



SURFACE WATER INTAKES

For Developing Surface Water Supplies...

Fixed-screen surface intakes have been used successfully since 1960 to develop cost-effective raw water supplies from surface water sources. These intakes typically consist of a reinforced concrete caisson that serves as the wet well/pumping station and one or more intake lines that are projected out into a river, lake or even seawater, as illustrated in the drawing below.

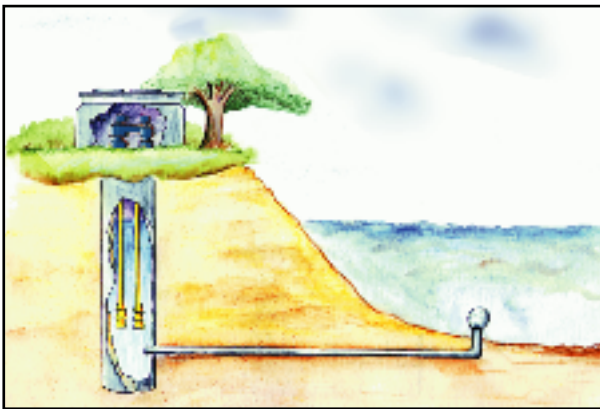


Diagram of Surface Water Intake

Fixed-screen intakes have been designed to produce yields of about 1000 gallons per minute (gpm) to over 450,000 gpm from a single unit. The use of advanced projection methods, including state-of-the-art microtunneling, can minimize the disturbance of local environmental conditions, which often simplifies permitting. The caisson is usually constructed back from the waters' edge, minimizing the impact on the shoreline and often allowing existing tree lines to remain intact, as shown in our project photo at right. This on-shore location also facilitates easier access to the pumping equipment and wet well during high water and flood events. Since construction is largely accomplished from on-shore locations, more expensive excavations, cofferdams and dewatering are not required, minimizing the project costs. Together with minimal O&M costs, this makes this type of intake extremely cost-effective when compared to conventional intakes, such as traveling screen and tower-style intakes.

This style of intake places the intake screens in the surface water body at advantageous points to ensure the most favorable water quality, to minimize impact on aquatic life and to reduce the intake of floating or bed-load debris.

Intake System Advantages

Some of the advantages this system offers:

- Intake yields per unit typically range from 1000 to over 100,000 gpm
- Low screen entrance velocities minimize screen plugging or impingement
- Offshore screen location moves point of withdrawal away from near shore environments-providing maximum protection to aquatic life
- Minimal operating & maintenance costs since no moving parts are involved
- Raised caisson offers flood protection
- Simple operator requirements
- Dewatering, open excavation (trenching), or cofferdams are not required
- Minimum property needs
- Minimum environmental impact since construction takes place away from the river
- Permitting is often simplified
- Automatic backwash systems flush debris from screen face - keeping screen open



Intake screen designs can include standard tee designs, drum-style, or multiple screen arrays, and intake lines can be projected at more than one elevation for selective withdrawals.