**NOTICE OF SPECIAL MEETING**
**OF THE**
**SOUTH ORANGE COUNTY WASTEWATER AUTHORITY**

**ENGINEERING COMMITTEE**

**November 14, 2019**

**8:30 a.m.**

NOTICE IS HEREBY GIVEN that a Special Meeting of the South Orange County Wastewater Authority (SOCWA) Engineering Committee has been scheduled to be held on **November 14, 2019**, at **8:30 a.m**. at the SOCWA Administrative Office located at 34156 Del Obispo Street, Dana Point, California.

*THE SOCWA MEETING ROOM IS WHEELCHAIR ACCESSIBLE. IF YOU REQUIRE ANY SPECIAL DISABILITY RELATED ACCOMMODATIONS (J.E., ACCESS TO AN AMPLIFIED SOUND SYSTEM, ETC.) PLEASE CONTACT THE SOUTH ORANGE COUNTY WASTEWATER AUTHORITY SECRETARY'S OFFICE AT (949) 234-5421 AT LEAST TWENTY-FOUR (24) HOURS PRIOR TO THE SCHEDULED MEETING. THIS AGENDA CAN BE OBTAINED IN ALTERNATE FORMAT UPON WRITTEN REQUEST TO THE SOUTH ORANGE COUNTY WASTEWATER AUTHORITY'S SECRETARY AT LEAST TWENTY-FOUR (24) HOURS PRIOR TO THE SCHEDULED MEETING*

*AGENDA EXHIBITS AND OTHER WRITINGS THAT ARE D/SCLOSABLE PUBLIC RECORDS DISTRIBUTED TO ALL, OR A MAJORITY OF, THE MEMBERS OF THE SOUTH ORANGE COUNTY WASTEWATER AUTHORITY ENGINEERING COMMITTEE IN CONNECTION WITH A MATTER SUBJECT TO DISCUSSION OR CONSIDERATION AT AN OPEN MEETING OF THE ENGINEER/NG COMMITTEE ARE AVAILABLE FOR PUBLIC INSPECTION IN THE AUTHORITY OFFICE, 34156 DEL OBISPO STREET, DANA POINT, CA ("AUTHORITY OFFICE"). IF SUCH WRITINGS ARE DISTRIBUTED TO MEMBERS OF THE ENGINEERING COMMITTEE LESS THAN 24 HOURS PRIOR TO THE MEETING, THEY WILL BE AVAILABLE IN THE RECEPTION AREA OF THE AUTHORITY OFFICE AT THE SAME TIME AS THEY ARE DISTRIBUTED TO THE ENGINEERING COMMITTEE MEMBERS, EXCEPT THAT, IF SUCH WRITINGS ARE DISTRIBUTED IMMEDIATELY PRIOR TO, OR DURING, 'THE MEETING, THEY WILL BE AVAILABLE IN THE ENGINEERING COMMITTEE MEETING ROOM.*

## *AGENDA*

1. **Call Meeting to Order**

2. **Public Comments**

*PERSONS WISHING TO ADDRESS THE ENGINEERING COMMITTEE ON MATTERS NOT LISTED ON THE AGENDA MAY DO SO AT THIS TIME. "REQUEST TO BE HEARD" FORMS ARE AVAILABLE AT THE ENTRANCE TO THE BOARD ROOM. COMMENTS ARE LIMITED TO THREE (3) MINUTES UNLESS FURTHER TIME IS GRANTED BY THE PRESIDING OFFICER. SUBMIT FORM TO THE CLERK OF THE BOARD PRIOR TO THE BEGINNING OF THE MEETING.*

*THOSE WISHING TO ADDRESS THE ENGINEERING COMMITTEE ON ANY ITEM LISTED ON THE AGENDA SHOULD SUBMIT A "REQUEST TO BE HEARD" FORM TO THE CLERK OF THE BOARD BEFORE THE PRESIDING OFFICER ANNOUNCES THAT AGENDA ITEM. YOUR NAME WILL BE CALLED TO SPEAK AT THAT TIME.*

**3. Approval of Minutes**

- Engineering Committee Meeting Minutes of September 12, 2019

**Recommended Action:**

Staff recommends the Engineering Committee to approve minutes as submitted.

**4. Operations Status Report**

**Recommended Action:**

Information Item

**5. SOCWA Research Plan Project 3 Update**

**Recommended Action:**

Staff recommends that the Engineering Committee recommend the Board of Directors to receive and file the results of Project 3.

**6. Ocean Acidification and Hypoxia Model Validation Oversight (PC5 & PC24)**

**Recommended Action**:

Information Item; SOCWA staff will provide the Engineering Committee with the technical memorandums associated with the task 3 work.

**7. Project Updates, Contingency, and Change Orders (Project Committees 2, 15 & 17)**

**Recommended Action**:

a) Approve the recommended changes to presenting Change Orders to the Engineering Committee; and
b) Recommend the contingencies presented previously to the Board of Directors.

**8. Regional Treatment Plant Cogeneration System Update (Project Committee 17)**

**Recommended Action:**

Information Item

**9. J.B. Latham Treatment Plant Package B Update (Project Committee 2)**

**Recommended Action:**

Staff recommends the Engineering Committee recommend the Board of Directors approve Change Orders 1 for the construction contract of JBLTP Package B, Facility Improvements Solids Area.

