PROPOSAL FOR

DESIGN & CONSTRUCTION - MUNICIPAL WATER SUPPLY TREATMENT

CITY OF RAMSEY, MINNESOTA

AE2S
Think Big. Go Beyond.

7.7.2021

- SIMPLIFY
- INTEGRATE
- SUPPORT

IN ASSOCIATION WITH:

OERTEL ARCHITECTS

SRF Consulting Group, Inc.

DESIGN TREE
engineering + land surveying

www.ae2s.com

July 7, 2021
John Nelson
7550 Sunwood Drive NW
Ramsey, MN 55303

Re: A Team and Approach to Ensure your Long-Term Water System and Public Works Success

Dear Mr. Nelson:

This is an exciting time as the City of Ramsey plans to provide filtered drinking water to all its residents through design and construction of a new Water Treatment Plant (WTP). We've assembled the team of AE2S, Oertel Architects, SRF, and Design Tree (and will also be partnering with Total Control Systems), to bring your vision to reality. By selecting this team, Ramsey will realize the following benefits:

- **Operationally Friendly, Maintainable, Complaint Mitigating Water Treatment Plant.** Your staff has a lot on their plates. You need an "Easy Button" WTP that is: operationally friendly, easy to maintain, and designed to progressively dial down water quality complaints. Upon receiving Ramsey's RFP, AE2S immediately took action: 1) testing all wells that will feed the plant; 2) identifying key parameters and opportunities to mitigate future operational issues, compliance issues, and complaints; 3) reaching out to Total Control Systems to establish a partnering agreement; and 4) developing a plan to deliver you an "Easy Button" WTP. Our team's collaboration with your staff, experience in WTP design, successful optimization of hundreds of plants, and successful history of working with Total Control Systems will all be harnessed to deliver a **SIMPLIFIED** water plant that maximizes your ability to serve Ramsey.

- **Architecturally Integrated, Efficient, Accommodating Campus.** Our team has unmatched insights into the City's vision for the campus through Oertel and SRF's experience designing the Public Works Facility. We're ready to hit the ground running! We're so excited, in fact, that we have already begun developing an architectural model of the future plant, as well as a plant-layout visualization tool that can be used to facilitate input and understanding during Workgroup Meetings. Our team's insight, passion, and collaborative Workgroup Meeting Approach will deliver a truly **INTEGRATED,** efficient, and accommodating overall campus.

- **Informed, Equipped and Empowered Operators.** Start-up, training, and ongoing optimization is the fun part; we begin with that end in mind. As passionate industry leaders in optimization and training, we will empower your operators personally and connect them with key organizations, vendors, and operators in our area/industry so they are **SUPPORTED** with the resources they need to be successful for years to come.

We are excited to work with you on this project! Should you have any additional questions, please contact me at 763-463-5036 or on my cell phone at 763-406-6940.

Submitted in Service,
AE2S

Steve Nelson, PE
Project Manager

Note: AE2S acknowledges the receipt and review of Addendum #1 on July 30, 2021

SIMPLIFY

WTP DESIGN & PROGRAMMING

WHY OUR TEAM:

- **Experience** with 100s of Iron & Manganese Treatment Plants
- **Specialized** O&M and WTP Optimization Experts
- **Integrated Programming** through relationship with Total Control

WATER PLANT THAT IS:

- Operationally Friendly
- Maintainable
- Complaint Mitigating

INTEGRATE

OPERATIONS WITH CAMPUS LAYOUT

WHY OUR TEAM:

- **Insight** Ramsey's Vision for the Public Works Campus
- **Understanding** of Work Order Processing and Mobilization
- **Collaborative** Workgroup Approach and Public Education

CAMPUS THAT IS:

- Architecturally Integrated
- Efficient
- Accommodating

SUPPORT

FOR WATER OPERATIONS STAFF

WHY OUR TEAM:

- **Training** by Industry Leaders in Operator Training and Education
- **Connections** with Local Organizations, Vendors, and Operators
- **Operational Technology** (OpWorks) that Empowers Your Staff

OPERATORS THAT ARE:

- Informed
- Equipped
- Empowered

OPERATIONS & MAINTENANCE FOCUSED WTP APPROACH

We know operational efficiency is a major priority for you and your staff who will be running the new facility. You deserve to be involved! Our goal is to be a resource to guide you through this new adventure.

TEAM WITH UNMATCHED INSIGHT!

Water Treatment Specialists

- 300+ Water-Focused Professionals
- Trained Operators
- Funding Experts In-house

Architecture

- Designed Ramsey's Public Works Building
- Extensive experience with multi-function campus projects
- Recently designed Edina & Robbinsdale WTP's with AE2S

Civil/Site

- Designed Ramsey's Public Works Building
- Understand the site conditions and execution of the campus vision
- Ability to build on work performed and eliminate rework

COLLABORATION WITH TOTAL CONTROLS*

We know your staff has a good working relationship with Total Controls. So do we! Your Project Manager, Steve Nelson, has collaborated on more than 10 projects with Total Controls. We are committed to working collaboratively with their team throughout this project.

= Seamless integration with your existing system

COMPLETED 30+ PROJECTS TOGETHER!

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KEY PROJECT TEAM

The selected consultant must have experience with iron and manganese removal, understanding of operational impacts, be able to execute sound technical and financial judgment, and demonstrate the proven ability to facilitate a collaborative planning and design process across a range of various interests to deliver a successful project. This is a proven team whose members have worked together successfully on numerous past projects. This team has committed the time and availability to help you make the best decisions for your water system, staff, and community.

On the next page you will see a snapshot of the key team members that you will interact with and why they make our team the best fit for your project. These key team members have successfully completed hundreds of similar projects for local communities. **For the interest of your time reviewing these proposals, we have highlighted the *"why"* they matter to the success of *this* project.** If the City would like to see a full resume for these team members or any members of our team, we would be more than happy to share that with you.

QA/QC - TECHNICAL ADVISORY TEAM

AARON VOLLMER, PE
KELLEY JANES
DELVIN DEBOER, PHD, PE
COLTON JANES, PE

City of RAMSEY

STEVE NELSON, PE
Project Manager

totalcontrol SYSTEMS, INC

DESIGN TEAM

WATER TREATMENT	STRUCTURAL/ ARCHITECTURAL	ELECTRICAL/ MECHANICAL	CIVIL/SITE	FINANCIAL/FUNDING
ABBIE BROWEN, PE Water Engineer	**ANDREW COOPER** Lead Architect	**PAUL QUIRIN, PE** Mechnical Engineer	**MICHAEL AARON, PE** Civil/Site	**ABBY RITZ** Funding Specialist
DELVIN DEBOER, PHD, PE Start-up/ Water Chemistry Expert	**THOMAS STROMSODT, AIA** WTP Architect	**AARON MULLER, PE** Electrical Engineer	**KEN GRIESHABER** Landscape Architecture	
KELLEY JANES Licensed Operator/ Operations Optimization	**JOE NICHOLSON, PE** Structural Engineer			
STEVE SEIBERT 3D Revit/Lead Process Designer	**ASHLEY OLSON, PE** Structural Engineer			

KEY TEAM SPOTLIGHT

"Mr. Nelson has been my go-to water engineer for years. He really listens and brings a lot to the table in his ability to think strategically, as well as outside of the box. He has consistently helped me find the best solutions for each community I have served."

BRIAN SKOK, Utility Superintendent
City of Apple Valley, MN
bskok@cityofapplevalley.org
952-953-8441

60+ WTP's
& DECADES OF REPEAT CLIENTS/TRUSTED RELATIONSHIPS

STEVE NELSON, PE
Project Manager

Client	1990s	2000s	2010s	2020	June 21'
Brooklyn Center			WTP, Water Quality Complaint Reduction		Filter Evaluation & Operator Training
Brooklyn Park		Filter Evaluation & Operator Training, WTP	Misc. Direct Selection Drinking Water Services	Misc. Direct Selection Drinking Water Services	
Eagan	WTP	Misc. Direct Selection Drinking Water Services, Misc. Direct Selection Drinking Water Services	WTP, Misc. Direct Selection Drinking Water Services		Filter Evaluation & Operator Training, Lead and Copper Rule - Corrosion Control Study
Edina	WTP, WTP, WTP	Water Quality Complaint Reduction			Filter Evaluation & Operator Training, WTP
Le Sueur/Carver/ Apple Valley		Filter Evaluation & Operator Training	WTP, Water Quality Complaint Reduction, Misc. Direct Selection Drinking Water Services	Misc. Direct Selection Drinking Water Services	Water Quality Complaint Reduction, Lead and Copper Rule - Corrosion Control Study
Plymouth		WTP, WTP	Filter Evaluation & Operator Training, Water Quality Complaint Reduction	Misc. Direct Selection Drinking Water Services	
Robbinsdale	WTP, WTP, WTP		Misc. Direct Selection Drinking Water Services, Misc. Direct Selection Drinking Water Services	WTP	

- WTP (Project Manager / Lead Process Engineer)
- Water Quality Complaint Reduction
- Filter Evaluation & Operator Training
- Lead and Copper Rule - Corrosion Control Study
- Misc. Direct Selection Drinking Water Services

"The design team at AE2S has been great. They are very knowledgeable, good at communicating with staff to determine needs, thorough, and responsive. We are very impressed with AE2S."

