Operations Committee Meeting
Tuesday, December 1, 2020 at 1:00 PM
Valley Sanitary District Board Room
45-500 Van Buren Street, Indio, CA 92201

*******SPECIAL NOTICE – Telephonic Accessibility*******

Pursuant to Paragraph 11 of Executive Order N-25-20, executed by the Governor of California on March 12, 2020, and N-29-20 issued on March 18, 2020, the Board of Directors regular meetings will be held telephonically.

Members of the public wanting to listen to the open session of the meeting may do so by calling (425) 436-6376 and when prompted, enter access code 166514. Members of the public wanting to address the Board, either during public comment or for a specific agenda item, or both, are requested to send an email notification no later than 12:30 p.m. on the day of the meeting to the Valley Sanitary District's Clerk of the Board at hevans@valley-sanitary.org.

Page

1. CALL TO ORDER

1.1. Roll Call

1.2. Pledge of Allegiance

2. PUBLIC COMMENT

This is the time set aside for public comment on any item not appearing on the agenda. Please notify the Secretary in advance of the meeting if you wish to speak on a non-hearing item.

3. DISCUSSION / ACTION ITEMS

3.1. Assign Committee Chair

3.2. Project Update: Reclaimed Water Project - Phase I 3 - 25

3.2 Reclaimed Water Project - Phase I.pdf

3.2 Attachment A Reclaimed Water Project – Phase I Update_ Dec 1_2020.pdf

3.3. Discuss Reclaimed Water Project - Phase II & III 26

3.3 Reclaimed Water Project - Phase II & III.pdf

3.4. Discuss Whole Effluent Toxicity Update and Toxicity Reduction Evaluation Workplan 27 - 31

3.4 Whole Effluent Toxicity Update.pdf

3.4 Attachment VSD WWTP TIE Progress Report_102620.pdf

4. FUTURE MEETING ITEMS

5. ADJOURNMENT

Pursuant to the Brown Act, items may not be added to this agenda unless the Secretary to the Board has at least 72 hours advance notice prior to the time and date posted on this notice.

Valley Sanitary District
Operations Committee
December 1, 2020

TO: Operations Committee

FROM: Ron Buchwald, Engineering Services Manager

SUBJECT: Project Update: Reclaimed Water Project – Phase I

☐Board Action	☐New Budget Approval	☐Contract Award
☒Board Information	☐Existing FY Approved Budget	☐Closed Session

Executive Summary
The purpose of this report is to provide a project update and information regarding VSD's Reclaimed Water Project Phase I. A PowerPoint presentation will be provided.

Strategic Plan Compliance
This item complies with VSD Strategic Plan Objective 3: Excellent Facilities.

Fiscal Impact
The current fiscal impact of this project is $2.2 million which will produce 60% design plans. In fiscal year 2021/22, Staff will request from the Board the authorization to award the completion of design and construction of the project estimated to be about $46 to $50 million.

Background
The Reclaimed Water Project Phase I is the initial project of three phases that will allow VSD to be able to produce reclaimed water. This project will replace and improve some treatment structures and provide redundancy for other treatment structures so that we can eventually decommission the ponds (Phase II) which will provide the needed area to construct additional treatment systems to be able to produce reclaimed water (Phase III). Phase I is expected to be completed by early 2025.

Recommendation
No recommendation. Information only.

