

ChemScan®

PROCESS ANALYZERS

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ChemScan® Application Summary #58 Well Blending

Monitoring System Requirements

Individual groundwater sources may exhibit high concentrations of nitrate, iron, manganese or other unwanted chemicals. Where the water from a particular groundwater source exceeds quality or public health limits for a particular parameter, treatment systems are installed to correct the problem by reducing the concentration of the parameter to acceptable levels. A typical treatment system uses chemical addition, pH adjustment and/or ion exchange to remove undesirable chemicals in a portion of the flow from the well. A blend of treated and untreated water results in a combined flow with chemical concentrations less than the water quality limit.

In order to assure that good quality water is entering the distribution system, monitoring of three sample points is desired for each chemical parameter of interest as shown in Figure 1. The points include the raw water extracted from the well, the treated water and the final blend of raw and treated water.

Since most pumping stations operate unattended for long periods of time, the monitoring system must operate automatically (on-line) and must produce accurate measurements of the chemical parameters of interest without frequent calibration, maintenance or adjustment. The monitoring system must also be capable of providing output signals that can be used for control, recording and/or alarm purposes.

ChemScan Analytical Methods

Nitrate, iron and hardness are the parameters most frequently controlled using well blending techniques. On-line analysis of nitrate, iron or other chemicals can be performed using the ChemScan Process Analyzer. The analyzer is calibrated to detect the natural light absorbance signature of water samples and to calculate the concentration of specific chemicals of interest from this information. The system can be used to monitor multiple sample lines and to output a dedicated 4-20 mA signal for each measured parameter to a programmable controller that can be set to accept these inputs and to calculate an appropriate blend ratio or to signal an alarm if a concentration set point has been exceeded.

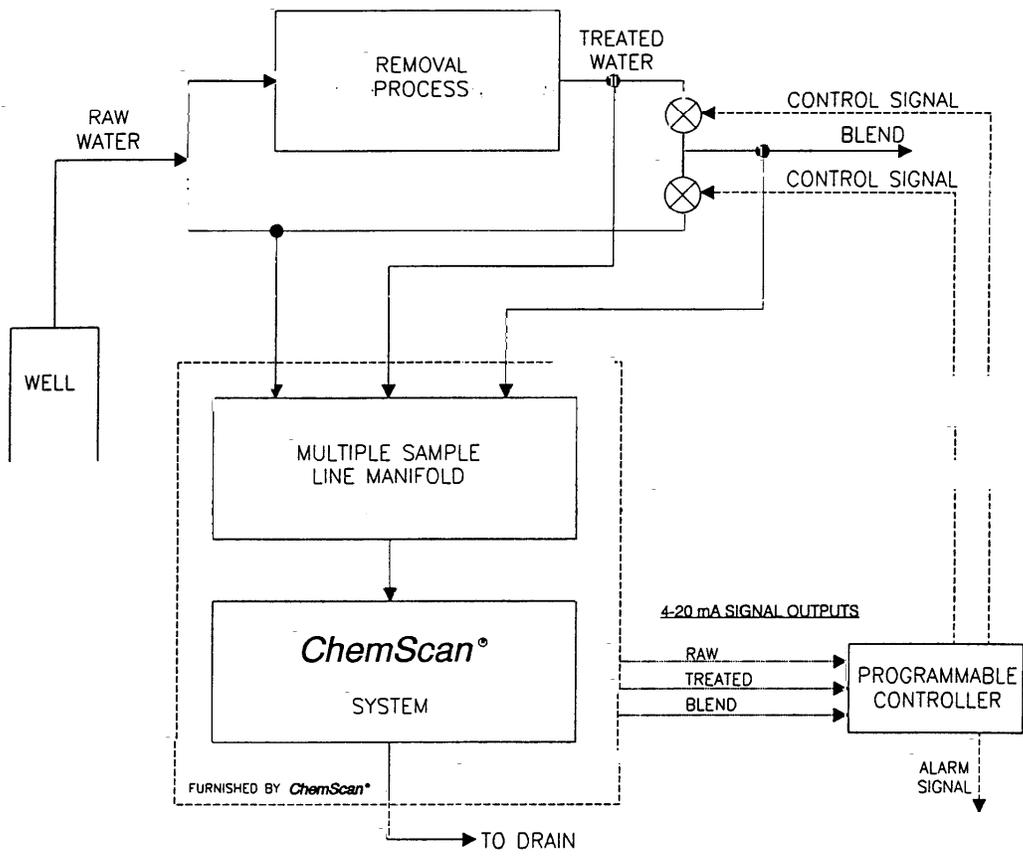


Figure 1.
Well Blending Process Control System

500-00000
1/7 000000
OF 000000
NO. 000000