



WATER POLLUTION PREVENTION

Project Toolkit

Water Pollution Prevention



Generation Earth Program

Generation Earth is a Los Angeles County Public Works environmental education program presented by TreePeople. Our goal is to educate and empower youth in the County of Los Angeles to be an active part of the solution to environmental concerns in their community. We offer do-it-yourself environmental projects that help youths make a positive difference at school, at home and out in the world. Our programs are built to support the needs of teachers, students, schools and community youth groups.

Generation Earth Project Toolkits

Generation Earth Project Toolkits are designed to assist teachers and students in the completion of an environmental project. These guides provide the instructions, tools and support materials needed for students to learn about important environmental projects that will positively impact the community.

The Hydrologic Cycle

The hydrologic cycle begins when rainwater starts to fall and then percolates down into the soil and rocks. The soil and rock act as natural filters cleaning the water that collects in aquifers (underground layers of rock that store percolated water). This underground water is called ground water and supplies water to wells and natural springs that we can tap into for consumption. When it rains, water that did not percolate into the ground travels over land as stormwater runoff, flowing downhill and collecting in streams and rivers which then outlet into lakes and oceans. Evaporation occurs when the sun heats surface water such as in the lakes, rivers and oceans creating and drawing tiny water vapors into the atmosphere to form rain clouds, thus completing the hydrologic cycle.

The Urban Environment

As communities grow, more land is developed creating miles of impervious surfaces (hardscape such as streets and parking lots where water cannot percolate), buildings and houses. Since rain water cannot percolate into the ground, there is more runoff at the surface level which increases the risk of a flood. To prevent floods, engineers created a flood control system. The flood control system consists of catch basins, large underground pipes and open channels designed to quickly convey runoff straight to lakes or ocean. However, it interrupts the natural hydrologic cycle by reducing the opportunity for percolation. Without this natural system of percolation and filtration, runoff reaches the lakes and ocean directly carrying pollutants along the way.

The School Campus

The school campus may generate polluted runoff that ends up in the ocean. The land area of the school directs water from rain, sprinklers, faucets and garden hoses from the campus and into the storm drain system. As the runoff makes its way to a storm drain, trash and other pollutants are picked up and carried into the storm drain system negatively impacting the environment beyond the campus. Students, teachers, administrators, and maintenance staff are responsible for what flows off the campus, into the storm drains and to the ocean.

Stormwater as a Resource

Now more than ever conserving water and preventing stormwater runoff is important. Taking steps to reduce potable water use – indoor and outdoor – and percolating stormwater runoff into the ground and not into streets helps to increase local water supply, decrease the need for imported water and reduce stormwater pollution. In support, Los Angeles County made history in November 2018, when voters approved Measure W to revamp our outdated stormwater system. As a result, the Safe, Clean Water Program was created to fund projects to capture, clean and reuse stormwater by expanding parks and other open space opportunities to capture and infiltrate stormwater.

Water Pollution Prevention Project Toolkit

This toolkit explores the water pollution and conservation potential on a typical school campus or in the community. This exploration will help your group learn about the issue, audit the site, and choose from a variety of options to help conserve water, increase infiltration or reduce pollution on campus and in the community through a trash cleanup event.

The Steps!

1. Check This Out

Students explore the subject of water pollution and conservation by working in teams to learn a specific topic and share what they have learned through the creation of an infographic.

2. Water Audit

Using a map of the site, students indicate where there are specific water-related elements. They continue the process by showing the direction water takes and identifying any areas of concern. Finally, students conduct an interview with the Facilities/Plant Manager to learn more.

3. Choose a Project

Using the water audits and interview information, students work as a group to determine what they would like to achieve by asking specific questions that lead to project suggestions. This either leads them to the Resource section, other Project Toolkits and Guides, or to conduct a Campus/Community Cleanup Event.

4. Campus/Community Cleanup Event

Using a Cleanup Preparation Checklist and Cleanup Event Timeline, students take the first steps needed to plan and run a cleanup event.

- **Promotion Plan:** Guidelines are provided to promote the event.
- **Cleanup Event Team:** Suggested roles are provided.
- **Event Day Set-up:** A list of the different stations is provided.
- **Event Day Management:** Helpful hints for managing before, during and after the event.

5. Evaluation

Students answer questions that serve to evaluate the process and offer next steps for potentially taking on additional projects.

6. Resources

Resources are provided for additional support.

CHECK THIS OUT

Students explore the subject of water pollution prevention and conservation by working in teams to learn a specific topic related to water and share what they have learned through the creation of an infographic.

