



Beaver Creek Thermal Profile
Reynolds High School
1996-1997 - ecology

Teacher Larry Callister places a
Hobo in Beaver Creek

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REYNOLDS SCHOOL DISTRICT
REYNOLDS HIGH SCHOOL
1698 SW CHERRY PARK ROAD
TROUTDALE, OR 97060-9633
(503) 667-3186 FAX (503) 669-0776

STRESSING THE ABCs: ACADEMICS, BASICS, CREATIVITY

**Metro Regional Parks and Greenspaces
1996-97
Greenspaces Environmental Education
Final Grant Report**

From Reynolds High School
Prepared and submitted by
RHS Teacher Larry Callister

Project "*Beaver Creek Thermal Profile*"
Metro Contract # 904715



Summary and Evaluation of Grant Activities

The 1995-96 school year was to be the first at Reynolds High School when Environmental Science (my baby!) was to be offered. I had planned on having the students become involved in year-long projects, but my real stroke of genius was to try to get a "grant writing" team do so as their project. Once three top-notch kids (Jon Fritz, Nicole Bestea, and Michelle Littlepage) signed up my hopes were raised, and in their first effort we landed the Metro Greenspaces grant. I told them that their grant writing days were over, and that now they were going to be the grant administration team.

The kids researched and priced the needed equipment, lobbied the school principal into upping the ante so that we could upgrade the computer to be purchased, and then ordered the equipment.

Spring came, the laptop and thermal recording equipment (HOBOTemps) arrived, we learned how to use it, and off we went. I even decided to go all out in the high tech world and use a digital camera to record our project. (Bad idea!)

We scouted out some sites to place the temperature probes, loaded my Environmental Science classes into the vans, and headed out in late April for a trial run. All went smoothly: we placed two probes into Beaver Creek, did a resource inventory at each site, and waited a few weeks. We went back in May, retrieved the probes, downloaded the practice data, and all was well.

June came, whence we placed four HOBOTemps into the stream. This is where the perfectly scripted story begins to go sour. During the last class period outing the laptop computer screen somehow got broken in transit. I was (incorrectly) told that it was hopeless, and it was not worth repairing. I was so ticked that I didn't even bother to find another camera to unload all our digital pictures onto, so we lost most of our photo record at that time. I installed the last couple HOBOTemps after school was out, so at least I did get a couple regular photos at that point.

Summer passed by quickly as always, and I was dying to go retrieve the HOBOTemps. Sadly only 18 students signed up for a second year of EnviroScience (20 are needed to have a class), so my grant team would not be in my classroom again this year, and could not continue as grant administrators. So instead I spent a good amount of time getting my classes started well, and got the new crew of EnviroSci I students trained in all the water quality and survey methods they would be using in the field. The freshly repaired laptop arrived ready for action once again.

Normally until the first steady rains of October or November Beaver Creek remains a bare trickle of a stream. But this year in mid-September there was a record-breaking 2+ inches of rain in one day. It created a flash flood of sorts, and demolished our HOBOTemp stations. Only one of the six HOBOTemps could be found, despite have perfectly marked their locations. All the others had been washed away, along with the cinder blocks or bricks

they were attached to. We even went back with wetsuits to swim around and thoroughly check the bottom of the pools below to no avail.

A couple of the HOBOS were in areas where kids play in the summer, so perhaps they were found and removed despite the camouflaged hiding spots. But a couple of them were well hidden in secluded, difficult to reach spots on private land, which make theft unlikely. Additionally they all included one of my business cards which contained a reward offer if turned in, but no one stepped up or called about it. The HOBOS in their watertight cases do float, so I hope that perhaps they'll be found floating in the Pacific one day and returned to us.

Of course there is the one HOBOS that was buried under six to ten feet of rock when the city of Troutdale did a major stream restoration project over the summer. It is probably still in place, but how to get it out? I know only within about a ten foot radius of where to begin digging even if I wanted to. The landowner who's place it was on had no idea about the stream restoration project, and once the backhoes arrived she only had a little while to try to find it, but of course couldn't since I had hidden it so well!

