



**ANNUAL  
REPORT  
2017**

**SACRAMENTO  
ENVIRONMENTAL  
COMMISSION**

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February 26, 2018

## Table of Contents

Comments from the SEC Chair and Vice Chair.....	3
Introduction.....	5
Commissioner Roster.....	6
Key Actions .....	7
SEC Outreach.....	9
SEC Website Updates.....	13
Key Meeting Topics.....	14
Facility/Project Tours.....	30
2016 Environmental Awards.....	32

## Appendixes

A. Advisory Letters	34
B. SEC Vision/Mission Statement/SEC History	40
C. Cyanobacteria in Sacramento Region Waterways	44
D. 2017 Meeting Schedule	56

(Cover photo: Ron Cassity Photos)

## **Comments from the Sacramento Environmental Commission Chair and Vice Chair**

In 2017, the Sacramento Environmental Commission (SEC) continued its role as an advisory body for environmental protection on behalf of the County of Sacramento and the three City Councils that it represents. In this capacity, the SEC reviewed information, conducted independent analysis, consulted with technical experts, recognized members of the community for their environmental achievements and solicited public input to numerous environmental issues and topics arising in Sacramento County.

The issues considered by the SEC during 2017 ranged from operations of the County Recycling and Waste Management Systems to the environmental effects of water conservation practices and flood control programs in the County. Other topics included an annual review of public health matters and management of mosquito-borne hazards that continue to be present in our region.

The SEC undertook two special initiatives during 2017. The first initiative was to conduct an outreach program to introduce, inform, and solicit input from the SEC sponsoring agencies. Special meetings to discuss SEC activities were held with members of the Sacramento County Board of Supervisors, City of Sacramento, City of Elk Grove and City of Folsom. As part of this outreach, the SEC met with fleet managers of the various agencies to discuss the challenges and opportunities associated with electrifying their fleet. This outreach program was supplemented with a state-wide survey of other environmental commissions that may be interested in future collaboration and information sharing.

The second initiative implemented by the SEC was to review and assess the potential threat of hazardous algae blooms (HABs) to public health from contact and use of Sacramento County waterways. This assessment prioritized various waterbodies and recommended measures to increase HAB monitoring during hot summer months. This increased monitoring would be conducted at minimal cost with the combined and coordinated efforts of staff from the Environmental Management Department (EMD) and the Sacramento-Yolo Mosquito & Vector Control District.

Finally, the SEC prepared a recommendation to reconsider including EMD in a proposal to reorganize several County departments and divisions. After substantial consideration of input from affected parties, the SEC concluded that the proposed reorganization had the potential to interfere with the implementation of ongoing programs, reduce EMD's effectiveness to protect the environment, and could increase operational costs.

The SEC Commissioners intend to build from the work completed in 2017 and carry it forward into 2018 with the goal of advising and encouraging our sponsoring agencies to achieve a safe, clean, and welcoming environment.

We appreciate the opportunity to submit this annual report.

Sincerely,

A handwritten signature in blue ink that reads "Richard Hunn". The signature is written in a cursive style with a large initial 'R'.

Richard Hunn, Chair

A handwritten signature in blue ink that reads "Eric Rivero Montes". The signature is written in a cursive style with a large initial 'E'.

Eric Rivero Montes, Vice Chair

## Introduction

The SEC prepared this 2017 Annual Report to inform member agencies and the public at large of SEC activities, discussions, advisory positions, and concerns in respect to the environment of Sacramento County.

The report is designed to focus on the key actions performed and key topics discussed by the SEC during 2017. Interested persons who wish to review topics considered and actions completed by the SEC are invited to review our meeting minutes that are maintained by the Sacramento County Environmental Management Department, which can be contacted by email at [sec@sacounty.net](mailto:sec@sacounty.net). The SEC webpage can be viewed at [www.emd.sacounty.net/sec](http://www.emd.sacounty.net/sec)



## **Key Actions in 2017**

During the course of the year, the SEC held 11 public meetings to receive information and data from selected parties with expertise in specific topics and issues. In addition, the SEC received several requests to advise other County and City authorities and agencies on environmental matters and other relevant environmental topics.

As a result of receiving this information or request, the SEC prepared and released several advisory statements for the consideration of these other agencies and decision makers.

The key actions performed by the SEC during 2017 included:

### **City of Elk Grove and Toby Johnson Middle School Recycling and Education Program Letter of Recognition**

This school recycling program was a joint effort between the school teachers and the City of Elk Grove, and was done on a voluntary basis. Elk Grove staff worked to train and educate a core group of students and teachers about the logistics of recycling and correct sorting, using signage and colorful, printed materials that clearly showed which waste streams get sorted into the various bins provided by the City of Elk Grove. The on-campus recycling program also addresses the new requirements for organics recycling and the City provided food waste bins and educational signage. Each week students collect and audit recyclables in classrooms to give to the custodians.

The SEC concluded that the efforts of students and teachers of Toby Johnson Middle School was exceptional and worthy of recognition. The SEC prepared a special letter of recognition to the California Resource Recovery Association, presented in Appendix A, to acknowledge their work, enthusiasm, and example of good environmental stewardship.

### **Sacramento County Department of Regional Parks FY 2016/17 Budget Request Letter of Support**

The SEC received a briefing from the Sacramento County Department of Regional Parks addressing its long-term goals to provide recreational opportunities and services. The SEC supports the goals of the Department to provide improved services to under-served areas of the County and improve and enhance the environmental quality of park resources.

The SEC prepared and submitted a letter, presented in Appendix A to this report, supporting the Department's FY 2016/17 budget request to enable accomplishing of the Department's recreational services goals, provide sufficient law enforcement to protect public safety, and continue the needed maintenance of park infrastructure.

## **Advisory Recommendation on EMD Reorganization**

The SEC considered the recent proposal to reorganize EMD along with other County departments and offices. The SEC held discussions to consider if the proposal could have adverse effects on EMD performance and ability to implement ongoing regulatory programs.

The SEC prepared an advisory letter to the Board of Supervisors addressing its concerns, noting that the proposed reorganization had potential to disrupt the ongoing implementation of over 33 environmental protection programs and could adversely affect regulated-businesses who would be subject to changed regulatory oversight. Appendix A of this report presents the SEC advisory recommendation.

## **Cyanobacteria in Sacramento Region Waterways**

The SEC undertook a significant effort to understand and convey the importance of Sacramento County waterways that may be contaminated with toxic bacteria (algae) which is occurring more frequently and for longer periods through warmer summer months.

The SEC prepared a special report assessing potential threat to public health in various County waterways because of hazardous algal blooms (HABs). As a result of this analysis, EMD and the Sacramento Yolo Mosquito Vector Control District coordinated an effort to improve the monitoring of water bodies to detect HABs that may pose a public health hazard. Appendix B of this report presents the analysis prepared by the SEC.

## **SEC Outreach 2017**

The SEC made a specific effort to reach out to sponsoring agency representatives and elected officials to inform and educate these agencies on SEC activities, identify important topics or key issues of concern, and improve communications with elected officials to enhance their understanding of SEC actions and availability to respond to future issues.

In addition to the direct outreach meetings with sponsoring agency representatives, the SEC initiated outreach to other environmental commissions located throughout California in an effort to understand the roles and responsibilities of other commissions, share information, improve communications that may enable better protection of environmental resources.

The following discussion summarizes outreach performed by the SEC Commissioners in 2017.

### **City of Folsom, City Councilmember, Roger Gaylord III**

Commissioner Bailey, the SEC appointee for Folsom, Isleton and Galt, met with the new City Council Member, Roger Gaylord III. The meeting was held on May 4, 2017. Council Member Gaylord has been in office for about four months. The Council Member was provided a copy of the 2016 SEC Annual Report, which was electronically distributed to all jurisdictions and interested parties.

During the meeting the purpose, vision and goals of the SEC were covered, highlighting past interaction the commission has had and comments made on environmental issues in our region. One key area discussed was the new expansion south of highway 50 and some of the environmental impacts such as the ongoing decision making processes, accountability, goals, water, transportation, open space, etc.

The need of regional approaches to environmental issues was discussed along with the charge to the SEC to provide professional input to its jurisdictions. It was a good starting point and re-enforced the need of jurisdiction communication.

### **SEC Outreach to Other California Environmental Commissions**

The SEC prepared an information and data collection survey to obtain an understanding of what other environmental commissions in California are responsible for and actions being performed. The survey was distributed to 14 commissions representing local, county, and regional authorities located throughout California.

The survey was taken by two entities that received an invitation to participate. The SEC intends to initiate increased communications and coordination with these entities through 2018.

**Keith Leech/Chief, Fleet Division and Parking Enterprise, Sacramento County,  
7/19/2017**

Commissioner Hunn opened the meeting stating that the SEC had seen articles about other west coast cities and State of California committing to higher use of Electric Vehicle (EV) for fleet vehicles. Commissioner Hunn noted that none of the SEC-authorizing agencies were listed nor do they have stated policies for increasing the EV portion of their vehicle fleets.

Mr. Leach noted that while he was Chief of the City of Sacramento Fleet Services, they were considered the greenest fleet in the State. He recently transferred to the County and is actively increasing alternatives to petroleum based fuels, including natural gas (NG), EVs, fuel cell.

The County has installed 6 Level 2 chargers @ Branch Center station. The number and location of chargers is the primary bottleneck for bringing on more EV vehicles. Infrastructure cost is restrictive. He thinks that those vehicles which are routinely taken home have a greater use with at-home Level 1 chargers.

The County has about 450 sedan-type vehicles. Most of these are hybrid vehicles. The average annual mileage accrued by these vehicles is about 5-6k miles per year. Therefore, converting these vehicles to EV may not substantially reduce fuel use or air pollutant emissions, relative to other County vehicles.

The greatest use of fuel and air pollutant emissions is from larger trucks and heavy equipment. The County operates a fleet of larger trucks and heavy equipment of about 300 vehicles. At this time, NG is the only viable alternative fuel source for larger trucks and heavy equipment. NG can also be purchased at a substantial discount because of agreements with the State.

Commissioner Hunn suggested that the SEC would review the City of Sacramento fleet webpage and consider the approach and strategy being used for alternative-fuel vehicle use. The City's recent electrification policy discussion and Climate Action Plan should also be considered. Based on this review, the SEC may choose to submit recommendations to the Board to establish a formal policy to increase the use of alternative-fuel vehicles.

Mr. Leach provided the following links to additional information regarding City of Sacramento Fleet use of alternative fuel vehicles, Sacramento County application for Government Green Fleet recognition, and the Sacramento Clean Cities website.

<http://www.government-fleet.com/search/?q=sacramento+county>

<http://www.cityofsacramento.org/Public-Works/Fleet>

<http://www.cleancitiessacramento.org/>

**Meeting with Christian Punsal (City of Elk Grove Integrated Waste Coordinator), Heather Neff (City of Elk Grove Integrated Waste Manager), Christopher Jordan (Assistant to the City Manager), Travis Ambrose (Student Intern with City of Elk Grove), 5/3/2017**

Commissioner Hunn and Commissioner Rivero -Montes opened the meeting by discussing the current initiatives of the SEC including a brief discussion on Cyanobacteria, Electric Vehicles, and the SEC Awards Program.

**Cyanobacteria:** Commissioner Hunn stated that the SEC approach is to look at areas that are more susceptible to the impacts of Cyanobacteria, considering conditions where the bacteria is likely to thrive , also considering social factors because Environmental Justice communities are more likely to be impacted.

