Inland Empire Brine Line Reach IV-B Lower Maintenance Access Structure Project

David Ruhl, Executive Manager of Engineering and Operations

December 2, 2025

Project Agreement 24 Committee

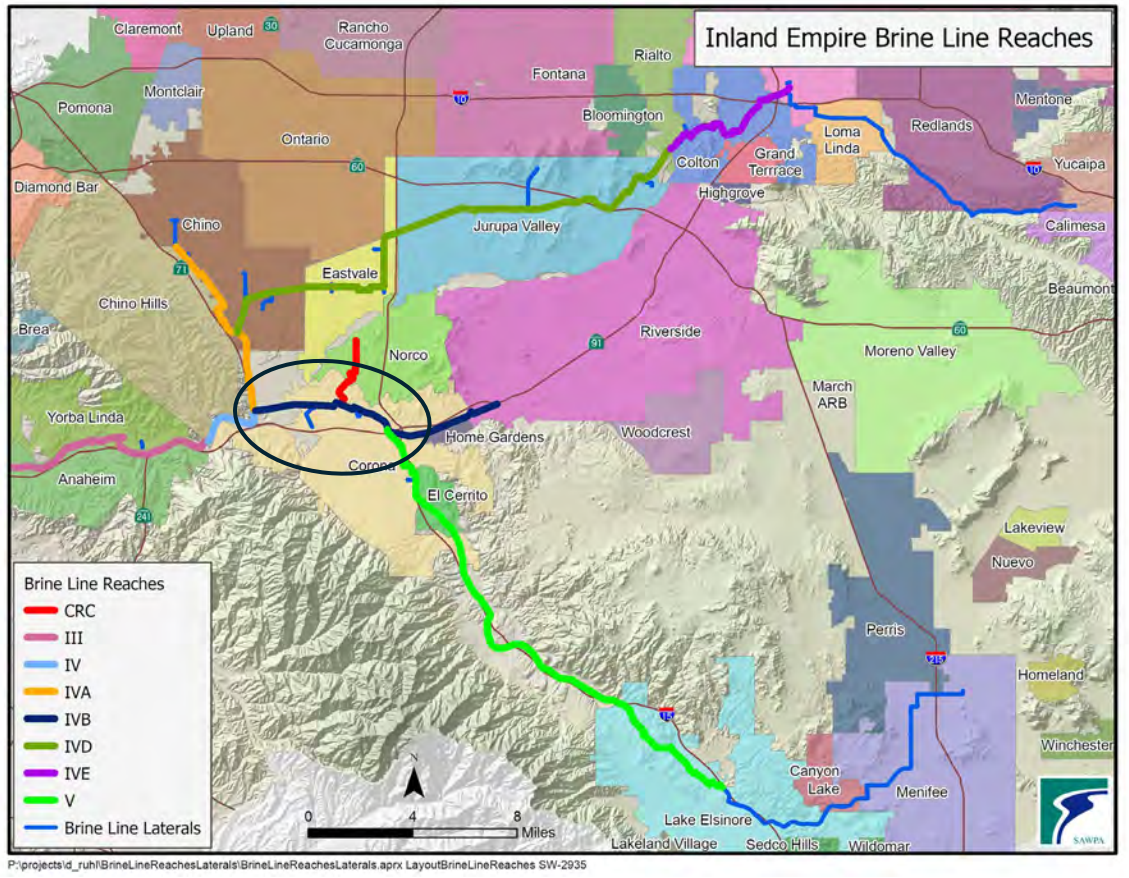
Recommendation

That the Project Agreement 24 Committee authorize the General Manager to execute the General Services Agreement and Task Order No. AAWA320-03-01 with Albert A. Webb Associates in an amount not-to-exceed $127,294 for engineering services for the Inland Empire Brine Line Reach IV-B Lower Maintenance Access Structure Project.

