



## Improving Water Quality in the Houston Ship Channel A Project to Reduce Nickel

The state of Texas requires the water quality in the 14 segments of the Houston Ship Channel to be suitable for contact recreation, noncontact recreation, high quality aquatic life, navigation, and industrial water supply; however, not all the segments are required to be suitable for all these uses.

This total maximum daily load (TMDL) project for the Houston Ship Channel System addressed dissolved nickel concentrations in water. Concern about nickel arose during the late 1980s; this TMDL effort began shortly thereafter. Advances in the ability to accurately measure very low concentrations of metals and repeated sampling have revealed that nickel is much less of a problem than was initially indicated by the less accurate data of the 1980s. However, the TMDL project was continued in order to finally resolve the nickel concerns. In March 2021, the U.S. Environmental Protection Agency (EPA) approved TCEQ's recommendation to withdraw the nickel TMDLs as unnecessary. TCEQ recommended their withdrawal in Appendix I of the *October 2020 Update to the Texas Water Quality Management Plan*.

Water quality in the channel has improved dramatically since the 1970s, due largely to efforts of state agencies, local governments, and industries. Areas of the channel that were once devoid of aquatic life now support abundant communities and recreational fishing. Many of the human health and environmental risks once associated with the channel area have been reduced or eliminated. However, limitations and impairments of water quality remain, due largely to the physical characteristics of the deep-draft navigation channels and the heavily urban and industrial nature and history of the region.

Learn more about water quality standards, monitoring, and TMDLs by reading [Preserving and Improving Water Quality](#)<sup>1</sup>, available on our website or in print.

### The Houston Ship Channel Watershed

The Houston Ship Channel System is located in the San Jacinto River Basin. Its various branches originate in western and northern areas of the City of Houston, and at the Lake Houston Dam on the San Jacinto River.

The Houston Ship Channel System consists of 14 designated segments, which together comprise the "enclosed" portion of the Houston Ship Channel proper,



with its major tributaries and side bays. The System excludes those portions of the Ship Channel located in Galveston Bay, seaward from Morgans Point. The designated segments included in this definition of the Houston Ship Channel System are:

- San Jacinto River Tidal (1001)
- Houston Ship Channel/San Jacinto River Tidal (1005)
- Houston Ship Channel Tidal (1006)
- Houston Ship Channel/Buffalo Bayou Tidal (1007)
- Buffalo Bayou Tidal (1013)
- Buffalo Bayou Above Tidal (1014)
- Greens Bayou Above Tidal (1016)
- Whiteoak Bayou Above Tidal (1017)
- Tabbs Bay (2426)
- San Jacinto Bay (2427)
- Black Duck Bay (2428)
- Scott Bay (2429)
- Burnett Bay (2430)
- Barbour's Cut (2436)

Commercial navigation primarily occurs in the segments and reaches southeast of the central business district of Houston, in an area that contains one of the highest densities of petrochemical facilities in the

<sup>1</sup> [www.tceq.texas.gov/publications/gi/gi-351](http://www.tceq.texas.gov/publications/gi/gi-351)

world and has long been one of the three or four busiest ports in the U.S.

The Houston Ship Channel System is tremendously important to the surrounding region. The commercial navigation provided by the channel initiated and supported the historic growth of the Houston area economy. The channel and the facilities along it are important to the economic health of the region, state, and nation. The channel's production of materials and inland location have been, and will be, important to the military security of the U.S. The headwater reaches, tributaries, and fringes of the System also provide recreational opportunities for residents.

### Public Participation

Due to the lengthy and extremely technical nature of the sampling, analysis, and model development aspects of this TMDL, initial public participation was primarily by permitted dischargers that contributed to data collection efforts and provided comments on laboratory results and model characteristics. In June 1999, approximately 40 people representing environmental groups, local governments, local industries, and consultants met with TCEQ staff to discuss the draft TMDL report. Participants recommended some revisions to make the report easier to understand and to more clearly describe the allocation. The draft report was revised and released for public comment. A public meeting was held in Houston in January 2000 to hear comments.

### TMDL Dates

**Start Date:** 1990

**TCEQ Adoption:** August 11, 2000

**EPA Region 6 Approval:** May 9, 2003

**TMDL Withdrawn:** October 2020

**EPA Region 6 Approval:** March 8, 2021

### I-Plan Dates

**TCEQ Approval:** July 13, 2001

TCEQ then developed an implementation plan (I-Plan) for the TMDLs. TCEQ solicited public comment on the plan in writing and at a public meeting in May 2001.

### For More Information

Visit the project webpage at:

[www.tceq.texas.gov/waterquality/tmdl/o1-houship.html](http://www.tceq.texas.gov/waterquality/tmdl/o1-houship.html).

E-mail us at [tmdl@tceq.texas.gov](mailto:tmdl@tceq.texas.gov) or call us at 512-239-2310.

Learn more about the TMDL Program on our website at:

[www.tceq.texas.gov/goto/tmdl/](http://www.tceq.texas.gov/goto/tmdl/).

### Project Highlights

- EPA Region 6 stated that the draft TMDL was technically acceptable in a letter dated June 4, 1999.
- The final report, *Fourteen Total Maximum Daily Loads for Nickel in the Houston Ship Channel System*, was adopted by the Commission on August 11, 2000.
- The TMDLs were submitted to EPA Region 6 for approval on August 17, 2000. EPA approved the TMDLs on May 9, 2003.
- The Commission approved the *Implementation Plan for Dissolved Nickel in the Houston Ship Channel System* on July 13, 2001.
- In the *October 2020 Update to the Texas Water Quality Management Plan*, TCEQ proposed to withdraw these TMDLs as unnecessary, demonstrating that the original nickel data that resulted in listing the water bodies as impaired was invalid, and that more recent, valid data indicate the water bodies are meeting the designated criteria.
- EPA approved withdrawal of these TMDLs on March 8, 2021.

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