

Date: January 7, 2016

**Proposal Deadline: 2:00 p.m., Tuesday February 9, 2016
North System Renewal Water Treatment Plant (NSRWTP)
Owner's Representative Request for Proposals (RFP)**

Requests For Proposals

Denver Water (DW) is soliciting proposals for an Owner's Representative (OR) to execute and deliver DW's NSRWTP. The NSRWTP is a new 150 million gallons per day (MGD) facility located on DW property near Ralston Reservoir north of Golden on Colorado State Highway 93.

The project execution will be a joint effort between DW and the OR. DW's responsibilities will include project management, internal and external communications, scheduling of internal resources, design review, and budget allocation. The OR's responsibilities and background project information are presented here with instructions for preparing a complete proposal to serve as the OR for the delivery of the NSRWTP.

Introduction/Background

DW is in the process of replacing the aging Moffat Treatment Plant (TP) with a new, modern plant located near Ralston Reservoir. The new site selected is owned by DW and has about 80 acres available for this new facility. The new facility will have the capacity to initially treat from 10 to 150 MGD and be expandable to treat up to 250 MGD, with accommodations for future unit processes such as ozonation, ultraviolet (UV) disinfection, and granular activated carbon (GAC) adsorption. Facility accommodations will also maintain available land for a parallel treatment system if a more impaired water source is treated at this site in the future.

In 2015, DW completed initial pilot testing for this source water that is usually consistent in quality with a low turbidity and total organic carbon content. The results of the pilot test indicate that with proper chemical feed rates and pre-treatment design, the filtration rates can exceed 10 gallons per minute/square foot (gpm/sqft). Other process decisions have not been finalized and will be part of the work required to be completed within the first year of the Project by the design engineers.

Finally, the project will be completed using a step-wise phasing strategy in order to make decisions and obtain approvals before proceeding to subsequent phases. DW is open to input on how best to accomplish this phased implementation with the caveat that DW may choose to accelerate or slow down phases in order to satisfy operational or budgetary constraints.

Approach

The responsibilities of the OR are categorized into two primary categories. The OR will provide:

- Limited project controls, including schedule, risk register and issues that affect the Project coordination, of all projects of the North System Renewal Program (“the Program”). See Appendix D – Draft Project Master Schedule (Page D-3, line 237) for a complete listing of the projects within the Program.
- Project management services during preliminary design, design, construction and startup of the NSRWTP (the Project”).

The OR will be part of an integrated team including the DW NSRWTP Program Manager and the Construction Manager-at-Risk (CMAR) to comprise the *Management Team* and be responsible for the delivery of the project. The design engineers, *Design Team*, will report to the Management Team and will be responsible for production of design deliverables. See Appendix C – Draft Table of Organization for design phases of the project.

DW intends to hold separate contracts directly with the OR, the CMAR and the Design Team. The OR will not perform design work, but rather assist DW in the development, implementation and management of the Project and the Program. The selected OR firm will be precluded from submitting proposals and being selected for additional professional services related to the design and construction of the NSRWTP. Once an OR is selected, DW and the OR will complete a Professional Services Agreement for Tasks 1 and 2 as outlined in Appendix A – Draft Scope of Work.

It is recognized that all of the work for the Management Team is highly collaborative and that the success of the Program and the Project requires seamless coordination, collaboration and cooperation between the OR and DW. The OR will perform all of its services at the direction of and under the authority of the DW's NSRWTP Program Manager or designee. Both DW and the OR each recognize that this Agreement's intent is to develop a relationship of trust and confidence which is required in order to develop and manage the Program and the Project. The OR agrees to act in the DW's best interests with respect to this Agreement, the Project and the Program.

Section 1 – Administrative Requirements

1.1 Requests for Information

This RFP contains the instructions governing the proposals to be submitted and the material to be included therein; mandatory requirements which must be met to be eligible for consideration; and other requirements to be met by each proposal.

Any requests for clarification or additional information regarding submission of this RFP shall be addressed at a mandatory pre-proposal conference or shall be submitted in writing via e-mail (peter.mccormick@denverwater.org) no later than **Thursday, February 4, 2016**.

1.2 Minimum Qualifications

Interested firms that meet the qualifications are invited to submit a proposal for providing professional services as an OR. Detailed qualification submittal requirements shall be incorporated in the proposal as outlined in Section 1.4 and a one-page confirmation shall be provided summarizing the firm's ability to meet the below qualifications.

1. Experience:
 - The selected OR will be experienced in providing a full range of services, as outlined in Appendix A – Draft Scope of Work.
 - The OR shall be a firm regularly engaged in the business of providing or managing engineering and construction services for projects in excess of \$100M.
 - The OR shall have experience with traditional and alternative delivery methods for the design and construction of water and/or wastewater treatment plants (W/WWTP).
 - The OR shall have experience with completing and/or overseeing the development of 3D design models.
 - Experience managing Minority and Women-Owned Business Enterprises (MWBE) outreach program, contracting and reporting.

1.3 Proposal Submission

Respondents are requested to submit:

- Four (4) copies of the firm's technical proposal.
- One (1) electronic copy of the proposal provided as a .pdf on CD or flash drive.
- One (1) copy of the firm's price proposal in a separate envelope marked "Confidential."

Responses must be in the format noted. DW reserves the right to disqualify any Response submitted incorrectly. Responses shall be addressed as follows:

Project Title: North System Renewal Water Treatment Plant
RFP for Owner's Representative
Attention: Mr. Peter McCormick, Design Project Manager
Denver Water Engineering Division, Administration Building
1600 West 12th Avenue
Denver, Colorado 80204-3412

Submittal Instructions:

1. Proposals (including both technical and price proposal envelopes) may be either mailed or hand-delivered. If the proposal is sent by mail, please allow extra time for delivery before the deadline. Proposals received after the deadline will be discarded or returned to the Respondent unopened. (Note: No e-mailed or faxed proposals will be accepted.)
2. Both the technical and price proposals must contain the signature of a duly authorized officer or agent of the Respondent's company empowered with the right to contractually bind the Respondent.
3. Each technical proposal and price proposal must be sealed and addressed as stated above to ensure confidentiality of the information prior to the submission date and time. DW will not be responsible for premature opening of technical proposals not properly labeled.
4. Proposals become the property of DW upon receipt. The content of proposals will be kept confidential until an award is made, after which the content will no longer be kept confidential, except as provided herein.
5. Proposals may be withdrawn or modified in writing prior to the proposal submission deadline. Proposals that are modified shall be sealed and resubmitted according to the above instructions prior to the proposal submission deadline.

1.4 Proposal Requirements

Proposals should be limited to 20 single-sided pages (minimum 11-point font) and include the below information in the order shown. Cover Letter, Resumes and the Price Proposal will not be counted toward this page limit, the Price Proposal shall be submitted in a separate envelope.