**10. Change Order to SS Mechanical Construction Contract for the Coasatal Treatment Plant Tertiary System Upgrades Project (Project Committee 15)**

**Recommended Action:**

Staff recommends the Engineering Committee recommend the PC15 Board to approve Change Order No. 9 for the construction contract of Applied Water Pump VFD and Electrical.

**11. Coastal Treatment Plant Facility Improvements Update (Project Committee 15)**

a) Status Update (generator connection)

**Recommended Action:**

Information Item

**12. Adjournment**

I hereby certify that the foregoing Notice was personally emailed or mailed to each member of the SOCWA Engineering Committee at least 24 hours prior to the scheduled time of the Regular Meeting referred to above.

I hereby certify that the foregoing Notice was posted at least 24 hours prior to the time of the above-referenced Engineering Committee meeting at the usual agenda posting location of the South Orange County Wastewater Authority and at www.socwa.com.

Dated this 12th day of November 2019.

B. Burnett

Betty C. Burnett, General Manager/Secretary
SOUTH ORANGE COUNTY WASTEWATER AUTHORITY

DRAFT

**MINUTES OF REGULAR MEETING**
**OF THE**
**SOUTH ORANGE COUNTY WASTEWATER AUTHORITY**

**Engineering Committee**

**September 12, 2019**

The Regular Meeting of the South Orange County Wastewater Authority (SOCWA) Engineering Committee Meeting was held on September 12, 2019, at 8:30 a.m. at their Administrative Offices located at 34156 Del Obispo Street, Dana Point, California. The following members of the Engineering Committee were present:

| | |
|---|---|
| MARC SERNA | South Coast Water District |
| DON BUNTS | Santa Margarita Water District [exit 9:38 a.m.] |
| MIKE MARQUIS | City of San Juan Capistrano |
| LORRIE LAUSTEN | Trabuco Canyon Water District [exit 9:52 a.m.] |
| ROD WOODS | Moulton Niguel Water District |
| BOBBY YOUNG | El Toro Water District [exit 9:52 a.m.] |
| MIKE DUNBAR | Emerald Bay Service District |

Absent:

| | |
|---|---|
| KEVIN BURTON | Irvine Ranch Water District |
| DAVE REBENSDORF | City of San Clemente |
| DAVE SHISSLER | City of Laguna Beach |

Staff Present:

| | |
|---|---|
| JASON MANNING | Director of Engineering |
| RONI YOUNG | Associate Engineer |
| AMBER BAYLOR | Director of Environmental Compliance [exit 9:38 a.m.] |
| JIM BURROR | Director of Operations |
| JEANETTE COTINOLA | Contracts/Procurement Administrator |
| BETTY BURNETT | General Manager [exit 9:38 a.m.] |
| DANITA HIRSH | Administrative Assistant |

Also Present:

| | |
|---|---|
| DENNIS ERDMAN | South Coast Water District [exit 9:27 a.m.] |

## 1. Call Meeting to Order

Mr. Jason Manning, Director of Engineering called the meeting to order at 8:30 a.m.

## 2. Public Comments

Mr. Erdman commented that he would like to see the Board of Directors develop tangible goals for the three treatment plants. Perhaps the decision will be made to re-rate the plant flows, to have an alternative to manage storm-related flows, or to adopt new forms of treatment technology above activated sludge treatment. As an example of a goal to reach toward, Director Erdman commented that perhaps Project Committee 2 (PC 2) should set a

goal to be at 50% water reuse by 2025. He noted that other SOCWA member agencies set goals and take actions toward achieving those goals, and SOCWA should have specific goals.

**3. Approval of Minutes**

- Engineering Committee Meeting Minutes of July 18, 2019; and

ACTION TAKEN
Motion was made by Mr. Bunts and seconded by Mr. Serna to approve Engineering Committee Meeting Minutes for July 18, 2019, as submitted.

| | | |
|---|---|---|
| Motion carried: | Aye 7, Nay 0, Abstained 0, Absent 3 | |
| | Marc Serna (SCWD) | Aye |
| | Don Bunts (SMWD) | Aye |
| | Mike Marquis (CSJC) | Aye |
| | Lorrie Lausten (TCWD) | Aye |
| | Rod Woods (MNWD) | Aye |
| | Bobby Young (ETWD) | Aye |
| | Kevin Burton (IRWD) | Absent |
| | Dave Rebensdorf (CSC) | Absent |
| | Dave Shissler (CLB) | Absent |

- Engineering Committee Meeting Minutes of August 15, 2019

ACTION TAKEN
Motion was made by Mr. Bunts and seconded by Mr. Woods to approve Engineering Committee Meeting Minutes for August 15, 2019 Minutes as corrected on page 1, El Toro Water Districts representative to Bobby Young, page 2, agenda item 5 of the "Discussion" to Ms. Young, and change the Minute Certification in the last paragraph of the Minutes meeting reference to "Special Meeting" and date to August 15.

| | | |
|---|---|---|
| Motion carried: | Aye 7, Nay 0, Abstained 0, Absent 3 | |
| | Marc Serna (SCWD) | Aye |
| | Don Bunts (SMWD) | Aye |
| | Mike Marquis (CSJC) | Aye |
| | Lorrie Lausten (TCWD) | Aye |
| | Rod Woods (MNWD) | Aye |
| | Bobby Young (ETWD) | Aye |
| | Kevin Burton (IRWD) | Absent |
| | Dave Rebensdorf (CSC) | Absent |
| | Dave Shissler (CLB) | Absent |

**4. Operations Report** – None

**5. Regional Treatment Plant Cogeneration System Update (Project Committee 17)**

Mr. Manning gave an update on the status of the operation of the Cogen system at the Regional Treatment Plant. He commented on some of the challenges that have been occurring and informed the committee of potential options for resolution. Mr. Manning stated more information would be available at the next meeting. An open discussion ensued.

