THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

BOARD ACTION

- **Board of Directors**
  Engineering and Operations Committee

2/8/2022 Board Meeting

7-2

Subject

Award three professional services agreements to support rehabilitation projects at the Colorado River Aqueduct pumping plants: (1) an agreement with Parsons Transportation Group Inc. in an amount not to exceed $2,650,000; (2) an agreement with Jacobs Engineering Group Inc. in an amount not to exceed $650,000; and (3) an agreement with Tetra Tech, Inc. in an amount not to exceed $650,000; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA

Executive Summary

Professional services agreements are recommended for the three Colorado River Aqueduct (CRA) pumping plant projects listed below.

- Project No. 1 - Iron Mountain and Gene Pumping Plant Utilities – This project replaces domestic water, non-potable water, and wastewater systems at the Iron Mountain and Gene pumping plants. This project is being closely coordinated and scheduled with the Desert Housing Program. The action authorizes an agreement with Parsons Transportation Group Inc. for preliminary and final design to replace utilities at Iron Mountain and Gene pumping plants.
- Project No. 2 - CRA Region Security Improvements – This project installs security improvements at the five CRA pumping plants and the Camino Substation. This action authorizes an agreement with Jacobs Engineering Group, Inc. for preliminary design to improve physical security at six locations along the CRA.
- Project No. 3 - Iron Mountain Station Power and Lighting Switchrack Replacement – This project replaces the central power distribution center for all pumping plant electrical loads, with the exception of the switchgear for the main pumps which was replaced under an earlier project. This action authorizes an agreement with Tetra Tech, Inc. for preliminary design to replace the station power and lighting switchrack at the Iron Mountain pumping plant.

This action authorizes three professional service agreements to provide engineering support for the projects listed above. These projects will improve water delivery reliability, provide reliable utility service for employees, and improve safety and security at several desert sites.

Details

Background

The CRA is a 242-mile-long conveyance system that transports water from the Colorado River to Lake Mathews. It consists of five pumping plants; 124 miles of tunnels, siphons, and reservoirs; 63 miles of canals; and 55 miles of cut-and-cover conduits. The aqueduct was constructed in the late 1930s and was placed into service in 1941.

Three professional service agreements are recommended at this time to provide engineering support for infrastructure improvements at the CRA pumping plants. One project improves security, while the other two projects replace aging facilities at the pumping plants.

In accordance with the April 2020 action on the biennial budget for Fiscal Years 2020/21 and 2021/22, the General Manager will authorize staff to proceed with the actions described herein, pending board-authorization of

the design services agreement described below. Based on the current Capital Investment Plan (CIP) expenditure forecast, funds for the work to be performed pursuant to this action during the current biennium are available within the Capital Investment Plan Appropriation for Fiscal Years 2020/21 and 2021/22 (Appropriation No. 15517). Funds required for work to be performed pursuant to the subject contract after fiscal year 2021/22 will be budgeted within the Capital Investment Plan Appropriation for Fiscal Years 2022/23 and 2023/24.

Project No. 1 - Iron Mountain and Gene Pumping Plant Utility Replacement – Preliminary and Final Design

The Iron Mountain and Gene pumping plants are located in remote areas of San Bernardino County, where municipal utility supplies are not available. The CRA pumping plants and villages rely on onsite utility systems to supply treated drinking water, to supply non-potable water for industrial and irrigation water needs, and to dispose of wastewater.

Most of these utility systems and ancillary features were installed in the 1940s. Major components of these systems have deteriorated over time through continuous use. This includes the drinking and non-potable water distribution systems, which are prone to pipe breaks and leaks, resulting in costly repairs. In addition, the wastewater systems are experiencing recurring problems such as plumbing and septic tank backups, clogged leach fields, broken and slow-draining collection pipes, and odors.

Replacement of the utilities beneath the roadways will also require cutting and trenching of the existing roadways. This work will further distress the existing asphalt surfaces. After nearly 80 years of service, the subgrade below the roads has deteriorated resulting in potholes and cracks throughout the village roads. A full-width asphalt road replacement is recommended as part of the utility replacement project.

The planned work for the Iron Mountain and Gene pumping plants utility improvements includes the replacement of the existing domestic water distribution piping, non-potable water distribution piping, and the wastewater collection piping with septic tanks and leach fields; replacement of the existing asphalt pavement in the village, including grading and drainage improvements, installation of new roadway striping and signage; and site restoration. Under a separate Capital Investment Plan project, the potable water treatment systems at each of the five CRA pumping plants are being replaced. This project will be coordinated with that on-going project.