**Electric Vehicles:** Commissioner Hunn talked about how the SEC is analyzing benefits and challenges associated with the County and other jurisdictions changing their fleets to a zero emission vehicles. He asked if the City of Elk Grove had considered switching to EV's. The City of Elk Grove had run a pilot program with SMUD and it was not successful.

Commissioner Hunn would like to discuss the pilot project with the fleet manager (Doug Scott) to get more information. Many of the vehicles that the City of Elk Grove uses (disposal vehicles, buses, etc.) are actually contractor-owned vehicles. It may be a good idea to approach some of the larger contractors to learn more about their programs and identify opportunities for them to switch to zero emission vehicles.

**SEC Awards:** Commissioner Rivero-Montes talked about the SEC awards and the history that the City of Elk Grove has had with this program. Since 2013, people, agencies or schools from the City of Elk Grove have won a total of 4 awards.

The City of Elk Grove brought up two topics that they requested the SEC assist with in supplying more information.

**Banning Polystyrene Foam Containers:** Mr. Punsal said that the City of Davis is considering the ban of Styrofoam food containers and that Elk Grove is thinking that they may want to follow suit. The consideration is only in the initial phases of discussion but they were wondering if the SEC might be able to provide a discussion on a proposed ordinance banning these containers. They said that in this case the environmental benefits are obvious but they are concerned on the economic impact this decision might have on small businesses. Commissioner Hunn mentioned that the SEC had taken a position on the bag ban ordinance and could also do a similar thing for the Styrofoam ban. When the SEC looked at the bag ban we also considered economic factors as well as environmental ones.

**Organics Recycling:** Mr. Ambrose talked about how they are expanding the recycling program that won an SEC award this past year (Toby Johnson Middle School) to include

Organics. They already have containers marked for organic waste at the school and are planning to go out there this week to see how well the program has been working. This is a student driven program, and they eventually plan to roll it out to other schools. The state is trying to bring more Organic Waste Recycling centers on line but the City of Elk Grove may want the SEC to bring some more attention to the lack of infrastructure.

Future Projects in Elk Grove: There are a number of activities going on in Elk Grove. Mr. Punsal mentioned that one project that may be of interest is the Laguna Creek Restoration project. Currently, there is an RFP for this project and they plan to do the first mile of the restoration as a pilot project and, if it goes well, they will expand it to the rest of the Creek. They also just recently completed their General Plan Update.

**Sacramento Environmental Commission Meeting with Mike McKeever (Mayor Darryl Steinberg's Chief of Staff), City of Sacramento – 8/22/17**

SEC commissioners Diane Kindermann and Mark Barry provided copies of the 2016 SEC Annual Report, Cyanobacteria Report and the August, July and June SEC meeting agendas. SEC Commissioners explained the role of the Commission and highlighted SEC accomplishments including the plastic bag ban and the annual environmental recognition awards.

During the discussion, Mr. McKeever indicated that the City would like to focus on multi-jurisdictional issues impacting the County and all cities within the County. He asked what the driving force was in getting Elk Grove to join and why Citrus Heights and Rancho Cordova have not yet joined. Mr. McKeever also plans to consider how the SEC and the City could work together to further the goals and mission of the City and the SEC.

**Meeting with Supervisor Frost, Sacramento county Board of Supervisors, 4/12/2017**

SEC Commissioners Marjorie Namba, Mark White, and Richard Hunn met with Supervisor Frost and Chief of Staff Matt Hedges to introduce them to the role and function of the SEC and solicit their input on important environmental matters. The Commissioners explained the history of the SEC, its advisory role with multiple sponsors in Sacramento County, and its role overseeing the activities of the Environmental Management Department.

Supervisor Frost expressed interest in matters such as noise pollution and air quality because of her background in public health.

The Commissioners left copies of the SEC 2016 Annual Report for staff's further consideration and invited future coordination on Sacramento County environmental matters.

## SEC Website Updates

The SEC worked with Sacramento County IT staff to create a new homepage which is more attractive and user-friendly. Meeting schedules, minutes, and past presentations are now all readily accessible.

The webpage can be viewed at: [www.emd.saccounty.net/SEC/Pages/default.aspx](http://www.emd.saccounty.net/SEC/Pages/default.aspx)

A new on-line application page for the annual SEC Environmental Awards was created to make it easier to nominate candidates for recognition. Also, the new "Learn more about how to help your community" link was updated to provide a comprehensive resource for Sacramento County residents to enhance learning more about local environmental issues. Users will now find links to local public agencies and environmental topics listed under the following categories:

- o Air quality and climate change
- o Green landscaping, agriculture
- o Energy conservation
- o Environmental health and food safety
- o Environmental justice
- o Land use planning
- o Solid waste, recycling and hazardous waste
- o Transportation
- o Water
- o Fish and Wildlife

## Key Meeting Topics

In 2017, the SEC received 13 presentations addressing a wide range of issues and topics. These presentations were related to the environmental quality of Sacramento County and its cities. The following summary describes key meeting topics that were considered by the SEC during 2017.

### **Water Conservation Programs- Peter Brostrom, Section Chief, Department of Water Resources, 1/23/2017**

Mr. Bergstrom reported that reservoir levels were at record highs with snow packs at 158 % of average for this time of year. Folsom Reservoir has released water several times to maintain safe flood control values. It is a flashy reservoir that fills up quickly due to the rise in elevation over a short distance. Shasta and Oroville reservoirs do not fill as fast. The Southern Sierra also has a high percentage of snow pack which was not the case last year.

California is highly variable in climate as compared to the rest of the country, which necessitates having more dams to hold water in dry years. The California Urban Conservation Council was established during the drought years beginning in 1988 and they created 14 best management practices for water suppliers to permanently transition to water conservation. Drought years led to the use of low flow water toilets, reducing each flush from 3.5 gallons to 1.6 gallons and precipitated drought wise landscaping ordinances.

From 2007-2009, water suppliers were required to set water usage targets for their customers on a per capita basis with a statewide goal of reducing urban per capita water use by 20% by 2020. With the 2013-2016 drought, the State Water Resources Control Board put emergency mandatory water usage reductions in place. The Department of Water Resources (DWR) reduced the area of turf allowed in new developments. State agencies had to prepare long term water contingency plans. In May 2016, Executive Order B-37-16 was signed, directing five state agencies to develop recommendations for long term water use efficiency and a drought planning framework. These recommendations were to focus on four primary objectives: water use targets, water waste prohibitions, water shortage contingency planning, and agricultural water management planning recommendations.

Recommendations for developing water use targets for retail water suppliers requires purveyors to know their landscape area density, household numbers and terrain and use that information to establish a per capita usage goal. Some water suppliers have already begun working with their customers to reduce water usage significantly. Water suppliers will begin reporting to the State Water Resources Control Board on residential water use beginning 2019 and on all sectors in 2021. As of yet there is no volumetric budgets required on the commercial side.

Standard indoor residential usage ranges from 55-58 gallons per capita per day. DWR will look to see if this should be lower. A standard for outdoor usage targets will also be established.

SWRCB will go through rulemaking to establish permanent waste prohibitions including no hosing of sidewalks and no sprinklers running 48 hours after a rain event of 1/10 inch. Recommendations for water shortage contingency planning will include annual water supply and demand reports, drought risk assessments, and drought planning as part of hazard mitigation plans. Agricultural water management plans recommendations will include water budget and water use fraction quantifications in agricultural water management plans and annual reporting requirements. Many recommendations will require legislation to implement. Building water storage in California may be one way to increase storage capacity of conserved water.

### **State of the County's Recycling and Waste Management System- Doug Kobold, Waste Management Program Manager, 2/27/2017**

Commodity prices drive many of the actions of Waste Management. Doug Kobold reviewed charts from the last six years showing the yearly tonnage of materials received into the various transfer station and landfill. Kiefer received 751,050 tons of materials in FY 15/16, twice the amount of the North Area Recovery Station. Kiefer landfill has seen a significant decrease in green waste, most likely related to the drought.

The Mattress Recycling program signed into law in September 2013, has been hugely successful. Approximately 25,000 mattresses have been received to date, with 22,500 of those being recycled. The issue of dormant bedbugs living in the recycled materials is addressed by "cooking" the mattress material and wood parts. The closest mattress recycler to Sacramento is DR3 in Woodland. Not all solid waste pickup programs mattress recycle. Only three states have a mattress recycling program.

Electronic Waste was banned from landfills beginning 2003/2004 to prevent lead from leaching into the ground. When consumers purchase monitors they pay a \$6-\$8.00 recycling fee at check out. In the last seven years the Sacramento e-waste program has brought in \$2,334,350 in revenue, largely from selling electronic materials to the processor using a market based structured contract.

The Tire Program was established in 1989 due to AB 1843. Tires are shredded and diverted for use as materials in synthetic playgrounds and rubberized asphalt. The market for shredded tires has declined significantly due to concerns about off gassing and hazardous fumes linked to cancer.

Paint program collections has been streamlined using an electronic point of sale system that bills the consumer's jurisdiction at the time the paint is turned in at the landfill. Jurisdictions, such as Rancho Cordova or Citrus Heights, are charged for using the County of

Sacramento as a collection site. The new electronic system saves 600 labor hours that used to be spent verifying addresses in order to bill jurisdictions accurately.

In the last six years, households served by County Collection sites has remained consistent, ranging from 147,931 to 150,309. The rates of garbage, single stream recycling, and green waste collection has also remained fairly consistent over that time frame.

**Sacramento Area Flood Control Agency Update- Richard Johnson, Executive Director, 3/20/2017**

Mr. Johnson stated that when it comes to flood safety and levies, New Orleans is now safer than Sacramento. This is due to the post-Katrina repairs and levee improvements in New Orleans, and Sacramento is now the #1 most at-risk city in America for urban flooding. Half a million people live in the flood plain with 70 billion dollars in damageable property. Most levees in the Sacramento region are old and were constructed with old methods such as clam dredging, the use of sand and silt, steep slopes, and no foundation. SAFCA is working on upgrading levees by adding slurry walls, constructing better slopes, and using hardening materials on the riverbanks. One hundred six miles of levees surrounding the area are under SAFCA jurisdiction. SAFCA has authorizations from Congress to cover every part of improving its levee system, worth \$4.4 billion of projects, but appropriations have not yet been made.

Flood protection standards have improved since Folsom Dam and the surrounding levees were built. Peak flows are higher than the levees were designed for and triggers have been studied. After the floods of '97 in the Central Valley, studies were done on the 40 levee failures which found that the majority of flood risk were geotechnical, not overtopping, meaning levee seepage and underseepage were the primary reasons for failures.

After Katrina, the 2007 Levee Vulnerability Technical Memorandum prepared for the Department of Water Resources, analyzed the past 100 levee failures across the county. Only 20% were due to overtopping while the remaining 80% of failures were due to seepage and underseepage. This resulted in new Federal and State standards for urban levees. Methods of strengthening and upgrading levees include seepage cut off walls being inserted into levees, higher standards for bank, channel and levee erosion mitigation, by hardening riverbanks using hardening materials and specific plantings. Fifty miles of levees and channels under SAFCA jurisdiction had been upgraded to meet the new standard, 22 miles do not need upgrading and 34 miles of levees are waiting for upgrades when the new appropriations are made. Still to do are to raise the Folsom Dam and widen the Sacramento Weir and Bypass.