Reach IV-B

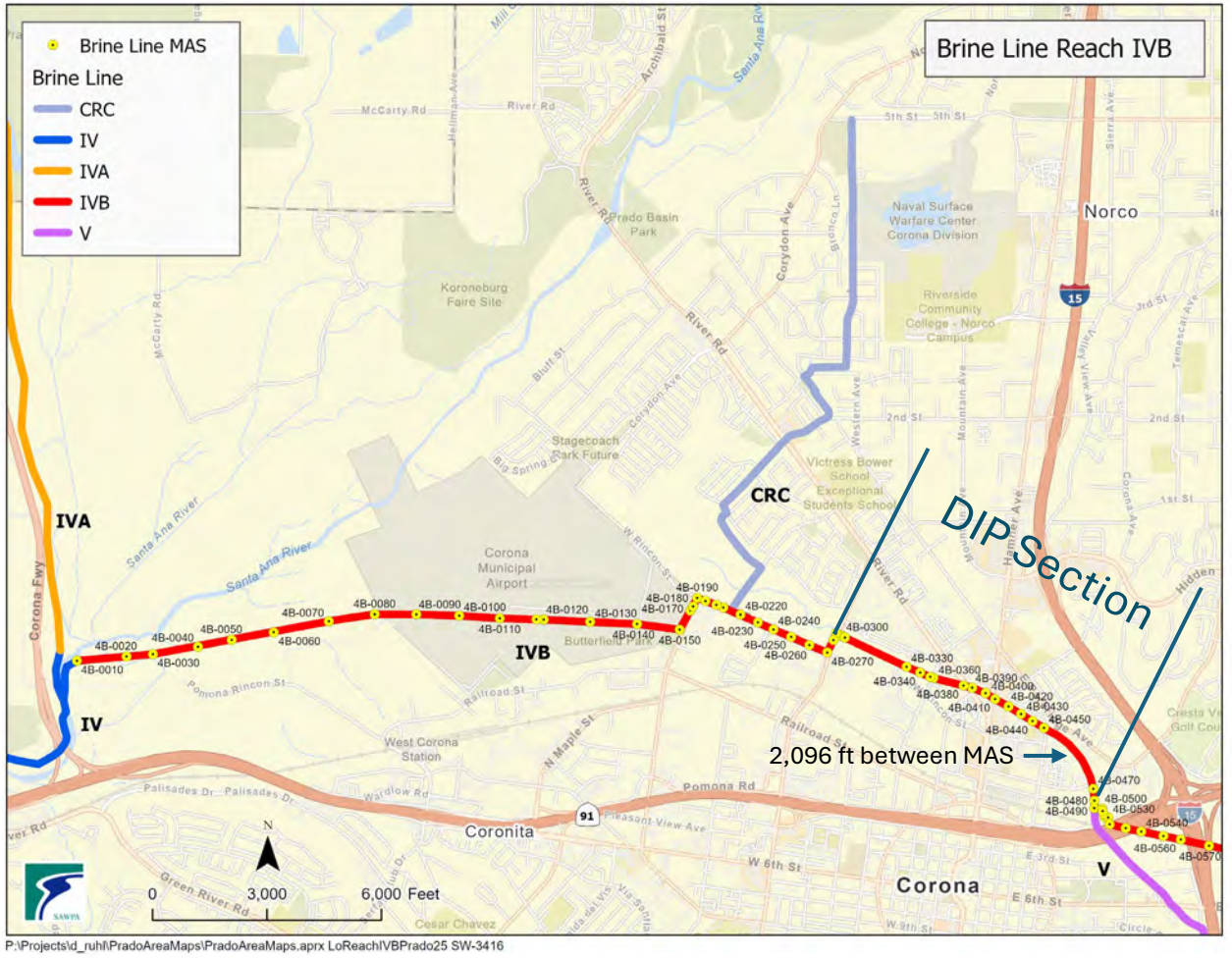
Reach IV-B Lower Background

- Constructed in mid 1990's
- Approximately 5.5 miles
- Pipeline size 30 – 36 inches in Diameter
- 47 Maintenance Access Structure
- Daily flow 5 – 7 MGD
- Maximum Capacity 13 MGD



Reach IV-B Condition Assessment

- Condition Assessment May 2023
- Final Report to PA 24 September 2024
- Near term recommendation to add additional MAS's
  - Access for cleaning, inspection and repairs limited due to distance between MAS
- Engineering services are necessary to prepare plans and specifications for the addition of two MASs.