The work under this project is also being closely coordinated and scheduled with an existing project to replace the desert village housing and other amenities at each site. Those projects are also in the preliminary design phase, and this is an opportune time to commence preliminary design of the utilities replacement project. Design activities will be conducted with a hybrid effort of consultant and Metropolitan staff as described below. Metropolitan staff will perform overall project management and consultant oversight. Staff will return to the Board at a later date to award a construction contract.

A total of $4.1 million is required for this work. Allocated funds include a total of $2,650,000 for design activities (includes $700,000 for preliminary investigations, technical assessments, and analyses, and $1,950,000 for final design activities) by Parsons Transportation Group Inc. (Parsons) under a new agreement, as described below; and a total of $195,000 for constructability workshop, environmental documentation, and geotechnical investigation activities. Each of these activities will be performed by a specialty firm under a contract planned to be executed under the General Manager's Administrative Code authority to award contracts of $250,000 or less. Allocated funds for Metropolitan staff activities includes $608,000 for technical oversight and review of consultant's work; $372,000 for regulatory agency coordination, project management, and project controls; and $275,000 for remaining budget.

As described above, final design will be performed by Parsons and Metropolitan staff. Engineering Services' performance metric target range for final design with construction more than $3 million is 9 to 12 percent. For this project, the performance metric goal for final design is 11.5 percent of the total construction cost. The estimated cost of design is $2,408,000, which includes $1,950,000 for Parsons and $458,000 for Metropolitan staff. The estimated cost of construction for this project is anticipated to range from $21 million to $23 million.

Attachment 1 provides the allocation of the required funds. The total estimated cost of this project work, including the funds allocated for the work described in this action and future construction costs, is anticipated to range from $28 million to $30 million.

Engineering Services (Parsons Transportation Group Inc) – New Agreement

Parsons is recommended to provide engineering services for preliminary and final design of the utility and pavement replacement at Iron Mountain and Gene pumping plants. Parsons was prequalified via Request for Qualifications 1131 and was selected based on the firm's design expertise in the specific technical aspects of this project. In addition, Parsons performed initial hydraulic modeling of the wastewater system and has in-depth familiarity with project requirements.

The planned activities for Parsons include performing the following activities: (1) site reconnaissance, data collection and utility investigations; (2) hydraulic analyses for potable water, non-potable water, and wastewater piping systems; (3) analyses associated with proper sizing and configuration of the necessary septic system components; (4) design development of the "basis of design" to incorporate desert housing project improvements; (5) preparation of drawings and specifications; (6) permitting support and coordinating with local jurisdictions and/or agencies; (7) development of construction cost estimate; and (8) bid phase support.

This action authorizes an agreement with Parsons for a not-to-exceed amount of $2.65 million to provide engineering design services for utility systems replacement at Iron Mountain and Gene pumping plants. For this agreement, Metropolitan has established a Small Business Enterprise (SBE) participation level of 19 percent. Parsons has agreed to meet this level of participation. The planned subconsultants for this work are listed in **Attachment 2**.

Project No. 2 - CRA Region Security Improvements – Preliminary Design

When Metropolitan's CRA pumping plants were constructed over 80 years ago, the desert region was undeveloped. Since then significant development and has taken place in the vicinity of the plants. Despite this development, the CRA pumping plants still lack security features that are typical of other Metropolitan facilities. In 2019, Metropolitan staff and a consultant completed a comprehensive security assessment of the desert pump plants and the Camino Electrical Switching Station. The results of that assessment made numerous recommendations for security upgrades. Those recommended upgrades are the subject of the scope of work for this project.

Examples of the issues at each of the five CRA pumping plants include incomplete perimeter fencing, which leaves these facilities susceptible to potential vandalism, theft, and sabotage by unauthorized public access. Upgraded security entry checkpoints are also necessary at each pump plant to properly control ingress and egress from the sites.

Security upgrades are also recommended for Metropolitan's Camino Electrical Switching Station, which is located in a remote area approximately 25 miles west of Needles, California. This facility is vulnerable to trespassing and is critical for the operation of the CRA system. The Camino Substation transmits power form Hoover Dan via two power lines; one power line transmits power towards the Gene and Intake pumping plants, and the other towards Iron Mountain, Eagle Mountain and Hinds pumping plants.

