AGENDA
IRVINE RANCH WATER DISTRICT
ENGINEERING AND OPERATIONS COMMITTEE
TUESDAY, MAY 19, 2020

Due to COVID-19, this meeting will be conducted as a teleconference pursuant to the provisions of the Governor's Executive Orders N-25-20 and N-29-20, which suspend certain requirements of the Ralph M. Brown Act. Members of the public may not attend this meeting in person.

Participation by members of the Committee will be from remote locations. Public access and participation will only be available telephonically/electronically.

To virtually attend the meeting and to be able to view any presentations or additional materials provided at the meeting, please join online via Webex using the link and information below:

Via Web:
https://irwd.my.webex.com/irwd.my/j.php?MTID=macbc19f2cdaf7df3cc3b7be1185fb8db

Meeting Number (Access Code): 629 135 726
Meeting Password: GJsfHGEA832 (45734432 from phones and video systems)

After joining the meeting, in order to ensure all persons can participate and observe the meeting, please select the "Call in" option and use a telephone to access the audio for the meeting by using the call-in information and attendee identification number provided.

As courtesy to the other participants, please mute your phone when you are not speaking.

PLEASE NOTE: Participants joining the meeting will be placed into the WebEx lobby when the Committee enters closed session. Participants who remain in the "lobby" will automatically be returned to the open session of the Committee once the closed session has concluded. Participants who join the meeting while the Committee is in closed session will receive a notice that the meeting has been locked. They will be able to join the meeting once the closed session has concluded.

CALL TO ORDER 10:00 a.m.

ATTENDANCE Committee Chair: Doug Reinhart _____
Committee Member: John Withers _____

ALSO PRESENT

Paul Cook	_____	Kevin Burton	_____	Wendy Chambers	_____
Jose Zepeda	_____	Paul Weghorst	_____	Cheryl Clary	_____
Rich Mori	_____	Eric Akiyoshi	_____	Richard Mykitta	_____
Kelly Lew	_____	Jim Colston	_____	Ken Pfister	_____
Lars Oldewage	_____	Malcolm Cortez	_____	Scott Toland	_____
John Dayer	_____	Bruce Newell	_____	Mitch Robinson	_____
Belisario Rios	_____	Rich Mori		_____	
_____	_____	_____	_____	_____	_____

PUBLIC COMMENT NOTICE

If you wish to address the Committee on any item, please submit a request to speak via the "chat" feature available when joining the meeting virtually. Remarks are limited to three minutes per speaker on each subject. You may also submit a public comment in advance of the meeting by emailing comments@irwd.com before 7:30 a.m. on Tuesday, May 19, 2020.

ALL VOTES SHALL BE TAKEN BY A ROLL CALL VOTE.

COMMUNICATIONS

1. Notes: Burton
2. Public Comments
3. Determine the need to discuss and/or take action on item(s) introduced that came to the attention of the District subsequent to the agenda being posted.
4. Determine which items may be approved without discussion.

INFORMATION

5. UPCOMING PROJECTS STATUS REPORT – CORTEZ / AKIYOSHI / LEW / MORI / BURTON

   Recommendation: Receive and file.

6. SYPHON RESERVOIR IMPROVEMENTS GEOTECHNICAL INVESTIGATION UPDATE – TOLAND / MORI / BURTON

   Recommendation: Receive and file.

ACTION

7. CAPSTONE THREE-YEAR FACTORY PROTECTION PLAN AGREEMENT FOR THE BIOSOLIDS AND ENERGY RECOVERY FACILITY PROJECT – O'NEILL / MYKITTA / CHAMBERS

   Recommendation: That the Board authorize the General Manager to execute a three-year Capstone Microturbine Factory Protection Plan Agreement with authorized service provider Cal Microturbine, for a total of $320,796.

ACTION (Continued)

8. THREE-YEAR CONTRACT AWARD FOR OPERATION AND MAINTENANCE OF MICROTURBINE AND BIOGAS TREATMENT SYSTEMS AT THE MICHELSON WATER RECYCLING PLANT BIOSOLIDS AND ENERGY RECOVERY FACILITIES – O'NEILL / MYKITTA / CHAMBERS

   Recommendation: That the Board authorize the General Manager to execute a three-year operation and maintenance contract with GI Energy for the Operation and Maintenance of Microturbine and Biogas Treatment Systems at the Michelson Water Recycling Plant Biosolids and Energy Recovery Facilities in the amount of $1,431,754.

OTHER BUSINESS

9. Directors' Comments

10. Adjourn

Availability of agenda materials: Agenda exhibits and other writings that are disclosable public records distributed to all or a majority of the members of the above-named Committee in connection with a matter subject to discussion or consideration at an open meeting of the Committee are available for public inspection in the District's office, 15600 Sand Canyon Avenue, Irvine, California ("District Office"). If such writings are distributed to members of the Committee less than 72 hours prior to the meeting, they will be available from the District Secretary of the District Office at the same time as they are distributed to Committee Members, except that if such writings are distributed one hour prior to, or during, the meeting, they will be available electronically via the Webex meeting noted. Upon request, the District will provide for written agenda materials in appropriate alternative formats, and reasonable disability-related modification or accommodation to enable individuals with disabilities to participate in and provide comments at public meetings. Please submit a request, including your name, phone number and/or email address, and a description of the modification, accommodation, or alternative format requested at least two days before the meeting. Requests should be emailed to comments@irwd.com. Requests made by mail must be received at least two days before the meeting. Requests will be granted whenever possible and resolved in favor of accessibility.

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May 19, 2020
Prepared by: M. Cortez / E. Akiyoshi/
K. Lew / R. Mori
Submitted by: K. Burton
Approved by: Paul A. Cook

ENGINEERING AND OPERATIONS COMMITTEE

UPCOMING PROJECTS STATUS REPORT

SUMMARY:

A status report of Irvine Ranch Water District's Upcoming Projects is presented to the Committee for information.

BACKGROUND:

The information, which is provided as Exhibit "A", is a status report submitted quarterly to the Committee for review.

FISCAL IMPACTS:

Not applicable.

ENVIRONMENTAL COMPLIANCE:

Not applicable.

RECOMMENDATION:

Receive and file.

LIST OF EXHIBITS:

Exhibit "A" – Upcoming Projects Status Report

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EXHIBIT "A"

IRWD UPCOMING PROJECTS STATUS REPORT

Project Name	Start Planning	Start Design	Construction Award	Construction Final Acceptance
Gillette/Morse DW Relocation		Spring 2020	Summer 2020	
Turtle Ridge DW, RW Pipeline Rehabilitation			Summer 2020	
University Drive Widening Appurtenance Relocations (RA w/ Irvine)				Summer 2020
MWRP Tertiary Filter Rehabilitation			Fall 2020	
MWRP MBR Fall Protection			Fall 2020	
MWRP Primary Tanks Replacement Covers			Summer 2020	
Culver and University Intersection DW Pipeline Relocation			Spring 2020	Fall 2020
Crystal Cove RW PRV Improvements		Spring 2020		
Rattlesnake Outlet Pipe Assessment		Spring 2020		
MWRP Compressed Natural Gas Fueling Station		Summer 2020	Fall 2020	
San Joaquin Reservoir Filtration Facility			Fall 2020	
HATS Diversion Structure Relining			Summer 2020	
Silverado Bridge 174 DW Improvements		Spring 2020	Winter 2020	
Silverado Bridge 175 DW Improvements		Spring 2020	Fall 2021	
Aliso Creek Remediation			Summer 2020	
2019 Vault Lid Replacement			Summer 2020	
Lake Forest Woods Sewer Improvements			Summer 2020	
Santiago Canyon Pump Station Improvements			Summer 2020	Spring 2021
MWRP Emergency Recycled Water Diversion to San Diego Creek				Spring 2020
Sewer Siphon Improvements			Summer 2020	
Baker Campus Entrance Improvements			Summer 2020	Fall 2020
Wells 5, 14 and 16 Rehabilitation				Fall 2020
DATS Miscellaneous Repairs		Spring 2020	Fall 2020	
Bake Parkway Zone 5-4 PRV and Pipeline				Summer 2020
Baker WTP Hydrochloric Acid Scrubber Evaluation			Summer 2020	Fall 2020
Lake Forest Zone C Pipeline			Summer 2020	Spring 2021
3.7 MG Zone 1 Reservoir				Summer 2020
Eastwood Zone A-B BPS and Zone A-C BPS				Fall 2020
Zone A to Rattlesnake Reservoir BPS			Summer 2020	Winter 2023
Lake Forest Zone B-C BPS			Winter 2021	
Baker WTP Softened Water Analysis		Summer 2020		
Serrano Creek Outlet Structure Improvements			Summer 2020	
15 MG Zone 1 Reservoir Coating Replacement and Improvements		Summer 2020		
Zone C+ Reservoir Strainer Improvements			Summer 2020	Winter 2021
Sewage Treatment Plant Master Plan		Winter 2021		
PDF Sodium Hypochlorite Storage and Feed System			Spring 2020	Summer 2022
Santiago Creek Dam Improvements			Spring 2023	

IRWD UPCOMING PROJECTS STATUS REPORT

Project Name	Start Planning	Start Design	Construction Award	Construction Final Acceptance
Santiago Canyon Fleming Zone 8 Tank and Zone 8-9 BPS			Summer 2021	
MWRP Biosolids and Energy Recovery Facilities				Winter 2021
Syphon Reservoir Improvements		Summer 2020		
MWRP Unit Substation T-1 Replacement				Winter 2021
PA 1, Orchard Hills Neighborhood 3 RW (RA w/ICDC)				Summer 2020
PA 6, Neighborhood 5B and C Phase 2 RW (RA w/ICDC)				Summer 2020
PA 12, Innovation Park DW and RW (RA w/ICDC)				Fall 2020
PA 12, Innovation Park DW (RA w/ICDC)				Fall 2020
PA 1, Jeffrey Road Extension RW (RA w/CDC)			Summer 2020	
Tustin Legacy, Moffett at Peters Canyon Channel DW, RW (RA w/Tustin)				Summer 2020
Tustin Legacy, Flight Drive RW (RA w/Tustin)				Summer 2020
Tustin Legacy, Neighborhood South Phase 1, S (RA with/Tustin)				Spring 2021
PA 51, Marine Way DW, RW (RA w/Heritage Fields)				Summer 2020
PA 51, South C St and LY St, S, RW (RA w/Heritage Fields)				Summer 2020
PA 51, Alton Pkwy from Technology to Muirlands, DW S, RW (RA w/Heritage Fields)				Summer 2020
PA 51, Marine Way from Barranca Pkwy to Alton Pkwy, DW S, RW (RA w/Heritage Fields)				Summer 2020
PA 51, Alton Interceptor Sewer (RA w/Heritage Fields)				Summer 2020
PA 51, Marine Way from Alton to Barranca Sewer (RA w/Heritage Fields)				Summer 2020
PA 51, Sociable from Z St to B St, RW (RA w/Heritage Fields)				Summer 2020
PA 51, GP1 St DW, S, RW (RA w/Heritage Fields)				Summer 2020
PA 51, GP2 St, DW, S, RW (RA w/Heritage Fields)				Summer 2020
PA 51, Magnet from Ridge Valley to Bosque RW (RA w/Heritage Fields)				Summer 2020
PA 51, Cadence South DW, S, RW (RA w/Heritage Fields)				Summer 2020
PA 51, District 5 A St DW, RW (RA w/Heritage Fields)				Summer 2020
PA 51, Chinon from Cadence South to Cadence (RA w/Heritage Fields)				Summer 2020
PA 51, Marine Way Reach C Sewer RW (RA w/Heritage Fields)				Summer 2020
PA 51, District 5, F and N St DW, RW				Fall 2020
PA 51, District 5, E St RW (RA w/Heritage Fields)				Fall 2020
PA 51, District 5, Astor DW, RW (RA w/Heritage Fields)				Fall 2020
PA 51, District 5, Merit DW, RW (RA w/Heritage Fields)				Fall 2020
PA 51, District 5, BB St RW (RA w/Heritage Fields)				Fall 2020
PA 51, District 5, P St and Cadence DW, RW (RA w/Heritage Fields)				Fall 2020
PA 51, Marine Way from Alton Pkwy to Bake Pkwy DW, RW (RA w/Heritage Fields)				Summer 2021
Serrano Summit Phase 2 DW, RW				Summer 2020
Update to Replacement Planning Model, Phase 2	In-Process			
Criticality Based Pump Station, Reservoir and Well Capital Improvement Program	Winter 2020			
Tustin Legacy / W51 / W52 Treatment Alternatives	In-Process			
Phase 2 Water Demand Factor Calibration	Fall 2020			