Attachments
Attachment A: PowerPoint presentation

Reclaimed Water Phase 1 – Project Update

Design/Build for Energy Services Treatment Plant Project

December 1, 2020

Presented by Valerie Houchin, Schneider Electric

Agenda

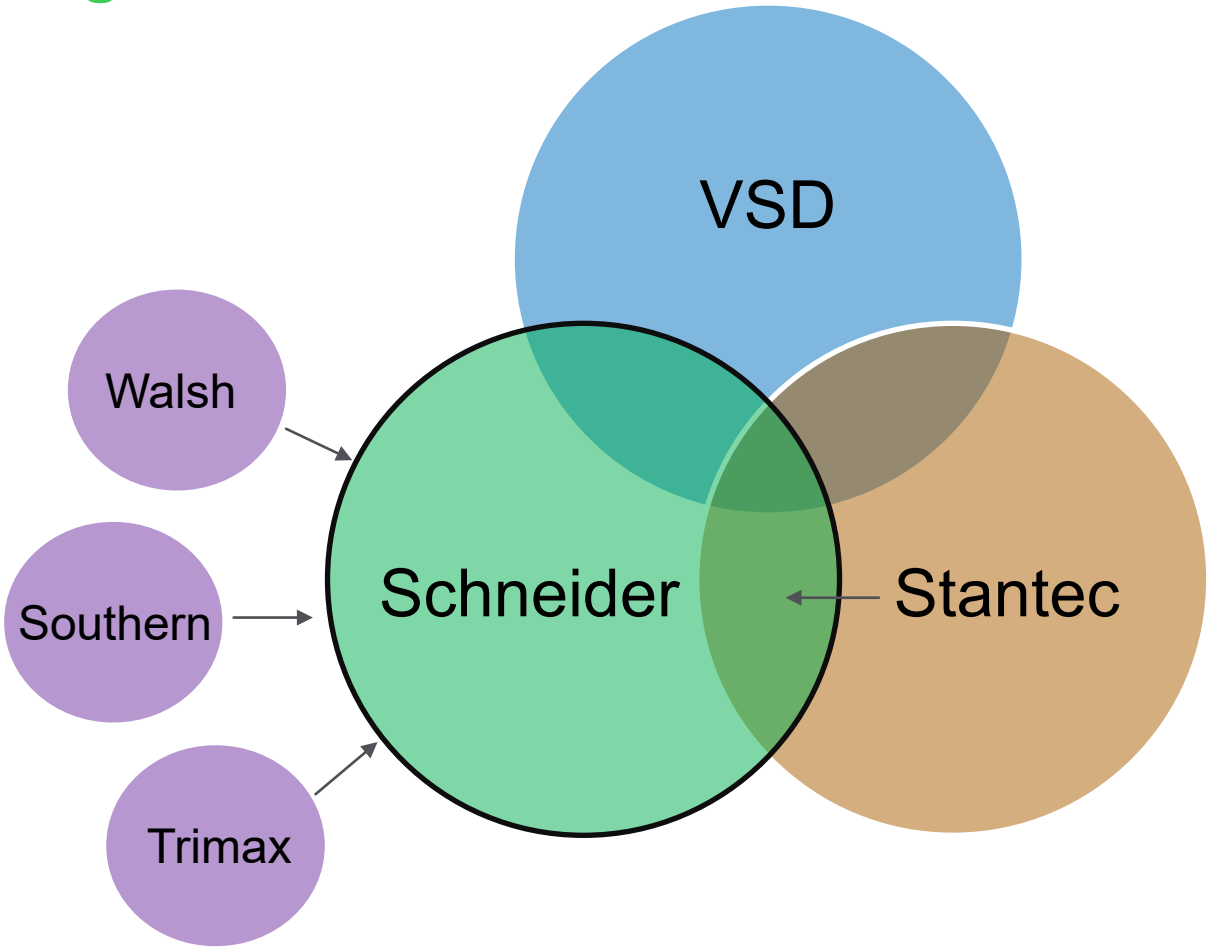
1	Why this project and delivery method?
2	Building out the team
3	Scope of Work Overview
4	Financial Considerations
5	Schedule and What's Next
6	Action Items, Wrap Up & Questions

Goal of Today's Meeting

- Have an open dialogue to create alignment around the Reclaimed Water Phase 1 Project

Why this project and delivery method?

Building out the Team



Scope of Work Overview

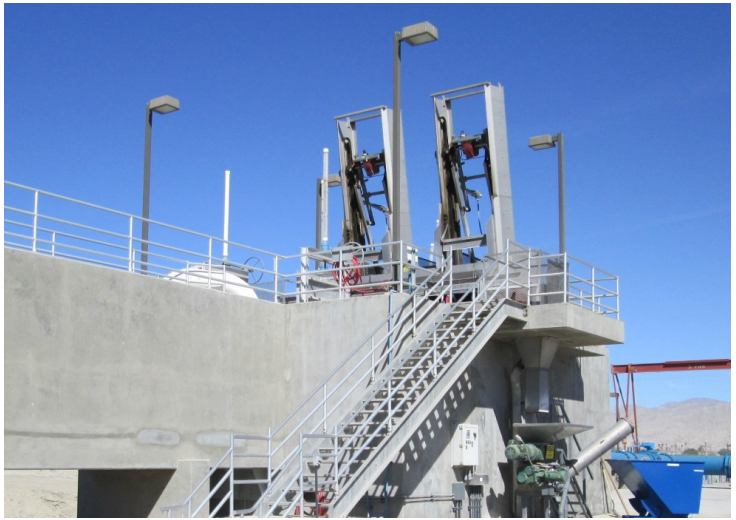
7 Measures/Scopes of Work in this project

