Alaska Department of Environmental Conservation
Division of Water

Frequently Asked Questions

November 2018

2014/2016 Alaska's Integrated Water Quality and Assessment Report
("Integrated Report")

Q1. Why is DEC working on the 2014/2016 Integrated Report in 2018?

A1. DEC delayed finalizing the 2014 and 2016 reports to allow time to examine the data closely and develop foundational policies to reach decisions. For example, we ensured data we collected satisfied our strict quality control/quality assurance requirements. We also worked on policies to guide us in making water quality decisions. Because of the delays, we have combined these two reports into one.

Q2. Isn't the data too old to use in making decisions?

A2. No. While some of the decisions in the report reflect data collected several years ago, DEC believes the data reflects current conditions. The data is also relevant to the report's time frame (2014/2016). Our policy says, "Generally, data less than five years old is preferred, but older data may be considered if the condition of the water has not significantly changed." We believe that although the data is older, conditions have not significantly changed.

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DEC's Water Quality Reports:

http://dec.alaska.gov/water/wqsar/reports.html

Alaska Water Quality Standards, Chapter 70:

www.dec.state.ak.us/regulations/index.htm

In an effort to ensure future Integrated Reports are more timely, DEC is switching to an electronic reporting database and has revised the report development process. For information on the new process, see http://dec.alaska.gov/water/wqsar/waterbody/integratedreport.htm.

Q3. How are impaired waters removed from the Clean Water Act Section 303(d) list of impaired waters (a.k.a., Category 5 in the Integrated Report)?

A3. Under the federal Clean Water Act, there are three ways to remove a water from the 303(d) list of impaired waters: (1) develop a Total Maximum Daily Load and implementation plan; (2) develop a waterbody recovery plan including a commitment to implement enforceable actions and monitoring; or (3) demonstrate through monitoring that the waterbody is no longer impaired. If

monitoring is conducted, it must be similar to the monitoring done that led to the impairment listing. There must also be assurances that the water quality will continue to meet standards in the future.

Q4. Some waters or uses are described as "threatened." What does that mean? Is it impaired or not?

A4. DEC designates a water as "threatened" when the thresholds established for clearly designating as impaired or attaining were not met. For example, the data collected may not have satisfied DEC's guidance for a sufficient number of samples or only one year of data shows the water is meeting standards instead of the two years required. However, the data evaluation indicates sufficient concern that DEC believes actions need to be taken to protect the water.

For regulatory purposes under the Clean Water Act, a water listed as threatened is considered an impaired water.

Q5. Is DEC just trying to find a way to issue restrictions and regulations by calling waters impaired? For example, do you just want to restrict for motorized boat use?

A5. No. DEC is not trying to issue restrictions or regulations. DEC is required by state statutes to protect human health and the environment. In many situations, regulations are not needed or are not the best approach if the problem can be addressed through other means. DEC supports a variety of methods to improve water quality. In some cases, restrictions on motorized boating is among the solutions.

Q6. Where can I get more information on Alaska's waterbody listing process and what the different categories mean? Does a water always stay in the same category?

A6. This information is in Section 2 of the Integrated Report: www.dec.state.ak.us/water/wqsar/waterbody/integratedreport.htm.

As new water quality information becomes available, DEC will re-evaluate where waters are exceeding or attaining water quality standards and change the category, as appropriate, in future Integrated Reports.

Q7. Where can I find information on the water quality studies DEC has done?

A7. DEC's searchable database can be viewed at http://dec.alaska.gov/water/wqsar/reports.html.

Q8. How did DEC decide the Little Susitna Rivers and Lake Lucille were impaired?

A8. DEC compared the collected water quality data with the State of Alaska's water quality standards. In the two waters, the data collected of pollutant levels were greater than the allowable limits and greater than natural pollutant levels. DEC then used the guidance developed to determine that the frequency and duration of elevated pollution levels impacted Alaska's protected water uses (such as recreation or the growth and propagation of fish and other aquatic life).

Q9. What information that I submit could lead to DEC changing the proposed water quality impairment or de-listing decisions?