Procedure

1. Divide students into five working groups. Groups should be as close to equal in size as possible.
2. Pass out a different topic sheet to each group.
3. Each group has 15 minutes to:
 - Learn and discuss the topic
 - Use poster paper and markers to create an infographic answering the questions listed on the topic sheet.
4. Each group shares and explains their infographic with the rest of the class.
5. As a class, discuss the need for water pollution prevention and conservation, at home, school and in the community and how this information is important to share.

Materials

- Topic Sheets (pages 5 - 9)
- Poster paper or dry erase board – one per group
- Markers – one set per group



Moving Water

Start Here!

In thinking about Los Angeles County, it is hard to believe that there are seven major watersheds – five of which are located near metropolitan Los Angeles. These land areas collect and drain water runoff into a common body of water. For most of these watersheds that body of water is the Pacific Ocean. As water moves through the urban watershed, it picks up everything in its path!

Create an Infographic that answers the following questions:

- What is a watershed?
- How does water move through a watershed?
- Why can this be an issue?
- What is something that can be done to support a healthy watershed?



- A watershed is the land area that “sheds” water to a drainage system or river. It helps supply us with water by feeding underground aquifers or channeling water into rivers and other waterways. Gravity moves water through the watershed from higher to lower areas. Every land is part of some watershed – including your campus and your neighborhood.
- A watershed functions best when the land area is more pervious allowing water to percolate into the aquifer. As rain falls on to land, it percolates through the soil and is filtered of pollutants before it reaches the water table below where it is stored. These underground spaces are called aquifers.
- A watershed’s headwater begins at the mountains and foothills, flows across the valley floor and eventually into a body of water (lakes and ocean). In Los Angeles County, the Antelope Valley Watershed flows into dry lakes. Other watersheds are the Santa Clara River, Los Angeles River, San Gabriel River, South Santa Monica Bay, North Santa Monica Bay and Dominguez Channel watersheds which outlet into the Pacific Ocean.
- When the land becomes developed and less pervious, rainfall is not able to percolate into the ground, disrupting the natural infiltration of water by collecting debris along the way.
- Support a healthy watershed by placing mulch on bare ground to allow the water to be absorbed. Also, picking up litter is another important action to take.

Open the Flood Gates

Start Here!

Many of the waterways in Los Angeles County have been covered in concrete to provide for flood protection during major storm events. Now connected to city streets by gutters, catch basins and storm drains, this flood control system provides a quick and direct path for everything draining from our city straight to the ocean.

Create an Infographic that answers the following questions:

- What is the typical climate of Los Angeles?
- Historically, why is that an issue?
- What is channelization and how does it affect water health?
- What is something that can be done to prevent water pollution?



Los Angeles River Bridge B&W by Downtowngal

- Los Angeles County has a Mediterranean climate, meaning that the climate is subject to short wet winters and long dry summers. When it does rain, most flooding in Southern California is the result of heavy precipitation over periods of one or two days and damage is often severe.¹
- The flood event in 1938 saw over ten inches of rain over five days, leaving a third of Los Angeles flooded and caused 115 deaths. This, and floods earlier in 1914 and 1934 resulted in the decision to channelize the river.²
- Channelization is the process of engineering waterways to provide for flood control and improved drainage. The Los Angeles River channelization began in 1938 and when completed in 1960, formed a fifty-one mile engineered channel mostly lined with concrete.³
- Today, Los Angeles County Flood Control District encompasses more than 2,700 square miles within 6 major watersheds. It includes drainage infrastructure within 86 incorporated cities as well as the unincorporated County areas. This includes 14 major dams and reservoirs, 483 miles of open channel, 3,330 miles of underground storm drains and an estimated 82,000 catch basins.⁴
- These drainage systems were designed to move water swiftly and efficiently through the watershed. Unfortunately, it also carries debris and other pollutants that may affect water quality.
- Reducing pollutants or picking up trash are some of the ways to prevent pollutants from entering and flowing through the flood control channels and reaching the ocean.

Pollution Down the Drain

Start Here!

Street gutters are more important than you may realize. They help carry runoff into the catch basins and storm drains. These openings lead to flood control channels, in turn, carry the water directly to the ocean picking up debris as it travels through streets and into the ocean.

Create an Infographic that answers the following questions:

- What is stormwater?
- What is the difference between stormwater and wastewater?
- Why is stormwater an issue?
- How is motor oil part of the issue?
- What is something that can be done to reduce the effect of urban runoff?