TOM WESOLOWSKI, PE, City Engineer
twesolowski@ci.shoreview.mn.us
651-490-4600

FOCUS ON OPERABILITY

- ✓ Deep Revit (3D Modeling) Background
- ✓ Side-by-side training/education with staff
- ✓ Creative long-term treatment solutions
- ✓ Member of the YP and Water Utility Council Committees

RELEVANT EXPERIENCE

- Edina WTP
- Mounds View WTP
- St. Cloud WTP

ABBIE BROWEN, PE
Project Engineer

ANDREW COOPER
Lead Architect

RAMSEY PW BUILDING LEAD

- ✓ Vision for Campus
- ✓ Understands Staff Preferences
- ✓ Proven Success for Ramsey

RELEVANT EXPERIENCE

- Ramsey Public Works Building
- Fridley Civic Campus & Public Works
- Minnesota National Guard Vehicle Maintenance Shop

THOMAS STROMSODT, AIA
WTP Architect

SIX WTP'S WITH AE2S

- ✓ Water-specific Architecture Design
- ✓ Sustainability and Re focus
- ✓ Operability

RELEVANT EXPERIENCE

- AE2S Go-to WTP Architect
- Robbinsdale WTP
- Edina WTP

AE2S NEXUS
The Financial Link

FINANCIAL/FUNDING

- ✓ Municipal-Specific Funding Specialists
- ✓ Cost of Service Analysis
- ✓ Life Cycle Cost Analysis
- ✓ Long-term Rate Planning & Design
- ✓ Revenue Adequacy

QA/QC - TECHNICAL ADVISORY TEAM

AARON VOLLMER, PE
QA/QC - Water Expert

- ✓ Big Picture
- ✓ Funding
- ✓ Water Treatment Expert

RELEVANT EXPERIENCE

- Woodbury CMAR Treatment Plant
- Robbinsdale WTP
- Shoreview WTP

DELVIN DEBOER, PHD, PE
Training Expert

- ✓ Past College Professor
- ✓ Connects Well with Operators
- ✓ Water Chemistry Expert

RELEVANT EXPERIENCE

- Edina WTP
- Shorview WTP
- Marshall WTP

COLTON JANES, PE
Operations Optimization

- ✓ Experienced Director of Operations; 13 Counties, 95 employees
- ✓ Leads AE2S Operations Software Development
- ✓ Facility Operations Optimization and Increasing Efficiencies

RELEVANT EXPERIENCE

- Eagan OpWorks
- Mounds View WTP

KELLEY JANES
Training/Operations

- ✓ 24 years of utility management experience
- ✓ Leads MN Rural Water Operator Training Programs
- ✓ Class A Water Operator

RELEVANT EXPERIENCE

- City of Chanhassen - Utilities Superintendent
- City of Golden Valley - Utilities Supervisor

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EXPERIENCE & QUALIFICATIONS

AE2S has been a specialized firm since the very beginning and developed a full service engineering business in support of our main spotlight, **water.** By focusing on this essential resource, we have proven to provide expert knowledge and an overall understanding of our clients' needs. Our team has successfully completed numerous projects similar to your's and are excited to bring our specialized experience to your project and exceed your expectations for design **simplicity,** facility **integration**, and operational **support.**

CLIENT	PLANNING	WATER SUPPLY	WATER TREATMENT	MANGANESE REMOVAL	IRON REMOVAL	GRAVITY FILTRATION	FINANCIAL
Alexandria Light & Power, MN	X	X	X	X	X	X	
City of Anoka, MN	X	X	X	X	X		X
City of Baxter, MN	X	X	X	X	X	X	
City of Bloomington, MN				X	X	X	
City of Breckenridge, MN	X	X	X	X	X		X
City of Brooklyn Center, MN	X	X	X	X	X	X	
City of Brooklyn Park, MN	X	X	X	X	X	X	
City of Buffalo, MN	X	X	X	X	X		
City of Burnsville, MN		X					X
City of Coleraine, MN	X	X	X	X	X	X	
City of Devils Lake, ND	X	X	X	X	X	X	X
City of Eagan, MN	X	X	X	X	X	X	X
City of Eden Prairie, MN		X		X	X	X	X
City of Edina, MN	X	X	X	X	X	X	X
City of Fairmont, MN	X	X	X			X	X
City of Grand Forks, ND	X	X	X			X	X
City of Hamburg, MN	X	X	X	X	X		
City of LeSuer, MN	X	X	X	X	X	X	
City of Minnetonka, MN	X		X	X		X	X
City of Mounds Views, MN	X	X	X				
City of Oakdale, MN		X	X				X
City of Plymouth, MN	X	X	X	X	X	X	X
City of Princeton, MN	X	X	X	X	X		
City of Robbinsdale, MN	X	X	X	X	X	X	
City of Shoreview, MN	X		X	X	X	X	
City of St. Cloud, MN	X	X	X			X	X
City of Sioux Falls, SD	X	X	X			X	X
City of Thief River Falls, MN	X		X			X	X
City of Woodbury, MN	X	X	X				X
Marshall Municipal Utilities, MN	X		X	X	X	X	
Watertown Municipal Utilities, MN	X	X	X	X	X	X	X

"I appreciate the commitment the AE2S team continues to make to ensure complete success of our multiple water infrastructure projects. The team operates as a seamless and dedicated extension of our City staff. Our communications have been very open, extensive and responsive. The ideas, advice, and feedback we have received is greatly appreciated, and reinforces my confidence that we are developing the best possible outcomes for our Community for not only the immediate term but for many, many years to come."

RICHARD MCCOY, PE, Public Works Director / City Engineer
rmccoy@ci.Robbinsdale.mn.us
763-531-1260

Robbinsdale, Minnesota

WATER SYSTEM IMPROVEMENTS

Community Faces Growth and Aging Infrastructure

The City of Robbinsdale is an inner ring suburb of the Minneapolis Metropolitan area with about 14,000 residents and provides an average of 2 MGD of potable water to the community. The City became fully developed in the 1970s and was experiencing redevelopment and pressure to add additional density in various locations throughout the City. The City had constructed three regional water treatment plants in the late 1960s to provide iron and manganese filtration, and those facilities had served them well for a very long time. Unfortunately, these facilities were nearing the end of their useful life, and Robbinsdale was faced with significant infrastructure challenges to replace these water treatment plants.

Investing in the Future

Following a feasibility study and council engagement, it was determined that Robbinsdale would make a significant investment in its water system. In addition to the treatment plant replacement, Robbinsdale elected to replace two existing wells, connect all of its wells to one central treatment plant, and build a new water tower. The City Council decided to proceed forward with a new centralized lime softening water treatment plant in order to improve the quality of the water they were providing to residents and businesses.

Seamless Partnership Streamlines Execution Process

AE2S teamed with Robbinsdale to complete all of these improvements under three separate projects, all of which are being constructed at the same time. Each of these projects addresses separate portions of Robbinsdale's drinking water infrastructure, and they ultimately work as an integrated system. AE2S assembled a project team that had the right combination of expertise and experience to enable the team to jump right in and get to work with Robbinsdale staff. The team was able to effectively evaluate and design a multitude of treatment processes, including groundwater lime softening, water tower design, and wellhead sustainability. Completing these projects on similar timelines, with complementary project teams and a central project manager, allowed for the seamless completion of each objective.

WHY THIS PROJECT?

- City's First Water Treatment Plant
- Similar Footprint
- AE2S/Oertel Partnership
- Similar Treatment Goals
- Operator Training/Support
- Under Budget & Ahead of Schedule

"AE2S provides great client service. The product they provide is ultimately owned by the City of Woodbury and AE2S has a forthright recognition of that. They are open and share information at all levels and enable our staff to be as self-sufficient as possible. We value our relationship with AE2S and the benefit they bring to our staff and community."