This was an information item; no action was taken.

**6. SOCWA Engineering Staff Augmentation (Project Committees 5, 17, and 24)**

Mr. Manning briefed the Committee on the status of filling the vacancy for the Senior Engineer position stating there were delays in completing the process. He informed the Committee that in order to provide some assistance to SOCWA Engineering staff with managing offsite projects, an RFP went out soliciting proposals for inspection services, construction management services, coordination, and program services. He stated the bulk of the services would primarily be applied to the Regional Treatment Plant. Mr. Manning also stated that to save time, the proposals would be brought directly to the Board for approval. However, he would be circulating the proposals to the Engineering Committee for review and input as soon as they're received. An open discussion ensued.

This was an information item; no action was taken.

**7. Discussion on the Addition of the Doheny Desal to the SJCOO NPDES Permit**

Ms. Baylor reported on the status of the NPDES Permits for the Aliso Creek and San Juan Creek Ocean Outfalls. She also reported on the water quantity impact for determining cost allocations impacting PC5 members. An open discussion ensued.

ACTION TAKEN
There was a consensus amongst the Project Committee 5 (PC5) members to forward to the Board of Directors at its October 3, 2019 meeting, to approve the inclusion and update of the Report of Waste Discharge (ROWD) to include the Doheny Desal Project with the condition that updated modeling and monthly monitoring is conducted as described in the report.

**8. J.B. Latham Treatment Plant Electrical System Evaluation Project Committee 2 Proposal Review**

Mr. Manning reported on the status of responses that were received as a result of an RFP for obtaining updated single-line drawings for the purpose of doing a condition assessment and developing a replacement plan on the majority of the electrical system that was not improved during the cogeneration upgrade project. An open discussion ensued.

ACTION TAKEN
There was a consensus amongst the PC2 members (South Coast Water District, City of San Juan Capistrano, and Moulton Niguel Water District; Santa Margarita Water District was absent) to forward the proposal from Hazen & Sawyer to the Board for consideration and approval.

**9. J.B. Latham Treatment Plant Hydraulic Modeling and Flow Management Study Project Committee 2 Proposal Review**

Mr. Manning reported on the status of responses that were received as a result of an RFP for developing the Hydraulic Modeling and Flow Management Study. The model would be an Excel spreadsheet that would calculate energy grade line and water surface elevations at each component of the plant. Additionally, it would allow the capability to adjust the inputs for influent flows, recycle flows, and number of basins or units in service. Mr. Manning also reported that the only consultant to respond to the RFP was Carollo Engineers. An open discussion ensued.

ACTION TAKEN
There was a consensus amongst the PC2 members (South Coast Water District, City of San Juan Capistrano, and Moulton Niguel Water District; Santa Margarita Water District was absent) to forward the proposal from Carollo Engineers to the Board for consideration and approval.

**10. J.B. Latham Treatment Plant Centrate System Final Design Project Committee 2 Proposal Review**

Ms. Roni Young gave an updated report on the status of re-negotiating with Kleinfelder on the design costs for the Centrate System based on the direction given by the PC2 members at the August 2019 Engineering Committee Meeting. Ms. Young informed the members that Kleinfelder was able to modify their costs by proposing a package pump station instead of a conventional station, which lowered their cost from $134,168 to 112,268. She noted that although the reduced cost was still above the budgeted amount of $85,000, staff identified collective funds within PC2 to accommodate the additional $40,000, including contingency. Ms. Young stated it was staff's recommendation to select Kleinfelder for the work. An open discussion ensued.

ACTION TAKEN
There was a consensus amongst the PC2 members (South Coast Water District, City of San Juan Capistrano, and Moulton Niguel Water District; Santa Margarita Water District was absent) to forward the proposal from Kleinfelder to the Board for consideration and approval.

**11. Adjournment**

There being no further business, Mr. Manning adjourned the meeting at 10:15 a.m.

I HEREBY CERTIFY that the foregoing Minutes are a true and accurate copy of the Minutes of the Regular Meeting of the South Orange County Wastewater Authority Engineering Committee of September 12, 2019, and approved by the Engineering Committee and received and filed by the Board of Directors of the South Orange County Wastewater Authority.

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Betty Burnett, General Manager/Secretary
SOUTH ORANGE COUNTY WASTEWATER AUTHORITY

# Agenda Item 5

| | |
|---|---|
| **Budgeted:** | Yes |
| **Budget amount:** | **$14,000** |
| **Line Item:** | **12-5000-02-00** |
| **Legal Counsel Review:** | N/A |
| **Meeting Date:** | November 14, 2019 |

**TO:** Engineering Committee

**STAFF CONTACT:** Amber Baylor, Director of Environmental Compliance

**SUBJECT:** SOCWA Research Plan Project 3 Update

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**Summary**

The development of the bacterial TMDLs included board approved Resolution R9-2008-0028 on May 14, 2008 which considered a 'Reference System Approach proposed to account for Natural & Uncontrollable Bacteria Inputs'. On December 17, 2008, the SDRWQCB requested a withdrawal of the resolution due to the inability to discriminate between natural sources of bacteria. The objective of the work completed in Project 3 was to provide the SDRWQCB with data that could substantiate the concentration of enterococcus bacteria for setting site specific concentrations natural sources of bacteria in alignment with Resolution R9-2008-0028 due to the two bacterial total maximum daily loading (TMDLs) at the terminus of Aliso Creek and San Juan Creek.

