

**Special Analysis Interpretation Sheet**  
**Routine Irrigation Water**  
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This test determines the suitability of a water source for irrigating plants. It does NOT determine its safety as drinking water.

The chart below lists the ranges of the different analyses performed in the irrigation water test. Following that is an explanation of each test. Pure water would have very low readings in all categories except pH.

<b>Test</b>	<b>Very Low</b>	<b>Low</b>	<b>Medium</b>	<b>High</b>	<b>Very High</b>
Ph	<4.5	4.5-5.5	5.6-8.5	8.6-9.0	>9.0
Conductivity $\mu$ mhos/cm	<100	100-250	251-750	751-2250	>2250
Total Salts	<64	64-160	161-480	481-1440	>1440
Sodium (Na)	<50	50-100	101-250	251-400	>400
Potassium (K)	<0.5	0.5-1.0	1.1-5.0	6-25	>25
Magnesium (Mg)	<1	1-5	6-25	26-50	>50
Calcium (Ca)	<5	5-25	26-75	76-150	>150
Iron (Fe)	<0.01	0.01-0.11	0.12-0.3	0.4-3	>3
Manganese (Mn)	<0.005	0.005-0.01	0.011-0.05	0.051-0.5	>0.5
Chloride (Cl)	<5	5-25	26-250	251-500	>500
Nitrate(NO <sub>3</sub> -)	<2	2-5	5-10	11-50	>50
Sulfur (S)	<1.67	1.67-8.33	8.34-83.3	83.4-166.7	>166.7
Alkalinity	<25	25-50	51-200	201-400	>400

**pH-** pH tests are the acidity or alkalinity of the water. Water with a very low or low pH may corrode metal pipes or structures over time. Water with a pH in the medium category is preferred.

**Conductivity ( $\mu$ mhos/cm)** – The conductivity of the water is the amount of electricity the water will conduct. This is an indication of the amount of salt present in the water. The higher the strength of electrical current, the more salt is in the sample. A low or very low reading is preferable.

**Total salts** – Total salts are calculated by multiplying the conductivity reading times 0.64. A low or very low reading on total salts indicates good quality irrigation water. Salt, sodium and chloride are the most critical analyses in determining water’s suitability for irrigation. High or very high levels make water unsuitable for irrigation on all but salt-tolerant plants.

**Sodium (Na)** – Sodium is not an essential element for plants. It can be harmful when present in large amounts. When combined with an associated anion, it is salt. A low or very low reading on sodium is preferred. High or very high levels make water unsuitable for irrigation on all but salt-tolerant plants.

Potassium (K) – Potassium is an essential element in plants. It is also a component of salts, but usually not a major component. Potassium levels rarely affect the quality of irrigation water.

Magnesium (Mg) and Calcium (Ca) – Magnesium and calcium are essential elements for plants. High magnesium and/or calcium levels can cause water to be “hard”.

Iron (Fe) and Manganese (Mn) – Iron and manganese are essential elements for plants. High levels of these elements can plug the emitters in drip irrigation systems. High iron may also impart a “rusty” color to plants if applied to the foliage.

Chloride – Chloride is a component of salts. A low or very low reading on chloride is preferred. High or very high readings make water unsuitable for irrigation on all but salt tolerant plants.

Nitrate (NO<sub>3</sub><sup>-</sup>) – Nitrate is a form of nitrogen. Nitrogen is an essential element for plants. Levels above 44 ppm in drinking water may cause health problems in people, especially infants.

Sulfur (S) – Sulfur is an essential element for plants. High levels of sulfur may cause an undesirable odor in the water.

Alkalinity – High alkalinity can cause problems, such as iron deficiency, in acid-loving ornamental plants.

### **How Good is My Water?**

- (1) To determine the quality of your water, first look at the Total Salts, Sodium and Chloride. If any of these are high or very high the water has quality problems for irrigation. If all three are high, consider using another water source. Some plants will withstand poor quality water. Salt tolerant plants, such as cotton, can thrive while irrigated with water high or very high in salt, sodium and chloride. Salt sensitive plants, such as rice, may have problems when salt, sodium and /or chloride are medium.
- (2) If iron or manganese levels are high, emitters in irrigation systems may be plugged. This is a physical problem with the equipment, but does not adversely affect the quality of water for irrigation.
- (3) If nitrate levels exceed 44 ppm, be advised that drinking the water may cause health problems especially for infants.