2nd Revised NOTICE OF SPECIAL MEETING
OF THE
SOUTH ORANGE COUNTY WASTEWATER AUTHORITY

PC-15 / PC-23 JOINT COMMITTEE
TELECONFERENCE MEETING

April 1, 2021
10:30 a.m.
(or immediately following the SOCWA Board Meeting)

Join Zoom Meeting by clicking on the link below:

https://socwa.zoom.us/

Meeting ID: 861 6585 5343
Passcode: 912055

One tap mobile
+16699006833,,86165855343#,,,,*912055# US (San Jose)
+13462487799,,86165855343#,,,,*912055# US (Houston)

Dial by your location
+1 669 900 6833 US (San Jose)
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+1 312 626 6799 US (Chicago)
+1 929 205 6099 US (New York)

Meeting ID: 861 6585 5343
Passcode: 912055

Find your local number: https://socwa.zoom.us/u/kPkd2Smv

NOTICE IS HEREBY GIVEN that a Special Meeting of the South Orange County Wastewater Authority (SOCWA) PC-15 / PC-23 Joint Committee was called to be held by Teleconference on **April 1, 2021** at **10:30 a.m. (or immediately following the SOCWA Board Meeting).** SOCWA staff will be present and conducting the call at the SOCWA Administrative Office located at 34156 Del Obispo Street, Dana Point, California. This meeting is being conducted via Teleconference pursuant to the California Governor Executive Order N-29-20.

MEMBERS OF THE PUBLIC ARE INVITED TO PARTICIPATE IN THIS TELECONFERENCE MEETING AND MAY JOIN THE MEETING VIA THE TELECONFERENCE PHONE NUMBER AND ENTER THE ID CODE. THIS IS A PHONE CALL MEETING AND NOT A WEB-CAST MEETING SO PLEASE REFER TO AGENDA MATERIALS AS POSTED WITH THE AGENDA ON THE WEBSITE AT WWW.SOCWA.COM. ON YOUR REQUEST, EVERY EFFORT WILL BE MADE TO ACCOMMODATE PARTICIPATION IF YOU REQUIRE ANY SPECIAL DISABILITY RELATED ACCOMMODATIONS. PLEASE CONTACT THE SOUTH ORANGE COUNTY WASTEWATER AUTHORITY SECRETARY'S OFFICE AT (949) 34-5452 AT LEAST TWENTY-FOUR (24) HOURS PRIOR TO THE SCHEDULED MEETING TO REQUEST DISABILITY RELATED ACCOMMODATIONS. THIS AGENDA CAN BE OBATINED IN ALTERNATE FORMATS UPON 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 DISCLOSABLE PUBLIC RECORDS DISTRIBUTED TO ALL, OR A MAJORITY OF, THE MEMBERS OF THE SOUTH ORANGE COUNTY WASTEWATER AUTHORITY PROJECT COMMITTEE NO. 15 & 23 IN CONNECTION WITH A MATTER SUBJECT FOR DISCUSSION OR CONSIDERATION AT AN OPEN MEETING OF THE PROJECT COMMITTEE NO. 15 & 23 ARE AVAILABLE BY PHONE REQUEST MADE TO THE AUTHORITY ADMINISTRATIVE OFFICE AT (949) 234-5452. THE AUTHORITY ADMINISTRATIVE OFFICES ARE LOCATED AT 34156 DEL OBISPO STREET, DANA POINT, CA ("AUTHORITY OFFICE"). IF SUCH WRITINGS ARE DISTRIBUTED TO MEMBERS OF THE PROJECT COMMITTEE 15 & 23 LESS THAN TWENTY-FOUR (24) HOURS PRIOR TO THE MEETING, THEY WILL BE SENT TO PARTICIPANTS REQUESTING VIA EMAIL DELIVERY. IF SUCH WRITINGS ARE DISTRIBUTED IMMEDIATELY PRIOR TO, OR DURING, THE MEETING, THEY WILL BE AVAILABLE IMMEDIATLELY ON VERBAL REQUEST TO BE DELIVERED VIA EMAIL TO REQUESTING PARTIES.

AGENDA

1. **Call Meeting to Order**

2. **Public Comments**

*THOSE WISHING TO ADDRESS THE **PROJECT COMMITTEE NO. 15 & 23** 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. **Coastal Treatment Plant Feasibility Study Update [Project Committee 15]**

- Presentation by Hazen & Sawyer
- Discussion of current CIP at the Coastal Treatment Plant and compatibility with Feasibility Study

Recommended Action: Board discussion and direct staff for the next steps

4. **North Coast Interceptor Intertie Project Update & Agreement [Project Committee 23]**

- Staff verbal update
- Board discussion and direct staff for the next steps

Recommended Action: Staff recommends the PC-23 Board approves an Agreement for the North Coast Interceptor Intertie Project.

5. **CTP Facilities Improvement Project & Reduction in Project Scope [Project Committee 15]**

Recommended Action: Board Discussion and Comments

6. **Federal Earmarks Projects & Outreach – Opportunity before April 15, 2021**

- Staff verbal update
- Outreach to Elected Officials
- Meet Policy / Project Objectives
- Beneficial Regionally

Recommended Action: Board discussion and direct staff for the next steps

7. **Coastal Treatment Plant Sludge Force Main Replacement Project Geotechnical Services During Construction [Project Committee 15]**

   Recommended Action: The Engineering Committee recommend to the PC-15 Board to award the time and materials contract to Ninyo & Moore in the amount of $65,790 for the Geotechnical services during construction for the Coastal Treatment Plant Sludge Force Main Project.

Adjournment

I hereby certify that the foregoing Notice was personally emailed or mailed to each member of the SOCWA Project Committee No. 15 and 23 at least 24 hours prior to the scheduled time of the Special 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 Project Committee No. 15 and 23 meeting at the usual agenda posting location of the South Orange County Wastewater Authority and at www.socwa.com.

Dated this 30th day of March 2021.

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

CTP Feasibility Study Update

Agenda Item 3

April 1, 2021

Agenda

- Review of Shortlisted Alternatives
- Cost Estimate Summary
  - CAS BNR
  - MBR
  - AGS
- Construction Sequencing Considerations
- CTP AWT Considerations
- Next Steps

CTP Feasibility Study Update

The following summarizes the project road map as we bring this phase of the project to a close.

- Evaluated CTP Data for Evaluation Basis
- Developed High-Level Concepts of 5 Leading Alternatives (layouts, sizing, etc.) and Presented to PC 15
- Evaluation & Screening of 5 Leading Alternatives and Presentation to PC 15
- Screened to 3 Leading Alternatives (BNR, MBR, AGS)
- Progressed 3 Leading Alternatives (layouts, sizing, costing, MOPO)
- Considered Potential Synergies with Future Regulations
- *We are here*
- Present to PC 15 Final Evaluation (Concepts, Costs & MOPO)
- Complete Concise TM Summarizing Evaluation – Project Completion

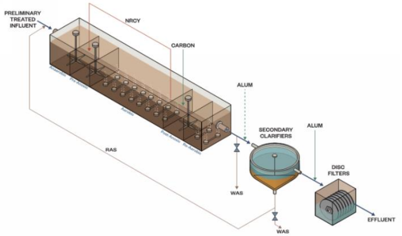
Shortlisted Alternatives

Future Alternatives For Consideration

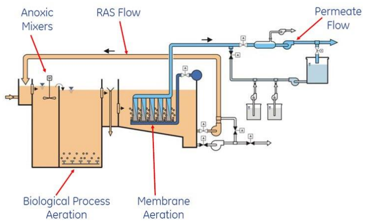
- ✓ Conventional Activated Sludge with Nutrient Removal **(BNR)** (selector/nutrient removal)
- ✓ Membrane Bioreactor **(MBR)**
- ✓ Aerobic Granular Sludge **(AGS)**

- X Membrane Aerated Biofilm Reactors **(MABR)**
- X Sequencing Batch Reactors **(SBR)**

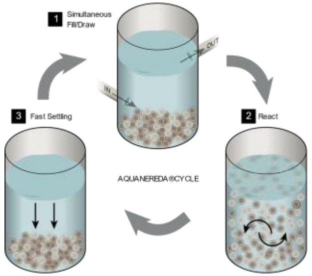
The BNR and AGS alternatives assume disk filtration to provide approximate equivalently effluent quality to the MBR alternative