The planned work for the physical security improvements will include installation or upgrades of perimeter fencing with access gates at patrol routes around all the five pumping plant facilities; permanent guard station at the entrance to each pumping plant; facility signage, access control, and road improvements at main entrances to each pumping facility; cameras, motion detectors, remote speakers, lights, and card readers at the Camino Substation. Preliminary design activities will be conducted by consultant as described below. Metropolitan staff will perform overall project management and consultant oversight.

A total of $1.43 million is required for this work. Allocated funds include $650,000 for preliminary design by Jacobs Engineering Group Inc. (Jacobs), under a new agreement, as described below; and a total of $200,000 for value engineering, environmental documentation, and geotechnical investigation activities. Each of these activities will be performed by a specialty firm under a contract planned to be executed under the General Manager's Administrative Code authority to award contracts of $250,000 or less. Allocated funds for Metropolitan staff activities includes $196,000 for technical oversight and review of consultant's work; $231,000 for surveying, environmental assessments and documentation, project management, and project controls; and $153,000 for remaining budget.

The total cost of the project to improve the CRA region physical security will be re-evaluated during preliminary design. Currently, the future construction contract is estimated to range from $8 million to $9 million. **Attachment 1** provides the allocation of the required funds.

Engineering Services (Jacobs Engineering Group Inc.) – New Agreement

Jacobs is recommended to provide engineering services for preliminary design of the CRA Region Physical Security Improvements. Jacobs was prequalified via Request for Qualifications 1131 and is recommended based on the firm's expertise in the discipline-specific technical aspects of this project, technical approach, and its experience with similar projects.

The planned design activities for Jacobs include: (1) site reconnaissance, data collection and utility investigations; (2) assessments of existing security measures; (3) evaluations of proposed security improvement options and preferred alternatives; (4) preparation of field of view calculations and drawings; (5) preparation of preliminary design drawings and report; (6) development of a Class 3 construction cost estimate; (7) participation in value engineering review workshops; and (8) development of final design criteria.

This action authorizes an agreement with Jacobs for a not-to-exceed amount of $650,000 to provide engineering design services for CRA Region Physical Security Improvements. For this agreement, Metropolitan has established a SBE participation level of 10 percent. Jacobs has agreed to meet this level of participation. The planned subconsultants for this work are listed in **Attachment 2**.

Project No. 3 – Iron Mountain Pumping Plant Station and Lighting Switchrack Rehabilitation – Preliminary Design

At each of the CRA's five pumping plants, incoming high-voltage power is stepped down to 6,900 V to power the main pumps and then down to 2,400 V (or 480 V in the case of Intake Pumping Plant) to power each plants' station power and lighting (SPL) switchrack. These switchracks are the central power distribution center for all pumping plant electrical power loads with the exception of the main pumps. Each switchrack consist of vacuum circuit breakers and transformers fed by overhead copper buses, and disconnect switches, all of which are supported by a steel lattice frame, exposed to the environment in an outdoor fenced-in yard.

From the SPL switchrack, power is distributed directly to electrical loads or via additional step-down transformers to various critical systems including the main pumps' cooling water pumps, lubricating oil systems, and discharge valve actuators; general station lighting and computer systems; domestic water filtration systems; microwave communications systems; and village housing. In the event of an unanticipated power outage to the pumping plant, power systems are kept operational by the activation of a standby diesel generator tied to the SPL switchrack.

The CRA's main pump switchracks were upgraded with a project that was completed in 2017. The SPL switchracks are mostly original CRA construction, completed in the late 1930s. Deficiencies affecting the reliability of the switchracks include obsolete equipment such as the use of obsolete vacuum circuit breakers; lack of modern safety features such as a means to lock switches in the open state when required; an outdoor equipment design where switches, breakers and busses are exposed to the elements, making it difficult to repair or maintain equipment under adverse weather conditions; and outmoded protection relays.

A detailed study of the Iron Mountain switchrack was recently completed to define project scope and determine design and construction sequencing options that would be applicable to Iron Mountain and the other four other CRA pumping plants, given the similarities between the plants. In addition to addressing obvious deficiencies, the study recommended a coordinated and holistic upgrade of both the switchrack and other ongoing and associated electrical projects, such as the nearby standby generator replacement and the low voltage auxiliary power system replacement.