A9. Additional water quality data could result in DEC changing the proposed water quality impairment or de-listing decision(s).

Q10. What can I do to help improve water quality?

A10. Take action to help reduce water pollution. Changing our behavior is a big part of reducing pollution, such as being careful when using fuel containers and quickly cleaning up drips and spills using absorbent materials (not dish soap), and reducing your boat wake to avoid stirring up excess sediments. For additional information on best management practices to reduce pollution, see: http://dec.alaska.gov/water/wnpspc/protection_restoration/bestmgmtpractices/index.htm.

Q11. What are the next steps?

A11. DEC prepared a revised Final Integrated Report and a Response to Comments and submited these documents to EPA for approval. EPA then approves or disapproves the list of impaired waters (Category 5) and submits their findings to Congress.

Impaired waterbodies (Category 5) are scheduled for restoration activities. Many of these restoration activities include opportunities for public involvement, inclusion in the Alaska Clean Water Actions grant program, and follow-up water quality monitoring after restoration activities have been implemented. As new water quality information becomes available, DEC will re-evaluate where waters are exceeding or attaining water quality standards and change the category as appropriate, as early as 2020. If you want to be involved in restoration activities, you can subscribe to the Nonpoint Source Program email listserv at http://list.state.ak.us/mailman/listinfo/dec.wqsar.nps/.

Alaska Department of Environmental Conservation
Division of Water

Frequently Asked Questions

November 2018

Integrated Report — Kenai River

Q1. The Kenai River is naturally cloudy or turbid. What is turbidity, and why is DEC saying turbidity is a problem?

A1. Turbidity is a measure of water clarity in streams, rivers, lakes, and the ocean. Turbidity describes the amount of light scattered or blocked by suspended particles in the water sample. Clear water has low turbidity, and cloudy or murky waters have a higher turbidity level. Turbidity is caused by particles of soil, organic matter, metals, or similar matter suspended in the water column.

DEC's regulations recognize turbidity can occur naturally. For example, a river like the Kenai originates from melting glaciers and has suspended glacial sediments, giving the river a noticeable milky blue color and high turbidity values. Regulations require a comparison of natural areas to areas with high levels of human activity.

DEC developed a specific listing methodology for turbidity that describes data analysis and statistical tests to evaluate differences between natural and potentially impacted areas. The methodology helps identify when turbidity is a problem. For the Kenai, DEC collected extensive turbidity data and found that the turbidity in areas impacted by human activity was higher than the natural areas but was unable to determine if it exceeds impairment thresholds. Based on the sampling results and analyses, ADEC is leaving the lower Kenai River in Category 3 (insufficient information) for turbidity until further information becomes available to reassess the current condition of the river

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DEC's Water Quality Reports:

http://dec.alaska.gov/water/wqsar/reports.html

Alaska Water Quality Standards, Chapter 70:
www.dec.state.ak.us/regulations/index.htm

Q2. Sometimes a natural condition site has a higher turbidity value than an impacted site. How did DEC establish the natural condition site of turbidity?

A2. The natural conditions site was established at an upstream location above the areas with the most on river human activity, like boating, but still within close geographic proximity of the suspected impacted site. During times when there is less human activity, the turbidity levels are very similar at the natural and impacted sites. Finding natural condition sites can be challenging, which is why the work was peer reviewed prior to publication. To view a copy of all DEC studies conducted, see: http://dec.alaska.gov/water/wqsar/reports.html.

Q3. The data DEC is using is old, and boating/fishing conditions have changed. Is the data still valid?

A3. Yes. DEC recognizes that conditions and human activities change over time, but this data remains relevant to identifying and understanding impacts on the river. For example, fishing practices have shifted, and fewer overall boats were counted in recent years compared to the 2008-2010 time period. This might result in reduced impacts on the river. However, significant human and boating activity continues on and along the river, and the recent decrease in fishing and boating activity may not be enough to resolve the turbidity impairment or may not be a long lasting change in activity. In the future, DEC will work with local stakeholders to create a prioritized watershed plan to address potential water quality issues affecting the Kenai River.