The teacher at Centennial HS that I had been working with in past years left the school, so I still had the two HOBOS that had been intended for them. These two plus the one we recovered gave us a chance for another try during the summer of 1997. With my classes this spring we attached the HOBOS to really large bricks, buried them well under large rocks, and are hoping for a late monsoon season next fall.

While we only got data from our least important site, at least we know that the technical part of the system works, and hope things go better in the future. The foundation has been laid for the educational opportunities to be continued in future years. I'm sure the kids learned that experiments in the real world do not quite go the same as canned ones in the classroom.

Temperature (°C)

22

20

18

16

14

12

10

8

04/24
1996

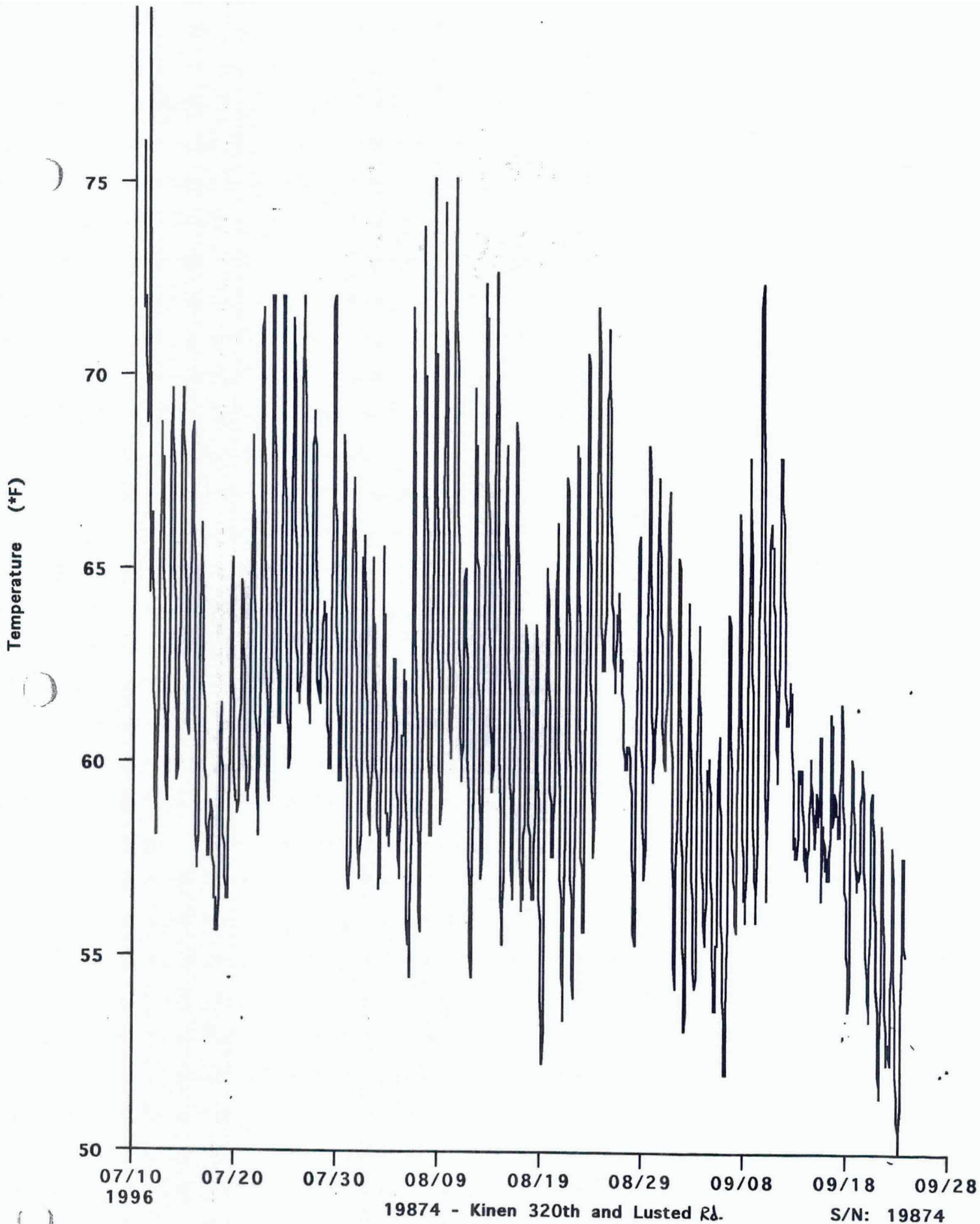
05/04

05/14

Beaver Creek I

S/N: 66881

Sample of data from a HOBOTemp trial run of 3 weeks in April/May 1996



Printout of the data from the one surviving HOBOtemp

The *Reverie*

VOLUME 7, ISSUE 7

1698 SW CHERRY PARK ROAD TROUTDALE OR, 97060

FEBRUARY 23, 1996

Grant provided for science students through U.S. Fish and Wildlife Service

Reynolds High School has recently received a grant of almost \$2,000 made possible by the U.S. Fish and Wildlife Service. This grant will be used by Ecology Club members as well as Larry Callister's environmental science class.

Juniors Jon Fritz and Nicole Bestea and senior Michelle Littlepage submitted a request for a grant. The \$1,854 grant will be matched by RHS to make the total grant about \$4,000.

This money will be used to buy matchbook-sized computers placed on the creek and record the temperature in different areas. The temperature determines how fish populations survive in the creek.

Grant to aid study of Beaver Creek

□ Reynolds students to monitor temperature over the next year

by BECKY LANG
of The Outlook staff

Reynolds High School students in the school's environmental science program will apply their knowledge to Beaver Creek now that they have been awarded an environmental education grant from Metro Regional Parks and Greenspaces Department.

The grant of \$1,854 will be matched by the high school, and will help students study the temperature of Beaver Creek over the next year. The temperature determines the livability of the creek for salmon and head populations.

Three students, juniors Jon Fritz and Nicole Bestea, and senior Michelle Littlepage, wrote and submitted the grant in October.

"A lot of things have been done to make the stream better," said

"Some forks of the stream are cooler and have better water quality than others."