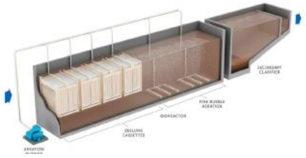
✓ CAS BNR



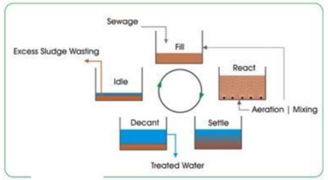
✓ MBR



✓ AGS



X MABR

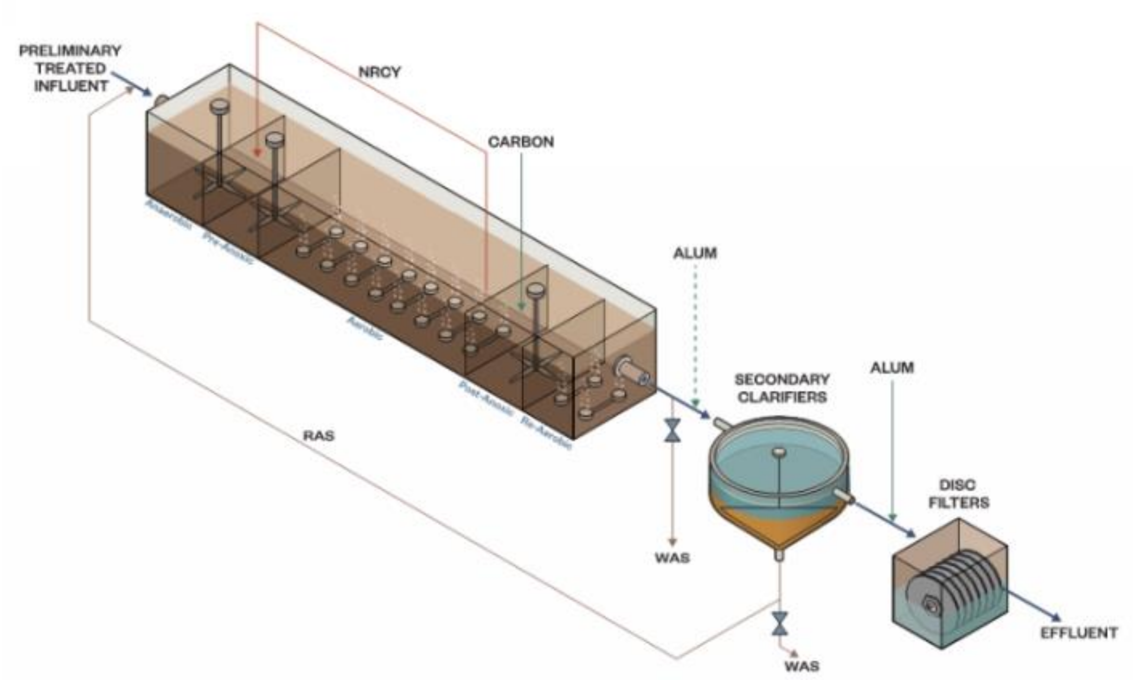


X SBR

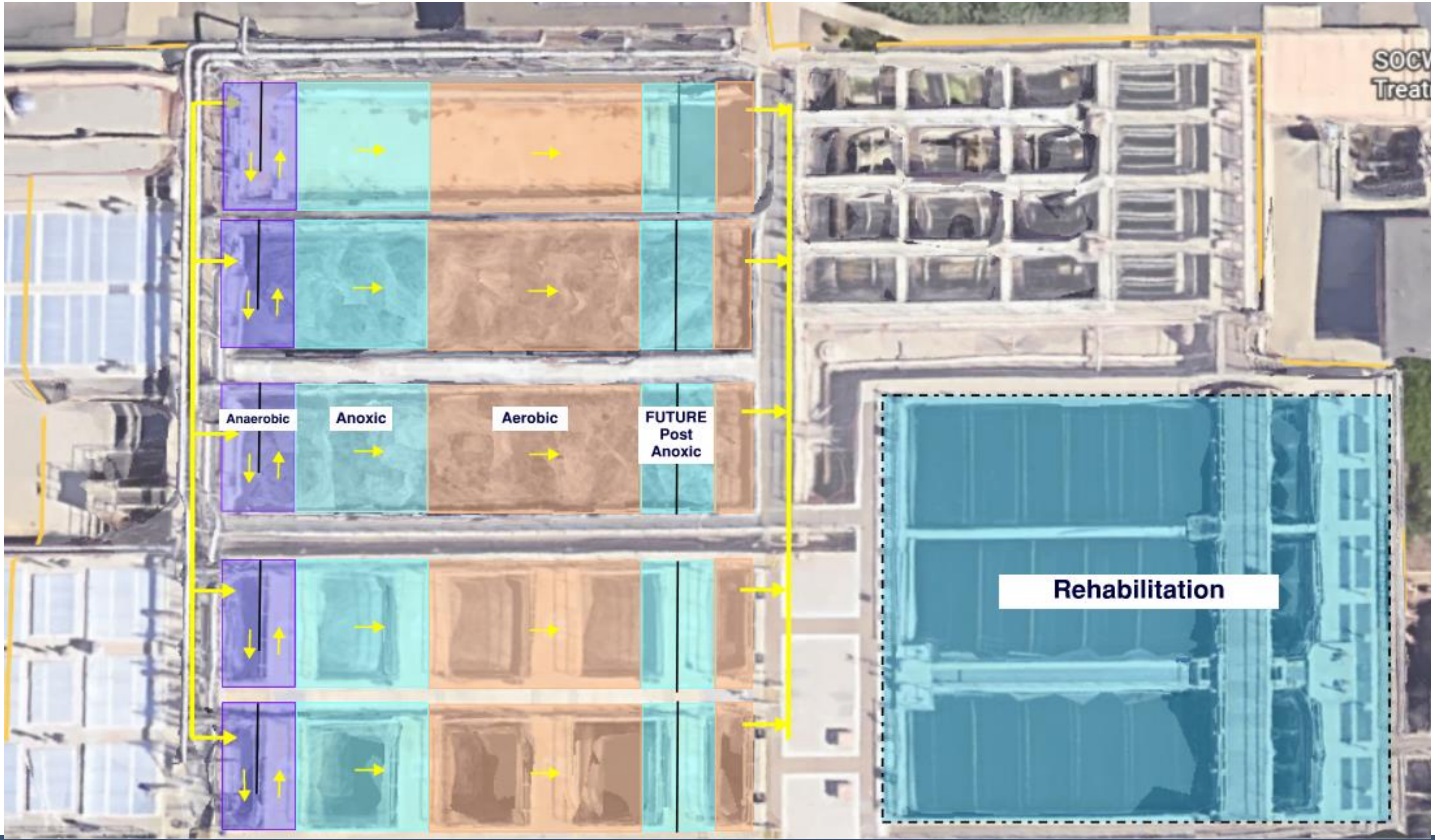
BNR Alternative

Conventional Activated Sludge Biological Nutrient Removal (BNR)

- What?
  - Biological N and P removal through zone design to select specific organisms
- Why?
  - Proven approach with decades of implementation
  - Provides improved effluent quality (nutrients) compared to current operation
  - Consistent effluent quality
  - Improved settling



Layout of BNR Alternative at CTP



Providing Similar Effluent Quality for CAS BNR and AGS

Tertiary Filtration Location

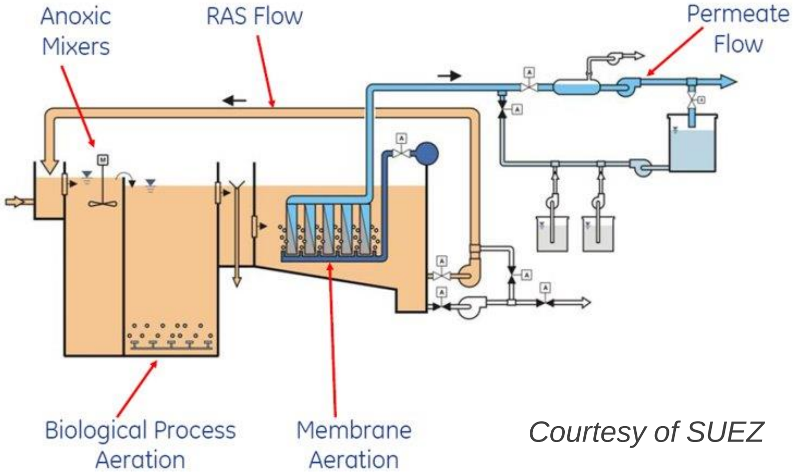
Driver:
Providing similar effluent to the MBR alternatives

Approach:
Assuming CAS BNR and AGS would include a new disc filtration facility for tertiary filtration

MBR Alternative

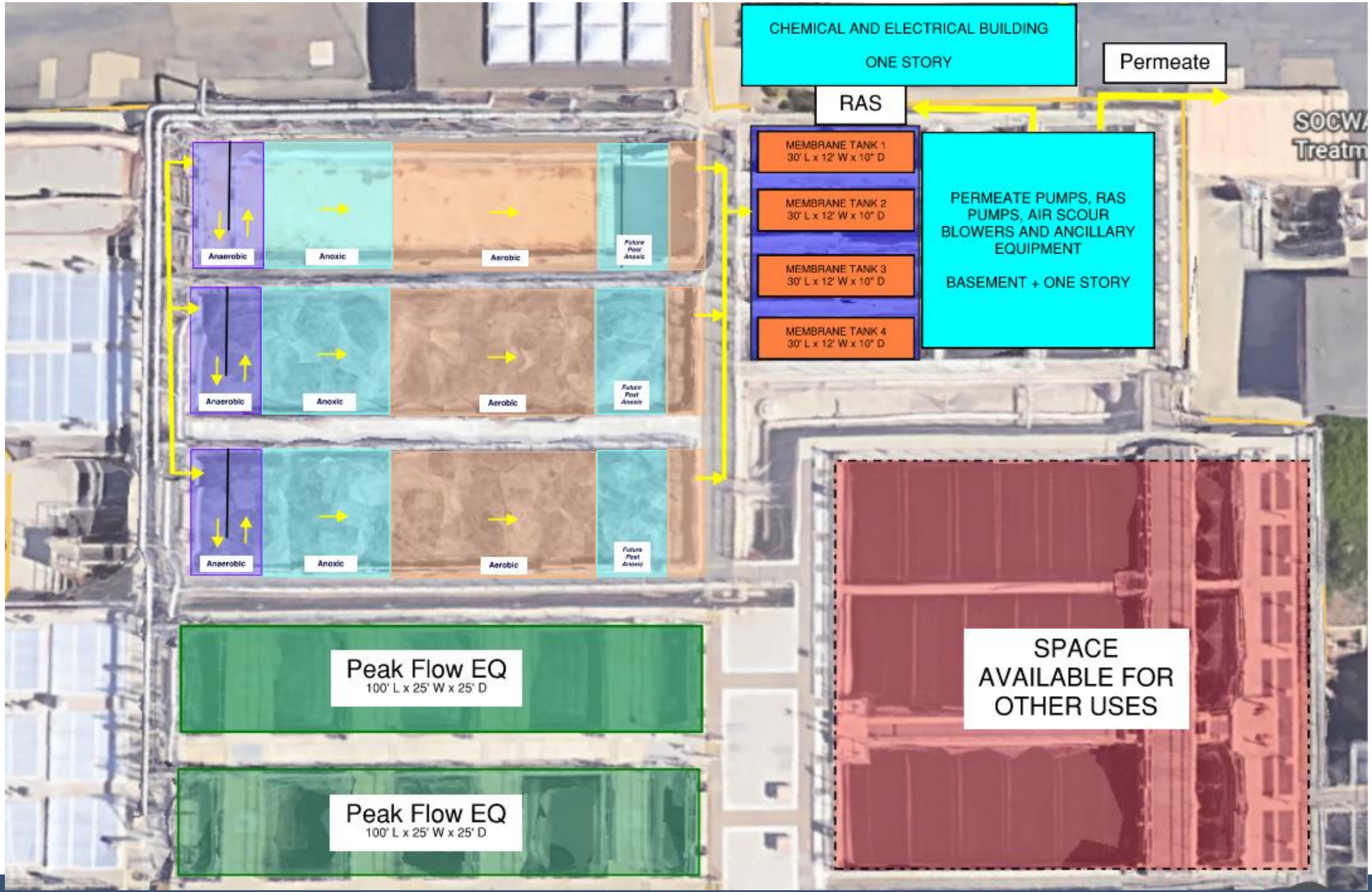
Membrane Bioreactor (MBR)

- What?
  - Secondary clarifiers replaced with membranes
  - Pump or gravity flow MLSS from aeration basins to membrane tank
  - Dedicated membrane tankage preferable for flexibility
  - Typical BNR configurations can be used
- Why?
  - Smaller footprint versus clarifier based secondary process
  - Enhanced effluent quality for reuse



Courtesy of SUEZ

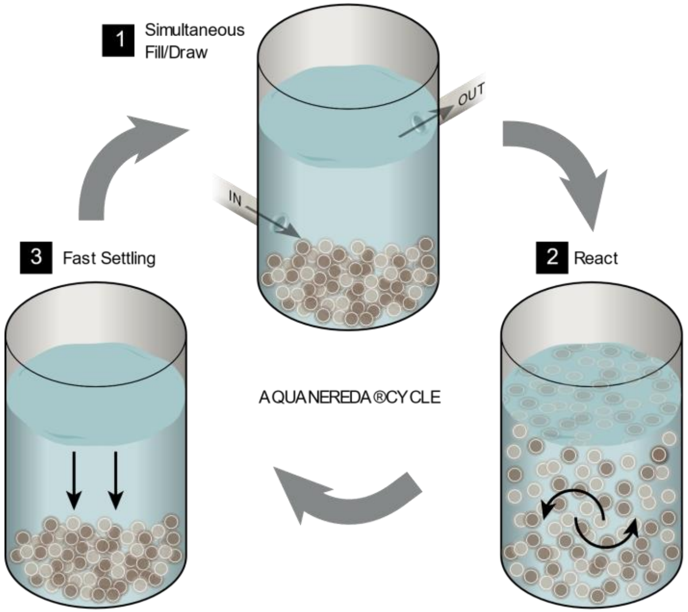
Layout of MBR Alternative at CTP

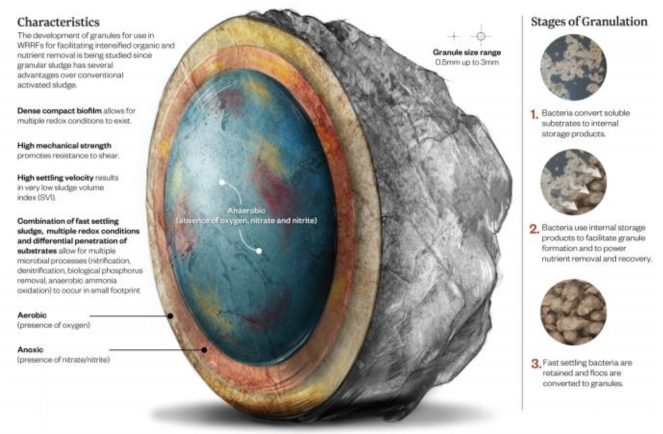


AGS Alternative

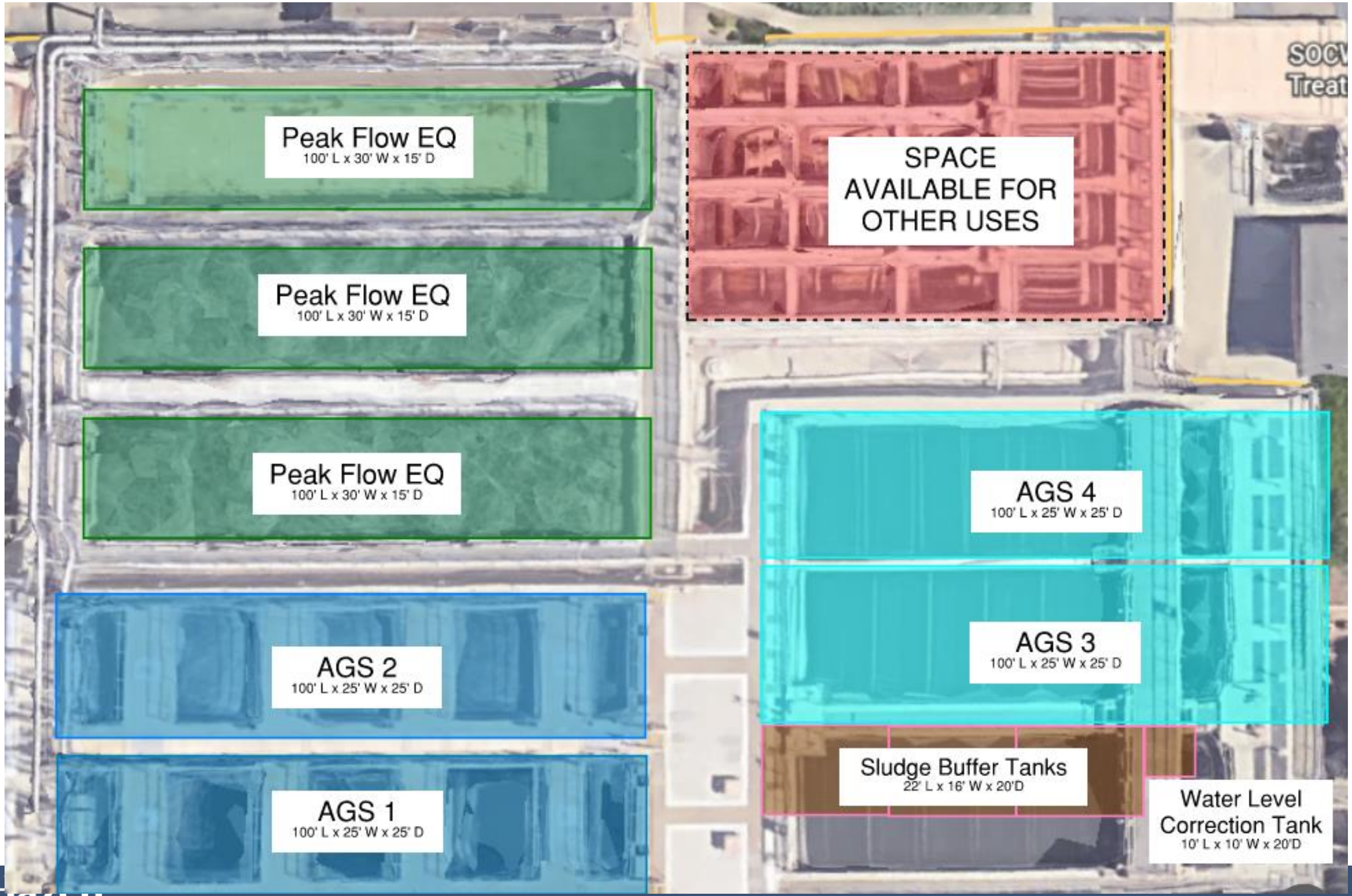
Aerobic Granular Sludge (AGS)