Q4. Why is DEC only focusing on the month of July for the Kenai River?

A4. July is the month when king and red salmon fisheries are open and when levels of motorized boating activity are the highest. Turbidity data was also collected at other times of the year. Except for July, DEC found little turbidity difference between the natural condition site and the impacted site.

Q5. Other rivers (like the Copper River) are just as turbid as the Kenai River. Is DEC calling all turbid rivers impaired?

A5. DEC is not calling all turbid rivers impaired. We evaluated each river in comparison to its natural condition. Although the Copper and Kenai Rivers both have some characteristics in common, they have different water quality characteristics and different human activity.

Q6. How does increased turbidity affect the fish? What about boating or other recreational activities?

A6. Fish are protected by aquatic life criteria, and turbidity levels in the Lower Kenai River do not exceed the criteria for aquatic life. DEC understands salmon do not spawn in the impacted section of the Lower Kenai River, and this section of the river is not a rearing area for juvenile salmon. However, studies have indicated that excessive turbidity makes it difficult for salmon to recognize and capture prey. At this time, we have no evidence that salmon fisheries in the Kenai are being directly affected by turbidity.

Turbidity pollution can cause the river water to be cloudier than usual and hide hazards to navigation or obstacles in the river. Besides these dangers, excess turbidity is often considered

aesthetically displeasing by giving the river a "muddy" appearance. These impacts affect boating recreation, including fishing activities.

Q7. What is the cause of the excess turbidity? What sources did you identify?

A7. Although not part of the data collection study, DEC did subsequently conduct an evaluation of possible sources of turbidity. Possible sources evaluated included: tides, boats, discharges from the Soldotna Wastewater Treatment facility and other point sources, flocculation of dissolved sediments due to salt water mixing with fresh water, and chemical or biological processes.

Q8. How do you know the turbidity isn't being caused by the tides?

A8. DEC closely evaluated the tides since the impacted area is within the tidally-influenced reach of the river. DEC examined the potential sources of sediment and patterns of the turbidity.

No sediment is being carried in from the ocean because marine water does not extend upstream of the Warren Ames Bridge. Therefore, the turbid conditions are caused by sediment on the river bottom becoming re-suspended in the water column. The pattern of turbidity increases does not coincide with the tides. Timing of high and low tides and the tidal range is consistent, regular, and predictable. If tidal action influenced turbidity exceedances, we would expect to see a pattern of high turbidity events coinciding with the pattern of tidal ebb and flow. While tidal action may play some role in the turbidity levels, it is not the most significant source.

Q9. Is DEC trying to ban all boats on the Kenai River?

A9. No. DEC is working with stakeholders to try and find solutions to address the increased level of turbidity. DEC wants to preserve use of the water, including fishing and boating.

Q10. If the turbidity results aren't high enough to affect fish, why should I care? No one uses the river for drinking water or swimming, so why are you calling it impaired?

A10. Waters in Alaska must meet the standards for all designated uses. When a waterbody does not meet a standard, DEC must report it and work to address the problem. Aquatic life standards are one type of designated use, but not the only one. Water supply and recreation are other designated uses protected by Alaska's regulations. All designated uses are important to maintain and protect Alaska's waters for future users. The expressed goal of the federal Clean Water Act, which in Alaska is implemented by DEC, is to end all pollution in the water. We cannot choose to ignore the protection of all uses of the waters.

Q11. This the first I've heard of this issue. Has DEC consulted with other agencies and people knowledgeable about the river?

A11. Yes. DEC has reported this problem at the Kenai River Special Management Area (KRSMA) meetings, held meetings with interested parties, and consulted with other agencies.

Q12. A single high data point in a day could skew the daily average. Doesn't this matter?

A12. Each data point constitutes only 1/96 of the daily average; therefore, a single high data point that was within a natural range for turbidity could not have a significant effect on the resulting daily average turbidity. Over 50,000 data points were evaluated by DEC in making this decision. We also used a statistical test to help ensure data were evaluated comprehensively.

Q13. Did DEC purposefully take samples at times when there would be higher motorized boat use of the river?

