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City of Palo Alto

Regional Water Quality Control Plant

School Outreach Programs

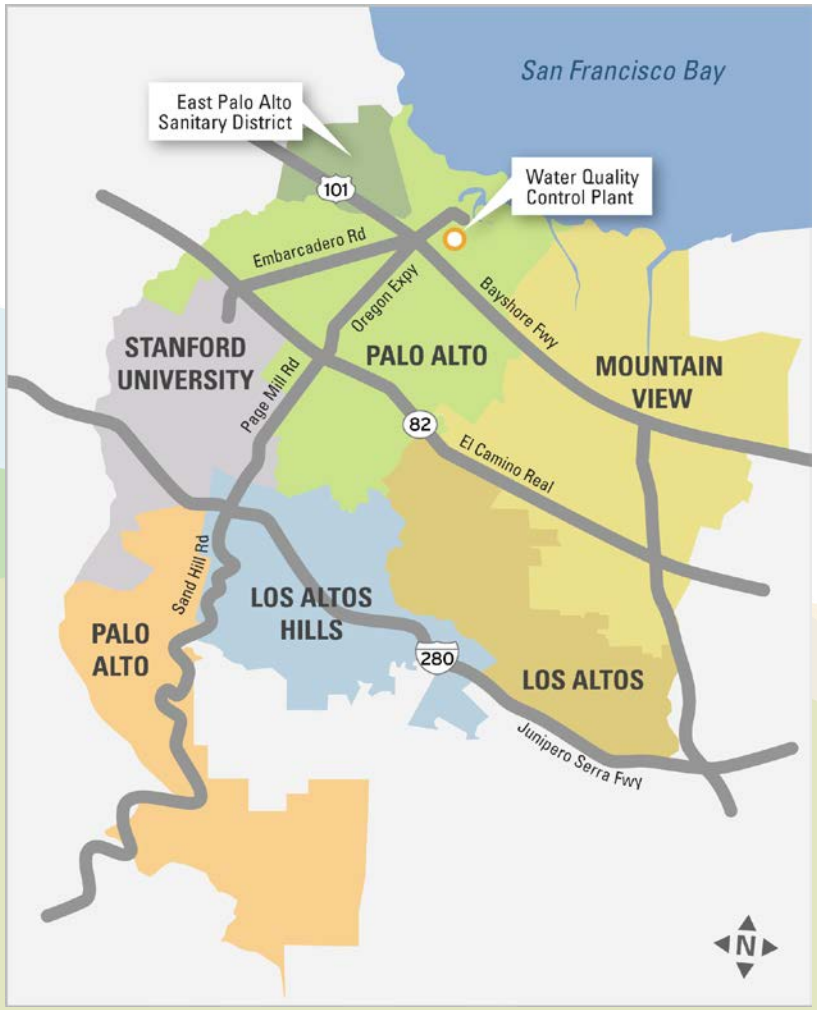
Julie Weiss, Project Manager, City of Palo Alto

Claire Elliott, Senior Ecologist, Grassroots Ecology

REGIONAL WATER QUALITY CONTROL PLANT

City of Palo Alto

Regional Water Quality Control Plant Service Area



Grassroots Ecology Overview

New name for program with 45 year history (most recently known as Acterra Stewardship)

Mission: involve, educate, and inspire the public to create healthy ecosystems in our urban communities, natural lands, and waters

Strategies:

- *Engage* a broad and diverse base of individuals in restoration, education, and environmental stewardship.
  - 11,500 people involved in 920 volunteer and educational events this past year
- *Enhance* the ecological health, functionality, and resiliency of a diversity of habitats.
  - 22 sites and 8 watersheds encompassing over 2,200 acres
- *Collaborate* with public and private partners to create a larger regional impact.

Palo Alto Regional Water Quality Control Plant Water Pollution Prevention Education Programs

History

- 2000 Palo Alto expands existing in-classroom offerings into a new program in collaboration with consultant team Jan Raissle and Susanne Mulcahy
- 2016 Palo Alto contracts with Grassroots Ecology to continue the program
- Last year the program reached 3,820 students at 145 presentations in 19 schools and six communities

Palo Alto Regional Water Quality Control Plant Water Pollution Prevention Education Programs