1. Cover Letter (one to two pages, not included in the page limit).
2. Qualifications summary (limited to a single page).
3. Project Approach including any unique solutions, and any insights on the NSRWTP and the value and innovation the OR proposes to leverage in the delivery and execution of the work. Note that MWBE goals have not been set for the OR work although goals will be developed for design and construction activities.
4. Provide an organization chart showing the team structure and their duties. The OR shall submit a list of key project personnel, identifying, at a minimum who will perform the below duties (11-inch X 17-inch format is acceptable as single page count).
5. The OR understands that DW's selection process incorporates an evaluation of key personnel, and that DW's decision to select the OR is based upon the representation of the OR's intent to use the key personnel for the duration of the project. Therefore the OR will agree to retain the listed **Project Manager, Cost Controls/Budget Manager and Project/Program Controls Manager** through the Substantial Completion of the Project. Any replacement for key individuals must be approved in advance and agreed to in writing by DW, or pay DW a one-time amount of \$50,000.00, for each key personnel removed. This provision shall not apply if a medical or personal emergency requires a listed individual release from the Project, or if the listed individual leaves the employment of the OR and its affiliates.
 - **Owner's Representative Project Manager** – Responsible for overall project management and act as a liaison between DW, the Design Team and General Contractor Construction Manager at-Risk (CMAR). Provides project direction on phasing, implementation and overall management of the Project and the Program as part of the Management Team.
 - **Cost Controls/Budget Manager** – Responsible for managing the Project budget including overall NSRWTP capital cost, individual design, professional services and construction

- contracts. Reviewing pay applications for all Project contracts, updating projections and forecasts, and assisting with the evaluation of cost alternatives analysis.
- **Project/Program Controls Manager** – Responsible for the development and seamless implementation and oversight of the controls for the Project and the Program.
 - **Project/Program Scheduler** – Responsible for the ongoing management and updates of the Project and Program scheduling needs.
 - **Communications Specialist** – Works with DW Public Affairs Division to develop and execute internal and external communications plan.
 - **Permit Coordinator** – Responsible for tracking the Project permits requirements, status, and monitoring costs, implementation, compliance and approval of Project permits.
 - **Quality Assurance Reviewer** – Provides day-to-day quality assurance for adherence to the Project standard operating procedures (SOPs), guidelines and processes for all documents produced, including design and construction documents.
 - **Administrative Support** – Responsible for providing Project support for contract development, meeting agendas and minutes, Project reporting and general assistance for the Management Team to support execution of the Project.
 - **Other Key Staff** – At the OR's discretion, additional key staff may be identified, including but not limited to 3D Drafting expertise, construction estimating or other key specialties the OR believes adds value to the Project and Program delivery.
6. Provide a biography of the most applicable W/WWTP design and construction projects the firm has managed or executed in the last 10 years in excess of \$100M and describe the firm's roles and responsibilities on the project and the roles and responsibilities of proposed team members on these projects. Highlight the firm's experience with conventional and alternative project delivery methods for W/WWTPs. Project Biographies (one to three pages, 11-inch X 17-inch format is acceptable and each sheet will count as a single page) shall include:
- A description of the project and its similarity to the NSRWTP.
 - Project Name.
 - Project Location.
 - Project Capacity (MGD) and Capital Cost (\$M).
 - Key personnel involved.
 - Key project issues.
 - Responsibility of the firm on the project.
 - Projects must have been conducted by one or more of the proposed team members.
 - Provide an Owner reference(s) for each of the projects including complete and current contact information.
7. Resumes of team members (one to two pages maximum per resume, not included in the page limit), including any sub-consultants.
8. Price Proposal: Provide a manpower labor estimate in the form of a detailed Work Breakdown Structure (WBS) by labor type/hours for each project task and the corresponding hourly rates (11-inch X 17-inch format is acceptable). An example WBS will be provided at the mandatory pre-proposal meeting. List all assumptions made to develop the WBS. The Price Proposal, must be submitted in a separate envelope (not included in the page limit) and shall include:
- A complete and detailed WBS must be submitted for Task 1: Mobilization and Task 2: Design Phase Services Procurement and will be the basis for negotiating and finalizing the OR's initial Professional Services Agreement.
 - Provide a valid 2016 labor rate sheet including how indirect costs will be invoiced.
 - Provide proposed labor rate escalation approach for 5 years and future years to be negotiated.

1.5 Addenda To The Request For Proposal

If it becomes necessary to revise any part of the RFP, an addendum will be placed online at <http://www.denverwater.org/DoingBusinesswithUs/RequestsforProposals/BidProposalsEngineering/> prior to **February 5, 2016**. Respondents are responsible to check online prior to submission of their proposal and acknowledge receipt of addendum(s) within their proposal.

1.6 Mandatory Pre-Proposal Conference

A pre-proposal conference is scheduled for **Thursday, January 14, 2016 at 10:00 a.m.**, in the Board Room of the Administration Building, 1600 West 12th Avenue, Denver, Colorado, 80204. Due to the anticipated number of Respondents, please limit your firm's attendance to two (2) representatives.

1.7 Award of Contract

Agreements may be negotiated with Respondents whose proposal is determined to be most responsive to DW's needs and most advantageous to DW, considering the factors based on the criteria described in Section 4, all as solely determined by DW. Award of an Agreement may be made without discussion after proposals are received. Proposals should, therefore, be submitted initially on the most favorable terms of qualifications and technical experience. DW reserves the right to reject any or all proposals. It is not DW's intent to base selections solely on price, but to use the price proposal as the basis for future negotiations.

DW will perform a complete review of the Proposal items identified in Sections 4.1 and 4.2 of the selection criteria. DW will then determine which Price Proposal will be opened, based on the relative rankings of the firms and score the Price Proposal according to the criteria in Section 4.3. A short-list will be developed for interviews and DW will make a final selection. Once an OR is selected, the final scope of work for Tasks 1 and 2 will be negotiated and DW and the OR will complete a Professional Services Agreement. DW reserves the right to extend the Agreement with the OR for future Tasks 3 through 6, based on the OR's performance on Tasks 1 and 2, with future Tasks negotiated as the project progresses.

1.8 Respondent Responsible For Proposal Costs

DW is not liable for any cost incurred by any Respondent associated with the preparation of a proposal or the negotiation of an Agreement for services prior to the issuance of an Agreement. Respondent is responsible for costs associated with responding to the RFP including costs related to site visit(s) and estimate preparation(s) for work authorized under the Agreement.

Respondents may be asked to present their proposals and/or to demonstrate ability to provide products or services to DW's representatives at DW offices. The Respondents shall bear the costs for such presentations.

1.9 Economy of Proposals

Respondent must submit a complete and concise response to the RFP, which will be retained by DW. Proposals should be prepared simply and economically, while providing complete details of the Respondent's abilities to meet the requirements of this RFP.

1.10 Proposals Binding

Respondents are advised that proposals shall be binding upon the Respondent for sixty (60) days from the proposal due date. A Respondent may withdraw or modify their proposal any time prior to the proposal due date by a written request, signed in the same manner and by the same person who signed the proposal.

1.11 Notification

Each Respondent submitting a proposal in response to this RFP will be notified in writing as to acceptance or rejection of their proposal. DW plans to release such letters within forty-five (45) days of the proposal submittal date. DW may delay this action if it is deemed to be in the best interest of DW.

1.12 Right To Reject Proposals and Negotiation

DW reserves the right to reject any and all proposals and to waive any formality in proposals received, to accept or reject any or all of the items in the proposal, if it is deemed in DW's best interest.

DW reserves the right to negotiate any and all elements of the proposal, if such action is deemed to be in the best interest of DW.