JIM WESTERMAN, Utilities Division Manager
jim.westerman@woodburymn.gov
651-714-3720

Woodbury, Minnesota

WATER TREATMENT AND MANAGEMENT

Ground Water Contamination Concerns Lead to Treatment

In 2004, PFAS were first found to have contaminated drinking water supplies in parts of the eastern Twin Cities. Over the last 15 years or so, PFAS have been discovered in Woodbury's groundwater supply and research has been conducted to identify the source and level of contamination. Most of the contamination has been traced to four dumps or landfills in Oakdale and Woodbury, at the 3M manufacturing facility.

In November 2017, the MDH notified the City of Woodbury that of Woodbury's 19 municipal wells, water from five wells - based on the most current data - exceed either a PFAS health-based guidance value (HBV) and/or a health risk index (HRI) value.

On February 20, 2018, the State of Minnesota settled its lawsuit against the 3M Company in return for a settlement of $850 million.

Lawsuit Leads to Action

In response to this settlement, the City of Woodbury retained AE2S to assist with the development of a PFAS Treatment Master Plan.

The PFAS Treatment Master Plan consisted of the alternative evaluation and planning for a 30MGD WTP to treat PFAS and potentially other treatment target goals, such as iron and manganese removal, radon removal, softening, fluoridation, and disinfection. The study also included a review of population and water demand projections, evaluation of current and future drinking water regulations, completion of a source water evaluation, a treatment technology evaluation, and development of preferred project alternatives for evaluation.

Various treatment technologies were investigated, such as GAC, Ion Exchange, Lime Softening, and RO/NF Membranes.

Focused Project Team Delivers a Solution in Record Time

Following negotiations with the State and the identification of a temporary WTP site, Woodbury was awarded a grant of $8,725,000 to design and build a temporary WTP capable of treating 3,800 gpm. AE2S jumped into action in early 2020 to begin planning for the design and construction of a temporary WTP with a goal of treatment being operational by June 1, 2020. In addition to AE2S beginning an expedited design process, Woodbury determined that this was an emergency and declared a City emergency which allowed them to utilize a unique CMAR (Construction Manager at Risk) contracting method not yet allowed in Minnesota. Through a seamless project team between the City, AE2S, and the contractor (Rice Lake Construction), AE2S was able to deliver a successful WTP on time and before summer peak demand.

APWA PROJECT OF THE YEAR

WHY THIS PROJECT?

- PFAS Removal
- City's First Water Treatment Plant
- Operator Training/Support
- Accelerated Schedule
- Innovative Construction Techniques

"The design team at AE2S has been great. They are very knowledgeable, good at communicating with staff to determine needs, thorough, and responsive. We are very impressed with AE2S."

TOM WESOLOWSKI, PE, City Engineer
twesolowski@ci.shoreview.mn.us
651-490-4600

Shoreview, Minnesota

WATER TREATMENT PLANT DESIGN AND CONSTRUCTION

Concerns Lead to New WTP

The City of Shoreview provides an average of approximately 3 MGD of potable water to its 26,000 local residents, as well as to customers within the Cities of North Oaks, Arden Hills, and Vadnais Heights. The City experienced significant growth in the 1970s and 1980s, but focus shifted from new development to infill and redevelopment. The City currently operates a water supply system that consisted of six wells, raw water transmission piping, a storage reservoir, chemical feed systems, and a booster pump station (but no treatment/filtration facility). The existing water system had served the City well for decades, but increasing color-related concerns and aging infrastructure spurred the City to enlist AE2S to design and construct a water treatment plant (WTP).

Treatment Objectives Drive Technology Selection

The treatment objectives established for the new WTP included ammonia removal, iron and manganese removal, hydrogen sulfide removal, radon removal, fluoridation, disinfection and maintaining a protective disinfectant residual in the distribution system, and disinfectant by-product control. Several alternative technologies were evaluated to accomplish these treatment objectives for the proposed water treatment facility. Analysis included a pilot study evaluating greensand filtration and alternative oxidation processes.

Solution Meets Treatment Financial Objectives

Ultimately, aeration, with gravity filtration, gas chlorine, and traditional backwash reclamation basins were selected as the alternatives that best met the City's needs, both in terms of accomplishing treatment objectives and financial considerations.

Final design and bidding were completed in May 2015. The WTP became operational December 2016.

WHY THIS PROJECT?

- Integrated with Existing Campus
- Iron & Manganese Removal
- City's First Water Treatment Plant
- Operator Training/Support

"The staff at AE2S are extremely knowledgeable in all aspects of water treatment, storage, and distribution. They coordinate and communicate well with all members of the design and construction team. Throughout design and construction, they provide a thorough review of all options and evaluate multiple scenarios at each point in the process. I am very impressed with their organization and have been pleased with the work they have completed in the City of Fairmont."

TROY NEMMERS, PE, Public Works Director
tnemmers@fairmont.org
507-238-9461

Fairmont, Minnesota

WATER SYSTEM PLANNING AND NEW WTP

Facing Multiple Challenges

The Fairmont Water Treatment Plant (WTP) was experiencing treatment capacity limitations, as well as challenges related to aging infrastructure, including operational difficulties related to deteriorating and outdated treatment processes. Proposed drinking water regulations would likely require improvements or advanced treatment processes to be implemented in the future at the WTP.

To address these challenges, the City retained AE2S to complete a Facility Master Plan, designed to include population and water demand projections, evaluation of current and future drinking water regulations, establishment of treatment target goals, completion of a source water evaluation, a WTP condition assessment and risk analysis, a treatment technology evaluation, and development of preferred project alternatives for evaluation.

Confirmation of Recommendations

Following completion of the Master Plan, AE2S initiated an onsite pilot treatment operation that was designed specifically to comparatively analyze the Taste and Odor (T&O) mitigation performance of Ultraviolet light (UV) and Hydrogen Peroxide (H_2O_2), ozone, and Granular Activated Carbon (GAC). Analysis included "spiking" pilot water with increased concentrations of T&O compounds to evaluate performance under worst case conditions.

In addition to analytical evaluation, performance of the alternative technologies was evaluated by an "Odor Panel" consisting of WTP staff, City officials, residents, and engineers. Participation not only assisted in process selection, but also improved public support for the project.

Full Speed Ahead

The 5.4 million gallon per day (MGD) facility includes the following treatment processes: raw water aeration, conventional lime and soda ash softening, a filter press solids handling process, conventional sand filtration, GAC filtration, onsite generation of sodium hypochlorite for chlorine disinfection, and eight additional chemical feed systems. Interesting project components include demolishing an existing school to make way for the new facility location, rehabilitating and reusing the existing raw water intake station, intermediate pumping station, high service pumping station, and demolishing the existing facility and restoring the adjacent lake shoreline.

WHY THIS PROJECT?

- Educational Gallery Included for Public Tours
- Taste and Odor Complaint Mitigation
- Collaborative Workshop Approach