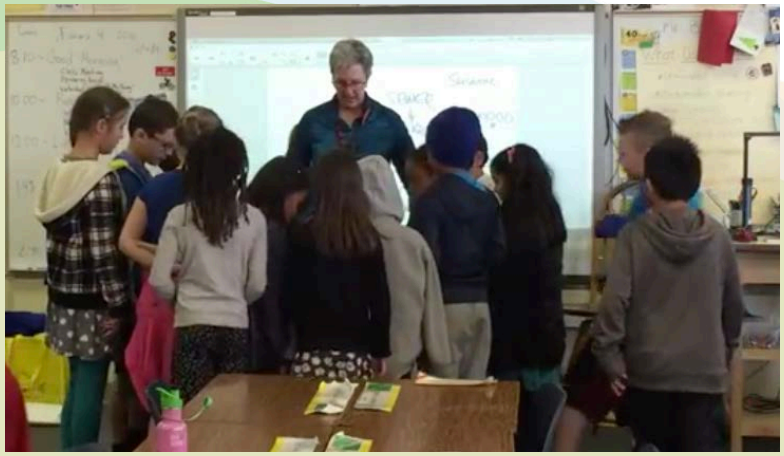
Outreach

- Many teachers repeat each year and are proactive about contacting us
- Emails and phone calls made to schools that do not reach us
- Brochure available online
- Contact cleanbayeducation@cityofpaoalto.org

Palo Alto Regional Water Quality Control Plant Water Pollution Prevention Education Programs

Goals/Strategy:

- Several connections throughout the students' years in the public school system
- Use activity or game-based approach
- Students learn how they can be part of the pollution solution



Water Pollution Prevention Education Program Classes

WHAT'S UP WITH THE BAGS?!?

2ND GRADE

Students dive into the watery world of San Francisco Bay and meet its inhabitants as they take part in a "reader's theater" story which supports reading skills and story comprehension. Students learn about the impact of plastic bags when bags enter the watershed through human use and misuse. They'll learn alternatives to plastic and how to be part of the pollution solution. Students finish by decorating a reusable bag made from recycled plastic to take home (The bag can also serve as a year-end "take-home" bag!).

WHAT'S BUGGING YOU?

2ND GRADE

Students crawl into the world of insects as they learn about the importance of insects in the food chain, how pesticides pollute our water and environment, and whether there really are "good bugs" or "bad bugs." Students work together to assemble a large insect habitat puzzle on the floor while reading aloud fascinating facts about insects. Listening and focusing skills are emphasized while practicing teamwork. The program concludes with giving the students the opportunity, with no pressure, to eat "edible bugs."

WHO DIRTIED THE BAY?!?

3RD GRADE

Students step into a time machine and roll back the clock as they trace the history of San Francisco Bay, from the Ohlone to present day, to learn about the impact of humans on our Bay environment. A hands-on activity builds their understanding of how runoff flows into creeks and the Bay, both directly and through the storm drain system, as they "dirty" a simulated Bay with pollutants from past and present. Students learn what they can do to be solutions to the pollution that impacts this vital ecosystem.

Photo: Susanne Mulcahy

MERCURY: PAST & PRESENT

4TH GRADE

Students take a hands-on look at the impact of mercury on San Francisco Bay through the lens of the Gold Rush by tracing the history of how mercury was mined in southern Santa Clara County, used in the gold mining process, and subsequently washed into San Francisco Bay. Through the interactive "Fish-Eat-Fish" game, students experience how this toxic metal is transferred through the Bay ecosystem and food chain through bio-accumulation. Students learn what we do now to prevent more mercury from entering our local environment.

WATERSHED WARRIORS

3RD AND 5TH GRADES

Using an interactive tabletop relief model called the"Enviroscape™", students learn what defines a watershed. After building out the Enviroscape model with props to create residential, commercial and agricultural communities, students simulate how rain moves pollutants through the watershed to a river, bay and ocean. The simulation concludes with a discussion of pollution sources and best practices to keep pollutants from entering the watershed.

MICROBES IN SEWAGE

7TH GRADE

Utilizing activated sludge from the water treatment plant, this lab gives students the unique, real-world experience of finding, observing, documenting, and identifying the microbes that play a vital role in wastewater treatment and observing how they remove pollutants and clean the water. This lab always gets an audible "WOW" from the students when they first look in the microscope.

Preceding the distribution of slides, we review the wastewater treatment process, proper lab procedures, and microscope technique. We provide all lab supplies, lab worksheets, and very active microbes from the wastewater treatment plant.

TOUR YOUR WATER TREATMENT PLANT

GRADES 6 TO ADULT

Just how DO we clean 20 million gallons a day, 365 days a year? At the RWQCP you'll see and learn about the multiple treatment processes that wastewater undergoes before reentering the water cycle in the Bay. Call **650.329.2396** or email **cleanbayeducation@cityofpaloalto.org** to arrange a tour. Tour content is modified for age appropriateness. Consider preceding this tour with a classroom program or watch our online video of the wastewater treatment process (visit cleanbay.org for this and other videos).

