



October 5, 2006

*Via Electronic Mail & Federal Express*

Chair Jeffrey S. Young and Members of the Board  
Central Coast Regional Water Quality Control Board  
895 Aerovista Place, Suite 101  
San Luis Obispo, CA 93401

Re: San Luis Obispo County Regional Storm Water Management Program

Dear Chair Young and Members of the Board,

On behalf of the Natural Resources Defense Council (NRDC) and our more than 100,000 California members, including thousands of members who live in the Central Coast region, we submit the following comments regarding the draft County of San Luis Obispo Storm Water Management Program (“draft Program” or “SWMP”). NRDC thanks you for the opportunity to review and provide comments on the draft Program. In accordance with procedures provided in the Central Coast Regional Water Quality Control Board (“Board”) electronic notification, NRDC hereby requests that a public hearing be conducted by the Board regarding the adequacy of the draft Program.<sup>1</sup>

The first section of this two-part letter summarizes and lists a dozen major inadequacies of the draft Program, which illustrate the draft Program’s failure to meet the maximum extent practicable standard and protect water quality. The summary of these inadequacies is supported by the extensive discussion and analysis already submitted and presented to the Board with respect to the Central Coast Phase II program.<sup>2</sup> The second part of this letter focuses on and provides further information with respect to two main areas: the impact of storm water pollution on sea otters and advancements in low impact development.

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<sup>1</sup> See also State Water Resources Control Board (SWRCB) Water Quality Order No. 2003-0005 – DWQ, National Pollutant Discharge Elimination System (NPDES) General Permit No. CAS00000X, Waste Discharge Requirements for Storm Water Discharges From Small Municipal Separate Storm Sewer Systems (MS4s) (General Permit) at 5.

<sup>2</sup> In addition to the documents previously submitted, we have attached to this letter several supporting documents for inclusion in the administrative record.

## **PART I: The Draft Program Fails to Meet MEP and Protect Water Quality**

Overall, we are greatly disappointed with the draft Program. The draft Program fails to meet the federally mandated maximum extent practicable (“MEP”) standard as well as other measures required to assure compliance with water quality standards. In many instances, the draft Program fails to contain meaningful commitments to effectively control California’s number-one source of coastal pollution—polluted urban storm water runoff. In fact, the “improvements” to the Program are so nominal that our December 2004 comment letter easily suffices to identify the persistent inadequacies in this draft. The inadequacies of the draft Program are further demonstrated in light of new and existing storm water management programs in the region and throughout the country. For instance, the *Model Urban Runoff Program* and the nearly dozen programs discussed in NRDC and the Ocean Conservancy’s *A Practical Plan for Pollution Prevention* and other Central Coast programs make it plain that meaningful programs with commitments and near-term deadlines are practicable for similarly situated Central Coast communities—like San Luis Obispo County. More recently, the Board’s unanimous approval of the significantly improved Monterey Regional SWMP bolsters this point.

As an initial step forward for improving the inadequate draft Program, we recommend revision of the draft Program by utilizing, primarily, the Monterey Regional SWMP.<sup>3</sup> Other useful sources include the documents referenced above, *A Practical Plan for Pollution Prevention* and the *Model Urban Runoff Program: A How-To-Guide for Developing Urban Runoff Programs for Small Municipalities*, compiled by the Cities of Monterey and Santa Cruz, the California Coastal Commission, Monterey Bay National Marine Sanctuary, Association of Monterey Bay Area Governments, Woodward-Clyde Consultants and the Central Coast Regional Board. These documents set forth the specific types and BMPs and measures that are necessary to meet the MEP standard and protect water quality.

In this connection, we incorporate by reference comments submitted by other environmental groups as well as our previous comments submitted for this Program and the Monterey Regional SWMP. While many improvements are necessary to meet MEP and protect water quality, the following is a list of major inadequacies in the draft Program, which are discussed in-depth in the Monterey Regional SWMP, *A Practical Plan for Pollution Prevention*, the *Model Urban Runoff Program*, and our comment letters:

- Impermissibly Vague. The draft Program repeats an intention to “develop” or “establish” basic program components that should have been developed long ago when the first draft was submitted in 2004. The limited discussion of the intention to develop these components lacks detail in terms of actual commitments and requirements. (*See, e.g.*, Program section 4 at 50, 56, 58, 59, 62, 65, 72.) As a result of these vague provisions, and as previously determined by this Regional Board, the public is unable to review the actual program

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<sup>3</sup> NRDC reserves the right to submit additional comments and information pending the Regional Board’s public hearing and further review of the draft Program.

elements or determine whether they will meet MEP and protect water quality. (*See Environmental Defense Center v. EPA*, 344 F.3d 832, 857-858 (9th Cir. 2003) (Ninth Circuit emphasized that a storm water management plan, which “contain[s] the substantive information about how the operator of a small MS4 will reduce discharges to the maximum extent practicable”, is an inherent part of the storm water permit)).

