Fact Sheet *March 2012*

ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Division of Water

Draft Total Maximum Daily Load (TMDL) for Petroleum Hydrocarbons in the Waters of Big Lake in Big Lake, Alaska

TMDL Essential Facts:

Hydrologic Unit Code:	190205051403
Criteria of Concern:	Petroleum Hydrocarbons; specifically Total Aromatic Hydrocarbons (TAH)
Designated Uses Affected:	Water Supply: Aquaculture; Growth and Propagation of Fish, Shellfish, Other Aquatic Life, and Wildlife
Major Source(s):	Motorized Watercraft
Loading Capacity:	10 micrograms per liter (µg/L) TAH
Wasteload Allocation:	Not Applicable
Load Allocation:	10 µg/L TAH
Margin of Safety:	Implicit through conservative assumptions
Future Growth:	10 µg/L TAH

What is the status of Big Lake water quality?

The amount of petroleum hydrocarbons found in areas of Big Lake during the summer months is over the allowed limit under the State of Alaska's water quality standard. Specifically, total aromatic hydrocarbons (TAH) exceeded the water quality criterion of 10 µg/L (micrograms per liter) during water quality studies conducted in the open water months of 2004, 2005, and 2009. This data is summarized in the total maximum daily load (TMDL) document.

TAH is found in gasoline. The primary source of TAH to Big Lake is motorized watercraft – boats and personal use watercraft such as jet skis. The TAH can come from gasoline leaks and spills but most of it likely results from the combustion process of gasoline motors, which are designed to directly release unburned fuel out of the exhaust into the water during combustion. This is especially the case with 2-cycle motors. More gasoline motors on the lake at any given time increases the amount of gasoline being released. Water monitoring results show higher concentrations of TAH at times of increased motorized watercraft usage on Big Lake, especially during high use weekends like holiday weekends and in certain locations: near marinas, boat launches and other high traffic areas in the east basin.

Duck with ducklings in Big Lake. This TMDL is designed to be protective of aquatic life and public health.

Why be concerned with the petroleum pollution?

Certain petroleum hydrocarbons are highly toxic and tend to accumulate in the fats and oils of organisms. This can impact or kill aquatic organisms such as insects that serve as a food source for fish and wildlife. The negative effects of petroleum can move up the food chain from the aquatic insects to fish to wildlife and potentially to humans. Polluted water can also affect fish and wildlife through direct contact and consumption.

Because petroleum hydrocarbons contain known cancer causing compounds such as Benzene and Benzo(a)pyrene, controlling their concentration in Big Lake is important not only to protect the environment but ultimately to protect human health.

For these reasons, in 2006, the State of Alaska listed portions of Big Lake as an impaired water body under the Federal Clean Water Act Section 303(d) for petroleum hydrocarbon pollution.

What is a Total Maximum Daily Load (TMDL)?

A TMDL basically represents a "pollutant budget" for a waterbody. It identifies the maximum amount

of a pollutant (total aromatic hydrocarbons) that can enter the waterbody (Big Lake) while still meeting the water quality criterion (10 µg/L). A TMDL is established to meet the requirements of Section 303(d)(1)(C) of the Clean Water Act and the U.S. Environmental Protection Agency's regulation that requires the establishment of a TMDL for the achievement of water quality standards when a waterbody is impaired.

What are the parts to a TMDL?

Similar to developing a budget for a business with different expense codes, a TMDL identifies different pollutant sources to calculate an overall pollution budget. The TMDL looks at the overall amount of TAH pollution Big Lake can receive and calls it the loading capacity. The TMDL then divides that pollution capacity into three different sources. First, permitted sources receive a budget, called a wasteload allocation, like an industrial facility discharging petroleum. The second source is the unpermitted sources like boating and related activities; these receive what is called a load allocation. Lastly, the TMDL budget includes a margin of safety to account for any unknowns.

The pollution budget recognizes there may be future growth and TAH discharge to the lake and incorporates this into the calculation.

What pollution limits does this TMDL set?

The Big Lake TMDL pollution budget is straightforward in setting the limits equivalent to Alaska's state water quality TAH criterion of 10µg/L.

There are currently no permitted sources discharging TAH to Big Lake so that source is considered not applicable. This means that the focus is on the unpermitted boating and related activities. The concentration-based pollution budget is set at the water quality criterion of 10 µg/L of TAH for these activities. The TMDL also establishes a budget for future sources equivalent to the water quality criterion of 10 µg/L of TAH to ensure that any future permitted and unpermitted sources also meet established water quality targets.

How will the lake water quality be improved?

The petroleum pollution from motorized watercraft needs to be reduced to meet the state water quality criterion at all times and under all conditions on the lake – even on the sunny, busy weekends.

Efforts to address the petroleum-related impairment in Big Lake are already underway. There is currently a coordinated effort with the Big Lake community and other local, regional and federal stakeholders. This group has developed an Action Plan to improve Big Lake water quality. The Action Plan will be included as part of the TMDL. Additionally, local marinas are encouraged to participate in the Clean Harbors statewide certification program. One marina is already working towards their certification.

When will the impairment status be removed?

After implementing pollution reduction actions, follow-up water quality monitoring will be conducted to assess progress towards reductions in TAH concentrations. At least two years of data showing concentrations meeting water quality criteria will be necessary to remove the impairment status.

How can I learn more about this draft TMDL or make comments?

A public review and comment period for the draft TMDL is underway. Written public comments must be mailed, faxed, e-mailed, or hand delivered to the address below before 4:30 PM on April 24, 2012.

DEC will hold a public information meeting to discuss the draft TMDL at the Big Lake Lions Club (2942 S. Lions Circle, Big Lake) starting at 6:00PM on April 3, 2012.

The draft TMDL and Action Plan is available at DEC's Big Lake website at http://dec.alaska.gov/water/wnpspc/protection_restoration/biglakewq/index.htm, or upon request by contacting:

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Answers to commonly asked questions about TMDLs in general can be found on the DEC website at: http://dec.alaska.gov/water/tmdl/pdfs/Commonly_asked_questions_about_TMDLs_Final.pdf

What are three important "fixes" for cleaning up Big Lake?

- Use a cleaner burning engine such as a 4-stroke or direct fuel injected 2-stroke.
- Reduce idle time at near-shore areas.
- Continue public education efforts on ways that all lake users can help reduce water pollution.