Preliminary design effort will initially focus on rehabilitation of the switchrack at Iron Mountain. The work will also take into account the planned necessary upgrades to the other associated electrical equipment described above. The design for Iron Mountain will be used as the framework for the preliminary design development of the remaining pumping plants. Based on the conceptual work that has been completed to date, rehabilitation work includes a cast-in-place building to house critical electrical equipment and replacement of the SPL switchracks, standby diesel engine generators, and low voltage auxiliary power system. Preliminary design activities will be

conducted with a hybrid effort of consultant and Metropolitan staff as described below. Metropolitan staff will integrate related ongoing projects such as the emergency generator replacement and auxiliary system rehabilitation; develop construction phasing for the suite of electrical projects; perform consultant oversight; and overall project management.

A total of $1.6 million is required for this work. Allocated funds include $650,000 for preliminary design activities and technical assessment by Tetra Tech, Inc. (Tetra Tech) under a new agreement, as described below; and a total of $125,000 for value engineering, environmental documentation, and geotechnical investigations activities. Each of these activities will be performed by a specialty firm under a contract planned to be executed under the General Manager's Administrative Code authority to award contracts of $250,000 or less. Allocated funds for Metropolitan staff activities include: $354,000 for technical oversight and review of consultant's work; $317,000 for surveying, environmental assessments and documentation, project management, and project controls; and $154,000 for remaining budget.

The total cost of the project to replace and upgrade the existing 2.4 kV switchrack at the Iron Mountain pumping plant will be re-evaluated during preliminary design. Currently, future construction contract costs are estimated to range from $16 million to $17 million. **Attachment 1** provides the allocation of the required funds.

Engineering Services (Tetra Tech, Inc.) – New Agreement

Tetra Tech, Inc. is recommended to provide engineering services for preliminary design to rehabilitate the SPL switchrack at the Iron Mountain pumping plant. Tetra Tech was selected via Request for Qualifications No. 1215. Tetra Tech was selected based on the firm's design expertise in the discipline-specific technical aspects of this project, technical approach, and its experience with similar projects. In addition, Tetra Tech performed the study phase of the project and has in-depth familiarity with project requirements.

The planned preliminary design activities for Tetra Tech include: (1) development of design criteria; (2) preparation of load calculations; (3) development of interconnection to existing system; (4) preparation of equipment layouts; (5) identification of outage requirements; and (6) planning for construction sequencing. Preliminary design phase activities will be conducted with a hybrid effort of consultant and Metropolitan staff as described below. Metropolitan staff will perform overall project management and consultant oversight.

This action authorizes an agreement with Tetra Tech for a not-to-exceed amount of $650,000 to provide engineering design services to rehabilitate Iron Mountain pumping plant SPL switchrack. For this agreement, Metropolitan has established an SBE participation level of 15 percent. Tetra Tech has agreed to meet this level of participation. The planned subconsultants for this work are listed in **Attachment 2**.

Alternatives Considered

Alternatives considered for completing design activities for the CRA Rehabilitation Program included assessing the availability of in-house Metropolitan staff to conduct this work. The CRA Rehabilitation Program's staffing strategy for utilizing consultants and in-house Metropolitan staff has been: (1) to assess current work assignments for in-house staff to determine the potential availability of staff to conduct this work; and (2) for long-term rehabilitation projects, when resource needs exceed available in-house staffing or require specialized technical expertise, typically staff uses project-specific professional services agreements in order to provide a concentrated engineering effort over an extended duration.

This strategy relies on the assumption that in-house engineering staff will handle the baseload of work on capital projects, while professional services agreements are selectively utilized to handle projects above this baseload or where specialized needs are required. This strategy allows Metropolitan's staff to be strategically utilized on projects to best maintain key engineering competencies and to address projects with special needs or issues. After assessing the current workload for in-house staff and the relative priority of this project, staff recommends the use of a professional services agreement for the subject projects. This approach will allow for the completion of not only these projects, but also other budgeted capital projects within their current schedules and ensure that the work is conducted in the most efficient manner possible.