- In urban environments, stormwater falls onto impervious surfaces and runs across pavement, through gutters, enters the catch basins and into the storm drains.
- Storm drains help prevent urban flooding by moving large volumes of stormwater to flood control channels and into the ocean. Urban runoff from sources of water, such as over watering of lawn, is carried directly to the ocean.
- Unlike wastewater, which is from inside use such as toilets, sinks and showers and is carried out by underground sewer pipes that go directly to a wastewater treatment plant, stormwater is not treated before being sent out to the ocean.
- Urban runoff is a significant source of ocean pollution. Litter, pet waste, cigarette butts, fast food packaging, plastic shopping bags, leaking motor oil – anything on the ground – can end up washed into gutters and carried to the ocean.
- One gallon of used motor oil, poured into the gutter or dripping from a car, can contaminate up to one million gallons of ocean water. Over 115 million gallons of motor oil are sold in California each year; and only about half of it is recycled with the other half ending up in the waste stream, polluting our waterways and ocean or burning off, causing air pollution.⁵
- Eliminating the use of harmful pesticides and fertilizers on plants that will be washed into the street, recycling motor oil and picking up trash are just some of the ways to prevent polluted urban runoff from reaching the ocean.

The Source of the Issue

Start Here!

Not all pollution is the same! Different types of pollution are regulated by the Environmental Protection Agency in different ways through the Clean Water Act. Identifying the type of pollutants and their source helps government agencies address the pollutants' impacts on our environment.

Create an Infographic that answers the following questions:

- How is water pollution categorized?
- What is nonpoint source pollution?
- What is a TMDL?
- What is something that can be done to prevent nonpoint source pollution?



- Water pollution is categorized by where it originates or its “source.” It is either “point source” or “nonpoint source”.
- Point source pollution is discharged from a single, identifiable source such as pipes, factories or ships.
- Nonpoint source pollution is caused by rainfall moving over the ground as runoff picking up pollutants and depositing them into rivers or other bodies of water.⁶ Pollutants can include fertilizers, insecticides, car oil, pet waste, bacteria and trash.
- When these pollutants enter water bodies such as our lakes and ocean, whether it is point or non-point, it becomes a huge water quality issue. As a result, the State of California established TMDLs (Total Maximum Daily Loads) which are scientifically established maximum amounts of a particular pollutant that a specific body of water can receive and still meet water quality standards. For example, the Los Angeles River can only have a certain amount of metals in it and still meet the TMDL.
- Eliminating the use of harmful pesticides and fertilizers on plants that may be washed into the street, recycling motor oil and picking up trash are just some of the ways to prevent these pollutants from entering waterways.

Every Drop Counts

Start Here!

The average person in California uses 196 gallons of water per day. Up to 70 percent of that water is used outdoors for watering plants and lawns. Los Angeles County residents can make a huge difference by reducing water usage and ensuring that every drop counts!

Create an Infographic that answers the following questions:

- Historically where did most of the water for Los Angeles come from?
 - Where does it come from now?
 - Why is importing water a problem?
 - What can be done locally to conserve water and reduce the need for imported water?
- The El Pueblo de Los Angeles was founded in 1781. During this time the Pueblo relied almost exclusively on the Los Angeles River for its water. In the early years, water from the river was channeled through a distribution system of dams, water wheels and ditches.⁷
 - Local water supply such as groundwater was not enough to satisfy the demand for the growing population, creating a need to import water from other sources. In 1913, the City of Los Angeles completed construction of the first Los Angeles Aqueduct.⁸ The Aqueduct diverted water from the Owens River that runs along the base of the eastern Sierra Nevada Mountains. This has grown to include waters from the Colorado River and the Sacramento-San Joaquin River Delta (California Aqueduct/State Water Project).
 - Relying on imported water can be an issue when weather can be unpredictable. The amount of rainfall received during the winter season determines the amount of snowpack in the Sierra Nevada Mountains, the water levels in California's reservoirs and ultimately the supply of our underground aquifers.
 - Conserve water by capturing rainwater in rain barrels that can provide water for gardens or replacing high-water use plants with climate-appropriate and native plants.
 - Slowing down rainwater and allowing it to infiltrate into the ground, such as through planting trees, installing rain gardens and mulching helps to replenish local groundwater supplies and decrease the need for imported water.



WATER AUDIT

Using a map of the site, students indicate where there are specific water-related elements on campus. They continue the process by showing the direction water takes and identify any areas of concern. Finally, students conduct an interview with the Facilities/Plant Manager to learn more.

Procedure

1. Plan to divide into groups when mapping and auditing the site.
2. Create a map of the site doing the following:
 - Use an existing map, removing any unnecessary information.
 - Download a map of the site from online.
 - Create your own map using a large sheet of paper.
3. Make sure each group has a map, Water Audit Guidelines sheet and specific colored pencils or markers.
4. Have students follow the instructions to locate specific water-related elements and mark them on the map. Then, continue the process by using arrows to show the direction water takes and identify any areas of concern.
5. Familiarize students with the areas they are observing and demonstrate how to gather the data.
6. In the classroom, instruct groups to report findings.
7. Create a combined map of all findings representing the site as a whole.
8. Have students conduct an interview with the campus Facilities/Plant Manager using the Interview Questionnaire. This person may have more information about what is happening on campus that may not be seen during the audit.