Selection Process

- 2 Proposals received
  - Albert A. Webb Associates
  - Dudek
- Both firms selected for interview
- Selection based on scoring of the proposals, interviews, and fee proposal

Selection Process (cont.)

Firm	Fee Proposal	Score
Albert A. Webb	$127,294	92.3
Dudek	$159,582	90.8

- Albert A. Webb Associates selected as most qualified

Schedule and Budget

Schedule

- PA 24 Approve Contract — Dec 2, 2025
- Design — Jan – Aug 2026
- Bid Construction — Late 2026

Budget

- Design and Related Field Work — $150,000
- Construction — $375,000

Estimate of construction costs will be refined during design.

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Contact Information

David Ruhl

Executive Manager of Engineering and Operations

Druhl@sawpa.gov

SANTA ANA WATERSHED PROJECT AUTHORITY

Brine Line Solids Imbalance and Billing Formula Update

PA 24 Committee
Agenda Item No. 6.B
Lucas Gilbert
Manager of Permitting and Pretreatment
December 2, 2025

Recommendation

- Receive and file

SARI Metering Station (SMS)

SAWPA recovers costs paid to OC San, from monitoring conducted at SMS, using a billing formula to allocate the costs related to solids formation from each discharger

Background

- The solids formation creates an imbalance in the Total Suspended Solids (TSS) and Biochemical Oxygen Demand (BOD) measured at the SMS versus the dischargers input
- To account for the imbalance, in 2016 SAWPA developed a scientifically-based revision of the previous Billing Formula based on known formation mechanisms of the observed solids composition
- In July 2016, the SAWPA Commission adopted this revised Billing Formula
- SAWPA continues to implement the Billing Formula following subsequent annual reviews of the monitoring data and billing formula parameters in 2017, 2018 and 2019

Brine Line Billing Formula (current)

$$TSS_b = TSS_m + TSS_f * \left[\frac{dBOD_m}{dBOD_t} * (0.31) + \frac{Calcium_m}{Calcium_t} * (0.28) + \frac{Alkalinity_m}{Alkalinity_t} * (0.41)\right]$$

BOD Load | **Calcium Load** | **Alkalinity Load**

Where:

- TSS_b = *Billed TSS to discharger*
- TSS_m = *Measured TSS for discharger*
- TSS_f = *Formed TSS in Brine Line (calculated)*
- $dBOD_m$ = *Dissolved BOD measured for discharger*
- $dBOD_t$ = *Total dissolved BOD measured for all dischargers*
- $Calcium_m$ = *Dissolved calcium measured for discharger*
- $Calcium_t$ = *Total dissolved calcium measured for all dischargers*
- $Alkalinity_m$ = *Dissolved alkalinity measured for discharger*
- $Alkalinity_t$ = *Total dissolved alkalinity measured for all dischargers*

Background

- Since the 2019 review of the billing formula there have been changes in the flow characteristics of the Brine Line due to new discharges and increased flow. In addition, the solids imbalance has increased since 2019 when the billing formula was last reviewed
- Due to these changes in the solids imbalance, the PA 24 Committee authorized staff in October of 2024 to coordinate with Trussell on an updated study of the solids imbalance and review the Billing Formula and make recommendations for changes as necessary
- A draft report has been prepared by Trussell to document the findings and to provide recommendations for the Billing Formula

