Consensus for a Healthy Watershed

by Carlos Porrata, Council Chair

Water reminds us of our connections to the natural world and to one another. Everything we do and produce and consume belongs to the flow of rainfall through streams and groundwater to the nearshore marine environment. In western Marin County, a large land area drains into Tomales Bay. In 1986, the bay’s once-pristine waters were found to be compromised, leading to the founding, in 2000, of Tomales Bay Watershed Council.

This annual newsletter, TBWC’s sixth, reports on some big news, including the Council’s receipt of state grant funds to spearhead collaborative efforts to protect Tomales Bay. Here are some highlights, and I encourage you to find more details on the pages inside.

TBWC and Point Reyes National Seashore together won a $1.5 million state grant—the Council for a long-term Water Quality Monitoring Program, the Seashore for the Giacomini Wetlands Restoration Project (in my experience, a most significant natural resource restoration project in our watershed and beyond).

With other state funding, TBWC and our partners are developing an Integrated Coastal Water Management Plan, due to be finished this summer. Along with a prioritized list of projects for future funding and implementation, this effort will produce a first-ever plan that includes water supply and associated needs in our communities around Tomales Bay and in Bolinas.

A breakthrough restoration plan is taking shape for Chicken Ranch Beach, a microcosm of the Tomales Bay ecosystem, with responsible agencies and private property owners working together through TBWC.

We are helping Inverness Association and the community of Woodacre to enlist homeowners in the care of our septic systems, for improved water quality throughout the watershed.

While much more work lies ahead, these and other milestones to date are encouraging. Perhaps most important: our very real achievements draw strength from a committed consensus approach. TBWC, in its role as convener, has effectively provided the forum for all interested parties to understand the problems regarding the health, water quality, and ecology of the watershed—and to work together towards finding solutions.

My hope is that our children and grandchildren will enjoy this precious place—and will have every reason to build upon our present efforts and continue in its stewardship.
A New Chapter for Chicken Ranch Beach

“See you at the Beach!”

Thus concludes a newsletter from the Inverness Waterfront Committee, a citizen group working to regain public access to a beloved local beach. The year was 1972, and a 10-year campaign had just ended in success. Committee members were off for a celebratory swim at the shoreline north of Inverness known as Chicken Ranch Beach.

This local splash sent ripples far beyond Tomales Bay. Besides the Committee’s effort, a neighboring property owner brought suit after Chicken Ranch was purchased and declared off-limits (see Time Line below). The litigation, Marks v. Whitney, reached the California Supreme Court, which handed down a landmark decision in 1972. The ruling established the right of people throughout the state to access any shoreline below the mean high-tide line. Ever since, California tidelands have been part of the commons—a resource belonging to the public.

But the saga of Chicken Ranch Beach was far from over. The ecosystem in this little watershed has been barraged with successive impacts over the years, from dumping of dredge spoils, to development on the wet meadow, to mechanized dredging in the creek.

Fortunately for this commons in Tomales Bay watershed, stewardship efforts on the part of many people and organizations have persisted over the decades. The challenge has been to sort out and solve the problems affecting the mosaic of wet meadow, riparian grove, flowing stream, miniature estuary, sandbar, and tidal flat—found at Chicken Ranch Beach.

Restoration Planning

Tomales Bay Watershed Council is writing a new chapter in this story—an integrated plan to restore the valley and cove—with the cooperation of involved agencies, activists, and neighboring private property owners.

The new chapter begins with a collaborative proposal for the funding to launch Phase I of a restoration project at Chicken Ranch Beach in the coming year. Local private, state, and federal partners are helping develop this proposal, which includes:

► community outreach to develop long-term project goals and objectives;
► collecting field data to understand site conditions (already in progress);

Left: Aerial view to SW—Golden Hinde marina (far left), Chicken Ranch Beach, and Third Valley (diagonal cleft).
modeling various restoration options;
- securing the required permits and environmental compliance; and
- bringing these elements to a final design so that the TBWC may seek implementation funding within three years.

The overall aim is restoration of a self-sustaining wetland system in the lower reaches of Third Valley Creek watershed. The project’s design will likely include a blend of habitats—a riparian stream corridor, a terraced floodplain, a seasonal/perennial freshwater marsh, and possibly a tidal/saltwater marsh—in areas that have been significantly degraded by human alterations in the past 150 years.