— Larry Callister

Reynolds High teacher directing the study of Beaver Creek.

RHS science teacher Larry Callister. "My question has always been 'can (the salmon) survive in the summer when the water gets too hot?'"

Callister, his environmental science students and those students involved with the high school's ecology club will place "HOBOTemp" devices at various places along Beaver Creek.

The matchbook-sized computers will record the stream's temperature

every hour, and Callister and his students will be able to take a laptop computer to the stream bank, plug in the HOBOTemp and retrieve the temperature information.

"It shows you that you need to work on the temperature," Callister said. "Some forks of the stream are cooler and have better water quality than others."

He said that science students at Centennial and Sam Barlow high schools already have worked to plant more trees that will provide cooler, shaded areas for the fish to rest during the summer. But there are areas of the creek that reach temperatures that are too high for salmon.

Callister said he plans to donate some of the HOBOTemps to the science departments of Centennial and Barlow high schools, so those students can be part of the project, too.

The Metro grant to Reynolds High School was one of 57 grants awarded to schools and educational programs in Multnomah, Clackamas and Washington counties. The grants were made possible by funding from the U.S. Fish and Wildlife Service.

Turn to GRANT, Page 3A.

Reynolds students friends of salmon

The recovery of the salmon habitat of Beaver Creek is going high-tech, thanks to the Metro Regional Parks and Greenspaces Program and the environmental science program of Reynolds High School.

Three Reynolds High students, juniors Jon Fritz and Nicole Bestea and senior Michelle Littlepage, wrote and submitted the grant request to Metro in October. Metro responded with a \$1,854 grant that will be matched by the school, so the students will be able to begin a long-term project to study Beaver Creek's water temperature.

Water temperature is very important for salmon, who do not thrive in water that is too warm. The students, under the direction of environmental science teacher Larry Callister, will be installing matchbook-size computers in the creek to record the temperature. Information will be retrieved with laptop computers.

The Reynolds project is a good accompaniment to the projects of Centennial High and Barlow High students who have planted trees and shrubbery along the creek to provide cooler, shaded areas for fish to rest during the summer. Callister's plan is to also involve Centennial and Barlow students in the Reynolds temperature-testing project.