IRWD UPCOMING PROJECTS STATUS REPORT

Project Name	Start Planning	Start Design	Construction Award	Construction Final Acceptance
Non-Potable Hydraulic Model Updates	In-Process			
Potable Hydraulic Model Updates	Winter 2020			
Generator Fuel Storage Upgrades and Site Evaluations	In-Process			
Bienniel Capital Budget and Long-Term Capital Program Analysis	Fall 2020			
MWDOC 5-Year Water Projections	Spring 2020			
2020 Urban Water Management Plan Technical Support	Fall 2020			
2020 OCWD Basin Equity Assessment Analysis	Summer 2020			
Updates to Water Resources Master Plan for 2020 Urban Water Management Plan	Fall 2020			
			Category	Months
			Winter	Jan. Feb. & Mar.
			Spring	Apr. May & June
			Summer	Jul. Aug. & Sep.
			Fall	Oct. Nov. & Dec.

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May 19, 2020
Prepared by: S. Toland / R. Mori
Submitted by: K. Burton
Approved by: Paul A. Cook

ENGINEERING AND OPERATIONS COMMITTEE

SYPHON RESERVOIR IMPROVEMENTS
GEOTECHNICAL INVESTIGATION UPDATE

SUMMARY:

As part of the development of the Syphon Reservoir Improvements Project, extensive geotechnical investigations were conducted to characterize existing geologic and geotechnical conditions at the Syphon Reservoir site. These investigations will be used to inform the ongoing environmental documentation process and the final design of the proposed Syphon Reservoir Improvements Project. The geotechnical investigations are complete, and staff will provide a presentation summarizing the overall scope of the investigations and the associated findings.

BACKGROUND:

On July 22, 2019, the Board authorized the execution of a Professional Services Agreement with AECOM Technical Services for geotechnical investigation services in the amount of $2,388,838. The scope of the project included a comprehensive site characterization program to adequately document and characterize the geologic and geotechnical conditions at the site. The proposed investigation resulted in the collection of a suite of soils data and samples that were used to evaluate the proposed dam foundation, abutments, spillway, and outlet works. The data were also used to determine the appropriate excavation depths and requirements for dam seepage control measures, evaluate the characteristics of potential dam construction materials that could be extracted from borrow areas on the site, and verify the location and historical activity of the previously documented inactive Center Valley Fault that was believed to be located at the site.

To accomplish these goals, the work involved a combination of exploratory test pits, soil borings, and geophysical surveys to characterize the subsurface conditions of the soil at each exploratory location. The exploration locations were selected based on the locations of the proposed reservoir improvements, site access considerations, and the desire to minimize impacts to environmentally sensitive areas. The results obtained from the investigation will inform the ongoing environmental documentation process and the final design of the proposed project.

In general, the investigations confirmed that the geologic and geotechnical conditions at the site are suitable and fully support development of the proposed Syphon Reservoir Improvements project. Staff will provide a presentation summarizing the overall scope of the investigations and the associated findings at the Committee meeting.

Schedule:

With the geotechnical investigations complete and the geologic and geotechnical characteristics of the site confirmed, staff is developing the Request for Proposal (RFP) for engineering design services for the Syphon Reservoir Improvements Project. Staff anticipates issuing the RFP to a select list of engineering consultants in June.

FISCAL IMPACTS:

Not applicable.

ENVIRONMENTAL COMPLIANCE:

Not applicable.

RECOMMENDATION:

Receive and file.

LIST OF EXHIBITS:

Exhibit "A" – Geotechnical Investigation Update Draft Presentation

Syphon Reservoir Improvements Project

Geotechnical Investigation Update

Engineering & Operations Committee
May 19, 2020

1

Agenda

- Background
- Exploration Program
- Work Products
- Findings
- Next Steps

2

Background

- 2012 – Initial feasibility-level geotechnical investigations by GEI Consultants (GEI)
  - Limited scope due to site constraints and environmental factors
- 2016 – Dry lakebed geotechnical exploration by GEI
  - Identify and evaluate lakebed sediments
- 2019/20 – Extensive geotechnical investigation by AECOM
  - Board approved the Final Initial Study/Mitigated Negative Declaration for the geotechnical work in June 2019
  - Field geotechnical activities were conducted from Sept. 2019 to Jan. 2020
  - Staff maintained Division of Safety of Dams involvement throughout

3

Program Goals and Objectives

- Program Goals
  - Characterize the geologic and geotechnical conditions at the site to inform the ongoing CEQA documentation process and the future final design phase
- Program Objectives
  - Collect soils data and samples to evaluate the proposed dam foundation, abutments, spillway, and inlet/outlet works and to determine excavation depths and requirements for dam seepage control measures
  - Evaluate the characteristics of potential dam construction materials that could be extracted from borrow areas on the site (e.g. strength, seepage, and shrinkage/bulking characteristics)
  - Verify the location and historical activity of the previously documented inactive Center Valley Fault
  - Characterize existing lakebed sediments to determine suitability for reuse or the need for export from the site

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Summary of Field Exploration Activities

- Comprehensive field investigation
  - Geologic mapping
  - Test pits
  - Abutment and fault investigation trenches
  - Soil borings (core, hollow-stem auger, and hand auger)
  - Packer tests and slug tests
  - Geophysical surveys (seismic refraction and electrical resistivity)
- Robust laboratory testing program
  - Particle-size distribution, water content, specific gravity, compaction characteristics, triaxial compression, compressive strength, hydraulic conductivity, direct shear, and many more

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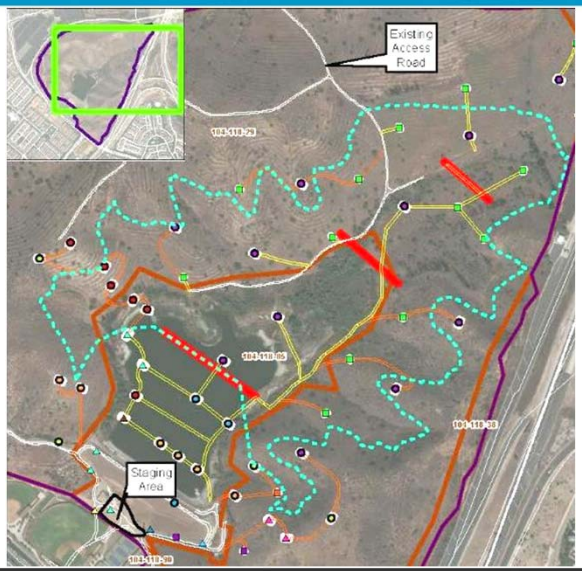
Overview of Exploration Program



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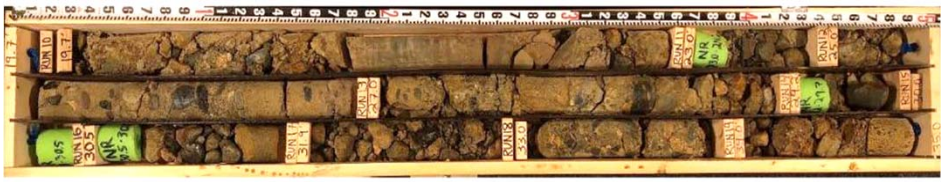
Work Products

- Geotechnical Data Report (GDR)
- Geotechnical Interpretive Report (GIR)
- Fault Investigation
- Lakebed Sediment Sampling

7

Geotechnical Data Report (GDR)

- GDR provides a summary of the exploration program and all acquired testing data
- Includes all historical previous geotechnical exploration, testing, and monitoring data performed at the site
- Does not include engineering evaluations or opinions of the data
- Developed as a resource for future design engineer



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Geotechnical Interpretive Report (GIR)

- GIR provides a summary of the initial interpretations from the exploration and testing program
- Includes engineering evaluations and opinions of the geologic and geotechnical data
  - Engineering properties of onsite materials
  - Landslides and slope stability
  - Bedrock and alluvium hydraulic conductivities
  - Anticipated amount of stripping across the site
- Future design engineer will either adopt or expand upon the GIR as the basis of design for the project

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GIR – Landslide and Slope Stability

- Geology of the slopes at the site suggest that there are no unstable slopes that could threaten proposed project facilities
- California Geological Survey (CGS) interpreted the presence of four landslides in the reservoir area
  - Mapped landslide areas would be inundated in part with the configuration of the proposed reservoir
- Field investigations conducted in mapped landslide areas
  - Investigations found some evidence of Landslide 1 (1-ft thick clay gouge), but found no evidence for Landslides 2, 3 and 4
  - Landslide 4, if present, would have been exposed during construction of SR-133; no such landslide was mapped
- Slope instability and landsliding are not considered to be significant hazards at the site

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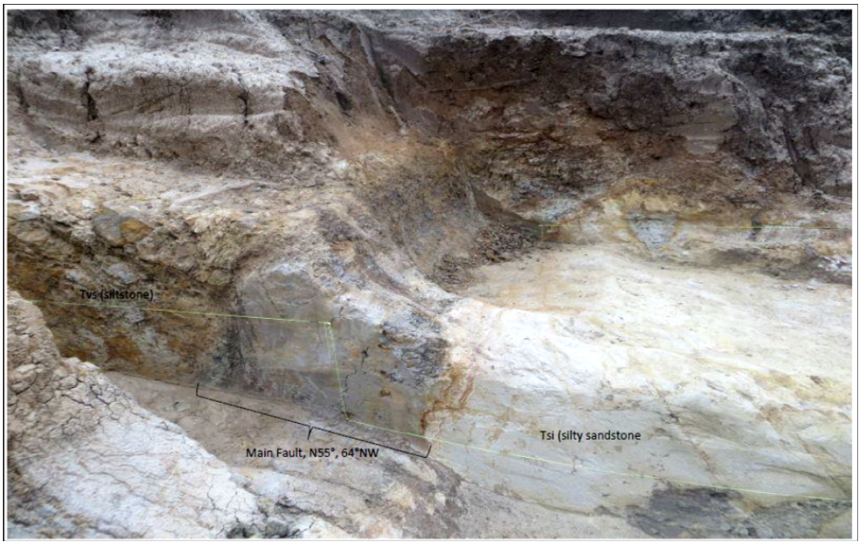
Fault Investigation – Center Valley Fault