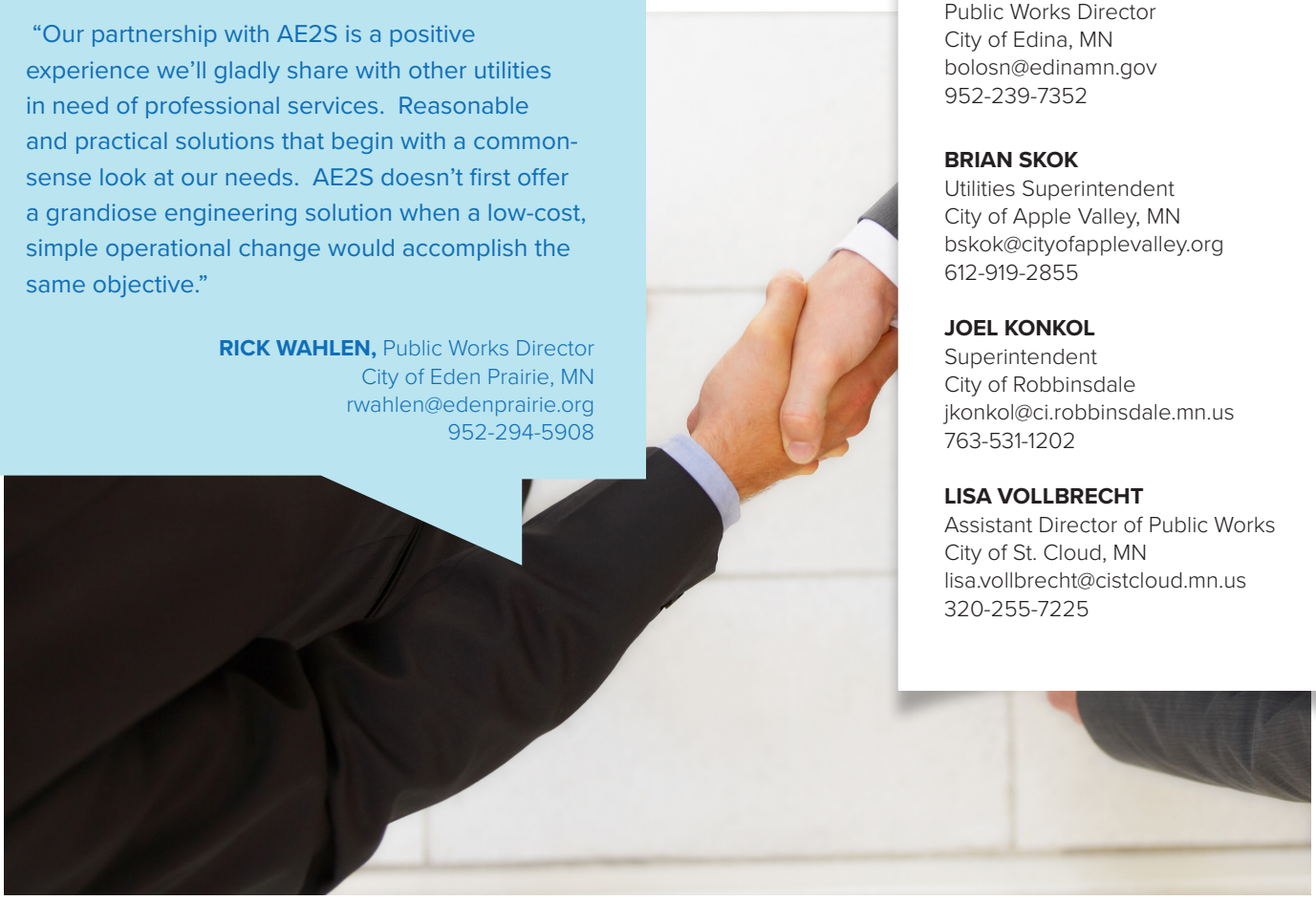
REFERENCES

We strive to develop exceptional client/consultant relationships which go beyond the norm by adding the value of knowing that your consultants are an extension of your staff, devoted to the success of your public utilities as a whole. We believe that exceptional relationships are the true measure of client satisfaction.

We have listed a few client references to the right and the pages prior to this. **We encourage you to contact any of our clients to get a sense of what "extreme client service" means to AE2S.**

"Our partnership with AE2S is a positive experience we'll gladly share with other utilities in need of professional services. Reasonable and practical solutions that begin with a common-sense look at our needs. AE2S doesn't first offer a grandiose engineering solution when a low-cost, simple operational change would accomplish the same objective."

RICK WAHLEN, Public Works Director
City of Eden Prairie, MN
rwahlen@edenprairie.org
952-294-5908



STEVE GILBERG
Water Production Supervisor
City of Eagan, MN
sgilberg@ci.eagan.mn.us
651-485-0602

JIM LOOMIS
Lead Operator
City of Brooklyn Center, MN
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763-585-7103

BRIAN OLSON
Public Works Director
City of Edina, MN
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952-239-7352

BRIAN SKOK
Utilities Superintendent
City of Apple Valley, MN
bskok@cityofapplevalley.org
612-919-2855

JOEL KONKOL
Superintendent
City of Robbinsdale
jkonkol@ci.robbinsdale.mn.us
763-531-1202

LISA VOLLBRECHT
Assistant Director of Public Works
City of St. Cloud, MN
lisa.vollbrecht@cistcloud.mn.us
320-255-7225

3
APPROACH & SCHEDULE

Understanding

This is an exciting time as the City of Ramsey takes the next steps to provide filtered drinking water to all residents of the City. This project offers opportunities to achieve water quality goals, including iron and manganese removal, customize the facility design to consider operations and maintenance, and seamlessly integrate the building into the public works campus. AE2S is excited about the opportunity to work closely with the City of Ramsey team to not only exceed near-term objectives, but also to design and construct a facility that implements the best long-term solutions.

No one knows the existing Ramsey Water System better than you and your operations team. You have responsibly operated your existing system for years and have set yourselves up to successfully bring the vision of a fully integrated public works campus to life. We understand that these next steps will be building upon the City's previous work, including the most recent 2021 Water Treatment Plant Feasibility Study. AE2S intends to work closely with Ramsey representatives and our teaming partners to ensure that this project is a true collaboration of our project teams, resulting in the most successful project possible.

DEFINING SUCCESS FOR RAMSEY

- **Operationally friendly, maintainable, and complaint mitigating water plant.**
- **Architecturally integrated, efficient, and accommodating campus.**
- **Informed, equipped, and empowered operators.**

OPERATIONS & MAINTENANCE FOCUSED WTP APPROACH

Our team offers Ramsey an opportunity to focus the next phases on creating a water treatment facility with operations and maintenance at the forefront. The Public Works Building sets the stage for the aesthetic and construction materials desired by Ramsey, eliminating the need for workshops and planning needed early on in most facility designs. Time savings related to:

- Architectural finishes and construction materials – consistency throughout the campus
- Site design through institutional knowledge of the site and existing underground utilities
- Maintaining consistency with controls and integration

Our project team has built a dependable relationship with proven success on many relevant projects. Project team members of all roles have worked together before. These relationships result in teamwork and the ability to anticipate each other's needs, introducing even more efficiency in the project delivery.

3D DESIGN SAVES MONEY!

AE2S utilizes 3D Modeling Software as the design/drafting tool for all new facilities. The model creation assists throughout the design process by **identifying conflicts and reducing costly change orders.** The model also allows for the design team to virtually "walk through" the facility to get a feel for space, layout, and appearance of the planned WTP. The 3D tool can also be extended outside the facility to demonstrate virtual "fly-over" videos to see the WTP as a part of the campus and to communicate with stakeholders and the public.

For an example of our 3D tool's potential capabilities visit:

www.ae2s.com/3D-renderings

SIMPLIFY

WTP DESIGN & PROGRAMMING

Upon receiving Ramsey's RFP, AE2S immediately took action:

1. Testing all wells that will feed the plant
2. Identifying key source water quality differences that, if not carefully designed and programmed for, could riddle your future with complex operational issues, compliance issues, and complaints
3. Reaching out to Total Control Systems to establish a partnering agreement
4. Developing a plan to deliver you an "Easy Button" water plant.

TREATMENT GOALS

- Manganese Removal
- Iron Removal
- Accounting for Differing Ammonia Levels
- LCR (Corrosion) Compliance
- Avoid Taste & Odor Complaints
- Avoid Color Complaints
- Maintain Operator Health (in the WTP)
- Minimize Waste / Maximize Reclaim

Water Source	Iron (mg/L)	Manganese (mg/L)	Ammonia (mg/L)
Well 3	**0.52**	**0.221**	0.37
Well 4	**0.22**	**0.355**	0.48
Well 5	0.74	0.080	0.45
Well 6	0.79	0.044	0.43
Well 7	0.75	0.049	0.47
Well 8	0.58	0.225	0.40

In addition to iron and manganese for Wells 3 and 4 (that the Feasibility Study pilot tested for), AE2S assessed all the above wells for iron, manganese, and ammonia impacts.

Ammonia =

10x

the chlorine demand of iron

= making it an extremely important constituent in Ramsey's water system.

Adding a WTP Can Cause Distribution Challenges?

It often comes as a surprise that adding a water treatment plant in a community actually compounds the degradation of water quality in their distribution system. This is due to the inadvertent addition of air (dissolved oxygen) to the water which initiates biological activity.

CORROSION:

Biological activity can reduce the pH in a water system and lead to increased lead and copper corrosion. There is a direct correlation with Minnesota communities that add filtration and then exceed the regulated copper levels at their consumer's tap.

TASTE & ODORS:

Biological activity can lead to drinking water taste and odors at the consumer's tap.

OTHER:

Chlorine dosing must be carefully controlled to avoid "swimming pool" types of odors at the consumer's tap and to avoid harmful fumes and corrosion in the WTP.