Among the project objectives:
- reduced sedimentation and bacteria in Tomales Bay;
- improved wetland habitats in the project area, expanding the patchwork of wetlands along the Tomales Bay shoreline;
- a functional floodplain along the bottom reaches of Third Valley Creek with no increase in flooding potential on adjacent lands; and

Who Uses Chicken Ranch Beach?

Along with the 100-plus beachgoers likely to visit Chicken Ranch Beach on a sunny August day, to swim, play in the sand, walk dogs, or launch kayaks, many others species inhabit and visit the beach and Third Valley Creek.

TBWC’s Habitat Committee is developing a list of species that may occur in this area and that are protected by state and federal law. Included are the California black rail, northern spotted owl, tidewater gooby, steelhead salmon, California red-legged frog, and many plant species.

Already using habitats here are scores of sandpipers, cormorants, herons, intertidal invertebrates, and small mammals. Recently a river otter was sighted in Third Valley Creek.

Wildlife abundance and diversity would likely increase in response to habitat improvements resulting from future restoration and conservation.

- improved aquatic habitat in the system.

Potential project partners and adjacent private landowners have expressed strong support and enthusiasm for the plan. (Public access to the tidelands, of course, is guaranteed!) TBWC is a catalyst, making possible a new consensus drawn from good information and a shared commitment.

The effort required for a successful restoration is large; the challenges are complex. This would come as no surprise to the Waterfront Committee of 40 years ago, and to the dozens of people whose unflagging work in the past has given present and future generations a treasured commons to protect and restore.

“See you at the Beach!”

Tom Baty, Tom Gaman, Michael Mery, and Mairi Pileggi helped prepare this article.
Major New Work Funded by State Grants

Water and Wetlands: Planning and Implementation

The consensus to act on behalf of healthy water supplies and ecosystems, embodied by Tomales Bay Watershed Council (TBWC), has drawn recognition and support from the State of California. In the past year, new funding has enabled Council partners to undertake ambitious planning efforts, focused on water, for the communities around Tomales Bay, in San Geronimo Valley, and in Bolinas. The same source—“Prop 50 funding” (explained below)—provides for current and projected implementation projects, from restoring vital wetlands to ensuring water supplies for residential, agricultural and other needs in the watershed.

In January 2006, the State Water Resources Control Board awarded TBWC a $460,000 planning grant under the Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002—Proposition 50. Our Prop 50 grant funds a four-fold, cooperative effort spanning more than a year and coordinated by a new TBWC staff person Katie Burdick. The project components are:

- development of an Integrated Coastal Water Management Plan (ICWMP);
- septic solutions outreach;
- a municipal stormwater assessment and recommendations reports; and
- assessments of four important Areas of Special Biological Significance.

The Council will undertake a public review process during June and July 2007, with formal adoption of the ICWMP by the Council slated for August.

Complementing planning efforts, Prop 50 also funds implementation projects. Such funding represents the potential to improve water supply, water security, and water quality for the Tomales Bay region, paying (for example) for improvements to poorly functioning storm drains and culverts, remediation of problem septic systems, improvements to water supply and storage, and habitat and water quality improvements.

As this Bulletin goes to press, the Integrated Coastal Water Management Plan is well under way, and preparing this plan involves several steps:

- gathering and analyzing existing management plans in order to address water supply and water management issues—water supply reliability, flood management, recreation and public access, wetland enhancement, non-point source pollution control, and wastewater treatment;
- developing a clear set of management issues, objectives, and strategies (three major components of the plan) to guide watershed management over the coming decades;
- development of a prioritized list of projects—both for implementation grant funding and for funding via other government grant programs now and into the future; and
- identification of issues of controversy within the watershed.

As part of the focus on septic system solutions within the watershed, the Inverness Association, with grant support, is producing a brochure called “Septic System Monitoring and Maintenance” for distribution to residents within the Inverness Ridge Planning Area. Some of this material is included in the removable guide included in this newsletter. In Woodacre, a group of citizens has convened to engage in a community-wide dialogue about options for addressing septic systems throughout the community.

As part of this planning effort, since January 2007, Ed Strausser, TBWC water technician has been out in the field collecting water quality samples in Tomales, Point Reyes, and Woodacre. Last fall the County of Marin mapped stormwater networks in these three villages, and our monitoring will collect information to help us identify issues and needs associated with water quality and stormwater networks.