The SOCWA Research Plan Project 3, sought to evaluate the natural or environmental bacteria using commercially available kits. Project 3 concluded when the intern's time exceeded the budget. The SOCWA intern transferred between 12% and 100% of colonies each week to specialized isolate kits to evaluate the environmental species that were present. The intern found that between 0% to 100% of the isolates were environmental origin with no samples exceeding the recreational water quality standards. The scientific advisory group is reviewing the results of Project 3 with a recommendation to quantify all isolates as part of the current EPA 1600 Method in lieu of continued isolate speciation.

**Discussion/Analysis**

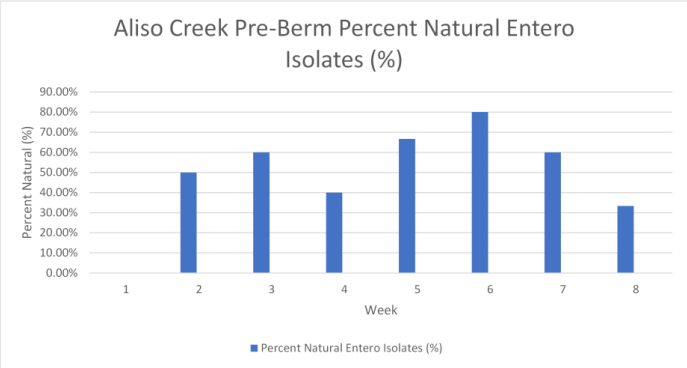
To address the fundamental human health risk questions related to bacterial Total Maximum Daily Loading (TMDL) compliance, SOCWA began initial investigation of false positives in the EPA 1600 test. False positives are considered sources from environmental bacteria that due not pose a risk to human health. The EPA 1600 method modified broad based screening medium which has a reduced amount of triphenyltetrazolium chloride (TTC) and includes indoxyl β-D-glucoside, a chromogenic cellobiose analog used in place of esculin. In this procedure, β-glucosidase-positive enterococci produce an insoluble indigo blue complex which diffuses into the surrounding media, forming a blue halo around the colony. Enterococci that the EPA 1600 method includes *Enterococcus faecalis (E. faecalis), E. faecium, E. avium, E. gallinarium*, and their variants. However, *E. faecalis and E. faecium* are the two main species that are associated with infections to humans.

In March 2019, SOCWA's laboratory began speciation of enterococcus bacteria from colonies growing on membranes using EPA Method 1600. Ferguson, et al[1] evaluated the intertidal and marine sediments in Dana Point and Huntington Beach in Southern California using the matrices of beach water, urban runoff, and wastewater treatment plant influent and effluent and found that there was a 11-26% rate of misidentification of enterococcus species in regulatory samples.

SOCWA conducts weekly sampling of the shoreline between Laguna Beach and San Clemente as required by the Unified Beach Monitoring Program in the NPDES permits. There are significant negative ramifications that could be the result of erroneously identifying human source of contamination when in fact the indicator is representing bacteria naturally found in the environment. The research builds on the question of human health risk utilizing traditional FIB methods that are tied to compliance criteria established by AB 411 and the bacterial TMDLs of the REC-1 standards.

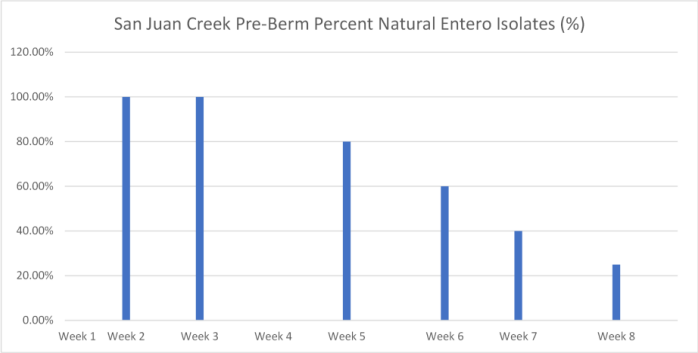
**Results of the Eight Week Study:**

The Science Advisory Group (SAG) reviewed the sample locations taken for the eight-week project. It was determined that pre- and post- berms of the Aliso Creek and San Juan Creek would provide input from the watershed at the pre- berm location while the post-berm location would provide information as to the effectiveness of the berm for recreational water users at the respective beaches. There were no bacterial water exceedances of enterococcus at either location. The results indicated that of the colonies that were speciated, approximately half of the isolates at each location (Graphs 1 & 2) were of environmental origin representing a reduction in potential for human source input to the exceedances. The SAG suggested additional tables to evaluate the results of the study which was included in Tables 1-4.




