



April 11, 2022

Anthony Uribe
City of Coalinga
(Submitted Electronically)

RE: Proposal for WTP Upgrades - Task Order #1 – Raw Water Intake Screens Replacement

Dear Anthony,

MKN & Associates, Inc. (MKN) is pleased to submit a scope and fee of design services for the City of Coalinga (City) Water Treatment Plant (WTP) Upgrades - Task Order #1 – Raw Water Intake Screens Replacement.

Project Background

The raw water intake screens at the WTP's raw water intake structure are nearing the end of their useful life. The City is seeking to replace the existing screens with a long-term, cost-effective solution that will achieve the following objectives:

- reliable screening of raw water debris typically observed in the Coalinga Canal
- ease of access and maintenance
- cost-effective integration of the new screens with the existing raw water intake structure

Budgetary quotations for replacement screens were previously solicited from two equipment manufacturers, Duperon and Hydrodyne, through a local representative, JBI Water & Wastewater (JBI). Comparison of both quotations indicated that the Hydrodyne Great White Screens were approximately \$250,000 less expensive than the Duperon Flexrake (quoted with 304 stainless steel materials of construction). Based on recent conversations with City staff, it was preliminarily determined that use of stainless-steel screening materials would likely be too costly and unnecessary to implement, given water quality and debris conditions typically observed at the raw water intake.

In addition to the previously-quoted Duperon and Hydrodyne Screens, several additional manufactures also offer a washer-compacter to be integrated with each screen to remove excessive water and particulate from debris capture on the screen. The final product is typically conveyed into a disposal bin for hauling. While this represents an additional capital cost, MKN will work with City staff to determine whether it would be economically and operationally beneficial to potentially integrating a washer-compacter with each new screen.



While both equipment manufacturers have preliminarily stated that it would be possible to integrate either set of screens with the existing layout of the raw water intake structure, MKN will work with City staff and equipment manufacturers to better identify any potential issues with installation of either product. Furthermore, MKN will solicit budgetary quotes from the Coombs-Hopkins Company and G3 Engineering (in addition to any other manufacturers or representatives that the City prefers) to identify other feasible screen replacement alternatives.

Based on past permitting experiences with the United States Bureau of Reclamation (USBR) on the WTP Total Trihalomethane Reduction Project and recent conversation with City Staff, MKN is assuming existing electrical and controls wiring, conduit, and infrastructure associated with the WTP and Raw Water Intake Facilities will be re-used to the greatest extent possible to avoid USBR permitting requirements. Thus, it is assumed that no coordination or permitting with USBR will be required.

Scope of Work

Task Group 100 – Project Management, Meetings and QA/QC

Task 101 – Project Management and QA/QC

Overall project management, which includes supervision of in-house staff, planning and monitoring of contract budget and schedule, and coordination with the City and MKN's project team will be conducted by MKN's Project Manager.

MKN will provide senior technical review and implement our quality assurance and quality control (QA/QC) measures throughout the project.

Task 102 – Meetings

MKN has included the following meetings as part of this scope of services:

- **Project Kickoff Meeting** – In-person meeting to review the project scope, schedule and budget.
- **Progress Review Meetings (2)** – Progress reviews by video conference meetings.

Deliverables:

- Meeting Agenda and Minutes (3 meetings)

Task 103 – Data Review

MKN will review previously obtained data (i.e. typical raw water lift/intake flowrates, previously-prepared technical memorandum(s), as-built drawings, field-measured dimensions, recent field photographs and videos, previous meeting notes, etc.). MKN will verify all necessary and relevant information with City Staff prior to proceeding with subsequent tasks.

