SoCal SETAC News

Society of Environmental Toxicology and Chemistry
Southern California Chapter

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Feature Article

John Wolfe, LimnoTech
SoCal SETAC Past President

Funding of Water Infrastructure in the Trump Era: Feast or Famine?

During the Presidential campaign, President Trump and his team promoted major reforms to clean and safe drinking water policies, including tripling spending on federal revolving loans and new tax credits to spur private investment in infrastructure. Improved capture, treatment, and recycling of wastewater and storm water are critical to management of water quality, which is central to the issues we confront as professionals. If Congress were to approve the proposed initiatives, how would the money be spent, and how could it be effectively targeted to meet ecological and human health goals?

The size of the problem: In recent surveys, EPA identified a total of $655B in water-related needs across the U.S. over the next 20 years, of which $271B was to satisfy water quality regulations via wastewater and storm water improvements (EPA 2012). This staggering figure compares with $384B (about $19B/year for 20 years) needed to upgrade public water systems to protect public health and comply with drinking water regulations (EPA 2015).

In This Edition of SoCal SETAC News

Because California has relatively few combined sewer systems, we differ from the rest of the nation in needing greater investment in separated storm water systems. Moreover, our state's limited water resources are reflected in our increasing need for recycled water infrastructure.

Comparing proposals to the need: During his campaign, Mr. Trump pledged to triple federal funding for state revolving funds (SRFs), which include the Clean Water State Revolving Fund (CWSRF) and the Drinking Water State Revolving Fund (DWSRF). These funds, which require a 20% state match, provide low interest loans, purchase local debt, and/or provide collateral to help communities build and maintain waste/storm water treatment facilities and water supply capacity, respectively.

Tripling the scale of current CWSRF finding would be roughly consistent with the 20-year needs identified in EPA's most recent survey. However, a tripling of DWSRF awards would still leave communities far short of the identified needs for clean drinking water,

FEATURE ARTICLE
Trump proposals to fund improvements in water infrastructure (cont.)

Water Infrastructure Needs for the U.S. and California, by Category, as Reported to EPA

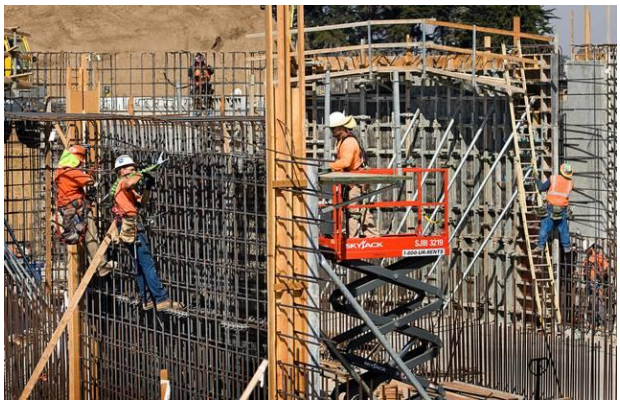
Water Infrastructure Category	U.S.		California	
	$Billion	% of Total	$Billion	% of Total
Wastewater and Storm water	$271	41%	$26.2	37%
Conveyance and Treatment	*$198*	*30%*	*$19.8*	*28%*
Combined Sewer Overflows	*$48*	*7%*	*$0.1*	*0%*
Stormwater and Recycled Water Distribution	*$25*	*4%*	*$6.1*	*9%*
Public Water Supplies	$384	59%	$44.5	63%
Transmission, Distribution, Source, Treatment, and Other	*$344*	*53%*	*$38.1*	*54%*
Storage	*$40*	*6%*	*$6.4*	*9%*
Total	**$655**	**100%**	**$70.2**	**100%**

indicating that the needs of drinking water systems could compete with clean water agencies for any new SRF funds.

The Trump campaign also proposed $1 trillion in private infrastructure investment, which includes water and wastewater upgrades (Peter Navarro 2016). Public wastewater and storm water systems often struggle financially, and a study by the New York Times found a pattern of substantial rate increases to provide a return to private investment on such systems.