In December 2016, Congress passed the WIIN Act which authorizes the American River Watershed Common Features General Reevaluation Report. The authorization was for \$1,595,761,000, the largest authorization for SAFCA. This will enable the doubling of the

width of the Sacramento Weir and Bypass, updating levees and repairing erosion and underseepage along the American River, Sacramento River and Eastside tributaries. Widening of the Sacramento Weir and Bypass would significantly increase the flood protection provided to Sacramento because during flood events, these carry approximately 80% of the water past Sacramento, instead of flooding into Sacramento.

A new standard in levee management for the Sacramento Region is focused on removing encroachments, including pools and extended yards with high risk vegetation. The “vegetation on levees” policy has moved from no vegetation to risk based vegetation being allowed, as it reduces erosion and slows water flow. SAFCA has identified all trees on its levees and assigned them risk factors and is currently preparing its outreach for properties that have encroachments that need to be removed.

After SAFCA completes all the work planned on authorized projects Sacramento will be in a 200- 300 year flood protection range.

### **A Primer on Water in Sacramento Region- Sources-Users- Suppliers-Commissioner Buzz Link 3/20/2017**

There are two surface water supplies in the Sacramento region, the American River and the Sacramento River. Groundwater is supplied by the North Basin and South Basin and some recycled water supplies the region from the Sacramento River Treatment Plant.

Consumptive water usage occurs when water is removed from the River for indoor/outdoor use, agricultural use and environmental use such a wildlife refuges. Non consumptive water use means that water stays in the channel but provides usage for hydropower and fish and wildlife habitats.

Water is regulated by the Federal, State and local governments. The State Regional Water Control Resources Boards issues water right. The Regional Water Quality Control Board oversees water quality and the California Department of Fish and Wildlife oversees fish and wildlife water sources. One of Sacramento’s local water regulators, the Water Forum Agreement, is a collaboration of groups that drive water policy.

The Folsom Dam was constructed in 1955 as a Central Valley Project for flood control, water supply, power, navigation and environmental benefits. At one time, the Army Corp of Engineers would dredge the river so that barges could navigate south.

The median water year inflow into Folsom Dam is 2,600,000 acre feet. Already to date, during this very wet year, the October 1- to date inflow has been 4,350,000 acre feet. The storage capacity is 977,000, which means that already this year the Dam has conceivably been filled and emptied 4 times.

There are six diversion facilities on/in the American and Sacramento Rivers, including pumping plants, canals, and Ranney collectors. The America River facilities divert water to SMUD, Roseville, City of Sacramento and the Folsom prison. The Sacramento River

Diversion intake pumps water to the City of Sacramento, the County of Sacramento and East Bay MUDD.

The California Supreme Court has established that riparian rights holders have priority to divert water over most appropriative water rights holders. Riparian rights have exclusions regarding artificial storage and pumping to sites not adjoining the waterway. Appropriative rights to surface water include the use of unappropriated water that is surplus to the needs of riparian rights owners and prior appropriators. These rights are based on diversion uses of the water and are good only if there is surplus water available, but do include water storage. Prescriptive rights are created by five years open and notorious use of water. Groundwater rights exist when a landowner's land overlies a groundwater basin but rights are limited to a reasonable usage. California now regulates groundwater under the Sustainable Groundwater Management Act so groundwater rights have changed. California is one of the last states to regulate groundwater rights and usage.

Water suppliers' contracts contain conditions such as maximum rate of diversion, annual volume of diversion, time of diversion, uses, and clauses that exist in the event of water source deficiencies. California urban water suppliers now prepare long term resource water plans that assess the reliability of their water supply and report their progress in meeting the 20 % water reduction consumption goal by the year 2020. One acre-foot of water meets the needs of two typical California households for one year.

Commissioner Link presented tables listing the 19 water suppliers in our region and how much water from the American and Sacramento Rivers are diverted to the various contract holders.

### **Sacramento-Yolo Mosquito & Vector Control District- Gary Goodman, Executive Director, 4/17/2017**

The Sacramento-Yolo Mosquito & Vector Control District provides safe, effective and economical control of mosquitoes and other vectors by providing ongoing surveillance to determine the threat of disease transmission and acting to reduce that threat and lower annoyance levels. The peak season for mosquitos and other vectors is June through September but can include May if the weather is very warm.

Water management is key to controlling mosquito populations. Technicians are assigned to district zones where they look for breeding sites and determine if treatment is required. Traps are set every day and mosquitos that are caught are tested for disease. Sacramento and the surrounding regions have optimal conditions for mosquito breeding, including urban agricultural areas, rural farms, urban pools and backyard water sources. Mosquitoes lay 50-200 eggs at a time in as small as a bottle cap amount of water so targeting water that acts as a breeding grounds is very important.

Methods of controlling mosquito populations include removing outdoor water sources, planting mosquito fish, backpack spraying and aerial spraying. Drones are being utilized to look for urban mosquito breeding areas. Untreated pools are the largest source of urban mosquito breeding that requires intervention. One unmaintained, untreated pool can produce millions of mosquitoes. The public can call Sacramento Yolo Mosquito and Vector Control District to report pools that are green and untreated and they will respond usually within 24 hours to plant mosquito fish in the pool. A properly maintained pool will not produce mosquitoes. Last year 4000 pounds of mosquito fish were planted in pools and agricultural areas, ditches and wetlands. The District also works with landowners to control mosquitoes physically, by manipulating properties and land to reduce depressions where standing water accumulates.

Mosquitoes can carry and transmit several debilitating diseases including West Nile Virus, Dengue Fever, Malaria, Chikungunya, Zika Virus, and dog heartworm. Many of these diseases cause fever, joint aching, long term neurological damage, meningitis and even death. Twenty percent of people who are bitten will develop West Nile Virus, but there are no marks that appear on the skin when bitten to indicate whether a mosquito carried, and transmitted, the virus. Symptoms can last weeks and even months and are not curable. Of the 25 cases of West Nile Virus confirmed in California last year, 18 of those were in Sacramento and Yolo counties. Zika disease transmitted by mosquitoes is known to cause birth defects in fetuses of pregnant women so pregnant women should avoid travel to transmission areas while pregnant. The first case of microcephaly linked to the virus is also sexually transmitted.

Cases of confirmed West Nile Virus (WNV) in California have increased because birds and mosquitos are sharing the same limited water sources. Mosquitos bite infected birds and then carry the disease to humans and horses. The CDC estimates that for every 1 case of WNV threat is reported, there are 30-70 cases unreported. In 2016 there were 442 confirmed reported cases of WNV in California.

Emerging mosquito carried diseases now confirmed in Southern California, Madeira and San Mateo include Dengue Fever and Chikungunya (translated bent-over) transmitted by the Yellow Fever Mosquito. The eggs of this mosquito can lay dormant for 6 months, hatching at various times of the year making them difficult to eradicate. These mosquitoes are aggressive day biters but only fly up to 150 yards.

The best protection against mosquito bites is mosquito repellent containing DEET. There are other products containing Picaridin, Oil of Eucalyptus and IR 3535 but they don't last as long or work as effectively.

**Climate Change and Adaptability- Kathleen Ave, Climate Program Manager, SMUD Energy Research & Development Chair, Capital Region Climate Readiness Collaborative, 5/15/2017**

SMUD has prepared a Climate Readiness in the Capital Region Plan that outlines its long range goals to increase energy efficiency and reduce global warming. This includes the reduction of greenhouse gas emissions, reaching sustainable energy supply goals and having a risk management system that addresses and mitigates risks including climate change.

SMUD performs assessments of power supply risks and ensures that they have a diverse portfolio of power supplies including solar, hydro, natural gas, wind and biomass. Wind is an unpredictable resource and SMUD predicts flat growth of this resource when projecting climate models.

Most of these sources were developed soon after the Rancho Seco nuclear power plant shut down. The power supply chain is assessed scientifically every 4 years and the findings used in all long term planning, particularly investment strategy and infrastructure planning. Forward looking strategic focuses include carbon sequestration in the land base, reducing short lived climate pollutants, and forest thinning which potentially could reduce wildfire risk and increase hydro flows.

The action plan studies climate impacts which are then summarized and ranked in probability in the plan. Some examples of impacts that are addressed are: cool roof technology to reduce the urban heat island effect, drones being utilized to survey areas for dead and dying trees that may harm powerlines, and natural disaster impacts on energy. The costs of the King fire disaster in El Dorado County in the summer of 2016 carried forward to cause 20 million dollars in damage this year due to effects of erosion and slides on power lines.

Heat transmission is a huge component of climate models. Average days over 101 degrees are predicted to rise from the current 13 per year to 85 per year by the end of the century, in conjunction with a longer heat season. Heat kills more people per year than storms and weather events combined. Cooling center operations are triggered at different temperatures based on location. In San Francisco, centers are triggered at 85 degrees as most people do not have air conditioners there. Community congregations make the best cooling centers because of their proximity to the people that need and use them. Social cohesion is a crucial factor in climate emergencies and aids the largest number of people in extreme heat situations. Climate Central is a valuable online resource tool for climate data.

Ms. Ave showed a slide from Cal EPA illustrating Capital Region Heat Pollution, also called the urban heat island phenomenon, on a thermal map. Although the heat sources were located in South Sacramento and downtown Sacramento, the map clearly showed the heat

flowing to Roseville, Rocklin and Folsom. The heat source are roof tops and hardscapes in urban areas.

There is a community aspect to climate readiness. The Capital Region Climate Readiness Collaborative acts as a convening group, influences future projects and promotes climate resiliency. There is an economic cost to air pollution and heat pollution. A prior FEMA study estimated that for every dollar spent pre-disaster, it would save 4 dollars in disaster response cost.

What's next? The Sierra Nevada Conservancy is working on forest health and stream flows and upland/lowland relationship in water usage. The Arch Nexus building is an example of an innovative energy project that could pave the way for future energy positive buildings. The building is fossil free in its operations and is required to verify energy performance by a neutral 3rd party.

Climate migration is an uncertain issue. If Sacramento were to experience temperatures as hot as Arizona, residents may potentially migrate out but SMUD currently projects flat population growth, not influx or outflow, due to heat.

Future SMUD utility pricing will be tied to time use, to discourage use of electricity during peak hours. Community solar projects bring more local partners into projects. Roof solar panels are good but it is more efficient and cost advantageous to develop solar panel projects within the energy supplier's grid.

SMUD has launched a natural refrigerant program to incentivize the change over from the current commercial refrigerant to an environmentally friendly one that reduces harmful effects on the climate. Commercial refrigerant management is a number one identified change area that is feasible to implement.

**I Street Bridge Replacement Project and the Broadway Bridge Jesse Gothan, Project Manager, City of Sacramento, 6/19/2017**

**Jason McCoy, Project Manager, City of West Sacramento**

**Zach Siviglia, Project Manager, Mark Thomas and Co.**

**Claire Bromund, Environmental Project Manager, ICF and Associates**

**I Street Bridge Project**

The City of Sacramento is the project lead on the I Street Bridge. The current structure is a historic bridge linking downtown Sacramento with West Sacramento, owned by the Union Pacific Railroad. The new bridge would be partially funded by the state Highway Bridge Project fund which supports bridge rehabilitation or replacement. The project includes the following goals: improved economic development, pedestrian and bicycle access and safety for river crossing, reduced vehicle delays, increased riverfront access and improved safety for emergency vehicles. The project also incorporates the Neighborhood Friendly bridge definition which primarily focuses on serving local traffic trips, all modes of users, is

architecturally pleasing, does not require widening of approach roads, encourages low speeds, has a low profile, and does not connect to streets that are residential use. Future levee and planned class one bike paths are considered in the design and construction plans of the new bridge.