Graph 1: Percent Naturalized bacteria at the pre-berm location at Aliso Creek

[1] Ferguson, D., Moore, D., Getrich, M., & Zhowandai, M. (2005). Enumeration and speciation of enterococci found in marine and intertidal sediments and coastal water in southern California. *Journal Of Applied Microbiology*, *99*(3), 598-608. doi: 10.1111/j.1365-2672.2005.02660.x




Graph 2: Percent Naturalized bacteria at the pre-berm location at San Juan Creek

The following tables evaluate the limitations associated with low amounts of transfer isolates. As the concentration of isolates exceed the standard operating procedure of 5 isolates transferred per sample site, the availability of extrapolation of natural sources of bacteria is limited.

| | Entero cfu/100mL | % of colonies transferred | % of colonies natural bacteria | Aliso Creek - Pre-Berm |
|---|---|---|---|---|
| Week 1 | 6 | 50.00% | 0.00% | E. faecalis/E. faecium (3) |
| Week 2 | 11 | 45.45% | 40.00% | E. faecalis (3) |
| | | | | E. cass/E. mundtii (2) |
| Week 3 | 13 | 38.46% | 60.00% | E. casseliflavus (2) |
| | | | | E. faecium (2) |
| | | | | E. durans/mundtii (1) |
| Week 4 | 25 | 20.00% | 40.00% | E. faecalis (3) |
| | | | | E. cass./mundtii (1) |
| | | | | E. durans/hirae (1) |
| Week 5 | 35 | 14.29% | 40.00% | E. faecalis (3) |
| | | | | E. avium (2) |
| Week 6 | 10 | 50.00% | 80.00% | E. faecium (1) |
| | | | | E. casseliflavus (4) |
| Week 7 | 9 | 55.56% | 60.00% | E. faecalis (2) |
| | | | | E. casseliflavus (3) |
| Week 8 | 13 | 23.08% | 20.00% | E. faecalis (2) |
| | | | | E. casseliflavus (1) |

Table 1: Aliso Creek Pre-Berm Enterococcus Results

| | Entero cfu/100mL | % of colonies transferred | % of colonies natural bacteria | Aliso Creek Post Berm |
|---|---|---|---|---|
| Week 1 | 8 | 37.50% | 100.00% | E. cass/E. mundtii (3) |
| Week 2 | 0 | | | |
| Week 3 | 0 | | | |
| Week 4 | 0 | | | |
| Week 5 | 5 | 100.00% | 20.00% | E. faecalis (4) |
| | | | | E. avium (1) |
| Week 6 | 0 | | | |
| Week 7 | 9 | 55.56% | 40.00% | E. faecalis (3) |
| | | | | E. casseliflavus/mundtii (2) |
| Week 8 | 1 | 100.00% | | Not determined |

Table 2: Aliso Creek Post-Berm Enterococcus Results

| Week | Entero cfu/100mL | % of colonies transferred | % of colonies natural bacteria | San Juan Creek Pre-Berm (Creek) |
|---|---|---|---|---|
| Week 1 | 1 | 100.00% | 0.00% | E. faecium (1) |
| Week 2 | 21 | 23.81% | 100.00% | E. avium (3) |
| | | | | E. cass./mundtii (1) |
| Week 3 | 1 | 100.00% | 100.00% | E. cass./mundtii (1) |
| Week 4 | 0 | 0.00% | 0.00% | |
| Week 5 | 44 | 11.36% | 80.00% | E. gallarium (1) |
| | | | | E. faecalis (1) |
| | | | | E. cass./mundtii (1) |
| | | | | E. durans/hirae (2) |
| Week 6 | 8 | 62.50% | 60.00% | E. faecium (2) |
| | | | | E. durans/hirae (1) |
| | | | | E. cass./mundtii (2) |
| Week 7 | 13 | 38.46% | 40.00% | E. faecalis (2) |
| | | | | E. faecium (1) |
| | | | | E. durans/hirae (1) |
| | | | | E. cass./mundtii (1) |
| Week 8 | 45 | 8.89% | 25.00% | E. faecalis (2) |
| | | | | E. faecium (1) |
| | | | | E. durans/hirae (1) |

Table 3: San Juan Creek Pre-Berm Enterococcus Results

| Week | Entero cfu/100mL | % of colonies transferred | % of colonies natural bacteria | San Juan Creek Post Berm (Ocean) |
|---|---|---|---|---|
| Week 1 | 0 | 0.00% | 0.00% | |
| Week 2 | 0 | 0.00% | 0.00% | |
| Week 3 | 0 | 0.00% | 0.00% | |
| Week 4 | 0 | 0.00% | 0.00% | |
| Week 5 | 1 | 100.00% | 0.00% | E. faecalis (1) |
| Week 6 | 0 | 0.00% | 0.00% | |
| Week 7 | 0 | 0.00% | 0.00% | |
| Week 8 | 0 | 0.00% | 0.00% | |

Table 4: San Juan Creek Post-Berm Enterococcus Results

**Advisory Committee Review**

SOCWA staff reached out to the SAG and to determine which additional tests would be necessary for an additional presumptive identification of natural bacteria. SOCWA will move forward with additional media suggested by the SAG for further presumptive analysis of environmental bacteria. SOCWA staff will extend this project to the other samples that exceed Rec-1 standards to quantify the number of bacteria that are of natural sources. SOCWA will continue to work through the SAG on the design of the next phase of research from Project 3 that will be incorporated into analysis for routine analysis when using the EPA 1600 method.

**Fiscal impact**

The eight-week project resulted in a staff cost of $16,700, which exceeded the budgeted amount of $14,000. Although the budgeted line item has been slightly exceeded, there are no additional fiscal impact moving forward.

**Recommended Action:**

Staff recommends that the Engineering Committee recommend the Board of Directors to receive and file the results of Project 3.