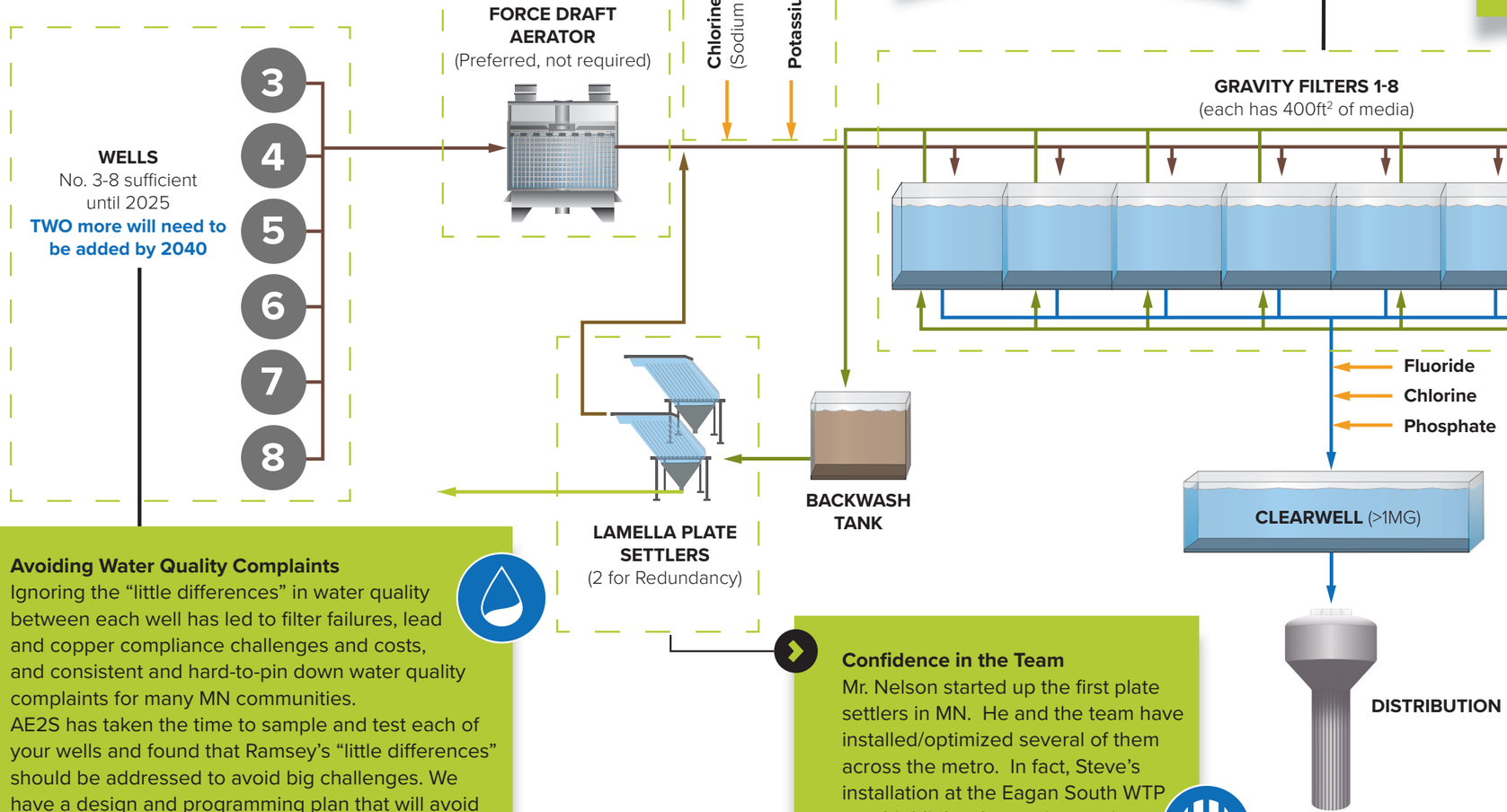
Asking good questions is the first step in planning for Ramsey's success. Our team's collaboration with your staff, experience in water plant design, successful optimization of 100's of plants, and successful history of working with Total Control Systems, will all be harnessed to deliver a water plant that simplifies and maximizes your ability to serve Ramsey.

Benefits & Considerations for Adding Aerator
An aerator is not needed for Iron & Manganese removal, but could present value for removing radon to ensure healthy air conditions for operators. It may also be valuable in accommodating for a future addition in case of groundwater source contamination.

If an aerator is added, it should be coupled with a detention tank to:
- Save on chemical costs
- Prevent lead and copper issues and odor complaints

Opportunity for Savings, Safety, and Simplicity
Relocating these chemical feed points could save substantial annual chemical costs. Using sodium permanganate would be a simpler and healthier approach for operators.

Operations-Focused Filters
AE2S will design each filter so it can be isolated, shut-off, or backwashed while other filters remain in operation.



Avoiding Water Quality Complaints
Ignoring the "little differences" in water quality between each well has led to filter failures, lead and copper compliance challenges and costs, and consistent and hard-to-pin down water quality complaints for many MN communities.
AE2S has taken the time to sample and test each of your wells and found that Ramsey's "little differences" should be addressed to avoid big challenges. We have a design and programming plan that will avoid compliance costs and reduce complaints.

Confidence in the Team
Mr. Nelson started up the first plate settlers in MN. He and the team have installed/optimized several of them across the metro. In fact, Steve's installation at the Eagan South WTP was highlighted as an innovative success story in a MDH article.

COST SAVINGS
+ Life Cycle Costs

SUPPORT
+ Operator Health
+ Operator Training

SIMPLIFY
+ Flexible Filter Operations
+ Complaint Reduction
+ Jar Testing

COMPLY
+ Lead & Copper Rule
+ Manganese Levels
+ Future Contaminants

INTEGRATE

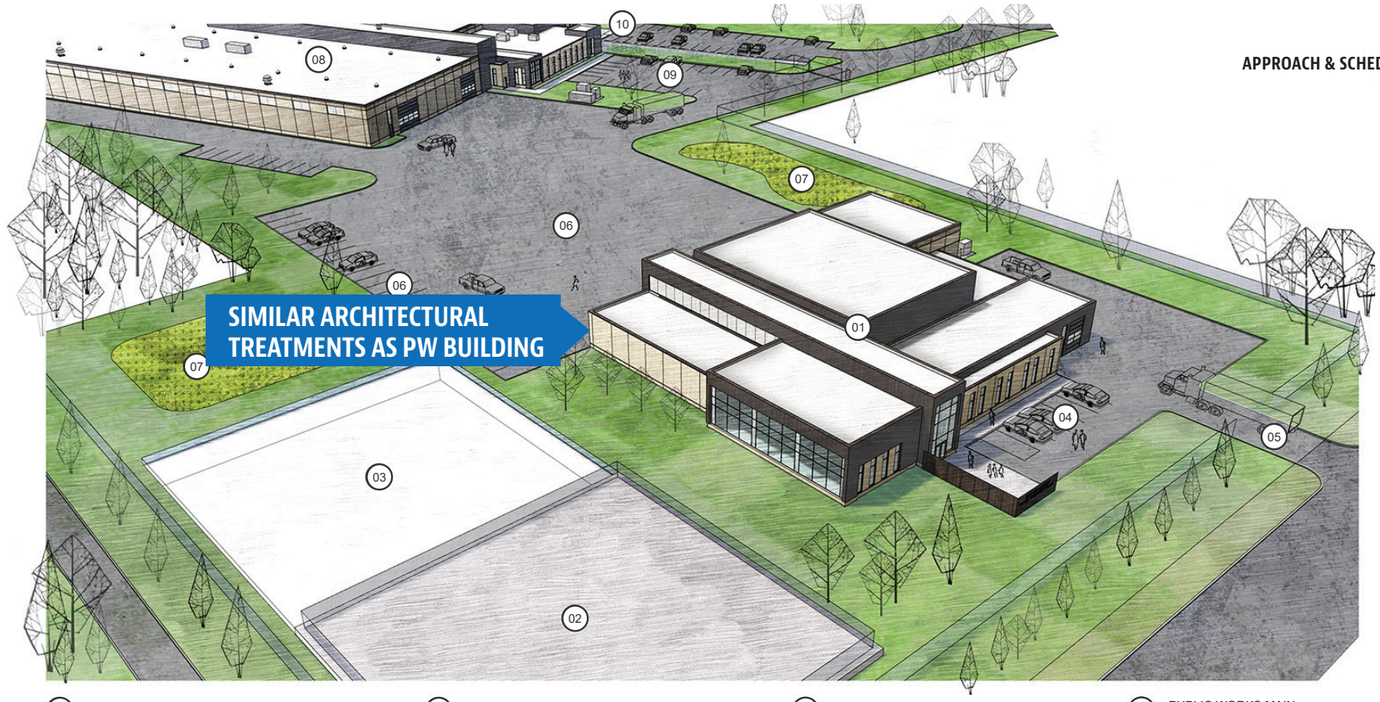
OPERATIONS WITH CAMPUS LAYOUT

You can have peace of mind knowing that the water treatment plant will architecturally **integrate** in the Public Works Campus – Oertel has you covered! The institutional knowledge Oertel and SRF bring to the table will streamline the design process and spark creativity as we talk through decisions as a team. The Oertel team has already begun drafting a rendering of the proposed building on the campus site and AE2S has already begun strategizing the best layout to maximize **simplicity** and meet all of your identified goals for this facility. We will use these tools to facilitate workgroup meetings to make sure every detail meets the needs of your staff and your vision is executed, even better than you had imagined.

