ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Division of Water

Granite Creek, Sitka Alaska
Draft Total Maximum Daily Load (TMDL) Revision Summary

What was the problem with Granite Creek water quality?

In the past, Granite Creek had excess sediment and turbidity pollution because of stormwater runoff from gravel extraction operations, material stockpiles and road maintenance. Rainwater and snow melt coming in contact with the ground surface carry the pollution directly into the creek.

How did the problem get fixed?

Best management practices have been installed, and continue to be operated, maintained and monitored, and gravel extraction operation maintenance has improved. These practices prevent pollutants from reaching Granite Creek. Best management practices included:

- Collection and treating of stormwater runoff through settling ponds, vegetated swales, and roadside ditch check dams
- Strengthening lease agreements and annual audits
- Maintaining functional vegetated buffers (an area that protects a creek from outside disturbances)
- Ensuring permit requirements and water quality monitoring are done.

After 12 years of water quality monitoring and implementing best management practices the amount of sediment and turbidity in the creek are within acceptable levels. The exceptional leadership of the City/Borough of Sitka and substantial efforts of individual gravel operators have changed the condition of the creek from impaired to healthy.

Sediment entering a creek

Turbidity standards

What are sediment and turbidity, how do they affect a creek, and why should I care?

Sediment is solid fragments of mineral or organic matter that come from weathered rock and are carried and deposited by water, ice or wind; see the photo showing sediment entering a creek. Turbidity is how cloudy or murky the water is; see the image of different turbidity in liquid.

Sediment and turbidity negatively affect a creek in many ways:

- Fish have difficulty breathing, locating food, and finding mates
- Natural spawning areas and the spaces between rocks in the creek bottom, necessary for fish eggs and aquatic insects, can be smothered
- Less sunlight penetrates the water, and plant growth is inhibited

Granite Creek supports spawning and rearing for Coho, pink, and chum salmon. The effects from sediment can impact both spawning and rearing.

What is the Total Maximum Daily Load (TMDL)?

The TMDL is basically a "pollutant budget". The TMDL budget was developed using standard mathematical equations, actual creek water quality data, and other landscape and weather measurements. The calculations show the amount of sediment and turbidity that can enter Granite Creek while still meeting the state's allowed limits (see table below). The draft TMDL Revision explains these calculations in detail.

A TMDL is established to meet the requirements of Section 303(d)(1)(C) of the Clean Water Act.

So if we have a plan, why do we need a new one?

The original plan contains limits that are no longer applicable and a new plan needs to be legally adopted. New data enabled the calculations of the amount of sediment each gravel operation can discharge without unhealthy affects to the creek; this is called the waste load allocation. The waste load allocation has been divided among the know dischargers to the creek.

Yearly total suspended solids (TSS) in the draft Granite Creek TMDL Revision

Load Capacity (tons/year)	Existing Load (tons/year)	Waste Load Allocation (tons/year)	Margin of Safety (tons/year)	Future Source Load Allocation (tons/year)	Alaska Water Quality Standards Turbidity (NTUs)[1]
170.49	63.91	40.58	5	61	5.86 to 8.23 varies monthly

Granite Creek is now healthy with best management practices in place.

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

The draft TMDL Revision is available at http://dec.alaska.gov/water/tmdl/approvedtmdls.htm or upon request. DEC is asking for public review and comments at this time. DEC is specifically looking for comments on the distribution of waste load allocation. Written public comments must be mailed, faxed, emailed, or hand delivered to the address below before 5:00 PM on December 7, 2015.

Alaska Department of Environmental Conservation Attention: Gretchen Pikul 410 Willoughby Avenue, Suite 303, Juneau, AK 99811	Email: gretchen.pikul@alaska.gov Phone: (907) 465-5023; FAX: (907) 465-5177

[1] 18 AAC 70.020 applicable water quality criteria for turbidity may not exceed 5 nephelometric turbidity units (NTUs) above natural conditions when natural turbidity is 50 NTU and less.