



# KIDS for the BAY

A Project of Earth Island Institute

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Mandi Billinge, Executive Director/Founder

December 13, 2023

Dear Derek Johnson and Members of the Alameda County Fish and Game Commission,

I hope you're all doing well! The attached report materials provide an overview of the impact of our Watershed Action Program last school year and our current progress. Please find attached:

- Final Report Narrative
- Student Thank You Letters
- Watershed Action Program Year-In-Review Flyer for the 2022-2023 school year
- KIDS for the BAY 2022-2023 Annual Report

The Watershed Action Program is also off to a great start this school year. Watershed lessons have begun and students and teachers are excited about the hands-on investigations in their classrooms and outdoors in the local watershed. They are looking forward to their Environmental Action Projects and nature-based field trips.

I hope you will enjoy reviewing these materials and please let me know if you have any questions about our progress.

KIDS for the BAY has not only bounced back from the COVID-19 pandemic, we have also sprung forward and our programs are filling faster than ever before. You can learn more about our new partnerships, our staff team, and the impact of our work in the attached Annual Report.

Thank you so much for your support for environmental and wildlife education in Alameda County!

Sincerely,

Mandi Billinge  
Executive Director/Founder

# KIDS for the BAY

Report to the Alameda County Fish and Game Commission  
December 15, 2023

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## INTRODUCTION

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In the 2022 - 2023 school year, with the support of a \$10,000 grant from the Alameda County Fish and Game Commission, KIDS for the BAY (KftB) delivered the Watershed Action Program (WAP) to six classes in three elementary schools in Oakland and Hayward. KftB lessons and activities engaged students in hands-on learning, helped them connect to their local watershed environments, and empowered them to work together to have a lasting, positive impact for their schools and communities. The WAP included four watershed lessons and an Environmental Action Project for each class, as well as a bus field trip to a local creek or bay location.

Partner classes and schools included:

- Two fourth grade classes at Cleveland Elementary School in Oakland
- Two third grade classes at Manzanita Community School in Oakland
- Two fifth grade classes at Burbank Elementary School in Hayward.

Thanks to the support of the Alameda County Fish and Game Commission, KIDS for the BAY achieved the following goals:

- 172 students increased their knowledge of watershed science and became stewards of their local watershed environment
- 172 families learned how to reduce pollution to the local watershed
- Six teachers increased their confidence in using the watershed as an educational resource
- The WAP was integrated into the curricula and culture of three partner schools.

Student participants in the WAP included an average 70% under-resourced, low-income students, 82.3% students of color, and more than 35.3% English Language Learners.

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## PROGRAM HIGHLIGHTS

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### **Watershed Lessons**

#### ***Watershed Investigations and Mini Watershed Experiment***

The fourth graders at Cleveland Elementary were thrilled to learn about their local watershed. When KftB Educator Yvette Diaz Samayoa asked Mr. Luke Rosenberger's class to define 'watershed' several students raised their hands. Leo said, "A watershed is where water travels down the mountain and goes through the streets and then travels to the ocean." After watching a short, educational video, Mr. Luke's class increased their understanding of what a watershed is; more than just water, it includes all the land that water flows through.

The students were excited to test their new understanding by making their own miniature watersheds. They crumpled up parchment paper and predicted where they thought water would travel, using marker pens to trace their predictions. Students then sprayed water onto their models. One young scientist named Major predicted the mini watershed his group created would have three main paths. His group member Vanessa wondered if the mountains would change shape as the water flowed down the model.

### ***Watershed Scavenger Hunt***

The Manzanita Environmentalists were thrilled for the opportunity to go outside for their watershed scavenger hunt. Kaia spotted a hummingbird flying over her head. “Look! There’s a pollinating bird! We just learned about that last year!” she exclaimed, and eagerly drew the bird on her scavenger hunt worksheet. The third graders were eager to show KftB Educator Alix Martin the storm drain in their school garden. The drain was full of trash and covered by large items, like a discarded umbrella and a jacket. Christina felt saddened by all the trash, and shared, “It is so disrespectful for the ocean that there is trash in the drain! This trash is going to go in the bay and ocean!” Ms. Alix discussed possible solutions to this problem, and Christina was inspired to complete a trash cleanup, and to learn how to reduce trash and waste at the source.