The I Street Bridge was built in 1911 and was not designed to current standards. The structure has a narrow sidewalk, 9 foot lanes, approach viaducts that are too steep to meet ADA specifications, requires much ongoing maintenance and experiences vehicle delays. The proposed project alignment is C Street in West Sacramento to Railyards Blvd. in Sacramento. Blossoming commercial industry near project sites support this bridge alignment. The existing bridge would remain in place and be used by Union Pacific.

The City of West Sacramento has initiated a feasibility study of converting the upper deck of the historic I Street Bridge to a ped and bike walkway, maintaining connection between Old Town and West Sacramento.

The United States Coastguard is one of the entities that issues permits to organizations who are constructing in navigable waterways. They were consulted at the beginning of the design phase and gave clear parameters for bridge height and pier placement which must leave enough room between piers to prevent backflow. The maximum height of the bridge is determined by how much clearance a barge carrying a crane would need to navigate the bridge when the river is at its highest point.

Several types of movable bridges are an option in the design; lift bridge, bascule bridge, and swing bridge. The most feasible for this project is a vertical lift bridge. Public outreach will be initiated to determine what elements the public would like to include in the aesthetic design of the bridge.

The project is still in the environmental study phase and will then move into the final design and construction phase, which should take approximately four years total. Opening day is projected to be near the end of 2021 and the estimated project cost is 160 million dollars. The Riverfront JPA has already been formed and will be involved with oversight of the new bridge and other projects downtown.

Work windows for the I Street Bridge will be approximately May 1st thru Nov 30th in order to cause the least impact to fish and wildlife. While this window appears large, it will reduce the number of years required to complete the project, therefore cause less wildlife impact.

### **Broadway Bridge**

This future project creates an entirely new bridge over the Sacramento River, aligned along Broadway corridor and touching down on West Sacramento's shoreline near Jefferson Blvd. or South River Rd. The alignment of this bridge is very flexible and there is currently an

alignment and alternatives study in process. West Sacramento has been de-commercializing its waterfront properties to allow development of high density mixed use spaces and water recreation.

Criteria for the alignment of the new Broadway Bridge would take into account land use and traffic studies where the bridge would touch down at either Jefferson Blvd or South River road on the West Sacramento side and touch down on Broadway or X Street on the City of Sacramento side. Sacramento already has a grid built in for traffic dispersion but that is not the case on the potential connector for West Sacramento. Planners are including the addition of sidewalks and bike paths on Broadway and the bridge connection so there would be a road divide on Broadway.

The potential cross section of the bridge project would be an 82 foot wide structure with 12 ft. of sidewalk, 8 ft. buffered bike lanes and 12 ft. car lanes. This design would accommodate future growth and planning without a need to modify the structure. Value engineering exercises recommend turn lanes to increase flexibility for a 100 year structure. In this current planning phase the focus is on finding the optimal length and alignment of the structure.

The height standard set by the Coast Guard for this bridge project would be 170 ft. clearance. This allows for a consideration of more bridge types than the I Street bridge project since it requires a lower clearance. Funding is a major constraint to this project as it does not have dedicated funding like the I Street Bridge.

Geotechnical challenges to the bridge projects are the high loads demanded. Bridge piles would need to be 9 ft. in diameter and buried 90-100 ft. deep. Coordination with the Army Corp of Engineers would occur early in the design phase to include future levee requirements and plans.

**City of Sacramento Active Transportation Program- Jennifer Wyant, Active Transportation Specialist, Department of Public Works, 6/17/2017**

Ms. Wyant gave an overview of the existing transportation plans for the Sacramento region, including the Sacramento General Plan 2015, Grid 3.0, the Broadway Corridor plan and the Master Modal plan. These plans overlap in many areas so departments are cognizant of considering this when projects and improvements are implemented so there is cohesive movement forward.

Funding for transportation projects and improvements comes from grants and bonds, (99.9%), not general funds. The City of Sacramento partners with the Sacramento Area Council of Governments to obtain funding for American River parkway projects, highway safety programs, pedestrian crossings and underpasses. Improvements along the Parkway and bike trail connections can be impeded since the City of Sacramento does not have

access to all the parcels on the American River Parkway. The City has budgeted 2.3 million to acquire easements over the next few years.

The Bicycle Master Plan prioritizes improvements and infrastructure projects using Average Daily Traffic (ADT) studies, which means the higher the traffic speeds and the higher the volume, the more separation there should be between bikes and cars. When ADT is at approximately 10,000 and 30 mph, attention is given to activating bike lanes. Bike lane separation can be achieved by painted lines in some areas (i.e. 65th Street bike lane at the major traffic signals) while class 4 bike lanes which are entirely separated from cars by a physical barrier would be optimal in areas with traffic moving at relatively high speeds. Class 2 bike lanes are defined by wide, green stripes applied using thermoplastic and they are implemented in conflict areas, often including a right turn lane and bike lane in the same space.

A Vision 0 goal, meaning zero preventable deaths, has been adopted by the City of Sacramento, embracing a traffic safety concept that all serious biking, pedestrian and auto injuries and fatalities are unacceptable. The City has been developing an action plan to achieve zero preventable accidents by 2027. The project uses police report data from reported accidents to plan and measure the success of this project and to identify High Injury Corridors that need improvement. Unreported accidents can hinder measuring the actual success of the plan.

Active Transportation successes in Sacramento in 2016-2017 include the installation of bike racks and bike parking. The projects took 9 months to complete and use bike rack designs that are practical and safe, and that lock bikes in 2 places. Other completed projects which greatly enhance safety include the City College bike bridge, the Freeport Boulevard bike lanes, and 65th street bike lanes.

A pilot bike sharing program has been rolled out in Sacramento, West Sacramento and Davis. The 50 bike program hopes to become an extension of transit. Bike users become a member using an app to both find available bikes and pay the fees for usage. Bike wayfinding signs have been installed, professional bike maps have been printed and urban bike classes are being offered monthly in a classroom setting. The Active Transportation

Current planned projects include Broadway complete streets, Folsom Blvd. complete streets, numerous safety improvements, crossings, and signal improvements. SB1 will be pursued for funding as roads require maintenance and active transportation funding becomes available. The Sacramento Train Station will be equipped with a 2 tier parking structure, called a Secure Parking Area (SPA).

### **Sacramento Electric Vehicle Association Update, 6/17/2017**

**Guy Hall Chief Strategy Officer, Sacramento Electric Vehicle Association Board  
Secretary Electric Auto Association, Director Sacramento Clean Cities Board,  
Secretary Northern California Reno Tesla Owners Association**

The Electric Vehicle Association was started in 2011 and now has over 600 volunteers. Their mission is educate the public about the personal and environmental benefits of owning an Electric Vehicle (EV) and to dispense information about infrastructure and incentives that are available to those thinking about purchasing one. The Association engages one on one at public events, providing test drives and youth education. In a graph presented by Mr. Hall, transportation is the major source of GHG in total CA emissions, followed by industrial pollution and electricity generation.

The latest EV's have increased range, up to 230 miles for the newly released Tesla 3. The newer Chevy Volt and Nissan Leaf have an extended range as compared to the older models.

The United States lags behind other countries in Plug In sales and growth, with China and Europe in the lead, according to Mr. Hall. Factors discouraging the purchase and use of EV's in the United States include range anxiety, the lack of plentiful charging infrastructure and lack of local mechanics skilled in EV repairs. One solution for cities is to install the less expensive trickle chargers rather than the super-fast charging stations. This can provide enough charge per day for an average commuter to complete their work drive, an average of 36 miles per day. DC Fast Charging infrastructure would be best utilized in highway corridors where you could get a charge rate of 100-400 miles in 10-60 minutes.

There are incentives available to those looking to purchase an EV. The link to find available incentives in your geographical area is <https://driveclean.arb.ca.gov/pev/Incentives.php>. The City of Sacramento also incentivizes by offering discounted parking and 21 free charging stations, although there are approximately 120 EV drivers competing for these charging spaces. These charging spaces only encourage EV use if there is no requirement to move the car after a certain amount of charging time. It discourages EV users if there is the possibility of getting tickets.

The Sacramento airport has had early EV successes. They installed free charging stations for trickle charging for long term parking customers and CDFC fast chargers in other parking areas. They also provide long range EV rentals for visitors.

The gas tax currently funds road maintenance and repairs. As EV use increase, the state will need to figure out how to collect funds for this purpose.

**South Sacramento Habitat Conservation Plan (SSHCP) - Richard Radmacher, Senior Planner, and Bill Ziebron, Program Manager for SSHCP, Department of Water Resources, 8/21/2017**

The South Sacramento Habitat Conservation Plan has been under development for over 20 years, preparing strategies for species protection, governance and economics for preserving several conservation areas in the urban development boundaries of Sacramento. The timeline for completing the SSHCP has recently speeded up with a deadline of April 2018 because the Department of Fish and Wildlife has given notice that they will no longer be issuing permits project by project but rather will permit comprehensive conservation plans that achieve more effective conservation and include the many partners in each protected area. The partners in the plan's area include Sacramento County, City of Rancho Cordova, City of Galt, Regional San and the Capital Southeast Connector.

The SSHCP will streamline the permitting process and provide an integrated solution for the multiple permits required by the Endangered Species Act Section 10, the Clean Water Act, the Endangered Species Act Section 2081 and the Clean Water Act section 401. The SSCHP protects 28 species, provides for 50 year ESA and CESA take permits, provides financing by use of a mitigation/in-lieu fee program and contains a wetlands protection ordinance. The large preserves set aside contain a large quantity of vernal pools. The protected species list in the plan covers new species of animals and plants as they are added or removed from the endangered list. Protected species currently include the Sandhill Crane, the Swainson's Hawk, the Giant Garter Snake and Sacramento Orcuff Grass and many others.

The SSHCP differs from current plans because it protects full biological systems, incorporates stream setbacks and contains adequate funding for oversight and management in perpetuity. The South Sacramento Conservation Agency has already been approved by the local jurisdictions and documents have been submitted to the state. Plan officials will be comprised of elected officials from Sacramento County, Rancho Cordova and Galt. Long term funding will be provided by mitigation fees paid by developers at a per acre charge based on the type of habitat being affected. Current funding is being provided by Sacramento County at approximately 80% and other cities at 20%.

**Annual Health of the County Update – Kate McAuley, Senior Health Program Coordinator, Health and Human Services, Sacramento County, 10/16/2017**

Ms. McAuley informed commissioners that on Friday, October 13<sup>th</sup>, Governor Brown declared a state of emergency to aid combating the Hepatitis A (Hep. A) outbreak in California and the shortage of Hep A vaccines.

The current Hep A outbreak started in San Diego and has spread to Santa Cruz and Los Angeles with a total of 576 confirmed cases. A normal background level of Hep A cases per year is 8. The majority of patients in this outbreak are the homeless, illicit drug users, and

those with limited sanitation resources. The disease is spread person to person through contact with fecal contamination.

The Hep A vaccine is an extremely effective measure to combat the illness. The provision of hand washing stations and access to toilets are also effective prevention and control measures to help reduce the risk of transmission. Vaccinations at homeless shelters have been implemented as well as health staff actively going into homeless areas to vaccinate people outside of the shelter environment.

Sacramento County experienced a Botulism outbreak from April 20-May 14, 2017, in which the County investigated 10 cases of botulism linked to cheese sauce dispensed through a machine being sold at a gas station in Walnut Grove. 80% of the patients confirmed consuming cheese sauce from the gas station within a week of illness onset.