- Storm Water Pollution Impacts on Sea Otters. Based on numerous scientific articles, storm water pollution contributes to sea otter mortality and morbidity in San Luis Obispo County’s receiving waters. (*See* discussion below at Part 2.A.) As the chief mechanism for controlling storm water pollution, the draft Program fails to adequately and comprehensively include meaningful measures to address this important regional problem. By contrast, other programs include specific components that require actions to reduce storm water pollution impacts on sea otters.
- Water Quality Monitoring. The draft Program contains no provisions that commit to water quality monitoring. Instead, the draft Program relies solely on monitoring conducted by “volunteers.” This approach is unacceptable because there are no assurances that meaningful water quality monitoring will occur during the permit term. Water quality monitoring is essential for determining the effectiveness of the Program. In fact, other Central Coast storm water management programs mandate water quality monitoring as part of their programs. For example, the program for the seven regional municipalities in Monterey peninsula commits to monitoring a minimum of 25 percent of all outfalls at least four times a year, accounting for seasonal variation. Likewise, the City of Santa Barbara’s program requires water quality monitoring of its outfalls and receiving waters.
- Compliance Inspections and Screening Dry Weather Flows. The draft Program fails to require actual compliance inspections (in addition to education efforts/audits) of all commercial and industrial facilities. (*See* Program section 4 at 51.) Compliance inspections as well as business inventories are basic requirements in storm water management programs. Even though there is a vague mention of inspections of some businesses for illicit connections, it is entirely unclear what percentage of inspections will be conducted and the frequency of inspections. As discussed by the U.S. Environmental Protection Agency in its evaluation of other programs, “The low level of measurable goals does not appear to add up to developing, implementing, and enforcing an effective storm water management program.” (Ltr from Alexis Strauss EPA Region IX (Feb. 8, 2006).) The draft Program should clarify the commitment to actively screen dry weather flows as well as the methods for the screening and inspection of the storm drain system.
- Response and Enforcement. Although the draft Program indicates that guidelines and procedures will eventually be established, the delay in developing these guidelines and procedures is inexcusable considering that numerous examples are widely available. The draft Program also fails to include adequate response time and enforcement measures throughout the minimum control measures. For instance, the illicit discharge and detection

program doesn't describe the response procedures for when illegal actions are discovered. (Program section 4 at 49-50; *see also* 57, 58, 60, 63, 72, 74.)

- Construction Activity. The draft Program impermissibly delays implementation of measures for construction sites for over two to three years and fails to include basic requirements, such as required BMPs and compliance inspections. (*See* Program section 4 at 59.) Such a delay is unacceptable given the well-documented negative impact of construction activity on water quality as well as the rapid pace of development in the Central Coast. In addition, the draft Program should clarify the commitment and the detailed procedures for construction site inspections with meaningful measurable goals. Moreover, the draft Program fails to have any requirement for construction activity under one acre—which is regulated in other Central Coast programs. The County's approach leaves a loophole for an entire category of construction activity in the region.
- New Development and Redevelopment. The majority of post-construction storm water management in new development and redevelopment is impossible to review given that much of the program has yet to be developed by the County. It is also unclear what will actually be required under this component. In addition, the majority of the program will not be developed until year three, let alone actual implementation. (*See* Program section 4 at 62, 64.) Because of the multi-year delay in developing and implementing basic requirements, such as self-certification, inspection procedures, and revisions of the County's ordinance, general plan, and CEQA checklist, the draft Program's development review process is meaningless. Moreover, instead of relying on low impact development ("LID") practices that are over half a decade old, the County should utilize more recent models in designing the LID manual (*See* discussion below at Part 2.B.)
- Storm Drain Cleaning. The draft Program indicates that it will "Implement routine inspection and cleaning procedures for schedules for storm drain catch basins and other components of the storm sewer system that require cleaning at least twice per year on an ongoing basis." (Program at 71.) This BMP will be implemented in year 2. Based on this brief description it is unclear what the County proposes to do with respect to storm drains. A basic component of storm water management programs is to inspect and clean all catch basins and storm drains multiple times throughout the year, and definitely prior to the rainy season. Other programs also include stepped-up inspection and cleaning for hot-spot areas. All of these measures are lacking in the proposed Program.
- Street Sweeping. The draft Program merely indicates that street sweeping will occur on a "quarterly or sooner" basis in "heavily soiled areas" and will begin in the second permit year. (Program section 4 at 70.) Such street sweeping efforts are unacceptable given that street sweeping is a basic municipal activity and most communities have weekly street sweeping—especially in high traffic areas. Moreover, it is unclear what the draft Program proposes to do for all other streets.