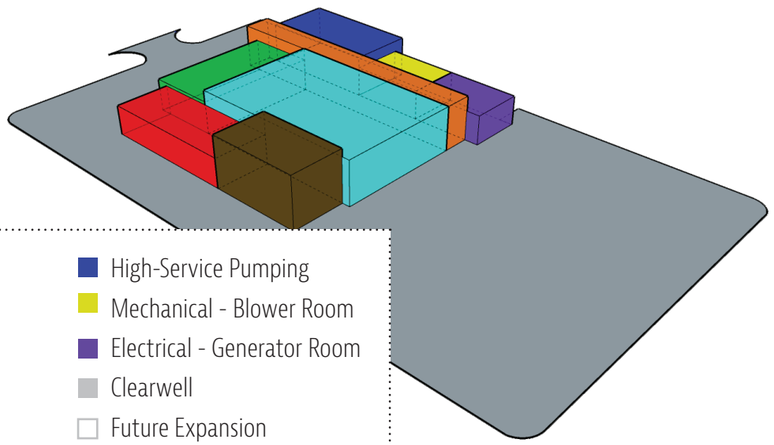
WHAT'S A WORKGROUP MEETING (WGM)?

Throughout critical points of design, our teams will collaboratively conduct workshops related to narrowing down to an operationally friendly layout and coordinating on controls and programming that meet your needs.

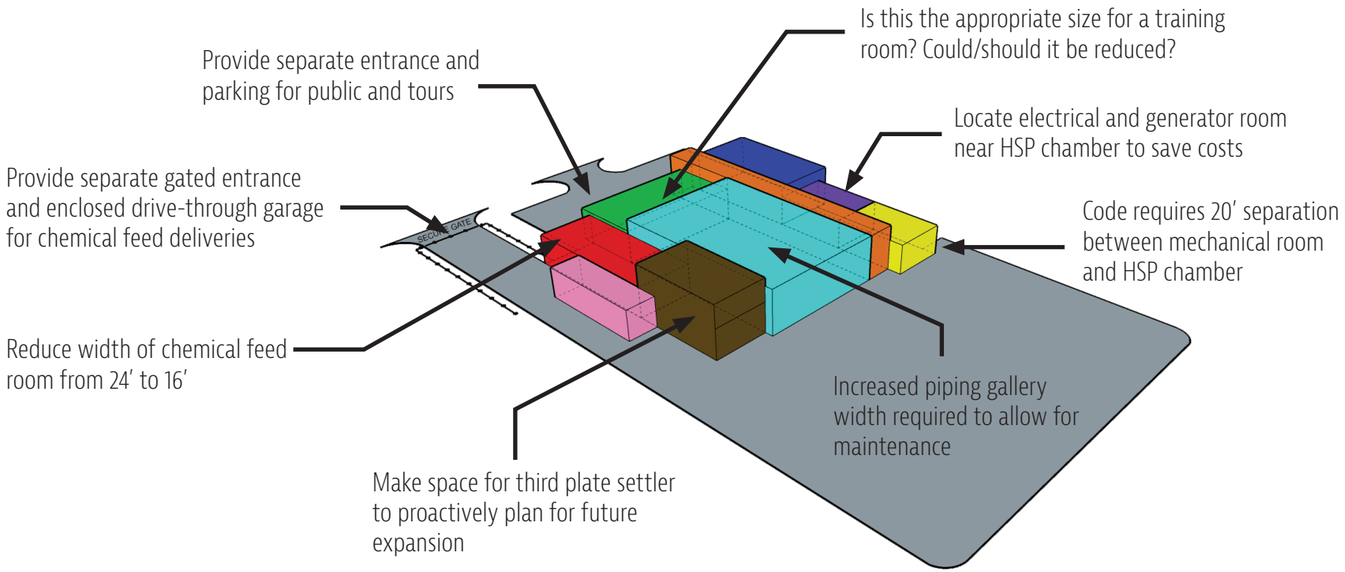
Interactive tools, ***similar to the colored boxes concept below,*** will be used to make adjustments and see conceptual outcomes in real time.



CURRENT FEASIBILITY STUDY LAYOUT



EXAMPLE WGM SUGGESTED MODIFICATIONS



SUPPORT

FOR WATER OPERATIONS STAFF

Our **Technical Advisory Team** is comprised of individuals with decades of experience designing, operating, and maintaining water treatment plants across Minnesota. Whether it is a direct phone call to our team to build confidence in operational decisions or crossing paths at an operator training to discuss a question that has been on your mind for a while, our team will be there for support.

Our plan is to work with you to 1) finalize a treatment technology that is simplified; and 2) ensure start up and training leaves operators feeling comfortable and empowered to make operational decisions.

We will also work directly with Total Control Systems, Inc. on recommendations on the type of controls programming that would be appropriate to give operators the level of control they need and desire.

In addition to our Technical Advisor Team, as Project Manager, Steve Nelson will guide your team and connect your staff with the resources they need to succeed. Steve has served as head representative of the Education and Training Committee, Small Systems Committee, and Suburban Utilities Supervisor Association (SUSA) for the MN Section of AWWA.

OPERATOR PARTICIPATION

We want operators involved in the process!
We value everyone's insight and opinions!

Participation in the WGMs is recommended for operations staff – we want to allow everyone to speak up and offer their ideas for making the water treatment plant an integral part of the Public Works Campus.

WHAT IS PERFORMANCE COACHING?

Performance Coaching is a specialized service designed to help Ramsey get the most out of your plant. Our top optimization experts that are part of this project team will evaluate the treatment processes, discuss, and help implement potential adjustments to get the system operating at peak performance at startup. Our team has been able to help several clients throughout the region get the most out of their treatment process from day one.

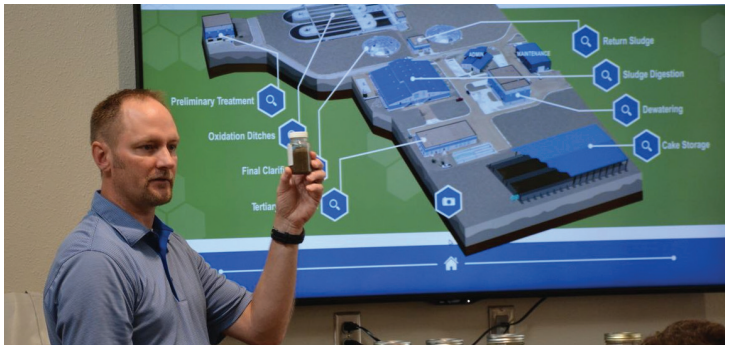
SPECIAL CONSIDERATIONS

I. Aesthetics/Construction Material

Throughout this proposal, we've highlighted Oertel's involvement in past projects with the City, including the Public Works Facility. Our team will maintain that focus on delivering aesthetic treatments that fit your vision and meet the exceptions of your stakeholders. This rendering mimics our vision for matching the Public Works Facility and we intend to work with you to customize the details.

II. Educational Tour Accommodations

We know we are geeks about water treatment and the chemistry behind what makes for safe, reliable drinking water. We're also very passionate about sharing our love of water engineering and the value of municipal government with our communities. We partner with our AE2S Communications Practice, made up of graphic designers, web designer, videographers, and strategic communications specialists, to develop educational tools to help you communicate with the public and facilitate future tours of your facility. AE2S Communications professionals understand water treatment and have developed effective tools to communicate to a wide array of audiences.