Botulism is a rare disease, with only 199 cases reported in 2015. *Clostridium botulinum* spores are found in soil and require an anaerobic environment to produce toxin, which, in large enough doses is a lethal neurotoxin. Common botulism risk groups/sources include canned food, IV drug users who have closed wounds, and infants under one year of age who are given honey.

Symptoms of botulism are blurred vision, slurred speech, difficulty swallowing and breathing, dry mouth, thick tongue muscle paralysis and nausea/vomiting. Anti-toxins are dispensed by the state botulism expert to treat the patient but the illness can still be deadly. Doctors first report botulism cases to County Public Health, which reports the cases to State Public Health in order to receive anti-toxin. The County proceeds to investigate causes and mitigate spread of the illness.

### **Kiefer Landfill as a Regional Resource – Tim Israel, Senior Civil Engineer, Waste Management and Recycling, Sacramento County, 10/16/17**

The Kiefer Landfill opened in 1967 and is currently 305 acres with 30,000,000 tons of garbage in place, only half the permitted footprint. There is enormous future capacity available. There are both federal and state minimum standards requirements for solid waste landfills but California standards are even more stringent. Groundwater monitors and air emissions are highly regulated. The Water Board mandated the first liner be installed in 1993. A groundwater treatment system was installed in 1995 and a landfill gas collection system in 1997 which partnered with the Kiefer landfill generating plant. The current Solid Waste Facility permit estimated closure date is 2035 but at the current fill rate the closure date could potentially be 2092. Rates/fees have remained level for the last 5-6 years.

The landfill receives 2,200 tons of fill per day and has a staff of 50. Small amounts of recyclables are diverted to Kiefer but the main focus is burying trash and maximizing the

amount of trash bulldozed into each cell to get the most cost benefit. By disposing of trash at local landfills and not trucking it to other states, greenhouse gas emissions are reduced.

Capacity far exceeds the daily drop. The landfill can accept up to 10,815 tons per day and can service the entire Sacramento area. . The majority of city trash goes to Kiefer. Kiefer landfill also serves an essential resource for waste disposal in event of a natural disaster. There is a hazardous waste handling and storage area.

The energy plant was built in 1999 and partnered with Aria energy. Sacramento County owns three of the five engines. The power is sold to SMUD and can power approximately 10,000 homes. As landfills age, the gas collected doesn't supply the BTU's to be sold as energy.

The Kiefer Landfill is the site of a 244 acre Vernal Pool Preserve managed by the Sacramento Valley Conservancy. Endangered species with habitats at these pools include Orcutt grass, fairy shrimp, and tadpole shrimp. The Bufferlands is a 2000 acre preserve surrounding Kiefer that is owned by the County. It not only buffers the surrounding community from the landfill but it's managed as a preserve for agricultural lands, riparian habitat and vernal pools.

The landfill has an onsite stormwater retention basin to aid in recharging groundwater aquifers and plans to add the treatment plant water to the recharge water as well. They use sheep and goats for vegetation control at Kiefer and Department of Waste Management and Recycling not only because it's green but because they eat the grass down to within inches of the soil, alleviating fire danger near pipes emitting gasses. Kiefer Landfill also works with Cal Recycle to develop applications for tire derived aggregate.

Landfills settle as trash decomposes. If improvements and public use structures such as parking lots and recreational spaces are put on the land soon after closure, they risk being unmaintainable and damaged.

**City of Sacramento, 28<sup>th</sup> Street Landfill as a Resource – John Febbo, City of Sacramento Recycling and Solid Waste Division, Integrated Waste Planning Superintendent, 10/16/17**

In 1950, the City of Sacramento was landfilling on two private lots. The City still has the liability for that trash but does not own the land. It would cost 3 ½ million dollars to close these two landfills. The City has acquired real estate for its landfill over the years and has tentative plans/ideas for how to repurpose this resource to benefit the public. Developing bike paths that connect pieces of the American River Parkway bike trail are high on the list. Caltrans is proposing running a freeway through the landfill.

Sutters Landing Fort land will eventually to be connected to the American River Bike trail and McKinley Village is a recent new development across from landfill. Trades are a way of helping the city landfill and regional partners achieve compatible goals such as open space or land for new gas monitoring systems. One valuable regulatory effort has been fire recovery. Recently an RV started on fire adjacent to the landfill but the situation was quickly contained because the landfill had been mowed, fire fuel was reduced, and the fire didn't spread.

The City of Sacramento has installed new gas systems and new flares. The City would like to postpone closure of the 28<sup>th</sup> Street Landfill until Spring 2019, when the soil is softer and the dirt from the McKinley Park excavation will be available to use as cover for the closure.

Sutters Landing Park is a repurposed landfill. The dog park is appropriate because landfills settle and that settlement won't affect a dog park use. Moreover, a dog park won't require future maintenance. Bocce court materials are stable but could become uneven in the future. The indoor skate park in the old Bailer building is a very popular and much used repurposing. The parking lot and basketball court at that site are no longer used due to settling. The bike trail has settled to the point where it cannot be repaired but needs to be excavated and filled, a costly project that is currently on hold.

The City is completing the Two Rivers bike trail extending all the way to the railroad trestle, about a mile addition. By 2020 it will connect to Sacramento State, cross the bridge and proceed all the way to Granite Bay. It's a section of bike trail that is in the one percent of rivers deemed "wild and scenic."

Capital City Freeway widening project from E street to Arden may cross over some of the Sutter Street Landfill. The Sutter Landing group may resist the project because the freeway would be elevated which projects freeway noise. This project would recapture space and the old bridge could be repurposed as a public space with gazebos and become viewing spot, a community asset.

Possible future uses for the 28<sup>th</sup> Street Landfill include soccer fields, animal habitats, a driving range and/or an urban mountain bike park. Funding determines when these projects could take place.

## Facility/Project Tours

### Tour of Architectural Nexus Inc. – 930 R Street, Sacramento CA 95811

On May 18, 2017, members of the Sacramento Environmental Commission (SEC) and the Environmental Management Department (EMD) staff attended a tour of the Architectural Nexus Inc. (ArchNexus) building at 930 R Street, Sacramento. Newly opened in January 2017, this building is 8,200 sq. ft. and offers onsite composting and solar panels.



Figure 1 – Front of ArchNexus building

Architectural touches double as ultra-green systems and technology includes onsite water treatment and is net positive water consumption. There is an emphasis on creating strong connections between nature and the environment.



Figure 2 – Water cisterns

The building footprint remained the same from the previous building, minimizing the environmental impact. There is focus on aesthetics, and two local Sacramento artists designed the bike stations. The building encourages public engagement by giving public tours and making food produced in the urban agriculture garden available on an exterior bench for anyone to eat. An internal living wall of plants indicates if too much or too little greywater is available.

ArchNexus uses only rainwater collection for non-potable water use. Two 5,000 gallon cisterns outside collect rainwater that currently supplies the composting toilets and irrigation.

Greywater from sinks, showers and dishwasher filter into a 100 gallon poly tank which is aerated and supplies water to the living wall. The building produces 105 percent of their energy and uses 100 percent daylight. Solar tubes divert outside into the building and there is no HVAC system. A wall sensor indicates when to open windows.

**A few other highlights include:**

- No automated items in building
- No “red list” chemicals
- First infill project applying for certification, others have been new construction (Petal 2 materials)
- The meeting room has open windows to allow the public to see in and become inspired.
- Partnered with local elementary schools and funded a school garden in exchange for fresh food to give away.
- Currently working on a proposed surface water treatment system.

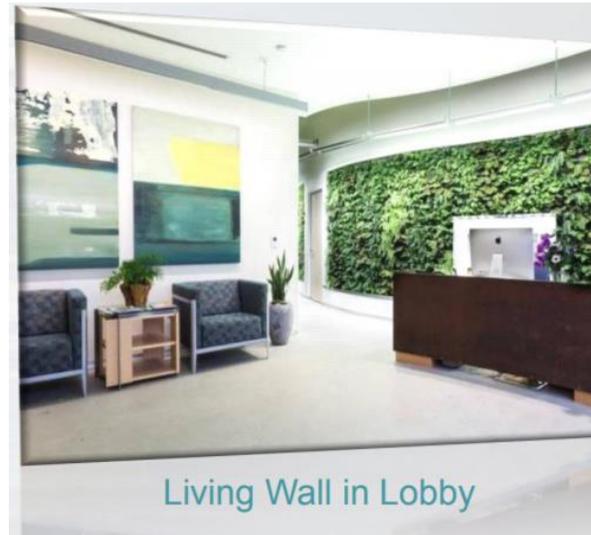


Figure 3 – Living wall

## **2017 Environmental Awards (for year ending 2016)**

The SEC has annually awarded recognition to groups, companies, and other entities that have demonstrated a commitment to improving environmental quality that exceeds minimum requirements or provides leadership in the County and participating communities.

Each year, the SEC reviews and modifies its award process to increase public interest and the number of nominations to receive the awards. In 2017, the SEC awarded the following recipients for their efforts in 2016.

**City of Elk Grove Integrated Waste Department and the Toby Johnson Middle School, educational on-campus Recycling Program.** Elk Grove staff worked to train and educate a core group of students and teachers about the logistics of recycling and correct sorting, using signage and colorful, printed materials that clearly showed which waste streams get sorted into the various bins provided by the City of Elk Grove. The on-campus recycling program also addresses the new requirements for organics recycling and the City provided food waste bins and educational signage. Each week students collect and audit recyclables in classrooms to give to the custodians. This type of on-campus recycling program serves as a model for other schools in the Elk Grove School District that would like to incorporate on-campus recycling programs at their school.

**Carmichael Water District, Riparian Habitat Restoration on the American River as part of the American River Pipeline Conveyance Project.** This project included removal of exposed, abandoned river infrastructure, as part of their American River Pipeline Conveyance project. Existing abandoned water diversion assets at the project site along the American River were removed, and the riverbank was restored to a natural setting. This environmental restoration included the removal of 400 feet of 33-inch diameter exposed steel pipe dating back to the 1950s that had long posed a boating hazard in the river channel. In addition, three concrete intake and pump station structures, a failing riveted steel culvert, and large buried valves were demolished and removed. The restoration culminated with the reconnection of an upstream riparian habitat that had long been separated from the primary American River channel by freefall discharge from a 65- year old culvert.

**Sacramento County Department of Water Resources, Management of the Collaborative Cordova Creek Naturalization Project.** The purpose of the project was to replace a deteriorating concrete-lined channelized portion of Cordova Creek (formerly referred to as Clifton Drain) with a new meandering stream channel. The project was designed to create a naturalized channel intended to restore ecological function to the stream, and also included measures to eradicate and prevent reestablishment of invasive

species, installation of an interpretive walkway for public recreation and environmental education programs implemented by Soil Born Farms, and establishment of over 19 acres of new native riparian, wetland, and upland habitat.

The project was completed in the fall of 2016. The new stream channel has a natural stream substrate, a wide meandering design, and banks consistent with natural vegetation assemblages and historical drainage patterns. The project installed a total of approximately 4.3 acres of new riparian habitat, 4.8 acres of wetland habitat, and 10.1 acres of native upland plantings. Special provisions were taken all throughout the design and construction process to protect sensitive wildlife, plants, and other natural resources at the site, with the intention of establishing a more productive and natural environment where these resources can thrive in perpetuity.