Burbank Elementary students were eager for the opportunity to ‘zoom in’ on the local watershed and investigate parts of their environment they may not usually notice. When Danielle paused to ask Ms. Grace a question, they both noticed a ladybug that had landed on her clipboard! This was the perfect opportunity to sketch it in the ‘insect’ box on her scavenger hunt worksheet. Aiden and Brandon noticed a small piece of plastic halfway through the grate of a nearby storm drain. The students and Ms. Grace discussed what would happen if they left that plastic to flow down the drain. Aiden hypothesized, “It might end up in the bay or the ocean and then an animal might eat it and die!” The young Environmentalists picked up the plastic trash and placed it in the garbage can on the way back to their classroom.

### ***San Francisco Bay Estuary and Pacific Ocean Satellite Map Investigations***

Cleveland Elementary students enjoyed their map investigation and worked hard to identify every landmark on the list, to gain an understanding of the large scale of the San Francisco Bay watershed. They could not believe how small the Bay Area looked from space and how many cities are in the region. After finding Oakland Blake wondered, “How many people live in all these cities?”

Fifth grader Noah at Burbank Elementary shared, “The water is darker blue in the ocean because of how deep it is.” Ms. De Anda, the fifth grade teacher, asked the class if they had visited many places on the map. “It is a valuable skill to know what is around you,” she told her class. Genesis said she had visited Alcatraz Island. “It’s so cool to see it on a map!” she exclaimed.

### ***Estuary Studies, Bay-Ocean Models, and Pollution in the Watershed***

When Ms. Grace asked Mr. Martinez’s class at Burbank Elementary why watersheds are an important subject to study, Noah answered, “It is important since watersheds give us drinking water.” Blake added, “And fish from the sea.” Ms. Grace explained that healthy watersheds also provide flood control, habitats for animals and plants, and areas for recreation.

The students were excited to build a model of the San Francisco Bay estuary. The class discussed why scientists might use models as a tool. Tala from Ms. De Anda’s class shared, “We use models to be able to see how things work in a smaller version.” The class poured water into their estuary models and eagerly observed the blue ‘saltwater’ mix with the clear ‘freshwater.’ Seba pointed out, “They are mixing to make brackish water!”

Ms. Grace told a story of a marine shipping accident that resulted in an oil spill and asked the class to share their predictions of what might happen once the pollution got into the water. Students then added a drop of yellow food color to each model to represent the pollution in the story. “Oh no, it is going to spread to all the animals!” exclaimed Gio. After adding the dye Tala observed, “Almost all the water turned green.” German observed, “Wow, the pollution is spreading everywhere in the bay!” After the

activity, one student shared, “I don’t usually like science. Math is my favorite, but the science model was really fun!”

### ***The Storm Drain System and the Sanitary Sewer System***

Ms. Grace asked the class if they recalled the definition for ‘pollution’ from Watershed Lesson One. Teava, a Spanish speaking student, asked her desk partner to translate her comment: “Pollution comes from factories that make clothes and contaminates the air.” Jonathan recalled, “Pollution is trash or smoke.” Ms. Grace also reminded the class about the pollution they saw during the Watershed Scavenger Hunt: the many pieces of trash on their campus. If there was rain, the litter they saw could be washed into the storm drain system and negatively impact the environment, explained.

### ***Plastic Pollution and its Impact on Aquatic and Marine Life***

Students from Manzanita Community School investigated photos of marine animals, including turtles and seabirds, harmed by plastic pollution. Feeling very concerned about the animals, Christalina exclaimed, “This is so awful that animals are dying!” Ms. Alix encouraged Manzanita Environmentalists to brainstorm solutions to stop plastic pollution from harming aquatic wildlife. “We could clean up trash to help the animals!” Liyah suggested. “I’ve seen people cut the soda rings so that they don’t get stuck on an animal,” said Ismael.