III. External Funding Opportunities

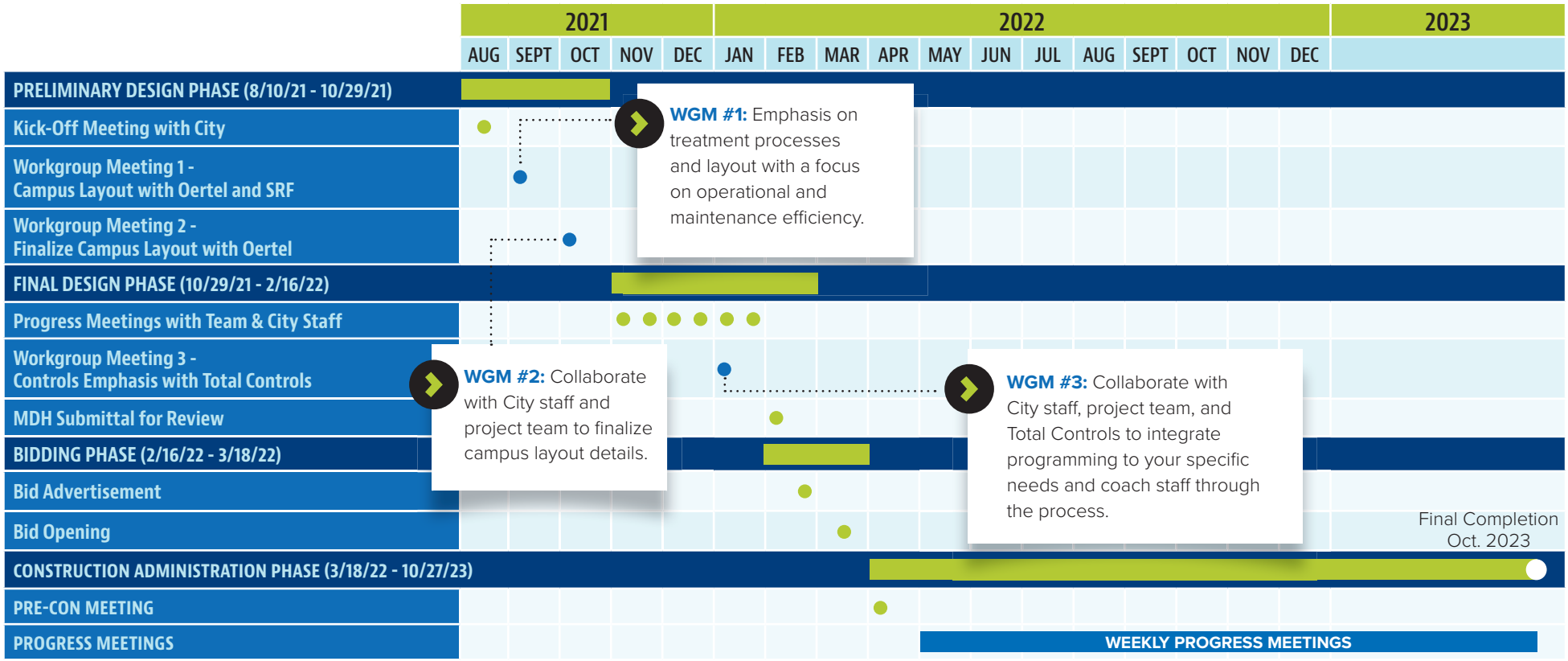
Sometimes projects need a boost when trying to cross over from concept to reality. **AE2S Nexus**, the funding/financial division of AE2S, helps bridge that gap. We focus on creating solid plans, aggressively pursuing funding options, and assisting you with implementation to make sure your project is on solid ground. AE2S Nexus is comprised of individuals committed to fully understanding issues, such as State and Federal funding programs, project financing, utility financial health (revenue adequacy, cost of service, etc.), and asset management. Together, we work as an integrated team, providing our clients with the perfect marriage of financial and engineering expertise that enables us to truly understand the long-term impacts of each alternative.

Funding Source Considerations for Ramsey:

- Drinking Water Revolving Fund (DWRF)
- American Rescue Plan Act (ARPA)
- MN's Capital Project Budget Requests (2022 bonding bill)
- Federal Earmarks
- WIFIA

SCHEDULE

Our team developed a preliminary schedule based on our understanding of your goal of having an operational water treatment plant by **October of 2023.** We understand how critical communication will be to the success of this project and look forward to consistent collaboration throughout all phases of the project. We are highlighting critical Workgroup Meetings (WGMs) during design that will focus on campus layout and integrated programming of the facility.

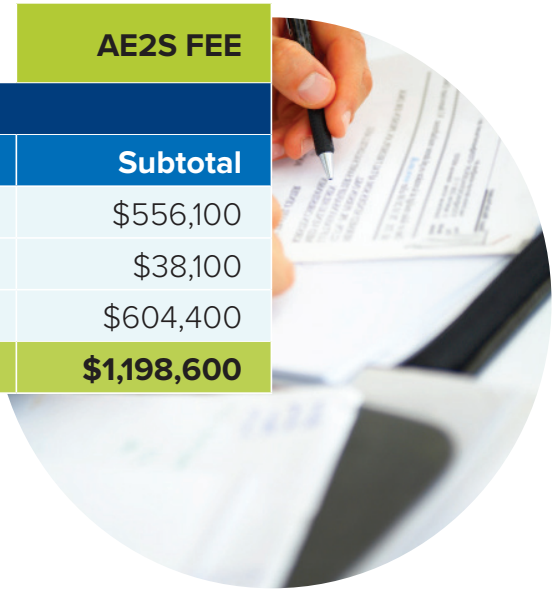


4
PROPOSED FEE

Based on our knowledge of the plans for the Ramsey Water Treatment Plant, review of previous work completed for the City of Ramsey, and our experience and expertise with water system projects throughout the region, we developed a complete project plan that is tailored to meet your objectives. A summary of the major tasks and associated Professional Hours/Fees is presented below and a detailed breakdown is provided on the following pages.

Should the City of Ramsey desire a level of service that differs from the proposed scope, AE2S would welcome the opportunity to negotiate a revised scope that aligns with the City's expectations.

SUMMARY OF PROPOSED PROFESSIONAL FEES	AE2S FEE
RAMSEY WATER TREATMENT PLANT	
10-MGD Water Treatment Plant at Public Works Site	**Subtotal**
Design Phase	$556,100
Bidding Phase	$38,100
Construction Phase	$604,400
TOTAL PROFESSIONAL FEE	**$1,198,600**



NOTES:
With the full scope of construction being unknown at this stage of the project, the extent of the following items will be determined at appropriate stages of design and construction, with fees provided to the City:

1. Soil borings, permits, and material testing services. AE2S will solicit proposals from third-party agencies on behalf of the City.

2. Construction phase surveying. Proposed fee includes initial construction staking and control points.

Fee includes FULL-TIME construction inspection for 18 months.