## APPENDIX A

### City of Elk Grove in support of the Toby Johnson Middle School Recycling and Education Program, Letter of Recognition

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#### *SACRAMENTO ENVIRONMENTAL COMMISSION*

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*Robert Bailey  
Mark Barry  
Dana M. Curran, Vice Chair  
Dr. Anthony DeRiggi  
Richard Hunn, Chair  
Diane Kindermann  
George "Buzz" Link  
Marjorie M. Namba  
Eric Rivero-Montes  
Mark White*

*A JOINT COMMISSION APPOINTED BY:*

*County of Sacramento  
City of Sacramento  
City Folsom  
City of Elk Grove  
City of Galt  
City of Isleton*

May 15, 2017

Christian Punsal  
Integrated Waste Coordinator  
City of Elk Grove  
8401 Laguna Palms Way  
Elk Grove, CA 95758

Subject: SEC Letter of Support for City of Elk Grove and Toby Johnson Middle School Recycling and Education Program

Dear Mr. Punsal:

The Sacramento Environmental Commission ("SEC") is a joint County/City appointed commission chartered to advise the Sacramento County Board of Supervisors and the City Councils of Folsom, Galt, Isleton, Elk Grove and Sacramento on environmental issues facing our communities. Recently, the SEC awarded citizens, businesses or organizations based in Sacramento County whose actions this past year demonstrated outstanding efforts to improve and steward the environment. Among the recipients of this award was the City of Elk Grove Integrated Waste Department, and Toby Johnson Middle School for their effort to go above and beyond in organizing an on-campus school recycling and education program at the Middle School.

The school recycling program was a joint effort between the school teachers and the City of Elk Grove that encouraged voluntary participation and increased public awareness of the benefits of recycling. Elk Grove staff members worked to train and educate a core group of students and teachers about the

logistics of recycling and correct sorting, using signage and colorful, printed materials that clearly showed which waste streams get sorted into the various bins provided by the City of Elk Grove. The on-campus recycling program also addresses the new requirements for organics recycling and the City provided food waste bins and educational signage. Each week students collect and audit recyclables in classrooms to give to the custodians.

The SEC believes that the efforts of the students and teachers of Toby Johnson Middle School, and the City of Elk Grove Integrated Waste Department are worthy of recognition. The students and teachers who participated in the program gained valuable, first-hand experience on how to organize a grass-root effort whose impact could benefit the entire community. Furthermore, this on-campus recycling program may serve as a model for other schools in the Elk Grove School District that would like to incorporate similar recycling programs at their own campus. The work of these students and the program's organizers may someday be the foundation of other successful recycling programs throughout the region. It is because of this that the SEC would encourage other environmental organizations to consider the City of Elk Grove Integrated Waste Department, and Toby Johnson Middle School for an award.

If you have any questions, please contact Jill Koehn, SEC Secretary at (916) 875-8584 or [koehnjill@saccounty.net](mailto:koehnjill@saccounty.net).

Sincerely,



Richard Hunn, SEC Chair  
Sacramento Environmental Commission



Eric Rivero-Montes  
Sacramento Environmental Commission

## Letter of Concern Regarding the Reorganization of the Environmental Management Department as a Division

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### *SACRAMENTO ENVIRONMENTAL COMMISSION*

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*Robert Bailey*  
*Mark Barry*  
*Dr. Anthony DeRiggi*  
*Richard Hunn, Chair*  
*Diane Kindermann*  
*George "Buzz" Link*  
*Marjorie M. Namba*  
*Eric Rivero-Montes, Vice-Chair*  
*Mark White*

*A JOINT COMMISSION APPOINTED BY:*

*County of Sacramento*  
*City of Sacramento*  
*City of Folsom*  
*City of Elk Grove*  
*City of Galt*  
*City of Isleton*

December 18, 2017

Don Nottoli, Chair  
 Sacramento County Board of Supervisors  
 700 H Street, Suite 1450  
 Sacramento, CA 95814

Subject: Concerns Regarding the Proposed Reorganization of the Environmental Management Department

Dear Chair Nottoli:

The Sacramento Environmental Commission (SEC) is a joint County/City appointed commission chartered June 14, 1988 to advise the Sacramento County Board of Supervisors and the City Councils of Folsom, Galt, Isleton, Elk Grove and Sacramento on environmental issues facing our communities. As part of its role, the SEC provides input on effective comprehensive environmental protection and management programs.

The SEC has considered the proposed reorganization to demote the County of Sacramento, Environmental Management Department (EMD) from a department to a division within a larger Department of Health Services. The SEC recommends that the EMD retain its department status and that any administrative reorganization not interfere or alter the effectiveness of ongoing environmental protection programs.

### **The Proposed Reorganization Will Negatively Impact EMD's Role to Protect the Public Health, Safety and Welfare**

The SEC is concerned that the proposed reorganization will reduce the effectiveness of EMD and increase costs to the County by:

- Establishing two levels of administrative management over technical EMD managers and staff who are responsible for meeting a wide variety of regulatory requirements, authorizing use of incident response personnel, and coordinating with multiple regulated communities who fund EMD programs.
- Eliminating control over staff hiring, training, and education that is imperative to proper function of the agency.
- Diverting the focus of technical senior managers to include a broad range of social-issue topics that have no common features with EMD programs, regulated communities, or funding sources.
- Interfering with the oversight of future programs such as those which may be associated with commercial cannabis cultivation, which will require additional EMD staff time to oversee hazardous waste permitting.

### **The Reorganization is Inconsistent with County Goals Established by the County Toxic Task Force**

The goal of establishing EMD in 1988 was to create a single County-wide authority capable of responding to the myriad environmental and hazardous materials regulations that were becoming enforced. At that time, the County Toxic Task Force found that the organizational structure of the Sacramento County Health Department and other agencies was not suitable and a strategy that elevated EMD to a higher level in the County administrative system would better implement the critical environmental protection programs. The strategy to elevate EMD to department-level was approved by the Board of Supervisors in February, 1988, when it enacted Ordinance No. SCC 0718.

The EMD Director is often called upon by members of the Board of Supervisors to address inquiries about current technical matters. This direct communication has worked well and provided elected officials with information to address constituents' concerns for many years. The proposed reorganization will result in a filtering of questions and responses through several levels of administration that are not knowledgeable about the technical issues on a day-to-day basis.

### **EMD Effectively Oversees 33 Technical Environmental Programs**

As the regulatory environmental has grown more complex, the responsibilities of EMD has expanded to include thirty-three programs involving hazardous materials generators and storers, small drinking water systems, underground storage tanks, incident response, accidental release, wells and monitoring wells, food protection and inspections, body art, recreational health, waste tires, and childhood lead exposure investigations. Each of these environmental responsibilities requires staff and management that are trained and knowledgeable about technical issues, regulatory requirements, and understanding of the regulated-sectors' concerns and efforts for compliance.

EMD has an excellent track record and continues to successfully meet its goals and objectives to protect the Sacramento County environment. This success has been demonstrated in part, by the number and breadth of awards received. Over the past eight years, EMD has been recognized with eighteen awards for best management practices, outstanding program implementation, innovation, and public outreach and communications. Most recently, EMD received the 2015 Solutions Significant Achievement Award for

establishing its Cross-Connection Control internet portal.  
 (<http://www.emd.saccounty.net/EC/Pages/CrossConnection.aspx>)

### **EMD has a Positive and Cost-Effective Relationship with the Regulated Community**

EMD is responsive to the Sacramento County business community that conduct activities over which it has regulatory responsibility. In this role, EMD has maintained excellent communication and coordination to ensure consistent and cost-effective implementation of regulatory actions. Sacramento businesses that are subject to regulatory oversight must continue to be given the County's highest priority by working with a department-level agency on matters that can require substantial costs, investments, and time to achieve desired environmental protection. Additional layers of administration that focus on providing public social services will only act to diffuse the commercial business focus of EMD and diminish its effectiveness.

These awards and established relationships with the Sacramento business community demonstrate that EMD is functioning as originally approved by Board of Supervisors. Consolidating the various programs under a single department-level authority has enabled EMD to develop and implement reasonable, effective and cost-conscious programs that are contributing to protecting the Sacramento County environment.

The proposed reorganization has a high potential to reduce program effectiveness, established cost controls, and direct interaction with the regulated Community. There is no obvious issue with EMD's performance that warrants a change in department management structure, operations, or activities.

### **Recommendation**

EMD can continue to be a point of excellence recognized by local and statewide interests. Actions that can disrupt its structure, decision authority and technical operations will have repercussions on EMD's ability to continue functioning in a cost-effective manner to achieve County environmental protection goals.

Therefore, we recommend that the proposed reorganization of EMD not be implemented.

If the Board of Supervisors decides to further consider the reorganization of EMD, members of the SEC are available to participate in a comprehensive environmental regulatory program review to ensure continued effectiveness and cost efficiency.

Thank you for considering our concerns.

Sincerely,



Richard Hunn, Chair  
 Sacramento Environmental Commission

Cc: Nav Gill, County Executive, Sacramento County  
 Clerk of the Board, Sacramento County  
 Supervisor Serna, Sacramento County

Supervisor Kennedy, Sacramento County  
Supervisor Peters, Sacramento County  
Supervisor Frost, Sacramento County  
Mayor Darrell Steinberg, City of Sacramento  
Mayor Steve Miklos, City of Folsom  
Mayor Mark Crews, City of Galt  
Mayor Steve Ly, City of Elk Grove  
Mayor Glenn Giovannoni, City of Isleton

## Appendix B

### Mission/Vision Statement

#### ***SEC VISION***

The Sacramento Environmental Commission (SEC) envisions a county and cities where local government and citizen actions result in improved environmental conditions and enhance sustainability such that:

- water pollution is minimized;
- air pollutant emissions are minimized;
- land is productive and managed for multiple uses;
- natural resources are managed in a sustainable manner;
- renewable energy is readily available;
- people, plants, and animals thrive in a healthy and sustainable ecosystem;
- neighborhoods are clean and healthy;
- food is safe; and
- residents can walk, bicycle, carpool, or ride public transit as their first choice of transportation.

**Sustainability** is acting in a way that provides for the needs of people and the environment, while at the same time, maintaining the natural systems that will support life into the future, without compromising the ability of future generations to meet their needs.

#### ***SEC MISSION***

The SEC mission is to provide leadership, assistance, analysis, and advice on environmental matters to the Sacramento County Board of Supervisors and the City Councils of Elk Grove, Folsom, Galt, Isleton, and Sacramento. In this role, the SEC works with city and county agencies and strives to advance its vision of environmental quality, conservation, public health, environmental management, environmental justice, and sustainability. The SEC serves as an advisory body for the Sacramento County Environmental Management Department (EMD).

#### ***SEC HISTORY***

The SEC was established in 1988 by the Sacramento County Board of Supervisors and the City Councils of Folsom, Galt, Isleton, and Sacramento. The City of Elk Grove joined the SEC in 2014. The ordinance establishing the SEC defines a broad charter that covers a range of environmental topics. The SEC undertakes activities ranging from commenting on specific projects to reviewing larger more comprehensive environmental policies and proposals.

The SEC has presented awards that acknowledge contributions toward environmental quality and health. The SEC established its annual Environmental Recognition Awards in 1999 to recognize the accomplishments and leadership of individuals, organizations and industries that have promoted a healthy and quality environment within the Sacramento Region.