- Impermissible Delay. As the County admits that the draft Program “capitalizes on aligning existing water quality activities and storm water management with current BMPs.” (Program at ii.) However, the County cannot proffer a collection of pre-existing activities to meet its obligations under the Clean Water Act and Porter-Cologne Act. Moreover, the County cannot use its pre-existing activities as a basis to delay implementation of basic program components—especially when these components are currently implemented within the Central Coast as well as in similarly-sized communities throughout the United States. In fact, the County has had over two years to “develop” and “establish” these components since the first draft was submitted in 2004. Examples of basic components that are impermissibly delayed are:
  - storm drain stenciling for all communities (Program section 4 at 20, 40)
  - mapping delayed over five years (Program section 4 at 48)
  - ordinances adoption delayed to years 2-5 (Program section 4 at 47, 53, 56, 62)
  - illicit discharge and detection checklist and enforcement delayed to year 3 (Program section 4 at 50, 51, 52)
  - municipal staff training of construction sites (Program section 4 at 59)
  - post-construction measure delayed until year 3 (Program section 4 at 62-64)
  - street sweeping delayed to year 3 (Program section 4 at 70)
  - storm drain inspection and cleaning delayed to year 2 (Program section 4 at 71)
  
- Maximum Extent Practicable Standard. The draft Program misapplies the MEP standard by excluding consideration of its guiding principle—technical feasibility. (*See In re Bellfower, et. al*, State Board Order 2000-11 at 20 (technical feasibility is the “focus” of MEP; *see also* Program section 2 at 10.) This misapplication of the MEP standard is compounded by the draft Program’s concentration on costs and available resources as a basis for limiting its BMPs and measures. (*See, e.g.*, Program section 1 at 2, section 2 at 10.) These assertions are difficult to understand considering that the County’s proposed 2006-07 budget for all funds is \$434,540,960 with a general fund budget of \$357,975,916. (County Budget Message 2006-2007 (May 8, 2006).) Thus, the County’s storm water budget of \$138,000—even with the reported \$28,000 increase for the new program—is less than 1 percent of all funds. In fact, the storm water budget is merely .03 percent of all funds and .04 percent of the general fund, which funds the Program. Cost limitations become more tenuous given that the County boasts “continued solid growth in local revenue” and “an improved state financial outlook”. (County Budget Message 2006-2007 (May 8, 2006).)
  
- Commitments and Quantifiable Targets. The components of the draft Program fail to include detailed commitments and quantifiable targets. For instance, the public education and public participation program fails to indicate what will actually be required. It also fails to include the corresponding quantitative numbers, such as, events attended, the audience reached, surveys conducted, or financial commitment by the County for public participation events, like coastal and creek cleanup. (*See, e.g.*, Program section 4 at 39-41.) Moreover, the

commitments of the other six communities covered by the proposed Program are unclear or non-existent with respect to storm water pollution control.

In its current form the draft Program does not ensure the efficient reduction of storm water pollution in the County in a manner consistent with the MEP standard, applicable discharge prohibitions, and receiving water limitations. As such, the draft Program cannot be approved in its current form and must be modified to contain specific program elements that meet the requirements of the General Permit and federal law. Hopefully, with additional revisions based on our comments and the plethora of model material, the Program will be substantially improved.

## **PART II: The Draft Program Should Include Meaningful Components to Address Sea Otter Mortality and Low Impact Development**

### **A. Storm Water Pollution Impacts on California Sea Otters**

The proposed Program fails to adequately address storm water pollution impacts on the California sea otter. Abundant scientific evidence shows that land-based pollution—including but not limited to polluted storm water runoff—is a leading source of otter mortality and morbidity caused by infectious disease. As the Board knows, NRDC, in actively advocating for denial of a waiver for the Morro Bay/Cayucos Wastewater Treatment Plant, has submitted scientific articles and research showing that sewage wastewater cannot be ruled out as a possible source of land-based pollution causing otter mortality. By the same token, several scientific articles also identify surface runoff as a possible source of pathogens causing otter deaths.