City of Ramsey WTP	AE2S										Oertel				SRF Consulting			Design Tree									
	Nelson	Vollmer	Browen	DeBoer	K. Janes	Volkmann	Schneider	Seibert	Reynolds	Sluiter	Cooper	Stromsodt	Englund	Staff	Aaron	Grieshaber	Staff	Nicholson	Olson	Tech	Muller	Quirin	Staff	Subtotal	Labor	Expenses	Total
	PM	WTP QA/QC	PROC, PE	Start Up	Operations	Process, EIT	Const. Services	Process, Tech	Process, Tech	Admin	QA/QC	Architect	Design Architect	Support Staff	Civil Engineer	Landscape Architect	Support Staff	STR, PE	STR, PE	STR, Tch	Electrical Engineer	Mechanical Engineer	Support Staff	Hours			
2021 Billing Rate	$ 241	$ 193	$ 168	$ 193	$ 179	$ 121	$ 192	$ 158	$ 92	$ 104	$ 135	$ 135	$ 100	$ 75	$ 180	$ 180	$ 100	$ 120	$ 104	$ 90	$ 180	$ 180	$ 100				
Design Phase	186	36	268	4	4	156	0	52	288	0	46	101	356	196	80	80	200	92	418	780	275	127	748	4493	$542,999	$13,070	$556,069
Structural Design and Drafting	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	78	400	780	0	0	0	1258	$121,469	$0	$121,469
Foundation Design																		10	60	20				90	$9,250		$9,250
Below Grade Walls																		10	60	20				90	$9,250		$9,250
Above Grade Walls																		10	60	20				90	$9,250		$9,250
Floors and Roofs																		16	140	20				176	$18,296		$18,296
Slab, Beams and Columns																		16	60	20				96	$9,967		$9,967
Structural Plans																				380				380	$34,346		$34,346
Structural Details																				300				300	$27,115		$27,115
Specifications																			20					20	$2,082		$2,082
Structural QAQC																		16						16	$1,914		$1,914
Process Design and Drafting	138	32	220	0	0	140	0	48	280	0	0	0	0	0	0	0	0	0	0	0	0	0	0	858	$126,678	$0	$126,678
Facility Plan Views	20	8	40			20		8	100															196	$25,968		$25,968
Section Views	20	8	40			20		8	100															196	$25,968		$25,968
Details	10	4	20			20		8	20															82	$12,066		$12,066
Chemical Room Layouts / Equipment Sizing	20	4	20			20		8	20															92	$14,476		$14,476
Pumps and Internal Hydraulic Calculations	20	8	40			40		8	20															136	$21,028		$21,028
Misc Coordination with other Disciplines	40		40					8	20															108	$19,464		$19,464
Specifications	8		20			20																		48	$7,708		$7,708
Meetings/Coordination	48	4	48	4	4	16	0	4	8	0	0	0	0	0	0	0	0	14	18	0	0	0	0	168	$28,744	$9,570	$38,314
Kickoff Meeting with City Staff	4		4					4										4						16	$2,746	$100	$2,846
Bi-Weekly Progress Meetings with City Staff (6 Total / 2 hr Each)	12		12																					24	$4,908	$180	$5,088
Design Team Coordination Meetings (Teams)	4		4																10					18	$2,677	$0	$2,677
Workgroup Meeting 1 - Treatment Process and Campus Layout	4		4						4									4						16	$2,482	$30	$2,512
Workgroup Meeting 2 - Finalize Campus Layout	4		4	4	4				4									4						24	$3,970	$30	$4,000
Workgroup Meeting 3 - Controls Emphasis	4		4																					8	$1,636	$30	$1,666
Permit Coordination (MDH, MCES)	4		4																					8	$1,636	$500	$2,136
Opinion of Probable Cost	8	4	8			16												2	8					46	$7,052		$7,052
City Council Meetings (2 Total)	4		4																					8	$1,636	$200	$1,836
Site Survey																								0	$0	$8,500	$8,500
Civil Design and Drafting - SRF Subconsultant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	80	200	0	0	0	0	0	0	360	$48,800	$0	$48,800
Civil Design and Drafting															80	80	200							360	$48,800	$0	$48,800
Architectural Design and Drafting - Oertel Subconsultant	0	0	0	0	0	0	0	0	0	0	46	101	356	196	0	0	0	0	0	0	0	0	0	700	$70,237	$560	$70,797
Architectural Design and Drafting											46	101	356	196										700	$70,237	$560	$70,797
Mechanical Design and Drafting - Design Tree	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	127	220	347	$44,770	$0	$44,770
Mechanical Design and Drafting																						127	220	347	$44,770	$0	$44,770
Electrical Design and Drafting - Design Tree	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	275	0	528	803	$102,300	$0	$102,300
Mechanical Design and Drafting																					275		528	803	$102,300	$0	$102,300
Bidding Phase	46	8	44	0	0	0	0	8	0	16	4	5	17	4	8	4	0	4	8	8	17	8	25	235	$37,471	$590	$38,061
Project Management, Process and Structural Bidding Phase Services	46	8	44	0	0	0	0	8	0	16	0	0	0	0	0	0	0	4	8	8	0	0	0	142	$24,984	$590	$25,574
Contractor Questions	20	4	20															2	4					50	$9,608		$9,608

City of Ramsey WTP	AE2S										Oertel				SRF Consulting			Design Tree									
	Nelson	Vollmer	Browen	DeBoer	K. Janes	Volkmann	Schneider	Seibert	Reynolds	Sluiter	Cooper	Stromsodt	Englund	Staff	Aaron	Grieshaber	Staff	Nicholson	Olson	Tech	Muller	Quirin	Staff	Subtotal	Labor	Expenses	Total
	PM	WTP QA/QC	PROC, PE	Start Up	Operations	Process, EIT	Const. Services	Process, Tech	Process, Tech	Admin	QA/QC	Architect	Design Architect	Support Staff	Civil Engineer	Landscape Architect	Support Staff	STR, PE	STR, PE	STR, Tch	Electrical Engineer	Mechanical Engineer	Support Staff	Hours			
2021 Billing Rate	$ 241	$ 193	$ 168	$ 193	$ 179	$ 121	$ 192	$ 158	$ 92	$ 104	$ 135	$ 135	$ 100	$ 75	$ 180	$ 180	$ 100	$ 120	$ 104	$ 90	$ 180	$ 180	$ 100				
Addendums, Clarifications, Document Management	20	4	20					8		12								2	4	8				78	$12,843	$500	$13,343
Pre-Bid Meeting	2		2																					4	$818	$30	$848
Bid Opening	1																							1	$241	$30	$271
Evaluate Bids & Recommend Award	2		2							4														8	$1,234		$1,234
Attend Council Meeting	1																							1	$241	$30	$271
Civil Bidding Phase - SRF Subconsultant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	4	0	0	0	0	0	0	0	12	$2,160	$0	$2,160
Civil Bidding Services															8	4	0							12	$2,160	$0	$2,160
Architectural Bidding Phase - Oertel Subconsultant	0	0	0	0	0	0	0	0	0	0	4	5	17	4	0	0	0	0	0	0	0	0	0	30	$3,271	$0	$3,271
Architectural Bidding Services											4	5	17	4										30	$3,271	$0	$3,271
Mechanical Bidding Phase (Included in Design Fee) - Design Tree	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	8	17	$2,352	$0	$2,352
Mechanical Bidding Services																						8	8	17	$2,352	$0	$2,352
Electrical Bidding Phase (Included in Design Fee) - Design Tree	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	0	17	34	$4,704	$0	$4,704
Electrical Bidding Services																					17		17	34	$4,704	$0	$4,704
Construction Phase	136	0	170	0	0	3184	82	10	10	0	18	77	148	0	30	20	80	8	218	0	126	63	168	4547	$583,856	$20,540	$604,396
Project Management and Construction Administration	136	0	170	0	0	3184	82	10	10	0	0	0	0	0	0	0	0	8	218	0	0	0	0	3818	$488,495	$17,600	$506,095
Preconstruction Conference	4		2			4																		10	$1,784		$1,784
Progress Meetings	20		60																					80	$14,900		$14,900
Procure Testing Services	8																		8					16	$2,761		$2,761
Shop Drawing Review (Approx. 100 submittals)	20		20			40	10												110					200	$26,391		$26,391
Change Orders & RFIs	8		8				20											4	32					72	$10,922		$10,922
Contractor and PM Coordination																		4	32					36	$3,810		$3,810
Review Construction Schedules			8				20																	28	$5,184		$5,184
Pay Requests			8																					8	$1,344		$1,344
Construction Observation (40 hours per week, 18 Months)						3120													16					3136	$379,186	$12,300	$391,486
Construction Staking - AE2S Provide Initial Control Points																								0	$0	$5,000	$5,000
Special Inspection Meetings (Pre-Concrete, Pre-Precast Setting, 2 add'l)	8						16												4					28	$5,416		$5,416
Substantial Completion Punchlist	8		8				8												4					28	$5,224		$5,224
Start-up of Systems	40		40																					80	$16,360		$16,360
Final Completion Review	8		8																8					24	$4,105		$4,105
Project Close-Out	8		8																4					20	$3,688		$3,688
Record Drawings	2					10	8	10	10															40	$5,728	$300	$6,028
Document Library/O&M Manuals	2					10																		12	$1,692		$1,692
Civil Construction Administration - SRF Subconsultant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30	20	80	0	0	0	0	0	0	130	$17,000	$0	$17,000
Civil Construction Services															30	20	80							130	$17,000	$0	$17,000
Architectural Construction Administration - Oertel Subconsultant	0	0	0	0	0	0	0	0	0	0	18	77	148	0	0	0	0	0	0	0	0	0	0	242	$27,541	$2,940	$30,481
Architectural Construction Services											18	77	148	0										242	$27,541	$2,940	$30,481
Mechanical Construction Administration - Design Tree	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	63	42	105	$15,540	$0	$15,540
Mechanical Construction Services																						63	42	105	$15,540	$0	$15,540
Electrical Construction Administration - Design Tree	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	126	0	126	252	$35,280	$0	$35,280
Electrical Construction Services																					126		126	252	$35,280	$0	$35,280
	368	44	482	4	4	3340	82	70	298	16	68	183	521	201	118	104	280	104	644	788	418	198	941	9276	$1,164,326		
	$ 88,688	$ 8,492	$ 80,976	$ 772	$ 716	$ 404,140	$ 15,744	$ 11,060	$ 27,416	$ 1,664	$ 9,171	$ 24,735	$ 52,101	$ 15,041	$ 21,240	$ 18,720	$ 28,000	$ 12,438	$ 67,042	$ 71,223	$ 75,204	$ 35,622	$ 94,120		**$1,164,326**	**$34,200**	**$1,198,526**