- What?
  - Simultaneous biological N and P removal through formation of granules typically in SBRs
- Why?
  - Smaller footprint, higher loading rates
  - Reduced energy
  - Good settling
  - Alternative to membrane bioreactors





Layout of AGS Alternative at CTP



New filter location and layout same as CAS BNR

Summary of Shortlisted Alternatives

- The shortlisted alternatives meet the same level of nutrient removal, providing an enhancement compared to the current facility operation
  - **Anticipating a >50% reduction in effluent TIN**

- MBR and CAS BNR alternatives provide the benefits of maximizing the existing basin infrastructure

- AGS requires extensive structural work (shoring, new foundations, etc.) for the 2 new reactors which increased the capital cost of that alternative

The following slides will summarize the cost estimate developed for the shortlisted alternatives

Cost Estimate Summary

Comparative Cost Estimate Assumptions

- Cost developed for alternative comparison purposes and do not include costs for improvements that are common between all alternatives
- American Association of Cost Estimators (AACE) Class 4 cost estimate with expected accuracy within -30%/+50%
- Unit process improvement exclusions: influent pumping, preliminary treatment, primary treatment, aeration blower improvements, solids handling, disinfection and outfall.
- Cost estimate markups:
  - General Conditions = 10%
  - Contractor Profit = 18%
  - Bonds and Insurance = 3%
  - Contingency = 35%
- Cost of engineering not included

Comparative Capital Cost Estimates

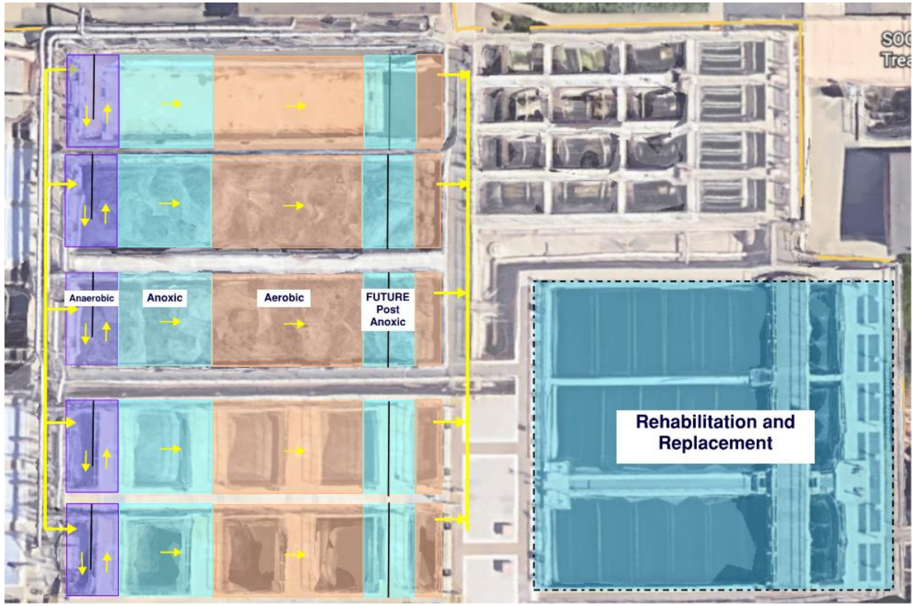
Alternative	Opinion of Probable Construction Cost[1,2]
1. CAS BNR	$16.5M
2. MBR	$25.6M
3. AGS	$32.3M

1. American Association of Cost Estimators (AACE) Class 4 cost estimate with expected accuracy within -30%/+50%
2. Cost estimates markups:
   - General Conditions = 10%
   - Contractor Profit = 18%
   - Bonds and Insurance = 3%
   - Contingency = 35%

Construction Sequencing Considerations

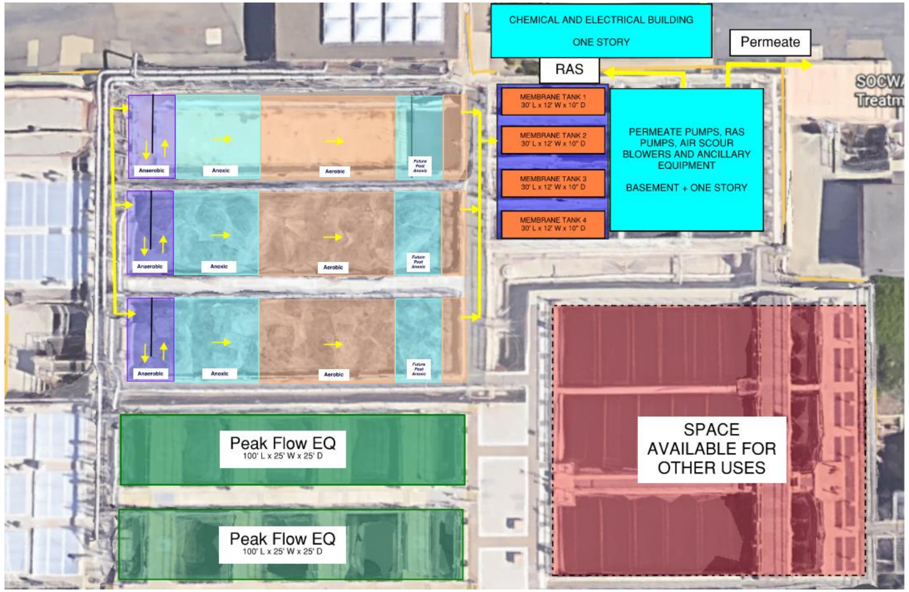
BNR Potential Construction Sequencing and Challenges

Alternative	General Sequence	Challenges
1. BNR	1. Construct improvement one basin and West SC at a time	• Coordination of basin operation



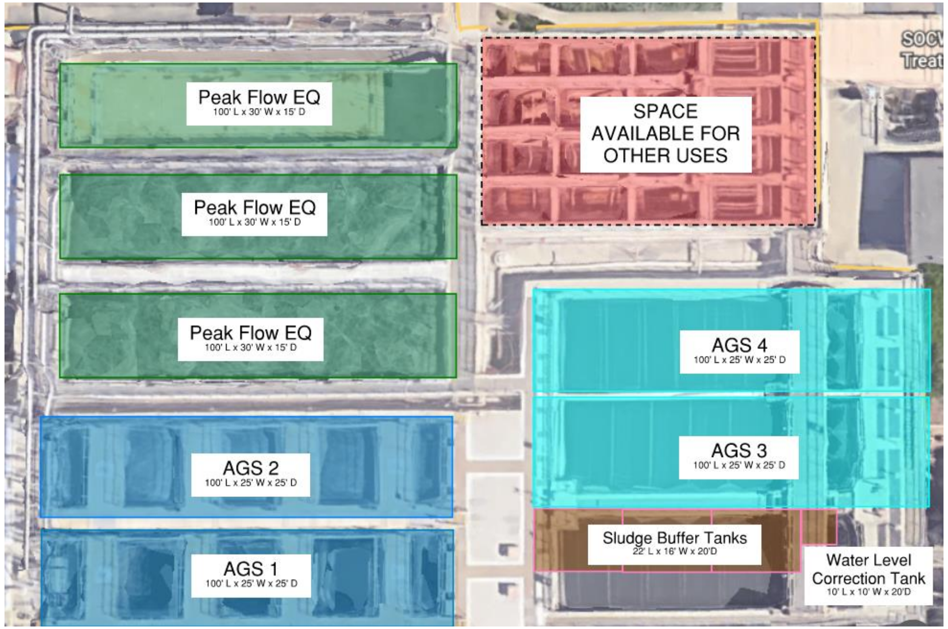
MBR Potential Construction Sequencing and Challenges

Alternative	General Sequence	Challenges
2. MBR	1. Offline: East Plant Online: West Plant Demo East SCs / Construct MBR Construct BNR Improvements 2. Offline: West ABs Online: East ABs and West SCs Construct PF EQ 3. MBR and PF online	• Reliability of West SCs • Demolition of East SCs • Construction within constraints of East SC footprint • Increased truck traffic to haul debris and spoils



AGS Potential Construction Sequencing and Challenges

Alternative	General Sequence	Challenges
3. AGS	1. Offline: West ABs and One West SC Online: East SBs, East SCs and Two West SCs Construct: AGS 1&2 with Buffer Tanks 2. Offline: West ABs and All West SC Online: East ABs, East SCs and AGS 1 & 2 Construct: AGS 3&4 with Buffer Tanks 3. Offline: East ABs and SCs Online: AGS 1-4 Construct: PF EQ one tank at time	• Staged demolition of West SCs • Deep vertical excavation • Geotechnical and groundwater impacts • Increased truck traffic to haul debris and spoils



CTP Future Advanced Water Treatment Considerations

Potential Advanced Treatment Drivers

Potential Near-Term and Long-Term Drivers

Near-Term Advanced Treatment Drivers

- Potential near-term drivers are considered applicable for removal of emerging contaminants

Near-Term Drivers:

Advanced Wastewater Treatment

***Benefits**:*

- *Improve Water Quality Discharged to Ocean*
- *Reduced PFAS, 1,4-Dioxane, CECs, Microplastics, pathogens*
- *Recycled water capacity*
- *Meeting more stringent reuse requirements*

Long-Term Advanced Treatment Drivers

- Potential long-term is considered applicable if/when there is a driver to expand reuse options including implementing potable reuse

Long-Term Drivers:

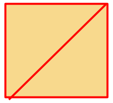
Potable Reuse

Benefits

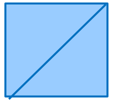
- *Improve Water Quality Discharged to Ocean*
- *High Level of Treatment*
- *Reduced Discharge to Ocean*
- *Multiple-Barrier Treatment*

These are example drivers in-line with the current industry. There are synergies with considering long-term drivers during near-term improvements planning (space considerations, technology selection, etc.)