- The inferred Center Valley Fault is the western part of an unnamed, curved fault trace shown on regional geologic mapping
- The Center Valley Fault is generally regarded to be an inactive bedrock fault that is incapable of renewed rupture
- The inferred presence of the fault requires a thorough investigation to identify its precise location and confirm inactivity

Fault Investigation – Center Valley Fault

- Fault investigation objectives
  - Locate the fault in the reservoir valley and at the proposed dam footprint
  - Classify the activity of the fault in accordance with DSOD fault activity guidelines
  - Estimate the displacement caused by the fault if it were found to be active or conditionally active
- Fault investigation program
  - Surface geophysics (electrical resistivity and seismic refraction)
  - Test pit excavations and fault trenching
  - Drilling of core borings

Center Valley Fault in Trench T-2 West



Irvine Ranch Water District 13

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Center Valley Fault in Test Pit TP-33

Irvine Ranch Water District 14

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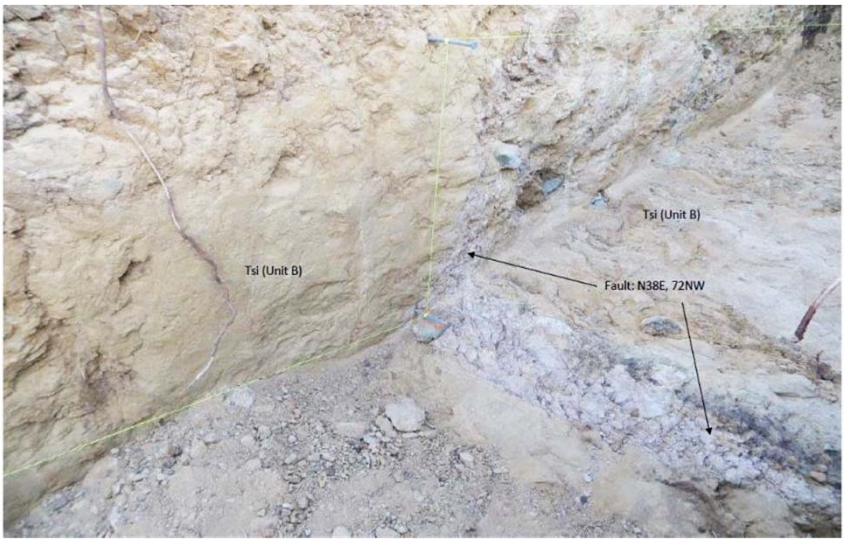
Other Fault Splay in Trench T-2 East



Irvine Ranch Water District 15

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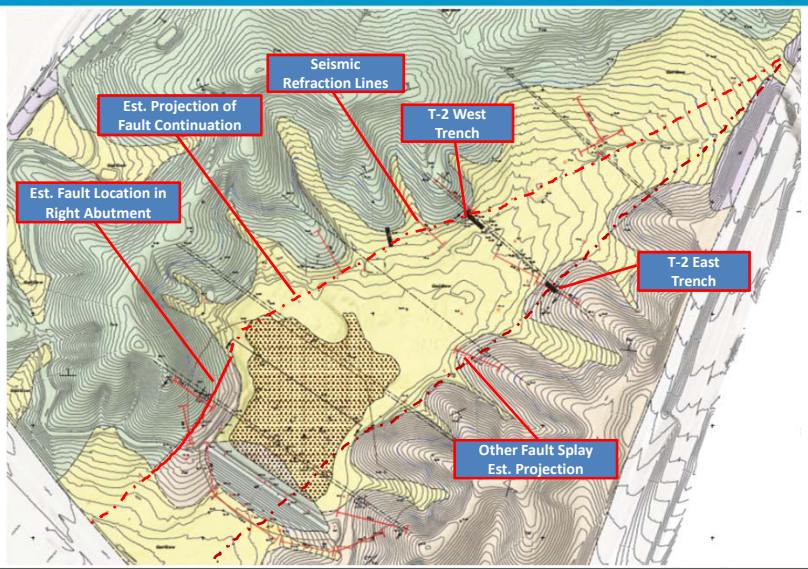
Site Map - Fault Locations



Irvine Ranch Water District 16

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Fault Investigation Findings

- The Center Valley Fault is located along the western edge of the valley rather than through the center of the valley as previously inferred
- The two major fault splays in the reservoir valley, which are presumably strands of the "U-shaped" fault, are inactive according to DSOD fault activity criteria
- The exploration confirmed that there are no large-displacement faults that exist in the central portion of the valley
- No special design considerations are required to mitigate for fault rupture for the proposed dam

Lakebed Sediment Sampling

- Analyzed lakebed sediment for a suite of metals, herbicide, pesticide, and organic compounds
- Results for metals indicate concentrations below residential or commercial Human Health Screening Levels (USEPA 2019), except for arsenic
  - Arsenic concentrations are below typical background concentrations for Southern California soils and in the range found at sites throughout LA and Orange County (and are not considered to be "impacted soils"); Dust mitigation and worker protection measures will be required during excavation and transportation activities
  - Herbicide, pesticides, and organic compounds were detected in very low concentrations, several orders of magnitude below regulatory benchmark values (i.e. not considered "impacted soils")
  - Semi-volatile and volatile organic compounds were not detected
- Report recommends on-site disposal and/or use of the sediments, either as part of wetland replacement or as fill for the lake bottom after borrow excavation

Exploration Program Findings

- The geologic and geotechnical conditions at the site are suitable and fully support development of the Syphon Reservoir Improvements project
- Sufficient type and quantities of onsite materials are available for use in the proposed embankment dam
  - Anticipated import materials limited to blanket and chimney drain material and rock rip rap on the upstream face of the dam
- Slope instability and landsliding are not considered to be significant hazards at the site
- Fault investigation confirmed location and inactivity of the Center Valley Fault and other onsite fault splays
- Lakebed sediments can be efficiently disposed of or used on site

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Next Steps

- Staff continues reviewing the draft reports
- AECOM will finalize the reports in June 2020
- Staff is developing the Request for Proposals for engineering design services
  - RFP distribution anticipated in June 2020
  - Consultant selection anticipated in August 2020

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May 19, 2020
Prepared by: O. O'Neill / R. Mykitta
Submitted by: W. Chambers
Approved by: Paul A. Cook

ENGINEERING AND OPERATIONS COMMITTEE

CAPSTONE THREE-YEAR FACTORY PROTECTION PLAN AGREEMENT
FOR THE BIOSOLIDS AND ENERGY RECOVERY FACILITY PROJECT

SUMMARY:

Once the Biosolids and Energy Recovery Facility Project becomes fully operational, power-generating microturbines will convert biogas to electricity. The microturbine manufacturer requires that only authorized service providers maintain the microturbines during the warranty period. Staff recommends that the Board authorize the General Manager to execute a three-year Capstone Microturbine Factory Protection Plan Agreement with the authorized service provider Cal Microturbine for a total of $320,796.

BACKGROUND:

As part of the Biosolids and Energy Recovery Facilities Project, power-generating Capstone Microturbines were installed. Capstone, as the manufacturer, requires that only authorized service providers maintain the microturbines and associated systems during the warranty period. Staff has negotiated with Cal Microturbine, Capstone's authorized service provider, a three-year Factory Protection Plan Agreement which covers all scheduled and unscheduled maintenance for an annual cost of $106,932.

FISCAL IMPACTS:

Sufficient funds for the first two years of the contract are included in the approved FY 2019-2020 and FY 2020-2021 Operating budgets. Funds for the remaining term will be requested through the District's budget process.

RECOMMENDATION:

That the Board authorize the General Manager to execute a three-year Capstone Microturbine Factory Protection Plan Agreement with authorized service provider Cal Microturbine, for a total of $320,796.

LIST OF EXHIBITS:

Exhibit "A" – Capstone Factory Protection Plan Agreement

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3100 Airway Ave, Suite 128
Costa Mesa, CA 92626
Phone: (714) 486-1140
www.calmicroturbine.com

CAPSTONE FACTORY PROTECTION PLAN – END USER AGREEMENT

AGREEMENT NUMBER	AGREEMENT EXECUTION DATE
	6/1/2020
PURCHASER COMPANY NAME (BILL-TO)	
Irvine Ranch Water District	
ADDRESS (BILL-TO)	
3512 Michelson Dr. Irvine, CA 92612	
BILLING CONTACT NAME	SERVICE CONTACT
Owen Oneill	
NUMBER/TYPE OF TURBINES	ADDRESS (TURBINE LOCATION(S)
(5) C200 DGSTR Gas, GC, UL	3512 Michelson Dr. Irvine, CA 92612
GAS PACKS or FGB	OTHER
N/A	CLC
ANNUAL PRICE: $	BILLING CYCLE:
106,932.00	Annual

A. Factory Protection Plan Types and Optional Services

FACTORY PROTECTION PLAN TYPES[1]	
Plan A – 5 year or 39,999 system hours, Parts ONLY, NO Overhaul	___<4000 hrs/yr. ___ 4000-6000 hrs/yr. ___ >6000 hrs/yr.
Plan B – 5 year or 39,999 system hours, Parts & Labor, NO Overhaul	___<4000 hrs/yr. ___ 4000-6000 hrs/yr. ___ >6000 hrs/yr.
Plan C – 10 year or 79,999 system hours, Parts ONLY, with Overhaul	___<4000 hrs/yr. ___ 4000-6000 hrs/yr. ___ >6000 hrs/yr.
Plan D – 10 year or 79,999 system hours, Parts & Labor, with Overhaul	___<4000 hrs/yr. ___ 4000-6000 hrs/yr. ___ >6000 hrs/yr.
✓ Other –3 year, Parts & Labor, NO Overhaul	___<4000 hrs/yr. ___ 4000-6000 hrs/yr. ✓ >6000 hrs/yr.

[1] See Section B below for description of included services for each type of Factory Protection Plan.

B. Description of Factory Protection Plan Services

FACTORY PROTECTION PLAN INCLUDED SERVICES	PLAN A	PLAN B	PLAN C	PLAN D	Other
Maintenance Parts:					
• Scheduled maintenance parts as needed.[1]	✓	✓	✓	✓	✔
• Scheduled maintenance engine overhaul at ~40,000 engine hours.	No	No	✓	✓	No
• Unscheduled maintenance parts as needed, including: • Engine assembly (Engine/Generator) • All power electronics components • All fuel system components • Optional/Accessory equipment (if installed) • Main battery pack • Heat Recovery Module (HRM) coil • Advanced Power Server (APS) • Dual Mode Controller (DMC) • External Fuel Filter • External Regulator	✓	✓	✓	✓	✔
Maintenance Labor:					
• Scheduled maintenance labor.	No	✓	No	✓	✔
• Unscheduled maintenance labor.	No	✓	No	✓	✓
Additional Services:					
• Access to Capstone's Support Center, including 24/7 access to Emergency Technical Support.	✓	✓	✓	✓	✓
• Priority response to unscheduled maintenance service requests.	No	✓	No	✓	✓
• System software upgrades as released by Capstone.	✓	✓	✓	✓	✔
• Installation of system software upgrades.	No	✓	No	✓	✔

[1]. Pursuant to the then current Capstone Standard Maintenance Schedule (Capstone document number 440000).

C. Service Conditions

1. Sites must be clean, free of debris and any other obstructions, well lit, and operating in an environment that will not cause equipment damage or excessive usage, or need for replacement of consumables and filters outside the parameters of Capstone's standard service intervals.