1.13 Confidentiality

Proposers acknowledge that DW may be required to disclose any or all of the documents submitted with a Response, pursuant to the Colorado Open Records Act, C.R.S 24-72-200.1, et seq. Under C.R.S § 24-72-204(3)(a)(IV), DW may deny inspection of any confidential commercial or financial information furnished to DW by an outside party. Therefore, a Respondent must clearly designate any documents submitted with its Response that the Respondent deems proprietary or confidential, to aid DW in determining what should be disclosed in the event of a request for documents under the Colorado Open Records Act. Proposals submitted and terms and conditions specified in each Respondent's response shall remain the property of DW.

Section 2 – Scope of Work

The OR and DW will enter into a series of phased Professional Services Agreements based on project milestones and performance. The OR will assist DW with the procurement effort and overall project execution as part of the Management Team. The major Tasks are detailed in Appendix A – Draft Scope of Work. The OR will be responsible for finalizing the project execution plan, which will include procurement of design and construction services, preliminary and final design, construction and project close-out.

Once an OR is selected, the final scope of work for Tasks 1 and 2 will be negotiated and DW and the OR will complete a Professional Services Agreement. DW reserves the right to extend the Agreement with the OR for future Tasks 3 through 6, based on the OR's performance on Tasks 1 and 2, with future Tasks negotiated as the project progresses.

Section 3 – Project Schedule

3.1 Proposal Schedule

1. Issue RFP ----- January 7, 2016
2. Pre-proposal Meeting----- January 14, 2016
3. Questions Due ----- February 4, 2016
4. Proposals Due ----- February 9, 2016
5. Short List for Interviews ----- February 17, 2016
6. Interviews/Workshops ----- Week of February 22, 2016
7. Final Selection/Negotiation----- March 4, 2016
8. Contract Award----- March 23, 2016
9. Notice to Proceed ----- March 24, 2016

3.2 Design and Construction Schedule

1. Project Management Plan Development & Design Procurement (April 2016 through August 2016)
 - Based on schedule submitted by OR that meets or accelerates the schedule in Appendix D
2. Preliminary Design (August 2016 through April 2017)
 - Based on schedule submitted by Design Team that meets or accelerates the schedule in Appendix D
3. Final Design & Construction Procurement (April 2017 through October 2021)
4. Construction (October 2018 through September 2023)

Section 4 – Selection Criteria

DW will perform a complete review of the Proposal items identified in Sections 4.1 and 4.2 of the selection criteria. DW will then determine which Price Proposal will be opened, based on the relative rankings of the firms and score the Price Proposal according to the criteria in Section 4.3. A short-list will be developed for interviews and DW will make a final selection. Once an OR is selected, the final scope of work for Tasks 1 and 2 will be negotiated and DW and the OR will complete a Professional Services Agreement. DW reserves the right to extend the Agreement with the OR for future Tasks 3 through 6, based on the OR's performance on Tasks 1 and 2, with future Tasks negotiated as the project progresses.

4.1 Proposed Approach (40%)

1. Does the proposal show an understanding of the project objectives and the results that are desired from the project?
 - Demonstrate a clear understanding of the Project needs and the firm's approach to being an active, engaged and committed OR.
 - Identify the firm's ability to add value, innovation and efficiency's to the Project.
2. Is the firm capable of doing the work in the required time frame? What steps will be taken to insure the schedule is met or accelerated?
 - Provide a Project schedule narrative detailing the OR's approach, tasks, sequence, critical path and key milestones for completing Tasks 1 and 2. Describe how the OR firm's approach will drive the schedule and provide DW with flexibility in accelerating the schedule, managing multiple critical paths, key task sequencing and risk mitigation.

4.2 Project Personnel and Experience (40%)

1. Do the assigned personnel have the demonstrated skills and experience to provide the job functions described in Section 1.4? (Qualifications will be evaluated partly based upon experience of the individual members on such projects and the prior experience of the members working together on such projects.)
 - Demonstrate the firm's capacity and commitment to providing, at a minimum, the staff requested in Section 1.4.
 - Identify key project staff and highlight their experience in working on W/WWTP projects in excess of \$100M capital cost.
 - Identify key project staff experience with conventional and alternative delivery methods for the design and construction of W/WWTPs.
 - Identify project team and include previous similar projects with ties to the proposed team.
 - Demonstrate adequate resources and support services within the Denver Metro region for areas such as Program Manager, project management, resource management, procurement services, construction phasing, etc. for the duration of the Project.
2. Is the Consultant aware of and will follow DW Capital Project Procedures and other standards?

4.3 Cost and Work Hours (20%)

1. Is the Work Breakdown Structure (WBS) completed properly, detailed and meet the project needs?
 - Provide a manpower labor estimate via a detailed WBS by labor type/hours for Tasks 1 and 2 along with a valid 2016 labor rate sheet including how indirect costs will be invoiced.
 - Provide proposed labor rate escalation approach for 5 years and future years to be negotiated.
2. Do the work hours presented accurately reflect the level of effort to complete each task?
3. How do unit labor and overhead costs compare to other firms?

Appendices

- A. Draft Scope of Work
- B. Draft Roles and Responsibilities Matrix
- C. Draft Table of Organization
- D. Draft Project Master Schedule
- E. Project Opinion of Probable Cost

Sincerely,



Robert J. Mahoney, P.E.
Director of Engineering



Peter J. McCormick, P.E.
NSRWTP Program Manager

RJM:PJM:sas

Appendix A Draft Scope of Work

General:

Once an Owner's Representative (OR) is selected the final scope of work for Tasks 1 and 2 will be negotiated and DW and the OR will complete a Professional Services Agreement. DW reserves the right to extend the Agreement with the OR for future Tasks 3 through 6, based on the OR's performance on Tasks 1 and 2, with future Tasks negotiated as the project progresses.

Owner's Representative Responsibilities:

The following Work Breakdown describes the Tasks 1 through 6 and primary responsibilities of the North System Renewal Water Treatment Plant (NSRWTP) OR.

Task 1: Mobilization: Mobilization involves tasks to create the primary elements necessary for the Management Team to execute the Project and the Program.

Task 2: Design Phase Services Procurement: Procurement tasks include assisting DW with design phase contracting for both the Construction Manager-at-Risk and the Design Team.

Task 3: Preliminary Design: Preliminary Design involves tasks to develop the Project to 20% design completion.

Task 4: Final Design: Final Design involves tasks to develop the Project through 30%/60%/90% design milestones and delivery of the Final for Construction and addenda for all Work Packages.

Task 5: Construction: Construction tasks include the management and oversight of the Design Team's Engineering Services during Construction, project communications and Program coordination.

Task 6: Transfer of Facility Ownership: At the completion of construction and commissioning, the OR will assist DW with transfer of project files to DW stakeholders, filing of project documents, close-out of Design Team contracts and deliverables and successful transfer of the Project to DW Operations.