Ms. Grace asked students at Burbank Elementary why scientists have to study sad things sometimes. Fifth grader Noreese answered, “So we can help with the problems of pollution.” Ms. Grace showed the class containers of plastic collected from the ocean, pointing to the photo of a decomposing albatross with many pieces of plastic still intact and visible in its stomach. The plastic will still be there after the bird has decomposed, she explained. It will continue breaking into smaller micro plastics for hundreds of years. “So microplastics are the most dangerous?” asked one student. Ms. Grace explained the many dangers of microplastics. They easily pass through storm drains, undetected by animals who often consume them. The student exclaimed, “I have an idea! What if we put a piece of cardboard over the storm drain except for one part so the plastic can’t get through.” Ms. Grace appreciated this problem-solving mentality and asked the class to brainstorm more actions they could take to reduce marine plastic pollution. The class called out, “Pick up trash!” and that’s exactly what they did!

### ***Neighborhood Survey and Trash Cleanup***

Filled with purpose, the Burbank Environmentalists rushed outside to pick up trash around their school campus. Noreese saw trash accumulated by the fence and told her teammates, “We hit the jackpot! I’m a natural at this!” The students noticed there was lots of trash around the areas where they eat. “There were lots of plastic and chip wrappers,” reported a Burbank fifth grader.

### ***Preventing Pollution and Practicing the Five Rs***

Many students at Burbank Elementary shared that they had never learned about the Five Rs (Reduce, Reuse, Recycle, Rot and Reuse) before. The students had only heard of recycling as a preferred disposal method for paper and cans in their classrooms and homes. Ms. Grace explained even more effective ways to reduce waste, either by reducing the amount of single-use plastics or refusing plastic altogether. KftB Educators asked the young Environmentalists to brainstorm ways they could practice the Five Rs at school and at home. Jonathan proposed, “If I was going to the grocery store, I could bring my own bag and I wouldn’t use plastic at all.” At Manzanita Community School, Christalina exclaimed, “You can use a can for a container! Or a bottle!”

### ***Bay Organisms Investigations***

Students were very excited to learn about the anatomy of bay organisms including seaweed. Manzanita Environmentalists shared their observations while investigating bull kelp. “The seaweed smells like tea

to me!" said Liyah. Cassandra added, "I think it smells like honey." German told Ms. Alix, "I noticed there's slime on the kelp." She explained about the commensal relationship between the kelp and the bacteria on its surface. Kelp has 'good' bacteria living on its body just like we do, and the slime helps to keep that bacteria alive! Students from Burbank Elementary used their senses and past experiences to make observations and compare the seaweed to other natural objects. Major noticed, "It smells like green tea," and a few of his classmates nodded their heads in agreement. Major described the texture using his tactile senses: "It's slimy after you wet it, and when it's dry, it feels like leather."

Burbank Elementary students were thrilled for the opportunity to investigate fish and crustaceans from the bay. Ms. Grace demonstrated the many ways students could interact with their specimens. Opening her striped bass fish mouth, Yessenia declared, "This is actually cool. The fish's teeth are very tiny." The young scientists were eager to learn more about the organisms. Anthony asked, "How can you tell if it's a boy or girl crab?" Major helped answer the quandary by confirming, "Isn't it illegal to fish for female crabs?" Neva shared, "I used to go fishing a lot with my family, so I know how to hold a fish." She handled the specimen carefully with both hands, allowing her group to get a closer look, mimicking how the fish might move through the water. One group named their specimens: "Peter the striped bass had a fin that was sharp like sticks on the top of his body that helped him swim. John the Dungeness crab had hairs on his abdomen that helped him sense where he was." Catherine said, "The crab has the adaptation of claws. I think the spikes on the fish help protect it from predators." At the end of the lesson, Alexis reflected, "I learned that estuaries are very important habitats for the population of bay animals."