- ECM 1 – Mechanical Bar Screen
- ECM 2 – Grit Chamber
- ECM 3 –Waste Activated Sludge (WAS) Thickening – adds mechanical device in place of gravity thickening in Pond 2
- ECM 4 –Digested Sludge Holding Tank and Dewatering Feed Pumps
- ECM 5 – 2nd Digester and related systems
- ECM 6– Foul Air Fan and Biofilter at new WAS thickening facility
- ECM 7– Switchboard Replacement

ECM 1: Bar Screens

Proposed Scope of Work at VSD:

- Add one bar screen to replace existing manual rack in the third screen channel.
- The bar screen added will be a multi-rake bar screen with ¼” opening as opposed to the existing ½” opening climber screens.
- After several site visits to area plants, VSD has narrowed equipment selection down to:
  - Vulcan
  - Headworks International



ECM 2: Grit Chamber

Proposed Scope of Work at VSD:

- Replace aerated grit with Vortex type grit chamber or possibly multi-tray grit removal device.
- Sized for 22.5 mgd peak flow capacity.
- One unit is required with grit pumping, grit cyclone, and grit classifier.
- Space and stub-out for future grit chamber will be provided.
- VSD wants the ability to bypass

ECM 3: Waste Activated Sludge (WAS) Thickening – adds mechanical device in place of gravity thickening in Pond 2

Proposed Scope of Work at VSD:

- Construct a Gravity Belt Thickener building, enclosed with odor scrubbing.
- Install 2 Gravity Belt Thickeners (GBTs)
- Elimination of dredging / pumping of thickened sludge from Pond 2 to belt press.
- Design will provide space for 3rd GBT in future.

ECM 4: Digested Sludge Holding Tank and Dewatering Feed Pumps

Proposed Scope of Work at VSD:

- Construct a concrete cylindrical holding tank, 50 ft. diameter at 20 ft. height for digested sludge.
- Maximum liquid height will be 17 ft.
- Feed pumps sized to match existing belt press capacity (one pump per belt press).
- The digested sludge holding tank allows flexibility for operation of the dewatering belt presses

ECM 5: 2nd Digester and related systems

Proposed Scope of Work at VSD:

- New digester will be the same size as existing Digester No. 1 (85-ft diameter).
- Includes pumped mixing system, digester gas handling, raw sludge feed and digested feed withdrawal.
- A shade structure will be built to provide some protection of the equipment that serves the new digester, including sludge recirculation pumps, the sludge heat exchanger, and the digested sludge transfer pump.
- Current flare is too large for the digester gas at the plant, so this project will include a 2nd flare, of smaller capacity.

ECM 6: Foul Air Fan and Biofilter at new WAS thickening facility

Proposed Scope of Work at VSD:

- For Gravity Belt Thickeners (GBTs), covered with foul air withdrawal; using hoods over each GBT.
- Remainder of GBT Building will be ventilated, but not scrubbed.
- Foul air from GBT units will be treated using an in-ground or above-ground biofilter.

- That biofilter scrubber may have sufficient capacity to also serve the proposed GBTs; will investigate in Phase 2.