Task 1 - Mobilization

1. **Mobilization:** Mobilization involves tasks to create the primary elements necessary for the Management Team to execute the Project and the Program. The OR shall submit for review to the Owner and complete all the mobilization tasks within 90 days after Notice to Proceed. The goals of this task is to create a fully functional Management Team and system. This system is intended to be well organized for all work phase activities, including design, procurement, construction, startup and system turnover.
 - 1.1. **Meetings:** The OR shall be responsible for preparing Meeting Agendas and Meeting Summaries for all DW-initiated meetings during the mobilization phase.
 - 1.1.1. **Kick-Off Meeting:** Attend a kick-off meeting with DW's Leadership Team to discuss the OR responsibilities, limitations, DW's expectations, DW and OR project leads and roles and communication procedures.
 - 1.1.2. **Leadership Team Meetings:** Conduct bi-monthly, one-hour Leadership Team meetings or as recommended by and agreed upon by DW. The purpose of these meetings will be to review the Project and the Program policies and resources to ensure the contract objectives and milestones are being achieved.
 - 1.1.3. **Management Team Meetings:** Conduct bi-monthly, one-hour Management Team meetings or as recommended by and agreed upon by DW. The purpose of these meetings will be to review the Project and the Program schedules and daily tasks, maintain and manage the Issues Log, Risk Register and Change Management procedures and coordinate all facets of the Project and the Program to ensure successful delivery of the contract objectives.
 - 1.1.4. **Program Manager Meetings:** Conduct weekly, one-hour update meetings with the NSRWTP Program Manager to report on the Project and the Program metrics, address resource and schedule issues, review costs projections, productivity trends, program scheduling and planning.
 - 1.1.5. **DW Board Meetings:** Attend and present at up to 3, two-hour Board Meetings. The OR shall be responsible for assisting the NSRWTP Program Manager with the development of Board handouts, presentations, and any necessary documentation for providing critical updates to the Board at key milestones and periodic progress reports to the Board throughout the duration of the Project and the Program.
 - 1.2. **Project Management Plan:** Prepare and submit for approval a complete Project Management Plan with the following components.
 - 1.2.1. **Delivery Strategy:** A complete set of management, administrative, financial, risk, change and issues standard operating procedures (SOPs), guidelines and work flows for the efficient and consistent completion of all work phase activities. A Draft Roles and Responsibilities Matrix is provided in Appendix B for reference in developing project workflows and controls management.
 - 1.2.2. **Table of Organization:** A detailed organization table identifying project staff and responsibilities.
 - 1.2.3. **Communications Plan:** Develop a communication plan that addresses both internal and external communication needs that is fully coordinated and executed through the Management Team and with safeguards and procedural compliances and protocols for outside and public communications.

- 1.2.3.1. Internal Communications:** Internal communications shall ensure the full scope, goals, progress and issues of the Project and the Program are accurately and effectively communicated to the entire program staff, including the stakeholders, Management Team, Leadership Team, Chief Executive Officer (CEO) and Board. Internal communications shall include at a minimum Weekly, Monthly and Annual reporting documents that shall over time, adjust to the needs and progress of the Project.
- 1.2.3.2. External Communications:** Assist with critical stakeholder management, including governing agencies, permitting entities and public involvement-related activities.
- 1.2.4. Risk Management:** Create a Risk Register to continually evaluate and monitor the probability and impact of potential risks.
- 1.2.5. Change Management:** Assist DW with developing and managing scope, cost, quality, schedule and staffing changes with clear, documented guidelines and workflows to ensure an efficient and well communicated project plan and approach.
- 1.2.6. Conflict Resolution:** Assist DW with developing and managing dispute resolution guidelines and workflow.
- 1.2.7. Schedule:** Develop and maintain a 3-week, 3-month, 9-month and Overall Preliminary Schedule detailing the contracting, design, final design, procurements, construction, testing, commissioning, startup and turnover to achieve or accelerate the target completion date of 2023. Schedule shall include critical paths and milestones, cost loaded activities and consider the proposed sequencing in Appendix D.
- 1.2.8. NSRWTP Budget and Analysis:** Update at major milestones and maintain a detailed breakdown of the Opinion of Probable Cost (OPC) for design and construction, including, permits, labor and materials, equipment, contingency, public outreach and engineering services during construction (ESDC). Create standardized Net Present Value (NPV) and Life Cycle Cost (LCC) calculation guidelines for use during the course of the Project. A detailed breakdown of the concept OPC is included in Appendix E.
- 1.2.9. Controls:** A comprehensive controls system including but not limited to business processes, contracts, budget, the Project OPCs, NPV, LCC, alternatives analysis, cost, commitment and production tracking, quality control compliance, trending and change management, risk assessment, quantity unit rate and quantity tracking, labor and quality assurance tracking, permit status and compliance, scheduling and schedules, progress reports and all other reporting necessary to meet the needs of all stakeholders.

Task 2 – Design Phase Services Procurement

2. **Design Phase Services Procurement:** Procurement tasks include assisting DW with design phase contracting for both the Construction Manager-at-Risk and the Design Team. DW will contract directly with the Design Team and the Construction Manager-at-Risk (CMAR) throughout the course of the Project. The OR will provide contract oversight and management of both the CMAR and the Design Team as an authorized representative of the DW, during the design phase of the Project. During Construction, DW will provide contract oversight and management of the CMAR and the OR will continue management and oversight responsibilities for the Design Team.
- 2.1. **Meetings:** Task 2 shall occur concurrent with Task 1 and the meetings identified in Task 1 shall be inclusive of the OR's total scope of work.
- 2.2. **Procurement:** Assist DW with development of the Project Design Table of Organization, scoping of design services contracts for the CMAR and the Design Team and analysis of contracting structures for DW to hold with the Design Team.
- 2.2.1. **Contracts:** Assist DW with the development of design service Request for Qualifications (RFQs), Request for Proposals (RFPs) and necessary attachments. Review Owner's standard agreements for design services and provide recommendations for tailoring the contracts to align with the project goals and selected design delivery.
- 2.2.2. **Selection:** Assist DW with design proposal reviews, Design Team interviews, development of selection criteria, Design Team negotiations, and standardizing of contracting and selection processes for potential additional professional services as needed.
- 2.2.3. **Minority and Women-Owned Business Enterprises (MWBE):** Establish and manage an Outreach Program to emphasize opportunities for MWBE to provide design and professional services for the project.
- 2.2.4. **Co-location:** Work in collaboration with DW and the Design Team to determine the need and efficacy of co-locating the Project team or facets of the team. Assist in the logistics, contracting and mobilization associated with any co-location plan. Costs and responsibilities for co-location will be determined and negotiated at prior to the Preliminary Design Task, if necessary.
- 2.2.5. **Preliminary Design Budget:** Prepare and submit for approval a detailed Work Breakdown Structure (WBS) for delivery of the Project Preliminary Design (20% design), including the resources and costs for the Design Team, the CMAR and the OR.
- 2.3. **Equipment and Materials Procurement:** Assist DW with the development of procurement procedures for the timely appropriation of funds, contracts and approvals for equipment and materials necessary for the execution of design and construction.