The primary study conducted on otters in the Central Coast concluded, “This study provides evidence implicating *land-based surface runoff* as a source of *T. gondii* infection for marine mammals, specifically sea otters, and provides a convincing illustration of pathogen pollution in the marine ecosystem.”<sup>4</sup> This conclusion is echoed in numerous other articles (as discussed below in Part A.3). Also, as explained in the scientific literature, the transport of pathogens and diseases impacting otters occurs as follows, “In California, surface water runoff is conducted to coastal streams, or directly to the ocean from lawns, streets, and open land via storm drains, ditches and culvert pipes, with essentially no pre-treatment.”<sup>5</sup> Further, “This association between maximal surface runoff and *T. gondii* seropositivity in sea otters suggests a significant role for freshwater runoff in the transmission of *T. gondii* to sea otters.”<sup>6</sup>

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<sup>4</sup> M.A. Miller et al., *Coastal freshwater runoff is a risk factor for Toxoplasma gondii infection of southern sea otters (Enhydra lutris nereis)*, 32 International Journal for Parasitology 997, 997-98 (2002) (emphasis added).

<sup>5</sup> *Id.* at 1004.

<sup>6</sup> *Id.*

In addition to this tremendous scientific research, there is intense public concern and interest in sea otter mortality and controlling storm water pollution as documented in many newspaper articles and, most recently, in the state legislature.<sup>7</sup> Equally important, the sea otter is an iconic figure for San Luis Obispo County that attracts locals and tourists. As a result, sea otters are integral to the County's tourist dependent coastal economy. The otter is also both a *sentinel* and *keystone* species that is critical and representative of the overall health of the Central Coast's ecosystem, as discussed below at Part 2.A.1. In light of the overwhelming scientific evidence and importance of otters, the proposed Program—as the chief tool for controlling polluted storm water runoff—must include a comprehensive and proactive component to address storm water pollution impacts on sea otters. In this connection, given that the Regional Board documents take the position that “non-point sources” *i.e.* runoff, as opposed to primary-treated wastewater, is the likely source of pathogens affecting the otter, the failure to require effective program elements here is difficult to understand. (See Board Staff Report on Morro Bay/Cayucos 301(h) Waiver Reissuance at 7 (Mar. 3, 2006).)

#### 1. *Sea Otters in San Luis Obispo County's Receiving Waters*

The County's municipal storm drain system discharges directly into the home of the California sea otter. The southern sea otter, or California sea otter (*Enhydra lutris nereis*), is a threatened marine mammal species whose population is in decline.<sup>8</sup> Its range is limited to approximately 300 miles of the California coast, ranging from Half Moon Bay in the north to Point Conception and San Nicolas Island.<sup>9</sup> As a consequence, the Regional Board has jurisdiction over nearly all of the ocean waters in which the otter lives. The San Luis Obispo

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<sup>7</sup> See, e.g., AB 2485 by Assemblymember Dave Jones establishes a research program focused on reducing sea otter mortality from non-point source pollution and increases fines for killing a sea otter, marine mammal or fully protected mammal from \$5,000 to \$25,000; California and the World Ocean 2006 Conference, *Effecting Sea Otters and Their Ecosystem ?* (Sept. 2006).

<sup>8</sup> The summary of scientific articles and documents discussing sea otter mortality and morbidity as well as its role in the overall ecosystem is adapted from NRDC's comments submitted in conjunction with the Morro Bay/Cayucos 301(h) waiver application. This discussion is applicable given that scientists widely accept that land-based sources of pollution are the leading source of otter mortality and morbidity caused by infectious disease. Both sewage wastewater and storm water runoff are land-based sources of pollution that can carry pathogens which harm otters. Thus, this overwhelming body of research supports better efforts by regulators for both sewage treatment and runoff control to reduce the pathogens causing otter deaths.

<sup>9</sup> U.S. Fish & Wildlife Service, *Final Revised Recovery Plan for the Southern Sea Otter (Enhydra lutris nereis)* (2003), at viii (hereinafter *Revised Recovery Plan*).