# Agenda Item 6

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|---|---|
| **Budgeted:** | Yes |
| **Budget amount:** | $60,000 |
| **Line Item:** | PC5 & PC24 |
| **Legal Counsel Review:** | No |
| **Meeting Date:** | November 14, 2019 |

**TO:** Engineering Committee

**STAFF CONTACT:** Amber Baylor, Director of Environmental Compliance

**SUBJECT:** Ocean Acidification and Hypoxia Model Validation Oversight

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**Summary**

The regulatory requirements for plume tracking originate at the City of San Diego to solve two management problems: tracking advanced primary treated water due to the 301(h) waiver at the Point Loma Treatment Plant that is discharged to the Point Loma Ocean Outfall (PLOO) and to monitor the combined plume from the South Bay Water Reclamation Plant and the U.S. International Boundary and Water Commission's South Bay International Wastewater Treatment Plant to the South Bay Ocean Outfall (SBOO). These two outfalls discharge partially treated wastewater into the ocean and differ in both treatment level and discharge volumes compared to the San Juan Creek Ocean Outfall (SJCOO) and the Aliso Creek Outfall (ACOO). In an effort to standardize permit requirements for all eight ocean outfalls within the San Diego Regional Water Quality Control Board (SDRWQCB), Board staff started a series of plume tracking workshops in September 2018 and have acted in incorporating the plume tracking requirements into the San Elijo Ocean Outfall. SDRWQCB staff intends to include plume tracking requirements into the SJCOO & ACOO NPDES permits. The ACOO permit is up next for renwal by the SDRWQCB.

**Discussion/Analysis**

The first series of plume tracking workshops included presentations from SDRWQCB staff, the City of San Diego, and the Southern California Coastal Water Research Project (SCCWRP). The SDRWQCB presentation covered NPDES authority and an available technology review in order to facilitate discussion from the other dischargers present. The City of San Diego covered the work plan that was submitted to the SDRWQCB in March 2018 including work with University of California, SCRIPPS Institute on the available technology employed with an annual budget of $5M to complete the work.

The final presentation was provided by Ken Schiff, Deputy Director at SCCWRP. The presentation included a review of the traditional, non-traditional, and modeling efforts that they have engaged in or are currently working on with cost estimates for each technology ranging from $1K/year to $1M for the model. The option Mr. Schiff proffered to the five ocean outfall representatives, who would have plume tracking requirements in their NPDES permits, was the modeling work.

The model that SCCWRP is a coupled bio-geophysical model that combines extensive work on physical ocean modeling with a newer biological component that is not well established in the literature due to the complex food web structures that exist within the ocean. The physical part of the model is known as the Regional Ocean Monitoring System (ROMS) while the biological model is known as the biogeochemical elemental cycling (BEC) model. This combined model combined is known as the Ocean Acidification and Hypoxia (OAH) model. The problem is that the BEC portion of the model has not been validated by the scientific committee in order to couple with the ROMS model making it a model unfit for use as required in the plume tracking for the NPDES permits.

It is important to note that this is not the first effort that SOCWA has engaged with the SDRWQCB on the tracking of the plume. The ACOO outfall was studied in 2012 using Conductivity, Temperature, and Dissolved Oxygen (CTD) scans coupled with ammoia tracking. The study was unable to locate the plume due to instant uptake of ammonia in the ocean and the physical location of the ACOO (140ft deep at the edge of a depth countour on the ocean shelf. The SJCOO was studied using an autonomous underwater vehicle with the results consistent with the movement of currents parallel with the Coast in the Southern California Bight that is well established in the literature. The results of the underwater vehicle study at the SJCOO can be seen in Figure 1.

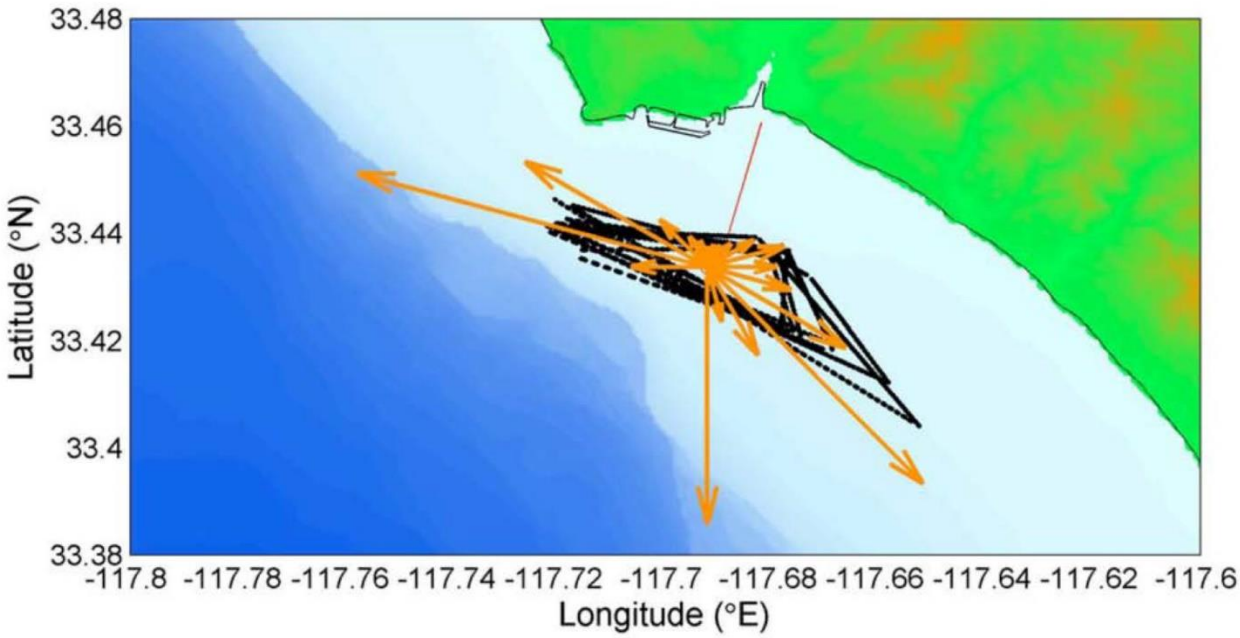


Figure 1: 2013 San Juan Creek Autonomous Underwater Vehicle Plume Tracking

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**Regulatory and Legislative Impact**