Task Group 200 – Preliminary Engineering

Task 201 – Preliminary Engineering Report

The report will state the design criteria and project constraints, present preliminary equipment sizing and layout information, and include budgetary capital, life-cycle,



operations, and maintenance cost opinions. The report will present the following information:

- Water quality history at the raw water intake (to verify that corrosion of feasible screen replacement materials will be minimized under typical raw water quality conditions)
- Evaluation of existing screening systems and proposed options for modifications to the systems that will improve the overall system performance, operation, and maintenance procedures
- Proposed screen replacement alternatives and required structural modifications required for each alternative
- Operating objectives for the new screening system and operational parameters, included (but not limited to):
 - peak flow and superficial velocity per screen;
 - screen grid opening size;
 - ranges of design head losses under varied flow conditions;
 - structural and drive design differentials;
 - intake channel dimensions requirements;
 - screen wash water requirements.
- Description of miscellaneous piping, valving, metering, and drainage control structures.
- Establishment of necessary clearances for operational and maintenance activities (i.e., equipment replacements, screen washdown operations, etc.).
- A description of electrical requirements including a process schematic including alarms and telemetry system for remote operation and data logging
- Identification of site constraints and the most appropriate mitigation measures (including associated costs).
- Potential impacts to the downstream WTP processes
- Identification of overhead and underground utilities and restrictions (i.e., power, communication, and water utilities).
- Description of other site improvements to be included in the design
- Evaluation of site security, lighting for low-visibility conditions, and operator safety.
- Layout of the recommended screen replacement systems on the project site.
- Engineer's estimate of probable construction/installation, life-cycle, operations, and maintenance costs.
- Design and construction schedule, lead times for equipment and phasing options.

MKN will submit the draft report for the City review and comment. MKN's project manager and project engineer will attend a draft report review meeting with City to address comments and discuss the next steps in the project.

MKN will incorporate comments received from the City into the Final Preliminary Engineering Report and submit the final report to the City.



MKN will also prepare 30% design plans for the selected screening system alternative. The plans will include piping, mechanical, and structural improvements required to install the selected screening system.

Deliverables:

- Draft Preliminary Engineering Report (electronic MS Word .DOC and Adobe .PDF files)
- Final Preliminary Engineering Report (Adobe .PDF files)
- 30% Plans, Specifications List, Cost Estimate (Adobe .PDF files)

Task Group 300 – Detailed Design

Task 301 - 90% Plans, Specifications, and Cost Estimate

MKN will incorporate the draft and final Engineering Report deliverable review comments from City and prepare 90% construction plans; specifications components including bid proposal items and quantities, explanation of bid items, and technical specifications; and an engineer's cost opinion for construction of Raw Water Intake Screens Replacement Project. Technical specifications will be developed in 2014 CSI format and plans will be prepared in AutoCAD. The City will review the contents of each submittal and provide comments for incorporation into subsequent submittals. The following design plans are anticipated to be included in the 90% design deliverable:

- General (3 Sheets)
- Civil (2 Sheets)
- Process (2 Sheets)
- Structural (3 Sheets)
- Electrical (4 Sheets)
- Instrumentation (3 Sheets)

Deliverables:

- 90% Plans (electronic Adobe .PDF files, 24" x 36")
- 90% Technical Specifications (electronic Adobe .PDF files)
- 90 % Front-End Bidding Documents (electronic MS Word .DOC files)
- Engineer's opinion of probable construction cost (electronic Adobe .PDF file)

Task 302 – Draft Final Plans, Specifications, and Cost Estimate

MKN will incorporate 90% review comments from the City and prepare draft final construction plans; specifications components including bid proposal items and quantities, explanation of bid items, and technical specifications; and an engineer's cost opinion for construction of the Raw Water Intake Screens Replacement Project. The MKN will assemble the bid specifications by incorporating the bid proposal items and quantities, explanation of bid items, and technical specifications. The following design plans are anticipated to be included in the draft final design deliverable:

- General (3 Sheets)
- Civil (2 Sheets)



- Process (2 Sheets)
- Structural (3 Sheets)
- Electrical (4 Sheets)
- Instrumentation (3 Sheets)

Deliverables:

- Draft Final stamped and signed plans (electronic Adobe .PDF files, 24" x 36")
- Draft Final stamped and signed technical specifications (electronic Adobe .PDF files)
- Draft Final Front-End Bidding Documents (electronic MS Word .DOC files)
- Engineer's opinion of probable construction cost (electronic Adobe .PDF file)

It is assumed the City Engineer (Tri-City Engineering) will review and prepare the Draft Final Front-End Bidding Documents for bid advertisement.