County's receiving waters—including Estero and Morro Bay—is home to a well-documented subpopulation of sea otters, most of which stay within the area year-round.<sup>10</sup>

Sea otters forage for food on rocky substrate, soft bottom communities, and within the understory and canopy of kelp forests.<sup>11</sup> California sea otters have a diverse diet, which varies with habitat type, individual, and time of year, and includes abalones, red sea urchins, kelp crabs, clams, turban snails, mussels, octopus, barnacles, scallops, fat innkeeper worms, sea stars, and chitons. Bivalve mollusks are particularly heavily consumed in soft-sediment habitat types. For example, Pismo clams make up a large portion of the diet of sea otters that forage at Atascadero State Beach, near Morro Bay.<sup>12</sup> Sea otters play an important role in maintaining a healthy marine ecosystem, particularly kelp beds, by controlling the populations of herbivores, such as sea urchins, which graze on these plant communities.<sup>13</sup> Healthy kelp forests, in turn, play a crucial role in near-shore marine ecosystems, providing important juvenile habitat for fish species and altering water flow.<sup>14</sup>

Recent scientific studies have focused on two critical roles that sea otters play in their ecosystem. First, “the unique biology of sea otters makes them an excellent *sentinel* species, one that can tell us a lot about pollution problems and ecological change,” early on.<sup>15</sup> Thus, “as a sentinel species, sea otter health has implications for human health, sustainability of some recreational shell fisheries, and overall health of the near shore marine ecosystem.”<sup>16</sup> Second, the otter is *keystone* species that controls “the destruction of kelp forests by grazing urchins” and thus, helps maintain a diversity of forest inhabitants and ecosystem services, including protection of the coastline from erosion.”<sup>17</sup>

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<sup>10</sup> Marianne L. Riedman & James A. Estes, *The Sea Otter (Enhydra lutris): Behavior, Ecology, and Natural History*, U.S. Fish & Wildlife Services Biological Report 90(14) (1990) at 54-56, 77-83 (hereinafter *The Sea Otter*).

<sup>11</sup> *The Sea Otter*, at 31.

<sup>12</sup> *Id.* at 41, 43.

<sup>13</sup> *Id.* at 28-29.

<sup>14</sup> *Id.* at 30.

<sup>15</sup> David Jessup, *Southern sea otter—Sentinel of the sea*, *Outdoor California* (Sep.-Oct. 2003), at 9 (emphasis added); P.A. Conrad et al., *Transmission of Toxoplasma: Clues from the study of sea otters as sentinels of Toxoplasma gondii flow into the marine environment*, 35 *International Journal for Parasitology* 1155, 1158 (2005) (“As nearshore predators close to the top of the food chain, otters serve as sentinels and early indicators of environmental change.”).

<sup>16</sup> Jessup, at 10.

<sup>17</sup> Conrad, at 1158.

## 2. *Struggling Sea Otter Population*

Historically, California sea otters could once be found from as far north as Oregon to Punta Abreojos, in Baja California.<sup>18</sup> At their height, an estimated 16,000 – 20,000 southern sea otters occupied this range. The California sea otter was listed as a threatened under the federal Endangered Species Act (“ESA”) in 1977. Following the reduction and eventual elimination of commercial harvesting, sea otter populations began to rebound. California sea otters re-colonized Cayucos Point and Morro Bay between 1972 and 1975.<sup>19</sup>

Recently, however, the sea otter has suffered a steady decline as well as struggled for recovery. Between 1995 and 1999, the California sea otter’s population declined at a rate of approximately 5 percent per year.<sup>20</sup> The current estimate of 2700 otters statewide reflects a population that has not grown significantly since 1994. Instead, mortality has increased, culminating in a record high mortality of 262 otters, or 10 percent of the population, in 2003. In fact, the highest stranding rate for the past two consecutive years is in the County’s receiving waters.<sup>21</sup> According to the U.S. Fish & Wildlife Service, “[t]he depressed population growth rate for the southern sea otter population is largely due to elevated mortality, as opposed to reproductive depression or emigration.”<sup>22</sup> Direct causes of mortality, and any causes that contribute to mortality—such as storm water pollution—, pose a serious threat to the recovery of the sea otter.<sup>23</sup> Equally important, leading scientists agree that the sea otter population is facing serious recovery problems.

## 3. *Causes of Sea Otter Mortality and Morbidity*

While California sea otter mortality has a variety of causes, including shark attacks, shootings, entanglement in fishing gear, and starvation, “the single most important known cause of mortality” among southern sea otters is infectious disease,<sup>24</sup> particularly from land-based

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<sup>18</sup> *The Sea Otter*, at 10, 12.

<sup>19</sup> *Id.* at Table 8 and Figure 33.

<sup>20</sup> *Id.* at 28-29.

<sup>21</sup> The Otter Project, Stranding Summary (63 for 2003 and 77 for 2004); The Otter Project, Stranding Summary for 2002, <http://www.otterproject.org> (follow “Research,” then “Stranding Reports”) (citing USGS Biological Resources Division).

<sup>22</sup> *Revised Recovery Plan*, at viii.