It is appropriate that a generation that hopes to have Beaver Creek saved for the next generation is active in projects to do what previous generations have failed to do — return salmon to their natural habitat.

METRO REGIONAL PARKS & GREENSPACES

REQUEST FOR REIMBURSEMENT GREENSPACES ENVIRONMENTAL EDUCATION GRANT

BILLING FORM

| | |
|-------------------------------|------------------------|
| Organization: | Reynolds High School |
| Address: | 1698 SW Cherry Park Rd |
| City/State/Zip Code | Troutdale, OR 97060 |
| Project Title: | Beaver Creek |
| Metro Contract Number: | 904715 |
| Local Project Manager: | Larry Callister |
| Signature of Project Manager: | Larry V. Callister |
| Date Submitted Billing: | |

OVER→

Return Billing Form To:

Lynn Wilson
Metro Regional Parks & Greenspaces
600 NE Grand Ave.
Portland, Oregon 97232-2736

Have a Question? Call:

(503) 797-1781

STUDENT GRANT TEAM ACTIVITIES 1995-96

| Jon | Michelle | Nicole | Date | Hours | x | Students | = Total Hours | Activity |
|-----|----------|--------|-----------|-------|---|----------|---------------|--|
| ✓ | ✓ | ✓ | Oct '95 | 8 | x | 3 | 24 | Grant Writing |
| ✓ | ✓ | ✓ | 12/17/95 | 1.5 | | 3 | 4.5 | Pricing Computers To purchase |
| ✓ | ✓ | ✓ | 1/22/96 | 1 | | 3 | 3 | Memo writing to Principal |
| ✓ | ✓ | ✓ | 1/30/96 | .3 | | 3 | 0.9 | Grant Team planning |
| ✓ | ✓ | ✓ +2 | 2/27/96 | 1.5 | | 5 | 7.5 | Develop presentation for Watershed Conference |
| ✓ | ✓ | ✓ | 2/29/96 | .2 | | 3 | 0.6 | Meet w/Principal re: \$ for computer |
| ✓ | | | 2/29/96 | 3 | | 1 | 3 | Develop presentation at Watershed Conference |
| | ✓ | ✓ +2 | 3/2/96 | 3 | | 4 | 12 | Watershed presentation at Madison H.S. |
| ✓ | ✓ | ✓ | 3/29/96 | 1.5 | | 3 | 4.5 | "Broke in" new laptop, installed HOBO software |
| ✓ | ✓ | ✓ | 4/2/96 | 1.5 | | 3 | 4.5 | Learned and practiced HOBO software |
| ✓ | ✓ | ✓ | 4/16/96 | 1.5 | | 3 | 4.5 | Visited sites for HOBO placements |
| ✓ | ✓ | ✓ | 4/26/96 | 1.5 | | 3 | 4.5 | Documented grant time data, set up data base |
| ✓ | ✓ | ✓ | 5/29/96 | 1.5 | | 3 | 4.5 | Document data, graph printouts |
| | ✓ | ✓ | Spring 96 | 2 | | 2 | 4 | Attend Metro conference on grants |
| ✓ | | +1 | 6/4/96 | 1.5 | | 2 | 3 | Download Digital camera photos |