Materials

- Water Audit Guidelines (page 11)
- Colored Pencils/Markers (red, blue, green, purple, black) - one per group
- Map of site
- Interview Questionnaire (page 12)

Helpful Hints

- Break the site maps into different parts of the campus for each group.
- If possible, plan to conduct the audit during a rainy day, to see where water travels or suggest using buckets of water to see and understand the flow of water across the site.

Water Audit Guidelines

Walk around the entire assigned area.

LOOK FOR:

- Trees and places where water can get into the ground (grass, bare dirt, garden, etc.)

Use **GREEN** to show these places on your map

Use  to show existing trees on your map

Use  to show empty tree wells on your map

- Sources of water (faucets, sprinklers, hoses, etc.)

Use **BLUE** to show these places on your map



- Places where water travels (gutters, down spout, drain, etc.)

Use **PURPLE** to show these places on your map



- Trash and other things that could be harmful to water (food, trash, oil, etc.)

Use a **RED X** to show these items on your map

INDICATE:

- The direction water would travel. Use arrows to show the direction. Remember, water flows from high to low points.
- Where water pools or floods during a rainstorm.
- Where you found a lot of trash and other areas of concern.
- What type of trash was found and a possible source for where it came from.

Interview Questionnaire

Name(s)

Date

Facilities / Plant Manager

1. Is there a need for any waste/pollution management or awareness on campus?
 - If yes, where and what type of waste/pollution do you see the most of?

What is needed?

2. Are there areas on campus that flood when there is water/rain runoff?
 - If yes, do you have any suggested solutions?
3. Are there any drains that are continually clogged?
 - If yes, where and what are they clogged with?
4. Are there any empty tree wells?
 - If yes, is there irrigation?

CHOOSE A PROJECT

Using the water audits, maps and interview answers, determine with the group what they would like to achieve at their site by asking specific questions that lead to project suggestions.

Procedure

1. Share with the class that they can help prevent water pollution, conserve water and raise awareness on their campus through a variety of projects to choose from. They include:
 - Campus/Community Cleanup Event
 - Water Pollution Prevention Campaign
 - Storm Drain Stenciling
 - Installing native plants
 - Installing a rain garden
 - Planting/Caring for Trees
 - Mulching
 - Beach Clean-up
 - Community Awareness Tour
2. Explain to the group that choosing the right project requires using what was learned from the water audit and interview to answer questions. Use the Project Selection sheet to answer specific questions.
3. Once complete, work with the students to go through all the “YES” answers and options to determine a project.

Materials

- Water Audits and maps
- Interview answers
- Project Selection sheet (pages 14 through 15)

Helpful Hints

Review the Project Selection sheet ahead of time to understand how it works.

Project Selection

STEP 1

Using the completed map:

- Look at areas indicated by **GREEN**

Could these areas use mulch to help slow the flow of water and allow it to seep into the ground?

NO

YES

Use the Soil Health Project Toolkit for mulching options

Are there areas that could use native and/or climate-appropriate plants to help conserve the amount of water used to irrigate them?

NO

YES

Use the Native Plant Project Toolkit for planting options

- Look at the trees on your campus

Are there young trees that need care or empty tree wells that need trees?

NO

YES

Use the Planting Trees or Caring for Trees Project Toolkit for guidelines

- Look at sources of water indicated by **BLUE**

Are there areas where water can be redirected from drains and hard surfaces?

NO

YES

Use the Rain Barrel or Rain Garden Project Toolkits for options

- Look at places indicated by **PURPLE**

Are there drains and/or gutters filled with trash or other substances?

NO

YES

Use this Project Toolkit to run a cleanup event

Do any of these drains lead to the storm drain system? If so, could they be stenciled (labeled) to raise awareness?

NO

YES

Go to the Resource Section for stenciling

- Look at the items indicated by a **RED X**

Is there a lot of trash that could be reduced through a clean-up event?

NO

YES

Use this Project Toolkit to run a clean-up event

Is there a specific type of trash that has a clear source?

NO

YES

Go to the Resource Section for guidelines on how to address specific trash at its source

STEP 2

Using the completed interview questionnaire:

Is there need for any waste or pollution management or awareness on campus?

NO

YES

Use this Project Toolkit to run a cleanup event or the Education Campaign Project Guide

Are there areas on campus that flood or pool water that could be redirected into a rain barrel, rain garden or other permeable area?

NO

YES

Use the Rain Barrel or Rain Garden Project Tool Kits for options

STEP 3

Consider the impact in the community or at the beach/river:

Does the class have the ability to go on a field trip?