2. Sites must be installed in accordance with all Capstone installation requirements. Installation must be performed or supervised by a currently certified Capstone Factory Trained Installer (FTI). A completed Installation Check List (ICL), signed by the FTI who performed/supervised the installation, must be on file with Capstone.

3. Sites must be commissioned in accordance with all Capstone specifications, and Capstone must have an approved Commissioning Checklist on file. Commissioning must be performed or supervised by a Capstone Authorized Service Provider (ASP), currently certified for the applicable equipment model(s).

4. Sites must be safe for personnel access and performance of all required troubleshooting and scheduled and unscheduled maintenance procedures. Where installation conditions require assistive equipment to access equipment and/or perform procedures (e.g. forklifts, ladders, etc.), site conditions and site standard operating procedures must allow for safe usage of such equipment.

5. Fuel must meet Capstone's then current Capstone Fuel Specification as defined in Capstone Technical Reference 410002 Capstone Microturbine Fuel Requirements Technical Reference.

6. For purposes of this Service Agreement, customers shall communicate directly with Distributor, and Capstone shall communicate directly with Distributor. Distributor shall coordinate any communications between Distributor's customers and Capstone.

D. Term of Agreement

1. *Start of Services:* The Services shall commence on June 1, 2020.

2. *End of Services:* The Services shall expire as specified by the Plan elected, either by years or by total run hours, whichever comes first.

E. Payment Terms

1. Payment for the Service Agreement will be made in equal annual installments as listed for each site. The first installment is due upon the Start of Services Date (see Section D above). The remaining periodic payments will be due 30 days prior to the start of each succeeding billing period.

2. Unless otherwise provided for in the payment descriptions above, payments for Services are due 30 calendar days from date of the invoicing, are stated in U.S. dollars, and exclude sales and other taxes.

3. Overdue payments shall be subject to a late charge, calculated from the date of invoice on the date of payment, equal to the lesser of 1.5% per month or the highest applicable rate allowed by law. The foregoing shall in no way limit any other remedy that may be available to Cal Microturbine, Inc.

4. Purchaser's obligations to Cal Microturbine, Inc. to pay in full all amounts owed to Cal Microturbine, Inc. as of the termination or expiration of this Agreement shall survive the termination for any reason or expiration of this Agreement.

5. Cal Microturbine, Inc. may adjust pricing for the services provided hereunder upon written notice to Purchaser should the total Consumer Price Index (CPI) exceed 3% for the 12 months immediately preceding.

6. All prices/discounts set forth are provided with the expectation that the contract will continue to be in effect for the entire duration of its specified term. However, in the event that the contract is cancelled prior to the contract end date, client will be subject to (i) repayment of any special discounts provided herein,
(ii) reimbursement to Capstone for any amounts owed pertaining to parts shipped and/or services provided, and (iii) any additional cancellation fees which Capstone may deem appropriate to be charged on a case by case basis.

F. Excluded Services

The following are specifically excluded from the Agreement:

1. Changes to the original design and configuration (alterations from "as commissioned").
2. Application engineering and installation; correction of latent or discovered defects or equipment failure due to application engineering, installation, settings and/or connections. For example, damages due to inadequate ventilation.
3. Operation of the Covered Equipment outside of Capstone's then current standard operating guidelines defined in the Capstone User Manual.
4. Usage/consumption of consumables (i.e. filters) outside the parameters of Capstone's standard service intervals.
5. Operation of Covered Equipment on a day-to-day basis.

6. Emissions testing or testing of exhaust gas.
7. Fuel analysis or laboratory analysis to confirm fuel composition.
8. Operator classroom training.
9. Any expenses resulting from failure to meet, or incurred as a result of, correcting deficiencies in order to meet Service Conditions specified in Section C above.
10. Operator classroom training
11. Tooling required to support performing Services on the Covered Equipment, e.g. maintenance tools, assistive lifting devices, trucks, crane or forklift rentals, etc.
12. Any expenses resulting from improper maintenance of Covered Equipment performed by any non-Capstone Authorized Service Provider.
13. Any expenses resulting from Force Majeure events.
14. Any expenses resulting from power quality disturbances (e.g. sags, surges, and harmonics) in grid-connected operation.
15. Any services requested by or performed by Customer which are determined, in Capstone's sole discretion, to be outside the scope of this Agreement.
16. Internet connection or related fees.
17. Balance of plant equipment: Cal Microturbine will provide Services for the Covered Equipment listed in Exhibit 1 only, as may be amended by the parties from time to time in writing.

Pursuant to this Services Agreement (the "Agreement"), Purchaser hereby authorizes Cal Microturbine, Inc. to provide the services described above (the "Services"), including the provision of any necessary parts (the "Parts"), on the Capstone Turbine generator systems, controls and/ or accessories identified above (the "Covered Equipment") in accordance with and subject to the terms and conditions described above.

1. The price, payment terms and scope of services for each of the Services (the "Scope of Services") are set forth in above section. If repairs or additional labor outside of the applicable Scope of Services are determined to be necessary and the required repairs are authorized by Purchaser, then additional labor and other costs and expenses will be (i) billed by CM to Customer at the then effective CM Factory Service Rates, as such terms and provisions are revised by CM from time to time and (ii) Parts will be billed at the then prevailing Capstone list price. If any action of CM is required outside the scope of this Agreement, mobilization charges will be as described in Capstone's then current Factory Service Rates.

2. This Agreement shall continue in effect for the term indicated in Section D of this Agreement unless Cal Microturbine terminates this Agreement by delivering to Purchaser written notice in the event of: (i) Purchaser's breach of any material term or condition of this Agreement; or (ii) Purchaser's failure to pay when due any amount owed by Purchaser to Cal Microturbine under any agreement with Cal Microturbine. If Purchaser fails to pay when due any amount owed by Purchaser to Cal Microturbine and this Agreement is not terminated Immediately by Cal Microturbine, Cal Microturbine may delay or cease performance of Services under this Agreement until payment in full is received or other payment arrangements are agreed to, at Cal Microturbine' reasonable discretion. The foregoing does not limit or restrict in any way Cal Microturbine' right to terminate this Agreement at any time following an event described in this Section.

3. **Cal Microturbine' Services; Warranty.** Cal Microturbine agrees that it will comply with applicable laws and regulations relating to its provision of the Services and such Services will be provided in a professional and workmanlike manner consistent with the applicable Scope of Services and with generally accepted industry standards and practices with regard to the type of services provided hereunder. Cal Microturbine on behalf of Capstone Turbine provides the warranties with respect to Parts and labor provided by Cal Microturbine for the applicable Covered Product

4. **Purchaser's Representations**. Purchaser represents, warrants , and covenants that: (i) it has the right, power, and authority to enter into this Agreement and to perform fully its obligations hereunder; (ii) the making of this Agreement

does not violate any agreement existing between it and any other person or entity; (iii) it has obtained or will obtain all licenses and permits necessary for Cal Microturbine to perform the Services; (iv) all information provided by Purchaser to Cal Microturbine related to the Services and its ability to pay for the Services is complete and accurate ; (v) it will arrange for Cal Microturbine' access to the facilities where the Covered Equipment is located as needed to perform the Services; and (vi) it will perform all of its obligations under this Agreement to the reasonable satisfaction of Cal Microturbine.

5. Purchaser's Obligations. In addition to all other obligations stated in this Agreement, when requested, Purchaser shall provide Cal Microturbine with: (i) records and Information concerning the Covered Equipment; and (ii) any special tools or instruments needed for the Covered Equipment which Purchaser already possesses. Purchaser shall designate an authorized representative who shall be available to Cal Microturbine at all times while Cal Microturbine is performing the Services on Purchaser's premises. Purchaser agrees that the Scope of Services excludes all trade labor work and any supervision, management or regulation of Purchaser's employees, agents or contractors and work related thereto, and it does not include responsibility for planning, scheduling, monitoring or management of the work to be performed by Purchaser. Purchaser agrees that any written or oral reports and advice provided by Cal Microturbine to Purchaser in connection with the provision of Services shall be utilized solely by Purchaser and shall not be used or conveyed by Purchaser to any third party without a need to know for proper operation or maintenance for the Covered Equipment.

6. Disclaimer. EXCEPT AS SET FORTH IN SECT ION 3, THE SERVICES ARE PROVIDED ON AN "AS IS" BASIS AND NO OTHER WARRANTIES, EXPRESS, IMPLIED OR STATUTORY ARE GIVEN FOR THE SERVICES , INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY, NON-INFRINGMENT OR FITNESS FOR A PARTICULAR PURPOSE, AND ALL SUCH WARRANTIES ARE EXPRESSLY DISCLAIMED.

7. Limitation of Liability in General.
   7.1 THE EXCLUSIVE REMEDY OF PURCHASER UNDER THIS AGREEMENT SHALL BE THE: CORRECTION OF NON-CONFORMITIES OF SERVICES ; THE CORRECTION OF NON- CONFORMITIES OF PARTS; OR AS OTHERWISE PROVIDED IN THE SERVICE-RELATED WARRANTY.

   7.2 Independent of, severable from, and to be enforced independently of any other enforceable provision of this Agreement , NEITHER PARTY SHALL BE LIABLE TO THE OTHER FOR INCIDENTAL , CONSEQUENTIAL , INDIRECT, SPECIAL, PUNITIVE, OR EXEMPLARY DAMAGES OF ANY KIND, OR FOR LOST GOODWILL, LOST PROFITS, LOST BUSINESS, COST OF COVER OR OTHER INDIRECT ECONOMIC DAMAGES, AND FURTHER INCLUDING INJURY TO PROPERTY, WHETHER SUCH CLAIM IS BASED ON THEORIES OF CONTRACT ,CAL MICROTURBINE'S NEGLIGENCE, TORT (INCLUDING STRICT LIABILITY), AS A RESULT OF BREACH OF ANY WARRANTY OR OTHER TERM OF THIS AGREEMENT , OR OTHERWISE WITH RESPECT TO ANY NON-CONFORMANCE OF OR NON-CONFORMITY OR DEFICIENCY IN THE SERVICES OR PARTS, REGARDLESS OF WHETHER CAL MICROTURBINE WAS HAD REASON TO KNOW OR IN FACT KNEW OF THE POSSIBILITY OF SUCH DAMAGES. Purchaser shall indemnify, defend and hold Cal Microturbine harmless from and against all costs, fees (including attorneys' fees) , losses, liabilities and expenses related to any personal injury, damage, or death related to Purchaser's improper use or operation of the Covered Equipment including, without limitation, those costs, losses, liabilities and expenses resulting from any product liability claim, to the extent such claim involves improper use or operation of the Covered Equipment.

   7.3 The limitations of Cal Microturbine's obligations and Purchaser's remedies, as provided for in this Section, shall prevail over any conflicting or inconsistent provisions contained in any of the documents comprising this Agreement or any other document issued by Purchaser hereto or in any conflicting or inconsistent statement made by any representative of Cal Microturbine.

   7.4 The rights, remedies and obligations of the Parties set forth in this Agreement, together with the attached exhibits, are the exclusive rights, remedies and obligations of the Parties hereunder and are in lieu of any other right, remedy, or obligation available at law or in equity.