Task 3 – Preliminary Design

3. **Preliminary Design:** Preliminary Design involves tasks to develop the Project to 20% design completion. The OR will assist DW and oversee the progress and adherence to the Project SOPs and guidelines of the Design Team and the Construction Manager-at-Risk (CMAR). Preliminary Design functions of the Design Team will include assisting DW with the development of the Project design and drafting standards, Developing Basis of Design Reports, Lean 2P events, permitting, Project site layout, hydraulic grade line, utilities investigations and coordination with other projects of the Program.
 - 3.1. **Meetings:** On-going Project Meetings as listed in Task 1. Key members of the OR's team shall conduct and participate in project design and coordination meetings in addition to the regular standing progress meetings defined in Task 1.
 - 3.2. **Project Management:** Once mobilization is complete OR will initiate ongoing management activities associated with the Project design and the Program coordination as detailed in Task 1.2. The OR shall support the Management Team with all aspects of project design and delivery. Ongoing management shall also include the following.
 - 3.2.1. **Forecasting:** Establish annual tasks, manpower and budget estimates for the project delivery in accordance with the short-term and overall schedule and based on input from the Design Team and the CMAR.
 - 3.2.2. **Scheduling:** Maintain the Project 3-week, 3-month, 9-month and Overall Preliminary Schedule detailing the Project tasks through contracting, design, final design, procurements, construction, testing, commissioning, startup and turnover to achieve or accelerate the target completion date of 2023. Schedule shall be created with Primavera P6 and include critical paths, milestones, reviews, and cost and resource-loaded activities.
 - 3.2.3. **Policy Directives:** Maintain an oversight system to ensure that all project participants follow established SOPs and guidelines. Continuously improve, update and implement project SOPs and guidelines as needed. Identify and update reporting responsibilities and project staff roles and responsibilities as needed.
 - 3.2.4. **Controls:** Implement the Project and the Program Controls System to effectively manage the Project costs, schedule, reporting functions and ensure seamless communication and planning between all projects of the Program.
 - 3.2.5. **Resources:** Manage project resources and ensure all necessary technical, management and support resources are available and performing according to the project policies and schedule to meet DW's objectives and goals.
 - 3.2.5.1. **Design Team/CMAR Oversight:** Review and track progress payments for the Design Team and the CMAR. Monitor the Project progress, trends and tracking in accordance with the Project schedule and WBS and Project Controls.
 - 3.2.5.2. **Minority and Women-Owned Business Enterprises (MWBE):** Monitor and track MWBE participation for design, professional services and construction for the Project.
 - 3.2.6. **Communications:** Coordinate with DW's Public Affairs staff for public meetings, hearings, electronic and written communications for public communications. The preparation of deliverables for public meetings and general Project messaging and visioning will be completed by DW.

- 3.3. Design Management:** The OR shall be responsible for managing the evolution of the preliminary design phase to ensure alignment with DW's goals and objectives.
- 3.3.1. Coordination:** Ensure input from Owner's stakeholders are effectively communicated, and assist DW in coordinating the stakeholder's involvement during the Preliminary Design stage.
- 3.3.1.1. Program Coordination:** Monitor and trend the issues, risks and schedules of all the projects within the Program.
- 3.3.2. Lean:** Assist DW with the preparation, scheduling, documentation and execution of Lean 2P events for the development of stakeholder expectations, site layout optimization and access/security measures for the facility, each unit process, including critical workspaces within the facilities.
- 3.3.3. Standards:** Manage the Design Teams development of the design standards to be executed during the final design of the Project. Assist DW with the publishing and identification of standard specifications, design standards and guidelines for the Project and for future Owner projects.
- 3.3.3.1. Standards Workshops:** Assist DW with preparation and execution of six, eight-hour workshops with the Design Team and CMAR to develop critical project information related to the design standards.
- 3.3.4. Permits:** Coordinate the permitting process in conjunction with the Design Team and CMAR. The party responsible for the permit shall be solely responsible for obtaining and implementing the permit requirements. The OR shall maintain a Permit Log to track and monitor the status, schedule and requirements of all Project permits.
- 3.3.5. Design Packaging:** Assist DW, the Design Team and the CMAR with the planning and the preparation for the final design. The Project team will identify the final design packages for the most efficient and highest quality design and construction. The OR will assist the design project managers with the development of design package work plans, schedules, budgets and project coordination.
- 3.3.6. Deliverables:** Ensure quality assurance procedures and compliance with Owner's standards for all deliverables generated during the Preliminary Design have been executed by the Design Team. Assist DW with Quality Control of Preliminary Design deliverables.
- 3.3.7. Final Design Budget:** Prepare and submit for approval a detailed WBS for delivery of the Project Final Design, including the resources and costs for the Design Team, the CMAR and the OR.

Task 4 – Final Design

4. **Final Design:** Final Design involves tasks to develop the Project through 30%/60%/90% design milestones and delivery of the Final For Construction and addenda for all Work Packages. The OR will assist DW and oversee the progress and adherence to the Project SOPs and guidelines of the Design Team and the Construction Manager-at-Risk (CMAR).
 - 4.1. **Meetings:** On-going Project Meetings as listed in Task 1. Key members of the OR's team shall conduct and participate in project design and coordination meetings in addition to the regular standing progress meetings defined in Task 1.
 - 4.2. **Project Management:** OR will continue ongoing management activities associated with the Project design and the Program coordination as detailed in Task 1.2. The OR shall support the Management Team with all aspects of project design and delivery. Ongoing management shall also include the following:
 - 4.2.1. **Forecasting:** Establish annual tasks, manpower and budget estimates for the project delivery in accordance with the short-term and overall schedule and based on input from the Design Team and the CMAR.
 - 4.2.2. **Scheduling:** Maintain the Project 3-week, 3-month, 9-month and Overall Preliminary Schedule detailing the Project tasks through contracting, design, final design, procurements, construction, testing, commissioning, startup and turnover to achieve or accelerate the target completion date of 2023. Schedule shall be created with Primavera P6 and include critical paths, milestones, reviews, and cost and resource-loaded activities.
 - 4.2.3. **Policy Directives:** Maintain an oversight system to ensure that all project participants follow established SOPs and guidelines. Continuously improve, update and implement project SOPs and guidelines as needed. Identify and update reporting responsibilities and project staff roles and responsibilities as needed.
 - 4.2.4. **Controls:** Manage the Project and the Program Controls System to effectively oversee the Project costs, schedule, reporting functions and ensure seamless communication and planning between all projects of the Program.
 - 4.2.5. **Resources:** Manage project resources and ensure all necessary technical, management and support resources are available and performing according to the project policies and schedule to meet DW's objectives and goals.
 - 4.2.5.1. **Design Team/CMAR Oversight:** Review and track progress payments for the Design Team and the CMAR. Monitor the Project progress, trends and tracking in accordance with the Project schedule and WBS and Project Controls.
 - 4.2.5.2. **Minority and Women-Owned Business Enterprises (MWBE):** Monitor and track MWBE participation for design, professional services and construction for the Project.
 - 4.2.6. **Communications:** Coordinate with DW's Public Affairs staff for public meetings, hearings, electronic and written communications for public communications. The preparation of deliverables for public meetings and general Project messaging and visioning will be completed by DW.
 - 4.3. **Design Management:** The OR shall be responsible for managing the execution of the Design Team in accordance with the Project standards and facilitate the procurement of Owner-Furnished and Owner Pre-selected Equipment.

- 4.3.1. Coordination:** Ensure input from Owner's stakeholders are effectively communicated, and assist DW in coordinating the stakeholder's involvement during the Final Design stage.
 - 4.3.1.1. Program Coordination:** Monitor and trend the issues, risks and schedules of all the projects within the Program.
 - 4.3.2. Design Delivery:** Oversee completion of the project documents, trend the progress, and provide risk management analysis for critical issues.
 - 4.3.3. Budget and Analysis:** Manage the Project OPCs up to the development of an Association for the advancement of Cost Engineering (ACE) Class 1 estimate in coordination with the Design Team and the CMAR.
 - 4.3.4. Deliverables:** Ensure quality assurance procedures and compliance with Owner's standards for all deliverables generated during the Final Design have been executed by the Design Team. Assist DW with Quality Control of Final Design deliverables.
- 4.4. Construction Management:** The OR shall be responsible for maintaining the Project and Program controls and coordination to ensure a completed Program is online by 2023.
- 4.4.1. Construction Management Procurement:** Assist DW with the procurement of construction project inspectors and support staff as needed.
 - 4.4.2. Construction Management Budget:** Prepare and submit for approval a detailed WBS for delivery of the Engineering Services during Construction (ESDCs), including the resources and costs for the Design Team, the Construction Management Team, and the OR.