Calls for Smarter Regulation: Mr. Trump has also called for reforms to streamline regulatory processes. The National Association of Clean Water Agencies (NACWA) supports this approach, arguing that smarter regulation could improve water quality at lower cost. NACWA highlighted the need to 1) improve planning, 2) consider cost/energy tradeoffs; 3) promote the most effective level of treatment for the greatest amount of flow in lieu of prescriptive treatment requirements, and 4) relaxing punitive penalties for utilities that promote innovation as ways to achieve reform.

Looking Ahead: If more funding and/or regulatory reform materializes, it will have ripple effects through the clean water sector for years to come. If this funding is not realized, expect California's role in water quality management to grow even more important. Going forward, the status quo seems unlikely, and our regional community should be prepared to adapt to changes in the way support for water quality protection is handled. As always, the devil is in the details, and we ultimately must wait to see what Mr. Trump proposes and whether Congress will support his proposals. Stay tuned.



Will we see an increase in water infrastructure spending during Mr. Trump's presidency? Photo source.

President's Corner

Rachel Adams
Loyola Marymount University

I hope that you all enjoyed a wonderful holiday season with family and friends. This year, the 37th North America SETAC meeting held in sunny Orlando coincided with the U.S. Presidential election. It was a highly informative and well-attended meeting, with an overall theme of "*Fostering Environmental Science for an Ever-Changing World*." The meeting's focus was on SETAC's mission to enhance environmental quality through science. There were 96 platform sessions, four keynote speakers, and over 1500 posters. Nancy Denslow and David Schindler were awarded the Founders and Rachel Carson Awards, respectively. In his keynote talk the day after the election, Dr. Schindler spoke about the world's ecological footprint and pointed to the importance of balance between the economy and the environment. Major topic areas for the sessions were aquatic toxicology and ecology, environmental and analytical chemistry, integrated environmental assessment and management, remediation/restoration, regulatory directions, linking science and social issues, and terrestrial or wildlife toxicology and ecology. Spotlight sessions included Everglades and wetland science, the Deepwater Horizon oil spill, plastic debris, advancing sustainability at SETAC, endocrine active chemicals, advanced analytical methods for contaminant discovery, climate change and water resource management, ecological effect models for assessing the risk of pesticides, alternative approaches to complex environmental challenges, and recovery of pelagic fish populations following oil exposures. Several Chapter members enjoyed happy hour at the Headwaters Lounge.

SoCal SETAC presented a regional poster at the conference this year. Thanks to the poster artist Corey Sheredy (Amec Foster Wheeler) and Denise Li, Megan Hall, and Graciel Diamante for presenting. SoCal SETAC is pleased to announce the winners of the Student Travel Awards. Graciel Diamante (UC Riverside) is the first-place winner and was awarded $500 from SoCal SETAC and $200 from national SETAC. Graciel presented a poster on developmental toxicity of 2- and 6-hydroxychrysene in zebrafish embryos. Second place winner Megan Hall (USC) received $200 from national SETAC and presented on transcriptomic response of *Mytilus* larvae to simultaneous copper and ocean acidification exposure. Finally, a big shout out to Marissa Giroux (UC Riverside), who took home the Best PhD Student Poster Award for her work on the effects of temperature on the endocrinology of smoltification in juvenile rainbow/steelhead trout (*Oncorhyncus mykiss*). The 2017 Annual North American meeting will be held Nov. 12-16, in Minneapolis, Minnesota. Hope to see you there!

On behalf of the SoCal SETAC Officers and Advisory Board, I would like to wish you a wonderful new year as we look to the future and remember SETAC's mission to support the development of practices that will protect, enhance, and manage sustainable environmental quality and ecosystem integrity. As environmental professionals and students, I encourage us all to lend our expertise to promote fact-based, data-driven discourse and environmental policies as we move forward in the New Year.

All the best, Rachel (with the Gang in Orlando)

Meet the Board

Denise Li
City of Los Angeles

Hello! I am **Denise Li**, the 2016-2018 board member representing the public sector. I've been employed by the City of Los Angeles since August 2014. I work in the Bureau of Sanitation's Environmental Monitoring Division as a Water Biologist in the Toxicity Testing Unit.