We have also assessed four local Areas of Special Biological Significance—Bird Rock, Point Reyes Headlands, Double Point, and Duxbury Reef. Partners and consultants conducted site visits in October 2006, and reports detailing the existing conditions for each area are currently in an internal review cycle.

In order to support all the activities associated with planning, TBWC hired a team of consultants to assist with researching, writing and developing the ICWMP. In addition, for this effort, Bolinas Community Public Utility District joined the Tomales Bay Watershed Council. Working together since 2000, TBWC now has 31 members who represent the full spectrum of regional interests and jurisdictions (see page 9 for the current roster).

Public involvement in this vital planning process is welcome. Each TBWC meeting through August will have a section dedicated to the Integrated Coastal Water Management Plan.

For more information please contact Neysa King, Watershed Coordinator, at 415-868-9081 or tbwc@svn.net.
Partnering for Wetlands Restoration and Watershed Monitoring

In a regional effort of huge conservation importance, the Point Reyes National Seashore and its Association (PRNSA) has partnered with the Tomales Bay Watershed Council for a combined grant of $1.55 million in Prop 50 implementation funding, and work is scheduled to begin this summer.

The Tomales Bay Wetlands Restoration and Monitoring Program (the title of this collaborative grant) is a community-driven watershed initiative, consistent with the planning priorities of TBWC, the Point Reyes National Seashore, the Tomales Bay Shellfish Technical Advisory Committee, and the draft Marin County Watershed Plan. It includes two major elements—the Giacomini Wetland Restoration Program (“Restoration,” below) and the TBWC Water Quality Monitoring Program (“Monitoring”).

The Restoration element, focused on the confluence of Lagunitas and Olema Creeks where they flow into Tomales Bay, may be the single most important measure to reestablish hydrologic function and facilitate improvements to water quality and aquatic/riparian habitat in the watershed. Among the organisms to benefit substantially from more and better habitat: a host of estuarine and marine aquatic invertebrates; shorebirds and waterfowl; and fish—anadromous salmonids, especially. Each year more than 1,000 endangered coho salmon adults migrate through this area on their spawning run up Lagunitas and Olema Creeks.

By removing levees and tidegates on a 563-acre diked dairy, this project will restore floodplain and intertidal habitat to an area conveying more than two-thirds of the freshwater inflow to the Bay. The amount of vegetated intertidal wetland habitat within the bay—salt marsh, for example—will be doubled as a result.

Extensive ecological evaluations and hydrologic modeling efforts show that the proposed project will reestablish important fluvial, tidal, and estuarine dynamics, while providing extensive flood relief to private residences adjacent to the project area. The restoration aims to achieve substantial and long-lasting ecological and water quality benefits within and far beyond the property boundaries.

The Monitoring element of the program involves implementing comprehensive water quality data collection and analysis. Focusing both on long-term trends and on source areas, this effort will measure indicator bacteria, dissolved oxygen, nutrients, acidity (pH), conductivity, salinity, temperature, turbidity, and suspended sediment levels and duration. Trend monitoring will generate water quality data to assess long-term shifts in water quality within Tomales Bay and tributaries. Source area monitoring will focus on identifying sources and quantities of water pollutants to Tomales Bay and its freshwater tributaries, to evaluate and prioritize past and future water quality improvement efforts.

One result will be a baseline of stream and bay water quality conditions. Such information, scientifically sound and reliable, is needed in order to evaluate the “total maximum daily load” (TMDL) in Tomales Bay waters, whether of pathogens, sediments, or nutrients—the factors known to be compromising water quality. Monitoring data will help multiple watershed partners make local and regional management and planning decisions.

The combined proposal holds an exceptional opportunity for us to establish and conduct monitoring at the watershed scale and, ultimately, to quantify potential response of Tomales Bay water quality to the largest wetland restoration project opportunity within the watershed. All this as we watch floodwaters spread over a transformed floodplain and the throngs of wetland dependent wildlife returning to restored habitats.
Prop 50 Implementation: COW Grant for Grazing Lands

Helping ranchers and the environment

The State of California has recognized the potential of cooperative efforts to protect and restore the Tomales Bay Watershed, granting support for large-scale planning and implementation projects. State funding from the Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002—Proposition 50—is now driving unprecedented efforts, whether coordinated by Tomales Bay Watershed Council or initiated and carried out by associate organizations.