8. Dispute Resolution. All disputes and claims arising out of this Agreement or any document referenced herein shall be settled by arbitration in Santa Ana, California by a panel of three arbitrators under the commercial arbitration rules of the American Arbitration Association or the Judicial Arbitration and Mediation Service. Such arbitration shall be conducted by three (3) arbitrators, one (1) chosen promptly by Cal Microturbine, one (1) chosen promptly by Purchaser and one (1) neutral arbitrator, selected by the first two arbitrators. The award of the arbitrators shall be final and binding and the parties' consent to the exclusive Jurisdiction of any federal or state court in Orange County, California for purposes of enforcing any decision of the arbitration panel. The Parties agree that the prevailing Party in an arbitration proceeding shall be entitled to recover its reasonable attorneys' fees and expenses such prevailing Party incurred.

9. **Confidential Information, Intellectual Property Rights**. Purchaser shall not, directly or indirectly, modify or disassemble for the purpose of reverse engineering any Covered Equipment or components thereof. All intellectual property rights and confidential information relating to the Covered Equipment, and any information provided by Cal Microturbine to Purchaser under this Agreement, shall remain the sole property of Cal Microturbine. To the extent that the Parties have entered into a nondisclosure agreement ("NOA"), the terms of such NOA are Incorporated into this Agreement. Purchaser's obligations related to confidentiality shall remain in effect and continue to bind Purchaser for five (5) years after the expiration or termination of this Agreement and Purchaser's obligation to maintain the secrecy of Cal Microturbine ' trade secret information shall continue for so long as such information is entitled to trade secret protection under California law. Purchaser acknowledges that a breach of its confidentiality obligations will cause irreparable rights, Cal Microturbine shall be entitled to temporary and permanent injunctive relief for the protection of its confidential information and intellectual property rights without posting a bond and without having to prove any actual damages.

10. **Miscellaneous**

10.1 **Governing Law.** This Agreement is governed by the laws of the State of California (as such laws are applied to contracts made and performed entirely within California, without regard to California 's conflicts of laws provisions) and federal laws applicable to patents and trademarks.

10.2 **Survival.** All provisions of this Agreement will survive its termination to the fullest extent necessary to give the Parties the full benefit of the bargain expressed in this Agreement. Notwithstanding the foregoing, Purchaser agrees that upon completion of the Services, any and all Service-Related Warranties shall expire as of such date.

10.3 **Assignment.** Purchaser may not assign this Agreement without the prior written consent of Cal Microturbine. Cal Microturbine may assign this Agreement to an entity wholly-owned by Cal Microturbine without the consent of Purchaser.

10.4 **Severability.** If any provision of this Agreement or the terms and conditions set forth herein is declared or found to be illegal, unenforceable, or void, the remaining provisions of this Agreement shall remain in full force and effect, subject to the immediately following provisions. In the event any provision of this Agreement is declared or found to be illegal, unenforceable or void, the Parties agree to negotiate in good faith a substitute provision that is legal and enforceable and is as nearly as possible consistent with the intentions underlying the original provision. If the remainder of the Agreement is not materially affected by such declaration or finding and is capable of substantial performance, then such remainder will be enforced to the extent permitted by law.

10.5 **Independent Review and Advice.** Each Party has full knowledge of the contents of this Agreement its legal consequences and any and all rights which each may have with respect to one another. Each Party has had the opportunity to receive Independent legal advice with respect to this Agreement and each Party enters into this Agreement of its own free will. The Parties expressly agree that there are no expectations contrary to the Agreement and no usage of trade or regular practice in the industry shall be used to modify any of the terms and provisions of the Agreement.

10.6 **Entire and Sole Agreement.** This Agreement constitutes the complete agreement with respect to the Services and supersedes all prior or contemporaneous proposals, agreements, representations, discussions and literature, written or oral, concerning the Services. This Agreement is not intended to change or alter any of the rights, duties, obligations, liabilities or limitations set forth in any other agreements between the Parties. The Parties' obligations with respect to confidential information reverse engineering and/or trade secrets shall be governed by, if applicable, the Direct Sales Agreement, the End User License, or
any confidentiality agreements the Parties have entered into.

10.7 **Amendments .** This Agreement may not be modified or amended except in writing signed by a duly authorized representative of each Party.

10.8 **Force Majeure.** Each Party's performance shall be suspended (other than the obligation to pay monies due) for so long as such performance is hindered by events beyond its reasonable control. **("Force Majeure"),** such as, but not limited to, riots, labor disputes of a general nature, national or civil wars, insurrections, rebellions, terrorist acts, embargoes, civil disturbances, earthquakes, dispositions or orders of governmental authority, acts of civil or military authority , fires, strikes, delays in transportation, inability to obtain necessary labor, manufacturing facilities or materials from usual sources and acts of God. Any delays resulting from a Force Majeure shall extend the time for performance correspondingly. If a failure to perform results from a governmental law, rule, regulation, disposition or order and the affected Party is unable to perform, after making reasonable efforts to comply, the matter shall be deemed a Force Majeure.

10.9 **No Third-Party Beneficiaries.** None of the terms of this Agreement are intended to confer to or benefit any person or entity other than the Parties to this Agreement any rights, remedies or other benefits under or by reason of this Agreement.

10.10 **Waiver.** No waiver by either Party of any term contained herein (or any breach thereof) shall be effective unless it is in writing executed by the party waiving such term (or any breach thereof). No waiver shall be deemed or construed as a further or continuing waiver of any such term (or any breach thereof) on any other occasion or as a waiver of any other term (or any breach thereof) on the same or any other occasion. The delay or failure of any Party in providing written notice hereunder shall not constitute a waiver by such Party of any default or any further default under the Agreement.

CAL MICROTURBINE, INC.	CUSTOMER: IRVINE RANCH WATER DISTRICT
SIGNED: _____	SIGNED: _____
NAME: :_____	NAME: _____
TITLE: :_____	TITLE: _____
DATE: :_____	DATE: _____

FACTORY PROTECTION PLAN – END USER AGREEMENT

Exhibit 1

SITE NAME	DESCRIPTION	MANUFACTURER	MODEL CONFIGURATION	SERIAL NO	*TRH
IRWD	C200	Capstone	DGSTR GAS, GC, UL	8825	1
IRWD	C200	Capstone	DGSTR GAS, GC, UL	8826	1
IRWD	C200	Capstone	DGSTR GAS, GC, UL	8827	1
IRWD	C200	Capstone	DGSTR GAS, GC, UL	8858	1
IRWD	C200	Capstone	DGSTR GAS, GC, UL	8859	1
IRWD	CLC	Capstone	Logic Controller	N/A	N/A
END	-	-	-	-	END

*Turbine Run Hours

May 19, 2020
Prepared by: O. O'Neill / R. Mykitta
Submitted by: W. Chambers
Approved by: Paul A. Cook

ENGINEERING AND OPERATIONS COMMITTEE

THREE-YEAR CONTRACT AWARD FOR OPERATION AND MAINTENANCE OF MICROTURBINE AND BIOGAS TREATMENT SYSTEMS AT THE MICHELSON WATER RECYCLING PLANT BIOSOLIDS AND ENERGY RECOVERY FACILITIES

SUMMARY:

To ensure effective operation and maintenance of the Biosolids Energy Recovery Facilities, staff is recommends approval to enter into an agreement for professional operation and maintenance (O&M) services from a qualified O&M contractor. Staff recommends that the Board authorize the General Manager to execute a three-year contract with GI Energy for the Operation and Maintenance of Microturbine and Biogas Treatment Systems at the Michelson Water Recycling Plant (MWRP) Biosolids and Energy Recovery Facilities for a total of $1,431,754.

BACKGROUND:

Construction of the Biosolids Energy Recovery Facilities is nearing completion and start-up activities are underway. To ensure efficient start-up and operation of the Microturbine and Biogas Treatment systems, a professional O&M contractor is needed. Staff received proposals from two pre-qualified O&M service providers: GI Energy and Synagro. Following its submittal, Synagro withdrew its proposal as it prefers to provide O&M services for the entire Biosolids Recovery Facility rather than the microturbine and biogas treatment systems only.

After a review of GI Energy's proposal, which is provided as Exhibit "A", and a visit to its facility, staff determined that GI Energy has the necessary experience and qualifications to perform the work. Provided as Exhibit "B" is GI Energy's Request for Information. Following discussions with staff regarding estimated costs and an enhanced understanding of the components of the project, GI Energy revised its proposal. The revisions are provided in Exhibit "C". The average annual cost for GI Energy's services is $477,251, for a total three-year cost of $1,431,754.

FISCAL IMPACTS:

Sufficient funding for the first 12 months of the contract are included in the approved FY 2019-2020 and FY 2020-2021 Operating budgets with the remaining term to be requested through the District's budget process.

RECOMMENDATION:

That the Board authorize the General Manager to execute a three-year operation and maintenance contract with GI Energy for the Operation and Maintenance of Microturbine and Biogas Treatment Systems at the Michelson Water Recycling Plant Biosolids and Energy Recovery Facilities in the amount of $1,431,754.

LIST OF EXHIBITS:

Exhibit "A" – GI Energy's Proposal for Operation and Maintenance of Microturbine and Biogas Treatment Systems
Exhibit "B" – GI Energy's Request for Information
Exhibit "C" – GI Energy's Proposal Amendment

ENERGY

An affiliate of Shell New Energies US LLC

GI Energy Proposal for Irvine Ranch Water District O&M Project

January 10, 2020

1. Identification of Proposer

GI Energy ("GIE") has assembled a very qualified and experienced Project Operations & Maintenance ("Project O&M") team comprised of our own team of project management and O&M professionals in addition to Biogas Engineering as our nominated subcontractor. We believe the team we have assembled coupled with the Project O&M approach detailed in this proposal will provide the Irvine Ranch Water District (IRWD) with environmentally-compliant and high cogeneration plant availability O&M services that will meet or exceed all RFP requirements and reliably deliver performance for the 3-year contract period.

1.1. GI Energy

Locally-based team that will serve as project prime contractor and provide permit compliance, gas boosting station and cogeneration system operations and maintenance ("O&M") and overall project management and contract compliance services

GIE, majority owned by and an affiliate of Shell New Energies US LLC (Shell), specializes in distributed energy resources (DERs) and provides consulting, development, financial, engineering, management, construction and O&M services to hospitals, educational institutions, building owners, property developers, and utilities. We work with clients to develop outstanding reliable, resilient, clean and cost-effective energy infrastructure solutions, harnessing the best available technologies and world-class O&M services. GI Energy has designed, installed, recommissioned and provided maintenance services to over 33 megawatts of cogeneration assets.

1.1.1. Biogas Engineering (Subcontractor)

GI Energy has appointed Biogas Engineering as the O&M Project subcontractor (major subcontractor to GI Energy). Biogas Engineering based in Signal Hill, California specializes in engineering, design, construction, project management, operations and maintenance for biogas collection and utilization projects – specifically digester gas and landfill gas. The company's expertise and focus are in providing cost effective solutions for complex engineering projects comprised of experienced industry professionals in civil, chemical and mechanical engineers.

The GI Energy team believes our proposal strikes the right balance between the IRWD's requirement to partner with GI Energy for the operations and maintenance of the Microturbine and Biogas Treatment Systems for the O & M project and comply with all regulatory and environmental permitting requirements.

