Q: Why does Hillsboro need to implement a water system improvement project?

A: Currently, the Hillsboro water treatment plant (WTP) has a rated capacity of 400 gallons per minute. Based on population projections and additional capacity for industry, Hillsboro will need approximately 500 gallons per minute in order to meet water demands into the future. While the existing WTP is capable of producing finished water meeting primary water quality regulations, the WTP is unable to produce finished water up to secondary treatment standards (manganese). Of primary importance is the need for Hillsboro to address the issue of deteriorating infrastructure at the WTP. Despite efficient plant operation and maintenance practices, the Hillsboro WTP is nearing 50 years old and suffers as a result of aging and outdated infrastructure.

Q: What water quality parameters are important to consider?

A: Primary standards are regulated standards in place to protect public health by limiting the quantity of contaminants in drinking water. Secondary standards, as well as other guidelines, exist in order to improve the aesthetic quality of drinking water. The following is a summary of the implications associated with water quality parameters of importance:

- **Sodium** (other/aesthetic) – affects high blood pressure and heart disease in "at risk" populations.
- **Sulfate** (secondary standard) – affects water taste, causes a laxative effect.
- **Manganese** (secondary standard) – affects taste, causes staining, scaling, and discoloration of water.
- **Arsenic** (primary standard) – may cause skin damage, problems with circulatory system, and skin cancer.
- **Total Dissolved Solids** (secondary standards) – affects taste, is corrosive, and limits effectiveness of soap and detergents.
- **Hardness** (other/aesthetic) – causes staining, scaling, and limits effectiveness of soap and detergents.

Hillsboro's current finished drinking water supply is moderately high in sodium, high in sulfate, high in manganese, high in total dissolved solids, and very hard. Hillsboro is able to meet the arsenic primary standard.

Q: What options does the City of Hillsboro have?

A: A recently completed study effort evaluated the following three options for the City of Hillsboro:

1) New Iron/Manganese (Fe/Mn) Removal WTP – Hillsboro Independent
2) New Membrane WTP – Hillsboro Independent

3) Regional Membrane WTP (at Hillsboro) – Regional with Traill Rural Water District (TRWD) and the City of Mayville

Q: What would the finished water quality be from the regional system?

A: The following table presents the anticipated finished water quality under each of the three aforementioned options:

Constituent	Maximum Level	Existing Hillsboro WTP	Fe/Mn Removal (Hillsboro Independent)	Membrane (Hillsboro Independent)	Membrane (Regional System)
	mg/l	mg/l (gr/gal)	mg/l (gr/gal)	mg/l (gr/gal)	mg/l (gr/gal)
Sodium	20 [1]	114	114	30 - 40	2 - 5
Sulfate	250 [2]	354	354	75 - 85	50 - 60
Iron	0.3 [2]	0.02	0	0	0
Manganese	0.05 [2]	0.23	0	0	0
Arsenic	10 [3]	7	7	2 - 3	3 - 5
TDS	500 [2]	938	938	240 - 260	100 - 120
Hardness	<50 [4]	546 (31.7)	546 (31.7)	50 - 86 (3 - 5)	50 - 86 (3 - 5)
[1]Recommended for low sodium diets, [2]Secondary Standard, [3]Primary Standard, [4]WQA soft water standard					

Generally, the Regional Membrane WTP would produce finished water much higher in quality than that produced by the existing Hillsboro WTP, or by a new Fe/Mn Removal WTP. The finished water would have much lower concentrations of secondary contaminants of concern such as sulfate, Fe/Mn, total dissolved solids, and sodium. The water produced at the Regional Membrane WTP would also have a reduced hardness level. Although Hillsboro has the option to construct a new Membrane WTP independently, the resultant finished water would still have elevated levels of sodium, sulfate, and total dissolved solids (compared to the Regional Membrane WTP) due to differing raw water sources.

Q: How hard or soft is Hillsboro's water now? How hard or soft will it be from the regional system?

A: As established by the Water Quality Association (WQA), the standard levels of hardness and softness are labeled as shown in the table below:

Hardness (milligrams per liter)	Hardness Level
Less than 17.1	Soft
17.1 - 60	Slightly Hard
60 - 120	Moderately Hard
120 - 180	Hard
Greater than 180	Very Hard

Hillsboro's existing finished water is classified as very hard, while finished water as projected from the regional system could be classified as slightly to moderately hard.

Q: Will softened water from the regional system harm my lawn or plants?

A: The regional system water would be fine for household uses such as plant watering, lawn irrigation, bathing, dish washing, etc.

Q: Isn't softened water considered harmful to drink?

A: The regional system water will be softened by a membrane process rather than with sodium as used in most home softeners, and would be of high quality for drinking.

Q: What are the costs?

A: The following table summarizes the total probable project costs that Hillsboro would be responsible for under each of the three project options:

Project Option	Grant Funding Anticipated	Total Probable Project Cost (Hillsboro Financial Responsibility)
Fe/Mn Removal Treatment Plant *Hillsboro Independent*	0%	$ 2,690,000
Membrane Treatment Plant *Hillsboro Independent*	0%	$ 6,800,000
Membrane Treatment Plant at Hillsboro *Regional System with TRWD and Mayville*	70%	$ 2,780,000

The regional project has already received 70 percent grant funding approval for the first two project phases, and it is anticipated that the third and final phase of the regional project that includes Hillsboro would also be funded at the 70 percent grant level. Based on an equitable cost distribution amongst the involved entities, and the anticipated funding, it is estimated that Hillsboro would be responsible for approximately $2.78 million in project costs.

It is unlikely that Hillsboro would be able to secure grant funding if the City were to pursue an independent project. Hillsboro's cost to participate in the regional project is comparable to independently constructing a new Fe/Mn Removal WTP, which would not produce near as high quality water as the Regional Membrane WTP.

Q: Why participate in the regional project?

A: The following is a list of the advantages of Hillsboro participating in the regional project:

- As opposed to constructing an Fe/Mn Removal or Membrane WTP independently, participating in the regional project would have the benefit of grant funding, and a larger user base over which to distribute project costs;
- Participation in the regional project would result in Hillsboro having access to the highest quality drinking water supply as compared to the independent WTP options (all secondary water quality parameters removed, reduced hardness);
- Under the proposed regional project, Hillsboro would still be able to operate its own facility;
- Hillsboro's existing raw water supply would be freed up for industry; and
- The regional project would incorporate future tie-in capability to the Red River Valley Water Supply Project.

Q: By participating in the regional project, does Hillsboro become a customer rather than a provider?

A: The regional project is governed by a joint powers agreement, in which Hillsboro has equal representation with TRWD and Mayville. As part of the regional project, Hillsboro and Mayville will buy raw water from TRWD, operate their own WTPs, and sell finished drinking water back to TRWD.

Q: What is the timeline of the regional project?

A: The raw water supply and transmission infrastructure phases for the regional project are in the design phase. It is not anticipated that the Regional Membrane WTP phase of the project will be ready for construction for another 2-5 years.