Footprint Available for Future AWT with Secondary Configurations



Footprint Available for CAS, AGS and MBR Alternatives



Additional Footprint Available for MBR Alternative

Near-Term Drivers

Hazen

Potential Contaminants of Future Concern

1,4-Dioxane	Antibiotic resistant genes	Brominated flame retardants	Microplastics
Nanoparticles	PFOA / PFAS	Viruses	Next generation pesticides
	Disinfection by-products	Heavy metals from electronic waste	

Example Removal of CECs through Potential Future AWT

Contaminant	Oxidation		Adsorption	
	Ozone	Ultraviolet Advanced Oxidation Process (UV AOP)	Granular Activated Carbon (GAC)	Ion Exchange (IX)
Disinfection By-produced (DBPs)	Possibly, w/ BAF	No	Yes, 9 months – 1 yr regen.	MIEX yes. Alternatives in Testing
1,4-Dioxane	50 – 60%	> 90%	No	No
PFOA + PFAS	No	No	1-1.5 yr regen.	Yes
Short Chain PFAS/PFOA	No	No	<6 months regen.	In testing

Potential Regulatory Outlook for SOCWA CTP

Continue monitoring the status of regulations for:

- Emerging contaminants
- Air, water, and biosolids
- Energy and resiliency
- Effluent nutrient requirements

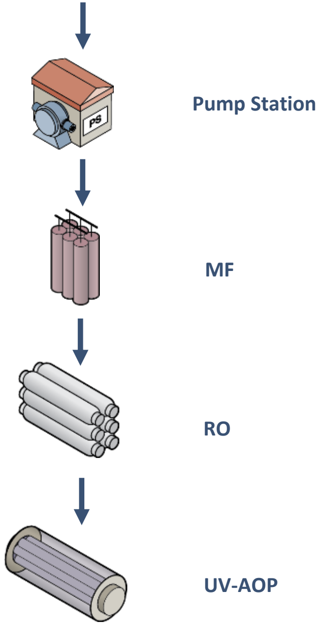
Potential Future Planning:

- Develop trigger-based master plan when treatment priorities and regulatory requirements have been identified
- Include a step-back analysis to understand potential reuse opportunities for the CTP water

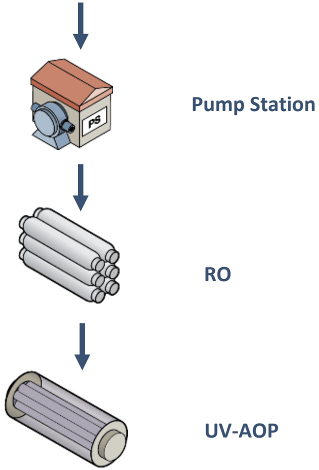
Envisioning a Potential Future AWT at CTP

Summary of Potential Future AWT Process Trains

CAS, AGS
Secondary Effluent



MBR
Effluent



Ongoing Demonstration work may allow MBR Plants to achieve potable reuse targets without needing MF upstream of RO in the AWT train

Site Layout: Membrane-Based Future AWT (CAS, AGS)

Site Layout: Membrane-Based Future AWT (MBR)

Site Layout Assumes Demonstration work Proves MF is not needed downstream of MBR

Water Reuse Considerations for CTP

- **Addressing near-term treatment drivers allows for consideration of long-term reuse goals**

- **Further studies needed to identify best path forward for advanced water treatment**

Next Steps

Next Steps

- Finalize brief technical memo summarizing this evaluation
- After TM submission, the project will be complete and SOCWA and Member Agencies can consider next steps

- Potential Project Next Steps:
  - **Progress key synergistic projects (i.e. CTP Aeration Improvements)**
  - **Consider a holistic step-back evaluation to determine potential regulatory drivers and evaluate regional demands for CTP water reuse**
  - **Consider a feasibility study to shortlist the leading alterative and complete a preliminary design**

This project supports SOCWA in being forward thinking with improvements to the CTP

CTP Facility Improvement Project & Reduction in Project Scope

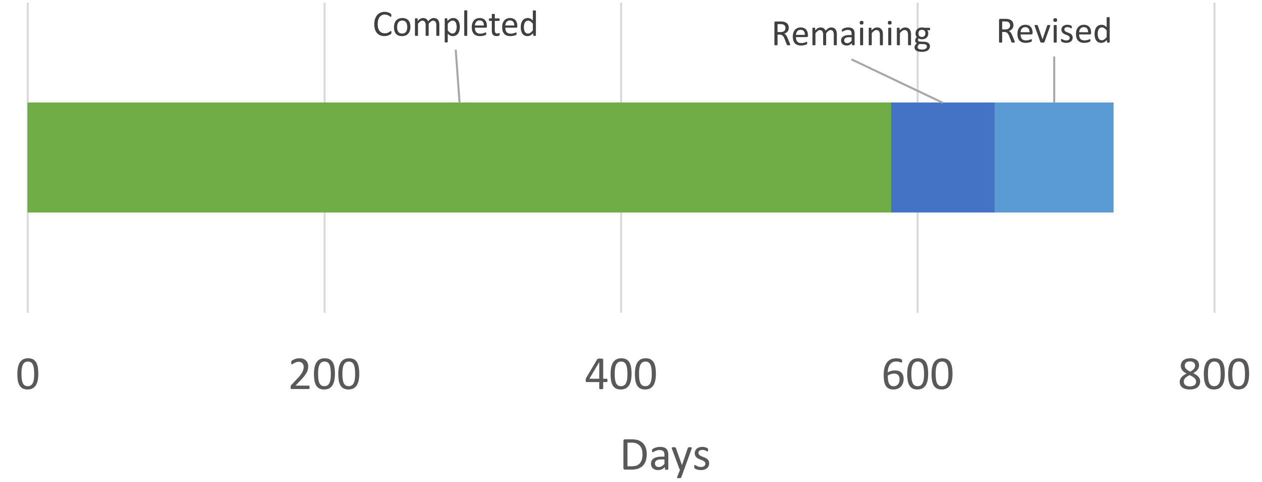
Agenda Item 5

Construction Update

April 1, 2021

Construction Schedule Update

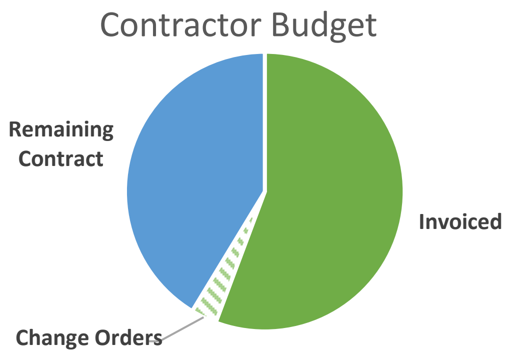
Schedule Completion	80%
Started	August 2019
Baseline Schedule Completion	June 2021
Revised Completion	August 2021



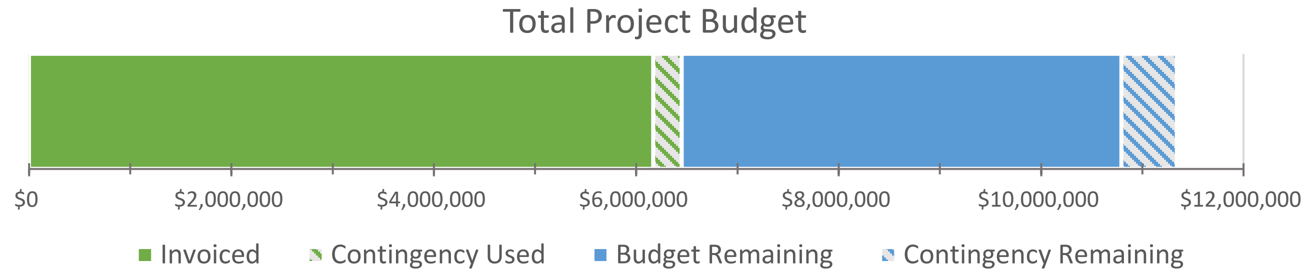
Data as of March 23, 2021

Schedule and Budget Update

Contractor Budget Completion	47%
Original Contract Value	$9,209,000
Change Orders	$282,869
Revised Contract Value	$9,491,869
Invoiced	$5,287,932



Total Project Budget Completion	48%
Original Contracts	$10,511,772
Contingency	$828,810
Invoiced	$6,168,020
Contingency Used	$282,869
Contract Remaining	$4,343,752
Contingency Remaining	$545,941



Construction Status Update

	Status	Est. % Complete
Switchgear Replacement & Electrical Improvements	Ongoing	95%
Secondary Clarifier Rehabilitations	Ongoing	70%
Grit Channel Rehabilitation	Ongoing	75%
Ferric Chloride Station Reconstruction	Ongoing	5%
Aeration Channel Construction	Not Started	-
Headworks Valve Replacements	Not Started	-
Drainage Pump Station Construction	Removed	n/a

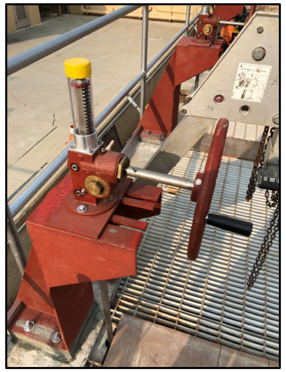
Main Switchgear Replacement (95% Complete)

- New electrical service from SCE
- Replaced main switchgear
- Repurposed building 10
- New duct banks and wires

- **Final electrical cutover in progress**

Secondary Clarifier Rehabilitation (70% Complete)

- Replaced sludge collection equipment and launders
- Replaced inlet, drain, and telescoping valves
- Replaced handrail
- Repaired concrete cracks
- **Completed 4 east clarifiers, working on 2nd (of 3) west clarifiers**



Grit Channel Rehabilitation (75% Complete)

- Replaced concrete coating in east grit channel

- **West channel ready for coating**

- Replaced aluminum grating and rebates

Major Project Changes

- Removed scope for new Drainage Pump Station construction
- Removed scope for new sludge collection equipment in west secondary clarifiers
- Changed foundation design for ferric chloride station
- Unforeseen concrete deterioration in grit channel

Removed Scoped

- Drainage Pump Station
  - Field conditions no longer matched design conditions
  - New PS won't fully abandon existing station
  - We will readdress in future project
  - Expected contract reduction amount ~$400,000

- West Secondary Sludge Collection Equipment
  - Significant equipment delivery delay would have delayed entire project
  - West equipment in better condition than east clarifiers
  - We will readdress in future project
  - Expected contract reduction amount ~$300,000

Project Outlook

- Work in west secondary clarifiers and west grit chambers back on track and will last another few months.

- Starting work on the ferric chloride containment structure next month.

- Overall project timeline is on schedule.

Agenda Item 7

PC-15 Committee Meeting

Meeting Date: April 1, 2021

TO: PC-15 Committee Board

FROM: David Baranowski, Senior Engineer

SUBJECT: Coastal Treatment Plant Sludge Force Main Replacement Project Geotechnical Services During Construction [Project Committee 15]

Overview

To support the construction of the Export Sludge Force Main Project, a geotechnical firm is needed for soils and materials testing. They will work in conjunction with the construction management firm to test soil samples, test backfill compaction, and to do concrete strength testing.

Proposals

SOCWA requested proposals from the following firms and asked them to assume 67 days of backfill monitoring plus additional testing per the plans and specifications:

Leighton
Ninyo & Moore

Both firms provided proposals (attached to this staff report) and are summarized below in Table 1. The proposals are an estimate of what each firm thinks the project will need. SOCWA will only pay for the actual services used on a time and materials basis.

Table 1 – Summary of Proposals

Firm	**Leighton**	**Ninyo & Moore**
Geologist	Jeff Hull	Michael Putt
Material Tests	18	30
Total Labor Hours	596	526
Total Cost	$79,879	$65,790

///

Cost Allocation

Table 2 – Cost allocation by member agency using the Ninyo & Moore proposal

Agency	Geotechnical Services
	3534-000
CLB	$ 24,941.28
EBSD	$ 1,963.88
MNWD	$ 19,246.03
SCWD	$ 19,638.81
Total	**$ 65,790.00**

Table 3 – Available budget

3534-000	3541-000	Total
$699,679	$4,045,345	$4,745,024

Project 3534-000 is already funded.

Table 4 – Project costs

Project Element	Cost	Contingency (8%)	Total
Construction	$3,107,346	$ 248,588	$3,355,934
EDSC	$ 150,800		$ 150,800
Biological Monitoring	$ 236,950		$ 236,950
Cultural Monitoring	$ 277,368		$ 277,368
Construction Management	$ 226,100		$ 226,100
Geotechnical Services	$ 65,790		$ 65,790
Total	**$4,064,354**	**$ 248,588**	**$4,312,942**

The project costs are within the current budget with an expected surplus of $432,082.

Recommended Action: The Engineering Committee recommend to the PC-15 Board to award the time and materials contract to Ninyo & Moore in the amount of $65,790 for the Geotechnical services during construction for the Coastal Treatment Plant Sludge Force Main Project.

Leighton Consulting, Inc.
A LEIGHTON GROUP COMPANY

February 16, 2021

Proposal No. IR21-055

South Orange County Wastewater Authority
34156 Del Obispo
Dana Point, CA 92629

Attention: Mr. David Baranowski
Senior Engineer

Subject: Proposal for Geotechnical/Materials Testing and Inspection Services
6-inch Diameter HDPE Export Sludge Force Main Replacement Pipeline
SOCWA Coastal Plant
28303 Alicia Parkway, (Intersection Awma Road)
Laguna Niguel, California

References: Dudek & Associates, Inc., 2010, South Orange County Wastewater Authority, Contract Documents for Construction, Coastal Treatment Plant Export Sludge Force Main Replacement 2020, Sheets 1 through 37A, dated October 29.

Ninyo & Moore, 2014, Geotechnical Evaluation, Export Sludge Force Main Replacement, South Orange County Wastewater Authority, Laguna Niguel, California, dated February 10; Project No. 202426006.

Leighton Consulting, Inc. (Leighton) is pleased to submit this proposal to provide geotechnical/materials testing and inspection services during construction of the subject pipeline project, proposed at the SOCWA Coastal Treatment Plant, 28303 Alicia Parkway, City of Laguna Niguel, California (site). Our proposed scope of work and fees are based on project plans, estimations of required hours and other logistical assumptions. Anticipated geotechnical services include bulk sampling of native backfill materials, imported aggregate base and shading sand, laboratory testing, and field observation and density testing of pipeline shading, utility backfill. A limited amount of subgrade preparation and concrete sampling and testing services have also been included.