The plume tracking technology review by staff indicated that although the model was not a viable alternative, a seasonal empirical monitoring study with the SCRIPPS Institute would suffice. The three year increase in NPDES permit costs for the ACOO and the SJCOO would be approximately $125,000 per year for a three year period. The estimate is still undergoing review as the San Elijo work plan is being developed and more accurate cost estimates are provided by SCRIPPS.

Although the SCCWRP model is not being used in the SOCWA NPDES permits, the model still persists as a tool to regulate ocean outfalls for nutrients. The OAH model was mentioned at the testimony by Sean Bothwell, Executive Director of California Coastkeeper at the Senate and Environmental Quality hearing on April 24, 2019 related to SB 69[1]. SB 69 was held in suspense but is projected to be brought back at the next legislative session making the need for validation oversight so important.

At the July 2019 CASA Regulatory Workgroup meeting that was held at SCCWRP, Mr. Schiff stated that the validation effort had just begun providing confusion as to the validity of the model ready for use for regulators and policy makers. However, at the October 9, 2019 SDRWQCB meeting, SCCWRP provided an informational update to the Board about the OAH model stating that the model had been validated.

The SCCWRP website states:

> "SCCWRP and its research partners are developing a set of integrated computer models for the North American West Coast that estimate how seawater chemistry is changing, and the role that land-based discharges play in exacerbating coastal acidification and hypoxia. In particular, nutrient-laden discharges may be triggering complex biogeochemical cycling processes that are making coastal seawater more acidic and hypoxic[2]."

**Advisory Committee Review**

This is the first time that SOCWA staff have brought the plume tracking requirements and the need to validate the results of the OAH model.

**Prior Related Project Committee or Board Action(s)**

SOCWA staff will brief the Board through a synopsis update in the General Manager's report and will budget for the additional monies for the plume tracking with the Scripps Institute.

**Fiscal impact**

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[1] Senate Environmental Quality Hearing on April 24, 2019(starting at 4:20): http://calchannel.granicus.com/MediaPlayer.php?view_id=7&clip_id=6139.

[2] SCCWRP website, November 6, 2019: 'Ocean Acidification and Hypoxia' webpage: http://www.sccwrp.org/about/research-reas/climate-change/ocean-acidification-and-hypoxia/

The SCCWRP member agencies are interested in the development of the model and have requested that the next technical advisory group meeting take up the validation review. SOCWA has been working with Dr. Scott Jenkins through the Doheny Desal Project and the modeling work conducted for the dilution study at both ocean outfalls. Dr. Jenkins is a key subject matter expert on the mechanics of the models. SOCWA has requested the following work conducted by Dr. Jenkins on behalf of the member agencies.

Task 1: Review Model Code and Literature Review (40 Hours)
Task 2: Meetings at SCCWRP for the Validation Committee Ad Hoc
Task 3: Two Technical Memorandums for the Review of the ROMS & BEC Models

The total cost of the above three tasks is $24,500. The budget for both outfalls for FY 19-20 is $60,000 which is within budget.

**Recommended Action:**

Information item; SOCWA staff will provide the Engineering Committee with the technical memorandums associated with the task 3 work.

Attachment(s): No attachments included.

# Agenda Item 7

| | |
|---|---|
| **Budgeted:** | Yes |
| **Line Item:** | PC 2, Tasks 3220-000, 3231-000, 3287-000; PC 15 Task 3539-000; PC 17 Tasks 3701-000, 3769-000, 3751-000 |
| **Legal Counsel Review:** | No |
| **Meeting Date:** | November 14, 2019 |

**TO:** Engineering Committee, Project Committees 2, 15, & 17

**FROM:** Jason Manning, Director of Engineering

**SUBJECT:** Project Updates, Contingencies, and Change Orders

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**Discussion**

SOCWA engineering staff has historically processed change orders that are within a project or set of task codes approved budget(s). Those change orders were then presented to the Engineering Committee. It is regularly the case, especially for construction projects, that change orders presented to the Engineering Committee have already been completed before they can be presented. Since this process is largely a formality, we are proposing to reduce the time required to prepare, review, and present the majority of change orders.

In an effort to streamline that process for the three current construction projects and all future projects, SOCWA is proposing the following process to increase staff and member agency efficiency in presenting and reviewing SOCWA engineering materials:

- Each project that is brought to the Engineering Committee and the Board of Directors will have an identified contingency.
- The total project cost and contingency will be equal to or less than the budget allocated to that project unless a budget increase is also being requested with the project.
- Any change orders authorized by SOCWA staff within the approved project contingency will be presented to the Engineering Committee at the next possible meeting in a tabular format. An example has been provided as Attachment A.
- The agenda item with change orders will be handled similarly to a consent calendar where the item will be open for discussion from members. If there are no comments from the Engineering Committee, the item will be taken to the next Board of Directors meeting.
- Any change orders that exceed the project contingency will need to go to the Board of Directors with an Engineering Committee recommendation for approval before being authorized.

