Highland Lakes Discharge Ban

What is the discharge ban for the Highland Lakes?

The ban prohibits the discharge of pollutants, including treated wastewater effluent, into the Highland Lakes. In the late 1980s, the Texas Water Commission (the predecessor of the Texas Commission on Environmental Quality, or TCEQ) adopted the rules to protect the water quality of the Highland Lakes. These rules, known officially as the Watershed Protection Rules, are described in Chapter 311 of the Texas Administrative Code, subchapters A, B, E and F.

This chapter is available at the following link:

http://info.sos.state.tx.us/pls/pub/readtac$ext.ViewTAC?tac_view=3&ti=30&pt=1

There are other water bodies that have watershed protection rules in place, but no other lakes in Texas have a similar ban on wastewater discharges.

What is the current water quality of the Highland Lakes?

The current water quality of the Highland Lakes is considered good to excellent. Visitors come to the Highland Lakes for recreation. More than 1 million Central Texans get their drinking water from the Highland Lakes. Lake Travis has historically had low nutrients in the water and has historically been one of the clearest lakes in Texas. With the exception of major floods, there are minimal influences on the water quality of the lakes.

Why does water quality change during certain times of the year?

While the water quality of the lakes may change periodically (caused by, for example, an increase in the growth of algae or a decrease in clarity), these occasional changes are generally attributable to the effects of wet or dry periods rather than pollution from human activity.

What is the water quality "exceptional" aquatic life use designation given to Lake Travis by the Texas Commission of Environmental Quality (TCEQ)?

Another indicator of the health of a body of water is the diversity of its aquatic life, such as fish. Lake Travis currently has an "exceptional" aquatic life use designation, the highest such designation given by the TCEQ. The exceptional aquatic life designation is based on dissolved oxygen levels of greater than 6 milligrams per liter (mg/L) in the water, which offers optimum conditions for aquatic life. The higher the dissolved oxygen level, the more diverse the aquatic community. All of the other Highland Lakes have a "high" aquatic life use designation. High aquatic life designation is based on providing suitable dissolved oxygen of greater than 5 mg/L for fish and other desirable organisms.

Are there any wastewater treatment plants that are exempt from these rules?

Four wastewater treatment plants are allowed to discharge effluent into the Highland Lakes because they were active before the rules were adopted and were grandfathered under the discharge ban rules. The following wastewater plants are allowed to discharge into the lakes:

- Travis Vistas II on Lake Travis with a permitted flow 6,000 gallons per day
- Kingsland Municipal Utility District on Lake LBJ with a permitted flow of 750,000 gallons per day
- B & W Gatherings on Lake LBJ with a permitted flow of 50,000 gallons per day

Silver Creek Lodge, Marina and Yacht Club (Lake Buchanan – Permitted Flow: 0.004 million gallons per day or 4,000 gallons per day)

How many wastewater treatment plants are located around Lake Travis, and what do they do with their treated effluent?

LCRA identified 34 permitted wastewater treatment facilities in the Lake Travis watershed. Of those, only one grandfathered plant, Travis Vistas, discharges into Lake Travis. The other 33 are using their wastewater effluent to irrigate their golf courses, common areas, parkland, and cedar breaks. The permitted volume of wastewater for these facilities is about 7 million gallons per day.

If the discharge ban were lifted today, would we have a lot more water in the lakes for water supply?

These plants would not contribute substantially to lake levels. LCRA estimates that if the 34 wastewater plants around Lake Travis were discharging their effluent into the lake, this would add about 8,000 acre-feet per year and Lake Travis would be about 5 inches higher. For comparison, Lake Travis holds about 1.1 million acre-feet at its full elevation.

What if wastewater treatment plants treated their effluent to "drinking water standards"?

Standard drinking water treatment processes do not sufficiently remove the nutrients common to treated wastewater discharge that would cause algae growth in the Highland Lakes.

The only nutrient standards for drinking water limits total nitrogen to 10 mg/L. For comparison, the average baseline concentration of total nitrogen for Lake Travis is 0.10 mg/L. The nitrogen concentration of wastewater effluent treated to the minimum drinking water standards and discharged would be a potential 100-fold increase, which would stimulate algae growth and decrease water clarity.

Another nutrient that contributes to algae growth in water is phosphorus. Because there is no drinking water standard for limiting total phosphorus, there would be an exponential increase of phosphorus in Lake Travis if wastewater were discharged into the lake, even if the wastewater were treated to drinking water standards.

Does LCRA have any tools to evaluate the potential effects of TCEQ lifting the discharge ban?

Yes. LCRA recently completed the Colorado River Environmental Models (CREMs) project, which can predict future water quality conditions of Lake Travis. The models can predict such characteristics as dissolved oxygen, chlorides, sulfates, nutrients (nitrogen and phosphorus) and algae levels as a result of changes associated with land use and wastewater discharges (nutrient loads).

The model is best used by comparing scenarios with and without assumed changes to the watershed, hydrology, or lake operations. These models were not calibrated to consider the emerging issue of pharmaceuticals in drinking water.

How would the discharge of wastewater affect the Highland Lakes?

It would add significantly more nutrients to Lake Travis, one of three reservoirs in Texas that historically has had very low nutrient levels. Without the discharge of wastewater, there are currently few sources of nutrients entering the lake. If the levels of nutrients increase, the lake will grow more algae and become more turbid. LCRA's water quality models indicate higher levels of nutrients from wastewater treatment effluent would have significantly more impact on future water quality than would runoff associated with changing land use. For ex-

ample, if all existing wastewater facilities were allowed to discharge their permitted volumes, average chlorophyll levels near Mansfield Dam would likely increase by 40 percent, from 3 micrograms per liter (ug/L) to a projected level of 5 ug/L.

How does the public view the water quality of Texas' lakes?

During the summers of 2003 and 2004, the Texas Water Conservation Association and several river authorities conducted a study to identify the level at which algal growth is objectionable to recreational users of reservoirs in Texas. Eight reservoirs were studied: Lake Bridgeport, Canyon Lake, Cedar Creek Reservoir, Lake Fork Reservoir, Lake Georgetown, Granger Lake, Lake Livingston, and Lake Travis. The responses from all recreational users indicated that users get acclimated to the conditions of their reservoir. Lake Fork Reservoir users, primarily fisherman, are used to 10-20 ug/L of chlorophyll, while Lake Travis users, primarily swimmers and boaters, are used to 1-5 ug/L of chlorophyll. The clearest lakes in the study, Lake Travis, Lake Georgetown and Canyon Lake, had the highest clarity and least variability of change in chlorophyll over the two-year study period. Overall, the study concluded that all users were more dissatisfied as the "greenness" of their reservoir increased.

Why is wastewater discharge not allowed in the Highland Lakes but is allowed in the Colorado River below Austin?

The differences between a reservoir and a flowing river are significant when it comes to assimilating pollutants entering a water body, either through stormwater runoff or direct discharge. Pollutants entering a reservoir are likely to stay in the reservoir for longer periods of time – pollutants generally reside in Lake Travis for one to two years. During that time, the pollutants, such as total suspended solids, nitrogen and phosphorus, either settle out or are used by aquatic life to survive and reproduce. A constant input of pollutants can have a cumulative effect on the reservoir. On the other hand, pollutants entering a flowing river system are moved downstream rapidly and settle out of the water throughout the length of the river over a matter of days. Ultimately, the nutrients entering the Colorado River below Austin contribute to the productivity of Matagorda Bay.