NO

YES

Go to the Resource Section for beach and river clean up resources

Does the class have the ability to create and provide a community tour of water issues in the neighborhood?

NO

YES

Use the Community Water Tour Project Guide

CAMPUS/COMMUNITY CLEANUP EVENT

A student-run campus or community cleanup event is an opportunity for students to address trash accumulation problems in areas that contribute to water pollution problems on campus and in their local neighborhood and environment.

How It Works

- Students identify pollution hot spots in their campus or community watershed, where trash debris regularly accumulates, using the completed Water Audit and maps.
- Students gather the supplies necessary to remove trash and debris. Outreach is conducted within the campus and community to recruit volunteers for their cleanup event.
- During the event, students provide their volunteers with background information on the impact of trash and debris on local waterways and the ocean, directions for the area to be cleaned and safety instructions for safe participation.
- If possible, volunteers sort trash that's collected during the cleanup into separate areas for recycling.
- Once complete, the students design and implement strategies to prevent further trash accumulation.

Procedure

1. Have students use the Cleanup Preparation Checklist to plan and complete the first steps.
2. Once a date is set, use the Timeline to complete the necessary tasks needed to ensure a successful event.

Materials

- Water Audits and maps
- Cleanup Preparation Checklist (pages 17 through 18)
- Event Timeline (pages 19 through 21)

Helpful Hints

Review the Preparation Checklist and Timeline ahead of time to understand what will be required.

Cleanup Checklist

Choose a Location

- Identify an area where trash regularly accumulates.

Consider an area:

- Adjacent to a large open area for staging cleanup supplies and gathering volunteers.
- Adjacent to an area where collected trash can be picked up for disposal
- Easily accessible for volunteers.
- Free of potential trip and fall hazards (if unavoidable, make sure to identify for volunteers).

Choose a Date

- If on campus, select a day during the school week or if in the community, select a day during the weekend to ensure the greatest number of volunteers.

Remember:

- Check with school administration to ensure the date is available and can be reserved, if the event is on campus. If held in the community, check with local residents or businesses to ensure minimal impact.
- Avoid local holidays or religious observances.
- Check the school calendar or local community to see if there are other events that the cleanup might coincide with (cleanups are great opening and closing activities for related community events or celebrations).

Choose a Time

- Select a time of day appropriate to seasonal weather conditions (warm weather cleanups should be held in the morning to avoid midday heat).

Remember:

- Plan to have volunteers cleaning for two to three hours.
- Plan for a total commitment of four to five hours, which includes an hour for set-up and an hour for breakdown.



Get Permission

- If cleaning on campus, make sure you have permission from the principal and plant manager. If cleaning in the community, check in with local residents and businesses to minimize impact. Remember:
 - Check with school administration about whether safety waivers for volunteers are required, if on campus.



Secure Supplies

- A variety of materials will need to be secured for use during the event. See Supply Checklist on page 24 for full list of supplies needed. Consider:
 - Several large tables are needed, for staging cleanup supplies and any event materials.
 - At a minimum, trash bags and protective gloves are required for the cleanup. Brooms, rakes, shovels, wheelbarrows and other cleaning supplies may be needed depending on the area and trash to be removed.
 - Garbage and recycling collection bins will need to be available. The size and amount of trash to be collected will help determine the size and number of bins needed. If necessary, consider renting or getting a large dumpster sponsored for use by the school or local council member's office.
 - Reusable items, such as buckets for trash and garden gloves, are encouraged to minimize additional waste.
 - Clean-up volunteers will need water, snacks, sunscreen and a shade tent.
 - Giveaway items for a volunteer raffle at the end of the cleanup is a nice way to reward and encourage participation throughout the event.



Determine Number of Volunteers Needed

- Consider:
 - Small clean-up areas, such as lunch eating areas or small alleys, can support up to 10–20 volunteers; while large areas, such as campus fields or several streets within the community, can support 100 or more.
 - More helping hands to remove trash can support community building and stewardship, but too many volunteers can overcrowd a small area.

Cleanup Timeline

It takes approximately two months to plan and execute a campus or community cleanup event.

Two Months Before the Event

- ☐ Identify and secure a location for the cleanup.
 - Evaluate the desired site so cleanup needs can be supported. This includes a space for volunteer check-in, a staging area for supplies and an area for trash collected during cleanup.
- ☐ Prepare a cleanup event plan for the event day including time (event set-up through take down), location and desired participants.
 - Use the details determined in the Cleanup Event Checklist.
- ☐ Present the cleanup event plan to key stakeholders (e.g. principal, plant manager, local residents and businesses) to obtain permission.
 - This includes volunteer safety waivers.
- ☐ Create a promotion plan (see page 22).
 - Be sure to designate the Cleanup Event Manager (see page 23) for any questions or concerns regarding the event.

