Please go near the water
a marine field trip manual
by Sue Jackson
and Harry Reese
PLEASE GO NEAR THE WATER

A Marine Field Trip Manual

Sue Jackson
Harry Reese

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INTRODUCTION

Too often, teachers view the field trip as a means of escaping from the four walls of the classroom. While the isolated trip has its merits, we have found that a series of field experiences directly related to classroom learning is far more effective.

This manual has been prepared to assist teachers in utilizing the waterfront as a classroom. It relates specifically to New York City, but it could easily be adapted to study most urban waterfronts. It has been designed to be used in conjunction with the interdisciplinary curriculum guide, New York City Waterfront, and its accompanying audio-visual package.

Each trip reinforces concepts studied in the classroom, transposing theories into the context of the natural world. Rather than be relegated to the role of spectator, the student will be involved in sensory experiences and discovery learning. The teacher is provided with background information where pertinent, suggested pre-trip and post-trip activities, sample worksheets for the day of the trip, and information on trip mechanics1.

1 Reservation procedures, admission, transportation, etc.
In our experience, a trip is most effective when there is a variety of activities to cover many learning modalities and provide for students with short attention spans.

There are three ways the teacher can use this manual. He can elect to have the entire class work on one or more activities; he can divide the class into groups, each of which will work on each activity but at different times; or he can divide the class into groups, each of which will concentrate on one activity and have the groups share results and pool their knowledge once back in the classroom. We prefer the two latter methods, but obviously they require more adult supervision for maximum effectiveness.

We are firmly committed to on-site learning; in our experience it has been the most effective, rewarding teaching method. It is almost an imperative in urban education. It has been documented that many students with low vocabulary and reading test scores are suffering from a lack of experience. The reading process requires a student to associate a written symbol to a word or concept that is part of his oral vocabulary. Obviously if he has not been exposed to a variety of experiences, he has no background to bring to the reading process.

In 1973, of the classes on which we tested our initial waterfront curriculum, the average increase in reading level on the Metropolitan Reading Test was 2.0 years in 6 months. These classes were so-called
"disadvantaged" 6th grade students whose reading levels ranged from 1.0 to 8.0, but averaged from two to three years below grade level.

While it was gratifying to see this tangible result of our program, our true reward was seeing the look of pride on the face of the child who held his first horseshoe crab, or the grim determination of the child scrawling an angry letter to a company documenting evidence of industrial waste pollution he has himself collected.

We are confident you will not only have success with these field experiences, but you will enjoy teaching this curriculum material.

PLEASE GO NEAR THE WATER!
THERE ARE FOUR GOLDEN RULES FOR A SUCCESSFUL FIELD TRIP:

PLAN AHEAD

Motivate students prior to every trip. Tell them what to expect and what to look for.

Map out transportation, timing, chaperone coverage, regulations and procedures well in advance. If an activity involving special equipment or clothing is planned, make sure the students understand what to wear or bring in the way of equipment.
USE DISCOVERY
ACTIVITY-ORIENTED
APPROACH

The more actively involved the students, the more successful the trip!
Use study guides and worksheets for museums. Walking on a beach is
fun; seining is fantastic! Sample activities include seining and collecting,
taking pictures, interviewing on a tape recorder, filling out prepared
questionnaires and worksheets, and testing water for dissolved oxygen
and other qualities.
TAKE SMALL GROUPS

A workable ratio of pupils to teacher is from eight to twelve pupils per teacher. If you must take a large group, make sure you have extra adults (parents, aides, etc.) with you and try to break into smaller groups for specific activities.
ALWAYS FOLLOW-UP ON TRIP ACTIVITIES

If you have collected several unusual shells, set up a display for the school library -- or better yet, have the students go into a lower grade classroom with the shell collection and share their new knowledge. If you have brought marine samples back to school, set up a local marine habitat or study them with hand lenses and a microscope. If you have recorded evidence of industrial pollution on a worksheet during a boat trip, use that information to write a letter to that company or to one of the policing city agencies. Encourage teachers from other disciplines to develop related enrichment projects.
KEY

$ There is an admission fee

R # days Reservations must be made # days in advance

#P/#A Suggested pupil-adult ratio

G # # is the maximum size group allowed

Trip site is near bus service

Trip site is near subway

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SUGGESTED MATERIALS

Note to Teacher: Following is a brief list of materials that you will find necessary to successfully complete many of the activities in this Field Trip Manual. Some of these materials can be devised from household paraphernalia; others will have to be purchased.

- Water Testing Kits
- Seining Nets or Plankton Nets
- Soil Sampler
- Strainers
- Hand Lenses
- Microscope and Blank Slides
- Field Guides
- Plastic Containers
- Rope
- Thermometers
- Metric Tape
- Water Sampling Jar
- Labels or Masking Tape
- Cassette Tape Recorder & Tape
- Cameras, Film
- Shovels
- Compasses
- Field Glasses
CIRCLE LINE BOAT TRIP

Boat leaves from Pier 83, 42nd Street and Hudson River, Manhattan

Transportation: Take 42nd Street crosstown bus; all subways have a stop on 42nd Street; Pier is approximately a 15 minute walk from Eighth Avenue or Times Square stations; or take M16 or M106 bus to last stop on Hudson River.

Background:

The Circle Line Tour Boat encircles Manhattan in three hours. It is an excellent introductory trip for three reasons: first, it provides a boating experience; second, it shows students that New York is an island city; third, it provides a preliminary glimpse of all five boroughs. The wise teacher will instruct the students to bring bag lunches to ensure that students spend adequate time on worksheet activities, not on line at the snack bar.

Goal:

To "tune in" all the senses to experience the New York City waterfront.

Pre-trip Activities:

1. Using a large wall map, orient students to the five boroughs of New York. Trace the route followed by the Circle Line tour boat. Discuss some of the important sites and points of interest, e.g. South Street complex, bridges and tunnels, Roberto Clemente State Park (only state park in New York City), Spuyten Duyvil (man-made ship canal), Columbia University crew basin, Cloisters, North River Pollution Control Plant, Palisades, and 79th Street Boat Basin.

2. Show how multiple observations of a single object, event, or place will not only differ but rarely give complete information. Choose an object that will stimulate various sensory responses (sight, smell, taste, etc.), e.g. fruit bowl. Have students describe the object in written form. Choose several paragraphs and read them aloud. Choose an example
that is visually-oriented, one that is olfactory, etc. A few might even combine the senses. Discuss the merits of each description. Show how a multi-sensory description is superior.

**Trip Activities:**

Divide the students into five groups: the Eyes, the Ears, the Noses, the Mouths, and the Fingers. Give each group a worksheet that highlights a particular sense. (Hint: Assign the more creative students to the Mouths and the Fingers groups.) All worksheets will include a blank map of New York City to locate and label impressions and observations. The Eyes should take at least one camera; the Ears should take a tape recorder. Take a collecting jar, tie a string on it, and obtain and test a small sample of the Hudson River at Pier 83. Using the water testing observation worksheet, record test results. (See Pelham Bay trip water testing worksheet.)

**Post-trip Activities:**

1. Prepare a multi-sensory display on the New York City waterfront. Use pictures, tape recordings, poems, sketches, objects, and descriptive paragraphs.

2. Prepare a chart on the blackboard or wall to record all sensory observations. Discuss which senses seem to predominate.
WORKSHEET #1

The Eyes

Imagine you are deaf. You have no sense of smell or taste. You have gloves on your hands and cannot feel textures or shapes. You must rely solely on your eyes to describe the New York City waterfront. Locate and label on the map provided any places, buildings, or objects that strike you as being representative of the waterfront, e.g. World Trade Twin Towers, George Washington Bridge, ferry dock, children playing in Carl Schurz Park. It might help if one of you watched out for bridges and tunnel towers, one for buildings, one for parks, etc. Take pictures of all important observations.

Examine the sample of water you collected. Does it have any color? Does it look clear? Does it look clean? Does the water near the shoreline look any different from the water in midstream? If so, how? Do you see any fish in the water? Do you see any objects? Describe.
WORKSHEET #2

The Ears

Imagine you are blind. You have no sense of taste or smell. You have gloves on your hands and cannot feel textures or shapes. You must rely solely on your ears to describe the New York City waterfront. Locate and label on the map provided any places, buildings, or objects that strike you as being representative of the New York City waterfront, e.g. the slap of waves on a pier, a helicopter landing at the heliport, the creak of a ferry slip as the boat docks. Tape record all important observations.

Listen to the sounds of the water. What sounds do you hear on the pier? in midstream?
WORKSHEET #3

The Noses

Imagine you are blind and deaf. You have no sense of taste. You are wearing gloves and cannot feel textures or shapes. You must rely solely on your noses to describe the New York City waterfront. Locate and label on the map provided any places, buildings, or objects that strike you as being representative of the waterfront, e.g. dead fish, factory waste, etc.

Examine the sample of water you collected. Does it have an odor? Does the water at midstream have an odor? Which has the strongest odor? Why?
WORKSHEET #4

The Mouths

Imagine you are blind and deaf. You have no sense of smell. You are wearing gloves and cannot feel textures and shapes. You must rely solely on your mouths to describe the New York City waterfront. Locate and label on the map provided any places, buildings, or objects that strike you as being representative of the waterfront, e.g. Fulton Fish market, salt air of harbor, etc.

Examine the sample of water you collected. What do you think it would taste like? Do you think the water in Lower New York Bay would taste the same as the water in the Harlem River? Why (not)? Why must you use your imagination on this experiment rather than actually tasting the water?
WORKSHEET #5

The Fingers

Imagine you are blind and deaf. You have no sense of smell or taste. You must rely solely on your fingers to describe the New York City waterfront. Locate and label on the map provided all places, buildings, or objects that strike you as being representative of the waterfront, e.g. damp rope, splintering pier, smooth rocks along shoreline, etc.

Examine the sample of water you collected. How does it feel? Imagine you fell overboard. Is it cold or warm? Is it the same temperature on the surface as below? Why (not)? Is it clear or murky?
HUDSON RIVER DAY LINE CRUISE

Boat leaves from Pier 81, 42nd Street and Hudson River, Manhattan

$; R well in advance; 15P/1A; G60; 1P

Transportation: Take 42nd Street cross-town bus; all subways have a stop on 42nd Street; Pier is approximately a 15-minute walk from Eighth Avenue or Times Square stations.

Background:

The Hudson River Day Liner travels up the Hudson River to Poughkeepsie and back, stopping at West Point and Bear Mountain. The trip takes 6 hours. Teachers can elect to stop at West Point or Bear Mountain or stay on the boat to Poughkeepsie. Optional guides are presented for Bear Mountain and West Point.

Goals:

1. To appreciate the beauty of the Hudson River Valley.

2. To examine the uses and abuses of the Hudson River Valley waterfront land.

3. To study the types of bridges that span the river.

(Optional)

4. To visit an historic landmark of the Revolution (Bear Mountain, West Point).

Pre-trip Activities:

1. Trace the Hudson River from its source at Lake Tear of the Clouds near the summit of Mount Marcy to the Atlantic Ocean at the New York Harbor. Use large wall map.

2. Discuss the role of the Hudson River in the growth of the New York port. Explain how the river provided easy access to the interior states, thus making New York City a strategic trading and distributing center.
3. Study the land usage map of the Hudson and Harlem Rivers that follows this lesson. Discuss importance of clear legend or key. Decide on legend for trip activity map.

4. Study the four main types of bridges in an encyclopedia or book on bridges: arch, suspension, cantilever, and truss or girder.

Trip Activities:

1. Using map worksheet provided, have students label the map to show waterfront usage.

2. Have students study the bridges that span the river.

3. Using worksheet provided, have students write a ship's log entry.

4. Have students read Algonquin legend. See worksheet.

Post-trip Activities:

1. Have students transfer information from map worksheets onto large wall-size map to show waterfront usage. Use color-coding system (red = industrial, blue = transportation, etc.).

2. Combine information from bridges worksheets onto large wall chart.

3. Have students read log entries aloud and constructively criticize classmates' work. Allow time for editing and re-writing. Take final drafts and make a class journal of the Hudson River trip.
WORKSHEET #1

Label the map using the key below. Indicate how the waterfront land is being used.

<table>
<thead>
<tr>
<th>Key</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>industrial</td>
</tr>
<tr>
<td>T</td>
<td>transportation</td>
</tr>
<tr>
<td>R</td>
<td>recreation</td>
</tr>
<tr>
<td>U</td>
<td>undeveloped</td>
</tr>
<tr>
<td>(railroad, highway)</td>
<td></td>
</tr>
<tr>
<td>(park, marina, beach)</td>
<td></td>
</tr>
</tbody>
</table>
BRIDGES

There are four main types of bridges you have learned about: arch, suspension, cantilever, and truss or girder. Try to identify the type of bridges the boat travels under. Draw a picture of each bridge and name it if you can.

<table>
<thead>
<tr>
<th>Picture</th>
<th>Name</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
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</tbody>
</table>
WORKSHEET #3

JOURNAL

Imagine you are an explorer from another Galaxy sent to report on the Hudson River Valley. You are to describe the "natives" you see on the shore and tell about their lifestyle from the buildings you see. You must also describe the natural resources.

Date: _____________________________
WORKSHEET #4

Read the Algonquin legend below and then do the exercises.

Once there was a river that went to hear a fountain sing. And the song was so beautiful that the river decided to sing it to the ocean. All the way to the shores of the ocean the river sang. Soon, the mountains heard of the song that the river was singing and came from all over the land to listen. And because the song was so beautiful the mountains settled down and stayed to listen forever.

1. What do you think is the river in this legend? the ocean?

2. What geographic facts does this legend illustrate?

3. Write your own legend to account for the birth of the Hudson River.
OPTION A:

BEAR MOUNTAIN TRIP

Background:

Teachers can elect to disembark at Bear Mountain instead of going all the way to Poughkeepsie. The Bear Mountain Historical Museum is on the site of historic Fort Clinton. It contains exhibits of the two forts (Clinton and Montgomery) that were major strong points in the American defense of the Hudson River during the American Revolution.

Optional Trip Activities:

In addition to the activities suggested in the main part of the lesson, have students tour the museum and then answer the following questions:

1. Look at the map. Why do you think Forts Clinton and Montgomery were located on the site that is now Bear Mountain State Park?

2. What kind of uniforms did the American soldiers wear?

3. What is a "redoubt"?

4. There has been intensive archaeological work on the site of Fort Montgomery in the past decade. Why do you think this is so?

5. What is the name of the British general who took these forts?

6. On what date did these forts fall into British hands?
OPTION B:

WEST POINT TRIP

Background:

Teachers can elect to disembark at West Point instead of going all the way to Poughkeepsie. The United States Military Academy is located here. It is a site rich in Revolutionary history. George Washington called this site "the key to America" and ordered fortifications to be built here in 1778 to seal off the Hudson Valley from the British. The infamous traitor, Benedict Arnold, commanded these fortifications in 1780 until Major John Andre, his contact with the British, was captured and his dealings with the British were discovered. He then fled by boat and joined the British army.

West Point has one of the finest military museums in the country; its collections date back to the Revolution. The remains of Forts Putnam and Clinton can be viewed, but are presently undergoing archeological work.

Optional Trip Activities:

In addition to the activities suggested in the main part of the lesson, have students visit the West Point museum and grounds and then answer the following questions:

1. Why do you think Forts Putnam and Clinton were located here?

2. Why do you think Washington called West Point "the key to America"?

3. Why do you think there is archeological work being done on the two fort sites?

4. Who was the commander of the West Point fortification who later became a British officer?

5. Which of the museum exhibits impressed you most? Why? Least? Why?

6. The army of today is far more sophisticated than the 18th century troops that fought in the Revolution. Compare the two armies in terms of uniform, equipment, size, and philosophy.
7. Would you like to go to the Military Academy at West Point? Why (not)?

8. There is a large Hudson River chain on display on the West Point grounds. Examine it. What do you think it was used for? Could it be used today?
STATEN ISLAND FERRY

South Ferry, Manhattan

$; 15P/1A; 60; ☐

Take IRT #2 to South Ferry.

