

## **Section 5**

### **Impacts of Recommended Water Management Strategies on Key Parameters of Water Quality and Moving Water from Rural and Agricultural Areas**

The guidelines for 2011 Regional Water Plans include describing major impacts of recommended water management strategies on key parameters of water quality identified by the regional water planning group and consideration of third party social and economic impacts associated with voluntary redistribution of water from rural and agricultural areas.

#### **5.1 Impacts of Water Management Strategies on Key Parameters of Water Quality**

The Brazos G RWPG has identified the following eleven key parameters of water quality to consider for recommended water management strategies:

- Chlorides,
- Sulfates,
- Total Dissolved Solids (TDS),
- Total Suspended Solids (TSS),
- Dissolved Oxygen,
- pH Range,
- Indicator Bacteria (Escherichia coli or fecal coliform),
- Temperature,
- Nitrates,
- Total Phosphorous, and
- Total Nitrogen- ammonia.

The selection of key water quality parameters is based on Texas Surface Water Quality Standards Chapter 307, current water quality concerns identified in the Brazos River Authority's Basin Highlights Report, water user concerns expressed during Brazos G RWPG meetings, and regional water quality studies. Total Phosphorous and Total Nitrogen were selected based on nutrient concerns in the North Bosque Watershed and will be considered throughout the Brazos G Area.

The major impacts of recommended water management strategies on key parameters of water quality were identified by the Brazos G RWPG pursuant to Texas Administrative Code Chapter 357-Regional Water Planning Guidelines. The recommended water management strategies for the Brazos G Area and effects of the key water quality parameters are presented in Table 5-1.

Water quality concerns affecting existing supplies are described in greater detail in Section 3.3, which also includes a summary of special water quality studies and activities in the Brazos River Basin. These identified water quality concerns present challenges that may need to be overcome before the water management strategy can be used as a water supply. For water quality parameters that cannot be fully addressed due to lack of available information or inconclusive water quality studies, the Brazos G RWPG recommends further studies prior to implementing a water management strategy.

## **5.2 *Impacts of Voluntary Redistribution of Water from Rural and Agricultural Areas***

Several opportunities for voluntary redistribution exist for the Brazos G Area, such as supplying groundwater from the Carrizo-Wilcox Aquifer in Lee and Milam Counties to Williamson County. While this groundwater water management strategy provides regional water supply and economic benefits, it will result in lowering of artesian levels in the Carrizo-Wilcox aquifer and consequently, may increase costs to pump water for water supply in rural and agricultural areas.

The remaining water management strategies recommended to meet water needs (Section 4C) do not include transferring significant quantities of water needed by rural and agricultural users and, therefore, are not considered to impact them.

**Table 5-1.  
Summary of Water Management Strategies, Potential Water Quality Concerns,  
and WUGs Potentially Affected**

<b>Recommended WMS</b>	<b>Project Origination</b>	<b>Beneficiaries of Project</b>	<b>Potential Water Quality Concerns Affecting Use of Supply</b>
Water Conservation	Varies	All municipal, industrial, and agricultural users with projected needs (shortages)*	total dissolved solids, sulfates, and chlorides
Treated Effluent Reuse	Brazos, Johnson, McLennan, Nolan, Williamson, Taylor, Jones	Steam/Electric (Nolan and McLennan Counties) Municipal (Cities of Round Rock, Bryan, College Station, Cleburne, Waco, Abilene)	indicator bacteria
<b>Interbasin Transfer of Surface Water from Lower Colorado River (Region K)</b>			
BCRUA	Varies	Municipal (Leander, Liberty Hill, Chisholm Trail SUD, Round Rock, Cedar Park)	none identified
<b>New Reservoirs</b>			
Coryell County Off-Channel Reservoir	Coryell	Municipal (City of Groesbeck)	none identified
Groesbeck Off-Channel Reservoir	Limestone	Municipal (City of Groesbeck)	none identified
Millican – Panther Creek Site	Navasota River	Municipal (College Station, Region H), Steam Electric	none identified
Cedar Ridge Reservoir	Clear Fork	Municipal (City of Abilene)	none identified
Brushy Creek Reservoir	Williamson	Municipal (City of Marlin)	none identified
<b>Augmentation of Existing Surface Water Supplies</b>			
Lake Palo Pinto Off-Channel Reservoir	Palo Pinto	Municipal (Palo Pinto County MWD No. 1)	none identified
Millers Creek Reservoir	Throckmorton, Baylor	Municipal (North Central Texas Municipal Water Authority)	none identified
Gibbons Creek Reservoir	Grimes	Steam/Electric (Grimes County)	indicator bacteria, temperature, pH
Lake Granger (BRA System Operations)	Williamson	Manufacturing (Williamson County); Municipal (Chisholm Trail SUD, Williamson County-Other, Cities of Georgetown and Round Rock, Jarrell-Schweitzer WSC)	increasing trends in sulfates, chlorides, elevated nutrients, and sedimentation from total suspended solids

**Table 5-1.  
Summary of Water Management Strategies, Potential Water Quality Concerns,  
and WUGs Potentially Affected (Concluded)**

Recommended WMS	Project Origination	Beneficiaries of Project	Potential Water Quality Concerns Affecting Use of Supply
Systems Approaches			
BRA System Operations	Varies	Manufacturing (Bosque and Hill Counties); Steam/Electric (Bosque and Somervell Counties); Municipal (Bell County WCID #1, Bosque County-Other, Brandon-Irene WSC, City of Hillsboro, White Bluff Community WS, Woodrow-Osceola WSC)	chlorides, total dissolved solids, total suspended solids, and nutrients
Groundwater Development			
Dockum Aquifer (Champion Wellfield)	Nolan	Municipal (City of Sweetwater)	none identified
Carrizo-Wilcox Aquifer	Brazos, Burleson, Lee, Milam, Robertson, Coryell, Erath, Falls, Lampasas, Williamson	Manufacturing (Brazos, Burleson, Limestone, Robertson counties); Irrigation (Burleson County) Steam/Electric (Milam County; Municipal (Wickson Creek SUD, Aqua WSC, Lee County WSC, Southwest Milam WSC; cities of Bryan, College Station, Giddings, Groesbeck, Hutto)	temperature
Trinity Aquifer	Coryell, Erath, Falls, Lampasas, Williamson	Manufacturing (Erath County); Municipal (Coryell County-Other, Falls County-Other, Lampasas County-Other, City of Florence)	chlorides, total dissolved solids
Gulf Coast Aquifer	Grimes	Manufacturing (Grimes County)	none identified
* For municipal users with shortages, additional conservation was recommended only for WUGs exceeding 140 gallons per capita per day.			