### ***Healthy vs. Unhealthy Watershed Assessment***

The Cleveland Environmentalists walked around their school campus to determine which aspects of their environment were healthy, unhealthy and in-between. Ms. Yvette placed laminated cards around the yard so students could read about indicators of a healthy or unhealthy watershed, including an abundance of pollinators, or the presence of trash. "Wow, look! A hummingbird!" Penelope observed. "That must mean the watershed is partly healthy!" Ashly exclaimed, "We found bees, which means the watershed is healthy! They are so beautiful." Tania said, "The storm drain could be unhealthy, because trash can wash into it." Rayden added, "Trash definitely goes in the unhealthy category." The class agreed that there were both healthy and unhealthy aspects of their environment, and that they all could make choices to make the watershed healthier than it is today.

### ***Environmental Justice Movement and Environmental Leaders***

At Manzanita Community School, our young Environmentalists were eager to learn about present and past leaders in the Environmental Justice Movement. Each student researched a different leader and shared their information with the rest of the class. Kassandra said, "These leaders are fighting for a clean environment for everyone!" Adrielly shared, "I want everyone to live in a clean environment, everyone should be able to! That's fair." At Burbank Elementary, Peter shared, "I want to live in a healthy environment, but I also want to live in a city." Ms. Grace discussed with the students if it is possible to live in a healthy city.

### **Environmental Action Projects & Field Trips**

#### **Burbank Elementary School: Jobs in the Watershed**

*Students learned about possible careers involved with watershed management on San Francisco Public Utilities Commission (SFPUC) restoration lands at Sheep Camp Creek in Sunol as part of the KIDS for the BAY partnership with Avila and Associates Engineers.*

Students from Burbank Elementary School were thrilled about the opportunity to go to Sheep Camp Creek to see a natural location dedicated to habitat restoration, and to learn about real careers in the

environmental field. During their classroom preparation, the Burbank Environmentalists focused on the topic of planting native plant species to prevent excessive erosion. The class played a game of tag to visualize sediments flowing down a river versus sediment being tagged, or held in place, by plant roots. The class loved to try and dodge the “plant roots” and avoid being tagged.

Burbank Environmentalists arrived at Sheep Camp Creek (SFPUC watershed land), where they had the opportunity to participate in three stations: birding, creek-side planting, and plankton and owl pellets observations. All the young scientists received a ‘biologist notebook’ and thought it was very cool that the biologists, botanists, and land managers at Sheep Camp Creek did scientific journaling for their job! Students learned that Sheep Camp Creek supplies some of their drinking water. Erinn, an Avila volunteer, explained, “The purpose of Sheep Camp Creek and other restoration sites is to restore the habitat and keep the land functioning for us, the insects, the land and plants.”

The Burbank Elementary ecologists enjoyed the opportunity to complete hands-on activities at three stations: the biologist station, the ornithologist station, and the botanist station. At the biologist station, students peered through microscopes to study plankton collected from the creek water and dissected owl pellets. At the ornithologist station, students learned how to use binoculars to observe the many species of birds living at Sheep Camp Creek, and how to take a birding count. These stations increased the students’ understanding of wildlife anatomy, physiology and behaviors.

The botanist station provided the opportunity for students to participate in a restorative planting project. Volunteer Naomi taught students about the trees at Sheep Camp Creek. Vanessa observed the tree closest to her. “Wow that oak must be old if oaks only grow an inch each year!” she exclaimed. Naomi asked the students if they could find differences between the ranching land fenced off next to them and the enclosed restoration site they stood in. Mailana guessed, “The restoration looks messier, with lots more on the ground.” Naomi exclaimed, “Exactly! There is lots more biodiversity here. There are grasses, rocks and logs that are homes to a host of organisms.”

The students were thrilled to have the opportunity to plant blue oak seedlings! The young Environmentalists loved digging holes for their plants and were determined to dig to the right depth to cover the taproot, but not suffocate the leaves. They patted the soil around their juvenile oaks carefully and gave each plant its own name, making wishes for their plants to thrive. “Grow nice and big and strong!” many students whispered to their plants. Noresse proudly explained, “Students in fifty years will get to see the plants we put in the ground today!”

### **Cleveland Elementary School: Caring for Our Watersheds**

Cleveland Elementary School fourth graders had the unique opportunity to explore Lake Merritt and participate in a special lakeside planting project. KftB Educators Yvette Diaz Samayoa and Corey Chan worked in partnership with the Rotary Nature Center (RNC), a nonprofit based at Lake Merritt that studies, protects, and educates the public about the ecology and health of the lake wildlife sanctuary.