Task 5 – Construction

5. **Construction:** Construction tasks include the management and oversight of the Design Team's ESDCs, project communications and Program coordination.
- 5.1. **Meetings:** On-going Project Meetings as listed in Task 1. Key members of the OR's team shall conduct and participate in construction and coordination meetings in addition to the regular standing progress meetings defined in Task 1.
- 5.2. **Project Management:** OR will continue ongoing management activities associated with the Project construction and the Program coordination as detailed in Task 1.2. The OR shall support the Management Team with all aspects of project coordination and delivery. Ongoing management shall also include the following:
- 5.2.1. **Policy Directives:** Maintain an oversight system to ensure that all project participants follow established SOPs and guidelines. Continuously improve, update and implement project SOPs and guidelines as needed. Identify and update reporting responsibilities and project staff roles and responsibilities as needed.
- 5.2.2. **Controls:** Manage the Project and the Program Controls System to effectively track the Project costs, schedule, reporting functions and ensure seamless communication and planning between all projects of the Program.
- 5.2.3. **Resources:** Manage project resources and ensure all necessary technical, management and support resources are available and performing according to the project policies and schedule to meet the DW's objectives and goals.
- 5.2.3.1. **Design Team Oversight:** Review and track progress payments for the Design Team. Monitor the Project progress, trends and tracking in accordance with the Project schedule and WBS and Project Controls.
- 5.2.3.2. **Minority and Women-Owned Business Enterprises (MWBE):** Monitor and track MWBE participation for design, professional services and construction for the Project.
- 5.2.4. **Communications:** Coordinate with DW's Public Affairs staff for public meetings, hearings, electronic and written communications for public communications. The preparation of deliverables for public meetings and general Project messaging and visioning will be completed by DW.
- 5.3. **ESDC Management:** Tasks associated with ESDC management during construction include oversight of the Design Team to ensure timely review and response to construction submittals, Requests for Information (RFIs), Change Requests and issues. The OR will be responsible for ensuring all design and construction documentation is being routed and filed in accordance with the Project controls procedures and the issues, schedules and coordination with the Program projects is seamless and does not conflict with the completion of the NSRWTP startup.
- 5.3.1. **Testing:** Coordinate with the Design Team and CMAR the development of a comprehensive testing plan for the NSRWTP processes to ensure stakeholder involvement, permit compliance and documentation of all testing requirements.
- 5.3.2. **Training:** Coordinate with DW, Design Team and CMAR on the development of a comprehensive training plan for all stakeholders and assist the stakeholders with training documentation, certifications and development of SOPs and necessary training materials.

- 5.3.3. Commissioning:** Manage the Design Team and DW's stakeholder involvement in the commissioning and startup of the facility, the scheduling, documentation, communications and reporting of for the entire phase of work.
- 5.3.4. Project As-Builts:** Assist DW with coordination and delivery of the Project As-Builts from the Design Team and the CMAR.

Task 6 – Transfer of Facility Ownership

- 6. Transfer of Facility Ownership:** At the completion of construction and commissioning, the OR will assist DW with transfer of project files to DW stakeholders, filing of project documents, close-out of Design Team contracts and deliverables and successful transfer of the Project to DW Operations
- 6.1. General:** The OR will be expected to assist DW, the Design Team and the CMAR will seamlessly and effectively transferring ownership of the NSRWTP over to DW Operations and any all necessary bookkeeping required to satisfy the needs of DW. Additional scope refinement is expected as the Project progresses and Task 6 is negotiated.
- 6.2. Asset Management:** Develop and oversee the implementation of an asset management plan which effectively transfers ownership of the NSRWTP, processes and equipment to DW. The plan shall address migration of critical data into DW's Computerized Maintenance Management System (CMMS), quality control of the data, and on-going quality assurance associated with the development of the NSRWTP CMMS, preventative maintenance protocols, data management, project drawings, warranties, operations & maintenance manuals and SOPs.
- 6.3. Property Accounting:** Assist DW and CMAR will financial accounting and Project costing of critical assets for DW financial systems.

Appendix B Draft Roles and Responsibilities Matrix

P = Primary Responsibility

Task	Entity				
	Owner's Rep	Denver Water	Design Team	CMAR	Construction Management Team
GENERAL					
Ultimate responsibility for ensuring the project is completed on time and on budget	P				
Internal coordination, contract approvals, Board reporting		P			
Ensure compliance with DW regulations, policies, procedures and directives		P			
Develop and implement the processes for administrative and financial procedures and controls	P				
Oversee all aspects of administration, implementation, and supervision of the design and project/program coordination, and construction	P				
Provide all accounting services for the project; maintain accurate books of accounts and record, including all required monthly, quarterly or annual audit reports	P				
Examine, approve, process all invoices and applications for payment	P				
Maintain all cost records and project related financial documents	P				
Track all project expenses against specific approved line items in the budget	P				
Prepare and present regular financial reports to DW	P				
Prepare, revise and administer a detailed project budget; be responsible for the budget (cost control)	P				
Prepare, revise, administer a detailed design schedule; be responsible for the schedule (schedule control)	P				
Implement change management procedures, issues tracking and risk analysis measures to keep project budget and schedule in line with project goals	P				
Lead all public agency hearings and reviews required	P				
Ensure coordination between all public and private aspects of the project	P				
Negotiate contracts with architects, engineers, contractors, consultants	P				
Manage the Architects, Engineers, Contractors, and Consultants Contracts under the Technical Direction from DW	P				
Investigate, apply for, and obtain approval for all rebate and incentive programs	P				
Maintain strict document control procedures	P				
Oversee and manage compliance of DW MWBE program and provide monthly report on MWBE goal attainment	P				
PRELIMINARY DESIGN					
Execute preliminary design and prepare deliverables			P		
Meeting Facilitation, preparation, documentation	P				
Conduct regular design meetings			P		
Conduct regular project coordination meetings	P				
Oversee all aspects of quality assurance on project processes and deliverables	P				
Oversee all aspects of quality control on design deliverables			P		
Facilitate and document development of design standards	P				
Oversee conformance with NSRTP design standards and finalize guidelines and deliverables for design execution	P				
Coordination, preparation, scheduling and facilitation assistance with Lean 2P Events for Site Issues	P				
Drive value engineering concepts and perspective throughout the duration of the project	P				
Manage facility design coordination issues and and physical connections to other NSR projects			P		