Background:

New York is an island city; thus, water transportation dominated intra-city transportation until the construction of railroads, bridges and tunnels fifty years ago, and the advent of trucking. Intra-city waterborne transportation (we are speaking here of intra-city passenger transportation, not ocean liners or freight vessels) is presently limited to ferries and tour boats, although hydrofoil and hovercraft projects have been explored in recent years.

Ferries were the only means of inter-island transportation for three centuries. The oldest ferry ran between Fulton Street in Brooklyn and Peck Slip in Manhattan. It began its run in 1642. It received its locomotion from horses hitched to a treadmill that turned primitive paddle-wheels. Passengers called for service from the farmer, Cornelius Dirckson, by blowing on a horn hung on a tree. The crossing took from 8 to 18 minutes.

The first steam-powered ferry boat, the Nassau, was designed in 1814 by Robert Fulton. By the 1830's, ferries ran between Manhattan and Staten Island, and Manhattan and New Jersey as well as between Manhattan and Brooklyn. The steam ferries were elaborately decorated with polished brass spitoons, and six-foot high mirrors. Passengers played craps and poker during the crossing.

In the two decades before World War II, many bridges and tunnels were built, and now the only ferry line still operating is between Manhattan and Staten Island. This ferry lane crosses the Upper New York Bay. All types of ships can be seen in this area of the harbor: oceanliners, freighters, barges, tugboats, sailboats, yachts, fireboats, harbor police craft, etc. See the following pamphlet, "The Ships of Our Port," prepared by the Delaware Sea Grant program, the New York Sea Grant Advisory Service, and the South Street Seaport Museum, for drawings of the types of ships you might see on any given day.

Goals:

1. To investigate the role of the ferry in intra-city transportation.

2. To study the ships in the New York Harbor.
Pre-trip Activities:

1. Visit the Museum of the City of New York's maritime exhibit to study (1) the paintings and models of the early ferries and (2) the paintings and models of other types of ships. (See appropriate items on worksheets prepared for the Museum of the City of New York trip.)

2. Have students study the pamphlet "The Ships of Our Port." Xerox pictures and cut them out and past them on 5" x 8" index cards. Have a "ship bee" in class using two teams. The winner receives a prize of a film to use on the trip.

3. Discuss the various means of powering boat travel: wind, steam, oar or paddle, horsedrawn treadmill, gas motor, atomic power, etc. Make a chart of boat type, function, and power source, e.g.

<table>
<thead>
<tr>
<th>Type</th>
<th>Function</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>sailboat</td>
<td>pleasure</td>
<td>wind</td>
</tr>
<tr>
<td>police boat</td>
<td>harbor patrol</td>
<td>gas motor</td>
</tr>
</tbody>
</table>

4. Compare the ferry of 1642 operated by Cornelius Dirckson, the Nassau of 1814, and the modern ferryboat. Divide class into three groups and have each group research one of the ferries. Have each group present their findings orally and then write important facts on a large wall mural which has been previously divided into three sections in time-line order.

<table>
<thead>
<tr>
<th>1642</th>
<th>1814</th>
<th>1978</th>
</tr>
</thead>
</table>

5. Obtain a floorplan of a boat or xerox one from a book and teach students how to interpret the plan.
Trip Activities:

We suggest two worksheets, one for the trip over and one for the trip back. Remind students that the trip takes only 15 minutes so they must work quickly. This trip can be combined with the Staten Island trips to the Conference House, Gateway Park, or the waterfront usage tour of Richmond Terrace along the Kill Van Kull.

Post-trip Activities:

1. Combine results of worksheet #1 onto one large wall-size chart display. Have artistic students draw pictures of each type of boat. Display chart in library or elementary classroom and ask student volunteers to teach a group of younger children about boats using the chart.

2. Work in small groups of four. Using the floorplan diagrams from the trip as guides, have students pretend they are ship architects who have been commissioned to design the Ferry of the Future. Each group must combine design ideas and construct a blueprint from the floorplans. The group can then construct a model or paint a picture of the final conception. Each group must then present their finished products at a stockholders meeting of the Best-ever Ferryboat Co. The stockholders (the class) will then vote on the best design for implementation in 1995. Suggest criteria for the best choice:

   1. Is it efficient in its use of space?
   2. Are all necessary areas and objects included?
   3. Is the design attractive?
   4. Is it creative?
   5. Does it take into account future obstacles and options? (e.g., cars may be longer; alternate methods of fuel may have to be used because of oil depletion)
THE SHIPS OF OUR PORT

The Staten Island Ferry

The Staten Island Ferry to Manhattan has been carrying people back and forth since 1712.

You have probably seen these ships and boats many times, either docked at the piers or streaming through the harbor. Moving people for business or pleasure is as important today as in the past. The ships remind us of the importance of the harbor to our lives.

Sightseeing Trips

The Circle Line boats show visitors and us exciting harbor views.

Excursion Fishing Boats

Excursion fishing boats take fishermen out for a day's outing.

A Pilot Boat and Ocean Cruise Ship

Ocean cruise ships take people on leisurely trips to other islands and countries of the world. A Pilot Boat takes a harbor captain out to go aboard an ocean ship so he can guide it safely into a pier.
Cargo Ship

A Cargo Ship, or freighter, brings packaged goods from the world to our harbor. Derricks on the ship are used to load and unload cargo.

Tugboat and Barges

Tugs are the workhorses of our harbor. They push or pull ships and barges.

Fireboat

Fireboats are tugboats with firefighting equipment to handle harbor fires.

Coast Guard

Men on Coast Guard cutters watch over the harbor and perform search and rescue missions.

Police Boat

Police boats patrol our waterways and give aid and assistance when necessary.
A Container Ship carries huge containers of goods that can be unloaded quickly by special cranes on the pier. The containers are then moved by truck or train to their destination.

Tanker

Oil is the most popular form of fuel today. It comes to us by sea, in giant oil tankers. Since the ships are too big to come into our harbor, the oil is transferred to coastal tankers and barges.

A Coastal oil tanker heads up the East River, loaded with oil...

a tanker full...

and comes back down, light and empty for more.

a tanker empty...
This presentation was developed in cooperation with the Delaware Sea Grant Program University of Delaware, the New York Sea Grant Advisory Service and the South Street Seaport Museum.

We are grateful to the Delaware Sea Grant Program for permission to draw upon its materials and to the South Street Seaport Museum for permission to use drawings from Ships and the River by David Canright, who also provided original drawings for this material.
Today you will test your powers of observation. Fill in the following chart with as many different types of boats as you can. Use the slash system (\(\#\#\#\#\)) for the second column, as you will be making additions throughout the trip. When you reach Staten Island, check your score at the bottom of the page to see how good an observer you are.

<table>
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<tr>
<th>Type of Boat</th>
<th># of Boats of That Type</th>
<th>Speed (f = \text{fast}) (m = \text{medium}) (s = \text{slow})</th>
<th>Function (if known)</th>
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<td>e.g. tugboat</td>
<td>(#####) 1</td>
<td>(m)</td>
<td>push or pull barges and large boats</td>
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If you saw

0-3 types of boats, you were asleep on the job, half-blind, or goofing off.
4-6 types of boats, you were doing a fairly good job of observing harbor activity.
7-9 types of boats, you were very observant and would make a good detective.
10 or more types of boats, you were an outstanding observer and would make a good news reporter or FBI agent.
WORKSHEET #2

You are to make a floorplan for each deck of the ferryboat. Be sure to include seating areas, windows, captain's bridge, car area, refreshment stands, doors, stairways, restrooms, lifeboats, life jackets, storage areas, pillars, etc. First, make a complete tour of the boat, making notes along the way. Then draw your diagram.
SAIL ON THE PETREL

Boat leaves from
Battery Park, Manhattan

$; R will in advance; 15P/1A; G35;

Transportation: Take IRT #1, 5 or 6
to South Ferry.

Background:

The Petrel, a 70-foot ocean racing vessel, is operated by a firm called
Bring Sailing Back, Inc., located at 1 Broadway, New York City. Four
crew members, a Senior Instructor and three Assistants who double as
skipper, mate, and deckhand, are expert sailors who have considerable
experience in instructing young children. Normally, the firm prefers to
schedule a series of sails to allow students to study sailing theory, naviga-
tion, and seamanship and actually train as crew members. Information
on the history and ecology of the harbor are integrated into the sailing
lessons. If there are not sufficient funds for a series of sailing experi-
ences, arrangements can be made to go on a single sailing trip.

Goal:

1. To "experience" sailing.

2. To explore the New York Harbor.

Pre-trip-Activities:

It is suggested that the teacher familiarize the class with the terminology
of sailing: helmsmanship, port, starboard, gybing, trimming sails, falling-
off, coming-about, etc. Plans should be made with Bring Sailing Back, Inc.,
as to pre-trip preparation and trip activity options. The length of the sail
will determine the activities.

The teacher must also review water safety, boat safety, and the importance
of model behavior aboard a sailing ship.
Trip Activities:

These should be planned with Bring Sailing Back, Inc., personnel. We do not suggest worksheets as this trip should emphasize hands-on learning to sail. If the teacher prefers to plan alternate activities, the water-testing worksheet from the Pelham Bay trip, the observation worksheets from the Circle Line trip, or the types of ships worksheet from the Staten Island Ferry trip can be used. Allow a few students to take photos and tape sailing instructor's lessons. They can interview the crew as to why they chose sailing as a career or hobby.

Post-trip Activities:

1. Have students write a book on sailing for the school library.

2. Have students paint pictures of the harbor, sailboats, or waterfront scenes to display in school library.

3. Have students make a chart or graph of water-testing results and use students as peer teachers in a lower-grade classroom.

4. Develop a slide/tape show of the "sailing experience."
TOUR OF AIRCRAFT CARRIER, SUBMARINE, CRUISE SHIP, ETC.

Varies

15P/1A; G30

Transportation: Varies.

Background:

By looking in the newspaper, you can often find opportunities to visit a ship. The Navy or Air Force allows school groups to tour their vessels when in port. Some arrangements might be made to tour a cruise ship if the main office of the shipping company were called; If none are in port, a bus trip to Hackensack, New Jersey, to tour the submarine U.S.S. Ling can be arranged. There is a small fee for entrance. Materials needed will be cameras, sketch pads, and tape recorder.

Goal:

To see what the life of a sailor is like.

Pre-trip Activities:

1. Fully introduce the subject of marine careers prior to the trip. List the career possibilities aboard a large ship on the blackboard. A partial listing might include deckhand, mate, captain, chef, purser, navigator, radio operator, etc.

2. Have students prepare a list of questions to ask seamen aboard the ship.

Trip Activities:

Students can be divided into 4 career task groups. One can be responsible for interviewing representative seamen using tape recorder and note pads. They will be the reporters. Another can be responsible for taking photos. They will be the photographers. A third group (the artists) will make sketches. A fourth group can be responsible for making a floorplan of each deck in rough form (note: some ships provide floorplans that can be used to check accuracy). This last group will be the draftsmen.
Post-trip Activities:

Have students prepare a display entitled "A Day in the Life of a Navigator (or Deckhand or Captain)." Use photos, sketches, cartoon drawings and captions. Have students use it as a peer-teaching tool to tell a second grade class about a career opportunity.
WORKSHEET #1 - "Reporters"

(This is a sample of the kinds of questions students will develop.)

1. Why did you choose this career?

2. What do you do on an average day?

3. Are there any dangers in your career? Explain.

4. How long are you out at sea?

5. Where do you sleep? eat? recreate?

6. What do you like about life at sea? What do you dislike?

7. What kind of special training did you receive?
WORKSHEET #2 - "Photographers"

List each shot as you take it. Be sure to be specific, e.g., "First mate's bunk on C-deck aboard U.S.S. Jones."

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WORKSHEET #3 - "Artists"

On your sketch pad, try to capture the life of the seamen aboard this ship. Work quickly and make rough sketches only. You can finish and refine them later. You can draw a sailor tying a rope, a captain steering the ship, some off duty sailors playing cards or eating, etc.
WORKSHEET #4 - "Draftsmen"

You are going to make a floorplan or map of each deck. Use pencil and sketch pad. Roughly sketch in areas. Measure (using a rough pacing system where one pace = one yard) your large areas to get an idea of dimension. Your floorplan need not be accurate as to measurements, but it should be accurate as to relative dimensions, position and actual fixtures.
MUSEUMS AND HISTORICAL SITES

SOUTH STREET SEAPORT MUSEUM

South Street and John Street, Manhattan

$; R 6 weeks; 15P/1A; G60; X

Transportation: Take IRT #2 to Fulton St. William St., or to Wall St. William St.; take IND A train to Fulton St. William St.

Background:

Students will learn about the life of a sailor and get the "feel" of the early seaport neighborhood. The South Street Port is rich in history; in the days of the sailing ships, the piers were bustling and alive with activity. The museum offers one-hour tours starting at 10:00 a.m., 11:15 a.m., and 12:30 p.m. on weekdays; workshop programs running from 10:00 a.m. until 2:00 p.m. are offered Tuesdays, Wednesdays, and Thursdays. Tours and workshops all stress hands-on learning. Teachers are encouraged to get in touch with the Education Department (766-9062) to plan programs to meet their particular curriculum needs.

Goal:

To understand and appreciate the life of a sailor or ship captain in past years; to learn about ship-building.

Pre-trip Activities:

Teachers should create a framework for the students of life in 19th Century New York City in the South Street area. Show slides of 19th Century buildings and ships. Discuss:

1. What types of ships were used in the early 1800's? What kinds of ships are used today? Which is more reliable? Why?


3. How might we learn about a person's lifestyle? (artifacts, possessions, journals, letters, pictures, etc.) What things do you think will tell us about the life of a sailor in 1820?
Historical South Street

50
Trip Activities:

We suggest planning a series of workshops if time permits. Two central themes would be boatbuilding and the life on a sailing ship of the 19th Century. The boatbuilding program is geared for three workshop sessions. In the first session, students study the types of ships they see in the harbor and in the museum collection. In the two succeeding sessions, they design and build a model of a ship in clay, wood, or styrofoam. If only one workshop program is possible, the actual building can take place back in the classroom as a post-trip activity. The program on the life on a ship can be done as a series of four workshops or as a single workshop with four separate activities. The four activities we strongly suggest are sea shanties, tattooing, writing a ship's journal or log, and designing an ensign (identifying flag).

If you prefer not to participate in any of the workshop programs, arrange for an hour tour of the museum's ship collection. Then take a walking tour of the immediate neighborhood, including the Fulton Fish Market area. We have provided a blank street map for this activity. Have students label street names and buildings. Have them take pictures of the piers and buildings. Once back in the classroom a large wall map can be constructed.

Post-trip Activities:

1. Prepare a multimedia display and talk on 19th Century boatbuilding or life in the early seaport. Present a talk to a younger class. Have students sing shanties, display ensigns, tattoos, and ship models, and read entries from ship logs.

2. Study the types of modern ships that would be found in the New York harbor. An excellent preliminary source is the pamphlet "The Ships of Our Port," developed in cooperation with the Delaware Sea Grant Program - University of Delaware, the New York Sea Grant Advisory Service and the South Street Seaport Museum. (See pamphlet following Staten Island Ferry trip.)

3. Make a large wall map of the South Street area. Have the students label all streets. Develop the pictures from the trip and place the photographs in the exact location using the results from your walking tour map activity. The resulting picture map can then be compared with a transparency enlargement of a section from Hagstrom's Guide on the overhead projector. Which map tells you more? Why? When might you prefer the picture map? When might you prefer the Hagstrom Guide? Why?
Instructions: Label all street names. Label any historic buildings or landmarks you see.
BATTERY PARK

Battery Park, Southern tip of Manhattan

15P/1A; G60; ☒

Transportation: Take FRT #1, 5 or 6 to South Ferry.