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Per your request, the scope of our observation and testing services for this proposal is based on an estimated 550 total hours of soil observation and testing time and 300 linear feet of trench backfill pace per day. Materials testing includes one day of 4,000 psi concrete sampling/testing and follow-up laboratory strength testing, if required.

Our services are intended to satisfy the general requirements and specifications of the project design plans, entitled *Contract Documents for Construction of Coastal Treatment Plan Export Sludge Force Main Replacement 2020*, Sheets 1 through 37A, dated October 29, 2020, prepared by Dudek & Associates, Inc (Dudek). The plans were forwarded to our office via electronic mail on February 3, 2021. Our scope and budget have been calculated in absence of a project construction schedule.

We intend to perform our services on a time-and-expense basis as dispatched and scheduled by your designated site representative/contractor. The actual number of hours and fees required to complete the project may be more or less than the established budget. The presented budget is considered a not-to-exceed cost. If required, we will inform you in the event the budget is not sufficient to complete all services.

PROJECT DESCRIPTION

The subject pipeline will transect through alternating swales and subtle ridges in hillside terrain aligned roughly paralleling to the existing facility access road. The pipeline will extend from the SOCWA treatment plant northward to Alicia Parkway, a distance of approximately 16,431 feet (3.1 miles). The average pipeline depth ranges from approximately 6 to 10 with local depths up to 15 feet below existing grades. Our review of the project geotechnical report prepared by Ninyo & Moore indicates the pipeline will expose bedrock assigned to the Monterey and Topanga Formations, as well as landslide and older alluvium/terrace deposits. Each earth material type will require a different laboratory proctor test, and warrant application of different backfill testing criteria as pipeline construction progresses.

We understand the pipeline will cross/connect to existing roadways at the distal ends of the project, where replacement pavement sections will be required as part of construction (aggregate base and asphalt or concrete).

Summarized below are certain plan requirements referred to in preparation of this proposal.

<u>Per plan detail No. 1 - Typical Trench and Conduit Detail (Sheet D-1)</u>: 6-inch HDPE pipe shall be surrounded (shaded) by a clean sand of (S.E. 30 or greater) at a thickness of 6-inches below and 12-inches above the pipeline. We understand the compaction standard

for the shade sand is 90 percent of the maximum relative proctor density. The balance of trench backfill will consist of native soils compacted to a standard of 90% of the maximum relative proctor density. A 4-inch diameter fiber optic conduit will be installed within the upper section of the trench backfill at a depth of 24-inches below finish surfaces.

Per plan detail No. 3 – Trench Detail at Asphalt (Sheet D-1): Pipe shading shall extend 6-inches below and 6-inches above the pipeline, and native backfill will be compacted to a standard of 95% of the maximum relative proctor density. The overlying pavement section will be prepared by placement of 6-inches crushed aggregate base compacted to a standard of 95% relative to the maximum proctor density. The finish surface will be completed/capped with 3-inches of asphalt concrete, for which no compaction standard is specified.

Per plan detail No. 7 – Access Road/Trail Detail (Sheet D-1): Subgrades in trench areas crossing existing roads/trails will include placement of 12-inches native soils compacted to 95% of maximum relative proctor density.

Per Detail No. 4/C-12 – Concrete Pipe Encasement Detail (Sheet D-3): Pipeline shall be encased in 4,000 psi concrete near the Aliso Creek Wildlife and Habitat Enhancement Project (ACWHEP) Structure. Upon request, Leighton will dispatch an ACI certified inspector to perform temperature readings, slump tests and prepare test cylinders on the date of the concrete pour for the ACWHEP structure. In a prior designated sequence, we will subject the cylinders to a series of follow-up strength testing in our laboratory to verify conformance with design standards.

SCOPE OF WORK

The proposed scope of our services will include geotechnical observation and density testing during trench backfill operations and pavement subgrade areas, geotechnical laboratory testing, one day concrete sampling and strength testing, project management and certified payroll preparation. As site safety is the responsibility of the contractor, we intend to notify your on-site representative upon our arrival to and egress from the construction site. Our field representatives with be equipped with conventional and customary personal protection for construction sites, including a hard hat, orange vest and eye protection and hard-sole shoes. Please inform us of any additional personal protection requirements specific to this site and project.

Our field staff will prepare *Daily Field Reports* (DFRs) documenting work activities, number of hours incurred, and results of our testing. The DFR's will be presented to your project superintendent or designated field representative (e.g. construction manager) for discussion and verification. We will request their signature on the DFR to acknowledge their understanding of the report.

Scope of work tasks are summarized by task below:

- **TASK I – Field Observation / Testing / Sampling / Inspection:** Leighton will provide backfill observation and testing services during pipeline construction, as warranted by the earthwork contractor's schedule, backfill progress and other logistics. Field (in-situ) dry density and moisture content measurements will be obtained using a nuclear moisture and density gauge, in general accordance with ASTM D6938. In general accordance with your request, we have budgeted a total of 550 total hours of soil technician time for observation and testing, and 12 hours for periodic collection of bulk samples for laboratory analysis. This assumes a pace of 300 feet of trench backfill placement per day.

- **TASK II - Geotechnical Laboratory Testing:** Leighton will perform geotechnical laboratory testing to determine compaction criteria for differing backfill types, including conformance criteria for imported shading sand and/or aggregate base materials. Testing will include the ASTM D1557 modified Proctor laboratory maximum dry density and optimum moisture content ("compaction curves") and Sand Equivalent (SE). To enable accurate test results we will collect representative bulk samples of differing earth materials encountered along the alignment and transport them to our laboratory at least 2 days prior to use in density testing of the trench backfill. We estimate approximately eight (8) separate proctor tests will be required.

- **TASK III - Materials Laboratory Testing**: Leighton will provide an ACI inspector to attend to one concrete pour on the project, associated with placement of 4,000 psi concrete for the ACWHEP structure. We have budgeted 8 total hours of inspector time for sampling and testing during the pour. The inspector will prepare six (6) 4x8-inch cylinders and test the slump and temperature of the mix. The cylinders will be transferred to our laboratory where follow-up strength testing will be performed at 7 and 28 day intervals. The test results will be reviewed, stamped and signed by a Professional Engineer, and forwarded to you electronically.

- **TASK IV - Management:** A Leighton Field Operations Manager and Project Engineer will manage our staff and the execution of our services as necessary to maintain quality control, coordination and efficiency. Daily Field Reports (DFRs) will be written by our technicians in the field, subsequently reviewed by professional staff and prepared for distribution. Geotechnical laboratory test results will be reviewed for distribution. Geotechnical concerns encountered in the field and noted on DFRs will be brought to the attention of your project superintendent or designated representative. A final compacted fill report is **not** currently budgeted, but can be provided upon request at additional cost.

SCHEDULE

We understand pipeline excavation will begin in early March 2021. We are prepared to commence with the above-outlined tasks upon receipt of your signed authorization to proceed. For the initial inspection request we request our dispatch team be provided at least two (2) working days advance to facilitate the organization and scheduling of our field personnel. Inspections thereafter may be scheduled within one (1) working day (minimum 24 hour) notice. Calls to our dispatch (**866-*LEIGHTON***) after 3:00 pm (prior work day) or on weekends and holidays are not addressed until the first following working day, without prior arrangement. We anticipate our personnel will be required on both a periodic (part-time) and continuous (full-time) basis at different stages of construction. We expect the number of hours and site visits required to efficiently perform field observation and testing services, and document trench backfill placement, will be a function of trench depth and contractor practices. We request that you "partner-with-us" in management of the project budget by helping avoid unnecessary visits. We will work with your field representative to reduce standby time or unnecessary trips to the site.

We will need to collect representative bulk-samples of backfill material at least two working days before beginning backfill compaction, and where different soil types are encountered. This includes imported shading sand and aggregate base materials. Compaction curves for each soil type will be determined per ASTM D1557. Shading sand will be subjected to Sand Equivalent (SE) testing.

FEES

Time and Expense Fee Schedule

The above proposed geotechnical (backfill density) testing services will be performed during construction on a time-and-expense basis, at California Prevailing Wage unit rates listed on the attached 4-page *2019 Professional Fee Schedule*.

Budget Estimate

A breakdown of estimated hours and fees for this project is presented in Table 1, *Cost Estimate*, attached to the end of our proposal. We have applied a 10% discount to our 2019 Fee Schedule for this project. The total budget estimated to perform the above-outlined tasks is equal to **Seventy Nine Thousand Eight Hundred Seventy Nine Dollars** (**$79,879.00).**

California Prevailing Wage

Since this is a California public works project, we will need to obtain a **DIR Project ID** from you (the "awarding body") before we begin any prevailing wage work on site. For more information please access the below links:

https://www.dir.ca.gov/Public-Works/Awarding-Bodies.html

https://www.dir.ca.gov/pwc100ext/ExternalLookup.aspx

We have not included budget to staff your project with an apprentice. Although possible under California Prevailing Wage law, based on our experience, we do not anticipate an apprentice will be dispatched for training on this project. If we are required to provide training for an apprentice on your project, then additional fees would be required to cover that additional labor expense, beyond what we currently propose.

ASSUMPTIONS

The following assumptions were made in preparing this proposal, estimating our geotechnical testing services fee during pipeline backfilling:

- **Access**: We assume pipeline trenches will be safe and readily accessible to our staff and testing instruments during construction. The contractor will provide safe and adequate trench shoring and ingress/egress.
- **No Overtime**: Our estimate does **not** include overtime charges. Overtime work (over 8 hours per day, weekends or holidays) will be billed in accordance with the attached *2020 Professional Fee Schedule* (discounted 10%).
- **No Professional Consultation**: Our estimate does **not** include costs for geotechnical design consultation, plan reviews or third-party review.
- **Certified Payroll**: As we understand labor rates for non-professional employees (Field Technicians and Inspectors) on this project are subject to California Prevailing Wage Law, we are required to prepare a Certified Payroll as part of our invoicing.

EXCLUSIONS

The following tasks are not included as a part of our scope of work:

- **Final Report Preparation:** Compilation of all field and laboratory testing results, preparation of illustrations including density test location map, and drafting of a final report for agency submittal.

- **Supplemental Laboratory Testing:** Tests including Expansion Index (EI), corrosion potential and/or R-value (of pavement subgrades) testing are **not** anticipated nor currently budgeted.

- **Hazardous Materials Testing:** Testing for hazardous materials is not anticipated nor currently budgeted.

TERMS AND CONDITIONS

Provided SOCWA agrees with the proposed scope, schedule and fees outlined herein, and intends to retain Leighton to provide the subject services, we request a Purchase Order be issued to Leighton, to which this proposal will become an exhibit of. The scope of our services will be performed on a time-and-expense basis in accordance with the current agreement between SOCWA and Leighton Consulting, Inc., effective November 22, 2019, in effect until December 31, 2022.

Any changes in these terms and conditions may require a change in scope of services and/or fees. Your assent to our beginning work prior to written execution of a mutually acceptable contract constitutes your agreement that the terms and conditions of the attached *Master Services Agreement* shall control until such a definitive contract is executed by both parties.

CLOSURE

We appreciate this opportunity to be of service to San Antonio Water Company. If you have any questions or information that would update our scope of work and budget, then please contact us at your convenience at **866-*LEIGHTON*** or (949) 681-4265, directly at the phone extension and/or e-mail address listed below.

Respectfully submitted,

LEIGHTON CONSULTING, INC.

Jeff L. Hull

Jeff L. Hull, CEG
Associate Geologist
Extension 4265, jhull@leightongroup.com

JLH/lr

Attachments: Table 1 - Estimated Testing Fees (1 page)
2019 Professional Fee Schedule (4 pages)
Scope of Work Agreement (1 page)

Distribution: (1) addressee (via e-mailed PDF)

Leighton Consulting, Inc.