The Marin Resource Conservation District (MRCD) this year will receive one million dollars in Prop 50 funding for a project called “Conserving Our Watersheds (COW): TMDL Implementation in Tomales Bay and Stemple Creek watershed.” To improve the environment, the goal of the COW program is to support ranchers implementing 20 to 30 successful, voluntary conservation practices on agricultural lands in the Tomales Bay and Stemple Creek watersheds. It is anticipated that many of these projects will result in reduced sediment delivery into Tomales Bay by as much as 75-95% from gullies and streambanks and by 50-75% from riparian fencing and revegetation projects.

Another important goal of COW is to continue to build excellent stewardship practices into the everyday work of ranching and farming in west Marin County—practices that will protect Tomales Bay, the Estero de San Antonio, and their tributaries far into the future. This work will expand upon the efforts of a large number of producers in the Tomales Bay, Walker, and Stemple Creek watersheds who are already tackling erosion and water quality projects on their land. Through voluntary participation in the COW program, landowners will be able to continue their proactive approach.

The COW program will utilize the Marin Coastal Permit Coordination Program (MCPCP), which provides coordinated regulatory review of 16 types of conservation and restoration practices for grazing lands, intended to reduce erosion, enhance aquatic and terrestrial habitat, and assist ranchers with sound stewardship in the Marin County coastal watersheds. These practices include access roads, animal trails and walkways, critical area plantings, filter strips, fish stream improvements, grade stabilization structures, grassed waterways, lined waterways, sediment basins, spring developments, and stream channel stabilization.

Projects will be selected through a process that has proven highly successful for other recent MRCD grant programs. Landowners will submit candidate projects through an open proposal process; a Technical Advisory Committee will then review and rank the projects and make a recommendation to the MRCD Board. Each producer will have the opportunity to obtain assistance with 1) project planning and permitting, 2) technical/engineering expertise, 3) construction, and 4) maintenance and monitoring.

If you are a rancher interested in being notified of this funding opportunity, please call the Marin RCD office at 415-663-1170.

—Nancy Scolari, Marin RCD

1 TMDL stands for total maximum daily load—of sediments and nutrients entering a body of water such as Tomales Bay. A key standard set by the State Water Quality Control Board for assessing water quality, TMDL is the responsibility of everyone inhabiting and using the watershed.
“Either it works… or you do!”

**Keeping Your Septic System (and Our Watershed) Healthy**

Many of us living in rural watersheds are unfamiliar with the backyard ecosystems at work for us, buried in the ground: our septic systems. Yet we’re responsible for what leaves our home and ultimately rejoins the larger flow of water through the environment. What does one need to know in order to keep a septic system healthy and performing well? Here are some commonly asked questions and some answers you may find helpful. Please detach and save this page.

**Q:** What does it mean to rely on a septic system—as is the case for much developed property within the Tomales Bay watershed?

► What goes down your drain—everything washed “away” by your plumbing—is *not* carried to a a distant treatment plant. It stays on your property, flowing first into your septic tank and from there to a drainfield. Wastewater then seeps into the ground, and some enters our streams and estuaries.

**Q:** Who’s responsible for keeping the system working well?

► You, the resident. Property owners need to communicate “how-to” instruction (see checklist, reverse) to tenants. A failed system can cost many thousands of dollars to repair, can reduce property values, and can pollute creeks and Tomales Bay, damaging the ecosystem. The good news: regular maintenance can ensure that your system stays healthy.

**Q:** How does a septic system work?

► Unseen by you, your “onsite sewage treatment and disposal system” sorts out and processes the waste and water it receives from your drain pipes. From your house’s main pipeline, your effluent arrives in your septic tank—a watertight container typically made of concrete, fiberglass or polyethylene, buried underground. There, in the first of two compartments, wastewater settles into solids (sludge) below and fluids (contaminated water, etc.) above.

High in the dividing wall inside the septic tank is an opening through which fluids can flow into the second compartment. Then gravity flow or a pump sends wastewater out to the drainfield. Some tanks also have a screened filter to keep solids out of the drainfield.

Typical septic tanks have two covered “manholes” (access ports) in the top, one for each compartment, for inspection and service (pumping). Older tanks are often entirely buried, including the tank lid and access ports. Newer ones have risers—wide vertical tubes—that extend from the tank lid to ground surface, facilitating tank location and access.

**Q:** What happens to my wastewater underground?

► As new water enters your septic tank, wastewater flows out into the drainfield (or leachfield). Here, pipes with holes in them distribute water—ultimately into the surrounding soil. Each so-called leach line is a trench 4 to 6 feet deep, slightly sloping.