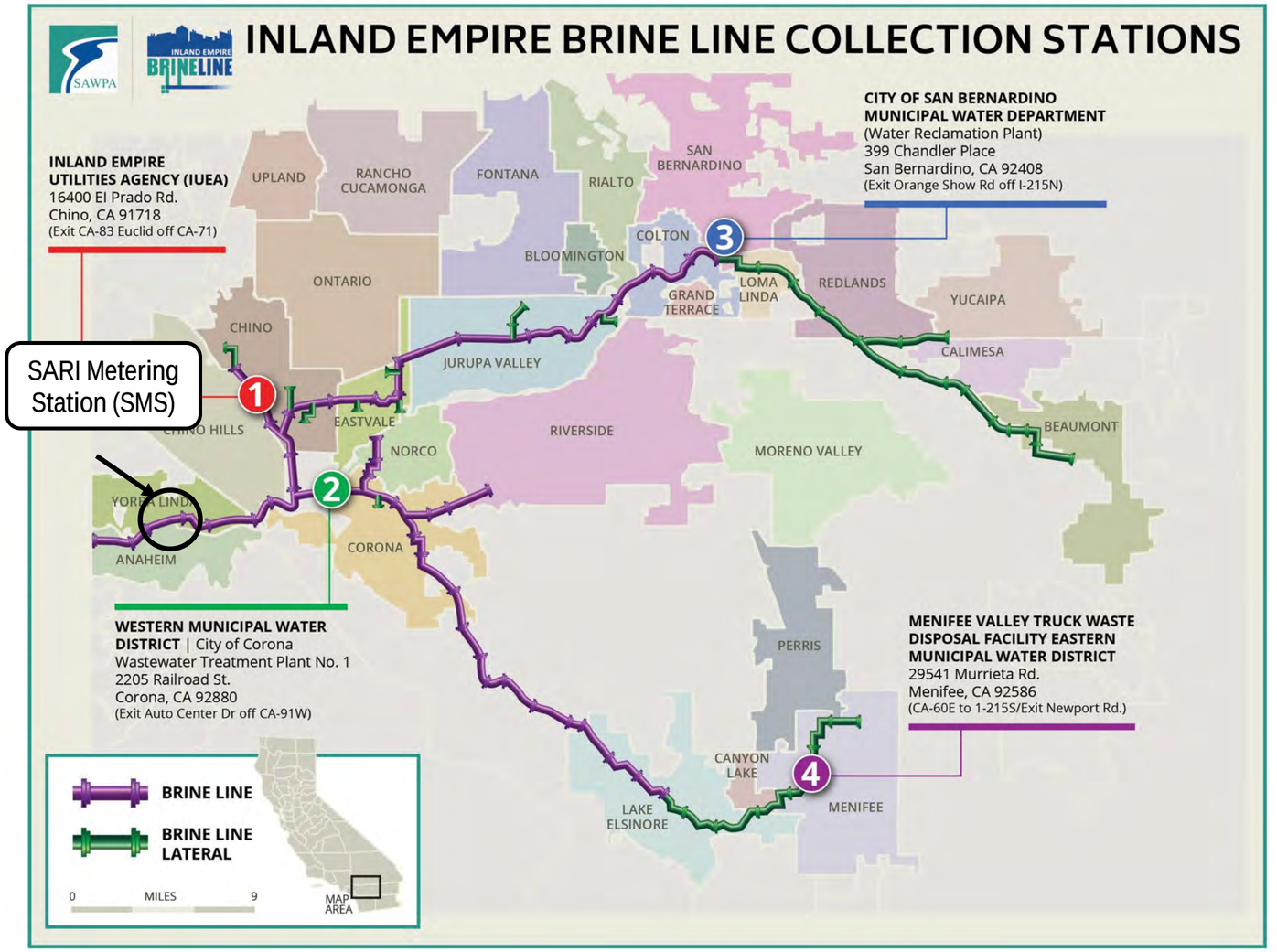
Trussell Presentation

Update on Solids Formation in the Inland Empire Brine Line

December 2, 2025

Emily Owens-Bennett, P.E., BCEE

Solids in Brine Line



Methodology

SS Out (SMS) – SS In (Combined Dischargers) = SS Formed (within Brine Line)

