

Part 6

What affects
the lagoon?

How Have Humans changed the Lagoons?

While wetlands are now coming to be appreciated for their rare qualities, this was certainly not true even in the recent past. As more and more people settled near San Diego, wetlands were viewed as wastelands, obstacles to progress.

Early mariners travelling along the coast mistook Mission Bay for San Diego Bay, naming it False Bay. Originally an estuary with mudflats and salt marsh, Mission Bay was dredged and filled, with the river confined to channels. Roads and highways were built across the bay, and watersports introduced. Only Kendall Frost Marsh and nearby Famosa Slough remain as wetlands.

As development proceeded along San Diego's coast, lagoons often served as boundaries between coastal cities. Farming, houses and road construction encroached upon the lagoons. Near the mouth of Aqua Hedionda Lagoon is a power plant. Mining has occurred along the San Luis Rey River, while a cemetery was once located along Buena Vista Lagoon.

The best preserved of San Diego's lagoons are the most southern and northern lagoons. Near the U.S - Mexico border, only Tijuana Estuary is not crossed by road or rail. Dams have been built upward from all the lagoons, with the sole exception of Santa Margarita Estuary, located to the north, near Camp Pendleton.

During the first world war, gunpowder was in high demand, and kelp was introduced as a key ingredient. Kelp processing plants were located along Sweetwater Marsh and San Elijo Lagoon. Cement

foundations still remain.




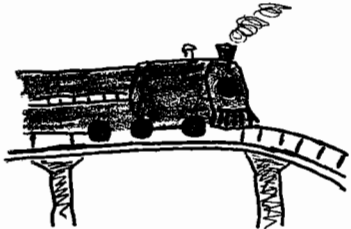

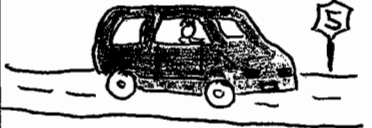
With more and more people living nearby, disposing of waste and sewage became a problem. Before releasing into the ocean, sewage was discharged to settle into these low-lying areas. Sewage was dumped into San Elijo and San Dieguito lagoons for over 30 years, ending in 1974.

San Dieguito Lagoon has certainly suffered the most extreme effects. In the 1930's, surrounding wetlands were filled for construction of the vast Del Mar Fairgrounds and Racetrack, along with parking lots. However, near the site where an airport operated for twenty years, a lagoon has been restored.

Batiquitos Lagoon is an excellent example of the positive and negative effects of human interference. Berms built across the lagoon for rail and freeway had restricted tidal flushing from the ocean. Without this natural flushing, silt accumulated, and the normally brackish estuary (partly salty, partly fresh water), became a fresh water lagoon. Over time, the lagoon would have filled, becoming a swamp. A major dredging project restored an open channel to the ocean, bringing back native plant and animal species. A similar project may take place at Buena Vista, currently a fresh water lagoon.

Another example of a shift in public attitude is Tijuana Estuary, where a boat marina was planned, but halted by citizen protest. What will the future bring? Increased awareness and education are key to preserving the habitats of these precious natural resources.

History of the San Elijo Lagoon

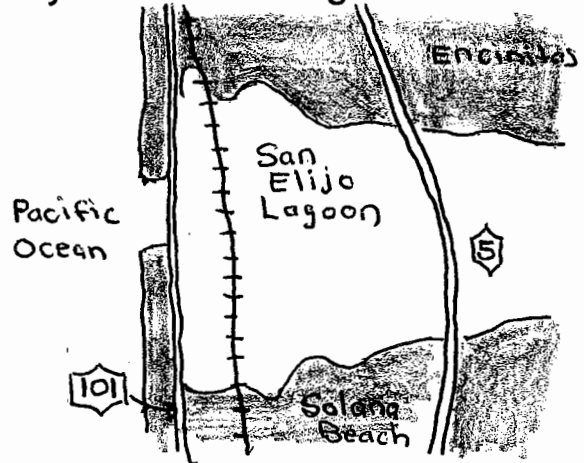
<p>1000 A.D. Along the lagoon, Kumeyaay lived by hunting, fishing and gathering shellfish. They used native plants for food, medicine, shelter, clothes and baskets.</p>	
<p>1700's Spanish explorers and settlers arrived. Along with them came 'invasive' plants from Europe and Asia, pushing out some native species.</p>	
<p>1769 The San Elijo Lagoon was named by an expedition led by Gaspar de Portola, heading north from San Diego to explore the coastline.</p>	
<p>1887 The Santa Fe railroad was constructed along the coast, crossing the lagoon.</p>	
<p>1912 The Pacific Coast Highway was constructed, with dikes crossing the lagoon.</p>	
<p>1965-68 Interstate Freeway 5 was constructed, crossing the lagoon.</p>	

How have humans affected the lagoon?

In its natural state, the mouth of a lagoon is open to the ocean, so that its waters are regularly flushed and cleansed by the rise and fall of ocean water. Salty water flows into the lagoon, bringing nutrients to living creatures. As the tides retreat, they flush out stagnant water and dead matter.

Roads, bridges and berms built across the lagoon have restricted this natural tidal flow.

Look at the map of the San Elijo lagoon. Identify the three man-made roadways built across this lagoon:



1. _____
2. _____
3. _____

What happens when the lagoon is not open to the ocean?