Appendix B Draft Roles and Responsibilities Matrix

P = Primary Responsibility

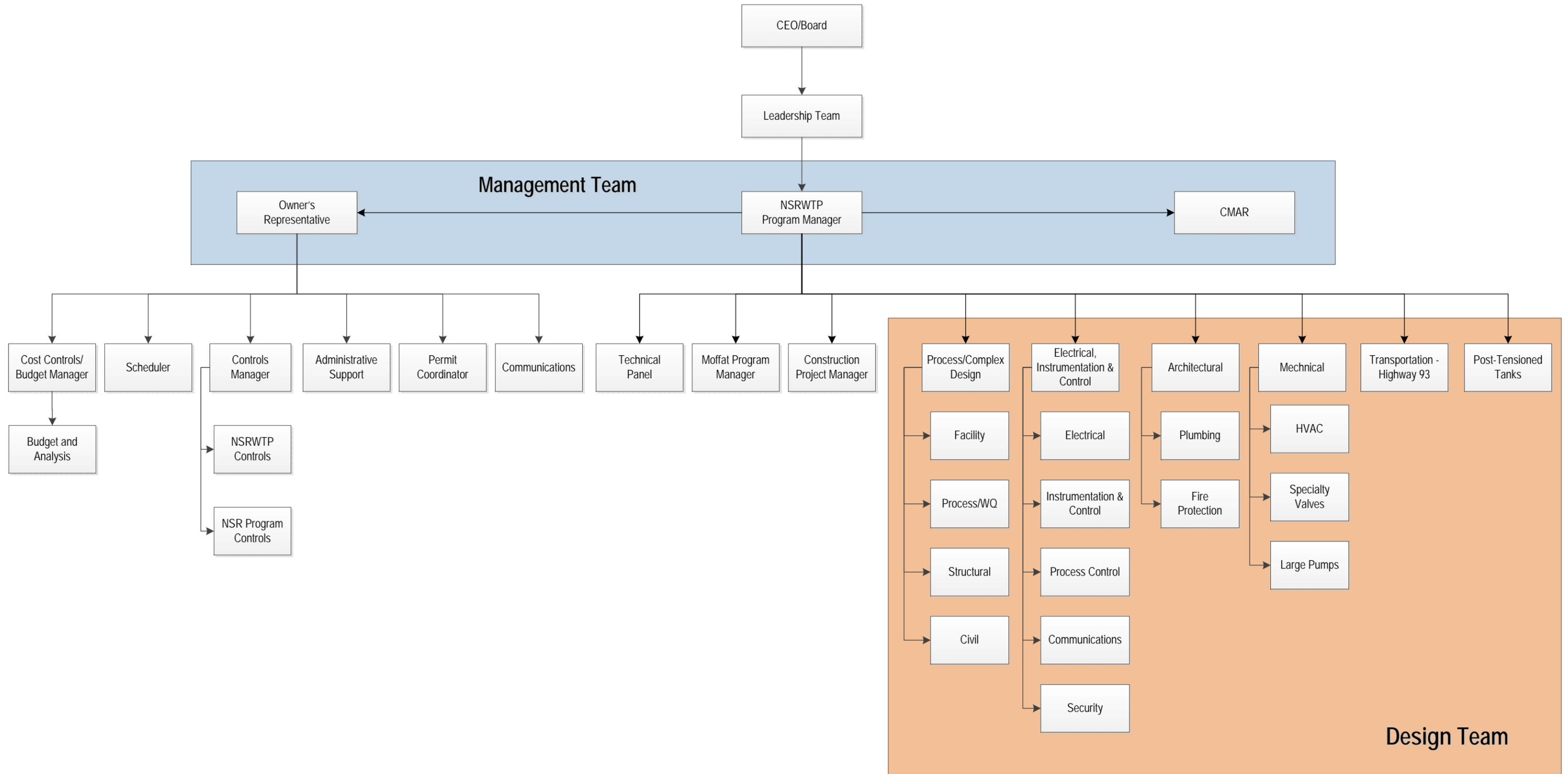
Task	Entity				
	Owner's Rep	Denver Water	Design Team	CMAR	Construction Management Team
Manage the development, finalization and oversight of the facility hydraulic grade line			P		
Conduct alternatives and cost benefit analysis on preliminary design features and components			P		
Development of Geotechnical Report			P		
Preparation of utility connection agreements	P				
Provide professional and technical services related to preparation of Inter-Governmental Agreement's	P				
Develop plan for the delivery of work Packages	P				
Complete Final Design contracts for Design Team	P				
Identify potential Owner-Furnished/Pre-Selected Equipment			P		
Prepare cost estimates for preliminary design alternatives				P	
Provide constructability feedback and installation considerations for process and system layouts				P	
Develop Preliminary Construction Schedule				P	
Develop preliminary Construction Cash Flow Projections				P	
Submit CDPHE Pilot Report as "Application for Construction Approval"		P			
Prepare and submit CDPHE Basis of Design Report			P		
FINAL DESIGN					
Execute Final Design and prepare deliverables			P		
Meeting Facilitation, preparation, documentation	P				
Conduct regular design meetings			P		
Conduct regular project coordination meetings	P				
Oversee all aspects of quality assurance on project processes and deliverables	P				
Oversee all aspects of quality control on design deliverables			P		
Assure conformance with NSRTP design standards, guidelines and deliverables for all project documents			P		
Drive value engineering concepts and perspective throughout the duration of the project	P				
Manage facility design coordination issues and and physical connections to other NSR projects			P		
Manage the development, finalization and oversight of the facility hydraulic grade line			P		
Provide constructability reviews and project recommendations				P	
Procurement of Owner-Furnished/Pre-Selected Equipment	P				
Prepare detailed Opinion of Probable Costs for 60%/90%/100% Design Milestones				P	
Maintain and update Construction Schedule				P	
Maintain and update Construction Cash Flow Projections				P	
Submit and attain approval for all applicable development permits	P				
Submit and attain approval for CDPHE permits			P		
Submit and attain approval for all applicable building permits				P	
Develop Final Phase Construction Agreements	P				
Prepare Final Construction Schedule				P	
Prepare Final Construction Cash Flow Projections				P	
Execute the bidding of project work packages	P				
Coordinate hookup of temporary utilities			P		
Develop and implement a signage plan (way finding and directional)				P	
Develop Equipment Start-Up Procedures and Processes			P		
CONSTRUCTION					
Coordination and relocation of permanent utilities (Qwest, Comcast, Xcel, Arvada)			P		
Process, manage and file all Construction-related documents (RFIs, RFQs, CORs, COs, Inspections, Reports, etc...)					P
Review and approve all Construction-related documents					P

Appendix B Draft Roles and Responsibilities Matrix

P = Primary Responsibility

Task	Entity				
	Owner's Rep	Denver Water	Design Team	CMAR	Construction Management Team
Oversee all aspects of quality control during construction				P	
Oversee all aspects of quality assurance during construction					P
Oversight of QA/QC program	P				
Receive and review quality control reports and all testing and inspection reports					P
Conduct construction Progress Meetings and issue minutes				P	
Daily inspections including daily reports documenting work progress, issues, non-compliance, labor, materials and equipment being furnished					P
Ensure compliance with all environmental permits				P	
Provide survey control		P			
Construction surveying and layout				P	
Final Grade Certifications					P
Verify CMAR Pay Applications and Reports (work quantities, labor, equipment)					P
Manage Construction Issues Log, Risk Register					P
Develop punch-list					P
Conduct Warranty walk					P
Handle any material disputes with contractors, vendors, suppliers or other team members				P	
Request Work Change Directives					P
Review, approve and administer change order requests					P
Reconcile contractor's cost calculations					P
Reconcile project expenses					P
Analyze cost allocations, change orders and pricing, subcontracts, material purchases, equipment rental					P
TRAINING					
Develop operations training			P		
Conduct operational training			P		
Equipment Training				P	
Secure and deliver all guarantees, warranties, affidavits, waivers, releases				P	
EQUIPMENT STARTUP/TESTING/COMMISSIONING					
Develop start-up plans for systems and equipment				P	
Equipment Testing/Commissioning				P	
Process Testing				P	
Start-up Testing				P	
CDPHE Construction Complete Form	P				
Oversee the final keying plan and deliver such keys to appropriate parties				P	
Review and approve all as-built drawings, O&M manuals, warranties and guarantees			P		
Manage the Completion of As-Built drawings and models for transfer to DW				P	
Manage the migration of project data into DW files and CMMS systems	P				