Background:

Battery Park, located on the southern tip of Manhattan, overlooks the New York Harbor. It consists of 21 acres. It is rich in history. The first Dutch settlers arrived here. It was a training ground during the American Revolution. The two sites worth visiting are Fort Clinton and Pier A. Fort Clinton, built in 1807 as part of the harbor defense system, was manned as a fort until 1821. It was U.S. Army headquarters during the War of 1812. It was then opened as Castle Garden and used as an opera house. In 1855, it became the immigration landing depot; it remained the entry point until 1892, when Ellis Island had to be used to accommodate the increased immigration flow. In 1896, the New York City Aquarium was built on this site, which remained open for five decades. Pier A was built between 1884 and 1886 by the City Department of Docks to house the Department offices and as headquarters for the Harbor Police. Originally, the pier and its 70' lookout tower were covered in galvanized sheet-iron and decorated with classical zinc ornaments. It was recently declared a New York City landmark and is also a National Register of Historic Places property. The tower clock was donated in 1919 by industrialist Daniel G. Reid. It rings the time in ship's bells to commemorate the men who died in World War I.

Whenever important people arrived by ship, the Harbor Police escorted them to Pier A. General John J. Pershing and President Harry Truman were both escorted to Pier A. The Fire Department's Marine Division is presently housed in this structure.

This trip can be combined with the Statue of Liberty trip, the Ellis Island tour, the Staten Island Ferry trip or the trip to Governor's Island.

Goal:

To study the history of the harbor.
Pre-trip Activities:

1. Study the fortification sites in the New York Harbor on a large map. Discuss the strategic location of Battery Park. Why is it a natural "port of entry" site?

2. Summarize background information in lecture-discussion format or use time-line technique (see Museum of the City of New York pre-trip activity).

Trip Activities:

Have students fill in observation worksheets, take photos or draw pictures and sketch a brief map of the park. They will make a park guide and present it to a second-grade class.

Post-trip Activities:

Make a park guide using the pictures taken on the trip. Include a map labelled with important sites. Have students write about historical points of interest in their words. Have students make original illustrations and create an imaginative cover.
1. Castle Clinton National Monument was first built as a fort in 1807. It has gone through many function changes. Name some of these changes:

2. Describe what is left of Castle Clinton.

3. Examine the Pier A structure. Describe in detail.

4. What is different about the clock in the tower?

5. The Fire Department Marine Division is still located in the Pier A structure. What special training would the firemen who work in this division need?

6. List all the activities possible in Battery Park, e.g., picnic, bicycle...

7. A large residential project called Battery Park City is planned for the area between Battery Park and Duane Street. What effect do you think this project will have on the environment of Battery Park?
WORKSHEET #2

Draw a map of Battery Park, labelling monuments, walkways, bench areas, etc.
GOVERNOR'S ISLAND
COAST GUARD BASE

Governor's Island, New York Harbor

R 3 weeks; A10; 15P/1A; G60; X

Transportation: Take IRT #15 or 6 to South Ferry; take ferry to Governor's Island.

Background:

Governor's Island is the site of the first permanent European settlement in the New York City area. An advance group of French-speaking Protestant Walloons seeking refuge from Catholic persecution in Belgium chose Governor's Island as the first Dutch West India Co. settlement site to be safe from the Indians. Governor's Island is the site of an historic fort, Castle Williams, dating to the 18th century, once the province of the British Governor, now headquarters of the U. S. Coast Guard. There are many Federal and Greek Revival houses. The Coast Guard provides a guide who conducts the class on a tour of five historical sites and arranges a tour of a Coast Guard cutter whenever possible. The tour takes approximately 1 hour. Information is mailed on request. This trip can be planned in conjunction with the Battery Park trip.

Goal:

To learn about a career in the Coast Guard.

Pre-trip Activities:

1. Locate Governor's Island on a map of the New York Harbor. Discuss its strategic location.

2. Have students prepare questions for interviewing Coast Guard members regarding careers in the Coast Guard. See sample interview questions that follow.

Trip Activities:

Have students take notes during guided tour for later development of tour-guide booklet. Following the guided tour, have students tape an interview with the Coast Guard member assigned to the class.
Post-trip Activities:

1. Write a short tourguide booklet on the historical sites at Governor's Island. Present it to a 3rd grade classroom for use on a later trip. Include original illustrations.

2. Write to 3rd Coast Guard District (NR)
   Governor's Island
   New York, New York 10004
to find out about the Coast Guard Auxiliary courses offered on basic boating, safety equipment (flotation devices and fire fighting equipment), seamanship (navigation, rules of the road, charts and compass, boating laws, marine engineers, sailing, marlin spike seamanship, marine radio-telephone, safe navigation in the area of locks and dams, weather, and proper boat handling), principles of sailing, and SOS (Shipper's Outboard Special).

3. Play back the tape and write a news classified item offering a job in the Coast Guard using information from the interview.

4. Write a brief essay detailing why you would like to join the Coast Guard (or why not).
WORKSHEET

(This is a sample of the kinds of questions the students will develop.)

1. What is the Coast Guard?

2. How is it different from the army and navy?

3. How long do you sign up for?

4. What is the starting salary?

5. What are the different ranks?

6. What do you do on an average day?

7. Have you ever been in a dangerous or exciting situation? If so, explain.

8. Why did you choose this career?
9. What training is involved?

10. Do you recommend it as a good career for young people to consider? If so, why? If not, why not?
ELLIS ISLAND

New York Harbor

$; 15P/1A; G80; □ and ferry

Transportation: Take IRT #1, 5, or 6 to South Ferry. Take boat to Ellis Island.

Background:

We will include a lengthy historical background, as this island has a wealth of historical significance. Ellis Island, nicknamed by immigrants "Island of Tears," was the "door to America" for 16 million immigrants who came to America between 1892 and 1954, when Ellis Island was permanently closed. It was reopened on Memorial Day weekend in 1976 as a national monument. An hour long tour by the National Park Service traces the immigration process. During its peak immigration tide (1900-1920), 2,000 people were processed a day.

The process began on the threshold of the Victorian-style main building. The immigrants first stopped in the baggage room. They then had a cursory medical exam. If the inspecting doctors noticed a problem, they wrote a large letter in chalk on the clothing of the afflicted, e.g., L for limp, E for eye trouble. Travelers were divided into groups according to the ship's manifests. They were asked dozens of questions: name, age, country of origin, how much money they had, what type of work experience they had, etc. Steamship companies often supplied "right" answers since they had to pay for return fare and meals for anyone who was refused entry. Criminals, the mentally ill, physically afflicted, single unaccompanied women, and anyone who was "dubious looking" were up for rejection. There were many marriage's performed on Ellis Island to provide instant reputable families. About 1 per cent of the immigrants were rejected. Families were sometimes split up. Some 3,000 suicides on Ellis Island show the depth of despair felt by many of the rejected.

If the immigrant passed the exams and answered all questions to the inspector's satisfaction, he was allowed to change his money.

Some famous immigrants who came through Ellis Island include composer Irving Berlin from Russia, football hero Knute Rockne from Norway, writer and director Elia Kazan from Greece and Supreme Court Justice Felix Frankfurter from Austria.
Prior to its use as an immigration process center, Ellis Island had undergone several name changes. The Indians called it KIOSHK (the Indian word for seagull) after the seagulls that fed on the oysters at low tide. At that time, it was 3-1/2 acres of barren land. The Dutch changed the name to Oyster Island, and it became a popular picnic area and oyster hunting ground. When the British took over the island, they held a public hanging of a pirate named Anderson, and the island was soon nicknamed Anderson Island. It was later renamed the Gibbett Island. It changed ownership several times under British hands and even disappeared from the tax rolls for fifty years. In 1785, the then owner, a New Jersey farmer named Samuel Ellis, decided to sell the island. He offered to sell a few barrels of excellent shad, herring, and twine along with the island; some expressed interest in the fish but didn't want the island.

In 1894, the government became defense-conscious because of the international tension of the Napoleonic Wars, and Ellis Island was taken over by New York State, along with Bedloe Island. In 1808, the government paid Samuel Ellis' heirs $10,000 for the island. When the U.S. Congress passed a law excluding "any convict, lunatic, idiot or any person unable to take care of himself or herself without becoming a public charge" in 1882, immigration control became stricter. Castle Clinton in Battery Park had been used as an immigration clearing house since 1855 and it remained open as a reception center another decade, but it could no longer adequately handle the flow. The Government thus enlarged Ellis Island by landfill, constructed seawalls and dredged a channel for large ships. The immigration processing center opened its doors in 1892. The first immigrant processed, Annie Moore of County Cork, Ireland, got a $10 gold piece as she passed through. It was first described as a "latter-day watering place hotel," but in a short five years, it was already referred to as "a row of unsightly rambshackle tinder boxes." The original building structures were destroyed by fire in 1897; the main building was replaced in 1900.

Goal:
To recreate the immigrant experience.

Pre-trip Activities:

1. Discuss the background of immigration processing or control. Can the U.S. accept all immigrants? Should anyone be excluded? If so, who and why? How can we decide which people should be accepted and which rejected?
2. Quote the 1882 law. Discuss.

3. Present historical background of island from Indian days to present-day landmark status. Use lecture format or duplicate materials as a reading lesson.

4. Have students read "Arriving in America" by Edward Corsi (text reproduced following this lesson). Discuss why the author felt resentment toward Ellis Island.

**Trip Activities:**

The National Park Service conducts a one-hour guided tour. Students should fill in worksheet during and following the tour. Have a few students take pictures and/or make sketches.

**Post-trip Activities:**

1. Using worksheet notes, students should write an autobiographical story entitled "My Experiences at Ellis Island, 1918." They should use specific details to illustrate their experiences and feelings. They can elect to be one of the rejected or one of the accepted. The stories can then be typed and duplicated, edited by peers, and then reproduced in booklet form and illustrated with photos and sketches. It can then be bound for use in the school library or in a lower grade classroom.

2. Role play the immigration process. Teacher assigns students roles of immigration officers, doctors, rejected immigrants and immigrants accepted for entry.
ARRIVING IN AMERICA

by Edward Corsi

My first impressions of the New World will always remain etched in my memory, particularly that hazy October morning when I first saw Ellis Island. The steamer Florida, fourteen days out of Naples, filled to capacity with sixteen hundred natives of Italy, had weathered one of the worst storms in our captain's memory. And glad we were, both children and grownups, to leave the open sea and come at last through the Narrows into the Bay.

My mother, my stepfather, my brother Giuseppe, and my two sisters, Liberta and Helvetia, all of us together, happy that we had come through the storm safely, clustered on the foredeck in fear of separation and looked with wonder on this miraculous land of our dreams.

Giuseppe and I held tightly to stepfather's hands, while Liberta and Helvetia clung to mother. Passengers all about us were crowding against the rail. Jabbered conversation, sharp cries, laughs and cheers -- a steadily rising din filled the air. Mothers and fathers lifted up the babies so that they too could see, off to the left, the Statue of Liberty.

I looked at that statue with a sense of bewilderment, half doubting its reality. Looming shadowy through the mist, it brought silence to the decks of the Florida. This symbol of America -- this enormous expression of what we had all been taught was the inner meaning of this new country we were coming to -- inspired awe in the hopeful immigrants. Many older persons among us, burdened with a thousand memories of what they were leaving behind, had been openly weeping ever since we entered the narrower waters on our final approach toward the unknown. Now somehow steadied, I suppose, by the concreteness of the symbol of America's freedom, they dried their tears.

Directly in front of the Florida, half visible in the faintly colored haze, rose a second and even greater challenge to the imagination.

"Mountains!" I cried to Giuseppe. "Look at them!"

"They're strange," he said, "why don't they have snow on them?" He was craning his neck and standing on tiptoe to stare at the New York skyline.

Stepfather looked toward the skyscrapers, and, smiling, assured us that they were not mountains but buildings -- "the highest buildings in the world." . . .
Finally the Florida veered to the left, turning northward into the Hudson River, and now the incredible buildings of lower Manhattan came very close to us.

The officers of the ship, mighty and unapproachable beings they seemed to me, went striding up and down the decks shouting orders and directions and driving the immigrants before them. Scowling and gesturing, they pushed and pulled the passengers, herding us into separate groups as though we were animals. A few moments later we came to our dock, and the long journey was over.

A small boat, the General Putnam of the Immigration Service, carried us from the pier to Ellis Island. Luckily for us, we were among the first to be transferred to the tiny vessel, and so were spared the long ordeal of waiting that occasionally stretched, for some immigrants, into several days and nights.

During this ride across the bay, as I watched the faces of the people milling about me, I realized that Ellis Island could inspire both hope and fear. Some of the passengers were afraid and obviously dreading the events of the next few hours. Others were impatient, anxious to get through the inspection and be off to their destinations. I have never forgotten the scene.

Impelled they may all have been, my parents and all the others alike, by a single desire -- to make a fresh start in a free country; nevertheless they were a strange and motley company. Crowded together upon the little deck of the General Putnam, each family huddled over its trunks and boxes, suitcases or bundles wrapped in bedding. Some were guarding grimy piles of worn bedding wound about with string or rope or wire. Among the horde of bewildered peasants were some with their pitiful, paltry personal belongings, all they had in the world, tied up in old blue or red bandannas, which they clutched anxiously as they peered over the rail toward the tiny island where their fate would be decided.

So they had shuffled aboard at the Italian port, forsaking the security of their villages among the vineyards, leaving behind the friends of their youth, of their maturity, or their old age. The young accepted the challenge with the daring of youth; the old pressed forward without a hope of return. But both saw in the future, through their shadowy dreams, what they believed was an earthly paradise. They did not weigh the price of their coming against the benefits of the New World. They were convinced, long before they left Italy, that America had enough and more for all who wised to come. It was only a question of being desired by the strong and wealthy country, of being worthy to be admitted.
I was not thinking of all this then, as the boat bore down toward Ellis Island. I was watching our fellow passengers, some of whom were weeping, some still shouting, others whispering to each other their hopes and fears. I began to pity with something like the confidence of a superior those whose faces showed alarm. Then I heard stepfather tell mother anxiously that we might not be permitted to enter the country -- that we might be sent back to Italy.

"What!" I cried angrily. "After we came all the way across the ocean?"

I suddenly remembered that I had heard stepfather say to mother, early in the voyage, that he had spent almost all our money on the second day out of Naples so that mother's passage might be exchanged from steerage to a cabin. I wondered if this was the reason for his sudden doubt.

He confirmed my fears by replying that one could not enter America without some money, and perhaps we would not have enough. Ahead of us loomed Ellis Island, and its buildings of red brick and gray stone seemed to grow more grim every instant.

"Why wouldn't they let us in?" Liberta asked passionately. "Aren't we like everyone else, even without money?"

Mother patted my little sister's curly head. For the first time during the voyage I saw tears in mother's eyes. What sort of world was this, where people were judged by the amount of money they had?

I felt resentment toward this Ellis Island ahead of us, where we could already see many people crowded into a small enclosure. It could not be a good place. It would have been better if we had stayed in our comfortable home in the Abruzzi, back in Italy. To come here made mother cry. I looked around the deck and saw that many women were crying.

Our little vessel coasted into the slip at Ellis Island. The passengers began to move. We moved with them and as we stepped from the gangplank to the land, all silent and subdued, I knew that my parents were thinking as I was, "What is next?"
1. Describe the entrance to the main building. A concrete statue is located on the threshold. What does it symbolize? Take a photo and/or make a rough sketch of the statue.

2. Describe the stages the immigrant had to go through in the processing, from baggage center to money exchange.

3. Which exhibit particularly moved you? Why?

4. How do you think you would feel going through this processing center in 1918? Describe in detail.

5. At home tonight, ask your parents if anyone in the family immigrated through Ellis Island. If so, try to interview him on tape as to his feelings and memories on that day.
THE STATUE OF LIBERTY

Liberty Island

$; 15P/1A; G60; 🟢; boat

Transportation: Take IRT #1 to South Ferry; take boat from Battery Park to Liberty Island.

Background:

This is an excellent trip for all ages in that it combines a boat trip experience with an impressive display on the life and experience of the immigrant.

The Statue of Liberty was a gift from the people of France to the American people in 1886. It was designed by the French sculptor Bartholdi in 1884. It is 151 feet high, weighs 225 tons, and is made of copper sheathing on a steel frame. The first finger is 16 and 1/2 feet long; its fingernail measures 13 x 10 inches. It has a New York mailing address, but it is actually located on the New Jersey side of the harbor. During the July, 1977, blackout in New York City, the Statue remained illuminated, as it draws its power from New Jersey. Boats leave every hour on the hour on weekdays.