A Month Before the Event

- ☐ Begin the Promotion Plan.
 - Make, distribute, post flyers, ads, etc.
- ☐ Begin to arrange and gather the needed supplies (see Supply list on page 24).
 - To remove large amounts of trash, arrange to have a large dumpster for the event.
 - Seek out donations or sponsorships for the dumpster from school or local Council office.
- ☐ Confirm that there are no campus or community calendar conflicts. Check for any potential opportunities for collaboration.
- ☐ Create information sheets and talking points to share with participants about stormwater pollution prevention (see page 25).
- ☐ Distribute and collect any necessary volunteer waivers and photo release forms.

Two Weeks Before the Event

- Continue Promotion Plan.
 - Begin in-person outreach.
- Continue to gather supplies.
- Assign team roles for event day (see Cleanup Event Team, page 23).
- Solicit other student groups or local community organizations to have an outreach booth at the event.
- Verify clean-up site layout with key stakeholders, including: parking, staging area, trash collection bins and any potential site hazards (see page 24).

Create A Larger Event

A cleanup event is a great opportunity to share the work of others. It also grows participation.

Invite the following to have an outreach table:

- Local non-profits and community organizations
- Neighboring schools
- Youth clubs or organizations
- Campus clubs

A Week Before the Event

- Confirm space and access with key stakeholders.
 - Verify nearby restrooms for volunteer use.
- Arrange a place for volunteers to store their personal items during the event.
- Arrange for water and snacks for volunteers.
- Confirm cleanup team roles and team members to support them.
- Go over last minute preparation and tasks for Event Day Management (see page 25).
- Continue promotion.
- Ensure all necessary volunteer forms are received.

A Day Before the Event

- Store supplies near cleanup site for quick setup on event day.
- Pick up water and refreshments.

Event Day!

- Have fun and be safe!
- Take pictures.

After the Event

- Return any unused or reusable supplies (see page 25).
- Thank all organizations and stakeholders involved.
- Complete an evaluation (see page 26).



PROMOTION PLAN

Create a promotion plan for reaching the largest audience possible for the cleanup event.

Consider:

Who do you want to reach in the community?

- Who is your audience?
- Will some materials need to be in another language?

What do you want to communicate?

- The reasons for the cleanup.
- Date, time and location.
- Free for all participants.
- Details for involvement.
- Items for volunteers to wear/bring (closed-toe shoes, clothes that can get dirty, reusable water bottle, sunscreen, etc.).
- Any additional activities happening or organizations attending.
- Phone number or email for more information.

How do you want to communicate?

- Create and send ads
 - School PTA newsletter
 - Local newspapers
 - Radio stations
- Create and distribute fliers
 - Community centers
 - Local businesses
- Social media
 - Online blogs
 - Facebook Event
 - Neighborhood websites
 - Tweets
 - Instagram
- Word of Mouth
 - Door Knocking
 - Classroom Announcements

Posters

- Create posters that are appealing to your audience.
- Present information in a way that it is easily understandable.
- Include important information such as: who, what, when, where and why.
- Make sure the title and subheadings can be noticed from a distance and are eye-catching.
- Include appropriate graphics and photos.

CLEANUP TEAM

Team members or assigned volunteers will be needed to support the various roles below.

Cleanup Event Manager

- Oversees the set-up and event needs of the various stations.
- Serves as the point person for any issues or questions that arise during the cleanup, including event partners, safety concerns.

Volunteer Greeter

- Signs-in volunteers.
- Directs volunteers to the Safety and Cleanup Instruction Station.

Volunteer Coordinator

- Provides instruction on where and how to clean and any safety hazards to avoid.
- Signs-in volunteers and has waivers completed if necessary.
- Directs volunteers to the Cleanup Supplies Station.

Supplies Coordinator

- Manages and distributes supplies to volunteers.

Collection Coordinator

- Manages the trash that is brought by the volunteers.
- Manages the sorting of any recyclable materials and bagging for recycling.



EVENT SET-UP

Use the list below to plan out the locations for each Cleanup Event station and how they will be managed.

Volunteer Check-In and Staging Station

- Located in front of the event area with space for volunteers to gather.
- Run by the assigned Volunteer Greeter with support of one or two team members.
- Serves as volunteer sign-in, refreshment/break area, first aid and for any questions.

Safety and Cleanup Instructions Station

- Located outside the cleanup area.
- Run by the assigned Volunteer Coordinator with support of one or two team members.
- Serves to verify that volunteers have signed in and collect necessary signed waiver forms, provide directions on what and where to clean and any hazards to avoid.