Total 80.5

ADVISOR ACTIVITIES 1995-96

| Callister | Date | Hours | School Van Mileage | Car Mileage | Activity |
|-----------|-----------|-------|-----------------------|----------------|---|
| ✓ | Oct 95 | 10 | | | Grant writing, working with student grant team |
| ✓ | Feb '96 | 8 | 25 | | Planning & presentation of grant project at watershed conf. |
| ✓ | Spring 96 | 3 | 33 | | Metro Greenspaces grant conference |
| ✓ | Spring 96 | 5 | | | General planning & consulting on project w/Grant Team |
| ✓ +1 | March 96 | 2 | | 10 | Met w/ Ron Gauthier re: HUBO Temps |
| ✓ | April '96 | 3 | | | Familiarization w/ laptop and HUBO Software |
| ✓ | 4/18/96 | 1.5 | 22 | | Site visits w/ grant team |
| ✓ | 4/24/96 | 4 | 17 | 13 (student) | Two classes out to place HUBO Temps |
| ✓ | 5/13/96 | 4 | 17 | 13 (student) | Download data from 2 HUBOs |
| ✓ | 6/10/96 | 4 | 32 | | Two classes place HUBOs |
| ✓ | 6/12/96 | 4 | 29 | | Two classes place HUBOs, break laptop! |
| ✓ | 7/11/96 | 5 | | 43 | Place two HUBOs w/o students |
| ✓ | 9/23/96 | 2.5 | 17 | 13 (student) | Retrieve 1 of 1 HUBOs with one class |
| ✓ | 9/24/96 | 2.5 | 16 | 12 (student) | Retrieve 0 of 1 HUBO with class |
| ✓ | 9/26/96 | 4 | 21 | | Retrieve 0 of 3 HUBOs w/ Ecology Club |
| ✓ | 9/27/96 | 4 | | 23 | Retrieve 0 of 2 HUBOs using wetsuits |
| ✓ | May '97 | 3 | | | Refresh use of Laptop, software |
| ✓ | 5/23/97 | 2.5 | 12 | 8 (student) | One class place HUBOs |
| ✓ | 5/27/97 | 2.5 | 14 | 10 (student) | One class place HUBOs |
| ✓ | May '97 | .5 | | | Phone contact with landowners for HUBO placement |
| ✓ | May 97 | 2 | | 8 | Metro Conference |
| ✓ | June '97 | 6 | | 62 | Final Report efforts |

Totals

83

255

215

Data Entry Sheet for Callister's Environ. Sci, Per 6

Site Visits
HUBO
Placement
Data Download
HUBO's
Placed
HUBO's
Placed

Date _____
Hours _____

| | | | | | | | | | |
|---------|---------|---------|---------|---------|--|--|--|--|--|
| 4/18/96 | 4/24/96 | 5/13/96 | 6/10/96 | 6/12/96 | | | | | |
| 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | | | | | |
| | | | | | | | | | |
| ✓ | ✓ | ✓ | | | | | | | |
| | | | | | | | | | |
| ✓ | ✓ | ✓ | ✓ | ✓ | | | | | |
| ✓ | ✓ | ✓ | ✓ | ✓ | | | | | |

Albin, Terry
Ameele, Eric
Berecek, Katie
Caranto, Reynald
Chung, Joseph

| | | | | | | | | | | |
|---|---|---|---|---|--|--|--|--|--|--|
| ✓ | ✓ | | ✓ | ✓ | | | | | | |
| ✓ | ✓ | ✓ | | | | | | | | |
| | | | | | | | | | | |
| ✓ | | ✓ | | | | | | | | |
| ✓ | ✓ | ✓ | | | | | | | | |

Cunningham, Jamie
Elsner, Eric
Gibbs, James
Loebl, Conrad
McTaggart, Shannon

| | | | | | | | | | | |
|---|---|---|---|---|--|--|--|--|--|--|
| ✓ | ✓ | ✓ | | | | | | | | |
| ✓ | | ✓ | ✓ | ✓ | | | | | | |
| ✓ | ✓ | ✓ | | | | | | | | |
| ✓ | ✓ | ✓ | | | | | | | | |

Morris, Jesse
Neuman, Tamie
Partridge, Nick
Pham, Trang
Philbin, Rhiannon

| | | | | | | | | | |
|---|---|---|--|--|--|--|--|--|--|
| ✓ | ✓ | ✓ | | | | | | | |
| ✓ | ✓ | ✓ | | | | | | | |

Rose, Sherry
Vonderharr, Keith

| | | | | | |
|-----------|------|------|------|-----|-----|
| Total Hrs | 19.5 | 16.5 | 18.0 | 6.0 | 6.0 |
|-----------|------|------|------|-----|-----|