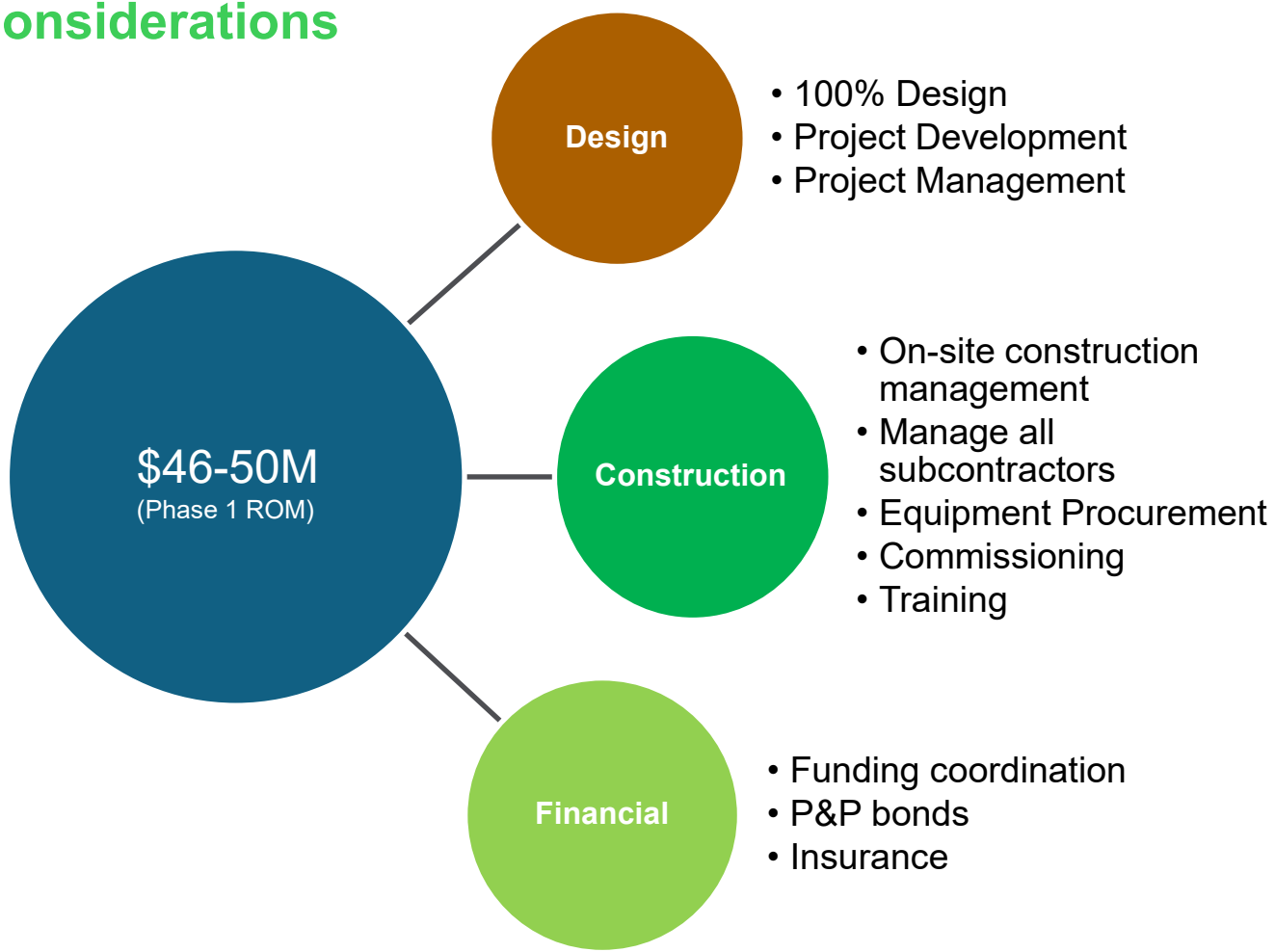
ECM 7: Switchboard Replacements

Proposed Scope of Work at VSD:

- Upgrade and/or replace per recommendation in 2019 Arc Flash Study
  - SWBD-MS (in place since 1972)
- Equipment has exceeded useful life

Financial Considerations

Financial Considerations



Potential Funding Sources

- Grants
- SRF Loan
- 3rd party tax-exempt lease
- VSD capital

Sample Funding Scenario*

$25MM Borrowing					
Term (Years)	Aggressive Interest Rate	Annual Debt Service Payment	Term (Years)	Conservative Interest Rate	Annual Debt Service Payment
15	2.23%	$2,006,225.00	15	2.75%	$2,091,851.00
20	2.44%	$1,619,530.00	20	3.50%	$1,800,775.00

$35MM Borrowing					
Term (Years)	Aggressive Interest Rate	Annual Debt Service Payment	Term (Years)	Conservative Interest Rate	Annual Debt Service Payment
15	2.23%	$2,808,715.00	15	2.75%	$2,928,592.00
20	2.44%	$2,267,341.00	20	3.50%	$2,521,085.00

$45MM Borrowing					
Term (Years)	Aggressive Interest Rate	Annual Debt Service Payment	Term (Years)	Conservative Interest Rate	Annual Debt Service Payment
15	2.23%	$3,611,205.00	15	2.75%	$3,765,332.00
20	2.44%	$2,915,153.00	20	3.50%	$3,241,395.00

* Upcoming rate study report is important to evaluate funding scenarios with revenue and rate projections.