1.1.2. Project O&M Responsibilities

Scope/Responsibility	GI Energy	Biogas Engineering
Prime O&M Project Contractor	✓	
O&M Project Subcontractor		✓
Start-Up and Commissioning Support, Observation and Guidance	✓	✓
SCAQMD PTO Conditions Compliance	✓	
Environmental Compliance	✓	✓
Biogas Pre-Treatment System O&M		✓
Biogas Post-Treatment System O&M		✓
Gas Blending and Booster Station O&M	✓	
Microturbine Cogeneration System O&M	✓	
System Availability Reporting	✓	
Monitoring, Reporting and Project Management	✓	✓

3. Scope

Operations & Maintenance Scope of Work Summary

GI Energy's proposed 3rd-party services to the IRWD will be focused on the core operations and maintenance activities associated with the MBT System while achieving compliance with emissions limits specified under the South Coast Air Quality Management District (SCAQMD) permit to construct and NPDES permit.

Additionally, GIE will provide value-added monitoring, reporting, project management and communications services.

The key sub-systems and equipment included in the GI Energy's scope and proposed pricing based on our understanding of the RFP scope includes the following:

- **Digester Gas Pre-Treatment System**
  - (2) Upstream raw gas separation units with single cartridge mesh filters
  - (2) SS 316 Hydrogen sulfide removal vessels with air spargers and 7.5 HP roots blower
  - (2) Iron sponge media charges
  - (2) Downstream raw gas separation units with single cartridge mesh filters
  - (3) 30 HP centrifugal booster blowers with PLC and HMI
  - (1) Biogas booster recycle line
  - (1) Economizing heat exchanger
  - (1) Glycol/gas heat exchanger with expansion tank
  - (1) Moisture removal coalescing filter
  - (1) 40-ton capacity glycol chiller with PLC and HMI
  - (1) Condensate trap
  - Balance of plant SS 316 piping, sensors, metering devices, electrical and controls wiring and valves

- **Digester Gas Post-Treatment System**
  - (2) 3-vessel siloxane removal trains (6 vessels total) with PLC and HMI
  - (6) Sil-X media charges
  - (2) Single cartridge type gas particulate filters
  - (1) Gas holding tank
  - (1) Gas blending controller

- (3) Vilters screw compressors with PLC and HMI
- (1) Gas compressor recycle line
- (1) Compressed gas heat exchanger
- (1) 304 SS gas receiver tank
- Balance of plant SS 316/304 piping, sensors, metering devices, electrical and controls wiring and valves

- **Microturbine Cogeneration System**
  - (5) 200 kW Capstone C200 microturbines with main PLC and HMI
  - (5) Cain heat recovery units
  - Balance of plant gas and hot water piping, sensors, metering devices, electrical and controls wiring and valves
- **NOTE**: Electrical switchgear and high voltage device O&M responsibility to be initially retained by Owner.

Our scope also includes, but is not limited to, the supply, support and procurement of all consumables including H2S media, siloxane media, chemicals, lubricants, remote systems monitoring, equipment warranty monitoring, emissions equipment monitoring and service/calibration, necessary upgrades, preventive maintenance and periodic servicing, fuel management, equipment overhaul and/or repair and provision of generator-related services.

Please note, that GI Energy has not included budget estimates for H2S and siloxane charging and disposal in Section 7 "Budget" because media specifications and volumes are currently unavailable and it is not yet known of spent media will test as a hazardous waste.

The normal operation of the MWRP MBT System will follow the recommendations of the vendor supplied installation, operations and maintenance manuals (IOM) and general good practices for facility operations. In addition, GI Energy has proposed that an IRWD-approved O&M Plan be adopted with period updates based on actual field conditions and learnings incorporated as updates over the term of the O&M contract.

Safety is of utmost priority and all operations are to follow the required IRWD safety procedures and training including, but not limited to:

- Task Hazard Analysis
- Personal Protective Equipment (PPE)
- Lock Out Tag Out energy isolation
- Fall Protection
- Hazard Notifications
- Spill Response
- Fire prevention & response

In addition, good site cleanliness and good "housekeeping" can improve safety by reducing trip hazards and allowing egress pathways to remain clear.

The following sections summarize tasks are indicative of those required for the installed MBT System following with the commencement of Normal and Emergency Operation and Maintenance activities. More detailed information is contained in the vendor IOM manuals and experience with the system may require modifications to these tasks or addition of new tasks as needed to provide reliable performance. These O&M tasks are first described in general and then in project specific terms.

Please refer to the Process Flow Diagrams and P&ID documents along with this description.

3.1. General O&M Activities

3.1.1. Daily general tasks:

3.1.1.1. Walk the facility and identify and correct any unsafe conditions.

3.1.1.2. Look and listen for any signs of unusual operation.

3.1.1.3. Check pressure, temperature, flow and level gauges and transmitter outputs and record in daily reports as needed.

3.1.1.4. Identify any signs of abnormal wear or deterioration of equipment.

3.1.1.5. Identify and correct any obstructions or poor housekeeping practices.

3.1.1.6. Identify any leaks of liquids or gases and take appropriate corrective and clean up actions.

3.1.1.7. Report any safety or compliance issues to the Supervisor or GIE Project Manager.

3.1.1.8. Review logs, faults, alarms and remote monitoring telemetry.

3.1.1 Weekly general tasks:

In addition to the daily tasks;

3.1.1.1 Record performance parameters as needed.

3.1.1.2 Compile weekly reports.

3.1.1.3 Follow up on any actions indicated by daily inspections that require resolution.

3.1.1.4 Request guidance from the IRWD, Project Manager or Service Manager as appropriate and as needed for upcoming tasks or issues.

3.1.1.5 Compile and analyze operation data and inform the IRWD of any issues.

3.1.1.6 Perform visual observation to check the system operation and performance.

3.1.1.7 Coordinate sub-contractor activities such as lab sample analysis, permit required testing, instrument calibrations.

3.1.1.8 Check and maintain stock of spare parts and expendable materials such as calibration gases, belts, hoses, gaskets, fuses, PPE and other (assumed to be stored at MWRP)

3.1.1.9 Notify of the IRWD of upcoming preventive and routine maintenance activities, expected scheduling and activity duration, and estimated MBT System downtime, if any.

3.1.1.10 Perform preventive and routine maintenance as necessary to keep the MBT System available at 100% of design for the maximum amount of availability in a safe manner.

3.1.1.11 Standing GI Energy Project Manager briefing and status report with IRWD O&M Project staff.

3.1.2 Monthly general tasks:

In addition to the daily and weekly tasks;

3.1.2.1 Compile and provide monthly report data and documentation.

3.1.2.2 Summarize previous months key activities and issues.

3.1.2.3 Preview the upcoming months planned activities including any planned outages or planned non-routine activities.

3.1.2.4 Discuss and review potential controls and programming enhancements to improve system availability and electricity production.

3.1.2.5 Request guidance from the IRWD, Project Manager or O&M Service Manager, as appropriate and as needed, for upcoming tasks or issues.

3.1.2.6 1- and/or 2-hour O&M Project meetings as requested by the IRWD.

3.1.3 Quarterly general tasks:

In addition to the daily, weekly and monthly tasks;

3.1.3.1 Compile and provide quarterly report data and documentation.

3.1.3.2 Assemble monthly reports into quarterly report and amend as needed.

3.1.3.3 Calibration of analyzers, sensors and gauges, if necessary.

3.1.3.4 Discuss and review potential equipment replacements.

3.1.4 Annual general tasks:

In addition to the daily, weekly, monthly and quarterly tasks;

3.1.4.1 Plan and execute annual outage for required maintenance activities.

3.1.4.2 Calibration of analyzers, sensors and gauges.

3.1.4.3 Report any issues that may require changes to the coming contract year budget or schedule.

3.1.4.4 Identify performance optimization and cost reduction measures and estimated benefits and impacts.

3.1.4.5 Create and distribute annual report.

3.1.4.6 Review annual report with IRWD O&M Project staff if requested.

3.2 MBT Sub-System Key O&M Tasks

3.2.1 Biogas Pre-Treatment System:

3.2.1.1 Moisture Pad Separator Filters (40-DGL-FLT-0150 and 40-DGL-FLT-0160)

Monitor pressure drop during regular inspections, daily

Open & Inspect element, during annual shutdown

Replace elements as needed

3.2.1.2 Hydrogen Sulfide Removal Vessels (40-DGL-TK-0210, 40-DGL-TK-0220)

Monitor H2S removal efficiency with manual (Draeger Tube) measurements. The frequency will depend upon operation. Initially monitoring will be daily but reduce to weekly or bi-weekly based on performance. Increase frequency of testing if the outlet H2S levels start to increase.

Initially plan on replacement of H2S media at first 6 months of continuous operation, but adjust interval with IRWD approval based on test results and system performance.

NOTE: Prior to the first replacement, the GI Energy team will prepare a media replacement procedure for IRWD review that will include a worker safety & PPE plan, media testing plan, disposal plan, required rolling stock, access requirements, and needed physical containments to eliminate the risk of media being introduced into the MWRP stormwater system (NPDES compliance).

Test and/or replace pressure vessel safety valves (PSV) as needed during annual shutdown.

Report any opening of the H2S vessels PSV, determine the cause and perform corrective action as needed.

3.2.1.3 Air Regeneration (40-AIR-BWR-0250)

Monitor operation with visual inspection daily.

Lubricate motor bearings per manufacturer's recommendations

Lubricate blower bearings per manufacturer's recommendations.

Replace wear items such as belts, expansion joints at annual shutdown based on observable wear or manufacturer's recommendations.

3.2.1.4 Gas Booster Blowers (40-DGL-BWR-0310, 40-DGL-BWR-0410, 40-DGL¬ BWR-0510)

Monitor operation with visual inspection daily.

Lubricate motor bearings per manufacturer's recommendations

Lubricate blower bearings per manufacturer's recommendations.

Replace wear items such as belts, expansion joints at annual shutdown or as needed based on observable wear.

3.2.1.5 Biogas Booster Recycle Line (40-DGM-FCV-0625)

Monitor valve actuator during daily inspections

Adjust limit switches as needed.

3.2.1.6 Economizing Heat Exchanger (40-DGM-EXR-0611)

Monitor operation during daily inspections.

Trend temperatures weekly and note any changes that would indicate loss of performance. Note pressure drops and record for reports.

Take corrective action for pressure or temperature changes that indicate plugging, fouling or other performance issues.

Clean air side per supplier's recommendations.

Check fan belt tension, as applicable. Adjust as needed.

Lubricate motor as required by manufacturer.

3.2.1.7 Glycol Heat Exchanger (40-DGM-EXR-0610)

Monitor operations daily.

Note pressure drops and fluid temperatures and record for reports.

Clean air side per supplier's recommendations.

Check fan belt tension, as applicable. Adjust as needed.

Lubricate motor as required by manufacturer.

3.2.1.8 Coalescing Filter (40-DGM-FLT-0610)

Monitor pressure drop during regular inspections, daily

Open & Inspect element, during annual shutdown

Replace elements as needed

3.2.1.9 Chiller (40-DGM-CHR-0620

Monitor Glycol fluid temperatures daily.

Check and add to fluid level as needed

Perform motor, compressor and pump maintenance per manufacturers recommendations.

3.2.2 Biogas Post-Treatment System

3.2.2.1 Siloxane Removal System (40-DGM-TK1410/1420/1430/1440/1450/1460)

Monitor Siloxane removal efficiency by taking samples and sending to a qualified lab test facility (see 3.3.2 below). The frequency will depend upon operation. Initially monitoring will be weekly or bi-weekly based but may be increased to monthly or quarterly based on performance, if acceptable to the IRWD.