<sup>23</sup> See James A. Estes et al., *Causes of Mortality in California Sea Otters During Periods of Population Growth and Decline*, 19 *Marine Mammal Science* 198, 215 (Jan. 2003) (noting that “[l]ong-term declines in pup-to-adult and adult mass-to-length ratios indicate that conditions for sea otters in California are deteriorating,” *id.* at 214).

<sup>24</sup> *Revised Recovery Plan*, at viii.

sources of pollution. According to the leading scientific research team, disease resulting largely from human activity causes nearly 50 percent of sea otter deaths.<sup>25</sup> Numerous studies link storm water runoff as playing a “significant role” for transmission of pathogens to sea otters.<sup>26</sup> “The most likely source of infection is highly infectious, egg-like oocysts shed in the feces of cats and transported via freshwater runoff into the marine ecosystem.”<sup>27</sup> As discussed in a 2005 study, “The most plausible explanation for the high number of southern sea otters infected by *T. gondii* off the coast of California is exposure to oocysts that are shed by felids and reach the ocean through streams, urban runoff and/or sewage effluent.”<sup>28</sup>

The leading infectious disease, encephalitis, is caused by the parasite *Toxoplasma gondii* (or “*T. gondii*”). Encephalitis affects the brains of infected animals, causing a variety of physical symptoms and such as fine muscle tremors, recurrent seizures, dull mentation, and decreased or abnormal motor function. A 2003 study identified *T. gondii* encephalitis as a “primary cause of death” in 16.2 percent of otters surveyed.<sup>29</sup> The same study showed that encephalitis is a major contributing factor in the death of sea otters from both shark attack and cardiac disease: sea otters with *T. gondii* encephalitis were 3.7 times more likely to die of shark attack and 2.9 times more likely to suffer from cardiac disease. Finally, *T. gondii* encephalitis may have other population-level effects on sea otters, as infection is associated with serious birth defects and high levels of miscarriages in both terrestrial animals and humans.<sup>30</sup>

The discharge of waste into ocean waters is highly correlated with the occurrence of this pathogen. *T. gondii* is spread through the consumption of infected animals or through the consumption of “oocysts” in the feces of infected animals. While a large variety of species—

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<sup>25</sup> UC Davis, School of Veterinary Medicine, Wildlife Health Center, Sea Otter Research, <http://www.vetmed.ucdavis.edu/whc/seaotters/seaotters/seaotters.html#>.

<sup>26</sup> See, e.g., M.A. Miller et al., *Coastal freshwater runoff is a risk factor for Toxoplasma gondii infection of southern sea otters (Enhydra lutris nereis)*, 32 International Journal for Parasitology 997, 997-98 (2002); P.A. Conrad et al., *Transmission of Toxoplasma: Clues from the study of sea otters as sentinels of Toxoplasma gondii flow into the marine environment*, 35 International Journal for Parasitology 1155, 1158 (2005); Dubey, et al., *Toxoplasma gondii, Neospora caninum, Sarcocystis-like infections in marine mammals*, 116 Veterinary Parasitology 275 (2003).

<sup>27</sup> National Science Foundation Supports Veterinary Researchers Trace Sea Otter Decline, (UC Davis) <http://www.vetmed.ucdavis.edu/whatnew/article.cfm?id=1556>.

<sup>28</sup> Miller, W., et al., *New genotypes and factors associated with Cryptosporidium detection in mussels (Mytilus spp.) along the California coast*, 35 International Journal for Parasitology 1103 (2005).

<sup>29</sup> C. Kreuder et al., *Patterns of Mortality in Southern Sea Otters (Enhydra Lutris Nereis) from 1998-2001*, 39(3) Journal of Wildlife Diseases 495, 499 (2003).

<sup>30</sup> Kreuder, at 504.

including humans—are capable of being infected with *T. gondii*, “the only animal known to shed oocysts in their feces are felids, most importantly domestic cats.”<sup>31</sup> Although terrestrial in origin, there is “compelling evidence” of marine dispersal of *T. gondii*, not only from the widespread infection of sea otters, but also from infections found in other marine mammals, including cetaceans and pinnipeds.<sup>32</sup> Scientists generally agree that “[t]he most plausible explanation for the high number of southern sea otters infected by *T. gondii* off the coast of California is exposure to oocysts that are shed by felids and reach the ocean through streams, urban runoff and/or sewage effluent.”<sup>33</sup> Studies have shown a statistically significant correlation between sites of maximal freshwater flow along the California coast and *T. gondii* infection rates among California sea otters.<sup>34</sup> Indeed, “[o]tters sampled at these maximal flow sites were nearly three times more likely to be seropositive to *T. gondii* than those sampled at low flow sites.”<sup>35</sup>

