

Engineering Firm Information Summary

Company Name		Key Contact Name	
Phone Number		Key Contact E-mail	
E-mail		Key Contact Phone	
Address			

Relevant Past Experience

In the space provided below, please describe your firm's experience with installing or modifying arsenic treatment technologies, including the systems at which the treatment was installed, the type of treatment, and a description of the treatment unit.

System Name & Location	Contact Info (Name/Phone)	System Size (pop., service connections, design flow)	Describe Treatment Installed (including dates of installation)

Staff Experience

In the space provided below, please list the qualifications and experience of staff members familiar with all aspects of arsenic treatment technology installation and operation.

Name	Phone/E-mail	Qualifications/License(s)	Describe Relevant Experience



Selecting an Engineering Firm

If you hire an engineer to help design and install the treatment, consider the following questions when contacting prospective engineering firms and when working with the engineers to choose the most appropriate treatment technology. If the engineer cannot answer these questions, he or she should work with the vendor to get you the information you need to make informed decisions.

Background Information

Questions	Reason for Question or What to Look for in the Answer
<i>Are you a registered Professional Engineer in this state?</i>	Some states require that a licensed professional engineer create any plans and specifications for system construction or modification.
<i>What experience do you have designing treatment facilities and arsenic removal technologies for small public water systems? Can you provide references?</i>	Hiring an experienced engineer provides a certain level of comfort. If the engineer has little or no relevant experience, determine how they will overcome that obstacle. Talking with another system about their experiences with the engineer can also be extremely valuable.
<i>What kinds of treatment facilities have you designed? Can you provide references?</i>	An engineer with a broad base of knowledge can better assist you in choosing the best technology for your system. This person should also be familiar with the State's permitting process.
<i>How much experience have you had getting water treatment facilities approved in our state? Can you provide references?</i>	Design is the first step; getting the state to approve the design is the next hurdle. You want an engineer who is familiar with the often lengthy approval process.
<i>Who in your firm is best qualified in the area of arsenic removal technologies?</i>	An engineering firm is only as good as the person(s) that will actually be doing the work. Get a commitment on the names and qualifications of the staff that will be working for you, and the amount of time that they can devote to your project.

Additional Questions

- ▶ How will the technology affect corrosion control?
- ▶ Do you have a good understanding of all the current and future drinking water regulations that affect my system?
- ▶ How will the treatment affect compliance with other Rules?
- ▶ How will the arsenic treatment process be incorporated into the bigger regulatory picture?



Adsorptive media treatment system for ion exchange waste brine.

Working with Vendors

Questions	Reason for Question or What to Look for in the Answer
<i>How do you deal with vendors that provide proprietary technologies?</i>	You want an engineer that protects your interest by evaluating all technologies carefully, and not just relying on the vendors' recommendations or past experience with a single technology.
<i>Have you worked with specific vendors in the past?</i>	Call former clients to learn how the engineer has dealt with vendors in the past.
<i>How do you ensure the success of a proprietary technology?</i>	Ask the engineer for a protocol they have used before in evaluating treatment technologies (e.g., pilot testing, bench scale evaluations, etc.).

Funding

Questions	Reason for Question or What to Look for in the Answer
<i>Are there sources of funding available to help cover the costs of treatment, and do you have experience helping systems obtain funding?</i>	<p>The engineer should be able to offer assistance and advice in this area. You can also contact your primacy agency to find out what funding your system is eligible for or see http://www.epa.gov/safewater/arsenic for information on the Drinking Water State Revolving Loan Fund and other funding sources.</p> <p>Ask if raising rates and self-funding is a better option. The engineer may be able to offer valuable advice and guidance on the process of obtaining funds.</p>

Technology Impact and Monitoring

Questions	Reason for Question or What to Look for in the Answer
<i>What preliminary water quality monitoring will I have to complete?</i>	Your engineer should know what water quality monitoring is necessary for process selection and design. Get a list of parameters and frequency of the testing that needs to be done, and get a cost estimate from the engineer. Make sure you understand the time required to get adequate monitoring data, and factor it into your compliance time-line.
<i>Will a full-time, on-site operator be required?</i>	You have to know the operational requirement, both in terms of time and expertise, in order to determine costs. Have the engineer estimate the level of operator attention the treatment plant will require and make sure the estimation is approved by the state. Some treatment technologies are more expensive to install but require less time to operate. Have your engineer look at various levels of automation.

Impact on Water Quality and Current Facilities

Questions	Reason for Question or What to Look for in the Answer
<i>Will the proposed treatment resolve or cause other problems?</i>	Most technologies will remove other constituents besides arsenic. This can positively or negatively affect treated water quality. You may be able to select a technology that will resolve other problems (e.g., remove both iron and arsenic), but you should also be aware of the potential "side effects" of the technology.
<i>Will other utilities be needed at the treatment site (e.g., improved power, standby power, sewer, gas, telephone, radio)?</i>	Providing these services will be a major expense-be aware of all the additional costs associated with treatment installation.
<i>What permits will we need (NPDES, building, electrical, construction, etc.)?</i>	You may need numerous permits to construct the building, each of which has their own set of requirements. Make sure that your engineer will develop a schedule for obtaining the necessary permits.
<i>Will I have to provide treatment at all my sources? Are there non-treatment options that I can apply to some sources?</i>	You will need to know the regulatory requirements and discuss all compliance options with the engineer. You may even want to consider purchasing treated water from, or consolidating with, another system. Your engineer should be able to help you address these issues.
<i>Will I have to provide treatment on a continuous basis?</i>	You must know if you have to use the well all the time or only during periods of high use. Also, you need to know if intermittent operation can cause problems. Your engineer should be able to answer these questions.



Bag filters for initial sediment removal.

Impact on Water Quality and Current Facilities (cont.)

Questions	Reason for Question or What to Look for in the Answer
<i>Will we be able to add additional capacity or treatment processes at the new facility at a later date?</i>	You need to have the ability to provide additional capacity to the system if there is a potential to expand your water system. Understand the growth potential of your system and consider installation of treatment technology that will meet that need, or phased construction that will provide for future growth.
<i>Will we have pressure and capacity through the new facility that will have to be compensated for with pump change-out?</i>	Almost all treatment processes will have pressure losses through the treatment plant. Your engineer must determine what the losses might be, and how you can minimize them. If the headlosses are high enough to cause a significant loss of flow, or pumping efficiency, your engineer should consider changing out, or modifying, the pump.
<i>Will we have water losses through the new facility that will have to be compensated for by additional wells?</i>	You will need to understand the production losses of each of the treatment technologies you consider. In many cases, the water loss can be reduced significantly (e.g., recycle of backwash water). In all cases, you must ensure the production is adequate to meet your maximum day demand.
<i>Are there increased process monitoring sampling requirements for the treatment process?</i>	For proper operation, the treatment system will require some process monitoring that is in addition to the regulatory sampling. The specific process control monitoring requirements may be system-specific, and will be established by your primacy agency. Be sure you understand what those requirements are. Ask the engineer to identify sampling sites and testing methods and explain State requirements. There are less expensive methods for process monitoring than for regulatory monitoring—understand the difference between them.