A13. The sampling plans were intentionally designed to look at times and locations where we expected to find higher concentrations of pollutants, but it also included sampling times and locations where we expected to find lower concentrations. This helped us determine the range and timing of contamination and helped us get a better understanding of the problem and possible solutions. Turbidity utilizes an averaging period for evaluating the results. This helps to take into account both busy times and less busy times.

Q14. Is the data you collected sufficient? Does it capture a range of conditions such as high and low water years?

A14. Yes. DEC believes the data collected is sufficient to compare to the water quality criteria. DEC collected over 50,000 data points, including an array of data and flow conditions. The analysis incorporates multiple years of data.

Q15. Is the river impaired?

A15. No, based on the sampling results and analyses, DEC is leaving the lower Kenai River in Category 3 (insufficient information) for turbidity in the 2014/16 IR until further information becomes available to reassess the current condition of the river.

Q16. The section of the river being listed is tidally influenced. Why are you using freshwater criteria? Shouldn't you call this marine water?

Frequently Asked Questions

November 2018

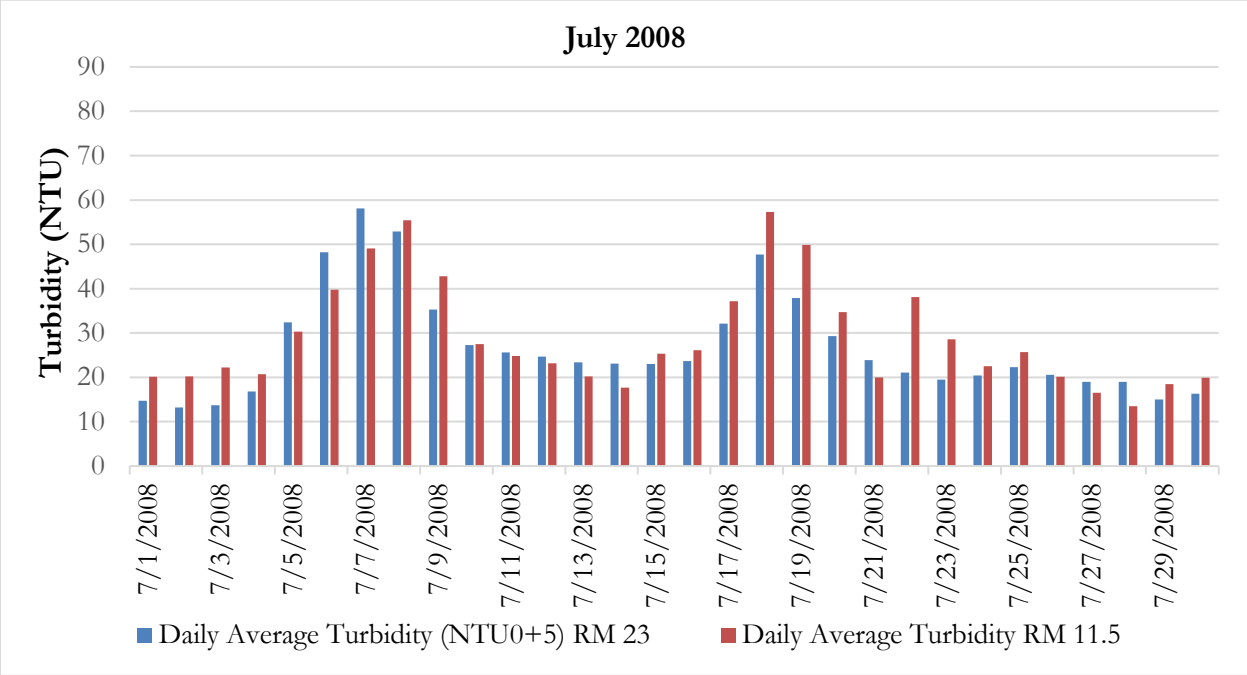
A16. Although the area between River Mile 5 and River Mile 12.5 is tidally influenced by the rise and fall of water levels, conductivity readings indicate that the saltwater does not intrude past River Mile 5. Therefore, the freshwater criteria apply.