***SEC MEMBERSHIP***

SEC members come from within the member jurisdictions and have diverse backgrounds, frequently representing the areas of environmental law, community advocacy, environmental regulation, industry, environmental justice, transportation, energy, water, solid waste, environmental health, and land use planning.

## Appendix C

### SEC Areas of Interest

The environmental sectors presented below are general topics of interest to the SEC. The SEC comments on these topics if/when they impact the vision and mission of the SEC.

TOPIC	GOALS
Solid waste	<ul style="list-style-type: none"> <li>• Support efforts by City and County agencies to increase recycling beyond the state diversion mandate.</li> <li>• Increase collaboration with the <b>California Department of Resources Recycling</b> and Recovery (CalRecycle).</li> <li>• Monitor local landfill issues.</li> <li>• Support long range planning to meet regional diversion and disposal needs.</li> <li>• Support land use planning that establishes a sufficient buffer around the Kiefer Road Landfill.</li> <li>• Support commercial, construction, demolition material, and food waste recycling programs; Support the reduction of greenhouse gas (GHG) emissions through enhanced waste management programs.</li> <li>• Promote the establishment of local ordinances to restrict use of single-use plastic bags and encourage the recycling of food waste.</li> </ul>
Energy	Increase SEC interaction with SMUD, PG&E, and the California Energy Commission in support of efforts to increase energy efficiency and the use of renewable sources of energy where appropriate.
Air Quality/ GHG Emission	Support efforts to improve air quality within the Sacramento region including efforts by local agencies to reduce GHG emissions.
Water Quality	<p>Support efforts by regional agencies to improve water quality in the Sacramento region.</p> <ul style="list-style-type: none"> <li>• Increase contact and involvement with regional agencies involved with larger contaminated sites in the region.</li> <li>• Support permitted well construction/destruction.</li> </ul>

Water Supply	<p>Support efforts by regional agencies to develop sustainable and reliable surface and groundwater supplies.</p> <ul style="list-style-type: none"> <li>• Support water conservation programs.</li> <li>• Support long range planning for water supply needs.</li> <li>• Monitor agency actions related to water resources protection.</li> <li>• Work with EMD to support small water system supply.</li> </ul>
Flood Control	<p>Support efforts by local agencies to design and implement effective flood control for the Sacramento region.</p> <ul style="list-style-type: none"> <li>• Support efforts to increase flood protection provided by American and Sacramento River levees.</li> <li>• Support efforts to increase flood protection provided by Folsom Dam.</li> <li>• Support efforts to minimize flooding from Sacramento County streams.</li> </ul>
Pollution Prevention	<p>Work with local agencies to support pollution prevention within their operations.</p> <ul style="list-style-type: none"> <li>• Reduce pesticide runoff.</li> <li>• Support hazardous materials collection operations.</li> <li>• Reduce light pollution at night “Dark skies”.</li> </ul>
Environmental Justice	<p>Support efforts by City and County agencies to design and implement environmental programs that are fair and equitable to all Sacramento area residents.</p>
Agriculture/Land Use	<p>Support efforts by local agencies to implement land use policies sensitive to environmental concerns for the Sacramento region.</p> <ul style="list-style-type: none"> <li>• Support development of facilities for accessible parks.</li> <li>• Support conservation of open spaces.</li> <li>• Preserve prime farm land and support urban farming.</li> <li>• Preserve critical habitat resources.</li> <li>• Protect and restore urban and rural creek systems.</li> </ul>

## APPENDIX D

# Cyanobacteria in Sacramento Region Waterways

Sacramento Environmental Commission

## **Introduction**

The Sacramento Environmental Commission (SEC) is a joint County/City commission chartered to

advise the Sacramento County Board of Supervisors and the City Councils of Elk Grove, Folsom, Galt, Isleton and Sacramento on environmental issues facing our community. Our mission is to provide environmental leadership, assistance and analysis, and provide advice to the participating governments. Our goal is to promote a vision of environmental quality, conservation, public health and environmental management, environmental justice and sustainability throughout the County. The SEC is also an advisory body to the Sacramento County Environmental Management Department.

The SEC received a presentation from staff of the State Water Resources Control Board (SWRCB) Surface Water Ambient Monitoring Program (SWAMP) on the expanding distribution of Harmful Algal Blooms (HABs) and presence of cyanobacteria at the SEC's September 2016 monthly meeting. The SWAMP presentation highlighted several key points that raised the concern of SEC Commissioners to further consider this topic.

The SEC prepared this analysis to determine if additional efforts are needed to monitor the presence of HABs in Sacramento County and whether further actions may be necessary to avoid or minimize a potential public health threat.

## Summary

Based on the data reviewed and information compiled, the SEC developed a series of findings summarized in the following points:

- Cyanotoxins and algal toxins pose risks to the health and safety of people and pets recreating in water bodies, eating fish, and drinking water.
- The SEC conducted a ranking of the sixteen waterways to determine those that pose a lower or higher potential for expose public to HABs.
- Certain Sacramento County waterways pose a higher risk of HAB exposure to the public, including:
  - American River
  - Sacramento River
  - Cosumnes River
  - Morrison Creek Group/East Drainage Canal/Steelhead Creek/Dry Creek/Arcade Group
  - Deer Creek Group
  - North Fork Badger/Laguna Creek/ Deadman/Bear Slough Creek
  - Delta Waterways and Sloughs
  - Folsom Lake
- The waterways with higher risk of HAB exposure warrant a higher level of monitoring during lower flow and higher temperature conditions.
- If HABs are detected which pose an immediate threat to public health through known pathways, action should be taken to inform the public of the hazard, post on-site signage, or take direct action to manage the presence, abundance, and distribution of the HABs.

## Background

Consistent with its roles and its continuing education on current environmental issues of concern, the SEC received a presentation from staff of the State Water Resources Control Board (SWRCB) Surface Water Ambient Monitoring Program (SWAMP) at the SEC's September 2016 monthly meeting. The SWAMP presentation highlighted several key points that raised the concern of SEC Commissioners to further consider this topic. These points included:

- Cyanobacteria, formerly known as blue-green algae (Cyanophyceae), are a group of bacteria with chlorophyll-a capable of photosynthesis. Under the right conditions of pH, nutrient availability, light, and temperature, cyanobacteria can reproduce quickly, forming a Harmful Algal Bloom (HAB) (EPA, 2015).
- The occurrence of freshwater HABs are increasing throughout California because of:
  - Increasing surface water temperatures
  - High concentrations of nutrients
  - Occurrence of drought and low flow conditions
- Cyanobacteria and harmful algal blooms (HABs) can have negative impacts on the environment, people, pets, wildlife, or livestock, as well as the economy.
  - Some HABs can produce large amounts of cyanotoxins or algal toxins, which can poison livestock, wildlife, and humans.
  - Certain other types of cyanobacteria are nontoxic but can impart an unpleasant taste to water and fish as well as giving off an unpleasant smell as they die and decay. Cyanotoxins and algal toxins pose risks to the health and safety of people and pets recreating in water bodies, eating fish, and drinking water.
  - They can accumulate in fish and shellfish to levels posing threats to people and wildlife consumers.

Based on this presentation, the SEC decided to further investigate the occurrence of HABs in Sacramento County and what level of effort should be considered to adequately monitor and manage future occurrences that could pose a public health concern.

## SEC Information Review

Commissioners researched specific information to determine if a potential public health threat was present because of the contamination of Sacramento County waterways with algae species that may produce toxic compounds leading to HABs. It was quickly determined that regional information addressing this topic was not available. Based on this initial investigation, the SEC elected to address key elements of this issue using other available information. This other information enabled the SEC to respond to the following inquiries.

- A. What is the relative toxicity of cyanotoxins including microcystins?
- B. What of the exposure pathways that may cause public exposure to these toxins?
- C. What is the potential exposure from Sacramento County waterways?

SEC Commissioners considered each of these questions and compiled available information to provide further guidance.

#### A. RELATIVE TOXICITY OF CYANOBACTERIA ALGAL BLOOMS

It has been estimated that 25 to 75% of cyanobacterial blooms are toxic. Production of cyanobacterial toxins (cyanotoxins) includes human and animal health hazards, which can present risks of illness and mortality at environmentally relevant concentrations (Blaha et al, 2009).

Microcystins have been shown to be acutely (and chronically toxic) to animals and with acute LD<sub>50</sub> (lethal dose for 50% of subjects) of the individual microcystin structural variants ranging between 50 and 1000 µg/kg following injection in mice. After injection, severe liver damage is observed followed by circulatory failure, heart failure and death. The oral LD<sub>50</sub> in mice (5000µg/kg body weight.) or in rats (>5000µg/kg body weight.) is approximately 100-fold higher than the injected. LD<sub>50</sub>, may be due to slow gastrointestinal uptake of toxins in mice (Blaha et al, 2009).

A comparison of various data suggests that microcystin is very toxic relative to arsenic and cyanide (see Table 1), but less toxic than another biological toxin, saxitoxin, and the poisons sarin, dioxin, and strychnine (Smith 2013). The LD<sub>50</sub> is often expressed as the µg of a toxin per kg of body weight of an animal. The LD<sub>50</sub> is telling us that when administered that dosage in µg agent/kg body weight, 50% of the animals exposed would likely die.

Table 1 Relative Toxicity of Various Toxins

Substance	Animal	LD <sub>50</sub> (µg/kg)	Original Data Source
Arsenic	Mouse	26,000-48,000	<a href="#">EPA AEGLs 2007</a>
Sodium cyanide	Rat	15,000	<a href="#">EPA AEGLs 2010</a>
<b>Microcystin-LR</b>	<b>Mouse</b>	<b>5000</b>	<b><i>LD<sub>50</sub> values for Microcystin-LR, compiled by Beagle Bioproducts</i></b>
Sarin	Rat	125	<a href="#">Scremin et al., 2003</a>
Dioxin	Mouse	114	<a href="#">National Library of Medicine, for emergency responders</a>
Saxitoxin	Mouse	10	<a href="#">Humpage EPA abstract, Falconer EPA chapter</a>
Strychnine (rat poison)	Rat	5	<a href="#">Government of Queensland factsheet</a>

The U.S. Environmental Protection Agency (U.S. EPA) Candidate List (CCL) is a list of contaminants that are currently not subject to any proposed or promulgated national primary drinking water regulations, but are known or anticipated to occur in public water systems. Contaminants listed on the CCL may require future regulation under the Safe Drinking Water Act (SDWA). EPA announced the Final CCL 4 on November 17, 2016 (EPA, 2016).

The U.S. EPA published national drinking water Health Advisories for the cyanotoxins, microcystins, and cylindrospermopsin (see Table 2). The Health Advisories identify the cyanotoxins levels in drinking water which are less than or equal to those by which adverse human health impacts are unlikely to occur over a 10-day period.

Health Advisories are developed to help states and water systems assess local situations and during emergency situations and spills. They are not a federally enforceable, regulatory limit. Given the health concerns that can occur from cyanotoxins in drinking water, many potable water purveyors are taking actions to manage and reduce the risks from cyanotoxin contamination in drinking water. These actions can include steps for cyanotoxin monitoring, adjusting treatment to address contamination before levels are of concern and notifying the public through a Drinking Water Advisory when tap water toxin levels are a possible public health concern. (EPA, Undated).