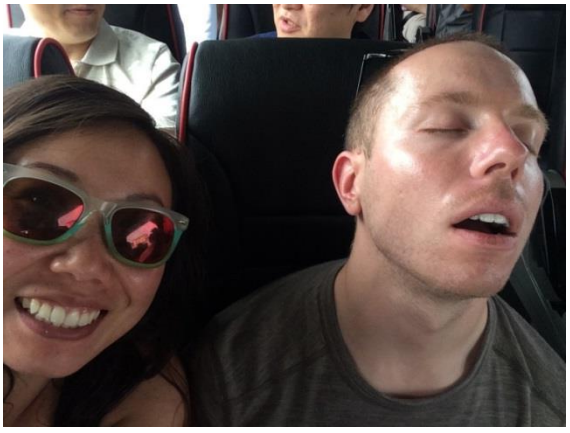
The Student Life. As an undergraduate at UC Berkeley, I took Dr. Stephanie Carlson's Fish Ecology course. Measuring species composition across our study site inspired me to study ecology. After graduating, I spent a year as a research assistant of my environmental toxicology professor, an experience that solidified my desire to pursue environmental toxicology. We completed studies related to urban runoff, sediment toxicity, and genetic diversity of populations of *Hyalella azteca.* I've also been a fisheries observer for NOAA in Alaska and have researched mammalian interactions at waterholes in the Kalahari Desert.

Environmental Toxicology is My Passion. I'm keenly interested in anthropogenic effects on the environment. Recently, that interest has been centered on contaminants of emerging concern, or CECs. In 2016, I completed a project on effects of 17β-estradiol on sexually immature topsmelt minnows. I had a lot of guidance from researchers at SCCWRP, specifically Dr. Alvine Mehinto. I also collaborated with undergraduate students from LMU and CSULB and Dr. Kelly Young, also at CSULB.

Topsmelt used in 17β-estradiol exposure bioassay with liver expertly excised.

Life is a Beach. I live in El Segundo and I love living here. I spend the spring and summer on my road bike and at the beach. My favorite activities are eating carbs, letting my fiancé pay for dinner, riding my bike, and traveling. In May 2016, I started a succulent garden. I think it's so great that they're so easy to propagate AND drought tolerant!

Inspiring Budding Scientists. Before I met Dr. Carlson, I was adrift academically and professionally. Dr. Carlson's mentoring throughout my undergraduate career sparked confidence in myself as a budding woman scientist. I really hope that, through my involvement in SETAC, I inspire other nascent women scientists to take pride in themselves and their work as Dr. Carlson did with me. If you're curious about the environmental toxicology aspect of environmental monitoring, feel free to send me an email or flag me down at the Spring Dinner Meeting.



Recently, my fiancé Austin and I went on a trip to Spain. This is us having a great time. That's me on the left.

Student Corner – Graciel Diamante
University of California, Riverside

Graciel, a Ph.D. student at UC Riverside, recently sat down with student Board member Jenn Cossaboon to talk about how SETAC has influenced her research and life goals.

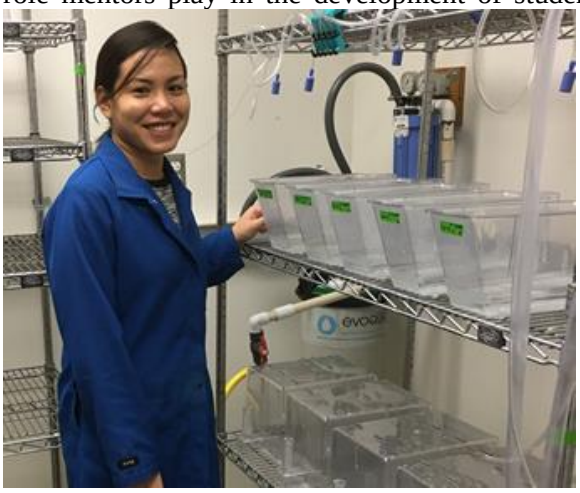
Graciel Diamante is a Ph.D. candidate majoring in Environmental Toxicology at the UC Riverside. She works in Prof. Dan Schlenk's lab and is a member of RECOVER, a collaborative team dedicated to studying the effects of oil spills on fish and their capacity for recovery following exposure. When Graciel attended the 2012 SETAC meeting, she learned about endocrine disruption, which led her to the first project of her Ph.D. thesis. Impressively, she recently received the SoCal SETAC Student Travel Award to present her research at the SETAC North America Meeting in Orlando.