Q17. What are the next steps for the Kenai River?

A17. DEC plant to work with local stakeholders to create a prioritized watershed plan to address potential water quality issues affecting the Kenai River.

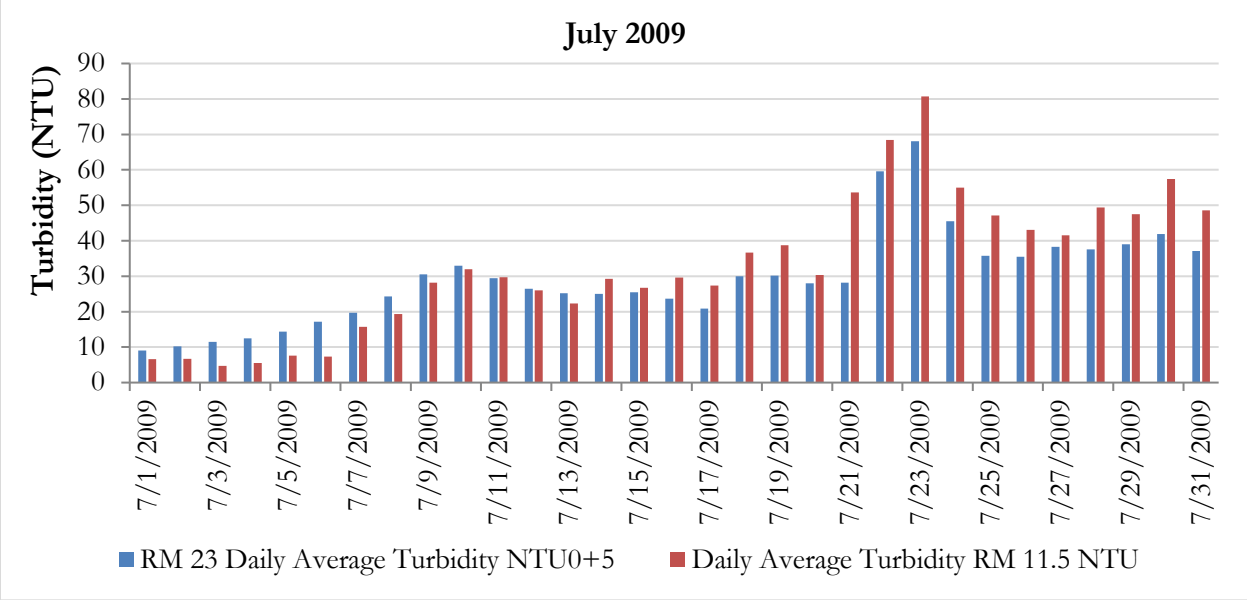
Q18. What did the turbidity daily average comparisons between the natural conditions site (RM 23) and the impacted site (RM 11.5) look like?