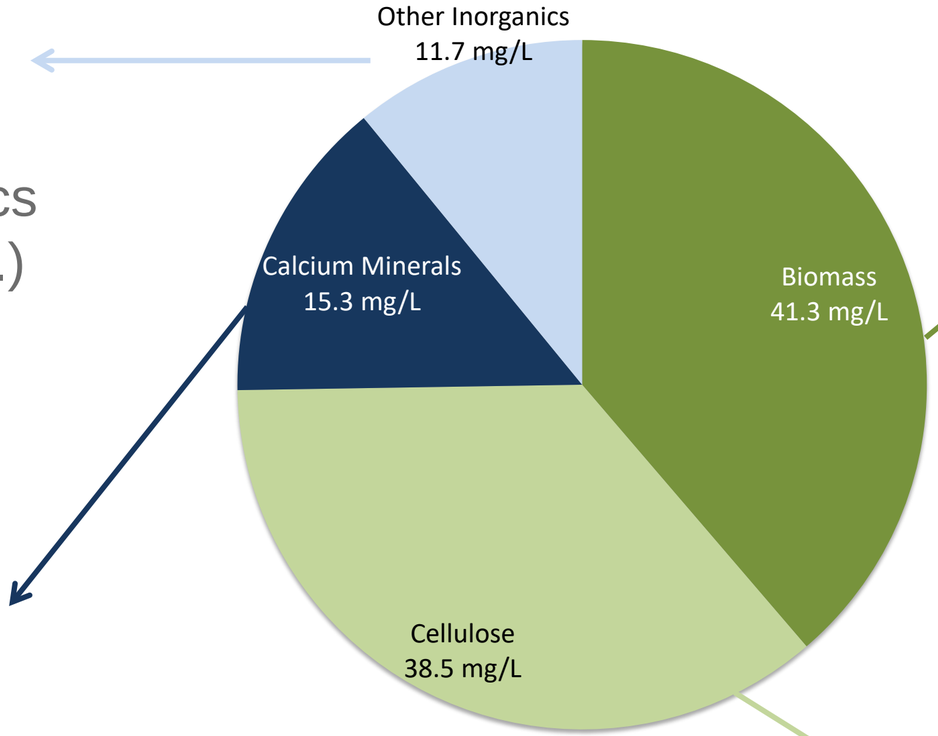
Trussell

Solids in Brine Line

*Values represent monthly average loading. When no monitoring occurred for an individual discharger in a month, surrounding average measurements were substituted.

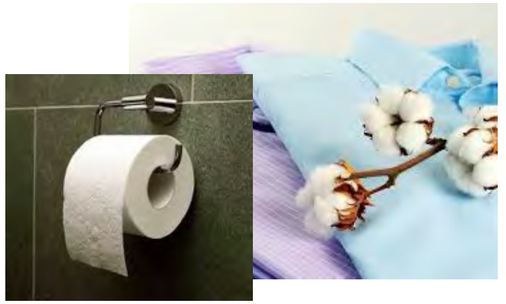
SMS Suspended Solids

Non-calcium inorganics
(silica, aluminum, etc.)



Bacteria
(dead & alive)

Calcium carbonate
(scale at bottom of teapot)

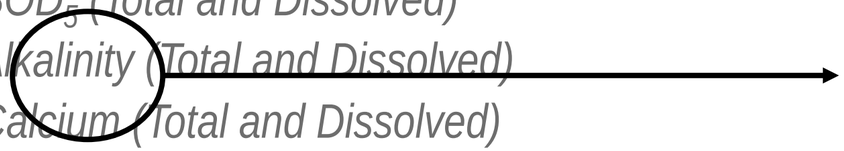


Cellulosic material from plant fibers
(paper products, cotton fabrics)