(over)
downhill, lined with drain rock and holding the perforated 4-inch drain pipe. As the effluent percolates through the field, it enters the soil, a wonderful natural filter. Eventually, your treated wastewater reenters the hydrologic cycle, either by plant uptake, evaporation or flow into underlying groundwater.

**Q:** Why is periodic maintenance so critical?

►If the septic tank is not pumped periodically, solids can flow into the leachfield, plugging up the flow and necessitating expensive repair or replacement.

**Q:** How do you know if your septic system is in trouble?

►Symptoms include: slowly draining sinks or toilets, gurgling sounds in your plumbing, backups, sewage odors and worse!

**Q:** What are the ramifications of a failing septic system?

►During storms, your effluent can run off into a neighbor’s yard, a local creek or an estuary.

The health of your family, your community, local stream habitats, and Tomales Bay’s ecosystem can be compromised.

A neighborhood with failing tanks can experience property value decline.

**Q:** Do you know where your tank is?

►Need help finding your “lost” tank? A sketch may have been included with the original septic system permit. If no sketch is available, then you will need to call upon your plumber or a local commercial septic system company: professionals can help you locate both your tank and your leachfield.

**Q:** Where can I learn more about septic systems and how to maintain them?

Small flows clearing house—
www.nesc.wvu.edu/nsf/nsfc_index.htm
http://cfpub.epa.gov/own/Septic/index.cfm

**County of Marin Septic Matters—**
www.septicmatters.org


►To request more information contact Tomales Bay Watershed Council: www.tomalesbaywatershed.org or 415-868-9081.

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Q: How can I keep my system in good working order?

►Keep and use this checklist!

**Have your tank inspected regularly** — at least every two years.

**Pump your tank regularly,** based on the suggestion of your septic system maintenance company. (Pumping a tank can cost around $300, while repairing a failed leachfield can cost $10–40,000!)

**Do not use septic tank additives.** According to the US EPA, they either do not help or can interfere with a healthy system.

**Control water use:** repair plumbing leaks (like drippy sinks); install and use water-conserving toilets, showerheads, etc.

**Don’t overload your system.** Spread your washing activities throughout the day or week (no more than 2 loads per day, e.g.).

**Use biodegradable soaps** and detergents whenever possible. Don’t use harsh cleansers, bleach, soaps and detergents.

**Do not use lye** or lye-containing products as they kill off the **good** bacteria in your “septic tank ecosystem.”

**Never dispose** of paint, medications, chemicals, fat/grease, paper (other than toilet paper) or food in your drains or toilets.

**No** coffee grounds, dental floss, disposable diapers, cat box litter, cigarette butts, tampons/sanitary napkins, plastics, facial tissues, and paper towels. These are **not digestible** by your septic system.

**Put fine-mesh strainers** in your sinks and drains to catch lint, hair and food particles.

**Do not drain your hot tub** into your septic tank.

**Do not plant trees** over your leachlines: tree roots will damage the lines.

**Don’t park on,** drive on or store heavy things on your leach field.

**Avoid** using a garbage disposal (or use it sparingly).

**Scrape and rinse** food particles from your dishes, into your sink strainer, before washing them.
Unsung Heros of Habitat

Seagrasses in Tomales Bay

by Suzanne Olyarnik

It’s a calm, quiet morning on Tomales Bay; the water is motionless and glassy as the sun peeks over the hills. A sudden, silvery flash at the surface breaks the stillness for just a moment, sending a ripple across the water and reminding us that beneath the quiet surface there is an unseen world teeming with life. At its heart is eelgrass (Zostera marina), a unique plant that has adapted to living submerged in salty coastal waters.

In places like Tomales Bay, where conditions are favorable, eelgrass forms thick beds with thousands of simple, long, green, ribbon-like leaves all but filling the water column. It looks much as you might expect—like tall grass underwater—but its unassuming appearance belies the important role eelgrass plays in the bay ecosystem. Eelgrass meadows can stretch for miles underwater, supporting a rich diversity of fish and wildlife, including many commercially and recreationally important fish species, shorebirds, waterfowl, crabs, shrimp, and many other invertebrates. Ten- to 100-times more animals can be found in eelgrass beds compared to adjacent sandy and muddy habitats. The three-dimensional structure that eelgrass provides is a haven for hundreds of species. Some spend their entire lives in the eelgrass beds, while others use them as a nursery ground or as a stop on a long migratory journey.