Cleanup Supplies Station

- Located next to the Safety and Cleanup Instructions Station.
- Run by the assigned Supplies Coordinator with support of one or two team members.
- Serves as supply management and distribution.
 - Any reusable materials should be separated and set up to be easily accessed and distributed.
 - Cleanup volunteers will return any unused supplies or reusable items here.

Trash Collection and Recyclables Sorting Station

- Located in the area designated by clean-up stakeholders.
- Run by the Collection Coordinator with support of one or two team members.
- Serves as the area to place the trash dumpster, Sharps Station for any sharp items found and recyclable materials.

Supplies

Volunteer Check-in

- Shade tent (if available)
- 3 to 4 large tables (3'x6")
- Sign-in sheets
- Pens/pencils
- Name tags
- Blank safety waivers
- Hand-sanitizer
- First-aid kit
- Refreshments/snacks/water

Cleanup Instructions Station

- Safety guidelines (see Resources page 27)

Cleanup Supplies Station

- Large, thick garbage bags (50+)
- Protective latex and work gloves
- Face masks
- Medium-sized buckets for trash collection (50+)

Trash Collection Area

- Signs for where trash is to be left
- Large dumpster (if needed)
- Sharps container or sturdy plastic jug

Recyclables Sorting Station

- Large tarp for sorting trash
- Signs showing where recyclable materials can be placed for separate bagging
- Clear bags for recycling collection (25+)

EVENT DAY MANAGEMENT

BEFORE

- The Cleanup Team should arrive at least one hour before the event.
- Verify any concerns regarding access and potential safety issues.
- Review assigned responsibilities.
- Set up the various stations.

DURING

- Be sure to include in the volunteer briefing the location of the various stations, available restrooms, if recyclable items are to be separated and the cleanup end time.
- The Volunteer Coordinator should ensure that volunteers take breaks.
- Plan to keep count of how many participants come to the cleanup.
 - Use a sign-in sheet or assign an additional volunteer at the Check-In Station to count the number of volunteers entering.
- If there are any safety issues that occur during the event, have the Cleanup Event Manager address the situation and contact the necessary officials.
 - Write down the person(s) involved, time, location of the incident and a brief summary of what happened for reference.
- If there are any concerns that arise regarding access to various spaces or volunteer activities, direct any interested individuals or questions to the Cleanup Manager.

AFTER

- Remove any additional trash from the event and place in the Trash Collection Station area.
- Put away any supplies brought to event (tables, tent, clean-up supplies, etc.)
- Take any leftover refreshments home or donate to a local food shelter.
- Thank the volunteers, location partners and any other groups participating.

Community Awareness

Share what you have learned about stormwater pollution prevention with the community.

- Use the Community Water Tour Project Guide to create an awareness tour in the neighborhood.
- Create information sheets to pass out to volunteers.
- Create talking points for the team to use when sharing information with volunteers.
- Use the Check This Out information as a resource (pages 5 through 9).

EVALUATION

Once students have completed their campus/community cleanup event, have them answer the following questions to evaluate their project and introduce some possible next steps.

QUESTIONS

1. What was the most successful part of the project?
2. What was the least successful?
3. What would you do differently next time?
4. What can be done to prevent further trash accumulation?
5. Were you glad you participated in this project? Are you willing to participate in future similar projects?

What's Next?

Another Project Toolkit

Are you interested in another project? Consider:

- Waste Reduction and Recycling Project Toolkit
- Community Water Tour Project Guide

RESOURCES

VOLUNTEER SAFETY GUIDELINES

- Stay in the designated clean-up area.
- Take breaks.
- Wear gloves when handling any trash. Gloves are located at the Clean-up Supplies Station.
- Drink plenty of water. Water is located at the Volunteer Check-In Station.
- Use sunscreen.
- A first aid kit is located at the Volunteer Check-In Station.

ADDRESSING TRASH AT ITS SOURCE

For the Waste Reduction and Recycling Project Toolkit, contact your Generation Earth Facilitator for more information.

PLANT MAINTENANCE ALTERNATIVES

- Integrated Pest Management Policy for LAUSD
laschools.org/employee/mo/ipm/docs/ipmpolicyretype.pdf
- Statewide Integrated Pest Management Program
ipm.ucanr.edu/
University of California, Agriculture and Natural Resources
- Beyond Pesticides
Alternatives to Using Pesticides in Schools
beyondpesticides.org/programs/children-and-schools/alternatives-at-schools

TO LEARN MORE ABOUT THE COUNTY'S STORMWATER PROGRAMS

- pw.lacounty
- CleanLA.com

STORMDRAIN STENCILING

For information on storm drain pollution or storm drain stenciling, contact Heal the Bay.
healthebay.org