Schedule and What’s Next

Schedule

Phase1

- **Conceptual Scoping Phase**
- July to September 2020

Phase 2

- **Mid-term:30% design and budgetary pricing**
- September 2020 through April 2021

Phase 3

- **Final: scope, savings and final pricing (60% design)**
- May 2021- December 2021

Phase 4

- **Construction contract and funding~ Q1 2022;**
- Followed by 100% design, equipment procurement
- 2022-2025

What's next?

Phase 2

- **Mid-term:30% design and budgetary pricing**
- September 2020 through April 2021

Scope	Financial	Communication/Vision
• Basis of Design Report • Draft P&IDs • Key operating strategies • Preliminary construction schedule	• Budgetary costs based on subcontractor input and equipment pricing • Budgetary energy & operational savings • Preliminary funding sources/cash flow	• Marketing Vision Plan Workshop • Draft Marketing Vision Workshop – Phases to Recycled Water 2025

Action Items, Wrap Up & Questions

Thank you!

Valley Sanitary District
Operations Committee
December 1, 2020

TO: Operations Committee

FROM: Ron Buchwald, Engineering Services Manager

SUBJECT: Reclaimed Water Project – Phase II & III

☐Board Action	☐New Budget Approval	☐Contract Award
☒Board Information	☐Existing FY Approved Budget	☐Closed Session

Executive Summary
The purpose of this report is to provide a project information regarding VSD's Reclaimed Water Projects Phase II & III.

Strategic Plan Compliance
This item complies with VSD Strategic Plan Objective 3: Excellent Facilities.

Fiscal Impact
No fiscal impact at this time. Information only.

Background
The Phase II project consists of decommissioning of the ponds which is relatively straight forward. However, the major issue with this project is the removal of large volume of sludge which has been built up prior to the 2006 treatment plant expansion project. Staff is slowly working on removing as much sludge as possible now but are restricted due to the limited sludge drying area. The completion of Phase II will include the expansion of the sludge drying area. Phase II is estimated to cost about $7.3 million.

The Phase III project will consist of upgrading the treatment plant to produce tertiary level of treatment effluent. From there, the effluent will be further treated to produce Title 22 or reclaimed water. For injection to the aquifer, the water quality will need to meet drinking water requirements. Phase III is estimated to cost about $55 million.

Recommendation
No recommendation. Information only.

Valley Sanitary District
Operations Committee
December 1, 2020

TO: Operations Committee

FROM: Ian Wilson, Facility Operations Manager

SUBJECT: Whole Effluent Toxicity Update

☐Board Action	☐New Budget Approval	☐Contract Award
☒Board Information	☐Existing FY Approved Budget	☐Closed Session

Executive Summary
The purpose of this report is to provide the Operations Committee with an update to the ongoing Whole Effluent Toxicity (WET) test results and the Toxicity Reduction Evaluation (TRE) workplan.

Strategic Plan Compliance
This item complies with VSD Strategic Plan Objective 6.7: Maintain compliance with all regulatory and permit requirements.

Fiscal Impact
No fiscal impact. Information only.

Background
As a requirement set forth in the current National Pollutant Discharge Elimination System (NPDES) permit, VSD is required to run quarterly WET tests. During the first and fourth years of the permit term, the testing shall be conducted in two phases: the screening phase and the monitoring phase. During the screening phase, VSD is to sample the outfall effluent and conduct concurrent toxicity tests using a fish (fathead minnow), an invertebrate (water flea), and an aquatic plant species (green algae). The results of the screening phase test determine the single species that will be used for the remaining monitoring phase, until the species are to be screened again.

The screening phase was initiated in Quarter 2 of 2020 (April thru June), shortly after the current NPDES permit went into effect. The test results determined that the most sensitive species was the green algae. Not only was the species the most sensitive, but the test result was a “fail,” for this organism. A test resulting in “fail,” initiates accelerated monitoring. During accelerated monitoring, the discharger must conduct four additional toxicity tests using the same test species. If none of the accelerated monitoring tests result in a “fail,” then the discharger may return to the regular testing

frequency. VSD had a “fail” on the first test of accelerated monitoring. This result initiated the implementation of the TRE workplan.