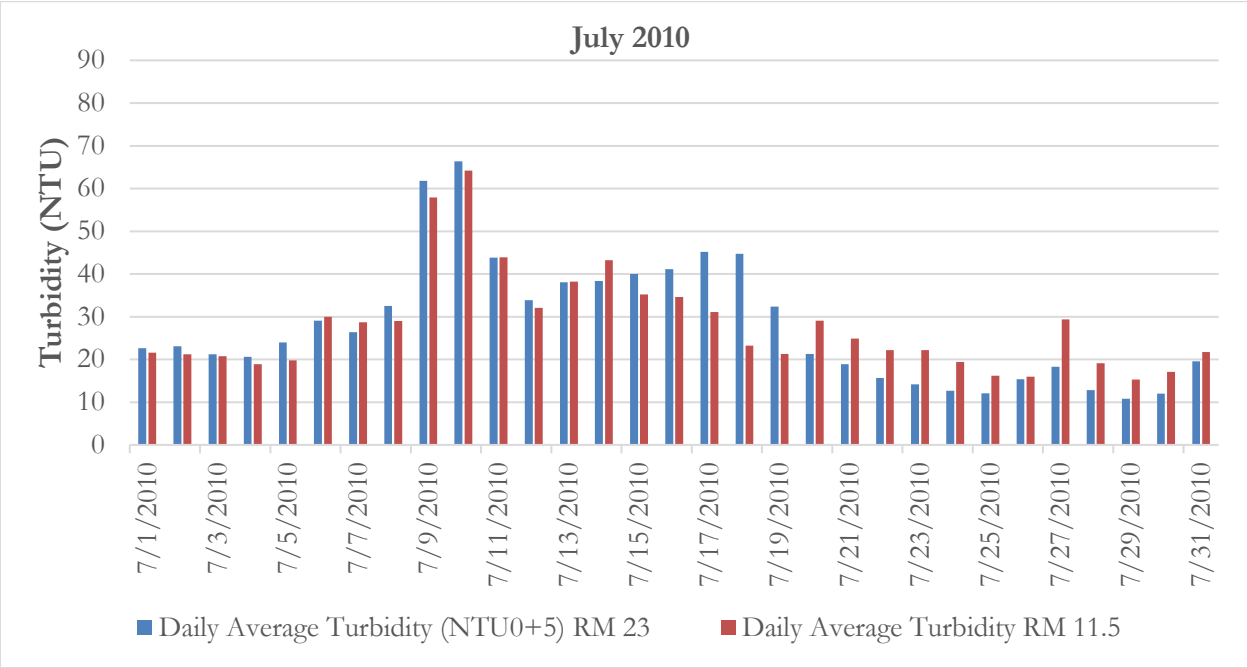
A18. The graphs below illustrate the turbidity criteria for drinking water and contact recreation compared against the impacted site (RM 11.5). The drinking water and contact recreation criterion is developed by adding 5 NTU to the daily average of natural conditions site (RM 23).



Frequently Asked Questions

November 2018





Alaska Department of Environmental Conservation
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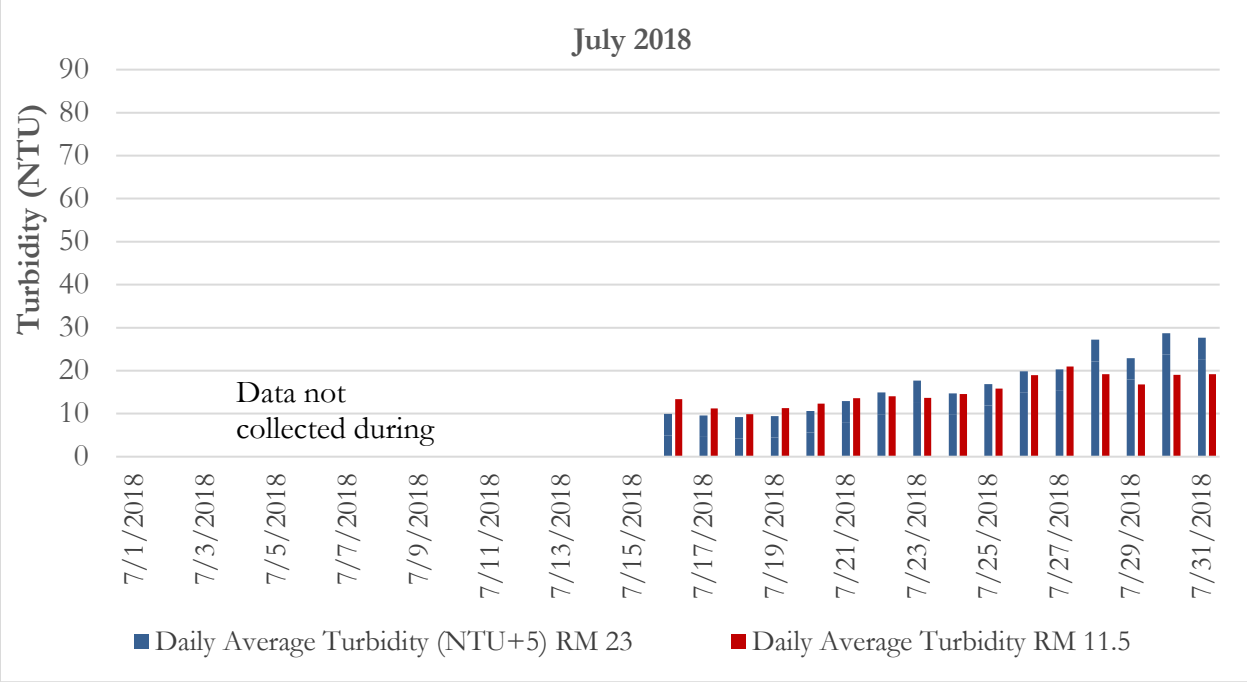
Frequently Asked Questions