While the direct pathway for *T. gondii* infections in marine mammals is not fully understood, the contamination of filter-feeding prey species such as shellfish is one likely explanation. Atlantic shellfish are known to concentrate protozoans such as *Cryptosporidium parvum* and *Giardia doudevalis* after the discharge of runoff or sewage effluent, and controlled laboratory studies have shown that California mussels (*M. galloprovincialis*) can remove and concentrate *T. gondii* from oocyst-contaminated water and cause *T. gondii* infection in mice.<sup>36</sup> Filter feeding mollusks, including mussels, are a major prey species of sea otters generally, and Pismo clams are known to be a key part of the diet of otters in the County’s receiving waters.<sup>37</sup>

#### 4. The County’s Receiving Waters Are a Hot Spot for *T. Gondii* Infected Otters

Critically, scientists have identified Morro Bay and Estero Bay waters as a hot spot for *T. gondii* infection of sea otters. Eighty-seven percent of sea otters tested in the Cayucos/Morro Bay area were seropositive for *T. gondii*.<sup>38</sup> California sea otters living in the area of Morro Bay “are nine times more likely to have toxoplasmosis than sea otters elsewhere in their range,”

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<sup>31</sup> M.A. Miller et al., *Coastal freshwater runoff is a risk factor for Toxoplasma gondii infection of southern sea otters (Enhydra lutris nereis)*, 32 International Journal for Parasitology 997, 997-98 (2002).

<sup>32</sup> *Id.* at 998.

<sup>33</sup> Kristen D. Arkush et al., *Molecular and bioassay-based detection of Toxoplasma gondii oocyst uptake by mussels (Mytilus galloprovincialis)*, 33 International Journal of Parasitology 1087, 1088 (2003).

<sup>34</sup> Miller (2002), at 1002, 1004.

<sup>35</sup> *Id.*

<sup>36</sup> Arkush, at 1094.

<sup>37</sup> *The Sea Otter*, at 41, 43-44.

<sup>38</sup> Miller (2002), at 1001.

including areas of urban development where urban runoff is also a factor.<sup>39</sup> Morro Bay sea otters were also more likely to be infected with a rare strain of *T. gondii*,<sup>40</sup> a further indication of unique factors affecting this group of otters.

The Director of the University of California, Davis' Wildlife Health Center explains these concerns with respect to the Morro Bay and Estero Bay region:

“Local populations of sea otters will likely continue to face significant recovery challenges in a near-shore system that may be substantially altered in terms of water quality and pathogen abundance. . . .”<sup>41</sup>

Because the County's receiving waters are a hotspot for otter mortality as well as have high stranding rates, the draft Program should be revised to include more robust actions to control storm water pollution specifically impacting sea otters.

##### 5. *The Role of the Otter in the Overall Ecosystem*

In this connection, reducing storm water pollution is vital to both sea otter recovery as well as the overall ecosystem in the County's receiving waters. As discussed above in Part 2.A.1, otters function as sentinel and keystone species. Marine scientists agree that a healthy marine ecosystem consisting of both land and marine interaction do not have “frequent die-offs, particularly those involving ‘indicator’ or ‘keystone’ species and “do not have high frequency of new or emerging diseases/intoxications with negative implications for human and wildlife health.”<sup>42</sup> As summarized by leading scientists:

Overall, what we see in the southern sea otters suggests their near shore California marine ecosystem may be “sick.”<sup>43</sup>

[Sea otters] are likely to be excellent sentinels of local marine ecosystem health because they are heavily exposed to human activity in coastal

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<sup>39</sup> David A. Jessup, *Good Medicine for Conservation Biology: Comments, Corrections, and Connections*, 17(3) *Conservation Biology* 921, 922 (June 2003).

<sup>40</sup> See M.A. Miller et al., *An unusual genotype of Toxoplasma gondii is common in California sea otters (Enhydra lutris nereis) and is a cause of mortality*, 34 *International Journal of Parasitology* 275 (2004).

<sup>41</sup> Letter from Jonna Mazet, DVM, MPVM, PhD, Wildlife Health Center, U.C. Davis, to Kate Wing, Natural Resources Defense Council (April 16, 2004), at 2.

<sup>42</sup> *Id.*

<sup>43</sup> *Id.*

California. . . . The findings [of our research] suggests that disease plays an important role in patters of mortality in this population.<sup>44</sup>

Likewise, the Regional Board itself has recognized this vital role of the otter in its ecosystem:

Sea otters are a prime indicator species of the health of our nearshore waters because of their heavy consumption of shellfish and general vulnerability to water borne pollutants. Their recently increasing mortality is cause for concern for the Central Coast Regional Water Quality Control Board.