Goal:

1. To appreciate the plight of the early immigrant and his contributions to our society.

2. To learn about the careers of museum curator, artist, park ranger, and surveyor.

Pre-trip Activities:

1. Discuss the symbolism of the statue. Can you name any other statues that symbolize ideas?

2. Discuss the waves of immigration and their effect on the "melting pot" character of New York City.

3. Prepare students for the trip worksheet activities by discussing the job descriptions for museum curator, artist, park ranger, and surveyor.
Trip Activities:

Divide students into four career groups: museum curators, artists, park rangers, and surveyors.

All groups will work cooperatively on projects.

1. Have the "museum curators" critique all exhibits at the Immigration Museum. They will then either redesign an existing exhibit or propose a new exhibit -- the initial groundwork will be done on the trip. The actualization into sketch, blueprint and/or model and accompanying research will be a post-trip activity.

2. Have the "artists" study the display in the statue's base on the creative process from artistic conception to realization in copper of the statue. They will then design a symbolic statue to present to a country of their choice.

3. The "park rangers" will tape record interviews with park rangers stationed on Liberty Island. They will determine major problems and try to come up with a creative solution to one of the problems in a post-trip activity.

4. The "surveyors" will measure the base of the statue with successively accurate measuring devices (estimate, pace, rope tied at metric intervals, tape measure).

Post-trip Activities:

1. Make a sketch, blueprint, or model of a revision of an exhibit from the Immigration Museum or design a new exhibit for the Museum.

2. Design a symbolic statue for presentation to a country.

3. Solve one of the problems elicited from the park rangers in the interviews.
WORKSHEET #1 - Museum Curator

You are the new museum curator of the Immigration Museum. You are to critique the existing exhibits on the chart below.

1. List and describe each exhibit, and identify its strengths and weaknesses.

<table>
<thead>
<tr>
<th>Exhibit</th>
<th>Brief Description</th>
<th>Strengths</th>
<th>Weaknesses</th>
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2. Which exhibit did you like best? Why?

3. Which exhibit did you like the least? Why?

4. How would you improve the exhibit in #3?

5. What new exhibit would you suggest?
You are an artist. You admire Bartholdi's statue. You are going to try to analyze its effectiveness.

1. What is it made of?

2. How was it first conceived?

3. What does the torch represent? The crown?

4. Why do you think he used a lady, not a man?

5. If you wanted to symbolize freedom in a statue, what would you use?

6. Think of another theme, e.g. love, war, peace. Think of a possible symbol to represent this theme. Draw a few rough sketches of your concept.
Draw your sketch below:
Following are some suggested questions to aid you in your interviews with a park ranger. You will think of other questions to ask as you talk.

1. What are your major duties and responsibilities?

2. What are your hours?

3. What do you enjoy about your work?

4. What do you dislike about your work?

5. Name some common problems you face in your daily work.
WORKSHEET #4 - Surveyor

You are to measure the base of the statue.

1. What do you estimate is the length and width in feet?

   length ___________ ft.; width ___________ ft.

2. How many paces is it?

   length ___________ paces; width ___________ paces

3. How many meters do you think it is?
   (use a rope tied at metric intervals)

   length ___________ meters; width ___________ meters

4. Now measure it exactly (use a tape measure).

   How long is it? ___________ How wide? ___________

5. Was your original estimate high or low?

6. Pace the island from one end to another. How many paces long
   is it? If your estimate is as consistently high (or low) as your
   estimate of the base, what do you think will be the accurate
   measurement?
Museum of the City of New York
MARITIME EXHIBIT

The Port of the New York World

SUGGESTED ROUTE
MARITIME EXHIBIT AT THE
MUSEUM OF THE CITY OF NEW YORK

Fifth Avenue between 103rd and 104th Streets
Manhattan, New York

Phone: LE4-1672

Transportation: Take IRT Lexington Avenue to 103rd Street station; walk west to
Fifth Avenue. Take 5th Avenue or Madison Avenue bus to 104th Street.

Background:

Founded in 1923, the museum was originally housed in Gracie Mansion and
later moved to its present site. The museum building was built in 1932.
The museum is open Tuesday through Saturday from 10:00 a.m. to 5:00 p.m.,
and on Sundays and holidays from 1:00 p.m. to 5:00 p.m. The marine exhibit
is on the second floor. It consists of dioramas, models, paintings, and
statues that depict the maritime development of the city from its days as a
Dutch trading post to the present.

Goals:

1. To study the history of the New York port.

2. To study the types of ships used over the past 350 years.

3. To critique a museum collection.

Pre-trip Activities:

1. Teacher should provide a framework of ideas before the museum visit.
   Class discussion could elicit myths and facts about New York from the
days of the clamming and canoeing of the Lenni Lenape Indians to its
present-day status as giant container port. Develop a time-line of
important highlights and dates, e.g.

   1524 Verrazzano landed in Staten Island on board the Dauphine.
   1609 Henry Hudson sailed up the bay and north on the river that
   would bear his name on the Half Moon.
   1642 First ferryboat started between Brooklyn and Manhattan.
2. Duplicate the following map or floorplan of the maritime exhibit.
Discuss how the exhibit might be organized, e.g. one room 1524-1820,
another room 1820-present. Discuss the advantages of having different
settings and floorplans for different exhibits. What types of exhibits
will be in the center of the room? What might be along the walls?

**Trip Activities:**

1. Have students complete the worksheet.

2. Have students label the map or floorplan, locating all exhibit items.
   Use a key to make it easier to read.

   e.g.
   
   A - model of ship, 1837
   B - painting of South Street
   C - statue of Indian
   D - model of ship, 1924

3. Have students choose three exhibit items that particularly impressed
   them and accurately describe the exhibit items in detail. Then have
   them list two or three reasons they liked those items.

**Post-trip Activities:**

1. Have students write a poem or story about one of the ships and illustrate it.

2. Have students write a critique of the maritime exhibit as to its accuracy,
   appeal, and creativity. Collect results, have class secretary
   write a thank you letter, and mail package to the Museum's Education
   Department.

3. Using the labelled floorplan, have students redesign the use of space.
   They must work within the given space confines, but they can re-
   arrange, consolidate, eliminate, or add items.

4. Do further research on the maritime development of the New York Port.
   See the pamphlet "The Growth of Our Port," produced by the National
   Maritime Historical Society for Gateway Park, that follows.
WORKSHEET

1. Statue of Robert Fulton
   a. How heavy is it?
   b. How high is it?
   c. When did Fulton die?
   d. Where did the statue come from?

2. Diorama of Verrazano's arrival, 1524
   a. Where did Verrazano land?
   b. How do the Indians seem to feel in this artist's view? angry? afraid? happy? How can you tell?

3. Henry Hudson, 1609
   a. What is the name of Hudson's boat?
   b. What do Hudson's and Verrazano's voyages have in common?
   c. How long did Hudson explore the bay and river?
   d. Why was Hudson's voyage so important in the growth of New York City?

4. Half Moon model
   a. How long was the ship?
   b. How much did it weigh?
   c. How many sailors manned it?
5. What two instruments were used to determine latitude?

Compare the two instruments.

6. Ship models

a. List the names of the ships in this display. Tell the type of ship or function.

b. Where was the Independent built?

c. In what ways was the Independent different from the modern-day ferryboat?

7. South Street diorama, 1850

a. How important a port was New York in relation to other American ports in 1850?

b. What type of ships do you see in this diorama?

c. What can you tell about the lifestyle and habits of this time from this diorama?
d. List some of the businesses you see.

8. Ship Models
   a. List the names and functions and approximate date of construction for each of the boats. Use chart below:

<table>
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<tr>
<th>Name</th>
<th>Function</th>
<th>Date</th>
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9. Paintings
   Look at the painting of the Monitor-Merrimac battle of 1862.
   a. Which ship had more guns?
   b. Which boat won?
10. **East River diorama, 1850's**
   a. What two industries are depicted in this diorama?
   b. What is the name of the boat in this diorama?
   c. What is it doing?

11. **Steamboat Paintings**
   a. Who is the artist?
   b. Name the ships in the paintings.

12. **Ship Tools**
   a. Name the three tools.
   b. Tell what each was used for.

13. **Paintings**
   a. Where do you think the two sidewheeler boats will travel to? Will they cross the Atlantic or go up the Hudson? How can you tell?
   b. In Beal's photographic view of New York in 1878, what is the large structure in the middle?

14. **Figureheads**
   a. Describe each figurehead. *(Sketch for extra credit.)*
b. What do you think was the purpose of a figurehead?

15. Constitution
   a. Why is this considered America's most famous ship?
   b. What is its nickname?
   c. What is its source of power?
   d. In which war did it fight?
   e. Who was its commander?
   f. Which ship did it defeat in 1812?
   g. After it was condemned, why was it saved and by whom?

16. Ship Models
    Which of these ships would you have liked to be captain of and why?
17. Bay of New York, 1955
Hudson River Pier

a. What kind of ships are in this display?

b. How do these ships compare with the ships in the South Street diorama?

c. What kind of cargo is the Cerro Ebano carrying?

18. Ferries

a. When did the first ferry between Brooklyn and Manhattan start?

b. Why did the Brooklyn/Manhattan ferries stop in 1924?

19. Poem by Walt Whitman

a. What is the title of this poem?

b. What city is the poet describing?

c. Do you think the poet liked or disliked the city? Why?
20. Slide Show
   a. Name the types of boats you see.

   b. Is this method of presentation more effective or less effective than models? than paintings? Why?

   c. Why do you think the slide show method was used with these ships and not another method?

21. Streamlined Ship
   a. When was this ship designed?

   b. What are the three factors the architect tried to account for?

   c. Do you think this ship is attractive? Why (not)?
CONFERENCE (BILLOPP) HOUSE

7455 Hylan Boulevard
Tottenville, Staten Island

15P/1A; G60; and ferry

Transportation: Take Staten Island Ferry to St. George Terminal. Take #103 bus to Hylan Boulevard and Craig Avenue. Walk south through park to Billopp House.

Background:

The Conference House, built prior to 1680, is so named because it was the site of a conference on September 11, 1775, called in vain to prevent the American Revolution. British Lord Howe met with three representatives from the Continental Congress: Benjamin Franklin, John Adams and Edward Rutledge. The men could not come to terms and the three commissioners went back to Philadelphia.

The house was built by a British naval captain named Billopp. Billopp was responsible for Staten Island's being included within New York City boundaries. It seems there was a dispute over whether Staten Island was part of New York or New Jersey lands. The Duke of York proclaimed that all islands which could be circumnavigated in a day should belong to New York. Captain Billopp sailed around Staten Island in 23 hours, thus Staten Island became part of New York City.

The house is open daily, except Monday, from 10:00 a.m. to 5:00 p.m. Entrance is gratis.

Goal:

To appreciate the early 18th century lifestyle of a sea captain.

Pre-trip Activities:

Review pertinent historical background in lecture format (or write it out on a duplicating master and use it as a reading exercise).
Discuss how we can often determine lifestyle through artifacts, e.g., Pompeian life was "frozen" by volcano and we can determine food tastes, education, etc., from the dishes, tablets, and furniture that was preserved by the volcanic ash. Set the scene for this trip: Tell students they are going to go on an "archaeological" expedition, not just to visit a museum. They will have to actually reconstruct a lifestyle from the furniture and artwork they examine.

**Trip Activities:**

Have students take copious notes and make sketches. Each piece of furniture should tell a story. If questions develop, ask the curator or guide to fill in information.

**Post-trip Activities:**

Have students write a biographical chapter about a day or week in the life of Captain Billopp. Specific details about food habits, hobbies, pasttimes, etc., should be included. Use worksheet notes for descriptive passages.
Today you are going on an archaeological expedition. Do not think of Conference House as a museum. It is the key to the past. You are going to enter the life of Captain Billopp and learn what he ate, what he wore, where he slept, what kind of art he liked, and what were some of his habits. As you enter each room, quickly sketch the furniture. Take notes from plaques and captions. Ferret out as much information about Captain Billopp's lifestyle as you can.
WATER QUALITY

WARD'S ISLAND POLLUTION CONTROL PLANT

Note: Present policy limits age of students to 16 or over.

R 2 weeks; 15P/1A; G30; ☑️

Transportation: Take M34 crosstown bus from Lexington Avenue and 125th Street to Ward's Island. The #4 and #5 IRT trains have stops on 125th Street and Lexington Avenue.

Background:

The Ward's Island Water Pollution Control Plant (as are most of the New York City pollution control plants) is presently being upgraded and expanded. The methane gas generated during the sludge digestion process is being used to supply energy for both the Ward's Island Pollution Control Plant and the Ward's Island-Roosevelt Island Hospital Complex. The Ward's Island Pollution Control Plant is a secondary treatment plant, which means that not only is the sewage permitted to settle, but it is skimmed and aerated in a second step. Arrangements can be made directly by calling the sewage treatment plant nearest you. See map of environmental facilities that follows lesson.

Goal:

1. To learn how sewage is treated.

2. To learn about the career opportunities at a sewage treatment plant.

Pre-trip Activities:

1. Call the Department of Environmental Protection (566-0108) and have them send you the booklet, "Operation of a Typical New York City Water Pollution Control Plant." The booklet explains, in simple language, the whole treatment process and presents a diagram of the layout of a typical pollution control plant.

2. Make a transparency of the pollution control plant layout. Discuss the various procedures involved in the treatment of sewage. Prepare rexograph copies of the layout diagram for orientation of the plant facilities tour task group.
Trip Activities:

Divide the class into 2 task groups. One group will tour the treatment facilities; the other group will survey the different career opportunities at a sewage treatment plant. See appropriate worksheets. Assign photographers in each group to take pictures of all facilities and treatment plant personnel involved in their duties, e.g., fixing a pump or taking a water sample.

Post-trip Activities:

1. The group that toured the facilities can make a diorama or model of a water pollution control plant. This can be used to teach the concept of sewage treatment to a younger class.

2. The careers group can prepare an illustrated career opportunities pamphlet incorporating all interview information. This can be used to teach a younger class about environmental career opportunities.
LAYOUT OF A TYPICAL N.Y.C. WATER POLLUTION CONTROL PLANT

Primary Settling Tank

Aeration Tank

Final Settling Tank

Chlorine Contact Tank

Effluent

Grit Chamber

Thickener Overflow

Sludge

Return

Sludge

Sludge Thickening Tank

Sludge Digestion Tank

Sludge Storage Tank

Boat

Dock

Bar Screens

Influent

Pump and Power House

Gas

Methane
With the help of your diagram of a New York City Pollution Control Plant, describe the processes involved at each stage of treatment. Make a sketch or take a photograph of each different type of tank. Take a sample at each tank. How is the water changed at each tank? Why is it necessary to constantly test the water during treatment?

<table>
<thead>
<tr>
<th>Stage of Treatment</th>
<th>Sketch</th>
<th>Water Quality</th>
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<tr>
<td>Example: Pump House</td>
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<td>untreated</td>
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WORKSHEET #2

You are going to be a career consultant. Your job is to find out about all of the career opportunities at a water pollution control plant. You will need to keep careful notes or tape record your interviews. Here are sample questions to help you in your task:

1. What is your job title?

2. What kind of training is required?

3. Describe your duties on an average work day.

4. What is your pay scale, and what are some of the benefits?

5. What do you like best about your job? least?

6. What special qualities or prerequisites would you say are needed for your job?

7. Are there many opportunities in your field?
Note to teacher:

The New York City waterfront has every type of water system. There are marshes, bays, inlets, rivers, streams, ponds, lakes, canals, and straits. The New York Aquarium has an exhibit on the various types of bodies of water. We thus recommend that students take the Aquarium trip prior to studying the various water systems. As Coney Island Beach is next to the Aquarium complex, we further recommend that the beach study be the first water system experience.
CONEY ISLAND BEACH

Coney Island, Brooklyn

10P/1A; G35; 

Transportation: Take IND B, D, or F train or BMT M, N, or QB train to Coney Island/Stillwell Avenue. Check subway schedule, as some trains operate only during certain hours.

Introduction:

There are 18.4 miles of public beach in New York City. Beaches are unevenly distributed among the boroughs. There are none in Manhattan, only one in the Bronx, and the rest are scattered among the other three boroughs. Some of the beaches have been closed because of environmental hazards, for example South Beach in Staten Island.