BEACH AND RIVER CLEANUPS

- **Los Angeles County Beaches: Heal the Bay**
healthebay.org/take-part/
 - **Nothin' But Sand**
Third Saturdays of the month (except December) 10am – Noon
Various Beaches, see calendar
 - **Adopt a Beach**
Support for large group beach cleanup (must commit to three cleanups within a year)
Submit request online using form
 - **Coastal Cleanup Day**
Third Saturday in September
Locations throughout County
healthebay.org/events/
- **Los Angeles River: Friends of the Los Angeles River**
folar.org/cleanup/
 - **La Gran Limpieza / The Great LA River Cleanup**
Three weekends during April and May
Multiple locations down entire length of river

REFERENCES

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4. dpw.lacounty.gov/LACFCD/web/
5. focus.senate.ca.gov/sites/focus.senate.ca.gov/files/climate/SB_778_Fact_Sheet.pdf
6. epa.gov/nps/basic-information-about-nonpoint-source-nps-pollution
7. waterandpower.org/museum/Water_in_Early_Los_Angeles.html
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NEXT GENERATION SCIENCE STANDARDS SKILLS

SCIENCE AND ENGINEERING PRACTICES

ASKING QUESTIONS AND DEFINING PROBLEMS

Check This Out (Pg. 4)

In Check This Out activity, students are able to identify problems in their community and use valuable information to design solutions to these issues.

Water Audit (Pg. 10)

By conducting a water audit, students are able to define the problems on their campus by interviewing Facilities/Plant Managers and questioning the direction water takes in order to identify any areas of concern.

Choose a Project (Pg. 13)

Students work as a group to ask specific questions intended to determine what they need to achieve success.

DEVELOPING AND USING MODELS

Check This Out (Pg. 4)

With the Check This Out activity, students are able to develop infographics as tools for representing water pollution issues and their solutions.

Water Audit (Pg. 10)

By creating a map of the site, students are able to construct and use models as helpful tools for presenting their ideas and explanations, which will serve as diagrams in planning their investigations.

PLANNING AND CARRYING OUT INVESTIGATIONS

Water Audit (Pg. 10)

In the process of creating a map of the site, students are able to investigate the layout of their landscape, systematically collecting data about the feasibility of their project by identifying the variables that may impact its success, as well as the parameters they have to work within.

Project Selection (Pg. 14)

In order to determine which project would best serve the site, students carry out investigations by collecting data about their surroundings which will inform the decision of which project to carry out.

ANALYZING AND INTERPRETING DATA

Choose A Project (Pg. 13)

In order to determine which project would best serve the site, students are able to analyze and interpret critical data collected about their site during their Water Audit by utilizing a range of tools and experiments to determine water flow patterns, relationships between drains and storm drain systems and the toxicity levels of fertilizers or other chemicals being used for maintenance.

Evaluation (Pg. 26)

As they reflect upon and examine the project upon its completion, students are able to analyze why the project was successful or unsuccessful and interpret that data in order to devise plans for how to either improve efforts moving forward or support the project's continued success.

USING MATHEMATICS AND COMPUTATIONAL THINKING

Water Audit (Pg. 10)

By assessing the physical layout of their site, students are able to utilize mathematics and computational thinking by designing a map that shows the physical scale of and quantitative relationship between various components essential to their project's success.

CONSTRUCTING EXPLANATIONS AND DESIGNING SOLUTIONS

Choose a Project (Pg. 13)

Based on the phenomena they have observed and the data they have collected and analyzed, students are able to form explanations and conclusions about what project they should carry out and design a plan for how to engineer and implement the solutions to the problems that informed their project choice.

Evaluation (Pg. 26)

As they reflect upon and examine the project upon its completion, students evaluate what was successful and unsuccessful about their efforts and construct theories and explanations as to why, prompting them to devise future solutions.

ENGAGING IN ARGUMENT FROM EVIDENCE

Toolkit Process (all pages)

By engaging in all of the processes detailed above, students are able to critically argue why they have designed their specific plan and defend its validity based on the evidence they have produced.

OBTAINING, EVALUATING, AND COMMUNICATING INFORMATION

Campus Community Cleanup Event (Pg. 16)

In the process of carrying out all the steps of a Campus Community Cleanup Event, including cleanup preparations, timeline creation, plan promotion, team formation, event day set-up and management and post-event evaluation, students are able to critique and communicate their ideas individually and in groups and persuade key constituents as to the merit of their plan, including such individuals as Generation Earth mentors, teachers, fellow students, community members, school administrators, district personnel, Complex Project Managers and media using solid evidence.

Cross Cutting Concepts

- Patterns
- Cause and Effect
- Scale, proportion and quantity
- Systems and system models
- Energy and matter
- Structure and function
- Stability and change