Without a free opening to the ocean, the lagoon becomes unhealthy, resulting in:

1. *excessive growth of algae*
2. *low quantities of dissolved oxygen*
3. *high bacteria content*
4. *fewer food sources for birds and animals*
5. *a buildup of sediment*

Local conservation efforts have periodically dredged San Diego's lagoons to maintain an opening to the ocean's tidal flow.

Pollution flows into wetlands

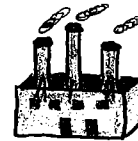
Pollution comes from farms, horse ranches, factories, cars, houses and buildings. Clearing land for construction adds large quantities of soil to the watershed, which wash downstream. Home lawns and golf courses contribute fertilizers and pesticides.

Farms & Ranches



Fertilizer
Pesticides
Manure

Factories

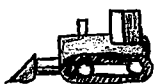


Chemicals
Metals

Silt
Soil

Gasoline
Oil

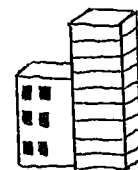
Sewage
Trash



Construction sites



Vehicles



Cities

Many people mistakenly believe that dirty water dumped into a storm drain goes to a sewage treatment plant. This is incorrect! Any trash, oil or chemicals that go down storm drains, flows directly to streams or lagoons. This water is not treated.



Water Quality

Scientists monitor the quality of the water to assess the health of the ecosystem, and the degree of pollution.

Some general observations of the region:

How fast is the water moving?

What color is the water?

How silty is the water?

How deep is the water?

Is there a lot of algae or pond scum?

Do you see signs of pollution: i.e. an oily surface?

How does the water smell?

Do you see signs of animal life?

Specific tests can be performed to monitor water quality:

Water test:	What the test measures:
pH	acidic or basic nature of water
turbidity	cloudiness of water
temperature	how hot or cold is the water?
salinity	amount of salt dissolved
dissolved oxygen	amount of oxygen in water
phosphates	amount of nutrients in water
nitrates	amount of nutrients in water

Instructions for performing such tests and interpreting the results can be found in resources, such as www.green.org.

What happens when nutrients enter the lagoon?

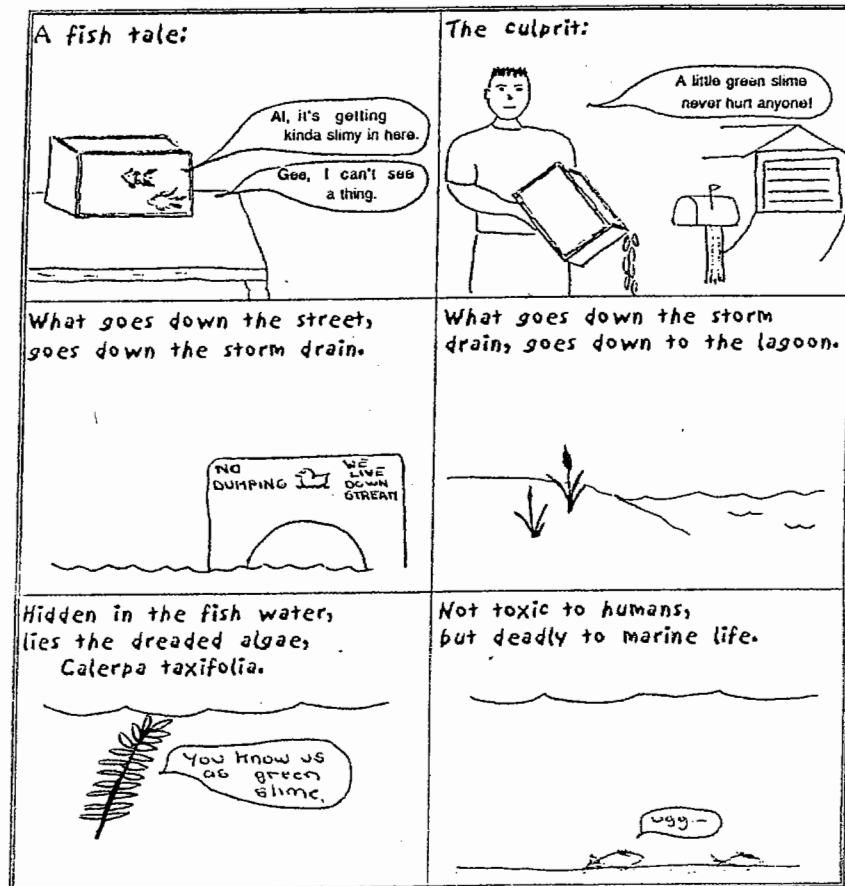
Runoff from farms and lawns may be contaminated with fertilizer; cities may contribute sewage and trash. This runoff carries nutrients, such as phosphates and nitrates, which are food for algae. Too much food causes algae to grow and multiply.

Algal blooms, also called **eutrophication**, discolor and cloud the water, blocking sunlight from reaching plants. Plants die, reducing food and habitats for wetland animals.

Also, algae die and decompose, using up oxygen in the water. Wetland animals depend on dissolved oxygen to survive. Eutrophication is a serious problem for lagoons.

You could pollute the lagoon without even knowing it!

A possibly true story:



How can we preserve remaining wetlands?

Think of 5 ways that the community could work together to help protect wetlands:

1. _____
2. _____
3. _____
4. _____
5. _____

What can **YOU** do to help protect our local wetlands:

1. _____
2. _____
3. _____

Come up with a snappy slogan that could be used on bumper stickers or billboards encouraging people to protect wetlands.

For example: **Only Rain in the Storm Drain!**

Find a Solution to Pollution