STORM DRAIN STENCILING

Somewhere around your school campus, or in the immediate neighborhood, there's a storm drain! Whether you're looking for a service project or a direct and memorable way to teach water pollution prevention, stenciling storm drains around your school with the *Only Rain Down Our Drain* logo can be the way to go. We provide all the materials and instructions. Call **650.329.2122** or email **cleanbayeducation@cityofpaloalto.org** to arrange this activity.Consider combining this activity with Watershed Warriors!

WHAT'S UP WITH THE BAGS?!?

2ND GRADE

Students dive into the watery world of San Francisco Bay and meet its inhabitants as they take part in a "reader's theater" story which supports reading skills and story comprehension.

- Students learn about the impact of plastics in watersheds
- They learn alternatives to plastics and how to be part of the pollution solution
- They decorate a reusable bag of recycled plastic to take home.

WHAT'S BUGGING YOU?

2ND GRADE

Students crawl into the world of insects as they learn about the importance of insects in the food chain, how pesticides pollute our water and environment, and whether there really are "good bugs" or "bad bugs."

- Students work together to assemble a insect habitat puzzle while reading facts about insects
- Facts cover insect biology, ecology, pesticides and their alternatives
- Focus on listening and teamwork skills
- Opportunity (with no pressure) to eat a bug!

WHO DIRTIED THE BAY?!?

3RD GRADE

Students step into a time machine and roll back the clock as they trace the history of San Francisco Bay, from the Ohlone to present day, to learn about the impact of humans on our Bay environment.

- San Francisco Bay in a jar
- Students take turns emptying film cans with “pollutants” in order of historic occurrence into the jar.
- We talk with students about how they can help keep these pollutants out of their local creeks.

MERCURY: PAST & PRESENT

4TH GRADE

Students take a hands-on look at the impact of mercury on San Francisco Bay through the lens of the Gold Rush

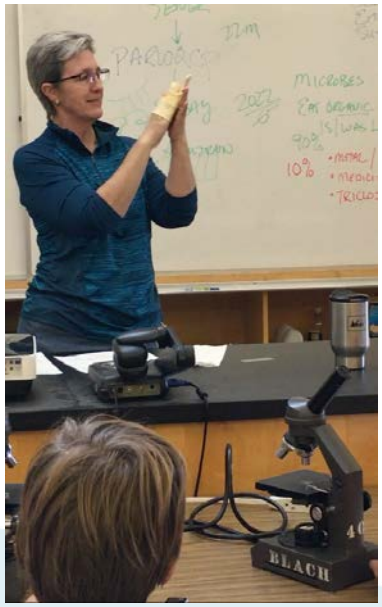
- Fits well with the 4th grade Gold Rush history
- Students learn about bioaccumulation using a roll playing food chain game
- Can be applied to any bioaccumulating pollutants, not just mercury
- New visual aids allow students to better visualize Bay life
- Fun facts about each organism are shared

WATERSHED WARRIORS

3RD AND 5TH GRADES

Using the "Enviroscape,™" an interactive tabletop relief model, students learn about watersheds and their impacts.

- Students help build the model
- They then sprinkle "pollutants" on the model
- "Rain" from spray bottles simulate washes pollutants to the bay
- Follow-up discussions of actions they can take.