The TRE describes the steps that VSD has been approved to follow if toxicity is detected. Part of the TRE is the Toxicity Identification Evaluation (TIE). During the TIE, VSD provided samples to Enthalpy Analytical, a contract lab, to help identify the cause of the toxicity. In their findings, Enthalpy suggested that there is a potential for the polymers used in the biosolids dewatering process to cause toxicity. VSD has sought out different polymers to be used in the dewatering process and Enthalpy is conducting tests to determine if the new polymer will be adequate to reduce the toxic effects of the previous polymer used. This is a time-consuming process for operations staff.

Aside from the outfall effluent being sampled, VSD sent Enthalpy separate effluent samples from the pond and activated sludge plant. The results from those samples showed that the ponds are the significant source of the toxicity making it to the outfall. This information strengthens the suggestion that polymers are the source of toxicity. Filtrate from the dewatering process goes back to the pond treatment system. The filtrate could very well be carrying excess polymer back to the ponds.

In an effort, to mitigate the spread of the toxicity to the activated sludge plant, a procedural change was made. Staff no longer drains the pond chlorine contact chamber to the headworks. Staff now pumps the contact chamber back to the ponds, whenever the contact chamber needs to be cleaned.

VSD has continued to sample for required WET testing to be conducted quarterly. Quarter 3 results were less toxic than quarter 2, but still resulted in a fail. Results for the Quarter 4 test are not available yet. The Regional Board has been notified of the steps taken along the way to help resolve the issue of toxicity in the outfall effluent. The Regional Board is waiting on VSD to resolve this toxicity issue before any determination is made on their part. Staff believes they are satisfied with our efforts to date but treatment plant modifications, violation(s) or additional testing may result at the conclusion of this process of resolving the toxicity issue.

Recommendation
No recommendation. Information only.

Attachments
Attachment A: TIE Progress Report

ENTHALPY ANALYTICAL
TOXICITY LABORATORY & CONSULTING

October 26, 2020

Valley Sanitary District WWTP
Via email: ABell@valley-sanitary.org

Subject: TIE Progress Report

This progress report includes testing conducted at Enthalpy Analytical starting in May 2020 for Valley Sanitary District (VSD). The overall arch of testing has encompassed routine monitoring and species sensitivity screening followed by accelerated/confirmation testing, and the initiation of a Toxicity Reduction Evaluation (TRE). The TRE included conducting Toxicity Identification Evaluations (TIEs). Progress and results to date, as well as next steps in the investigation are briefly outlined below.

May 2020 – Species sensitivity testing was initiated on 5/7/20 with a sample collected 5/6/20 using the green algae (*Selenastrum capricornutum*) growth bioassay, water flea (*Ceriodaphnia dubia)* survival and reproduction bioassay, and fathead minnow (*Pimephales promelas)* survival and growth bioassay. Only green algae resulted in a TST "Fail" at the Instream Waste Concentration (IWC). The percent effect at the IWC was 81 compared to the laboratory control. Due to the unknown nature of the toxicity, accelerated monitoring was initiated in accordance with the permit guidance.

Accelerated monitoring was conducted on 5/28/20 with a sample collected 5/27/20 using green algae. Green algae growth again resulted in TST "Fail" at the IWC. The percent effect was 84 compared to the laboratory control, which is comparable to previous rounds and suggests the source of the effect is consistent over time. Also tested at this time was the previous sample from 5/6/20 to evaluate persistence of toxicity over time. Knowing the persistence of the toxicity can aid in characterization and inform potential treatment schemes for the TIE. The 5/6 sample resulted in a percent effect of 83 compared to the laboratory control, suggesting that the toxicity is relatively stable over time.