Graciel was born in the Philippines and moved to the U.S. when she was 6 years old. She grew up in Los Angeles and attended CSU Northridge where she earned a B.S. in Cell and Molecular Biology. The enthusiasm of her introductory biology professor drew her to science. She participated in undergraduate research, including summer positions at UCI and UCLA, where she learned aspects of research that simply cannot be learned in a classroom setting.

Graciel's Ph.D. thesis project investigates the signaling pathways involved in the toxicity of hydroxylated polycyclic aromatic hydrocarbons (PAHs) using zebrafish as a model for vertebrate development. She is focusing on hydroxychrysenes, formed by photo-oxidation of chrysene, a particularly persistent PAH. Graciel is exploring the potential pathways and targets of hydroxylated PAH in biota. Graciel aims to enhance her understanding of cardiac development and physiology by obtaining a postdoctoral position, and hopes to combine her knowledge of toxicology and experience in developmental biology to explore other modes of action.

In her free time, Graciel enjoys visiting with friends and family. She lives in Riverside and enjoys hiking with her sister and cousin. She also enjoys watching college football, cooking and baking, and trying new cuisines. Because she misses some of her favorite Filipino dishes, she is starting to learn how to make them. Her fiancé is from Armenia, so she has been trying Armenian dishes and is learning how to cook them as well.

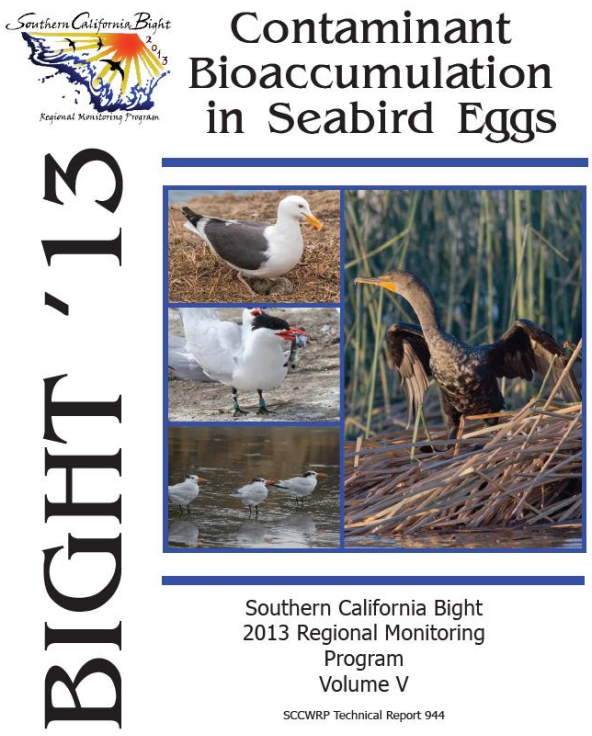
Graciel used her recent Travel Award to share her results with the international SETAC community and hopes to continue exchanging ideas with folks from around the world. She is also excited to share her research with the SoCal SETAC community and plans on attending the Chapter's 2017 Annual Meeting to present data from her latest work with zebrafish embryos. She wants to become a professor, a role that will allow her to motivate and foster curiosity in her students. She is very appreciative of the mentors who have helped her throughout her education, and realizes how vital a role mentors play in the development of students.



Graciel in action in the lab at UC Riverside.

Bight Corner

Nathan Dodder
San Diego State University



Bight '13 included a unique regional survey of bioaccumulative contaminants in seabird eggs. As top predators, seabirds feed at higher trophic levels, resulting in biomagnification of persistent organic pollutants, like DDTs, PCBs and PBDEs. Because female birds transfer contaminants into their eggs, collection of eggs left at the end of a nesting season can be a low cost, noninvasive way to assess avian contaminant concentrations. The study assessed the extent and magnitude of contamination in Bight seabirds.

The survey examined levels of PCBs, PBDEs, DDT-related compounds, chlordanes, mercury, selenium, and arsenic in eggs of California least tern (*Sterna antillarum browni*), Caspian tern (*Hydroprogne caspia*), double-crested cormorant (*Phalacrocorax auritus*), and western gull (*Larus occidentalis*). More than 100 eggs were collected from nests at 14 sites across the Bight during the spring and summer of 2013.