Summary

This action authorizes agreements with: (1) Parsons for a not-to-exceed amount of $2,650,000 for design to replace the utilities and pavement at Iron Mountain and Gene pumping plants; and (2) Jacobs for a not-to-exceed amount of $650,000 to provide engineering services for preliminary design for CRA region security improvements; and (3) Tetra Tech for a not-to-exceed amount of $650,000 to provide engineering services for preliminary design to rehabilitate the Iron Mountain pumping plant SPL switchrack.

See **Attachment 1** for the Allocation of Budgeted Funds, **Attachment 2** for the Planned Subconsultants, and **Attachment 3** for the Location Map.

Project Milestones

October 2022 – Completion of preliminary design of CRA region security improvements

December 2022 – Completion of final design to replace the CRA utilities at Iron Mountain and Gene pumping plants

March 2023 – Completion of preliminary design to rehabilitate the Iron Mountain pumping plant station power and lighting switchrack

Policy

Metropolitan Water District Administrative Code Section 8121: General Authority of the General Manager to Enter Contracts

Metropolitan Water District Administrative Code Section 11104: Delegation of Responsibilities

By Minute Item 51963, dated April 14, 2020 the Board appropriated a total of $500 million for projects identified in the Capital Investment Plan for Fiscal Years 2020/21 and 2021/22.

California Environmental Quality Act (CEQA)

CEQA determination for Options #1 and #2:

The proposed action is not defined as a project under CEQA because it involves only feasibility or planning studies for possible future actions which the Board has not approved, adopted or funded (Section 15262 of the State CEQA Guidelines). In addition, the proposed action is categorically exempt under the provisions of CEQA and the State CEQA Guidelines because the proposed action involves basic data collection and research activities which do not result in a serious or major disturbance to an environmental resource, which may be strictly for information gathering purposes, or as part of a study leading to an action which a public agency has not yet approved, adopted, or funded (Class 6, Section 15306 of the State CEQA Guidelines).

CEQA determination for Option #3:

None required

Board Options

Option #1

a. Authorize an agreement with Parsons Transportation Group Inc. for a not-to-exceed amount of $2,650,000 for design to replace the utilities at Iron Mountain and Gene pumping plants.
b. Authorize an agreement with Jacobs Engineering Group Inc. for a not-to-exceed amount of $650,000 for preliminary design to improve physical security at the CRA pumping plants.
c. Authorize an agreement with Tetra Tech, Inc. in an amount not to exceed $650,000 for preliminary design to rehabilitate the station power and lighting switchrack at the Iron Mountain pumping plant.

Fiscal Impact: Expenditure of $7.13 million in capital funds. Approximately $1.9 million will be incurred in the current biennium and has been previously authorized. The remaining capital expenditures will be funded from future CIP budgets following Board approval of those budgets.
Business Analysis: This option will enhance water delivery infrastructure reliability, provide reliable utility services on a schedule that is coordinated with the upgrade of desert housing and associated amenities, and improve safety and security in the CRA region.

Option #2

a. Authorize an agreement with Parsons Transportation Group Inc. for a not-to-exceed amount of $2,650,000 for design to replace the utilities at Iron Mountain and Gene pumping plants;
b. Do not authorize an agreement with Jacobs Engineering Group Inc. for a not-to-exceed amount of $650,000 for preliminary design to improve physical security at the CRA pumping plants; and
c. Do not authorize an agreement with Tetra Tech, Inc. in an amount not to exceed $650,000 for preliminary design to rehabilitate the station power and lighting switchrack at the Iron Mountain pumping plant.

Fiscal Impact: Expenditure of $4.1 million in capital funds. Approximately $1 million will be incurred in the current biennium and has been previously authorized. The remaining capital expenditures will be funded from future CIP budgets following Board approval of those budgets.

Business Analysis: This option will provide reliable utility services for employees which is being closely coordinated and scheduled with a project to upgrade desert housing and associated amenities. This option may delay improvements to water delivery infrastructure reliability, and safety and security in the CRA region.

Option #3

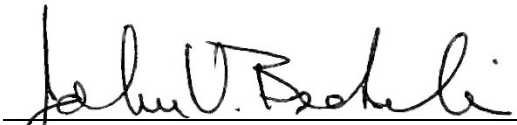
Do not proceed with the projects at this time.

Fiscal Impact: None

Business Analysis: This option would forego an opportunity to improve reliability, utility service, and safety in the CRA region.