Table 1 Estimated Fees

SOCWA Coastal Plant

Geotech Observation/Testing - Sludge Pipeline Backfill

Proposal # IR21-055

TASK DESCRIPTION		RATE	UNITS	COST
TASK I - Field Observation / Testing / Sampling / Inspection				
	Bulk Soil Sample Collection			
Field Soils/Material Tester (Prevailing Wage)	Terrace Deposits	$129.00 / hour	2	$258.00
Field Soils/Material Tester (Prevailing Wage)	Monterey Formation	$129.00 / hour	2	$258.00
Field Soils/Material Tester (Prevailing Wage)	Topanga Formation	$129.00 / hour	2	$258.00
Field Soils/Material Tester (Prevailing Wage)	Landslide Deposits	$129.00 / hour	2	$258.00
Field Soils/Material Tester (Prevailing Wage)	Shading Sand	$129.00 / hour	2	$258.00
Field Soils/Material Tester (Prevailing Wage)	Aggregate Base	$129.00 / hour	2	$258.00
Mileage	6 x RT Irvine office	$0.56 / mile	150	$84.00
	Density Testing			
Field Soils/Material Tester (Prevailing Wage)	Sand Shading	$129.00 / hour	20	$2,580.00
Field Soils/Material Tester (Prevailing Wage)	Trench Backfill	$129.00 / hour	510	$65,790.00
Field Soils/Material Tester (Prevailing Wage)	Aggregate Base (trail/asphalt concrete crossings)	$129.00 / hour	20	$2,580.00
Mileage	50 x RT Irvine office	$0.56 / mile	1250	$700.00
	Concrete Testing			
Field Soils/Material Tester (Prevailing Wage)	Field Sampling / Test Cylinder Prep (ACWHEP)	$129.00 / hour	8	$1,032.00
Mileage	RT Irvine office	$0.56 / mile	25	$14.00
			SUBTOTAL	**$74,328.00**
TASK II - Geotechnical Laboratory Testing				
Modified Proctor compaction 4 inch mold (Methods A & B ASTM D1557)		$220.00 / each	7	$1,540.00
Modified Proctor compaction 6 inch mold (Method C ASTM D1557)		$245.00 / each	1	$245.00
Sand Equivalent (SE, ASTM D2419/CTM 217)		$105.00 / each	2	$210.00
			SUBTOTAL	**$1,995.00**
TASK III - Material Laboratory Testing				
Reports - Test Results		$17.00 / each	12	$204.00
Concrete cylinders compression (ASTM C39 4" x 8")		$22.00 / each	8	$176.00
Pick-up & delivery – (weekdays, per trip, <50 miles from Leighton office)		$90.00 / each	2	$180.00
			SUBTOTAL	**$560.00**
TASK IV - Management				
Associate	quality control	$203.00 / hour	4	$812.00
Field Supervisor	technician scheduling/coordinaiton	$132.00 / hour	8	$1,056.00
Laboratory Supervisor	sample disposition	$132.00 / hour	2	$264.00
Dispatcher	50 incidents	$72.00 / hour	8	$576.00
Project Administrator/Word Processor	Payroll	$72.00 / hour	4	$288.00
			SUBTOTAL	**$2,996.00**
			TOTAL ESTIMATED COST	**$79,879.00**

2019 PROFESSIONAL FEE SCHEDULE

CLASSIFICATION	$/HR
Technician I	78
Technician II / Special Inspector	89
Senior Technician / Senior Special Inspector	99
Prevailing Wage (field soils / materials tester) *	129
Prevailing Wage (Special Inspector) *	134
Prevailing Wage (Source Inspector, NDT and soil remediation O&M)*	139
System Operation & Maintenance (O&M) Specialist	129
Non Destructive Testing (NDT)	139
Deputy Inspector	99
Field / Laboratory Supervisor	132
Source Inspector	122
City of Los Angeles Deputy Building (including Grading) Inspector	140

* See Prevailing Wages in Terms and Conditions

CLASSIFICATION	$/HR
Project Administrator/Word Processor/Dispatcher	72
Information Specialist	99
CAD Operator	113
GIS Specialist	126
GIS Analyst	149
Staff Engineer / Geologist / Scientist	135
Senior Staff Engineer / Geologist / Scientist / ASMR	149
Operations / Laboratory Manager	162
Project Engineer / Geologist / Scientist	167
Senior Project Engineer / Geologist / Scientist / SMR	185
Associate	203
Principal	221
Senior Principal	266

GEOTECHNICAL LABORATORY TESTING

METHOD	$/TEST
CLASSIFICATION & INDEX PROPERTIES	
Photograph of sample	10
Moisture content (ASTM D2216)	20
Moisture & density (ASTM D2937) ring samples	30
Moisture & density (ASTM D2937) Shelby tube or cutting	40
Atterberg limits (ASTM D4318) 3 points:	150
- Single point, non-plastic	85
- Atterberg limits (organic ASTM D2487 / D4318)	180
- Visual classification as non-plastic (ASTM D2488)	10
Particle size:	
- Sieve only 1½ inch to #200 (AASHTO T27/ASTM C136/ASTM D6913/CTM 202)	135
- Large sieve 6 inch to #200 (AASHTO T27/ASTM C136/ASTM D6913/CTM 202)	175
- Hydrometer only (ASTM D7928)	110
- Sieve + hydrometer (≤3 inch sieve, ASTM 7928)	185
- Percent passing #200 sieve, wash only (ASTM D1140)	70
Specific gravity and absorption of fine aggregate (AASHTO T84/ASTM C128/ASTM D854/CTM 207)	125
Specific gravity and absorption of coarse aggregate (AASHTO T85/ASTM C127/CTM 206)	100
- Total porosity - on Shelby tube sample (calculated)	165
- Total porosity - on other sample (calculated)	155
Shrinkage limits (wax method, ASTM D4943)	126
Pinhole dispersion (ASTM D4647)	210
Dispersive characteristics (double hydrometer ASTM D4221)	90
As-received moisture & density (chunk/carved samples)	60
Sand Equivalent (SE, AASHTO T176/ASTM D2419/CTM 217)	105
COMPACTION & PAVEMENT SUBGRADE TESTS	
Standard Proctor compaction, (ASTM D698) 4 points:	
- 4 inch diameter mold (Methods A & B)	160
- 6 inch diameter mold (Method C)	215
Modified Proctor compaction (ASTM D1557) 4 points:	
- 4 inch diameter mold (Methods A & B)	220
- 6 inch diameter mold (Method C)	245
Check point (per point)	65
Relative compaction of untreated/treated soils/aggregates (CTM 216)	250
Relative density (0.1 ft mold, ASTM D4253, D4254)	235

METHOD	$/TEST
California Bearing Ratio (CBR, ASTM D1883) – 3 point	
- 3 point	500
- 1 point	185
R-Value (AASHTO T190/ASTM D2844/CTM 301) untreated soils/aggregates	310
R-Value (AASHTO T190/ASTM D2844/CTM 301) lime or cement treated soils/aggregates	340
SOIL CHEMISTRY & CORROSIVITY	
pH Method A (ASTM D4972 or CTM 643)	45
Electrical resistivity – single point – as received moisture	45
Minimum resistivity 3 moisture content points (ASTM G187/CTM 643)	90
pH + minimum resistivity (CTM 643)	130
Sulfate content - gravimetric (CTM 417 B Part 2)	70
Sulfate content - by ion chromatograph (CTM 417 Part 2)	80
Sulfate screen (Hach®)	30
Chloride content (AASHTO T291/CTM 422)	70
Chloride content – by ion chromatograph (AASHTO T291/CTM 422)	80
Corrosion suite: minimum resistivity, sulfate, chloride, pH (CTM 643)	265
Organic matter content (ASTM D2974)	65
SHEAR STRENGTH	
Pocket penetrometer	15
Direct shear (ASTM D3080, mod., 3 points):	
Consolidated undrained - 0.05 inch/min (CU)	285
Consolidated drained - <0.05 inch/min (CD)	345
Residual shear EM 1110-2-1906-IXA (price per each additional pass after shear)	50
Remolding or hand trimming of specimens (3 points)	90
Oriented or block hand trimming (per hour)	65
Single point shear	105
Torsional shear (ASTM D6467 / ASTM D7608)	820
CONSOLIDATION & EXPANSION/SWELL TESTS	
Consolidation (ASTM D2435):	195
Each additional time curve	45
Each additional load/unload w/o time reading	40
Expansion Index (EI, ASTM D4829)	130
Swell/collapse – Method A (ASTM D4546-A, up to 10 load/unloads w/o time curves)	290
Single load swell/collapse - Method B (ASTM D4546-B, seat, load & inundate only)	105

METHOD	$/TEST
TRIAXIAL TESTS	
Unconfined compression strength of cohesive soil (with stress/strain plot, ASTM D2166)	135
Unconsolidated undrained triaxial compression test on cohesive soils (UU, ASTM D2850, USACE Q test, per confining stress)	170
Consolidated undrained triaxial compression test for cohesive soils, (CU, ASTM D4767, USACE R-bar test) with back pressure saturation & pore water pressure measurement (per confining stress)	375
Consolidated drained triaxial compression test (CD, USACE S test), with volume change measurement. Price per soil type below EM 1110-2-1906(X):	
- Sand or silty sand soils (per confining stress)	375
- Silt or clayey sand soils (per confining stress)	500
- Clay soils (per confining stress)	705
- Three-stage triaxial (sand or silty sand soils)	655
- Three-stage triaxial (silt or clayey sand soils)	875
- Three-stage triaxial (clay soils)	1,235
Remolding of test specimens	65

METHOD	$/TEST
HYDRAULIC CONDUCTIVITY TESTS	
Triaxial permeability in flexible-wall permeameter with backpressure saturation at one effective stress (EPA 9100/ASTM D5084, falling head Method C):	310
- Each additional effective stress	120
- Hand trimming of soil samples for horizontal K	60
Remolding of test specimens	65
Permeability of granular soils (ASTM D2434)	135
Soil suction (filter paper method, ASTM D5298)	400
SOIL-CEMENT	
Moisture-density curve for soil-cement mixtures (ASTM D558)	240
Wet-dry durability of soil-cement mixtures (ASTM D559) [1]	1,205
Compressive strength of molded soil-cement cylinder (ASTM D1633)[1]	60
Soil-cement remolded specimen (for shear strength, consolidation, etc.) [1]	235

[1] Compaction (ASTM D558 maximum density) should also be performed – not included in above price

CONSTRUCTION MATERIALS LABORATORY TESTING

METHOD	$/TEST
CONCRETE STRENGTH CHARACTERISTICS	
Concrete cylinders compression (ASTM C39) (6” x 12”)	25
Concrete cylinders compression (ASTM C39) (4” x 8”)	22
Compression, concrete or masonry cores (testing only) ≤6 inch (ASTM C42)	40
Trimming concrete cores (per core)	20
Flexural strength of concrete (simple beam-3rd pt. loading, ASTM C78/CTM 523)	85
Flexural strength of concrete (simple beam-center pt. loading, ASTM C293/CTM 523)	85
Non shrink grout cubes (2 inch, ASTM C109/C1107)	25
Drying shrinkage - four readings, up to 90 days, 3 bars (ASTM C157)	400
Length of concrete cores (CTM 531)	40
HOT MIX ASPHALT (HMA)	
Resistance of compacted HMA to moisture-induced damage (AASHTO T283/CTM 371)	2,100
Hamburg Wheel, 4 briquettes (modified) (AASHTO T324)	900
Superpave gyratory compaction (AASHTO T312/ASTM D6925)	350
Extraction by ignition oven, percent asphalt (AASHTO T308/ASTM D6307/CTM 382)	150
Ignition oven correction/correlation values (AASHTO T308/ASTM D6307/CTM 382)	1,350
Extraction by centrifuge, percent asphalt (ASTM D2172)	150
Gradation of extracted aggregate (AASHTO T30/ASTM D5444/CTM 202)	135
Stabilometer, S-Value (ASTM D1560/CTM 366)	265
Bituminous mixture preparation (AASHTO R30/CTM 304)	80
Moisture content of HMA (AASHTO T329/ASTM D6037/CTM 370)	60
Bulk specific gravity of compacted HMA, molded specimen or cores, uncoated (AASHTO T166/ASTM D2726/CTM 308)	50
Bulk specific gravity of compacted HMA, molded specimen or cores, paraffin-coated (AASHTO T275/ASTM D1188/CTM 308)	55
Maximum density - Hveem (CTM 308)	200
Theoretical maximum density and specific gravity of HMA (AASHTO T209/ASTM D2041/CTM 309)	130
Thickness or height of compacted bituminous paving mixture specimens (ASTM D3549)	40
Wet track abrasion of slurry seal (ASTM D3910)	150
Rubberized asphalt (add to above rates)	+ 25%