**Table 2 Cyanotoxin Health Advisories**

10-DAY HEALTH ADVISORIES	Advisory Level
<b>Microcystins</b>	
Children pre-school age and younger (under 6 years old)	0.3 µg/L
School-age children (6 years and older)	1.6 µg/L
<b>Cylindrospermopsin</b>	
Children pre-school age and younger (under 6 years old)	0.7 µg/L
School-age children (6 years and older)	3.0 µg/L

Source: U.S. EPA 2016b

## B. POTENTIAL FOR PUBLIC EXPOSURE

The public can be exposed to cyanobacterial blooms and cyanotoxins by:

- Drinking water that comes from a lake or reservoir with a cyanobacterial bloom
- Drinking untreated water
- Engaging in recreational activities in waters with cyanobacterial blooms
- Inhaling aerosols from water-related activities such as jet-skiing or boating
- Inhaling aerosols when watering lawns, irrigating golf-courses, etc. with pond water
- Using cyanobacteria-based dietary supplements that are contaminated with microcystins
- Receiving dialysis (this has been documented only in Brazil)

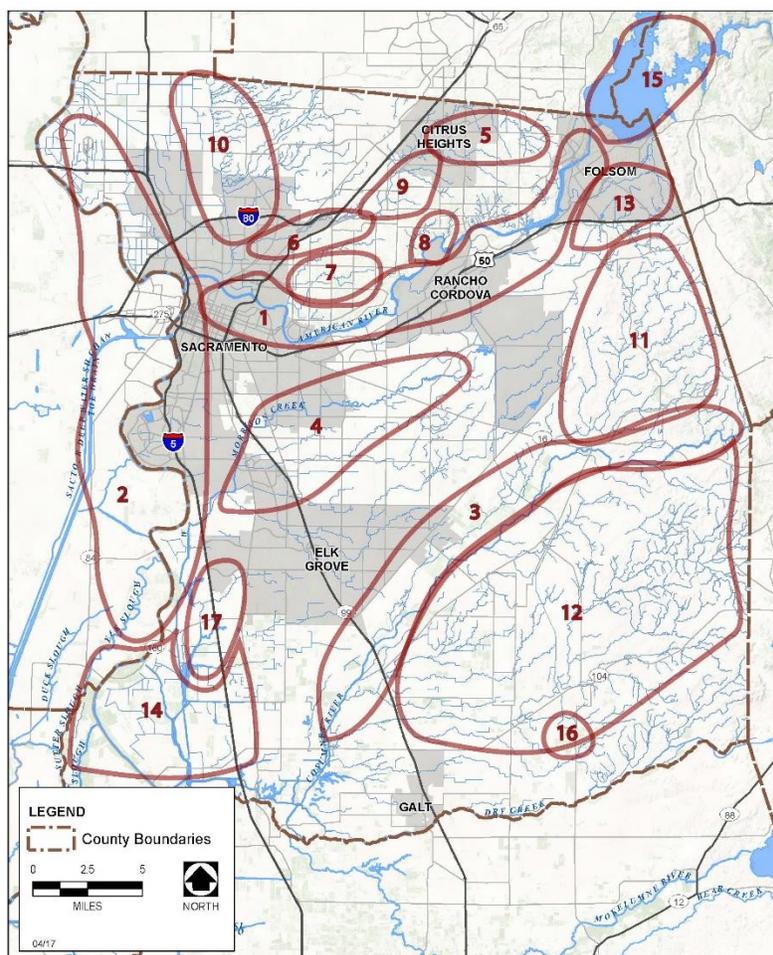
Evidence of bioaccumulation and toxicity of cyanotoxins to other aquatic vertebrates (*i.e.*, reptiles and birds) are very scarce, and literature is mainly based on reports of mass mortality of birds and waterfowls, insufficiently linked to the presence of cyanotoxins.

Recently, it was reported the presence of microcystins in domestic ducks *Anas platyrhynchos* and in the black-crowned night heron *Nycticorax nycticorax* in Lake Taihu (China). Among the various organs analyzed, higher amounts of microcystins were found in the intestines, liver and stomach and smaller amounts in the pancreas, gallbladder, kidney, heart, lung, spleen, gonads and muscles. They found also considerable amounts of microcystins in the egg yolk, which indicates a possible risk for bird embryos. No bird mortality was reported in this study (Ferraro-Fielho 2011).

A study was conducted to determine whether bioaccumulation of microcystins occurs in lettuce foliar tissue when sprayed with solutions containing microcystins at concentrations observed in aquatic systems (0.62 to 12.5 µg · L<sup>-1</sup>). Microcystins were found in lettuce foliar tissues (8.31 to 177.8 µg per Kg of fresh weight) at all concentrations of crude extracts. Spraying with water containing microcystins and cyanobacteria may contaminate lettuce at levels higher than the daily intake of microcystins recommended by the World Health Organization (Hereman & Bittencourt, 2012)

### C. POTENTIAL EXPOSURE IN SACRAMENTO COUNTY WATERWAYS

Sacramento County contains multiple waterbodies that provide water supply, recreation, and food for the community. The SEC has qualitatively ranked these waterways to reflect the potential risk of HABs to the community. The waterways of Sacramento County were identified in Figure 1.



**Figure 1 Sacramento County Waterways**

Based on this inventory of waterways, the SEC grouped them into sixteen waterways for easier consideration and to reflect common physical traits, location, and waterway type.

The SEC identified several criteria to rank these waterways to reflect their relative potential to expose public to HABs. These criteria include:

- Waterways prone to low flow conditions or stagnation which could induce the occurrence and abundance of HABs
- Waterways that offer contact public recreation opportunities
- Waterways that provide irrigation or public water supply
- Waterways located in an urban area with specific consideration if located in an identified environmental justice community

Based on these criteria, the SEC conducted a ranking of the sixteen waterways to determine those that pose a lower or higher potential for expose public to HABs. Table 3 shows the waterway ranking values and final ranking for lower and higher potential exposure.

The final rank shown in Table 3 reflects the waterway's relative HAB public exposure risk. Those waterways that best meet the criteria are ranked higher than those waterways that only partially meet or do not meet the criteria.

Table 3 Relative Public Exposure Risk of Sacramento County Waterways

\*Designated swimming, fishing, boating

\*\*SB 535 Disadvantaged Communities (OEHA)

## Legend

3 = Fully Meets Criteria
2 = Partially Meets Criteria
1 = Does not Meet Criteria

Waterway Number	Waterway Name	Prone to Low Flow	Contact Recreation By Public*	Irrigation or Water Supply	Located in Urban Area (or EIC)	Final Rank
1	American River Group	2	3	3	2	Higher
2	Sacramento River Group	2	3	3	2	Higher
3	Cosumnes River Group	2	3	3	2	Higher
4	Morrison Creek Group	3	2	1	3	Higher
5	Cripple Creek Group	3	2	1	1	Lower
6	Arcade Group	3	2	1	2	Higher
7	Carmichael Group	3	2	1	1	Lower
8	Fair Oaks Group (Carmichael Cr./ Minnesota)	3	2	1	1	Lower
9	Arcade/Cripple Creek Group	3	2	1	1	Lower
10	East Drainage Canal/Steelhead/ Dry Creek/Arcade Group	3	2	1	2	Higher
11	Deer Creek Group	3	2	2	1	Higher
12	North Fork Badger/Laguna Creek/ Deadman/Bear Slough Creek	3	1	3	2	Higher
13	Humbug Creek	3	2	1	1	Lower
14	Delta Waterways and Sloughs	3	3	3	1	Higher
15	Folsom Lake	2	3	3	1	Higher
16	Lake Rancho Seco	1	3	1	1	Lower
17	Stone Lake/North Stone Lake	2	2	2	1	Lower

- The waterways with higher risk of HAB exposure warrant a higher level of monitoring during lower flow and higher temperature conditions.
- If HABs are detected which pose an immediate threat to public health through known pathways, action should be taken inform the public of the hazard, post on-site signage, or take direct action to manage the presence, abundance, and distribution of the HABs.

## Findings

Based on the information considered by SEC, the following findings summarize the SEC's conclusions:

- Cyanobacterial toxins are relatively highly toxic if ingested in drinking water, contaminated vegetable crops, or consumed with contaminated aquatic invertebrates (mussels and oysters). Direct ingestion through water contact recreation is also a mechanism for ingestion.
- Children and pets are more susceptible to exceeding applicable health advisory levels because of smaller body size and weight.
- While Sacramento County HAB public health exposure risk may be less than other regions of California, there is present a risk which may increase with higher temperatures, more frequent low flow conditions, and higher frequency of drought.
  - American River
  - Sacramento River
  - Cosumnes River
  - Morrison Creek Group
  - East Drainage Canal/Steelhead Creek/Dry Creek/Arcade Group
  - Deer Creek Group
  - North Fork Badger/Laguna Creek/ Deadman/Bear Slough Creek
  - Delta Waterways and Sloughs
  - Folsom Lake

The waterways with higher risk of HAB exposure warrant a higher level of monitoring during lower flow and higher temperature conditions.

If HABs are detected which pose an immediate threat to public health through known pathways, action should be taken inform the public of the hazard, post on-site signage, or take direct action to manage the presence, abundance, and distribution of the HABs.

## Recommendations

The SEC offers the following recommendations for consideration by its authorizing agencies. It is intended that these recommendations be considered to provide a reasonable level of protection which corresponds to the potential level of risk and threat to public health.

- Continue the ongoing efforts of the Environmental Management Department (EMD) to track and monitor the presence of HABs which may contain toxins, including:
  - Checking electronic monitoring statistics being recorded for the American and Sacramento Rivers, including flow rate and water temperature, to determine the potential conditions present that may promote HABs.
  - Responding to public complaints regarding Blue Green Algal reports.
  - Collaborating with State Water Resources Control Board and getting test results when Sacramento sites are sampled.
  - Combining surveying waterways with the stormwater program, utilizing same staff person.
  - Coordinating efforts with Sacramento County Department of Parks and Recreation to respond to HAB events on park waterways.
- Initiate outreach to the Sacramento Yolo Mosquito Vector Control District to hold training on HAB recognition and reporting.
- Train American River Park and Folsom State Park Rangers to recognize HABs and report to EMD and SWRCB.
- Create a Cyanobacteria Fact Card for educating community groups that currently volunteer to monitor conditions along public waterways that will promote recognizing HABs and report to EMD.
- Produce a short (2 minute) education video addressing HABs and their potential hazard, for posting on the EMD website and other online locations.
- Coordinate with the Sacramento County Public Information Office to assist in production of articles and photos for local newspapers, magazines, or other information sources about HABs and how to report them to EMD.

## References

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## APPENDIX E

### 2017 MEETING SCHEDULE

**(January and February Meetings are the 4th Monday, all others are on the 3rd Monday.)**

DATE	Time	Location
January 23	6:00 p.m.	EMD, 10590 Armstrong Ave., Mather
February 27	6:00 p.m.	EMD, 10590 Armstrong Ave., Mather
March 20	6:00 p.m.	EMD, 10590 Armstrong Ave., Mather
April 17	6:30 p.m.	Board of Supervisors Chambers, 700 H Street
May 15	6:00 p.m.	EMD, 10590 Armstrong Ave., Mather
June 19	6:00 p.m.	EMD, 10590 Armstrong Ave., Mather
July 17	6:30 p.m.	Board of Supervisors Chambers, 700 H Street
August 21	6:00 p.m.	EMD, 10590 Armstrong Ave., Mather
September 18	6:00 p.m.	EMD, 10590 Armstrong Ave., Mather
October 16	6:30 p.m.	Board of Supervisors Chambers, 700 H Street
November 20	6:00 p.m.	EMD, 10590 Armstrong Ave., Mather
December	No Meeting	Happy Holidays