Conclusions from the survey are as follows:

Contaminants in seabird eggs were frequently detected. Most contaminants were detected in every sample, regardless of species or location.

Concentrations are comparable to or lower than previously reported in the Bight. Concentrations at the regional scale could not be compared because this was the first Bight-wide survey using bird eggs. Site-specific comparisons in San Diego Bay showed historical concentrations (e.g. from 20 years ago) were similar to or higher than was observed in this survey.

Observed levels were generally lower than levels associated with adverse effects. Only 2 of 102 samples exceeded the lowest observed apparent effects thresholds (LOAEC) for any single contaminant, indicating the probability of effects was low. However, many samples exceeded no observed apparent effects concentrations (NOAECs). The additive or synergistic effects of multiple contaminants at these low levels are unknown at this time.

There was no evidence of a relationship between eggshell thickness and PBDE or DDT levels. The lack thereof may be a result of low concentrations relative to levels in the 1960's and 70's, when eggshell thinning was a clear indicator of seabird population effects.

This study highlights the utility of seabirds as indicators for contaminant bioaccumulation. The Bight program was able to successfully sample, process, analyze, and assess contaminants in seabird eggs. The collaboration, coordination, and integration among sampling teams, laboratories, and managers proved that regional monitoring of bioaccumulation in seabirds is a viable and productive undertaking.

The full report can be found here.

Chapter News

Professor Daniel Schlenk of UC Riverside was appointed Associate Editor for *Environmental Science and Technology*, the flagship of environmental science, engineering and technology journals published by the American Chemical Society. Congratulations to Dan from all of us on the SoCal SETAC Advisory Board.

Dan also was our guest speaker for the Fall Dinner meeting, held on October 26 at the Old Spaghetti Factory in downtown Fullerton. His talk "*A novel approach for estimating the human health risk of DDT-contaminated sediments off Palos Verdes*" described a new interdisciplinary approach using novel measures of contaminant bioavailability and trophic transfer models to assess risks to ecological and human health for contaminants that biomagnify in aquatic food webs. More than 40 folks attended and we look forward to even greater participation at future dinner meetings.

On November 3-4, Dr. Schlenk was invited to speak on the application of cell bioassays for water quality monitoring at the prestigious Clarke Prize Award Ceremony sponsored by the National Water Research Institute. The awards ceremony was held at the Newport Beach Marriott Resort and Spa**.**

Marissa Giroux, a Ph.D. student in the Schlenk lab at UC Riverside, won best Ph.D. student poster at the North Americal SETAC meeting in Orlando. The title of her poster was "Effects of temperature on the endocrinology of smoltification in juvenile rainbow/steelhead trout (*O. mykiss*).

Graciel Diamante, a Ph.D. candidate in the Schlenk lab at UC Riverside, was awarded the Chapter's Travel Award for the North America 37th SETAC Meeting, held in Orlando, FL. Congrats to Graciel.

Megan Hall, a Ph.D. candidate at USC, was awarded a National SETAC Travel Award for the North America 37th SETAC Meeting, held in Orlando, FL. Way to go, Megan.

Our Winter Dinner Meeting is scheduled for Thursday, February 23, at the Acapulco restaurant in the Ports O' Call Village, San Pedro. Our featured speaker will be **Dr. Mas Dojiri**, Division Manager and longtime environmental scientist for the City of Los Angeles Environmental Monitoring Division in Playa del Rey. Mas will talk about lessons learned from their recent diversion of treated wastewater effluent that the City discharges into Santa Monica Bay. Mark your calendars and reserve your spot in advance as space will be limited!

Our 2017 Annual Meeting is scheduled for April 27-28 at the Ocean Institute in Dana Point, and will feature two days of presentations, posters, awards, and plenty of socializing, according to Past President and meeting organizer John Wolfe. We are planning special sessions on *Contaminants of Emerging Concern* and on *Nutrients and Harmful Algal Blooms*. Please consider giving a presentation this year. *You are encouraged to submit an abstract for a presentation or a poster in either of the special topic areas, or on any other topic of interest to our membership.* Abstracts should list a Title, Authors, and provide up to 100 words of text. **Please submit them to jwolfe@limno.com by February 15th.**