METHOD	$/TEST
AGGREGATE PROPERTIES	
Bulk density and voids in aggregates (AASHTO T19/ASTM C29/ CTM 212)	50
Organic impurities in fine aggregate sand (AASHTO T21/ASTM C40/CTM 213)	60
LA Rattler-smaller coarse aggregate <1.5” (AASHTO T96/ASTM C131/ CTM 211)	200
LA Rattler-larger coarse aggregate 1-3” (AASHTO T96/ASTM C535/CTM 211)	250
Apparent specific gravity of fine aggregate (AASHTO T84/ASTM C128/ CTM 208)	130
Clay lumps, friable particles (AASHTO T112/ASTM C142)	175
Durability Index (AASHTO T210/ASTM D3744/CTM 229)	200
Moisture content of aggregates by oven drying (AASHTO T255/ ASTM C566/CTM 226)	40
Uncompacted void content of fine aggregate (AASHTO T304/ ASTM C1252/ CTM 234)	130
Percent of crushed particles (AASHTO T335/ASTM D5821/CTM 205)	135
Flat & elongated particles in coarse aggregate (ASTM D4791/CTM 235)	215
Cleanness value of coarse aggregate (CTM 227)	210
Soundness, magnesium (AASHTO T104/ASTM C88/CTM 214)	225
Soundness, sodium (AASHTO T104/ASTM C88/CTM 214)	650
MASONRY	
Mortar cylinders (2” by 4”, ASTM C780)	25
Grout prisms (3” by 6”, ASTM C1019)	25
Masonry cores compression, ≤6” diameter (testing only, ASTM C42)	40
Masonry core-shear, Title 24 (test only)	80
Veneer bond strength, cost for each (5 required, ASTM C482)	55
CMU compression to size 8” x 8” x 16” (3 required, ASTM C140)	45
CMU moisture content, absorption & unit weight (6 required, ASTM C140)	40
CMU linear drying shrinkage (ASTM C426)	175
CMU grouted prisms (compression test ≤8” x 8” x 16”, ASTM C1314)	180
CMU grouted prisms (compression test > 8” x 8” x 16”, ASTM C1314)	250
BRICK	
Compression (cost for each, 5 required, ASTM C67)	40

METHOD	$/TEST
REINFORCING STEEL	
Rebar tensile test up to ≤ No. 10 bars (ASTM A370)	45
Rebar tensile test > No. 10 bars ≤ No. 17 (ASTM A370)	100
Rebar bend test, up to ≤ No. 10 bars (ASTM A370)	45
Rebar bend test > No. 10 bars ≤ No. 17 (ASTM A370)	150
Epoxy coated rebar/dowel film thickness (coating) test (ASTM A775)	45
Epoxy coated rebar/dowel continuity (Holiday) test (ASTM A775)	65
Epoxy coated rebar flexibility/bend test, up to No. 11 (ASTM A775)	55
Tensile strength, ≤100,000 pounds axial load (ASTM A370)	45
Prestressing wire, tension (ASTM A416)	150
Sample preparation (cutting)	50
Resistance butt-welded hoops/bars, up to No. 10 (CTM 670)	180
Post-tensioned bars (ASTM A772)	420

METHOD	$/TEST
SPRAY APPLIED FIREPROOFING	
Unit weight (density, ASTM E605)	60
BEARING PADS/PLATES AND JOINT SEAL	
Elastomeric bearing pads (Caltrans SS 51-3)	990
Elastomeric bearing pad with hardness and compression tests (Caltrans SS 51-3)	1230
Type A Joint Seals (Caltrans SS 51-2)	1620
Type B Joint Seals (Caltrans SS 51-2)	1530
Bearing plates (A536)	720
STREET LIGHTS/SIGNALS	
100W HPS Lighting (Caltrans RSS 86)	1296
SAMPLE TRANSPORT	**$/TRIP**
Pick-up & delivery (weekdays, per trip, <50 mile radius from Leighton office)	90

EQUIPMENT, SUPPLIES & MATERIALS

	$/UNIT	
1/4 inch Grab plates	5	each
1/4 inch Tubing (bonded)	0.55	foot
1/4 inch Tubing (single)	0.35	foot
3/8 inch Tubing, clear vinyl	0.55	foot
4-Gas meter (RKI Eagle or similar)/GEM 2000	130	day
Air flow meter and purge pump (200 cc/min)	50	day
Box of 24 soil drive-sample rings	120	box
Brass sample tubes	10	each
Caution tape (1000-foot roll)	20	each
Combination lock or padlock	11	each
Compressed air tank and regulator	50	day
Concrete coring machine (≤6-inch-dia)	150	day
Consumables (gloves, rope, soap, tape, etc.)	35	day
Core sample boxes	11	each
Crack monitor	25	each
Cutoff saws, reciprocating, electric (Sawzall®)	75	day
Disposable bailers	12	each
Disposable bladders	10	each
Dissolved oxygen meter	45	day
DOT 55-gallon containment drum with lid	65	drum
Double-ring infiltrometer	125	day
Dual-stage interface probe	80	day
Dynamic Cone Penetrometer	400	day
Generator, portable gasoline fueled, 3,500 watts	90	day
Global Positioning System/Laser Range Finder	80	day
Hand auger set	90	day
HDPE safety fence (≤100 feet)	40	roll
Horiba U-51 water quality meter	135	day
Light tower (towable vertical mast)	150	day
Magnehelic gauge	15	day
Manometer	25	day

	$/UNIT	
Mileage (IRS Allowable)	0.58	mile
Moisture test kit (excludes labor to perform test, ASTM E1907)	60	test
Nuclear moisture and density gauge	88	day
Pachometer	25	day
Particulate Monitor	125	day
pH/Conductivity/Temperature meter	55	day
Photo-Ionization Detector (PID)	120	day
Pump, Typhoon 2 or 4 stage	50	day
QED bladder pump w/QED control box	160	day
Quire fee – Phase I only	200	each
Resistivity field meter & pins	50	day
Slip / threaded cap, 2-inch or 4-inch diameter, PVC Schedule 40	15	each
Slope inclinometer	200	day
Soil sampling T-handle (Encore)	10	day
Soil sampling tripod	35	day
Stainless steel bailer	40	day
Submersible pump, 10 gpm, high powered Grundfos 2-inch with controller	160	day
Submersible pump/transfer pump, 10-25 gpm	50	day
Support service truck usage (well installation, etc.)	200	day
Survey/fence stakes	8	each
Tedlar® bags	18	each
Traffic cones (≤25)/barricades (single lane)	50	day
Turbidity meter	70	day
Tyvek® suit (each)	18	each
Vapor sampling box	55	day
Vehicle usage (carrying equipment)	20	hour
VelociCalc	35	day
Visqueen (20 x 100 feet)	100	roll
Water level indicator (electronic well sounder) <300 feet deep well	60	day
ZIPLEVEL®	15	day

Other specialized geotechnical and environmental testing & monitoring equipment are available, and priced per site

TERMS & CONDITIONS

- **Expiration:** This fee schedule is effective through December 31, 2019 after which remaining work will be billed at then-current rates.

- **Proposal Expiration:** Proposals are valid for at least 30 days, subject to change after 30 days; unless otherwise stated in the attached proposal.

- **Prevailing Wages:** Our fees for prevailing wage work are based upon California prevailing wage laws and wage determinations. Unless specifically indicated in our proposal, costs for apprentice are not included. If we are required to have an apprentice on your project, you will be notified and additional fees will be charged.

- **Overtime:** Standard overtime rate is per California Labor Law and is billed at 1.5 or 2 times their hourly billing rate. Overtime rate for non-exempt field personnel working on a Leighton observed holiday is billed at 2 times their hourly billing rate. Overtime rate for Prevailing wage work is per the California Department of Industrial Relations (DIR) determination and is multiplied at 1.5 to 2 times their hourly billing rate.

- **Expert Witness Time:** Expert witness deposition and testimony will be charged at 2 times hourly rates listed on the previous pages, with a minimum charge of four hours per day.

- **Minimum Field Hourly Charges:** For Field Technicians, Special Inspectors or any on-site (field) materials testing services:
  4 hours: 4-hour minimum charge up to the first four hours of work
  8 hours: 8-hour minimum charge for over four hours of work, up to eight hours.
  Project time accrued includes portal to portal travel time.

- **Outside Direct Costs:** Heavy equipment, subcontractor fees and expenses, project-specific permits and/or licenses, project-specific supplemental insurance, travel, subsistence, project-specific parking charges, shipping, reproduction, and other reimbursable expenses will be invoiced at cost plus 18%, unless billed directly to and paid by client.

- **Insurance & Limitation of Liability:** These rates are predicated on standard insurance coverage and a limit of Leighton's liability equal to our total fees for a given project.

- **Invoicing:** Invoices are rendered monthly, payable upon receipt in United States dollars. A service charge of 1½-percent per month will be charged for late payment.

- **Client Disclosures:** Client agrees to provide all information in Client's possession about actual or possible presence of buried utilities and hazardous materials on the project site, prior to fieldwork, and agrees to reimburse Leighton for all costs related to unanticipated discovery of utilities and/or hazardous materials. Client is also responsible for providing safe and legal access to the project site for all Leighton field personnel.

- **Earth Material Samples:** Quoted testing unit rates are for soil and/or rock (earth) samples free of hazardous materials. Additional costs will accrue beyond these standard testing unit rates for handling, testing and/or disposing of soil and/or rock containing hazardous materials. Hazardous materials will be returned to the site or the site owner's designated representative at additional cost not included in listed unit rates. Standard turn-around time for geotechnical-laboratory test results is 10 working days. Samples will be stored for 2 months, after which they will be discarded. Prior documented notification is required if samples need to be stored for a longer time. A monthly storage fee of $10 per bag and $5 per sleeve or tube will be applied. Quoted unit rates are only for earth materials sampled in the United States. There may be additional cost for handling imported samples.

- **Construction Material Samples:** After all designated 28-day breaks for a given sample set meet specified compressive or other client-designated strength, all "hold" cylinders or specimens will be automatically disposed of, unless specified in writing prior to the 28-day break. All other construction materials will be disposed of after completion of testing and reporting

SCOPE OF WORK AGREEMENT

Tasks outlined in this *Scope of Work Agreement* for geotechnical (backfill) testing services during pipeline installation, effective February 16, 2021, will be performed in accordance with our existing Agreement for Goods/Technical Services Between South Orange County Wastewater Authority and Leighton Consulting, Inc. for Geotechnical Observation and Materials Testing/Inspection Services, dated (effective) November 22, 2019, in effect until December 31, 2022.

PROJECT LOCATION: SOCWA access road between Coastal facility and Alicia Parkway, City of Laguna Niguel, California

DESCRIPTION OF SERVICES: Geotechnical (soils density) and laboratory testing of pipeline backfill. See Proposal (IR21-055) dated February 16, 2021.

LEIGHTON CONSULTING:	**CLIENT:**
Leighton Consulting, Inc.	South Orange County Wastewater Authority
17781 Cowan	34156 Del Obispo
Irvine, California 92614	Dana Point, California 92629
Telephone: (949) 250-1421	Telephone: (949) 234-5404
Email: jhull@leightogroup.com	Email: dbaranowski@socwa.com
Prime Contact: **Mr. Jeff Hull**	Prime Contact: **Mr. David Baranowski**

FEE: Our services during construction shall be undertaken on a time-and-expense basis using Prevailing Wage rates, for a total estimated fee **Seventy Nine Thousand Eight Hundred Seventy Nine Dollars ($79,879.00).** Our labor rates will be invoiced in accordance with the attached *2019 Professional Fee Schedule (discounted 10%)*.

I have reviewed and agree to this scope of work.

LEIGHTON CONSULTING, INC.	**SOUTH ORANGE COUNTY WASTEWATER AUTHORITY**
By (Signature)	By (Signature)
(Print Name)	(Print Name)
Date	Date

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

February 24, 2021
Proposal No. 04-03147

Mr. David Baranowski, P.E.
South Orange County Water Authority
34156 Del Obispo Street
Dana Point, California 92629

Subject: Proposal for Geotechnical and Materials Testing Services
Coastal Treatment Plant Export Sludge Force Main Project
Orange County, California

Dear Mr. Baranowski:

Ninyo & Moore is pleased to submit this proposal for the geotechnical and materials testing services during construction of the Coastal Treatment Plant Export Sludge Force Main project in Orange County, California. Ninyo & Moore provided the project geotechnical investigation and design work. Therefore, we are very familiar with the project requirements. Based on our review of the project plans and our discussions with you, we understand that the project will generally consist of installing a new 6-inch diameter pipe from the Costal Treatment Plant to a tie-in point on Alicia Parkway. The pipe will be located within the Aliso Canyon Wilderness Park. The pipe alignment parallels the east side of Aliso Creek. The pipe will have up to 13 feet of backfill cover. Jack and bore of steel casing will be installed between Stations 74+00 and 80+63. Pipe concrete encasement will be constructed at Station 100+00. The project also includes a Terra Cell slope protection system, rip-rap, and rock groin to protect the creek banks. We also understand that the anticipated level of effort for inspection and testing is 67 days.

SCOPE OF SERVICES

Based on our understanding of the proposed construction and our experience with similar projects, we propose to provide the following scope of services:

- Project coordination and management, including work scheduling and review of the project plans, specifications and contract documents.
- Field Technician services for observation, sampling and testing during trench backfill, subgrade preparation and aggregate base placement. Field density tests will be taken to check the contractor's compaction efforts.
- Field American Concrete Institute (ACI) Concrete Technician services for observation, sampling and testing of concrete including checking mix design, temperature, slump, air entrained, unit weight and casting a set of compressive strength samples for each batch of material.

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- Laboratory testing, including proctor density, sieve analysis, sand equivalent and compressive strength testing of concrete samples obtained in the field.
- Preparation of daily reports and test data sheets to document the items inspected.
- Preparation of a Final Compaction report which presents our opinion of the field operations and summarizes the field density tests results.