Consider coho, for example. Estuaries such as Tomales Bay play a vital role in the salmon life cycle. Coho salmon and steelhead trout use streams that flow into Tomales Bay for spawning. In the estuary, returning adults and migrating smolts (juvenile salmon) can adjust to changes in the salinity of the water as they move from saltwater to freshwater and back again. When they are big enough, juvenile salmon move down from the streams and into the eelgrass beds of the bay where they feed on tiny invertebrates. To avoid becoming a meal themselves, young salmon hide among the eelgrass leaves.

Eelgrass beds also supply a nursery area for Pacific herring, a favorite salmon snack. Herring spawn in the estuary in late winter, leaving tens of thousands of sticky eggs that attach to eelgrass blades and other surfaces. Many of these eggs get eaten by diving waterfowl including surf scoters and greater scaup.

Black brant, also known as the Pacific sea goose, is another key member of the eelgrass community. Brant use California eelgrass beds—including those in Tomales Bay—during their extensive migration from the high Arctic to Mexico. These “refueling” stops help the birds survive the rigors of migration to produce next year’s offspring. Brant are one of the few species that consume eelgrass directly, and they depend on it as a major food source in their diet. Because eelgrass is available only at key sites, the entire population of brant is vulnerable to eelgrass losses at a single location. Eelgrass declines in other areas have resulted in reduced numbers of this beautiful bird.

Many other species of birds, including great blue herons, marbled godwits, willets, dunlins, brown pelicans, and black scoters, feed on fish and invertebrates here, too. With their rich food resources, eelgrass beds support a huge population of birds year round.

A Key Species Between Land and Sea

Drawing on the nutrients available in both the coastal sediments and the rich coastal waters, eelgrass is a highly productive plant, generating more plant
Eelgrass from page 7

Proposed Seagrass Protection Zones for Tomales Bay

The Gulf of the Farallones National Marine Sanctuary recently concluded a public comment period on its proposed management plan and regulatory changes. One of the proposed regulations aims to protect seagrass by creating no-anchor zones in Tomales Bay. The proposed regulation includes a prohibition on anchoring a vessel in a designated seagrass protection zone in Tomales Bay, except as necessary for mariculture operations conducted pursuant to a valid lease, permit or license. Coordinates for the no-anchoring zones can be found on page 2–18 of the Draft Environmental Impact Statement, downloaded at http://sanctuaries.nos.noaa.gov/jointplan.

Eelgrass provides many services for people, too. Like other plants, eelgrass photosynthesizes, using energy from the sun to convert water, carbon dioxide, and minerals into food. During this process, oxygen is released; it literally bubbles out of the plants, providing oxygen for fish and other animals living nearby. By sequestering carbon dioxide, eelgrass is contributing to the reduction of greenhouse gases; it’s estimated that one acre of eelgrass sequesters 7,401 pounds of carbon per year, which equals the carbon dioxide emissions from an automobile traveling 3,860 miles. Eelgrass meadows guard against shoreline erosion by dampening wave energy and storms. By trapping sediments and nutrients, eelgrass improves water quality. It’s estimated that one acre of eelgrass absorbs the equivalent of treated effluent from 490 people.

Because it occurs in coastal areas, eelgrass feels effects from both land and sea. A decline in eelgrass can alert us to greater problems in the coastal habitat. Because eelgrass needs sunlight to survive, water clarity is important. Nutrient pollution is one of the main threats; sewage and fertilizers from land runoff produce excess nutrients that stimulate growth of microscopic plants. These phytoplankton cloud the water, diminishing sunlight that the eelgrass requires in order to grow. Other threats include physical disturbances (dredging, damage from boating activities), invasion of nonnative species, disease, and harmful algal blooms.

The next time you explore Tomales Bay, whether from the shoreline or out on the water, consider the hidden wealth below its glimmering surface. Evidence that eelgrass meadows are serving the ecosystem is everywhere: a flash of silver on the surface, a harbor seal diving for a fish, a pelican dipping its bill under the water, a flicker of a bat ray, the dorsal fin of a leopard shark, a hovering osprey … there are so many different animals to encounter on a given day. They are the reminders that eelgrass is underneath it all, supplying food, providing habitat, cleaning the water, and enhancing the entire bay ecosystem.