MICROBES IN SEWAGE

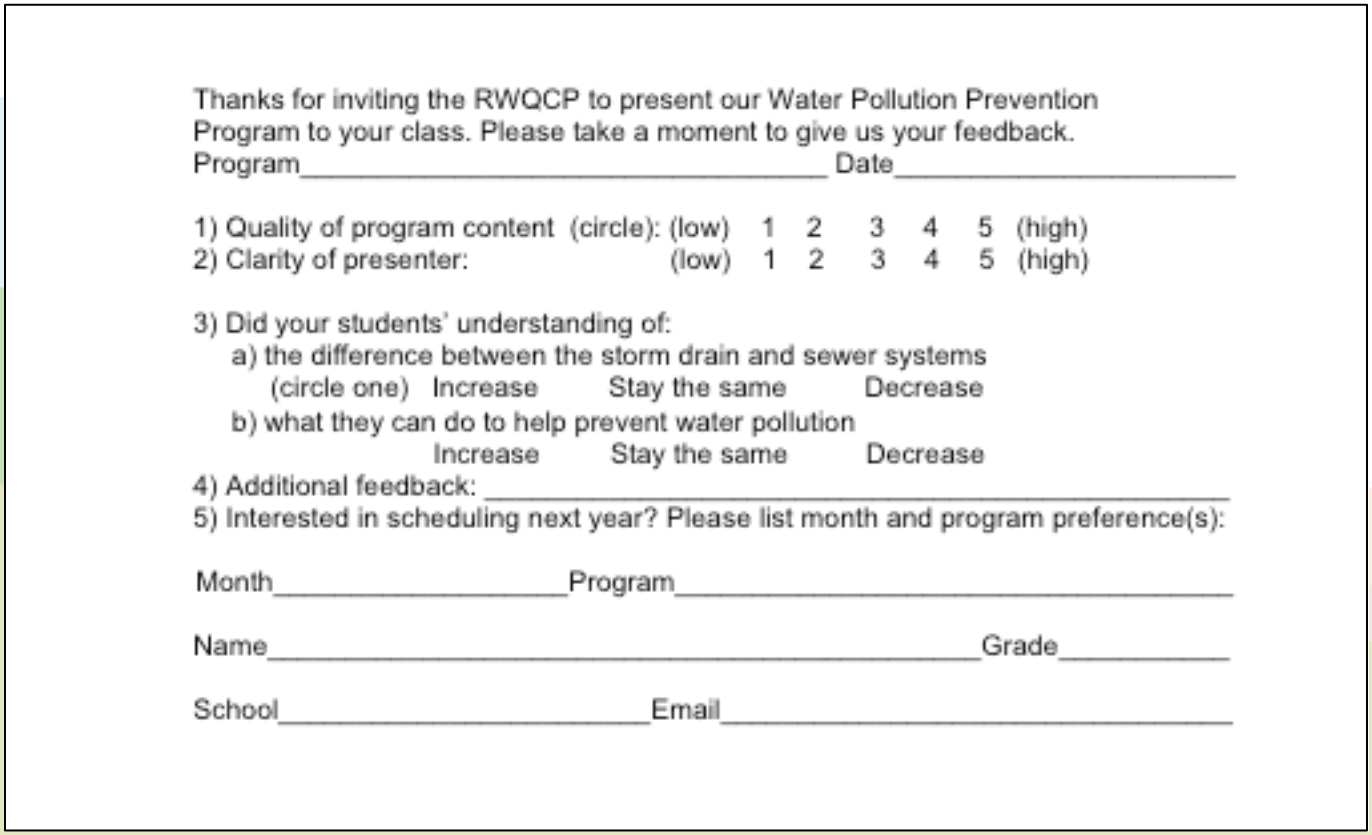
7TH GRADE

Utilizing activated sludge from the water treatment plant, this lab gives students the unique, real-world experience of finding, observing, documenting, and identifying the microbes that play a vital role in wastewater treatment and observing how they remove pollutants and clean the water.

- We first review treatment processes, safe lab procedures and microscope techniques
- Excitement in the class is audible as the students discover new life in their scopes
- Students draw and compare their organisms to photos for ID
- The lab teaches about Nature's services and the need to keep products from the sewers that can harm the microbes treating their waste.

Program Evaluation

- Postcards provided to each teacher to obtain feedback.
- The average teacher rating for the year was 4.9 out of 5
- 96 percent of the class showed an increased understanding of the difference between the storm drain and sewer systems



Thanks for inviting the RWQCP to present our Water Pollution Prevention Program to your class. Please take a moment to give us your feedback.
Program_____ Date_____

1) Quality of program content (circle): (low) 1 2 3 4 5 (high)
2) Clarity of presenter: (low) 1 2 3 4 5 (high)

3) Did your students' understanding of:
a) the difference between the storm drain and sewer systems
(circle one) Increase Stay the same Decrease
b) what they can do to help prevent water pollution
Increase Stay the same Decrease
4) Additional feedback: _____
5) Interested in scheduling next year? Please list month and program preference(s):

Month_____Program_____

Name_____Grade_____

School_____Email_____

Future of the Water Pollution Prevention Education Program

- Improve the program through updating props and materials
- Communicate alignment with Next Generation Science Standards
- Reach more students in underserved communities such as East Palo Alto
- Consider programming for high school students

Contact

Contact Information

Julie Weiss
City of Palo Alto--Watershed Protection
Project Manager
(650) 329-2117
Julie.weiss@cityofpaloalto.org

Claire Elliott
Senior Ecologist
Grassroots Ecology
(650) 419-9880 ext. 336
claire@grassrootsecology.org


Thank you.