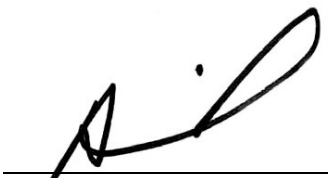
Staff Recommendation

Option #1



1/24/2022

John V. Bednarski *Date*
Manager/Chief Engineer
Engineering Services



1/26/2022

Adel Hagekhalil *Date*
General Manager

Attachment 1 – Allocation of Funds

Attachment 2 – Planned Subconsultants

Attachment 3 – Location Map

Ref# es02082022

Allocation of Funds for Iron Mountain and Gene Pumping Plant Utility Replacement

	Current Board Action (Feb. 2022)
Labor	
Studies & Investigations	$ 150,000
Final Design	458,000
Owner Costs (Program mgmt., envir. monitoring)	362,000
Submittals Review & Record Drwgs.	-
Construction Inspection & Support	-
Metropolitan Force Construction	-
Materials & Supplies	-
Incidental Expenses	10,000
Professional/Technical Services	-
Parsons Transportation Group Inc.	2,650,000
Specialized Geotechnical Services (Fugro)	100,000
Specialized Environmental Services (Aspen Environmental)	25,000
VE Consultant	70,000
Right-of-Way	-
Equipment Use	-
Contracts	-
Remaining Budget	275,000
Total	**$ 4,100,000**

The total amount expended to date to upgrade the Iron Mountain and Gene Pumping Plant Utility Replacement is $2.9 million. The total estimated cost to complete the project, including the amount appropriated to date, funds allocated for the work described in this action, and future construction costs, is anticipated to range from $28 million to $30 million.

Allocation of Funds for CRA Region Security Improvements

	Current Board Action (Feb. 2022)
Labor	
Studies & Investigations	$ 196,000
Final Design	-
Owner Costs (Program mgmt., envir. monitoring)	224,000
Submittals Review & Record Drwgs.	-
Construction Inspection & Support	-
Metropolitan Force Construction	-
Materials & Supplies	-
Incidental Expenses	7,000
Professional/Technical Services	-
Jacobs Engineering Group Inc.	650,000
Specialized Geotechnical Services	40,000
Specialized Environmental Services	100,000
VE Consultant	60,000
Right-of-Way	-
Equipment Use	-
Contracts	-
Remaining Budget	153,000
Total	**$ 1,430,000**

The total amount expended to date to upgrade the CRA Region Security Improvements is $280,000. The total estimated cost to complete the project, including the amount appropriated to date, funds allocated for the work described in this action, and future construction costs, is anticipated to range from $12 million to $13 million.

Allocation of Funds for Iron Mountain Pumping Plant Station Power and Lighting Switchrack Rehabilitation

	Current Board Action (Feb. 2022)
Labor	
Studies & Investigations	$ 354,000
Final Design	-
Owner Costs (Program mgmt., envir. monitoring)	307,000
Submittals Review & Record Drwgs.	-
Construction Inspection & Support	-
Metropolitan Force Construction	-
Materials & Supplies	-
Incidental Expenses	10,000
Professional/Technical Services	-
Tetra Tech Inc.	650,000
Specialized Geotechnical Servicies	50,000
Specialized Environmntal Servicies	10,000
VE Consultant	65,000
Right-of-Way	-
Equipment Use	-
Contracts	-
Remaining Budget	154,000
Total	**$ 1,600,000**

The total amount expended to date to upgrade the Iron Mountain Pumping Plant Station and Lighting Switchrack Rehabilitation is $550,000. The total estimated cost to complete the project, including the amount appropriated to date, funds allocated for the work described in this action, and future construction costs, is anticipated to range from $21 million to $23 million.

The Metropolitan Water District of Southern California

Subconsultants for Agreement with Parsons Transportation Group Inc.

Subconsultant and Location
Civiltec Engineering Inc. Monrovia, California
DRP Engineering Inc. Alhambra, California
Leighton Consulting, Inc. Irvine, California

The Metropolitan Water District of Southern California

Subconsultants for Agreement with Jacobs Engineering Group Inc.

Subconsultant and Location
Gillis + Panichapan Architects, Inc. – Costa Mesa, California
Indian Energy LLC – Anaheim, California

The Metropolitan Water District of Southern California

Subconsultants for Agreement with Tetra Tech, Inc.

Subconsultant and Location
DRP Engineering Inc. – Alhambra, California
ProjectLine Technical Services, Inc. – Costa Mesa, California

Location Map