This format will reduce the amount of time required for SOCWA staff and member agency representatives and will also help to streamline Engineering Committee Meetings.
For the existing projects already under construction, the following contingencies were presented to the Engineering Committee and Board:

| Project Committee | Task Code | | Project | Contingency | Date Presented to the Board of Directors |
|---|---|---|---|---|---|
| PC 2 | 3220-000 | | JBL Package B Liquids | $616,800 | June 6, 2019 |
| | 3231-000 | | JBL Package B Common | $96,800 | June 6, 2019 |
| | 3287-000 | | JBL Package B Solids | $672,400 | June 6, 2019 |
| PC 15 | 3539-000 | | CTP Facility Improvements | $828,810 | June 6, 2019 |
| PC 17 | 3701-000 | | RTP Miscellaneous Improvements 2018 Liquids | $343,593 | May 16, 2019 |
| | 3769-000 | | RTP Miscellaneous Improvements 2018 Common | $4,545 | May 16, 2019 |
| | 3751-000 | | RTP Miscellaneous Improvements 2018 Solids | $154,514 | May 16, 2019 |

The project contingencies are between 8-10% of the total project costs.

**Recommended Action:**

a) Approve the recommended changes to presenting Change Orders to the Engineering Committee; and
b) Recommend the contingencies presented previously to the Board of Directors.

**Attachment A – Sample Change Order Table**

| PC | Task | Contract | Change Order Item | Change Order Price | New Contract Amount | Task Contingency Remaining | Percent Contingency Used |
|---|---|---|---|---|---|---|---|
| 2 | 3287-000 | Olsson Construction JBL Package B Construction | Addition of Loop Piping to the Existing Hot Water Lines Adjacent to Digester 3 | $4,725 | $17,329,725 | $667,675 | 0.7% |

# Agenda Item 9

| | |
|---|---|
| **Budgeted:** | Yes |
| **Budget amount:** | $20,581,072 |
| **Line Item:** | PC 2, Tasks 3220-000, 3231-000, 3287-000 |
| **Legal Counsel Review:** | No |
| **Meeting Date:** | November 14, 2019 |

**TO:** Engineering Committee, Project Committee 2

**FROM:** Roni Young Grant, Associate Engineer

**SUBJECT:** J.B. Latham Treatment Plant Package B Project Update

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**Discussion**

SOCWA staff requests that the Engineering Committee recommends Change Order 1 to the construction contract with Olsson Construction for the J.B. Latham Treatment Plant (JBLTP) Package B Project.

**Financial Status**

| | |
|---|---|
| Original Contract Amount: | ____$ 17,325,000.00 |
| Net change by previous change orders: | ____$ 0.00 |
| Contract amount prior to this change order: | ____$ 17,325,000.00 |
| Net increase, decrease due to this change order: | ____$ 4,725.00 |
| New contract amount, including this change order: | ____$ 17,329,725.00 |

The overall project remains within budget.

**<u>Recommended Action</u>:**

Staff recommends the Engineering Committee recommend the Board of Directors approve Change Orders 1 for the construction contract of JBLTP Package B, Facility Improvements Solids Area (PC 2, Task 3287-000):

| CO # | CO Item | Description | Change Order Price | Total Change Order Price* | Status |
|---|---|---|---|---|---|
| 1 | Addition of Loop Piping to the Existing Hot Water Lines Adjacent to Digester 3 | Labor, material, and equipment for the work associated with the addition of loop piping to the existing hot water lines adjacent to Digester 3 | $4,725.00 | $4,725.00 | SOCWA Staff Recommended |

*Cumulative for specific budget task code

# Agenda Item 10

| | |
|---|---|
| **Budgeted:** | Yes |
| **Budget amount:** | $1,090,000.00 |
| **Line Item:** | PC 15, Tasks 3354-000, 3596-000, 3365-000 and 3366-000 |
| **Legal Counsel Review:** | No |
| **Meeting Date:** | November 14, 2019 |

**TO:** Engineering Committee, Project Committee 15

**FROM:** Roni Young Grant, Associate Engineer

**SUBJECT:** Change Order to SS Mechanical Construction Contract for the Coastal Treatment Plant Tertiary System Upgrades Project

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**Discussion**

SOCWA staff requests that the Engineering Committee recommends Change Order 9 to the construction contract with SS Mechanical Construction for the Coastal Treatment Plant Tertiary System Upgrades Project.

**Financial Status**

| | | |
|---|---|---|
| Original Contract Amount: | ____$ | 883,211.00 |
| Net change by previous change orders: | ____$ | 73,248.58 |
| Contract amount prior to this change order: | ____$ | 956,459.58 |
| Net increase, decrease due to this change order: | ____$ | 3,983.10 |
| New contract amount, including this change order: | ____$ | 960,442.68 |

The overall project remains within budget. This project is entirely funded by the South Coast Water District.

**Recommended Action:**

Staff recommends the Engineering Committee recommend the PC15 Board to approve Change Order No. 9 for the construction contract of Applied Water Pump VFD and Electrical.

| CO # | CO Item | Description | Change Order Price | Total Change Order Price* | Status |
|---|---|---|---|---|---|
| 9 | Additional Painting of Pumps, Piping and Fittings | Labor, material, equipment and subcontractor's costs for additional painting of pumps, piping and fittings for the Filter Supply Pump System and Clearwell Pump System | $3,983.10 | $3,983.10 | SOCWA Staff Recommended |

*Cumulative for specific budget task code