June 2020 – Following the accelerated test resulting in a "Fail", a TRE was initiated. The TRE included a Phase I TIE test that was conducted on 6/4/20 using the sample collected 5/27/20. The sample resulted in a percent effect of 73 compared to the laboratory control. Five treatments were performed on the sample to assist in classifying a potential class of constituent responsible for the observed effects. The only treatment which was able to remove the effect in the sample was the pH 11-adjustment followed by filtration. These results suggest that the treatment successfully precipitated and removed (through filtration) the constituent(s) causing the effects, or otherwise changed the chemistry of the sample in a way that caused it to no longer inhibit algal growth. Algal growth in the Aeration, C8, STS, and EDTA treatments were similar to or below that in the baseline sample, indicating that volatile, sublatable, oxidizable, non-polar organic, oxidative, or divalent cationic metals are not likely responsible for the observed effects in this sample. Analytical chemistry results for compounds detected at or above detection limits, for the baseline and post pH 11 treated sample were also evaluated. There were no constituents that stood out as being above the threshold effect levels for this species. There was a

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notable increase in chloride and sodium concentrations post treatment, however that is related to the addition of hydrochloric acid and sodium hydroxide as part of the TIE treatment process. Relatively substantial reductions in calcium, iron, and phosphorus were observed in the post pH 11 treated sample. The calcium and iron levels in the baseline are well below any known effect threshold to cause toxicity in and of themselves. Phosphorus generally enhances algal growth, therefore the reduction in the post treated sample is unlikely to lead to an increase in algal growth.

August 2020 – As part of the TRE, additives used in the treatment process are evaluated for the potential to be contributing to the observed toxicity. Flocculants and coagulants (i.e. polymers) used in wastewater treatment have demonstrated the ability to cause adverse effects to green algae growth in past projects at Enthalpy. Therefore, an evaluation of the polymers used at VSD was undertaken as the next step in the TIE. Two polymers, WE-2035 and C-6266, were in use at the treatment facility during the month of May. Each polymer is used for a different purpose within the treatment plant and at different dosage rates. To test the potential for these two additives to be the cause of the effects in the effluent, a spiking study was undertaken. Using dosage rates supplied by VSD, the two polymers were added to laboratory water and serial diluted to form a response curve. The results from theses tests demonstrate that both polymers in use at this facility can have a negative effect on green algae growth and that the WE-2035 polymer has a much greater effect compared to the C-6266 polymer. Although this demonstrates the potential to cause toxicity it is not, however, definitive evidence that either polymer is causing the toxicity in the effluent sample. The actual concentration of either polymer in the final effluent is still unknown. Further testing and evaluation were necessary to increase the level of confidence prior to determining whether either polymer may be the likely source of the observed effect to green algae growth.

September 2020 – Quarterly monitoring was conducted on 9/10/20 with a sample collected 9/9/20 using green algae in accordance with permit requirements. Green algae growth resulted in TST "Fail" and the percent effect was 68 compared to the laboratory control.

In an effort to further investigate the cause of the effluent toxicity, upstream sampling was performed on 9/21/20. One upstream sample was collected from the activated sludge process (ASP; sampling point EFF-001A) and the other is from the ponds (Pond; sampling point EFF-001B). The ASP waste stream comprises approximately 75 percent of the final effluent volume while the Pond waste stream comprises approximately 25 percent of the final effluent volume. Processes upstream of Pond waste stream involve the use of both polymers. Processes upstream of the ASP waste stream typically do not involve either polymer, however there are times when flow from the Pond waste stream is diverted to the ASP waste stream. Final reporting for these tests is pending, however initial results indicate that the Pond waste stream significantly inhibited algal growth while the ASP waste stream showed a less sever inhibition. This result provides an additional line of evidence and further suggests that the effects in the final effluent are be caused by the presence of polymer.

After the polymer spiking study results were reported, VSD evaluated an alternate polymer, WE-2128, to replace the WE-2035 currently being used. To confirm this polymer was less toxic to the green algae, another spiking study using WE-2128 was performed on 9/30/20. Reporting for this test is also still pending, however initial results suggest this polymer is much less toxic (approximately four times less) compared to the WE-2035 polymer.

Next Steps – The data thus far suggests that there is a potential for the polymers used in the treatment process to be causing the effects in the final effluent. Limited tools exist to measure the polymer concentrations in the final effluent, making it challenging to definitively quantify the amount present and compare it to the spiking study data. Follow up testing will be conducted once the WE-2128 has been in use for a period of time and residuals of WE-2035 have cleared the treatment system. If the effects in the final effluent are reduced with the use of WE-2128, it is another line of evidence that the original effluent toxicity was likely linked to polymers present in the final effluent.

Best Regards,

Kasey Skrivseth
Project Manager