



GREEN SCHOOLS

An environmental education program of Art From Scrap

Environmental Service Learning Project **Flows to the Ocean: Storm Water Quality Project**

Background: Nearly all storm drains lead to the ocean. Litter dropped on school grounds, neighborhood streets and parks will be washed into storm drains and eventually end up in the ocean. About 80% of the debris found in the ocean comes from land-based sources that are washed into the ocean via storm drains or from litter on beaches. Of this land-based litter, 60% to 80% are plastics. Because plastics do not decompose in the environment, plastic debris in the ocean accumulates year after year, causing ever increasing harm to marine life. Sea life and birds get entangled in plastic debris. They also ingest small plastic pieces, floating on the ocean's surface and mixed into the water column. A study by the Algalita Marine Research Foundation found that the mass of plastic pieces in the North Pacific Central Gyre of the Pacific Ocean was six times greater than the zooplankton floating on the surface. In Southern California waters the mass of plastic pieces is two and a half times greater than the zooplankton floating on the surface.

Conducting a Campus or Neighborhood Litter Clean-up will help your class track litter back to its source. Students can then design, research, and implement solutions to eliminate or reduce human behaviors that cause littering. The information your class collects and the solutions they implement will be included in the Santa Barbara County's Storm Water Management Plan.

Examples of action plans your class might propose include:

- A. Place more recycling and trash containers (clearly labeled in English and Spanish) at strategic places around campus.**
- B. Conduct a school-wide campaign directed at students to be more responsible about picking up their trash.**
- C. Conduct a school-wide campaign directed at students to pack lunches in reusable containers instead of disposable ones.**
- D. Create signs in English and Spanish, directed at weekend and after-school users of the school site, to dispose of litter in recycling and trash containers and to pick up cigarette butts.**
- E. Show the DVD "Our Synthetic Seas" to classes, the PTA, and community groups.**

- F. Write articles in school and community newspapers to raise awareness of plastics washing into the ocean via storm drains.**

Project Directions:

- 1. Watch the nine minute version of “Our Synthetic Seas DVD”.**
- 2. Locate the storm drains on and around your school campus.**
- 3. Research which creeks and beaches the storm drains in and around your school drain to.**
- 4. Conduct a campus or neighborhood litter clean-up.** *(If more than one class at a school is conducting this project, divide areas of the campus up by class. E.g. One class focuses on the lunch area, one class focuses on the field, and one class focuses on the areas between classroom wings.)*
- 5. Sort collected litter and record the amounts of various items** using the Litter Clean-up Data Sheet. Chart the information on the Litter Clean-up Chart.

Steps 1-5 are included in the Creek Kids Series.

- 6. Conduct multiple clean-ups of the same area.** Fill out a new Litter Clean-up Data Sheet and Litter Clean-up Chart for each clean-up. *(Set up the clean-ups to control for variables. This would include conducting the clean-ups on the same day of the week, at approximately the same time of day and giving approximately the same number of students the same amount of time to conduct each clean-up. It would be best to conduct three or more clean-ups to gather data before forming a hypothesis about where the litter is coming from and what might be done to stop it.)*
- 7. Form student teams to address each major category of litter found.** *(Young students may choose to focus on one major litter item for the whole class.)*
- 8. Form hypotheses about the sources of litter and an action plan to address changing human behaviors to reduce or eliminate the sources of litter.**
- 9. After implementing action plans conduct subsequent litter clean-ups** *(at least two)* to measure the effectiveness of your action plan. Use the Litter

Clean-up Graph to analyze how effective the action plans were in reducing or eliminating litter. Make changes to increase the effectiveness of your plan.

- 10. Document your project and each team's action plan** using the Green Schools Environmental Service Learning Project Portfolio which can be downloaded from the Environmental Education: Service Learning section of our website at www.ArtFromScrap.org Turn in completed portfolios to the AFS Green Schools Director. *(Students and classes who complete projects and the accompanying portfolios will be honored at the Student Environmentalist Awards Ceremony at Santa Barbara Earth Day Festival in April of 2007.)*

- 11. The County of Santa Barbara has requested schools pass on the information they collected to be included in the County's Storm Water Management Plan.** Copies of all Litter Clean-up Data Sheets, Charts, and Graphs should be included in your project portfolios and will be passed on to county officials.

- 12. Share what you learned by disseminating information to your peers and community.** *(This could include informing others of: the danger of plastics in the ocean; how plastics get into the ocean; data from your research, and things people can do to keep litter out of the ocean. This sharing can occur in the form of a presentation, a news article, a video or DVD, a public service announcement, posters, signage etc. Other classes, the PTA, the School District, community groups, and media outlets are good venues for disseminating information.)*

Additional actions you may want to take include using water quality test kits *(available through AFS Green Schools)* to test creek water.

Contact: Tahara Ezrahti, Green Schools Education Director at (805) 884-0459 x12 or enviroed@artfromscrap.org for more information.



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Litter Clean-up Data Sheet

School: _____

Teacher: _____ Grade: _____

Location of clean-up: _____

Zone or area cleaned: _____

Date: _____ Day of the week: _____ Time of day: _____

Number of students: _____ Amount of time for clean-up: _____

Number of bags of litter collected? _____ Estimate the weight of the litter _____

Directions:

Record information on the items listed below.

Keep a count of your items using tick marks and enter the item total in the box:

Example:

23	Cigarette Butts <i>lll lll lll lll ll</i>
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TOTAL

	Cigarette Butts
	Plastic Film (bags, wrappers.)
	Styrofoam
	Hard Plastic
	Metal
	Glass
	Paper Products
	Other

	Can Be Recycled
	Can Not Be Recycled

	Will Decompose
	Will Not Decompose

	Durable Items
	Disposable Items



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Campus Litter Clean-up Chart

School: _____

Teacher: _____ Grade: _____

Zone or area cleaned: _____

Clean-up # _____ Date: _____ Day: _____ Time: _____

Directions:

Use the following chart to record data collected during your campus litter clean up.

Item	Total Number Collected	% of Total Items of Litter	Yes - Likely to Become Marine Debris	No - Not Likely to Become Marine Debris
Cigarette Butts				
Plastic Film				
Styrofoam				
Hard Plastic				
Metal				
Glass				
Paper product				
Other				
TOTAL ITEMS				



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Campus Litter Clean-up Graph

School: _____ Teacher: _____

Directions:

Use the information from each clean-up chart to complete the graph.

Use a different color for each category of litter collected. **see below for colors

Draw a vertical line after the date of the initial cleanups to show the change made after your action plans were conducted.

Calculate the % of change for each category from the highest to lowest point.

Cleanup Date									
# Items									
50									
48									
46									
44									
42									
40									
38									
36									
34									
32									
30									
28									
26									
24									
22									
20									
18									
16									
14									
12									
10									
8									
6									
4									
2									
0									

**Cigarette butts: Blue; Plastic film: Yellow; Styrofoam: Green; Hard plastic: Red; Metal: Orange; Glass: Purple; Paper products: Pink; Other: Black