The Bronx's only beach, Orchard Beach, located on the northeastern shore of Pelham Bay Park, is one mile long. It is often overcrowded, attracting as many as 75,000 people on a hot summer day. The Rockaways' beach in Queens is 13 miles long. It includes an amusement park (Rockaway Playland) located between Beach 97th Street and Beach 99th Street. Brooklyn beaches include Brighton Beach, Oriental Beach, Manhattan Beach, and Coney Island. Of these, Coney Island is by far the most popular and famous. We suggest studying the beach at Coney Island because it is easily accessible by subway, and is located next to the Aquarium, allowing teachers to combine two trips in one. Beach trip activities include seining, water testing, and erosion study. For those teachers preferring or requiring assistance on their beach study trip, arrangements can be made with Gateway staff to visit Plum Beach, or Great Kills beach.

Background:

Coney Island Beach is located on an island 5 miles long and 1 mile wide, separated from the mainland by Gravesend and Sheepshead Bays. Verrazano and Henry Hudson were the first Europeans to view this island, which got its name from the fact that at one time it was rabbit-infested. It was later part of a farm owned by Lady Deborah Moody, an Englishwoman who had been driven out of New England because of her religious beliefs. Governor Stuyvesant had admired Lady Moody and he had allowed her to found a village at Gravesend.
At the end of the Civil War, Coney Island was developed as a well-to-do resort area with fancy restaurants and posh hotels. At one time, there were three racetracks on Coney Island. It gave the world two famous firsts: the roller coaster and the hot dog.

Gradually, Coney Island succumbed to scandal and saloons, and the neighborhood became a tough one. There was once a large hotel built in the shape of an elephant known as The Elephant. The expression "going to see the elephant" became New York slang for "going to Coney Island to misbehave."

Presently, many of the boardwalk amusement facilities are in disrepair. Great Adventure Amusement Park in New Jersey has become a serious rival. But for many city-bound people with no car, Coney Island remains the most attractive amusement center in the city area; it is easily accessible by subway, the beach boasts high waves, and the boardwalk offers everything from "the world's best french fries" to the roller coaster. It is estimated that on hot, summer days, some one million people crowd onto Coney Island Beach.

This trip is best combined with the New York Aquarium trip. The Aquarium has a "bodies of water" exhibit that distinguishes between river, stream, pond, marsh, bay, and lake. It thus makes an excellent introductory trip to the water systems unit. For inexperienced teachers, the Aquarium staff will gladly assist in the beach study at Coney Island. Such activities as sand study, aquatic study, discussions on tides and tidal wracks, and beach plant study are planned for during teacher workshops. Teachers may also elect to visit the Aquarium in the morning and strike out on their own at Coney Island in the afternoon. We will provide worksheets for this lesson for those teachers who prefer to do this field trip independently. These worksheets can easily be adapted to any of the New York beaches. Materials needed are the same as those for the marsh study trip, with the addition of a core sampler, magnifying glass, glass dishes, and magnesium chloride.

Goal:

To understand and appreciate the flora and fauna of the beach.

Pre-trip Activities:

It is suggested that you send for the June 1978 edition of Project City Science (Citiscience Notes) from Project City Science, School of Education, Health, Nursing and Arts Professions, New York University, Press 52,
New York, New York 10003 (212-598-2131). This publication will give you additional background, field activities, and resources.

Certain information must be taught in class prior to this trip. The concepts of tide, tidal wrack, waves, and the composition of sand should be discussed in the classroom. It might be wise to teach students how to observe by conducting a "realia observation exercise." Gather together a collection of shells, animal parts, and other realia. Observe with a hand lens and answer questions like the following:

1. Does it seem to be an outside skeleton of an organism?
2. Does it seem to be a bone, or part of an inside skeleton?
3. What color is it?
4. Is it hard, soft, or neither?
5. Is it flexible or stiff?
6. Could it have helped the animal to move (if it is part of an animal)?

Discuss how realia gives clues as to how an organism "adapted" to survive. Show students how to use a field guide to identify plants and animals. An excellent guide is The Seashore, published by Golden Books. BAVI offers three films on beach life and study. (See curriculum guide, The New York City Waterfront, Theme III-C)

Trip Activities:

It is suggested that this trip be made at low tide. Consult newspaper for time of low tide at your site. All students can participate in two whole-group exercises: beach erosion study and sand study. (See Worksheet #1.) Then divide students into five groups. The first group will dip into the sand (see Worksheet #2 Marsh Study-Pelham Bay Trip) to study animal samples; the second will gather aquatic samples for study, using a seining net (see Worksheet #2); the third will collect marine life attached to rocks (see Worksheet #3); the fourth will test the water with a water testing kite (see Worksheet #1 Marsh Study - Pelham Bay trip); the fifth will study life in the intertidal zone (between high and low tide). See appropriate worksheets that follow. The seining and water test worksheet from the marsh study trip (Pelham Bay) may be used for the seining and water testing activities. The groups can alternate and each complete all activities, if time permits.
Selected students from each of the groups can be responsible for taking pictures, tape recording students' reactions and observations, and labeling all samples collected. Labels should include date, time, and location of sample collection. On-site identification using the field guides should be made whenever possible. Samples should be LIMITED.

Post-trip Activities:

Students might set up a marine aquarium using samples collected. Information on how to set up aquarium can be obtained from the New York Aquarium staff. An easy classroom project to carry on with observation techniques is to start and grow a brine shrimp colony. A vial of brine shrimp eggs can be obtained from an aquarium supply store. Prepare the environment by letting tap water stand for several days at room temperature, uncovered so that the chlorine will evaporate. Fill the container(s) (plastic or glass) to a depth of several inches and add one tablespoon of artificial sea salt per cup of water. Add a pinch of brine shrimp eggs. In 72 hours, they should begin to hatch. Watch them grow. They will become adults in six weeks. Have class draw pictures to show how animals change. If algae does not grow on glass, students will have to add a few grains of yeast twice a week for food. Observe how shrimp molt. How do they move? Research animal in library.

Another popular post-trip activity is to press seaweed samples. Float a piece of seaweed in a shallow basin of water. Put a piece of water color paper under the seaweed plant while it is still submerged. Remove the paper carefully, keeping it flat. Cover the plant with a sheet of waxed paper to keep it from sticking to something else. Press it between newspapers or cardboard and place heavy books on top. Allow it to dry for about two weeks. Some students might like to investigate in a cookbook to find some recipes for seaweed. There are excellent soups and vegetable dishes using seaweed. Samples of plants and animals can be further studied under a microscope and identified with the help of the field guides. The results of the water testing can be made into a large wall chart for display in the classroom, the school library, or it might be mailed to the New York City Department of Environmental Protection. Results of water testing on all trips can be compared and put into chart format. An additional post-trip activity is to create a chart comparing the different habitats studied at the beach and how each habitat has different organisms living there.

For the advanced "marine biologist," a beach food chain could be developed.
WORKSHEET #1 - SAND STUDY AND BEACH EROSION

Beaches are made up of sand. The sand is moved around by the waves of the sea and by the wind. Observe the sand on the beach.

1. Can you see signs that the sand has been moved? (Hint: look for ripple marks.)

2. Compare the texture and temperature of the sand on the surface and the sand several inches down. What accounts for this?

3. Do you see signs of animals that live in the sand (tracks, holes, shells, bones)? Describe.

4. Stand where the surf breaks (toes in water). Study what happens to your feet when the tide goes out (in). Why? Against what part of your foot does the sand have its greatest buildup? Why? How do you think this principle explains the effect of tide and current on the sand at a beach over many years?
WORKSHEET #2 - ANIMALS THAT LIVE IN THE SAND

Drive your core sampler pipe straight down into the sand about 9" deep. Use the palm of your hand against the block on top of the pipe. Put a cork into the top of the pipe which will cause a vacuum. This will keep the sand from escaping. Take the pipe out of the sand. Cut off small samples of sand (about 1/2" each) and put them in dishes and cover with seawater. Add a mild solution of magnesium chloride (5g Mg Cl₂ to 100 ml. water) to each sample to relax the animals so they will float to the top. Pour off the liquid and you can then examine the animal organisms in the liquid. Use a very strong magnifying glass or take samples back to the classroom and study under a microscope.

Name of Observer(s) ____________________________ Date __________

1. Draw pictures of the organisms you see.

2. Identify the organisms if possible. Ask your teacher for a book with pictures of microscopic organisms, or get a book on marine microscopic and macroscopic organisms from the library.
WORKSHEET #3 - JETTY

Examine the plants and animals from a rock jetty or piling or on the beach where they have broken loose from rocks.

1. Draw a picture of each plant or animal sample. Describe the habitat or location in detail.

2. Make a sketch of a section of the jetty (or piling) where you find different samples.

Name of Observer(s) ___________________________ Date ____________

<table>
<thead>
<tr>
<th>Organism</th>
<th>Plant or Animal</th>
<th>Sketch</th>
</tr>
</thead>
</table>

3. Try to identify each sample with the use of your field guide.
WORKSHEET #4 - INTERTIDAL ZONE

The area you are to study is very large; it extends from the high tide line to the low tide line. You will need field guides, plastic trays or pails, a large spade or hand shovel. Your group should separate to study different sections of the intertidal zone, from high tide line, to low tide near water's edge. If you find a tidal pool, one or two members of your group should study this special environment.

Name of Observer

Section studied □ tidal pool; □ high tide line
□ water's edge; □ midway between high and low tide

<table>
<thead>
<tr>
<th>Organism</th>
<th>Plant or Animal</th>
<th>Sketch</th>
</tr>
</thead>
</table>

103
PELHAM BAY SALT MARSH

Transportation: Goose Creek - B12 bus to Pelham Golf Course Parking Lot, walk southwest 1/2 mile. Caution, as you must cross New York Central New Haven Railroad track. Turtle Cove - B12 or B52 bus to Golf Driving Range, walk south 1/4 mile over the hill.

Introduction:

New York City is a natural estuary. An estuary is defined as a semi-enclosed coastal body of water that has a free connection with the open sea wherein seawater is diluted by fresh water from river basins. The mixture of salt and fresh waters in a semi-enclosed area provides for a varying salinity and a strong interaction of tidal and river currents. This results in a high concentration of DO (dissolved oxygen) and organic nutrients, which makes this a highly productive biological environment. The nutrients form the basis of a food chain that supports most of the fish and shellfish of the world. The estuary is nicknamed "the breadbasket of the world."

The balance of the estuarine environment is delicate. Changes in the environment could cause the elimination of a particular species and result in the collapse of the food chain. The most valuable parts of the estuary in New York City are the tidal wetlands. Unfortunately, the growth of the city has sadly depleted this natural resource. Between 1954 and 1974, the city lost 4/5 of its wetlands in the Bronx, 1/3 in Queens, and 1/2 in Brooklyn. See the curriculum guide, The New York City Waterfront, for a table of the causes of wetland losses (Theme III-D). These include recreational, housing, industrial and airport development, waste disposal, and miscellaneous landfill.

There were 25 salt marshes left in 1974. The total acreage was 5,582; almost half of this figure (2,510 acres) is part of Gateway National Park. We suggest three sites for marsh study: Pelham Bay Park in the Bronx, the Jamaica Bay Unit (Brooklyn/Queens) of Gateway, and Great Kills in Staten Island (also part of Gateway). The two Gateway marshes can be studied with the assistance of national park rangers following the teacher-training sessions. See Gateway trip. The Pelham Bay trip can be done independently. Obviously, the other 22 salt marshes can be substituted as
sites. Extensive background information on the wetlands can be found in Elizabeth Barlow's book, The Forests and Wetlands of New York City, (Little, Brown, and Co., Boston, 1969). Following is a map of the location of the 25 salt marshes in New York City.

Background:

Pelham Bay Park is a 2,100 acre park located in the northeast Bronx. It comprises a broad spectrum of habitats: woods, meadow, marsh, and 13 miles of shore. Two striking features are the glacial terminal moraine and the salt marshes located at Goose Creek, Turtle Cove, and others. The salt marsh is an extremely fertile biological environment. It serves as the breeding, feeding and resting ground for invertebrates, many species of fish, birds, and many other biological forms. Most of the fish caught on the continental shelf spend some part of their life cycle in a marsh environment. The marsh also serves as a natural barrier against storms and tidal currents. It further fights pollution through the filtering action of the vegetation and porous soil as water rises and falls in the marsh.

The Siwanoy Indians valued the land that is now Pelham Bay Park. They called Hunter's Island Laap-Ha-Wach-King, or the place of stringing beads. They gathered shells in the coves and on the beaches; they transformed the shells into ornamental beads and money pieces. Some of the rock formations in the park bear witness to the many tribal ceremonies and religious rites performed by the Siwanos. The land was commissioned as a park in 1884.

The Thomas Pell Wildlife Refuge is 50 acres of what was once a 5,000-acre marsh tract in the Bronx. Other small segments of the marsh can be seen in Pelham Bay Park near Bartow Creek, on the southern end of Rodman's Neck, and on the northern part of Hunter's Island. Channels in the marsh were kept open by the tides; one of these is Goose Creek, a tidal estuary. You can find mollusks, eels, and other fish in the Goose Creek at the Pelham Bay salt marsh. Stocky woodcocks, wading herons, bitterns, and slender-billed sandpipers nest in the marsh or stop here on their migratory journey south. Bartow Creek contains a salt marsh alive with oysters, clams, mussels, fiddler crabs, and snails. The lagoon near Bartow Creek is the site of a Revolutionary War skirmish in which Colonel John Glover held off a British advance until General Washington arrived from New York City.

The materials you will need for this trip are as follows: a 12 foot seining net, strainers, water testing kit(s), field guides such as Golden Book series The Seashores, collecting bottles (deli containers used for salads serve extremely well), labels, shovels, camera, towels, extra pair of old sneakers, jeans, extra pair of jeans, thermometers, cassette recorder, plankton nets, soil test auger, plastic pail or basin.
<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Borough</th>
<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Jamaica Bay</td>
<td>Brooklyn</td>
<td>2510</td>
</tr>
<tr>
<td>2</td>
<td>Idewild Marsh</td>
<td>Queens</td>
<td>310</td>
</tr>
<tr>
<td>3</td>
<td>Far Rockaway</td>
<td>Queens</td>
<td>115</td>
</tr>
<tr>
<td>4</td>
<td>Harriman Park</td>
<td>Brooklyn</td>
<td>15</td>
</tr>
<tr>
<td>5</td>
<td>Midtown Tunnel</td>
<td>Queens</td>
<td>24</td>
</tr>
<tr>
<td>6</td>
<td>Hallett's Cove</td>
<td>Queens</td>
<td>4</td>
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<tr>
<td>7</td>
<td>Laguardia</td>
<td>Queens</td>
<td>8</td>
</tr>
<tr>
<td>8</td>
<td>Flushing Meadow</td>
<td>Queens</td>
<td>5</td>
</tr>
<tr>
<td>9</td>
<td>Little Neck Bay</td>
<td>Queens</td>
<td>56</td>
</tr>
<tr>
<td>10</td>
<td>Alley Park</td>
<td>Queens</td>
<td>54</td>
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<tr>
<td>11</td>
<td>Ullas Cove</td>
<td>Queens</td>
<td>38</td>
</tr>
<tr>
<td>12</td>
<td>Sporing Creek</td>
<td>Queens</td>
<td>137</td>
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<tr>
<td>13</td>
<td>Mill Basin</td>
<td>Brooklyn</td>
<td>50</td>
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<tr>
<td>14</td>
<td>Bronx River</td>
<td>Bronx</td>
<td>4</td>
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<tr>
<td>15</td>
<td>Westchester Creek</td>
<td>Bronx</td>
<td>43</td>
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<tr>
<td>16</td>
<td>Ferry Pt. Park</td>
<td>Bronx</td>
<td>1</td>
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<tr>
<td>17</td>
<td>Throgs Neck</td>
<td>Bronx</td>
<td>2</td>
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<tr>
<td>18</td>
<td>Hutchinson River</td>
<td>Bronx</td>
<td>217</td>
</tr>
<tr>
<td>19</td>
<td>Pelham Bay</td>
<td>Bronx</td>
<td>148</td>
</tr>
<tr>
<td>20</td>
<td>South Beach</td>
<td>Richmond</td>
<td>225</td>
</tr>
<tr>
<td>21</td>
<td>Great Kills</td>
<td>Richmond</td>
<td>230</td>
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<td>22</td>
<td>Wolfe Pond Park</td>
<td>Richmond</td>
<td>64</td>
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<td>23</td>
<td>Arthur Kill</td>
<td>Richmond</td>
<td>8</td>
</tr>
<tr>
<td>24</td>
<td>Fresh Kills</td>
<td>Richmond</td>
<td>450</td>
</tr>
<tr>
<td>25</td>
<td>Goethals Bridge</td>
<td>Richmond</td>
<td>840</td>
</tr>
</tbody>
</table>

WETLANDS

Goal:

To understand and appreciate the flora, fauna, and importance of the marsh to the marine environment.