The young Environmentalists were split into three stations: a planting station, nature journaling, and plant walk, for their Action Project. The students learned about the plants they planted, investigating their anatomy and predicting how their growth would progress. The Cleveland students planted California Sagebrush, California Aster, Lupine, and Beach Strawberry. On a guided plant walk around the lake, Dara exclaimed, “This is the plant I just planted!” She closely observed the beach strawberry plant and drew its anatomy. Faud observed, “The soil looks wet and damp, especially where it is darker.” RNC Volunteer Katie Noonan explained that the soil’s dark coloration indicated a low oxygen level, and led a discussion about the adaptations marsh plants at the edge of the lake need to survive in these conditions.

The Cleveland students engaged in community science by contributing to the lake's daily water quality testing records. They learned how to test the temperature, pH, turbidity, and color of the lake water. The lake visit culminated in an encounter with the notorious white pelican, Hank, who became a permanent resident of Lake Merritt after a powerline injury. Our young Environmentalists promised, "We will make sure to come back and visit Hank, and see how our plants are doing!"

### **Burbank Elementary: Sunol Regional Wilderness Field Trip**

When Burbank Elementary students arrived at Sunol Regional Wilderness, fifth grade teacher Ms. De Anda shared, "We are so excited to be here. We have been looking forward to this field trip!" The Burbank Environmentalists discussed their current position in the network of San Francisco Bay watersheds by referring to a map of the area. The class stopped at the visitor's center to learn about the Sunol ecosystem. Aiden called to his friends, "There are two snakes over here! It says one of them is a rattlesnake!" One of the visiting biologists from Avila and Associates, volunteer Cynthia, helped the students distinguish between the species of snakes. "The Gopher snake's head is different," noticed Neeva. Joia, another volunteer biologist, commented, "Exactly! That's how to tell them apart. It can be tricky as the gopher snake can flatten its head if feeling threatened to make predators think it is poisonous." Neeva replied, "That is such a cool adaptation!"

Ms. Grace informed the class that this watershed was home to the endangered red legged and yellow legged frogs, so disturbing the water during their observations could threaten the species. Julian shared, "I know that some species become extinct and are no longer around after being endangered." The students carefully explored the environment, noticing how the area had been completely shaped by the creek: the types of plants that grew, where the rocks were situated and the organisms that made their home in pockets of stagnant or flowing water.

After lunch the classes played a game of 'Adaptation Tag' and went on a nature walk to observe the wildflowers growing in the park. "This one looks like a common vetch," Tala said, observing a small purple plant. The class also got a chance to practice their bird watching skills using binoculars. "I see the same birds of prey that we saw at Sheep Camp Creek," declared Blake. A parent chaperone told Ms. Grace, "I can tell the students are having so much fun. They need to be in beautiful outdoor areas like this more often!"

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### **PROFESSIONAL DEVELOPMENT FOR PARTNER TEACHERS**

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KftB partner teachers increased their confidence and skills in teaching environmental education by observing and participating with our Educators as they led the watershed lessons and activities. Teachers were thrilled with how much their students learned. Some quotations from teacher participants:

"The KIDS for the BAY program was excellent! The students made connections all year in class to the science lessons we had with the program. They actively cleaned up trash outside the classroom and I noticed that they took more pride in keeping the outside area clean. Seeing all the trash in the drain and in our garden during the cleanup really seemed to affect them."

Patrick Tooley, Third Grade Teacher, Manzanita Community School, Oakland

"This Lake Merritt planting project is very cool! Our students will be able to come back here over time with their families, look for their plant name flag and say that they planted that plant right there!"