Calendar of Events

FEBRUARY

7 ESRI 3rd Annual Water Conference
February 7-9 | Orlando, FL
http://www.esri.com/events/water

23 **SoCal SETAC Spring Dinner Meeting**
San Pedro, CA
http://www.socalsetac.org

27 CWEA 2017 P3S Conference
Feb 27-March 1 | Santa Rosa, CA
http://events.cwea.org/event/2017-p3s-conference/

MARCH

19 2017 WateReuse California Annual Conference
March 19-21 | San Diego, CA
https://watereuse.org/news-events/conferences/2017-watereuse-california-annual-conference/

APRIL

2 253rd American Chemical Society National Meeting & Exposition
April 2-6 | San Francisco, CA
https://www.acs.org/content/acs/en/meetings/spring-2017.html

8 LA County Sanitation Earth Day
Whittier, CA
http://www.lacsd.org/environment/earth_day/

25 CWEA 2017 Annual Conference
April 25-28 | Palm Springs, CA
http://events.cwea.org/event/2017-annual-conference/

27 **SoCal SETAC Annual Meeting**
April 27-28 | Dana Point, CA
http://www.socalsetac.org

MAY

7 SETAC Europe 27th Annual Meeting
May 7-11 | Brussels, BE
http://brussels.setac.org/

JUNE

21 Assoc. for Environmental Studies and Sciences Conference 2017
June 21-24 | Tucson, AZ
https://aessonline.org/2017-conference/

26 WEDA Summit & Expo 2017
June 26-29 | Vancouver, BC
https://westerndredging.org/index.php/events/dredging-summit-expo

JULY

23 11th IWA International Conference on Water Reclamation and Reuse
July 23-27 | Long Beach, CA
http://iwareuse2017.org/

AUGUST

6 Ecological Society of America 102nd Annual Meeting
August 6-11 | Portland, OR
http://esa.org/portland/

7 National Environmental Monitoring Conference
August 7-11 | Washington, DC
http://www.nemc.us/

27 StormCon 2017
August 27-31 | Bellevue, WA
http://www.stormcon.com/
SER2017 World Conference on Ecological Restoration
Aug 27-Sep 1 | Foz do Iguassu, BR
http://www.ser2017.org/

SEPTEMBER

7 SETAC Latin America 12th Biennial Meeting
September 7-10 | Sao Paulo, BR
http://sla2017.setac.org/

10 32nd Annual WateReuse Symposium
September 10-13 | Phoenix, AZ
https://watereuse.org/news-events/conferences/annual-watereuse-symposium/

25 13th Annual Conference CA Stormwater Quality Association
September 25-27 | Sacramento, CA
https://www.casqa.org/events/annual-conference

NOVEMBER

5 Coastal and Estuarine Research Federation 24th Biennial Conference
November 5-9 | Providence, RI
http://www.erf.org/cerf-2017-biennial-conference

12 **SETAC North America 38th Annual Meeting**
Nov 12-16 | Minneapolis, MN
https://msp.setac.org/

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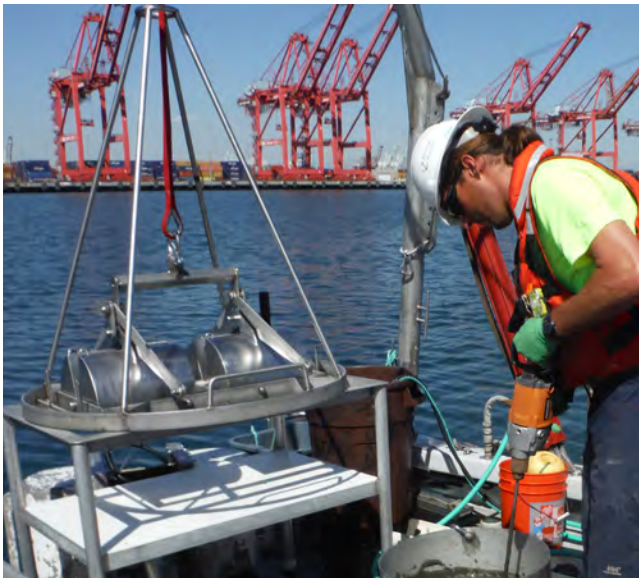

Design, Implementation, and Evaluation of Water and Sediment Quality-related Studies

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