Pre-trip Activities:

Refer to the curriculum guide, The New York City Waterfront, Theme II, for assistance with the pre-trip activities.

Students should be taught proper techniques for collecting samples and the importance of limiting samples. The use of water testing equipment and seining nets must be learned before use on-site. A lesson on food chains should be taught.

Trip Activities:

For greatest effect, the class should be divided into separate task-oriented groups: (a) water testing; (b) seining and sample collecting; (c) marsh plant and soil investigating. Each group should have an adult supervisor. A group should also be assigned to take pictures and record student reactions and observations.

Post-trip Activities:

Use samples collected to create a mini-marsh environment in a 10 or 20 gallon fish tank. Help with this project can be provided by the Education Center of the Museum of Natural History, 3rd floor. Study water samples collected under a microscope for presence of microorganisms. A wall chart of the results of the water testing can be produced for display in the classroom, library, or mailed to the Borough President's office and New York City Department of Environmental Protection. Plant and soil samples can be displayed with accompanying identification. All of the above can be combined to create a marsh profile. Be sure to include student pictures and taped reactions in the profile. A room can be set aside in the school where the marsh profile can be presented to other students using your students as peer teachers. Other schools, community members, and city officials can be invited to view the display.

Co-Op City was built on part of the Pelham Bay Marsh. Show the picture that follows of the Co-Op City construction site. How is this different from the marsh you visited? How did the construction change the marsh? What effects did the construction have on the marine food chain? Why do you think Co-Op City was built on the marsh?

Invite an expert from the N.Y. State Department of Environmental Conservation to discuss the importance of the N.Y. State Tidal Wetlands Act.
Pelham Bay

From: *The Forests and Wetlands of New York City* by Elizabeth Barlow
p. 62
The number of different tests you perform will depend on the availability of test kits and equipment.

Name(s) of Investigator(s): ___________________________ Class: ________

Date: ______________ Time: ______________

Location: ____________________________

Weather: ____________________________

Air Temperature: ____________________________

Water Temperature: ____________________________

Water Clarity:  □ Clear □ Discolored □ Turbid

Dissolved Oxygen: ____________ mg/l (ppm)

pH: ____________

Acid/Base: ____________ g. p. g.

Carbon Dioxide: ____________ mg/l (ppm)

Hardness: ____________ g. p. g.

Phosphate: ____________ mg/l (ppm)

Nitrate: ____________mg/l (ppm)

Coliform Bacteria: ____________
EXAMINING LIFE IN THE WATER

One of the ways that scientists can examine life in a body of water is to use an instrument called a seining net or a plankton net. The seining net will cover a large area, and permit us to collect all types of living things.

Wear an old pair of sneakers and jeans or wading boots. Only two people at a time can use the seining net, only one person to a plankton net. Samples collected are to be placed in a large plastic basin for sorting and identification. Specimens are to be placed in collecting jars with ample water to keep them alive. NO SPECIMEN IS TO BE TAKEN WITHOUT APPROVAL OF YOUR INSTRUCTOR. ALL OTHER SPECIMENS MUST BE RETURNED TO THEIR ENVIRONMENT. Use a field guide such as Golden Guide - The Seashores - to help you identify your specimens.

Investigator(s) ___________________________ Class _____________

Date ______________  Time ____________  Location __________

Weather ____________________

SPECIMENS FOUND IN NET (Include sketch or drawing if possible):

Fish:

Shellfish:

Other:
FLORA AND SOIL CHARACTERISTICS

You will be making careful observations and taking limited samples of the plant life and soil that you find. Use your field guides to assist in making identifications. NO SPECIMEN SHOULD BE COLLECTED WITHOUT APPROVAL FROM YOUR INSTRUCTOR.

Name: ___________________________ Class: ________________

Location: ___________________________

Date: ________________ Time: ________________

Weather: ___________________________

1. Describe the soil's characteristics

   a) Odor [ ] Yes [ ] No

      Describe (if yes) ___________________________________________

   b) Texture (how does it feel?) _________________________________

   c) [ ] Dry [ ] Wet [ ] Other (explain) _______________________

   d) [ ] Plants [ ] Barren

   e) Sketch the appearance of your location
2. Use the soil auger to bore a sample of the soil.
   
a) Measure the size of the sample -- ____________ centimeters
   
b) Describe and draw your sample:

3. Locate and identify as many different varieties of plants as you can.

<table>
<thead>
<tr>
<th>Name of Plant</th>
<th>Description and/or Drawing</th>
<th>Sample Taken (Instructor's approval needed)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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POND STUDY

Alley Park, Queens

10P/1A; G35; ☠ ☞

Transportation: Take IND E or F train to Kew Gardens. Take Q-44 bus to Wincheater Boulevard. Walk to the Environmental Center north of the Grand Central Parkway.

Introduction:

There are ponds in all the boroughs. The three sites we suggest for pond study are Alley Park in Queens, High Rock Conservation Center in Staten Island, and the Bronx Botanical Gardens in the Bronx, because of the expertise of the staff at each site. Teachers can contact one of the centers to arrange a pond study trip:

1. Alley Park Environmental Center
   228-06 Northern Boulevard
   Bayside, Queens
   229-5314

2. High Rock Park Conservation Center
   200 Nevada Avenue
   Staten Island
   987-6276

3. New York Botanical Gardens, Education Division
   Southern Boulevard and 200th Street
   Bronx
   220-8777

Other pond sites for the experienced teacher include Central Park in Manhattan, Prospect Park in Brooklyn, Baisley and Flushing Parks in Queens, Van Cortland Park in the Bronx, and Clove Lakes Park, Brady's Park, Wolfe's Pond Park and Clay Pit in Staten Island.

Background:

Alley Park includes 635 acres of wetlands and forests in northeast Queens. An environmental center was developed in an abandoned comfort station.
The pond that once gave Alley Pond Park its name gave way to highways when the interchange for the Long Island and Cross Island Expressways was built. Much of the park facing on Little-Neck Bay is now despoiled. The upland part of the park is dotted with small glacial ponds. Some of the ponds include Turtle, Decidur and Lily Pad Ponds. These ponds were formed when ice blocks broke off the melting glaciers and were buried under rock and gravel debris left by the receding ice. When the blocks melted and the rock and gravel settled, hollows filled with water remained as ponds.

Teachers can elect to study the tidal estuary at the northern part, or the Alley Pond Creek in addition to studying one of the glacial ponds.

Materials needed will be small kitchen strainers, plastic deli containers with lids, microscope and/or magnifying glass, labels, several copies of the field guide, Pond Study (Golden Book Co.), and thermometers.

Goal:

To study the flora and fauna of a glacial pond.

Pre-trip Activities:

It is suggested that the teacher read a pond field guide such as the Golden Books -- Pond Study -- in order to become familiar with pond flora, fauna, and processes. Discuss what a pond is. Refer to information gleaned from New York Aquarium exhibit on types of bodies of water. Discuss how the glacial ponds in Alley Park were formed. Familiarize students with some of the animals and plants they might see on the trip. Discuss importance of pond life cycle.

Trip Activities:

Have students work in small groups. Using strainers, have them collect samples for study under a magnifying glass or microscope. Have them identify all samples with the aid of the field guide (see Worksheet #1). Have them test the water with a water testing kit (see Worksheet #1 from the Pelham Bay trip), study soil and flora (see Worksheet #3 from the Pelham Bay trip).
Post-trip Activities:

Have students identify all samples they were unable to identify on-site. Have them make a pond study manual for Alley Park with pictures and map for use in a lower grade classroom.
WORKSHEET #1 - POND STUDY

You will be examining various kinds of animals that live in the pond. RETURN SAMPLES TO THE POND; IT IS THEIR HOME. Limited, representative samples may be taken for study in school only with the approval of your instructor. You can work in teams, and use a field guide to identify your discoveries.

Name(s) of Observer(s) ___________________________ Date __________

Location (example: south shore Lily Pond) ___________________________

1. Is there any movement in the pond water?
   Explain ____________________________________________
   ____________________________________________

2. a) Air temperature _____________
   b) Water temperature _____________
   c) Why are the temperatures the same? Different?

3. Use your strainers to collect samples for close observation. You can use a hand lens to help you identify small organisms.

<table>
<thead>
<tr>
<th>Organism</th>
<th>Insect</th>
<th>Fish</th>
<th>Shellfish</th>
<th>Other?</th>
<th>Sketch or Picture</th>
</tr>
</thead>
</table>

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STREAM STUDY

Richmond Creek, Staten Island

10P/1A; G35; 

Transportation: Take Staten Island Ferry to St. George. Take bus

Introduction:

A river is a natural surface stream of water of considerable volume and permanent or seasonal flow. A stream is smaller than a river but it also connotes a flowing body of water in a channel. A creek and a brook are terms used to define small streams that are sometimes river tributaries. All these terms involve movement of water. A kill is a Dutch term used synonymously with river, stream, creek or channel. It is used most often in Delaware and New York. A channel is the deepest part of a moving body of water, as a river or stream, where the main current flows or which affords the best passage.

There are rivers, streams, and creeks in all five boroughs. The four rivers include the Hudson River, the East River, the Harlem River, and the Bronx River. There are numerous streams, creeks and brooks. Please refer to the following map.

Background:

Richmond Creek on the western shore of Staten Island includes the Fresh Kills tidal stream, its northern branches (Main and Springville Creeks), and its southern arm, Richmond Creek. The Department of Sanitation operates a sanitary landfill near the William T. Davis Wildlife Refuge. Richmond Creek flows from a relatively pristine gathering ground to a landfill undergoing major environmental transformation. In the days before the Fresh Kill marshes were inundated with garbage, both Richmond Creek and Main Creek were navigable for one mile.

Materials needed for stream study include two marker stakes, a stopwatch or watch with a second hand, string, water testing kits, field guides, collecting jars, labels, magnifying glass or microscope.
Goal:

To study the characteristics of a stream.

Pre-trip Activities:

Classroom discussion on the terminology of river, stream, creek, brook, and kill is necessary. Discuss the primary characteristics of all the above: movement and its measurement term, velocity. Using a large wall map or transparency, have students identify the streams of New York City. Discuss how they might have been different in the days of the Algonquin Indians.

Trip Activities:

Divide class into three groups. Have group 1 determine the velocity of the creek (see Worksheet #1). Have group 2 examine the flora and soil of the creek banks (see Pelham Bay Worksheet #3). Using field guide for streams such as A Field Guide of Fresh Water Biology by Needham and Needham, have them identify all samples (see Worksheet #1, Pond Study). Have group 3 test the water (see Worksheet #1 from Pelham Bay trip). Groups can rotate and complete all activities and compare results. An optional activity for the advanced explorer is to create a stream survey using Worksheet ...

Post-trip Activities:

Have students combine all information into a guide to Richmond Creek for use in a lower grade classroom. Compare results of water testing with other water systems trips results. Identify all samples that couldn’t be identified on-site. Make a large map of the Richmond Creek area and draw pictures of the samples in the appropriate habitat, e.g., frog on creek bank, algae on rocks, etc.
WORKSHEET #1 - VELOCITY OF STREAM
(Adapted from PEEC Stream Velocity Worksheet)

1. Using stakes, mark a 30 meter distance along a straight section of the stream or creek. Throw a short stick into the water slightly above the upstream marker. Using a stop watch, record the number of seconds it takes the stick to float the 30 meter distance. Depending on the circuitous nature and apparent velocity of your stream, you may want to mark off a longer or shorter distance. Now determine the velocity:

\[
\frac{\text{Distance stick traveled}}{\text{Total # of seconds to cover distance}} = \text{Meters per second (velocity)}
\]

Use a compass to determine the direction of flow, example: south, northeast. Include with your velocity.

2. Using a string, mark a line across the stream in three different places within the stakes. Measure the width at the three different places, add and divide by three to get the average width. Take 10 depth measurements along your 30 meter course, add and divide by 10 to get the average depth.

3. One cubic meter of water is the water in a container one meter wide, one meter high and one meter long. You can find the cubic meter of water flowing per second by:

\[
\text{cu. meters per sec} = \text{average width} \times \text{average depth} \times \text{meters per second}
\]

4. Use the following information to answer the questions below:

One cubic meter of water = approximately 1,000 liters.

a) How many liters flow in this stream every second?

b) How many liters flow every minute?

c) How many liters flow every day?

An average person uses 567 liters of water per day. How many people could live from this stream (assuming it were clean enough)?
WORKSHEET #2 - STREAM SURVEY FORM

Note to Teacher: Depending on the amount of adult supervision and the size of the stream, you may wish to divide the group into an upper, middle, and lower stream team.

You are going to play the role of an explorer, recording as many observations as possible about the stream or river that you have been assigned. The information you gather will be used to develop a map of the river.

Name(s) of Surveyor(s) ___________________________________________ Date ________

1. Name of Park or Area ____________________________, County ____________

2. Name of Stream _____________________________________________

3. Air temperature _________ °C, Water temperature _________ °C.

4. Time □ morning □ noon □ early afternoon □ other ________________

5. Weather □ clear, □ partly cloudy, □ cloudy, □ rain, □ showers, □ other ________________

6. Portion of stream surveyed □ upper □ middle □ lower

7. Direction of flow □ N, □ S, □ E, □ W, □ NW, □ SW, □ NE, □ SE

8. Type of bottom □ rocky □ muddy □ sandy □ other ________________

9. Level of stream □ high water, □ normal water, □ low water

10. River Path □ straight, □ slightly winding, □ snake-like (circuitous)

11. Obstructions (dams, boulders, others) -- describe kind and how many

12. Tributaries (other streams feeding into your stream) -- where and how many

13. Depth ___________ Width ___________ (May be gotten from stream velocity team)
14. Vegetation in water:  □ none  □ sparse  □ average  □ heavy

15. Animal life in water:  □ none  □ some  □ many  □ teeming

16. Character of watershed (banks and surrounding area)
   □ canyon  □ hilly  □ mountains  □ rolling  □ flat  □ swampy
   □ wooded  □ open field  □ cultivated  □ uncultivated (wild)
   □ low shrubs and vegetation  □ other

17. Pollution (from where, type)

18. Other observations (not included in survey form)

19. Using the survey information you have gathered, draw a picture or sketch to show your section of the stream as accurately as possible.
GATEWAY NATIONAL PARK

Great Kills, Staten Island; Jamaica Bay, Breezy Point, New York; Sandy Hook, New Jersey.

Tel: 212/252-7307 R well in advance; 15P/1A; G60

Transportation: School bus or chartered bus is preferrable, as public transportation stops far from park areas. Staten Island unit is easiest to reach by public transportation. Take ferry to St. George and §103 bus to Great Kills.

Background:

Gateway National Park is the only urban park in the United States. Authorized as a national recreation area in October, 1972, it includes 26,645 acres. It is divided into four major units: the Sandy Hook unit, located in New Jersey; the Staten Island unit on the Raritan Bay in Staten Island, New York; the Jamaica Bay unit, located in Brooklyn and Queens, New York; and the Breezy Point unit in Queens, New York. Teachers are required to attend a preparatory workshop before a class visit. Gateway National Park offers a variety of waterfront experiences. Novice teachers as well as teachers with extensive field trip experience will be able to use Gateway as their "classroom," because of the support of the trained park ranger personnel.