Trussell

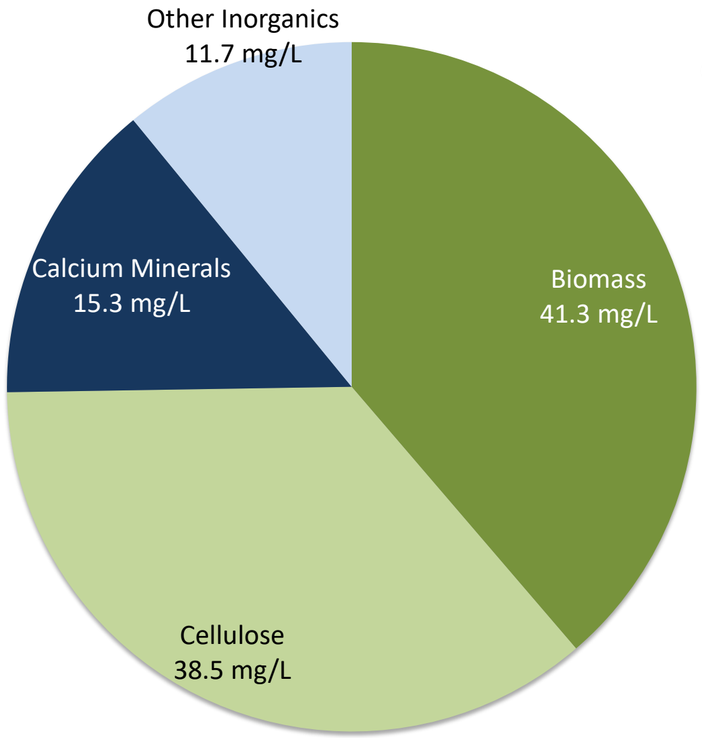
Discharger Suspended Solids

- Supplemental Monitoring Parameters
  - *TSS*
  - *VSS*
  - *BOD_5 (Total and Dissolved)*
  - *Alkalinity (Total and Dissolved)*
  - *Calcium (Total and Dissolved)*



Methodology

SS Out: SMS



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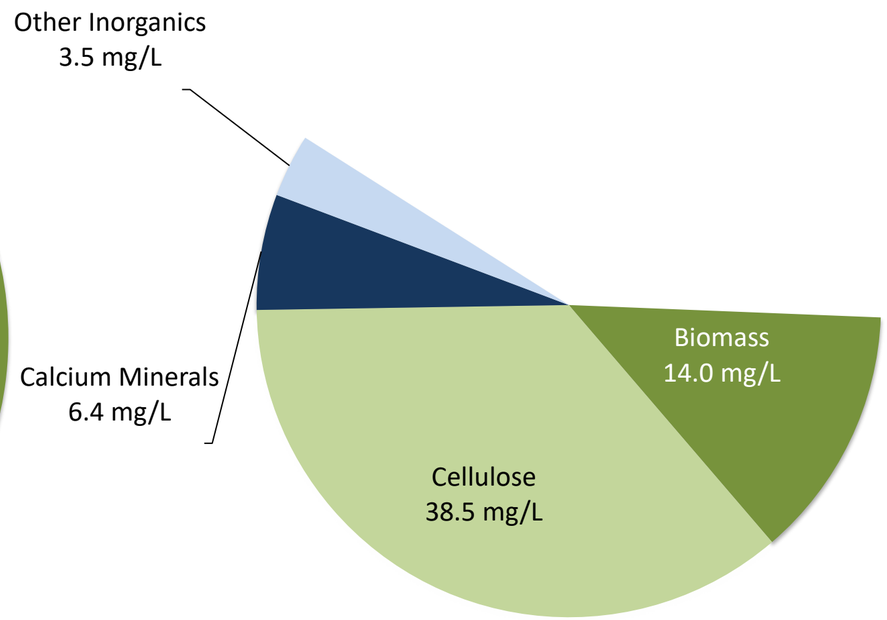
SS In: Combined Dischargers