Total = 66 hrs

1995-96 Whole Class/Group Volunteer Hours

Data Entry Sheet for Callister's Environ. Sci. Per. 8

| | Site Visits | Hobo Average | Data Download | Hobo's Placed | Hobo's Placed | | | | | |
|----------------------|-------------|--------------|---------------|---------------|---------------|--|--|--|--|--|
| Date | 4/18/96 | 4/24/96 | 5/13/96 | 6/10/96 | 6/12/96 | | | | | |
| # Hrs. | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | | | | | |
| Barnett, Jeremy | | | | | | | | | | |
| Bestea, Nicoleta | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | |
| Bottler, Jeremy | | | | | | | | | | |
| Burchett, Matthew | ✓ | ✓ | | ✓ | ✓ | | | | | |
| Debois, Anthony | ✓ | ✓ | ✓ | | | | | | | |
| Dornes, Justin | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | |
| Fisher, Desiree | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | |
| Fothergill, Allison | ✓ | | | | ✓ | | | | | |
| Fritz, Jonathan | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | |
| George, Brian | ✓ | ✓ | ✓ | ✓ | | | | | | |
| Heimerdinger, Frank | ✓ | | | | | | | | | |
| Hess, Harlan | | | | | | | | | | |
| Littlepage, Michelle | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | |
| Marfell, Phillip | ✓ | | ✓ | | | | | | | |
| Myatt, Kelly | | | | | | | | | | |
| O'Rnny, Amanda | | | | | | | | | | |
| Switzer, Nicholas | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | |
| Wittwer, James | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | |
| Wong, Alice | | | | | | | | | | |
| Young, Curtis | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | |
| Young, Jamie | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | |

Total Hrs. 22.5 18.0 18.0 16.5 16.5

Total = 91.5 hrs

1996-97

Data Entry Sheet for Callister's EnviroSci Per 5

HBO Retrieval HBO Retrieval HBO Diving HBO Placed

Date
#Hrs

| 9/23/96 | 9/26/96 | 9/27/96 | 5/23/97 | | | | | | |
|---------|---------|---------|---------|--|--|--|--|--|--|
| 1.5 | 3 | 3 | 1.5 | | | | | | |
| ✓ | | | ✓ | | | | | | |
| ✓ | | | ✓ | | | | | | |
| ✓ | | | ✓ | | | | | | |
| ✓ | | | ✓ | | | | | | |
| ✓ | | | | | | | | | |

BLISS, JENNIFER, M
BROWN, ANDRIC
COX, JAMIE
CRAWFORD, JAMES
CRISWELL, KRISTI

| | | | | | | | | | |
|---|---|--|---|--|--|--|--|--|--|
| ✓ | ✓ | | ✓ | | | | | | |
| | | | ✓ | | | | | | |
| ✓ | | | ✓ | | | | | | |
| ✓ | | | ✓ | | | | | | |
| ✓ | | | ✓ | | | | | | |

DOVER, MICHELLE
GOTHARD, GWENDOLYN
HOLLAND, MATTHEW
HOLSTI, DALE, E
JONGWARD, ABBY

| | | | | | | | | | |
|---|--|--|---|--|--|--|--|--|--|
| ✓ | | | ✓ | | | | | | |
| ✓ | | | ✓ | | | | | | |
| ✓ | | | ✓ | | | | | | |
| ✓ | | | ✓ | | | | | | |
| | | | ✓ | | | | | | |

LAW, KRIS
REESE, CURTIS
ROBINSON, BLAKE, V
ROWLEY, CORRINA
SANCHEZ, EDITH

| | | | | | | | | | |
|---|--|--|---|--|--|--|--|--|--|
| ✓ | | | ✓ | | | | | | |
| ✓ | | | ✓ | | | | | | |

VANDERIET, MELISSA
WITTCKE, CHRISTINA

Guaschino, Jody
Hinatsu, Justin
Schranth, Julie
Sarlien, Holly

✓
✓
✓
✓

Carranto, Reynald
Chung, Joseph
Switzer, Nick
Partridge, Nick
Fritz, Jan
Wittwer, James

Ecology
Club

✓
✓
✓
✓
✓
✓

Total hrs 28.5 18 9 24.0

Total = 79.5hrs

STRESSING THE ABCs: ACADEMICS, BASICS, CREATIVITY

DATE: 12/14/95
DEPT: Science
ORDERED BY: Larry Callister
ACCT.#: _____

Law V. Callahan
SIGNATURE