Task Group 400 – Bid Phase Support

Task 401 – Bid Phase Support Services

The City will coordinate with appropriate departments to advertise the plans and bid specifications. MKN will attend a pre-bid meeting and provide to the City written responses to bidder questions through the bid period. MKN will prepare and provide conformed plans and specifications incorporating any changes resulting from the bid period.

Deliverables:

- Addenda, RFI responses, and clarifications as needed
- Conformed plans (electronic Adobe .PDF files, 24" x 36")
- Conformed specifications (electronic Adobe .PDF files)

Additional Services

While not included in our initial Scope of Services, MKN is well-qualified to perform the following additional services if requested by the City and following an amendment to the agreement for professional services. At this time, we do not anticipate that these services will be required to complete the preliminary design phase of this project.

- Bench and/or pilot testing of raw water treatment technologies
- Utility potholing
- Assistance with pre-purchasing equipment, including preparation of separate bid packages



Schedule

The anticipated schedule for the project is included in **Table A**.

Table A. Anticipated Project Schedule	
Deliverable	Deliverable Date (Time Period Following Notice-to-Proceed)
Draft Basis of Design Report and 30% PS&E (Time to Complete TO #1 Work)	4 weeks
Final Basis of Design Report and 30% PS&E (Time to Complete TO #1 Work)	1 week
90% PS&E	8 weeks
Draft Final PS&E	2 weeks

Preparation of the Draft and Final Basis of Design Report Deliverables assume concurrent preparation of other Draft and Final Basis of Design/30% PS&E Deliverables from Task Order #4 in a single Basis of Design Report document. Following final design scoping, design criteria for Task Orders #2 and #3 will be briefly summarized in the same Basis of Design Report as Task Order #1 and #4 (to be amended).

Fee Estimate

MKN proposes to complete this work on a time and materials basis with a budget not to exceed the value provided in the Fee Estimate (included as **Exhibit B**) and is based on the 2022 MKN rate schedule, (included as **Exhibit C**).

Should you have any questions or wish to discuss any of the information presented herein, please do not hesitate to contact me at your convenience. My phone number is (559) 246-1947 and email is hliang@mknassociates.us.

Sincerely,


Henry Liang, PE
Principal

Stefanos Word, EIT, ENV SP
Project Engineer

Enclosures:

- Exhibit A – Anticipated Drawing Sheet List
- Exhibit B – Fee Estimate
- Exhibit C – Rate Schedule

Exhibit A - Anticipated Drawing Sheet List

Project:Coalinga WTP Upgrades - Task Order #1 - Raw Water Intake Screens Replacement Project				Total No. Sheets for 30% Submittal 9	Total No. Sheets for 90% Submittal 17		
Drawing Sheet Count							
Sheet	Plan Sheet Title	Sheet No.	Assigned Firm	Include in 30%?	Include in 90%?	Remarks	
General							
1	Cover Sheet/Title Sheet/Sheet Index	G-001	MKN	Yes	Yes		
2	Abbreviations, Legend, and General Notes	G-002	MKN	No	Yes		
3	Process Flow Diagram and Design Criteria	G-003	MKN	Yes	Yes		
Civil							
4	Construction and Staging Plan	C-101	MKN	No	Yes		
5	Site Demolition Plan	C-102	MKN	Yes	Yes		
Process							
6	Raw Water Screens Plan and Sections	D-101	MKN	Yes	Yes		
7	Process Details - I	D-501	MKN	No	Yes		
Structural							
8	3 Sheets Anticipated	--	SSG	No	Yes		
9		--	SSG	No	Yes		
10		--	SSG	No	Yes		
Electrical							
11	4 Sheets Anticipated	--	MSO	Yes	Yes	General Notes and Conduit Schedule	
12		--	MSO	Yes	Yes	Partial Single-Line Diagram	
13		--	MSO	No	Yes	Site Plan	
14		--	MSO	No	Yes	Electrical Details	
Instrumentation							
15	3 Sheets Anticipated	--	MSO/MKN	Yes	Yes	ISA Symbols Legend and Abbreviations	
16		--	MSO/MKN	Yes	Yes	Block Communications Diagram	
17		--	MSO/MKN	Yes	Yes	Raw Water Intake Screens P&ID	