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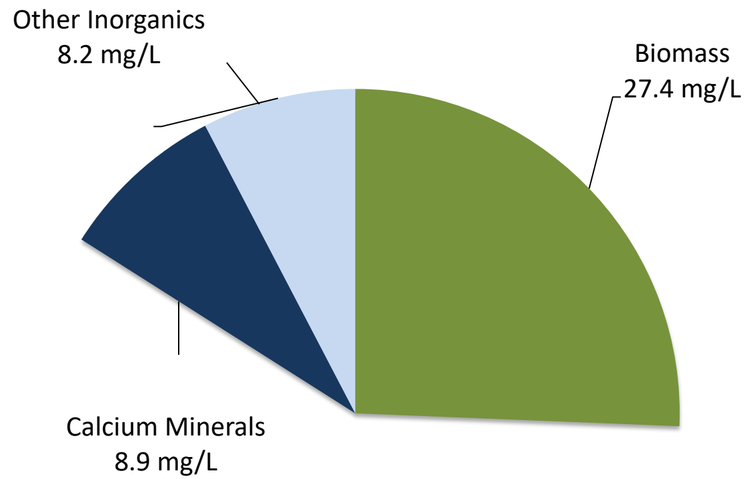
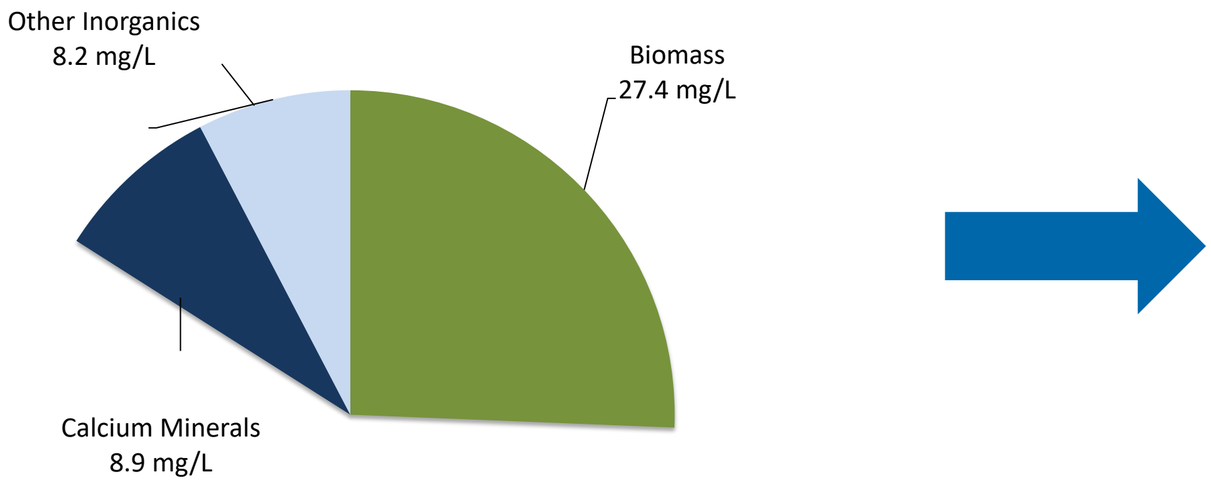
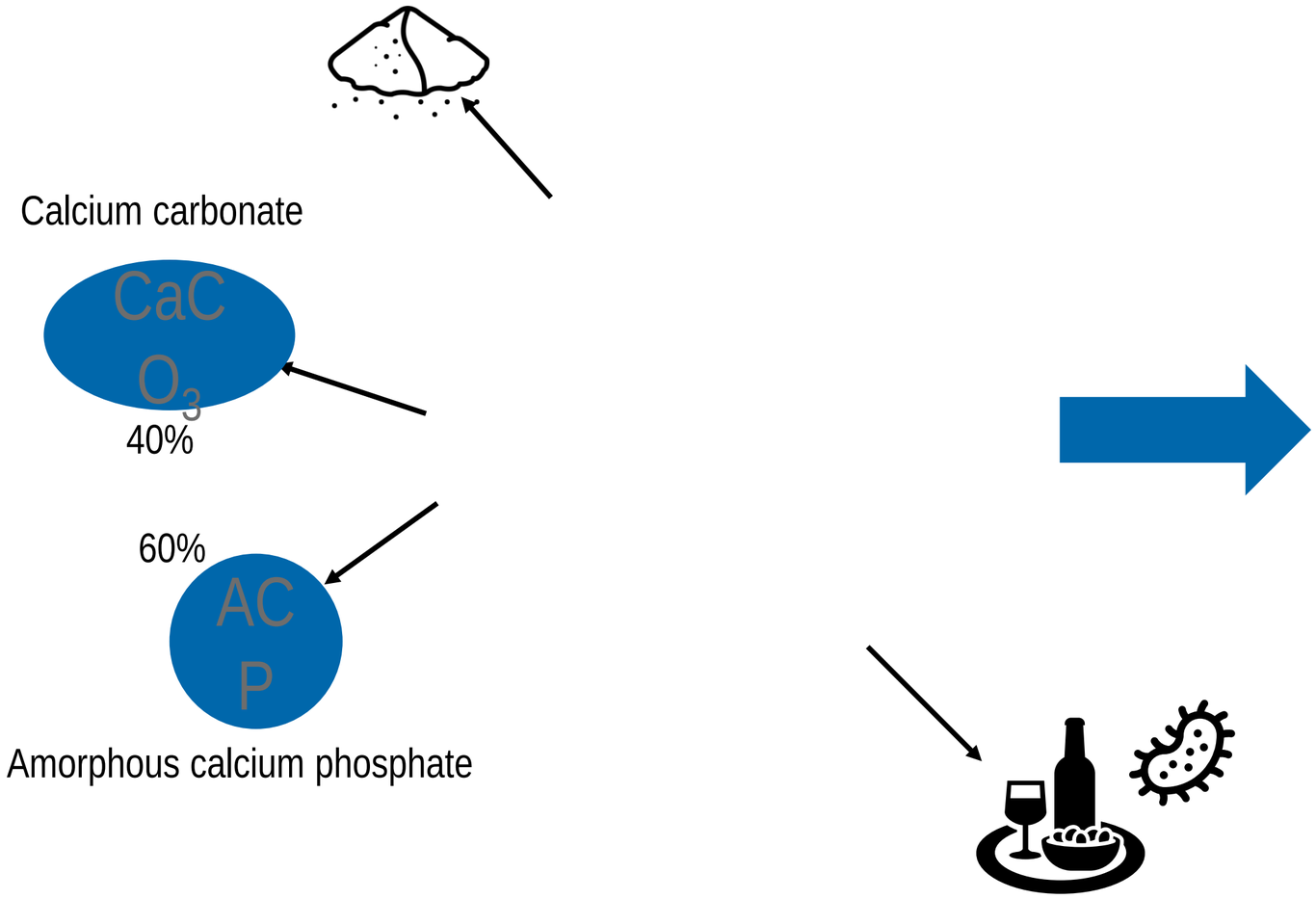
SS Formed