Suzanne Olyarnik is a PhD candidate at Bodega Marine Lab, University of California Davis.
Water Quality Monitoring

To evaluate actions aimed at improving water quality in Tomales Bay, we need baseline information and ongoing monitoring. In April 2006, TBWC began collecting water samples at four sites in the watershed. This is a report on our first year of monitoring.

In collaboration with the County of Marin and their Beach Monitoring Program, and in order to increase the community’s understanding of local water quality conditions and problems at some of the most popular swimming and wading beaches, this year we sampled at three sites in the Lagunitas Creek drainage: the Green Bridge in Point Reyes Station; Samuel P. Taylor Park; and Ink Wells in San Geronimo Valley. We collected samples weekly from April through October, measured several water quality parameters in the field, and sent the samples in to be tested for *E. coli* and *Enterococcus* bacteria. As a result, advisory signs were posted at some sites to inform the public that, because of high bacteria levels, water quality conditions did not meet state standards for recreational contact.

We also sampled at Chicken Ranch Beach and the watershed that feeds it, Third Valley in Inverness. Tests in previous years had detected excessive levels of *E. coli* bacteria at the beach and in an adjacent drainage ditch where people are often seen wading and playing. Similar to the freshwater sites along Lagunitas Creek, both the beach water and “Channel B Ditch” at the north end of the beach occasionally exceeded state standards for contact recreation and required posting of advisory signs to inform the public.

In an expanded effort to further document bacteria levels at the beach and to also evaluate potential sources of bacteria upstream, from April through October we collected samples from 1) two additional sections of the beach, 2) the main channel of Third Valley Creek, and 3) several upstream locations along Third Valley Creek and the Channel B Ditch. These sites were selected in consideration of the watershed and drainage system as well as a local effort that evaluated three adjacent private septic systems as potential sources of bacteria contamination (see pages 5–6). We continued monitoring at the Chicken Ranch Beach area until March 2007, in order to better understand water quality conditions throughout the year. Among the findings:

- At Chicken Ranch, the highest bacteria levels, both in 2006 and in previous years, occurred in the Channel B Ditch.
- Bacteria levels in the bay water and the main channel of Third Valley Creek at the beach have generally been below advisory levels (i.e., acceptable).
- In 2006, bacteria levels at locations upstream from the Channel B Ditch and Third Valley Creek were also generally below advisory levels.

Test results and observations from Chicken Ranch Beach will provide necessary information to guide further testing and restoration efforts. TBWC will continue the Water Quality Monitoring Program so that data will be available to identify water quality problems and document the results of stewardship activities in the watershed.

—Ed Strausser, TBWC Water Quality Technician, helped prepare this report.
Tomales Bay watershed is about 12 miles long and 1 mile wide.

The land area draining into it (within the black outline on map) is nearly 20 times the size of the Bay itself. The watershed area is 219 square miles. Its upper boundary is made up of coastal ridgelines—a rim of sorts, measuring 142 miles.

Creeks flow into Tomales Bay from Mt. Tamalpais and Bolinas Ridge to the south, Inverness Ridge to the west, and Walker Creek watershed to the east. There are hundreds of tributaries associated with the three largest creeks. Waters flow into Tomales Bay through wildlands, dairy ranches, forests, parks, and human communities. The watershed can be viewed as a vast circulatory system, connecting all the plant, animal, and human inhabitants.

Tomales Bay Watershed Council
P.O. Box 447
Point Reyes Station CA 94956
(415) 868-9081
www.tomalesbaywatershed.org

TBWC will be hiring a Water Quality Program Manager and a Bookkeeper/Accountant this spring-summer. Interested individuals should contact Neysa King, Watershed Coordinator at tbwc@svn.net or 415-868-9081.

Special thanks for many of the photographs illustrating this Bulletin go to Richard Blair and Kathleen Goodwin, residents of Tomales Bay watershed. Information about their publications, notes about nature, and galleries of their artwork can be found at www.pointreyesvisions.com.

Support the Council ★ Get Involved

General meetings of Tomales Bay Watershed Council, on the third Tuesday of each month, are open to the public.

Find out more about the Council’s mission, current activities, and meeting schedule online at www.tomalesbaywatershed.org.

Financial donations to Tomales Bay Watershed Council Foundation are tax-deductible and support the implementation of a Stewardship Plan for Tomales Bay. To learn how your contribution can make a difference, contact Watershed Coordinator Neysa King at (415) 868-9081.