A variety of locations have been identified as ideal environmental study areas; favorites include the following eight sites:

1. Dead Horse Bay (telephone 212-252-9286) - sensory awareness study on beach

2. Plumb Beach (telephone 212-252-9286) - salt marsh, wooded upland, and tidal flats

3. Bayberry Environmental Study Area (telephone 212-252-9286) - This area is designated for teachers who are experienced in field study technique only.

4. Breezy Point (telephone 212-474-4600) - bay and ocean beach study; bay location to be used for examination of live organisms; ocean location to be used for dune exploration and/or historical walking tour of Fort Tilden.
5. Wildlife Refuge (telephone 212-474-0613) - The Jamaica Bay Wildlife Refuge is on a major migration route for birds; some 312 species can be spotted here. A 2-hour visit to the West Pond explores the history, flora and fauna of the area. Recommended for 4th grade and above.

6. Great Kills Park, Staten Island (telephone 212-351-8700) - Includes seashore and mud-flats sites for class exploration of marine organisms; marsh environment for flora and fauna study and/or water testing activities.

7. Old Fort Hancock, Sandy Hook, N. J. (telephone 201-872-0115) - Historical tours of Fort Hancock or beach study of flora and fauna and/or water testing. Group camping by reservation.

8. Floyd Bennett Field (telephone 212-252-7307) - Camping by permit is allowed at Floyd Bennett Field. Supervised by park rangers.

Goals:

1. To "discover" and "experience" the marine environment

2. To appreciate the harbor as part of a natural historical defense system

3. To study some waterfront-related career options

Pre-trip Activities:

1. Study the history of the harbor. Using a wall map, discuss the significance of the name "Gateway." Point out the fortifications (Fort Hancock, Fort Hamilton, Fort Wadsworth, Fort Tilden) and discuss the strategic positions they occupy. If visiting the Sandy Hook area, point out that the Sandy Hook lighthouse is the oldest lighthouse in North America, and has been in operation since 1764. The Lenni-Lenape Indians who inhabited this area used it as a clam and fishing ground.

2. Study the land form, flora and fauna of the area you plan to visit, using a map and the pamphlet, "Gateway National Recreation Area", published by the National Park Service.

3. Make up questions for a career option interview, e.g. Why did you choose this career? What training is required? Practice interviewing a teacher, a librarian, a secretary, etc.

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Trip Activities:

Training and support staff can be provided for all of the following suggested activities. Sample worksheets from the Pelham Bay Salt Marsh trip can be adapted for environmental study at Gateway. Choose one or a combination of the following activities:

1. Seining (see Pelham Bay trip)
2. Water testing (see Pelham Bay trip)
3. Identification of flora and fauna (see Pelham Bay trip)
4. Sensory awareness
5. Historical walking tour of fort areas
6. Bird watching at Jamaica Bay Wildlife Refuge
7. Camping
8. Fishing
9. Study waterfront-related career options, e.g., Coast Guard park ranger, fisherman, marine biologist, environmental scientist, park planner, tour guide, etc. Use interview technique with prepared questions, preferably with the aid of a tape recorder. Take pictures of all persons interviewed.

Post-trip Activities:

These will be determined by the trip options chosen. Post-trip activities for activities 1-8 should be planned with the help of Gateway staff, as sample collecting is discouraged. If activity #9 is chosen, we suggest a "Madison Avenue" follow-up. Have students take all information from the career option interviews and make an advertising poster to entice students to follow a particular career.
THE NEW YORK AQUARIUM

Boardwalk and West 8th Street
Brooklyn, New York 11224

$; R well in advance; 15P/1A; G30; 

Transportation: Take IND D, M, QB, or F or BMT B or N to Coney Island-Stillwell Avenue

Background:

The philosophy of the Education Department of the New York Aquarium is to use the aquarium as a living laboratory, an extension of the classroom. Teachers must take workshops prior to an aquarium trip; this insures that the experience is meaningful to each class. Every effort is made to coordinate aquarium activities with classroom curriculum. To arrange an aquarium program, call 266-8540 Tuesday, Wednesday or Thursday between 10:00 a.m. and 4:00 p.m. The aquarium trains teachers, suggests pre-trip and post-trip activities, and plans a program for the age level and interest level of each class. A package of materials is distributed to each teacher that includes a bibliography and pamphlets on sea plants, invertebrates, fish, realia, oceanographic tools fabrication, general information about the aquarium and its personnel, the adjacent Osborn Laboratories of Marine Science, and resources. Favorite exhibits include dolphins, whales, turtles, and penguins. The touch-it tank has live starfish, horseshoe crabs, coral, etc., for the students to discover in a hands-on learning experience.

Goal:

"To observe, explore and discover aquatic animals." ¹

Pre-trip Activities:

The aquarium staff will suggest activities, which may or may not include the following:

1. Provide an overview of classification of marine animal life. Distinguish between marine mammals, fish, etc.

2. Discuss the adaptations required for marine life and adaptations animals must make to climate, availability of food, etc.

¹This goal is quoted from the Aquarium's pamphlet "Still Confused About the Sea."
3. Discuss the fact that the marine environment was the "cradle" of life -- all life came from the sea.

4. Discuss the "rainability" of dolphins and porpoises. Refer to the movie "Day of the Dolphin."

5. Review behavior rules -- especially the necessity of silence -- for the aquarium. Discuss the relative quiet of an ocean environment vis-a-vis land environment.

Trip Activities:

These will be determined by the program you design with the education staff. We recommend the teacher use the exhibit on water systems (river, pond, bay, etc.). We also highly recommend that the teacher include beach study activities (see "Beach Study" trip activities), using the Coney Island beach following the visit to the aquarium. Encourage several students to take photographs or make sketches.

Post-trip Activities:

The Aquarium will suggest post-trip activities. We further suggest two activities:

1. Students can work in groups to produce a book on their interest (dolphins, whales, plankton, starfish, penguins, etc.) for use in a 2nd or 3rd grade classroom or as preparation for another class' aquarium experience. The booklets could include information (gleaned from exhibit graphics and supplementary library research), sketches and photographs.

2. Students can work in groups to plan a "human zoo." Imagine it is the year 3000 and some higher form of life rules the planet Earth. Humans are in a zoo environment as specimens to be studied. Design a zoo environment including the graphics and realia necessary for exhibits.

Worksheets:

As the activities are planned by the aquarium staff, we will not provide worksheets for this trip, although the Beach Study worksheets (see "Beach Study" trip) can be used at Coney Island following the Aquarium visit.
Note to Teacher:

The following sites have been selected as appropriate for observation of land usage, but the worksheet activity can be adapted for any given site. It is strongly suggested that students be encouraged to draw maps, sketch impressions and take photos in addition to completing the worksheet. When a large site area is chosen, such as Sheepshead Bay or City Island, several worksheets should be used for specific locations. The background information should be reviewed prior to each trip. Follow-up activities might include:

1. Making a large land-usage map of sites observed, similar to the one developed in the Hudson River Day Line trip;

2. Writing a letter to a city agency or private organization on conditions observed; and/or

3. Redesigning or improving the site for maximum efficiency and use.

15P/IA; G30 for all trips

1. Riverside Park - 79th Street Marina

Hudson River and 79th Street
Manhattan

Transportation: Take IRT Local #1 subway to 79th Street and Broadway or M5 bus to 79th Street and Riverside Drive. Walk west to river.

Background:

House-boat residents include welfare recipients, ballet dancers, stock-brokers, and computer analysts. The marina is owned by the city. It is the largest community of live-aboards in the city. Most boat owners have dogs for security purposes. Some choose houseboat living because
it's cheaper to live on a boat than in an apartment (average expenses for heat, electricity, dock space, and insurance is $125 per month). Others choose houseboat-living because they love the expanse and romance and freedom of the water. Disadvantages include brutal, icy winters, nosy tourists, and the possibility of becoming mired in mud during outgoing tide. The 79th Street Boat basin has about 100 live-aboards on 85 boats. It is a tight-knit community unified in their fight with the city to get the basin fixed up. They have agreed on an alarm cry of five blasts on a ship's horn; everyone rallies at the cry to help extinguish a fire, save a boat from sinking, repel an intruder, etc.

The other city-owned marina is the World's Fair Marina in Queens. Nichols Yacht Yard runs both marinas.

2. World's Fair Marina and Boat Basin
   Flushing Meadow Park, Queens

   Transportation: Take the IRT #7 to Willets Point/Shea Stadium/
   Roosevelt Avenue stop and walk north through Flushing Meadow
   Park to Flushing Bay.

   Background:

   The World's Fair Marina, run by Nichols Yacht Yard, has a capacity
   of 800 boats. It is one of the largest on the east coast. See back-
   ground on 79th Street Boat Basin for general information on houseboat-
   living.

3. Roberto Clemente Park
   East Tremont Avenue along Harlem River
   Bronx

   Transportation: Take B40 or B18 bus west to park (last stop).

   Background:

   This is a state park which consists mostly of concrete. Facilities
   include an outdoor pool, recreation building, and a promenade with
   benches along the river. There are special programs for senior
   citizens and handicapped citizens. Access is difficult.
4. Waterside
23rd-29th Streets along East River
Manhattan

Transportation: Take IRT #6 to
23rd Street and Park Avenue
South and walk east to East River
or take M16 (34th Street cross-
town) bus to Waterside or take
M26 (23rd Street crosstown) bus
to 23rd Street (last stop) and walk
north to Waterside or take M21
bus to 23rd Street and walk north
to Waterside.

Background:
Waterside is a high-rise housing development located on the East River.
It is built on piles because if we continue our landfill development policy
we run the danger of changing the hydrology of the waterways. The
land is leased from the city for a 99-year period. Waterside was de-
dsigned to insure direct access to the waterfront. Too often, housing
is separated from the water by highways, railroad tracks, etc.

5. Carl Schurz Park
84th-90th Streets along East End Avenue
Manhattan

Transportation: Take IRT #4, 5 or
6 to Lexington Avenue and 86th
Street and walk east to East River
or take M31 bus to 86th Street and
York Avenue or M18 crosstown bus
to 86th Street and East End Avenue.

Background:
This is one of the most widely used parks in the city. There are few
parks nearby and residents have complained that Carl Schurz Park is
usually overcrowded.
6. St. George Place  
Staten Island  

Transportation: Take Staten Island ferry to St. George Terminal.

Background:

St. George became the center of Staten Island's transportation in the late 1880's when Erastus Wiman had the Staten Island Rapid Transit extended from Clifton to St. George and had several of the ferry docks consolidated into one installation. Wiman also established the New York Metropolitans in St. George, a National League baseball team which later became the New York Giants. Throughout the 19th century, the St. George area, along with the nearby shore communities, was a popular resort area; but by the early 1900's, heavy manufacturing and industrial growth with its resulting water and air pollution, signalled the demise of the resorts and fashionable estates. When New York City was consolidated in 1898, St. George became the civic center for the borough of Staten Island. The St. George shore was a troop debarkation center during the world wars; it was also the site of a short-lived shipbuilding boom. Between World Wars I and II, many shore residents moved inward.

St. George is now the borough's transportation, government and office center. The area also contains a large portion of the professional and service offices of the borough. While the Verrazano Narrows Bridge has drawn a good deal of the Manhattan and Brooklyn-bound traffic from the ferries, the St. George ferry terminal is still an active, sometimes crowded, commuter center.

7. Richmond Terrace  
Staten Island  

Transportation: Take Staten Island ferry to St. George terminal and then take Staten Island bus #1 from St. George terminal.

Background:

This trip should be a bus trip, not a walking tour; it can be combined with the Snug Harbor trip (see 8) if need be. Richmond Terrace is a street lined with waterfront-related industries. Of special interest is the dock where the Cable Queen, the only New York Telephone cable-laying boat in the city, is moored.
8. Snug Harbor
Statens Island

Transportation: Take Staten Island ferry to St. George Terminal and then take S #1 bus to Snug Harbor Road and Richmond Terrace and walk south to Snug Harbor gate.

Background:

This trip can be combined with the Richmond Terrace bus trip (see 7) if needed. Sailor's Snug Harbor was founded through a bequest by Robert Richard Randall, a sea captain and merchant, as an 80-acre retirement home for seamen. The twenty-six Greek revival buildings opened as a residence for 37 seamen in 1833. Its population later swelled to 1,000. By the late 1960's, only 150 residents remained and eventually the home was moved to Sea Level in North Carolina. The Snug Harbor site was sold to the city. Plans are underway to form a link with the city's schools and develop an art, ballet and culture center as an education campus. The philosophy will be to provide a chance for students to "see, feel, taste and learn" ("Culture Finds Snug Harbor on Staten Island," March/April 1978, Learning in New York, p. 9). Long range goals include a music hall, museum, botanical garden and marina. It is envisioned as a grand outdoor classroom and cultural resource center. Gardens are now maintained by the Staten Island Botanical Garden Center.

9. South Beach
Statens Island

Transportation: Take the Staten Island ferry to St. George terminal and then take the 2MB bus to South Beach terminal and Seaside Boulevard.

Background:

South Beach was the site of Staten Island's first permanent settlement, a farming community called 'Oude Dorp' established in 1661. As accessibility for New York City residents improved, South Beach became a very popular resort area, attracting some 100,000 people every Sunday. Hotels for fishermen and bathers sprang up in the area.
The surrounding land has development potential but it is marshy and subject to inundation. Landfill projects are still under consideration. South Beach is now considered unsafe for swimming because of the pollution. It is hoped that when the North River sewage treatment plant starts to function and when the pollution-control projects in New Jersey and Staten Island take effect, the quality of water at South Beach will improve to allow swimming. There is under consideration a plan to connect Hoffman and Swinburne Islands to the mainland by landfill to allow a protective jetty to keep polluted New York Bay waters from eddying onto South Beach. Swinburne and Hoffman Islands were built as quarantine stations by the Federal Government in the 1860's. Unused for many years, financier Bernard Baruch provided half the funds needed for purchase by the city on condition that they later be developed for recreational use. The island buildings have been demolished.

10. Sheepshead Bay
Brooklyn

Transportation: Take IND D train or BMT QB or M trains to Sheepshead Bay and East 16th Street.

Background:
Sheepshead Bay developed as farm country and a fishing village. By 1875, Emmons Avenue was lined with bathing pavilions. The Coney Island Jockey Club opened the Sheepshead Bay Race Track in 1880 which was considered one of the most beautiful and stylish tracks in the east. The area was so stylish, it was nicknamed "Millionaire's Row." Extensive farmland in the inland region remained until the 1930's. Most of the housing in the district was built after World War II. In 1938, ten concrete piers were built along Emmons Avenue to berth fishing and ferry boats. Fishing boats go out for day or night ocean fishing for bluefish, fluke, snapper, black cod, bonita and flounder. On shore, fish stalls attract sales with signs like: "If you did not catch one, buy it here and tell your wife you did." Some of the local seafood restaurants attract patrons from as far away as 80 miles.

The population of the Sheepshead Bay area was about 143,000 in 1970.
A bay is defined as an indentation in the shoreline of an ocean or a large lake. It is larger than a cove and smaller than a gulf. Sheepshead Bay can be observed in two activities: a walking tour of the Emmons Avenue waterfront and a boat trip on the Rockaway steamer. The boats run during the summer months. There is a charge. Teachers can use the sensory observation and water testing worksheets (see Circle Line trip).

11. City Island
Bronx

Transportation: Take IRT #6 to Pelham Bay Park and then take B12 bus to City Island.

Background:

City Island is one of the largest of the islands off the eastern edge of the Bronx; it includes 230 acres. It is linked to the mainland at Rodman's Neck by City Island Avenue causeway.

Originally known as Great Minnefords Island, it was a landmark for ships heading down to the New York port through the sheltered waters of the Long Island Sound. In 1761, Benjamin Palmer came up with a plan to develop Great Minnefords into a port to rival New York City. Nothing ever came of his plan; the only reminder of his idea is the name "City Island" which came of his dream.

In 1895, City Island residents broke their ties with Westchester County and became part of New York City. The population is small, under 5,000 residents.