Solids Formation Characterization



Solids Formation Characterization



Billing Formula

$$FF_{TSS} = \left[\frac{Calcium_m}{Calcium_t} \times (0.08) + \frac{Alkalinity_m}{Alkalinity_t} \times (0.12) + \frac{dBOD_m}{dBOD_t} \times (0.62) + \frac{Flow_m}{Flow_t} \times (0.18)\right]$$

Findings

- Brine Line flows have increased
- Suspended solids formation has increased recently
- Overall composition of solids in the Brine Line is similar over time

Recommendations

- Adopt new billing formula
- Continue to implement supplemental technical monitoring program
  - *Monitor flow and water quality from SMS and dischargers*
  - *Analyze all billing-related constituents from each sample*
- Characterize solids present at SMS
  - *Complete solids characterization events every 2 years*
  - *Consider additional events with significant changes in Brine Line system*

Thank you

Emily Owens-Bennett, PE
emilyo@trusselltech.com

Next Steps

- Receive comments from PA 24 Committee Members and Member Agency staff
- Conduct a workshop with Member Agency staff and Brine Line dischargers
- Incorporate comments into Final Report
- Present Final Report and recommendations to the PA 24 Committee at a future meeting
- Implement any approved changes to the billing formula that may go into effect with the July 2026 invoices

Recommendation

- Receive and File

Questions or Comments?

Lucas Gilbert
Santa Ana Watershed Project Authority
Office (951) 354-4245 | Cell (951) 415-5572
lgilbert@sawpa.gov
sawpa.gov

@sawpa_water

@sawpatube