Increase frequency of testing if the outlet Siloxane levels start to increase.

Initially plan on replacement of Siloxane media at first 6 months of continuous operation, but adjust interval with IRWD approval based on test results and system performance.

NOTE: Prior to the first replacement, the GI Energy team will prepare a media replacement procedure for IRWD review that will include a worker safety & PPE plan, media testing plan, disposal plan, required rolling stock, access requirements, and needed physical containments to eliminate the risk of media being introduced into the MWRP stormwater system (NPDES compliance).

Test and/or replace pressure vessel safety valves (PSV) as needed during annual shutdown.

Report any opening of the H2S vessels PSV, determine the cause and perform corrective action as needed.

3.2.2.2 Siloxane Sampling and Testing Method

Apply CAS AQL Method 111 for gas chromatography/mass spectrometry which tests for a 9-compound siloxane target list

Assemble and connect silicone tubing, rotameter and calibration tube, prepared slip stream and sampling tube(s) at designated sampling ports.

Take samples per Method and complete the Chain of Custody (COC) with the start and stop time flow rate and total sample volume and place in labeled Ziploc bag.

Send samples to ALS Environmental.

Receive and review laboratory results and provide reporting documentation.

3.2.2.3 Treated Gas Filter (40-DGM-FLT-1510 and 40-DGM-FLT-1520)

Monitor pressure drop during regular daily inspections

Open & Inspect element, during annual shutdowns

Replace elements as needed

3.2.3 Gas Blending and Compression

3.2.3.1 Gas Blending Station

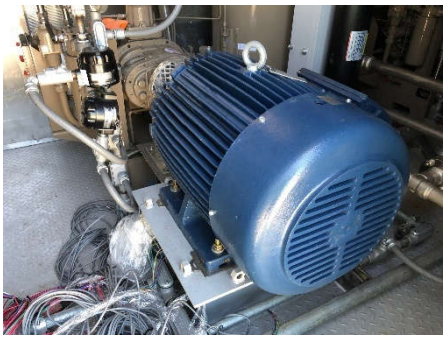
Monitor valve actuators during daily inspections

Adjust limit switches as needed.

Confirm Natural Gas pressure regulator setting and performance whenever blending is used.

Monitoring, record-keeping and reporting of treated biogas flow, treated biogas Btu value, natural gas flow and blend ratio

3.2.3.2 Gas Compressors (40-DGH-CMP-1610, 40-DGH-CMP-1620, 40-DGH-CMP-1630)



Monitor operation with visual inspection daily.

Lubricate motor bearings per manufacturer's recommendations

Lubricate compressor bearings per manufacturer's recommendations.

Replace wear items such as expansion joints at annual shutdown or as needed

Monitor vibration records and consult the manufacturer if any excess vibration is observed.

Check lubricant level daily, add as needed.

Send oil samples for lab analysis as recommended by the supplier.

If any PSV has opened, determine cause and rectify.

Perform interval-based preventive maintenance per manufacturer's recommendations.

Monitoring, record-keeping and reporting of inlet and outlet gas pressure

Review spare parts requirements annually.

3.2.3.3 Gas Compressor Recycle Line

Monitor valve actuator during daily inspections

Adjust limit switches as needed.

Correct any air or gas leaks found.

3.2.3.4 Compressed Gas Heat Exchanger (40-DGH-EXR-1645)

Monitor operation during daily inspections.

Trend temperatures weekly and note any changes that would indicate loss of performance. Note pressure drops and record for reports.

Take corrective action for pressure or temperature changes that indicate plugging, fouling or other performance issues.

Clean air side per supplier's recommendations.

Check fan belt tension, as applicable. Adjust as needed.

Lubricate motor as required by manufacturer.

3.2.3.5 Gas Receiver (40-DGH-TK)

Test and/or replace pressure vessel safety valves (PSV) as needed during annual shutdown.

Report any opening of the H2S vessels PSV, determine the cause and perform corrective action as needed.

Monitoring, record-keeping and reporting of inlet and outlet gas pressure

3.2.4 Microturbine System

3.2.4.1 Microturbines (40-DGH-TUR-1710, 40-DGH-TUR-1720, 40-DGH-TUR-1730, 40-DGH-TUR-1740, 40-DGH-TUR-1750)

Establish a site air-quality profile following commissioning per manufacturer's recommendations

Monitoring, record-keeping and reporting of inlet blended biogas temperature and pressure

Monitoring, record-keeping and reporting of process hot water return pressure and temperature

Replace batteries as required (if equipped)

General Cleaning and Inspection (actual battery limits of executed Capstone Factory Protection plan must be reviewed):

- Inspect all enclosure panel/door seals and exhaust stack seal(s)/gasket(s).
- Ensure all gaskets are present, intact and that there are no gaps between gaskets and doors.
- Replace any damaged seal(s)/gasket(s).
- Inspect all air intake paths – engine combustion air and electronics cooling air.
- Remove dirt and debris, clean air paths as necessary.
- Inspect all engine exhaust paths. Remove dirt and debris, clean exhaust paths as necessary.
- Inspect and remove debris from enclosure interior. Use vacuum cleaner and/or damp, lint-free cloths as necessary to remove debris.
- Inspect all fuel system fittings and components for leaks. Tighten fittings, repair leaks, and/or replace damaged components, as required.
- Inspect and secure any loose cables and harnesses.
- Ensure that no cables or flexible conduits rest on either the brake resistors or High
- Power Connection Module (HPCM).
- Inspect surrounding area (3m/10ft radius where possible) for excessive dirt, dust or other sources of air contamination. Clean surrounding area thoroughly to reduce dirt and dust intake into microturbine. Refresh gravel at sites where gravel is used to reduce fine ground-level dirt.
- Inspect enclosure sides and roof for damage and chipped/peeling paint. Touch up paint if necessary.

Clean or replace engine intake air and enclosure air filters per manufacturer's recommendations.

Fuel System Inspection and Maintenance:

- Inspect all fittings, connections, filters, valves, and gas compressors for leaks, from the fuel supply inlet into the microturbine.
- Tighten fittings, repair leaks, and/or replace damaged components, as required

Start/stop/restart microturbines as necessary to ensure proper utilization of biogas.

Perform SCAQMD-approved handheld emissions testing for NOx and CO on a weekly basis and record results

Monitoring, record-keeping and reporting of microturbine runtime, cumulative hours, percent online, electrical power per microturbines (kWh/day), electricity supplied to MWRP, parasitic power, electrical efficiency and online factor,

3.2.4.2 (5) Heat Recovery Units (need to clarify if HRUs are included in the Capstone scope of work)

On a daily basis, perform visual inspections, record analog gauge readings recorded.

Any leaks discovered during inspections will be addressed and repair work schedule in accordance to the severity of the leak.

Major leaks will be contained immediately after inspection and reported to the Site Supervisor or Service Manager.
On a weekly basis, perform water treatment testing, testing water samples at each unit unless they are tied to a common loop then testing will be done at the intersection of the loop. Samples will be cooled prior to performing tests. Water Chemistry will be adjusted according to test results. Note: method of testing TBD once

chemistry data has been provided. Any major swing in water chemistry will be treated as an internal leak if a visual leak is not detected and will be addressed accordingly.

On a quarterly basis, all onboard safeties will be tested.

On an annual basis, the following inspections, repairs and replacements will be performed in conjunction with the scheduled MBT System outage:

- Exhaust damper actuator gaskets and O-rings will be replaced due to them being outside in the elements and containing sensitive electronic components, any needed lubrication will also be done at this time. Test actuator operation. A ladder will be needed to access the actuators so a spotter will accompany the tech servicing the actuators.
- Grease exhaust damper pillow block bearings during actuator service.
- Pressure gauge check for accuracy.
- Temperature gauge check for accuracy.
- Thermal couple check for accuracy.
- Air release valve replacement, due to the small orifices within, they tend to clog and not vent entrained air and gasses as designed so a PM replacement is scheduled. Isolation valve will be closed, air release valve will be vented of pressure then removed and replaced with a new one.

Monitoring, record-keeping and reporting of recoverable heat (Btu/microturbine), inlet temperature, outlet temperature, flow rate (gpm), calculated thermal efficiency, cooling water supply inlet/outlet temperatures and flow rate (gpm).

7 Budget

Non-Recurring Budgets

Task	Duration	Labor	Mileage/ Vehicles	Parts/Services/ Consumables	Total Budget
Task 1 - Operation during Construction Contractor's Startup Testing and Commissioning	6 Weeks (1.5 Months)	$27,500.00	$1300.00	$0.00	$28,800.00
Task 2 - Operation to Achieve Performance Criteria Final Acceptance Test Plan	6 Weeks (1.5 Months)	$72,000.00	$2240.00	$0.00	$74,240.00
Task 2a – Project Plan	4 Weeks (1 Month)	$21,200.00	$0.00	$0.00	$21,200.00
TOTAL NON-RECURRING		**$120,700.00**	**$3540.00**	**$0.00**	**$124,240.00**

Assumptions

- Pre-Treatment System startup, commissioning, performance testing and final acceptance assumed to precede Post-Treatment and Microturbine Systems
- We assume that GI Energy will prepare an acceptance plan and conduct an onsite meeting with the IRWD prior to the acceptance test. This plan will include:
    - Objective
    - Parameters to be monitored for capacity, reliability and system current conditions (oil levels etc.)
    - Measures/testing procedure if the DG is not available at full capacity
    - Anticipated preventive maintenance schedule
    - Reporting schedule
    - Plan of operation for test (if it is not a continuous operation)
    - Who will be attending the tests
- It is assumed that system acceptance test will be comprised of full 5 days continuous operation and analysis of gathered data for the Pre-Treatment System and that the GI Energy team will be in attendance for evaluation, monitoring and reporting purposes
- It is assumed that system acceptance test will be comprised of full 5 days continuous operation and analysis of gathered data for the Post-Treatment and Microturbine system and that the GI Energy team will be in attendance
- Designated GI Energy and Biogas Engineering staff will attend all training

Recurring Budgets – Contract Year 1

Task	Duration	Labor	Mileage/ Vehicles	Parts/Services/ Consumables	Total Budget
Task 3 – Operations, Maintenance,	40 Weeks (9 Months)	$385,000.00	$28,800.00	$60,000.00	$473,800.00

Monitoring, Reporting and Compliance					
TOTAL NON-RECURRING ANNUAL		**$385,000.00**	**$28,800.00**	**$60,000.00**	**$473,800.00**
TOTAL NON-RECURRING MONTHLY		**$42,777.00**	**$3200.00**	**$6,666.00**	**$52,644.44**

Assumptions

- Does not include H2S and Siloxane media replacement and disposal costs
- Assumes 1 replacement of H2S and Siloxane media
- 2.5% annual escalation applied for contract Year 2

Recurring Budgets – Contract Year 2 (Full Year Operations & Maintenance)

Task	Duration	Labor	Mileage/ Vehicles	Parts/Services/ Consumables	Total Budget
Task 3 – Operations, Maintenance, Monitoring, Reporting and Compliance	52 Weeks (12 Months)	$478,000.00	$39,400.00	$131,500.00	$648,900.00
TOTAL NON-RECURRING ANNUAL		**$478,000.00**	**$39,400.00**	**$60,000.00**	**$648,900.00**
TOTAL NON-RECURRING MONTHLY		**$39,833.33**	**$3283.33**	**$10,958.33**	**$54,075.00**