ASSUMPTIONS

Based on our experience with similar projects, the following assumptions have been made in the preparation of our scope of services:

- Our services will be scheduled and coordinated by the construction management and inspection team on an as-needed basis.
- Our services are subject to prevailing wage requirements.

ESTIMATED FEE

We propose to provide our services on a time-and-materials basis in accordance with the attached Schedule of Fees and Schedule of Fees for Laboratory Testing. Our estimated fees for the scope of services described herein are presented in the attached Table 1.

Ninyo & Moore appreciates the opportunity to provide services on this project, and we look forward to working with you.

Sincerely,
NINYO & MOORE

Michael Putt
Principal Geologist

Alfredo "Tino" Rodriguez
Principal/Construction Services

MLP/AR/mlc

Attachments: Table 1 – Breakdown of Estimated Fee
Schedule of Fees

Table 1 - Breakdown of Estimated Fee							
Field Services							
Senior Project Engineer/Geologist	8	hours	@	$ 163.00	/hour	$	1,304.00
Senior Field Technician - Trench Backfill	440	hours	@	$ 97.00	/hour	$	42,680.00
Senior ACI Concrete Technician	8	hours	@	$ 97.00	/hour	$	776.00
Vehicle and Equipment Expense	456	hours	@	$ 15.00	/hour	$	6,840.00
				Subtotal		**$**	**51,600.00**
Laboratory Testing							
Proctor Density	16	tests	@	$ 220.00	/test	$	3,520.00
Sieve Analysis	4	tests	@	$ 145.00	/test	$	580.00
Sand Equivalent	2	tests	@	$ 125.00	/test	$	250.00
Compressive Strength (Concrete)	8	tests	@	$ 30.00	/test	$	240.00
						$	**4,590.00**
Project Coordination and Management							
Principal Project Engineer/Geologist	8	hours	@	$ 178.00	/hour	$	1,424.00
Senior Project Engineer/Geologist	32	hours	@	$ 163.00	/hour	$	5,216.00
				Subtotal		**$**	**6,640.00**
Report Preparation							
Principal Engineer/Geologist	4	hours	@	$ 178.00	/hour	$	712.00
Senior Project Engineer/Geologist	12	hours	@	$ 163.00	/hour	$	1,956.00
Data Processing	4	hours	@	$ 73.00	/hour	$	292.00
				Subtotal		**$**	**2,960.00**
TOTAL ESTIMATED FEE						**$**	**65,790.00**

Schedule of Fees

Hourly Charges for Personnel

Professional Staff

Principal Engineer/Geologist/Environmental Scientist/Certified Industrial Hygienist	$ 178
Senior Engineer/Geologist/Environmental Scientist	$ 168
Senior Project Engineer/Geologist/Environmental Scientist	$ 163
Project Engineer/Geologist/Environmental Scientist	$ 156
Senior Staff Engineer/Geologist/Environmental Scientist	$ 142
Staff Engineer/Geologist/Environmental Scientist	$ 126
GIS Analyst	$ 116
Technical Illustrator/CAD Operator	$ 92

Field Staff

Certified Asbestos/Lead Technician	$ 163
Field Operations Manager	$ 112
Nondestructive Examination Technician (UT, MT, LP)	$ 108
Supervisory Technician	$ 98
Special Inspector (Concrete, Masonry, Structural Steel, Welding, and Fireproofing)	$ 98
Senior Technician	$ 97
Technician	$ 92

Administrative Staff

Information Specialist	$ 78
Geotechnical/Environmental/Laboratory Assistant	$ 76
Data Processor	$ 73

Other Charges

Concrete Coring Equipment (includes technician)	$ 190/hr
Anchor Load Test Equipment (includes technician)	$ 190/hr
GPR Equipment	$ 180/hr
Inclinometer	$ 100/hr
Hand Auger Equipment	$ 80/hr
Rebar Locator (Pachometer)	$ 25/hr
Vapor Emission Kit	$ 65/kit
Nuclear Density Gauge	$ 12/hr
X-Ray Fluorescence	$ 70/hr
PID/FID	$ 25/hr
Air Sampling Pump	$ 10/hr
Field Vehicle	$ 15/hr
Expert Witness Testimony	$ 450/hr
Direct Expenses	Cost plus 15 %

Special equipment charges will be provided upon request.

Notes

For field and laboratory technicians and special inspectors, overtime rates at 1.5 times the regular rates will be charged for work performed in excess of 8 hours in one day Monday through Friday and all day on Saturday. Rates at twice the regular rates will be charged for all work in excess of 12 hours in one day, all day Sunday and on holidays.

Field technician and special inspection hours are charged at a 4-hour minimum, and 8-hour minimum for hours exceeding 4 hours.

Invoices are payable upon receipt. A service charge of 1.5 percent per month may be charged on accounts not paid within 30 days.

Our rates will be adjusted in conjunction with the increase in the Prevailing Wage Determination during the life of the project, as applicable.

The terms and conditions are included in Ninyo & Moore's Work Authorization and Agreement form.

Schedule of Fees for Laboratory Testing

SOILS

Atterberg Limits, D 4318, CT 204	$ 170
California Bearing Ratio (CBR), D 1883	$ 550
Chloride and Sulfate Content, CT 417 & CT 422	$ 175
Consolidation, D 2435, CT 219	$ 300
Consolidation, Hydro-Collapse only, D 2435	$ 150
Consolidation – Time Rate, D 2435, CT 219	$ 200
Direct Shear – Remolded, D 3080	$ 350
Direct Shear – Undisturbed, D 3080	$ 300
Durability Index, CT 229	$ 175
Expansion Index, D 4829, IBC 18-3	$ 190
Expansion Potential (Method A), D 4546	$ 170
Geofabric Tensile and Elongation Test, D 4632	$ 200
Hydraulic Conductivity, D 5084	$ 350
Hydrometer Analysis, D 422, CT 203	$ 220
Moisture, Ash, & Organic Matter of Peat/Organic Soils	$ 120
Moisture Only, D 2216, CT 226	$ 35
Moisture and Density, D 2937	$ 45
Permeability, CH, D 2434, CT 220	$ 300
pH and Resistivity, CT 643	$ 175
Proctor Density D1557, D 698, CT 216, AASHTO T-180	$ 220
Proctor Density with Rock Correction D 1557	$ 340
R-value, D 2844, CT 301	$ 375
Sand Equivalent, D 2419, CT 217	$ 125
Sieve Analysis, D 422, CT 202	$ 145
Sieve Analysis, 200 Wash, D 1140, CT 202	$ 100
Specific Gravity, D 854	$ 125
Thermal Resistivity (ASTM 5334, IEEE 442)	$ 925
Triaxial Shear, C.D, D 4767, T 297	$ 550
Triaxial Shear, C.U., w/pore pressure, D 4767, T 2297 per pt	$ 450
Triaxial Shear, C.U., w/o pore pressure, D 4767, T 2297 per pt	$ 350
Triaxial Shear, U.U., D 2850	$ 250
Unconfined Compression, D 2166, T 208	$ 180

MASONRY

Brick Absorption, 24-hour submersion, 5-hr boiling, 7-day, C 67	$ 70
Brick Compression Test, C 67	$ 55
Brick Efflorescence, C 67	$ 55
Brick Modulus of Rupture, C 67	$ 50
Brick Moisture as received, C 67	$ 45
Brick Saturation Coefficient, C 67	$ 60
Concrete Block Compression Test, 8x8x16, C 140	$ 70
Concrete Block Conformance Package, C 90	$ 500
Concrete Block Linear Shrinkage, C 426	$ 200
Concrete Block Unit Weight and Absorption, C 140	$ 70
Cores, Compression or Shear Bond, CA Code	$ 70
Masonry Grout, 3x3x6 prism compression, C 39	$ 45
Masonry Mortar, 2x4 cylinder compression, C 109	$ 35
Masonry Prism, half size, compression, C 1019	$ 120
Masonry Prism, Full size, compression, C 1019	$ 200

REINFORCING AND STRUCTURAL STEEL

Chemical Analysis, A 36, A 615	$ 135
Fireproofing Density Test, UBC 7-6	$ 90
Hardness Test, Rockwell, A 370	$ 80
High Strength Bolt, Nut & Washer Conformance, per assembly, A 325	$ 150
Mechanically Spliced Reinforcing Tensile Test, ACI	$ 175
Pre-Stress Strand (7 wire), A 416	$ 170
Reinforcing Tensile or Bend up to No. 11, A 615 & A 706	$ 75
Structural Steel Tensile Test: Up to 200,000 lbs., A 370	$ 90
Welded Reinforcing Tensile Test: Up to No. 11 bars, ACI	$ 80
Specific Gravity and Absorption, Coarse, C 127, CT 206	$ 115

ROOFING

Built-Up Roofing, Cut-Out Samples, D 2829	$165/200
Roofing Materials Analysis, D 2829	$500/750
Roofing Tile Absorption, (set of 5), C 67	$ 250
Roofing Tile Strength Test, (set of 5), C 67	$ 250

CONCRETE

Cement Analysis Chemical and Physical, C 109	$ 1650/1850
Compression Tests, 6x12 Cylinder, C 39	$ 35
Concrete Mix Design Review, Job Spec	$ 300
Concrete Mix Design, per Trial Batch, 6 cylinder, ACI	$ 850
Concrete Cores, Compression (excludes sampling), C 42	$ 120
Drying Shrinkage, C 157	$ 400
Flexural Test, C 78	$ 85
Flexural Test, C 293	$ 85
Flexural Test, CT 523	$ 95
Gunite/Shotcrete, Panels, 3 cut cores per panel and test, ACI	$ 275
Lightweight Concrete Fill, Compression, C 495	$ 80
Petrographic Analysis, C 856	$ 2,000
Restrained Expansion of Shrinkage Compensation	$ 450
Splitting Tensile Strength, C 496	$ 100
3x6 Grout, (CLSM), C 39	$ 55
2x2x2 Non-Shrink Grout, C 109	$ 55

ASPHALT

Air Voids, T 269	$ 85
Asphalt Mix Design, Caltrans (incl. Aggregate Quality)	$ 4,500
Asphalt Mix Design Review, Job Spec	$ 180
Dust Proportioning, CT LP-4	$ 85
Extraction, % Asphalt, including Gradation, D 2172, CT 382	$ 250
Extraction, % Asphalt without Gradation, D 2172, CT 382	$ 150
Film Stripping, CT 302	$ 120
Hveem Stability and Unit Weight D 1560, T 246, CT 366	$ 225
Marshall Stability, Flow and Unit Weight, T 245	$ 240
Maximum Theoretical Unit Weight, D 2041, CT 309	$ 150
Moisture Content, CT 370	$ 95
Moisture Susceptibility and Tensile Stress Ratio, T 238, CT 371	$ 1,000
Slurry Wet Track Abrasion, D 3910	$ 150
Superpave, Asphalt Mix Verification (incl. Aggregate Quality)	$ 4,900
Superpave, Gyratory Unit Wt., T 312	$ 100
Superpave, Hamburg Wheel, 20,000 passes, T 324	$ 1,000
Unit Weight sample or core, D 2726, CT 308	$ 100
Voids in Mineral Aggregate, (VMA) CT LP-2	$ 90
Voids filled with Asphalt, (VFA) CT LP-3	$ 90
Wax Density, D 1188	$ 140

AGGREGATES

Absorption, Coarse, C 127	$ 40/60
Absorption, Fine, C 128	$ 40/60
Clay Lumps and Friable Particles, C 142	$ 180
Cleanness Value, CT 227	$ 180
Crushed Particles, CT 205	$ 175
Durability, Coarse or Fine, CT 229	$ 205
Fine Aggregate Angularity, ASTM C 1252, T 304, CT 234	$ 180
Flat and Elongated Particle, D 4791	$ 220
Lightweight Particles, C 123	$ 180
Los Angeles Abrasion, C 131 or C 535	$ 200
Material Finer than No. 200 Sieve by Washing, C 117	$ 90
Mortar Making Properties of Fine Aggregate, C 87	$ 275/350
Organic Impurities, C 40	$ 90
Potential Alkali Reactivity, Mortar Bar Method, Coarse, C 1260	$ 1,250
Potential Alkali Reactivity, Mortar Bar Method, Fine, C 1260	$ 950
Potential Reactivity of Aggregate (Chemical Method), C 289	$ 475
Sand Equivalent, T 176, CT 217	$ 125
Sieve Analysis, Coarse Aggregate, T 27, C 136	$ 120
Sieve Analysis, Fine Aggregate (including wash), T 27, C 136	$ 145
Sodium Sulfate Soundness, C 88	$ 450
Specific Gravity and Absorption, Coarse, C 127, CT 206	$ 115
Specific Gravity and Absorption, Fine, C 128, CT 207	$ 175

Special preparation of standard test specimens will be charged at the technician's hourly rate.
Ninyo & Moore is accredited to perform the AASHTO equivalent of many ASTM test procedures.