Shipbuilding was the major industry on City Island until the middle of this century, but many of the boatyards have been losing business and some have closed. World-famous sailmakers, Ratsey and Lapthorn, still remain. The main street is lined with seafood restaurants, boatyard offices and other waterfront-related industries. At the end of City Island Avenue, there are two seafood fast food restaurants that have outdoor seating and a magnificent view of the Sound. There are telescopic viewers for close perusal of ships. Walking down the main street transports you into another time. You are reminded of a 19th century fishing village.
12. Inwood Hill Park
Manhattan

Transportation: Take IND A train to 207th Street and Broadway and walk west or take IRT #1 train to either 207th or 215th Streets and walk west or take M100 bus or B10 bus to 207th or 215th Streets and walk west.

Background:

Inwood Hill Park includes 196 acres of largely untouched wooded area and overgrown snails. It is located on the northern tip of Manhattan where the Spuyten Duyvil Creek meets the Hudson River. Well-known for its natural beauty, it is a site rich in historical significance.

Cavemen used to inhabit the land that is now Inwood Park. Later the land was the home of the Shorakapoks Indians, a Delaware tribe. The Shorakapoks used to dump oyster shells and animal bones in large refuse heaps. These remains, as well as pipe fragments, were uncovered in the 1890's. The Indians used to seek shelter from storms in small caves on a hill in the park; children love to climb through these caves and recreate the Indian experience. Legend has it that the Indians sold Manhattan Island to Peter Minuit for $24 worth of beads and trinkets on Inwood Park land in 1626; a rock tablet commemorates this story. Descendants of this Indian tribe lived in Inwood Park until the early 1900's.

In 1778, the British overran the colonial fort (Cockhill Fort) at Inwood Hill Park. Remains of the fort walls still stand today.

The park paths and facilities were constructed in the 1930's by WPA workers. Some of the paths and trails are now almost entirely overgrown. A small garden is maintained by a community group. While the playground areas are relatively safe, some of the more remote sections are reported to be dangerous.

Suggested locations for observation activities include: Cockhill Fort walls overlooking the Hudson River, the boathouse on Baker Bay, and the Spuyten Duyvil Canal north creek road. There is a legend attached to Spuyten Duyvil. According to Washington Irving, Peter Stuyvesant sent a Dutch trumpeter one dark, stormy night with a message to the mainland. There was no ferryman in sight so the trumpeter decided
to swim across the turbulent waters. He cried to the crowd: "I'll
swim across the water 'Spyten Duyvil' (meaning in spite of the devil)."
While nothing was ever seen again of the brave Dutch trumpeter, many
Marble Hill residents claim they can hear the moaning notes of a trump-
et above the wall of the storm on dark wild nights. It is more likely
that the name Spuyten Duyvil comes from the Dutch words "spuyten"
meaning sprouting spring and "duyvel" meaning meadow.

13. Brooklyn Heights/Brooklyn Bridge
Brooklyn

Transportation: Take IRT #4,
5 or 6 to Brooklyn Bridge/
Worth Street stop, walk across
bridge and walk southwest to
Brooklyn Heights section or
take IRT #2 or 3 to Clark
Street/Brooklyn Heights stop
and walk northeast to Brooklyn
Bridge.

Background:

I. Brooklyn Heights

Developed as a suburb in the early 19th century for wealthy Man-
hattan shipowners and merchants, Brooklyn Heights soon became
one of the wealthiest communities in the country. The opening
of the Brooklyn Bridge and the construction of the IRT subway
line increased the migration to this area. White-collar workers
and artists soon joined the old merchant families and the charac-
ter of the neighborhood changed. The Depression and World War
II years saw old homes being turned into apartments. Some of
the homes began to look run-down. After World War II, a new
breed of city lovers rediscovered Brooklyn Heights and began
buying and renovating old homes. In 1966, the City Landmarks
Preservation Commission designated Brooklyn Heights and its
view an historic district and landmark.

The area known as Brooklyn Heights stretches west from the
Fulton Street business district and north from Atlantic Avenue.
An esplanade on a high plateau over the industrial docks below
offers a magnificent view of the New York City Harbor, the
Brooklyn Bridge and the lower Manhattan skyline.
II. Brooklyn Bridge

Brooklyn Bridge was the brainchild of John Roebling. He envisioned a bridge that would be nearly 1,600 feet long. He started trying to convince city leaders and government officials of the feasibility of the project in 1857 but it was not until 1869 that his idea was approved. The winter of 1866-67 was so cold that the Manhattan-Brooklyn ferries froze in their slips. The city fathers began to see the need for a bridge which would allow all-weather transportation. John Roebling was injured in a boating accident while trying to determine where one of the Bridge towers should be located. His foot was crushed, he developed tetanus, and died. His son, Washington Roebling, took over the project. The construction of the bridge was a difficult and dangerous affair. Men had to climb tall towers and lift heavy weights. They worked days and nights by candle-light and oil lamps. Occasionally the candles and oil lamps caused blazing fires. More than 20 lives were lost during construction.

In 1883, the bridge was finally completed. It was a 5,989 foot long suspension bridge. A toll of one cent was collected, but the toll was abandoned in 1891. Horse-drawn buggies, sheep, hogs, cattle, and pedestrians now crossed between Manhattan and Brooklyn for free.

14. Brooklyn Navy Yards
Brooklyn

Transportation: Take IND F train to York Street/Jay Street and walk east on York Street to Hudson Avenue.

Background:

The Brooklyn Navy Yard was established by the Federal Government in 1801. It was such an important site that in the early part of the century, New York City officials who sought to impress visitors took them to the Navy Yard before visiting anything in Manhattan.

One of the most famous ships built at the Yard was the iron-clad battleship, the Monitor, built for the Union during the Civil War.
The Brooklyn Navy Yards were bustling shipyards through World War II. The Commerce Labor Industry Corporation of Kings (CLICK), a private, non-profit organization, negotiated a 70-year lease with the city, effective February, 1969, to develop the 239 acres of the yard as a self-contained industrial park.

15. Fulton Fish Market
Fulton Street along East River
Manhattan

Transportation: Take IRT #2 or 3 train to Fulton Street.

Background:
To see the market at its busiest, you would have to be there at 5:00 or 6:00 a.m. when most of the retailing takes place. Thursday is the market's busiest day, for that is when the city's fish shop owners and restaurants stock up for the weekend. Situated here since the 1820's, the market sells about 3-1/2 million pounds of fish and seafood every week. Most of the fish now arrives by truck, as trucks are cheaper and faster than boats. The only seafood delivered by water is salmon, which arrives by trawler from Long Island.

16. Roosevelt Island
East River

Transportation: Take IRT #4, 5, or 6, or the BMT EE or RR to Lexington Avenue and 59th Street and walk north one block and east two blocks to 60th Street and 2nd Avenue. Take tramway to Roosevelt Island. Trip takes 5 minutes and costs 50¢.

Background:
The Algonquin Indians called Roosevelt Island Minnahanock. The Dutch bought it from the Indians in 1637 and called it Varcken Evlandt. Governor Wouter Van Twiller kept it as his country estate until England captured it. King Charles II granted it to Captain John Manning, the infamous High Sheriff of New York who was eventually banished there to live out his days in luxurious exile. The Blackwell family farmed the land until the city bought the island from them in 1828.
The island was called Welfare Island during the 19th century because it was a home for the indigent. In 1832, the first city hospital was built on Roosevelt Island, followed by other hospitals and prisons. Famous inmates on Roosevelt Island included Boss William Marcy Tweed and Mae West. The name was changed in 1968 to Roosevelt Island and forty of the 147 acres were set aside for park and residential facilities. It is now the site of an ultra-modern community of apartments, cooperatives, and recreational facilities. At the northern tip of the island is located The Octagon, an old lighthouse designed by Alexander Jackson Dais in 1839 with an interior rotunda and spiral staircase.

17. UN Plaza/Delacorte Geyser
42nd-47th Streets along East River
Manhattan

Transportation: Take IRT #4, 5, or 6 to Grand Central Station and walk east to East River or take M106 or M104 buses to last stop.

Background:

The United Nations site was chosen when John D. Rockefeller, II, donated $8.5 million toward land that William Zeckendorf had assembled for private development. The Rockefeller donation covered two-thirds of the purchase; the remaining third came from the City of New York.

The complex of buildings was designed by an international team of architects, including Oscar Niemeyer of Brazil, Sven Markelius of Sweden, Le Corbusier of France, and Wallace K. Harrison of the U. S.

Now a top tourist attraction, some 10,000 visitors tour the UN complex each day. If there is time, the students would enjoy the tour prior to their observation activities, but there is an admission fee and reservations are strongly advised.

The neighborhood includes institutional offices related to the United Nations, e.g. the U. S. Mission and the Institute of International Education, hotels, luxury housing, and commercial buildings. The plaza garden overlooks the East River. Berobed dignitaries from all different countries can be seen walking along the promenade.
Across from the promenade at the southern tip of Roosevelt Island, the Delacorte Geyser can be seen, spraying a steady stream of purified water 400' into the air. It was a gift to the people of New York.

18. Grand Street Streetend Park
Grand Street and the East River
Brooklyn

Transportation: Take the BMT LL train to Bedford Avenue and North 7th Street. Walk south on Bedford Avenue 7 blocks to Grand Street and walk east three blocks to the East River or take 39 bus to Bedford Avenue and Broadway and walk north to Grand Street and east to the East River or take the 61 bus to Bedford Avenue and Grand Street and walk east to the East River.

Background:

The Grand Street Streetend Park was an experiment by the New York Parks Council to determine the feasibility of community-developed waterfront parks. The Williamsburg section of Brooklyn was chosen as an ideal experimental area, as the need for waterfront access in this crowded community was so urgent and community organizations and schools seemed eager to participate in the project. School children, community volunteers and Youth Corps workers started to build a neighborhood park that would meet the needs of the community and provide open access to the river in 1976. The finished product boasts paths and a road that once led to a Manhattan/Brooklyn ferry landing on Grand Street in past years. There is an observation deck and platform to view the boats that doubles as a concert stage for neighborhood Salsa bands and puppet shows. A garden adds to the scenic beauty and creative seating was arranged by filling old barrels with concrete.
OBSERVATION TRIPS WORKSHEET

Date: __________________________ Location: __________________________

Time: __________________________

Weather: __________________________

1. Describe the site in detail. Draw rough map(s) and/or sketches of facilities and/or natural resources.

2. Does this facility need to be located on the waterfront? Could it be located elsewhere? Explain.

3. What activities do you see going on?

4. Who seems to be using the facilities? If possible, tape record interviews with site users or workers.
5. Is this site being used efficiently? Creatively? Explain.

6. How would you improve this site? Be specific.
STUDENT DESIGN FOR FUTURE WATERFRONT DEVELOPMENT

TIFFANY STREET PIER

Tiffany Street, Bronx, NY
18P/IA; G35; ☐ ☐ ☐

Transportation: Take bus route #34 from Hunts Point Avenue, Southern Boulevard (take IRT Lexington Avenue #6 to Hunts Point - Southern Boulevard)

Background:

57 of the 220 straight-line miles of waterfront land in New York City lie vacant, deserted or underutilized. The New York City Planning Commission in its 1971 report on the waterfront admitted that "the waterfront is now the city's most extensive, underdeveloped, and promising natural resource." (NYC Planning Commission, The Waterfront, New York: January 1971, p. 5.)

Some communities have organized to develop streetend docks and waterfront land into parks, e.g. Grand Street in Brooklyn. Other streetends invite future plans and are now used informally (sometimes illegally) for washing cars, fishing, picnicking, etc. One of this latter group is the Tiffany Street Pier. Following this lesson are other sites and their appropriate backgrounds that can be used with this lesson's activities.

Goal:

To design a park from an underutilized and abandoned street end.

Pre-trip Activities:

The teacher should discuss the steps that are involved in park planning from design board to finalization. An excellent source of information would be the local office of the New York City Planning Commission. We suggest inviting a planner to the classroom for a lecture/discussion and/or contacting the Parks Council (Norm Cohen), for information on streetend park planning (telephone: 799-6000)

It would also be beneficial to discuss the concept of the urban park. Why is it necessary? How did it evolve? When were public parks first developed? Why? (See following summary of the history of parks.)
History of Parks

If you consider a park as a space open to the public, then the first parks were built by the Greeks. They were usually groves or athletic training fields. The Romans maintained several small parks, and one large one, called the Campus Martius.

Since ancient times, rulers had laid out pleasure grounds and hunting preserves but these "parks" were never open to the public. Only the royal guests and nobility could use them. In the Renaissance (14th to 16th centuries) in Europe, cities began to set aside land for public use. Gardens were planted, and promenades planned. Then, in the 18th century, many of the royal hunting preserves and pleasure grounds were turned into public parks.

Parks are not often spaced properly in cities. This is because most cities were built before people realized the need for parks. This is especially true in American cities. This is why you don't have an even distribution of parks. It was not until the 19th century that city planners stimulated cities to plan for parks.

In New York City, most of our parks were set aside for public use in the late 1800's. Before that time, the land was farmland or part of large estates. Van Cortlandt Park was part of the Van Cortlandt Mansion grounds. St. Mary's Park was part of the Morris family estate.

The more crowded the city becomes, the more important it is to have open space. Streetend parks give a sense of space as they border on river or ocean and give the impression of expanse and freedom. An excellent example of a streetend park is the Grand Street park (See Grand Street Observation Trip).

Activities:

Have the students visit the Tiffany Street Pier and take a walking tour of its immediate environs to get the "feel" of the neighborhood and determine what might be best to plan for the Tiffany Street dock. Fill in pertinent data as to housing, other parks, stores, etc., on map. Take pictures from all angles of the Pier. Test the water for D.O. + coli-form to see if fishing and swimming would be possible off the pier. See water testing worksheet from Pelham Bay trip. Materials needed will be tape measure, paper, pen, camera, water test kits.
Post-trip Activities

1. Develop the pictures and make a display of the Tiffany Street neighborhood using the worksheet results for captions and paragraph descriptions.

2. Design a park for the pier. Draw a blueprint, make a model or diorama of your design. Take your plans to the next Community Planning Board meeting.
1. On your map, locate and label apartment buildings in use (not abandoned), stores, parks, vacant lots, etc., in a three-block radius of the Tiffany Street Pier.

2. Is the Tiffany Street Pier in good condition? Describe it in detail. Would it need to be rebuilt entirely or could it be repaired?

3. Measure the pier’s width and length.

4. Take pictures of the pier itself, the neighborhood around it, and the view of the water from the pier.

5. Is the pier accessible (easy to get to)? Why (not)?

6. Do enough people live nearby to warrant having a park in this location? Explain.
7. Test a sample of water from the East River for coliform count and D.O. (See water testing worksheet from Pelham Bay trip.)

Findings: D.O. ____________________________

Coliform ____________________________

8. List the activities you think children would enjoy doing on the Pier, e.g. fishing.

________________________

________________________

________________________

________________________

9. List the activities you think adults would enjoy doing on the Pier, e.g. sitting.

________________________

________________________

________________________

________________________

10. List what facilities you think should be constructed on the Pier and why you would like to see them.

11. Would you like to see plants, trees, or grass near the pier? Why (not)? If so, describe what you would plant and where.
ALTERNATE STREETEND SITES - All sites have potential as streetend parks

I. Front Street
Staten Island

Transportation: Take Staten Island Ferry to St. George terminal. Take 2SB bus along Bay Street. Get off at Wave Street or Prospect Street and walk east to Front Street.

Background:

Front Street is the site of a group of abandoned piers with a breathtaking view of the Verrazano Bridge. The piers were built between 1921-1923 under Mayor John Hylan in an attempt to boost Staten Island's maritime life. As they were never used, they came to be known as Hylan's Folly.

II. 125th Street Pier
125th Street and Hudson River
Manhattan

Transportation: Take IRT #1 to 125th Street and Broadway. Walk west to Hudson River.

Background:

Formerly the site of the New York/New Jersey ferry to the Palisades, and also a stop on the Hudson River Dayliner route, this pier is no longer used for boat traffic. The pier runs under the Henry Hudson Parkway. It is used for fishing, washing and fixing cars, and hanging out.

III. Dyckman Street Pier
Dyckman Street and Hudson River
Manhattan

Transportation: Take M100 bus or IND A train to Dyckman Street and Broadway. Walk west to Hudson River.
Background:

Once the site of a New York/New Jersey ferry run, the Dyckman Street pier is no longer in use. It is used for fishing, washing or fixing cars, and hanging out.