

National Marine Sanctuaries
National Oceanic and Atmospheric Administration



NATIONAL MARINE
SANCTUARIES



MBNMS Citizen Science

Lisa Emanuelson

Citizen Science

Monterey Bay National Marine Sanctuary

Date: _____

City: _____

Site ID: _____

Site Name: _____

First Flush 2016 _____ of 2

Arrival Time: _____

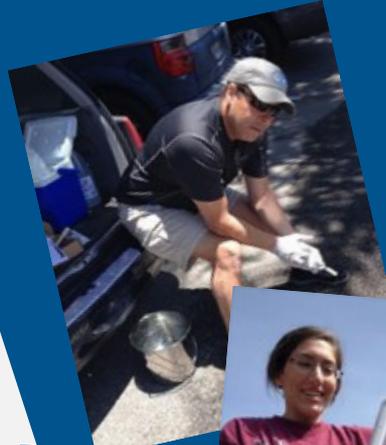
Departure Time: _____

Team Members

1	4
2	5
3	6

Time	Conductivity (µS)	Murkiness clear, cloudy, murky	Answer Y, yes or N-no for the following questions				Time to fill the bucket? Sm Ld Cup
			Rain	Oil Sheen	Trash	Sewage sighted or smelled	

NOTE: Begin sampling when the conductivity is below 1



Citizen Science

Cornell Ornithology Lab's eBird

Global Learning and Observations to Benefit the Environment (GLOBE)

Adopt a Stream

Surfrider's Blue Water Task Force

Citizen Science

Beach COMBERS

Water Quality- First Flush

Water Quality- Snapshot Day

Water Quality- Urban Watch

Team OCEAN

LIMPETS

Biotoxin Plankton Monitoring Program

Dive surveys

Whale Alert

A close-up photograph of a person's hand holding a large, smooth, greyish-blue beach combber shell. The shell is spherical and has a glossy, reflective surface. The background shows a sandy beach, the ocean with white-capped waves, and a clear blue sky. The text "Beach COMBERS" is overlaid on the image in a bold, black, sans-serif font, arched over the top of the shell.

Beach COMBERS

Beach Coastal Ocean Mammal/ Bird Education &
Research Surveys

Beach COMBERS



Large scale seabird die off

Harmful algal bloom impacts

Tarring of beached birds leads to removal of Jacob Lukenbach oil



Training/ Mentoring/ Team

100 miles of beach walked/ month

110 active volunteers

1225 volunteer hours/ year

\$33,798

First Flush



Metals:

copper, zinc, lead

Bacteria:

E. coli, enterococcus

Nutrients:

nitrate, phosphate,
ammonia, urea

Sediments:

total suspended solids
turbidity

Other:

fluoride, potassium,
color, hardness



First Flush Sites 2015



Partnerships –
MRSWMP

Trainings

Validation/ QA

Teams

37 outfalls

> 300 hours/yr

> \$8,268

Copper

Bacteria

Phosphate

First Flush

Snapshot Day



Creek and river sites
Bacteria and nutrients
Field measurements
“Snapshot” of water quality
Partnerships