**Appendix C
Draft Table of Organization
for NSRWTP Design Phases**



Appendix D Draft Project Master Schedule

ID	Task Name	Duration	Start	Finish	2016				2017				2018				2019				2020				2021				2022				2023			
					Q4	Q1	Q2	Q3																												
1	DW - Piloting/Process Selection	195 days?	Mon 3/2/15	Fri 11/27/15																																
12	DW - Project & Scope Management Plans	197 days	Mon 6/1/15	Tue 3/1/16																																
71	DW - Owner's Representative - Contract	124 days	Mon 10/5/15	Thu 3/24/16																																
72	Letter of Interest (LOI)	22 days	Mon 10/5/15	Tue 11/3/15																																
79	Owner's Rep RFP	109 days	Mon 10/26/15	Thu 3/24/16																																
80	Prepare Draft RFP	15 days	Mon 10/26/15	Fri 11/13/15																																
81	Draft RFP Review	10 days	Mon 11/16/15	Fri 11/27/15																																
82	Prepare Final RFP	10 days	Mon 11/30/15	Fri 12/11/15																																
83	Final RFP Review	5 days	Mon 12/14/15	Fri 12/18/15																																
84	Advertise RFP	1 day	Thu 1/7/16	Thu 1/7/16																																
85	Consultants Prepare Proposal	22 days	Fri 1/8/16	Mon 2/8/16																																
86	Pre-Proposal Meeting	1 day	Thu 1/14/16	Thu 1/14/16																																
87	Last Day for Questions	1 day	Tue 1/26/16	Tue 1/26/16																																
88	Last Day for Addenda	1 day	Tue 2/2/16	Tue 2/2/16																																
89	Proposals Due	1 day	Tue 2/9/16	Tue 2/9/16																																
90	Proposal Review	10 days	Wed 2/10/16	Tue 2/23/16																																
91	Interview Short-listed Firms	7 days	Wed 2/24/16	Thu 3/3/16																																
92	Select Owner's Rep	1 day	Fri 3/4/16	Fri 3/4/16																																
93	Board Approval	1 day	Wed 3/23/16	Wed 3/23/16																																
94	NTP to Owner's Rep	1 day	Thu 3/24/16	Thu 3/24/16																																
95	DW - CMAR - Contract	98 days	Tue 3/29/16	Thu 8/11/16																																
112	DW - Technical Panel - Contract	48 days	Tue 6/7/16	Thu 8/11/16																																
122	OR - Project Controls Development	94 days	Mon 4/4/16	Thu 8/11/16																																
123	OR Kickoff Meeting	1 day	Mon 4/4/16	Mon 4/4/16																																
124	Design Management Plan	65 days	Mon 4/4/16	Fri 7/1/16																																
125	Communications Plan	65 days	Mon 4/4/16	Fri 7/1/16																																
126	Risk Management Plan	65 days	Mon 4/4/16	Fri 7/1/16																																
127	Change Management Plan	65 days	Mon 4/4/16	Fri 7/1/16																																
128	Design Delivery	20 days	Fri 5/6/16	Thu 6/2/16																																
129	Design Package Schedule	20 days	Fri 5/6/16	Thu 6/2/16																																
130	Design Package Staffing Plans	20 days	Fri 5/6/16	Thu 6/2/16																																
131	Design Contract Development	20 days	Fri 5/6/16	Thu 6/2/16																																
132	Design Budget Projections	20 days	Fri 5/6/16	Thu 6/2/16																																
133	Project Designer RFP	48 days	Tue 6/7/16	Thu 8/11/16																																
134	Advertise RFP	1 day	Tue 6/7/16	Tue 6/7/16																																
135	Consultants Prepare Proposal	16 days	Wed 6/8/16	Wed 6/29/16																																
136	Proposals Due	1 day	Thu 6/30/16	Thu 6/30/16																																
137	Proposal Review	10 days	Fri 7/1/16	Thu 7/14/16																																
138	Interview Short-listed Firms	5 days	Fri 7/15/16	Thu 7/21/16																																
139	Select Designers	1 day	Fri 7/22/16	Fri 7/22/16																																

Project: Schedule Date: Mon 12/14/15	Task	Project Summary	Inactive Milestone	Manual Summary Rollup	Deadline
	Split	External Tasks	Inactive Summary	Manual Summary	Progress
	Milestone	External Milestone	Manual Task	Start-only	Manual Progress
	Summary	Inactive Task	Duration-only	Finish-only	

Appendix E
Opinion of Probable Cost

Prepared by:					Date:		Estimate:		
Denver Water					July 2014		Class 4 AACE Estimate		
Ralston - 150 MGD Granular Media Filtration									
RALSTON	QTY	UNIT	\$/UNIT	TOTAL COST					
Sleeve Valves & Piping	2	ea	-	\$8,050,000					
Rapid Mix	2	trains	-						
Flocculation	6	trains	-						
Sedimentation	6	trains	-	\$47,310,000					
Granular Media Filters	16	filters	-	\$33,990,000					
WW PS		MGD	-	\$4,480,000					
WW Storage Tank	0.9	MG	-						
BW EQ Basin & PS		MGD/MG	-	\$3,410,000					
BW Treatment		MGD	-	\$4,020,000					
Gravity Thickener	2	ea	-	\$4,000,000					
PreTreatment Chem Bldg	10,780	ea	-	\$9,480,000					
Post Treatment Chem Bldg	19,800	ea		\$9,100,000					
Admin Building	20,800	SF		\$9,710,000					
O&M Warehouse									
SW PS		MGD	-	\$2,180,000					
Clearwater Reservoir	2 @ 10	MG	\$1	\$20,880,000					
Disinfection Contact Basin	5	MG	\$2	\$12,390,000					
Drain PS		MGD	-	\$1,690,000					
Moffat				\$10,520,000					
SUBTOTAL				\$181,210,000					
Site Work	22%			\$39,440,000					
Plant Computer System				included above					
Site Electrical				\$4,160,000					
SUBTOTAL				\$224,810,000					
Contractor OHP	10%			\$22,480,000					
Mob/Bonds/Insurance	2.4%			\$5,400,000					
Contingency	30%			\$67,440,000					
TOTAL CONSTRUCTION COST				\$320,100,000					
Public Outreach	1%			\$3,201,000					
Engineering	10%			\$32,010,000					
Services During Construction	10%			\$32,010,000					
Taxes	1.70%			\$5,441,700					
TOTAL CAPITAL COST				\$392,800,000					