City of Coalinga
WTP Upgrades - Task Order #1 - Raw Water Intake Screens Replacement



	Project Director	Principal Engineer	Assistant Engineer II	CAD Technician I	Total Hours (MKN)	Labor (MKN)	ODCs (MKN)	Structural (SSG)	Electrical & Controls (MSO Technologies)	Non-Labor Costs	Total Fee
Hourly Rates	235	205	145	115							
Task Group 100 – Project Management, Meetings and QA/QC											
Task 101 – Project Management and QA/QC	2	8			10	\$2,110	\$ 63	\$ -	\$ -	\$63	\$ 2,173
Task 102 – Meetings	2	2	2		6	\$1,170	\$ 35	\$ -	\$ -	\$35	\$ 1,205
Task 103 – Data Review		2	2		4	\$700	\$ 21		\$ -	\$21	\$ 721
Subtotal	4	12	4	0	20	\$ 3,980	\$ 119	\$ -	\$ -	\$ 119	\$ 4,099
Task Group 200 – Preliminary Engineering											
Task 201 – Preliminary Engineering Report	2	4	16	12	34	\$4,990	\$ 150	\$ -	\$ -	\$150	\$ 5,140
Subtotal	2	4	16	12	34	\$ 4,990	\$ 150	\$ -	\$ -	\$ 150	\$ 5,140
Task Group 300 – Detailed Design											
Task 301 - 90% Plans, Specifications, and Cost Estimate	2	4	40	24	70	\$9,850	\$ 296	\$ 3,300	\$ 3,300	\$6,896	\$ 16,746
Task 302 – Draft Final Plans, Specifications, and Cost Estimate	2	2	12	8	24	\$3,540	\$ 106	\$ 1,375	\$ 2,200	\$3,681	\$ 7,221
Subtotal	4	6	52	32	94	\$ 13,390	\$ 402	\$ 4,675	\$ 5,500	\$10,577	\$ 23,967
Task Group 400 – Bid Phase Support											
Task 401 – Bid Phase Support Services		2	4	4	10	\$1,450	\$ 44	\$ -	\$ -	\$44	\$ 1,494
Subtotal	0	2	4	4	10	\$ 1,450	\$ 44	\$ -	\$ -	\$ 44	\$ 1,494
TOTAL BUDGET	10	24	76	48	158	\$23,810	\$ 714	\$ 4,675	\$ 5,500	\$10,889	\$ 34,699



2022 FEE SCHEDULE FOR
PROFESSIONAL SERVICES

ENGINEERS AND TECHNICAL SUPPORT STAFF

Engineering Technician	\$65/HR
Administrative Assistant	\$85/HR
CAD Technician I	\$115/HR
CAD Design Technician II	\$140/HR
Senior Designer	\$150/HR
Assistant Engineer I	\$125/HR
Assistant Engineer II	\$145/HR
GIS Specialist	\$150/HR
Planner	\$170/HR
Senior Planner	\$190/HR
Project Engineer I/ Senior Scientist	\$170/HR
Project Engineer II	\$180/HR
Senior Project Engineer I	\$190/HR
Senior Project Engineer II	\$195/HR
Project Manager	\$200/HR
Principal Engineer	\$205/HR
Project Director	\$235/HR

CONSTRUCTION MANAGEMENT SERVICES

Construction Inspector	\$162/HR
Assistant Resident Engineer	\$169/HR
Resident Engineer	\$184/HR
Construction Inspector	\$197/HR
Construction Manager	\$201/HR
Principal Construction Manager	\$236/HR

Routine office expenses such as computer usage, software licenses and fees, telephone charges, office equipment and supplies, incidental postage, copying, and faxes are included as a 3% fee on labor cost.

The foregoing Billing Rate Schedule is effective through December 31, 2022 and will be adjusted each year after at a rate of 2 to 5%.

DIRECT PROJECT EXPENSES

Outside Reproduction	Cost + 10%
Subcontracted or Subconsultant Services	Cost + 10%
Travel & Subsistence (other than mileage)	Cost
Auto Mileage	Current IRS Rate - \$.58.5/mi.