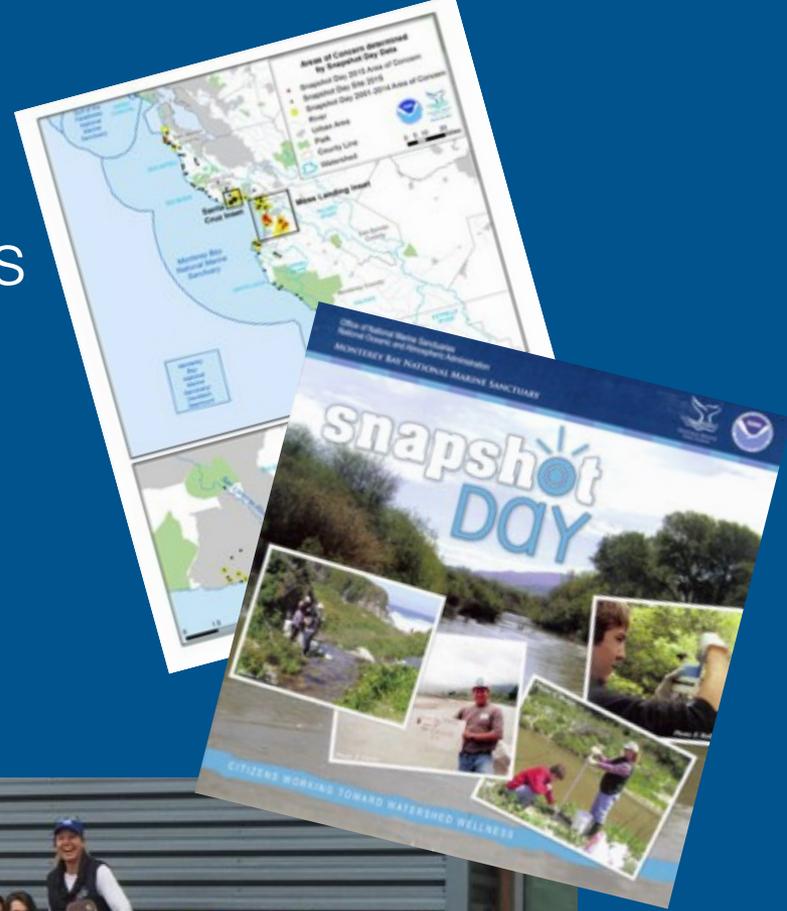
Snapshot Day

111 sites in 10 watersheds

143 volunteers

715 hours

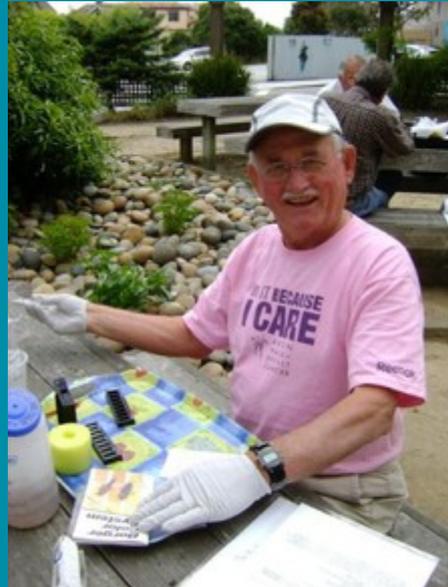
\$19,727



Urban Watch

Detergents
Ammonia
Phosphate
Chlorine
Bacteria
Trash

Infiltration
Back washing
Illegal disposal
Public contacts



Urban Watch

Pacific Grove
20 volunteers
174 hours
\$4,801



Team OCEAN

Sensitive species
Disturbance prevention
Documentation / severity



Team OCEAN



Model program
SJSU masters
thesis

Trends

Timing

Locations

1076 hours

\$29,687

Long-term Monitoring Program and Experiential Training for Students

Training - classroom and field

Sand crabs and rocky intertidal

Currents Symposium
Cosco Busan Oil Spill

LIMPETS





Partnerships

Training

>128 hours

>\$3531



LIMPETS

Marine Biotoxin Monitoring Program

Phytoplankton monitoring

Early detection of toxigenic species that could impact shellfish

CA Department of Public Health - QA

Weekly samples

San Simeon Pier

52 hours

\$1435



Dive surveys by chapter of Sierra Club

Undaria removal in the Monterey Harbor:
six 55 gallon trash bags

Whalers Cove Surveys for sea star wasting –
800 m²



296 hours

\$8167

Volunteer Divers



Reducing ship strikes

Smart phone app

Observation of whales-
alive or dead

Multiple species

MPA's

Whale Alert

Citizen Science

What do citizen science programs provide to the public beyond the experience of data gathering?

What are the hurdles to MBNMS' citizen science programs?

What are future growth areas for citizen science programs in MBNMS?

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