Assumptions

- Does not include H2S and Siloxane media replacement and disposal costs
- Assumes 2 annual replacements of H2S and Siloxane media
- 2.5% annual escalation applied for contract Year 3

Annual On-Call Budget Allowance

Task	Duration	Labor	Mileage/ Vehicles	Parts/Services/ Consumables	Total Budget Allowance
Task 4 – Emergency Operations	On-Call	$97,000.00	$3500.00	$5000.00	$105,500.00
TOTAL ON-CALL		**$97,000.00**	**$3500.00**	**$5,000.00**	**$105,000.00**

Assumptions

- Applicable overtime rates for GI Energy and Biogas Energy staff included
- Unused balance of Emergency Operation On-Call Budget Allowance to be credited towards next contract year Allowance budget

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ENERGY

An affiliate of Shell New Energies US LLC

To: Owen O'Neill, Electrical & Instrumentation Manager, Irvine Ranch Water District

From: Jeff Bogg, Senior Vice President, GI Energy

Cc: Leti Rodriguez, Sales Manager, GI Energy

Date: January 22, 2020

Re: RFP for the Operation and Maintenance of Microturbine and Biogas Treatment Systems – Request for Information (RFI) #1

Dear Owen:

On behalf of GI Energy, I am pleased to present you with answers and supplemental information in connection with your January 16th email to GI Energy. Our RFI responses are as follows:

IRWD Question #1 - *On Page 5, there is a matrix outlining project O&M responsibilities. A impactful, perhaps the most impactful, portion of the project (Biogas pre and post treatment) will be subcontracted to Biogas engineering. Biogas engineering appears to have a significant amount of experience with projects similar to ours. Given their experience level, could you please speak to the statement on page 10 as to why media replacement and disposal costs were excluded from the price proposal? The current price proposal indicates to us that the media replacement and disposal costs were included.*

GI Energy Response #1 – The GI Energy team was unsure of the gas composition and the trace impurities that could be potentially present in the biogas. In our judgment at the time of proposal preparation, it would have been premature to assume that the media will be nonhazardous, without knowing the time of operation (how long the media was in service) and other parameters which would impact that classification. Accordingly, we excluded this cost in our proposal to error on the side of caution.

However, assuming the media will be nonhazardous (which can be disposed in nonhazardous 27 CCR 20220 landfills) and the removal and replacement work can be performed in 3 days (for H2S vessels and for Siloxane removal vessel), the cost per changeout is roughly estimated to be as follows:

- Siloxane Media - Approximately $165,000 to $175,000/change out (excluding taxes) for Siloxane vessels (3 vessels/1 train) – assuming the media is sSorb Silica Gel Beads ($7.16/lbs of media), Type A – Colorless. Please note that the media currently specified in the O&M plan is proprietary, and we were unable to receive a quotation. GI Energy

is providing you a media which we believe to be nearly identical, if the media cost is different, we will revise the budgetary estimate.

- H2S Media - Approximately $40,000 to $50,000/changeout for the replacement of H2S media (both vessels) – assuming the media is iron sponge.

The proposal budget estimates presented above include media replacement, shipping and disposal costs. Labor, equipment, rolling stock and nitrogen purge of each vessel during the changeout costs are already included in GI Energy's budget. GI Energy will update and amend and amend Section 7 Budgets Non-Recurring Task 3 – Operations, Maintenance, Monitoring, Reporting and Compliance under separate cover.

IRWD Question #2 - *On Page 10, does GI energy or Biogas Engineering expect the spent H2S and Siloxane media to be HAZ waste?*

GI Energy Response #2 - No, we do not anticipate the media to be hazardous, however, it will be imperative that it br laboratory tested prior to final disposal. If an independent and qualified laboratory concludes that media is hazardous, a revised budget estimate for disposal will be prepared for the IRWD.

IRWD Question #3 - *Does GI Energy have a contingency in the event their relationship with Biogas Engineering is severed mid contract period?*

GI Energy Response #3 – Yes. GI Energy's business plan for IRWD O&M includes Biogas Engineering as a qualified subcontractor to provide consulting, advisory, training, operations and maintenance support services for the Pre- and Post-Treatment Systems for the critical first year of operations.

During the first year of operations Biogas Engineering will lead activities related to the O&M of the Pre- and Post-Treatment systems under GI Energy's direction in addition to providing GI Energy's O&M service technicians' training on the operation and maintenance of these systems. During the second contract year, GI Energy will assume lead responsibility for the daily, weekly and monthly activities and provide Biogas Engineering with scope to deliver oversight, troubleshooting and quality assurance services.

While GI Energy is highly confident that Biogas Engineering's interests in reliably serving us and the IRWD are aligned, if there is cause to terminate their contract after a year or more, GI Energy will be capable of delivering the services and performance required in the RFP as a consequence of the knowledge transfer and training received during the first year of operations.

IRWD Question #4 - *Would it be possible for IRWD to tour Biogas Engineering's operation?*

GI Energy Response #4 – Absolutely, we will be happy to provide you with both site and office tours. For the site tour, the most relevant and conveniently-located site will be the Victor Valley Wastewater Reclamation Authority, where Biogas Engineering provides on-call O&M services and is currently supporting several projects. Arnold Ramirez has been providing consulting and

engineering services for that site for past 6-8 years. Other site visits can of course be arranged at your request.

Please feel free to reach out to me or Leti directly with any additional questions you have.

Best regards,

Jeff Bogg
Senior Vice President, Service Solutions
Tel: (714) 916-2305
jbogg@gienergyus.com

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7 Budget

GI Energy and Biogas Engineering met with the Irvine Ranch Water District on February 24th, 2020 to discuss Operations and Maintenance Project scope, risk and budget assumptions with the objective of reducing proposal Section 7 Budget pricing. Following the meeting, GI Energy and Biogas Engineering developed revised pricing which is presented herein.

Task 1 and 2 Non-Recurring Budgets

For Task 1 – "Operation during Construction Contractor's Startup, Testing and Commissioning" and Task 2 – "Operations to Achieve Performance Criteria" - collectively referred to by GI Energy as the "Non-Recurring Budgets" - we now propose that these Tasks be billed to the IRWD on a time and materials basis. The reason for this relates to the inherent uncertainty around frequencies, durations and level of effort for Tasks 1 and 2.

With this proposed commercial approach, the IRWD can control the scope and budget on an "on call" and/or approved task order basis and be assured that the GI Energy team will be there to receive training and provide support and deliverables as requested. The 2020 rate schedule is as follows:

Table 1. GI Energy 2020 Time and Material Rate Schedule for Tasks 1 and 2

Labor Category	Base Hourly Rate - $/Hour	Overtime Rate - $/Hour
Principal	$220.00	-
Project Manager	$175.00	-
Project Engineer	$175.00	-
O&M Field Technician	$145.00	$200.00
Administrative Assistant	$75.00	-
	$/Mile	
Mileage	$2.75	-
	Markup	
Parts & Materials	15%	

Assumptions

- Field labor costs are prevailing wage.
- No budget ceiling proposed at this time due to scope and duration uncertainty.
- All T&M budgets authorized in writing advance by IRWD.
- Mileage charges assessed from point departure to MWRP.
- We assume that GI Energy will prepare an acceptance plan and conduct an onsite meeting with the IRWD prior to the acceptance test. This plan will include:
    - Objective
    - Parameters to be monitored for capacity, reliability and system current conditions (oil levels etc.)
    - Measures/testing procedure if the DG is not available at full capacity
    - Anticipated preventive maintenance schedule

  - Reporting schedule
  - Plan of operation for test (if it is not a continuous operation)
  - Who will be attending the tests
- Approved and designated GI Energy and Biogas Engineering staff will attend all training required by IRWD.
- If the test conditions do not match with the design conditions, or the digester gas is not available due to issues beyond our control, we reserve the right to request an amendment to the operation and maintenance contract performance guarantees.
- Since the Microturbine and Biogas Treatment Systems were not designed or installed by the GI Energy team, we assume no liability for any equipment performance deficiencies for the existing system or any equipment, process or controls design deficiencies which might be observed during the acceptance or performance testing.
- Programming changes/setpoint changes will be performed by others, setpoints changes will be recommended and shared with IRWD prior to programming.

Task 3 Recurring Budget – First 12 Months of Operations & Maintenance

Task	Duration	Labor	Mileage/ Field Service Trucks	Routine Parts/Services/ Consumables	Total Budget
Task 3 – Operations, Maintenance, Monitoring, Reporting and Compliance	52 Weeks (12 Months)	$292,000.00	$32,200.00	$60,800.00	$385,000.00
TOTAL RECURRING ANNUAL		**$292,000.00**	**$32,200.00**	**$60,800.00**	**$385,000.00**
TOTAL RECURRING MONTHLY		**$24,333.00**	**$2,683.00**	**$5,067.00**	**$32,083.00**

Assumptions

- The cost does not include any allocation of budget to replace existing system or equipment in the event of failure, we expect the equipment warranty will be provided and maintained by the owner (IRWD) with the exception of the Capstone Protection Plan which will be administered by GI Energy.
- If a piece of equipment, system, parts or service in excess of $5,000 value is required, GI Energy will notify IRWD immediately and an approval will be sought prior to performing the replacement/service. Any costs excess of $5,000 will be billed outside the contract overall limit on a time and material basis.

- We assume an inventory of equipment manufacturer recommended spare parts will be maintained by IRWD at the site and Biogas will have access to these parts 24x7. Any items which require more than $2,000 of non-routine service/parts (up to $20,000/year) form outside vendors will be billed under non routine maintenance. GI Energy will update client regarding the status of the inventory on a monthly basis so that the spare parts can be reordered and restocked by the client.
- IRWD will be notified prior to procuring parts and services.
- 2.0% annual contract escalation assumed.

Task 4 Media Change-Out Schedule Pricing

Per IRWD's request from the February 24th 2020 meeting, GI Energy prepared schedule pricing (contract Task 4) for hydrogen sulfide (H_2S) and siloxane media changeouts. The 2020 schedule prices are as follows:

- 2 Vessel H2S Media (Iron Sponge) Changeout: $60,000.00
- 3 Vessel (1 train) Siloxane Media (Silica Gel Beads) Changeout: $180,000.00

Assumptions

- Includes all direct and 3rd-party labor costs.
- Assumes work will be completed in 3 days.
- Vessel nitrogen purge costs included.
- Includes required rolling stock, equipment, tools and PPE to perform the work safely and efficiently.
- Non-hazardous waste transportation and disposal costs included.
- Media costs subject to change at time of IRWD media change-out approval.
- Labor and third-party annual cost escalation of 2.0%.

Task 5 Annual On-Call Budget Allowance

Task	Duration	Labor	Mileage/ Vehicles	Parts/Services/ Consumables	Total Budget Allowance
Task 5 – Emergency Operations	On-Call	$76,000.00	$3500.00	$5000.00	$84,500.00
TOTAL ON-CALL		**$76,000.00**	**$3500.00**	**$5,000.00**	**$84,500.00**

Assumptions

- MWRP normal business hours assumed to be 7:00 AM to 6:00 PM. Emergency call outs during non-business hours.
- We assume 25% of the overall emergency hours spent by the O&M Field Technicians will be overtime hours and about 15% time will be double time.
- Applicable overtime rates for GI Energy team staff included
- Unused balance of Emergency Operation On-Call Budget Allowance to be credited towards next contract year Allowance budget

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