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Stream Site Name: _____
Latitude:_____
Longitude: _____

Weather:

☐ Clear ☐ Cloudy ☐ Rain ☐ Drizzle ☐ Snow ☐ Sleet

Air Temperature: _____^{o}C

Habitat Types:

__ Riffle/Cobble __ Snag __ Aquatic Vegetation ___ Undercut Bank ___ Mud/Muck

Water Quality — Qualitative Observations:

H_2O Appearance	***Stream Bed***	***Odor***
☐ Scum/Foam	☐ Orange to Red	☐ Sewage
☐ Muddy/silty	☐ Yellowish	☐ Rotten Egg
☐ Clear	☐ Brown/black	☐ Petroleum/fuel
☐ Cloudy	☐ Greenish	☐ Russell-like
☐ Oily Sheem	☐ None — clean bed	☐ None
☐ Other _____	☐ Other _____	☐ Other _____
☐ Trash _____		

Chemical Tests:

Dissolved O_2 (DO)

_____***mg/L***

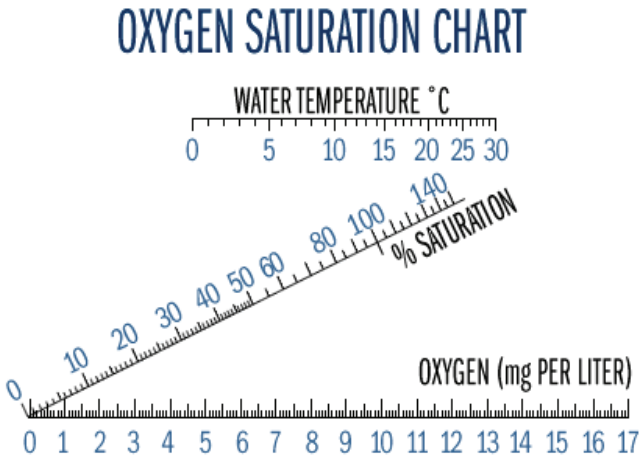
pH

_____

Acidic Basic

Conductivity

_____



Water Temperature: _____^{o}C

DO Saturation: _____%

Comments/other observations:

_____

_____

Streamflow

Flow site selection
Measure a 20 meter section and mark the upper end, middle (10 meter mark), and lower end with flags for easy reference.

Width
At the flow site, measure the width of the river to the nearest cm in three places. Record the measurements on the data sheet and compute the mean width.

Depth
At each of the three places where you measured the width of the stream, measure the depth to the nearest cm at five equally spaced places across the stream. Record your measurements on the data sheet and compute the average.

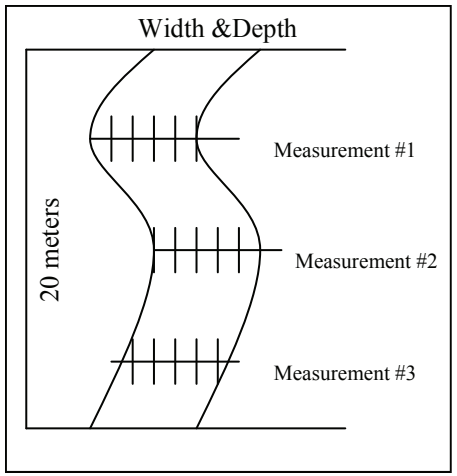
Velocity
Velocity is the measure of how fast something moves. Water velocity can be measured by timing how fast a floating object travels 20 meters in the sthream. Calculate velocity by taking the distance and dividing it by the time the floating object took to travel the distance (V=20m/# sec.)

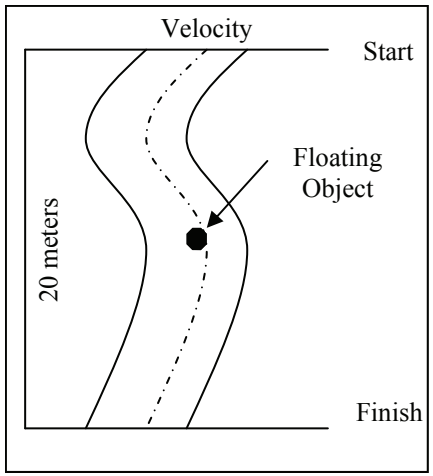
Example: If the object floats 20 meters in 10 seconds, velocity is
V=20 m/10sec.
V=2 m/sec.

Bottom Factor
Look at the bottom of the stream. If it is rubble, gravel, or plants, the bottom factor (a) is 0.8. If the bottom is smooth mud, silt, or bedrock, the bottom factor (a) is 0.9.

Streamflow
Compute streamflow in cubic meters per second using the formula below:

Streamflow is cubic meters per second = width × depth × velocity × bottom factor





Riparian Zone-Fish Traps

Site Name: _____

GPS coordinates: Latitude: _____N
Longitude:_____W
Elevation: _____

1. Describe some human impacts in the riparian zone at this location.

_____
_____
_____
_____
_____

2. Describe how salmon are a nutrient link between the marine ecosystem (the ocean) and the local terrestrial ecosystem (the boreal forest).

_____
_____
_____
_____
_____

3. Name the different species of fish that may be present in this watershed:

_____ _____
_____ _____
_____ _____

4. Record other notes and observations below:

_____
_____
_____
_____

Location: Hatcher Pass (Fishhook) Bridge

GPS coordinates: Latitude: _____N
Longitude: _____W
Elevation: _____

1. Describe the river at this location. Include the gradient, substrate size, channel path and shape, and any other observations.

_____
_____
_____
_____
_____
_____
_____
_____

2. Water temperature: _____°C

3. Explain the importance of white water in the upper reaches of the river. Why is this important for organisms living in the lower reaches?

_____
_____
_____
_____
_____
_____

Instructions:

1. Use "***# of different types***" column to record the number of different types of insects in each specified major group.
2. Estimate the total number of organisms present in your sample for each major group and taxa under "***Est. of total # in sample***."
3. Total the numbers of **E**, **P**, and **T** to calculate "***EPT richness total***."
4. Total the numbers of all other to calculate "***Non-EPT richness total***."
5. Add "***EPT richness total***" to find "***Taxa richness***" and "***Total # of organisms***."

Macroinvertebrate Data

Major Group	# of different types	Est. of total # in sample
Mayflies (*E*) *Ephemeroptera*	E=	
Stoneflies (*P*) *Plecoptera*	P=	
Caddisflies (*T*) *Tricoptera*	T=	
EPT Richness total		
Midges		
Craneflies		
Blackflies		
Aquatic mites		
Beetles		
Dragonflies		
Damselflies		
Scuds		
Snails		
Clams/mussels		
Worms		
leeches		
Flatworms		
Other		
Non-EPT richness total		

Total # of taxa (Taxa richness) ← ***Total # of organisms*** ←

Other organisms: Fish: _____ Frogs: _____

Signs of beaver/muskrat/otter? _____

Date_____ Observers_____

Measure	1	2	3	Average
Width	_____ meters	_____ meters	_____ meters	W=_____
Depth (measure in meters to nearest cm)	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	D=_____
	_____(average depth in meters #1)	_____ (average depth in meters #2)	_____ (average depth in meters #3)	
Velocity Distance/Time	___m÷___sec.= _____m/sec.	___m÷___sec.= _____m/sec.	___m÷___sec.= _____m/sec.	V=_____

Bottom Factor: rubble, gravel, or plant a=0.8
Smooth mud, silt, or bedrock a=0.9 a = _____

Streamflow site:_____GPS coordinates: _____N _____W

Streamflow (r) = W × D × V × a

Streamflow = _____ × _____ × _____ × _____ = _____ m³/sec.