Luke Rosenberger, Fourth Grade Teacher, Cleveland Elementary School, Oakland

“This has been such a great experience! Let me know how I can sign up for next year!”  
Ms. De Anda, Fifth Grade Teacher, Burbank Elementary School

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## 2023-2024 SCHOOL YEAR

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In the current school year, we are excited to have already begun school visits to teach engaging, hands-on lessons and connect students to their local watershed environment. Our students are diving into hands-on watershed science activities in the classroom, connecting with their local environment in watershed scavenger hunts outside, and conducting school campus and neighborhood trash cleanup projects to prevent litter from entering the storm drain system. This school year, Lincoln Elementary School in Oakland will be participating in the “Natural Pesticides” Action Project, where students will learn about the impacts of pesticide use and how to make natural, environmentally friendly pesticides. Students at Glassbrook Elementary School in Hayward will be completing the “Jobs in the Watershed” Action Project to learn about careers in the environmental field and help restore vital habitat at Sheep Camp Creek. We also plan to lead nature-based bus field trips where students will study and explore a bay or creek habitat. WAP spaces this school year filled faster than ever, with partner teachers eager to work with KIDS for the BAY. It is inspiring to know that so many teachers are committed to incorporating hands-on environmental education into their curricula. With the support of our funders and donors, we will continue to deliver engaging and equitable environmental education programs to our under-resourced partner schools.

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## ORGANIZATIONAL UPDATE

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### **Springing Forward After the Global Pandemic**

KIDS for the BAY has not only bounced back from the impacts of the pandemic, we have also sprung forward! We navigated the pandemic and school shutdowns with creativity and flexibility, and we were one of the first environmental education organizations to return to in-person school and Summer Camp programs. As restrictions began to lift, we saw a significant increase in the number of registered and waitlisted teachers, and programs filling faster than ever before. We are piloting new school programs to inspire and empower more young environmentalists, and we are thrilled to add a new summer camp session and theme for summer 2024. KIDS for the BAY is happy to report that we are in a strong position to continue to expand our impact over the next thirty years, to inspire many more empowered environmentalists.

Dear Founder of the Water shed Action program, My name is Catherine and I am in 3rd grade. I have been participating in the Watershed Action program with kids for the bay. Thank you for this opportunity to participating in this amazing program. My favorite lesson was we mixed the fresh water and the salt water because it was so fun when we poured the water in. I also liked when we cleaned up the school. Something I learned from the Water shed Action program is never ever litter anywhere. Now I try to help the environment by cleaning the schools thanks to the

Water shed Action Program,  
Sincerely, Catherine

School: Manzanita Community School

City: Oakland, Ca



Dear founder of the Watershed action Program, My name is German and I am in 3rd grade. I have been participating in the KIDS for the BAY with you for this opportunity to participate in this great awesome program. My favorite classroom was when we cleaned. I also liked when we touched the fish and the crab. Something I learned that people do pollution now, I try to help the environment by cleaning thanks to the watershed Action Program. sincerely:

German Morales  
manzanita community  
School  
oakland



5 6  
Dear Funder of the Watershed Action Program,  
My name is, Mailani I am in 5th  
grade; thank you for giving us this  
amazing opportunity to go on our first  
field trips as in, Sheep camp creek,  
and Sunol wilderness Park! ❤️

Sheep camp rock. My favorite  
thing to do there was BIRD WATCHING  
I loved it cause I saw so many  
new birds that I havent seen before  
like a hornet I also saw something  
that kinda looked like a Hawfinch! 🦜

I also loved when we planted a tree  
I feel like an expert! 🌱

And again thank you for giving us  
a opportunity to be at wonderful  
field trips, that I will never forget!

Sincerely,  
Mailani Kerr  
Burbank elementary School  
Hayward.

6/6/2023

Dear Founder of the Watershed Action Program, my name is Ildy Ortiz, and I'm in 5th grade. I have been participating in the Watershed Action Program with kids from the Bay. Thank you for this opportunity to participate in the program.

I really liked the Sausal Wilderness Park field trip and my favorite activity was when we went out on our hike and we got to see through the binoculars. But what I most enjoyed was seeing all the flowers, especially seeing the California Poppies.

I learned about pollution, and that plastic takes millions of years to dissolve. Now it makes a lot of sense why people use reusable bottles, and I started to use reusable water bottles. I also learned about the water cycle. Evaporation, Condensation and Precipitation.

Sincerely,  
Ildy Ortiz  
Burbank Elementary