Pathogens in nearshore waters is a topic of particular concern for us, and for local agencies and the public. . . . Protection of endangered species similarly ranked very highly. We are concerned about the potential impacts of land-based diseases on the nearshore environment, particularly related to shellfish consumption and marine mammal health.<sup>45</sup>

Therefore, the scientific research and intense public interest compels the Board to require more robust measures by the County in the proposed Program to control storm water pollution that is harming sea otters.

## **B. Advancements in Low Impact Development**

As an initial matter, we support the County's interest in pursuing low impact development ("LID") to control storm water pollution. LID offers multiple benefits to communities, including those associated with better water quality, increased water supply, less expensive infrastructure costs, improved community aesthetic values, and other economic benefits, including those associated with increased property values. In this connection, LID approaches allow most typical development activities to retain, infiltrate and/or reuse all of the nominal annual rainfall. NRDC's report on storm water management strategies, *Rooftops to Rivers: Green Strategies for Controlling Stormwater and Combined Sewer Overflows* (2006), comprehensively addresses both the primary and secondary benefits of LID practices.

The draft Program, however, proposed to rely on materials that are nearly half a decade old in developing its LID manual. Instead, the draft Program should utilize more recent LID materials. Recent advancements have been made in the implementation of LID practices, as discussed in *Rooftops to Rivers*. A list of resources discussing these advancements is also attached to this letter. Specifically, in developing its manual, the County should utilize sources, *inter alia*, such as: (1) Low Impact Development: Technical Guidance Manual for Puget Sound

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<sup>44</sup> *Id.*

<sup>45</sup> Ltr from Roger Briggs, Central Coast RWQCB, to Dr. Melissa Miller, U.C. Davis (Mar. 26, 2003).

(Jan. 2005); (2) Technical Memorandum No. 1: Review of Low-Impact Development Techniques (Jan. 2004); (3) Technical Memorandum No. 2: Analysis and Recommendations for the Use of LID Techniques in Puget Sound (Jan. 2004); and (4) Technical Memorandum No. 3: Suggested Adaptations to BMPs in the Washington Stormwater Management Manual to Include Benefits of LID Techniques (Jan. 2004).<sup>46</sup> Equally important, we urge swifter implementation of LID measures considering their technical feasibility, cost-effectiveness, and the rapid development in the County.

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In sum, by failing to create specific BMPs, programs, and measurable goals, the proposed Program fails to comply with the federally-mandated MEP standard and protect water quality. In addition, the draft Program has forfeited an opportunity to develop a well-tailored storm water management program that will ensure the efficient reduction of storm water pollution in the County and its communities in a manner consistent with applicable discharge prohibitions and receiving water limitations. The proposed Program cannot be approved in its current form and must be modified to contain specific program elements that meet with the requirements of the General Permit and federal law.

Thank you for the opportunity to review and provide comments on the draft Program. Please feel free to contact us if you have any questions.

Sincerely,



David S. Beckman  
Anjali I. Jaiswal  
Michelle S. Mehta

Electronic cc: Roger Briggs, RWQCB, Region 3  
Bruce Fujimoto, SWRCB  
Ryan Lodge, P.E., RWQCB, Region 3

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<sup>46</sup> Internet sites for these documents are: (1) Low Impact Development: Technical Guidance Manual for Puget Sound (Jan. 2005): [http://www.psat.wa.gov/Publications/LID\\_tech\\_manual05/LID\\_manual2005.pdf](http://www.psat.wa.gov/Publications/LID_tech_manual05/LID_manual2005.pdf); (2) Technical Memorandum No. 1: Review of Low-Impact Development Techniques (Jan. 2004): [http://www.psat.wa.gov/Programs/LID/LID\\_tech.htm](http://www.psat.wa.gov/Programs/LID/LID_tech.htm); (3) Technical Memorandum No. 2: Analysis and Recommendations for the Use of LID Techniques in Puget Sound (Jan. 2004): [http://www.psat.wa.gov/Programs/LID/LID\\_tech.htm](http://www.psat.wa.gov/Programs/LID/LID_tech.htm); (4) Technical Memorandum No. 3: Suggested Adaptations to BMPs in the Washington Stormwater Management Manual to Include Benefits of LID Techniques (Jan. 2004) [http://www.psat.wa.gov/Programs/LID/LID\\_tech.thm](http://www.psat.wa.gov/Programs/LID/LID_tech.thm).