November 2018



Alaska Department of Environmental Conservation
Division of Water

Frequently Asked Questions

November 2018

Integrated Report — Little Susitna River

Q1. What are the problems with the Little Susitna River?

A1. DEC has several years of water quality monitoring data (2005-2014) on the Little Susitna River. While most water quality parameters tested meet the state thresholds, two water quality parameters did not: petroleum hydrocarbons and turbidity. The monitoring reports for the Little Susitna River can be found at http://dec.alaska.gov/water/wqsar/reports.html.

Q2. Isn't the petroleum hydrocarbon pollution already fixed? Why is DEC including it in the 2014/2016 Integrated Report?

A2. Yes. DEC believes the problem has sufficient pollution controls and is improving. The Alaska Board of Fisheries implemented a new regulation effective January 2017 that prohibits fishing from a motorized boat unless the motor is a 4-stroke or direct fuel injected 2-stroke. This action, along with DEC's Clean Boating public outreach campaign, is expected to reduce the petroleum hydrocarbon levels in the river. DEC is describing the water quality of the Little Susitna River as "threatened" due to petroleum hydrocarbon pollution and will commit to resampling the river once the new regulation is fully implemented and enforced. Once the water quality sampling demonstrates the Little Susitna River is meeting allowed limits, DEC will remove the impairment designation for petroleum hydrocarbons in a future Integrated Report.

Q3. I thought petroleum disappears quickly from the water. Is there really a problem?

A3. Yes, there was a problem. Studies conducted by DEC show that during high use periods in the month of August, daily average petroleum concentrations have been higher than what the state water quality standards allow to protect aquatic life. Water quality should improve by decreasing carbureted 2-stroke motor use on the river. The water quality sampling in 2014 showed improvement with the 4-day average petroleum level meeting the state water quality standard. In the 2014/2016 Integrated Report, DEC is recommending a "threatened" water quality designation until additional sampling confirms that petroleum levels will remain below the standard and are not due to one year with unusually low boat traffic or high water levels.

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DEC's Water Quality Reports:

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Alaska Water Quality Standards, Chapter 70:
www.dec.state.ak.us/regulations/index.htm

Q4. What is turbidity?

A4. Turbidity is a measure of water clarity in streams, rivers, lakes, and the ocean. Turbidity describes the amount of light scattered or blocked by suspended particles in the water sample. Clear water has low turbidity, and cloudy or murky water has a higher turbidity level. Turbidity is caused by particles of soil, organic matter, metals, or similar matter suspended in the water column.

Q5. The Little Susitna River has natural turbidity. How do you know what you are calling pollution isn't just natural turbidity? Why does greater turbidity matter?

A5. DEC's regulations recognize turbidity can occur naturally and because of this, water quality sampling must include establishing a turbidity natural condition. Measurements of turbidity are examined for what is in excess of the natural condition turbidity. Organisms, including fish, are generally adapted to the levels of turbidity naturally found in the specific water body they inhabit. While some turbidity is natural and not dangerous to fish (e.g., glacially influenced streams), studies in Alaska have demonstrated that when relatively low levels (0-5 nephelometric turbidity units, or NTU) of turbidity are present in naturally low turbidity streams, the unnatural increases can interfere with fishes' ability to find food and avoid predators. Algae, a primary food source for certain fish and macro-invertebrates, are affected because turbidity reduces its growth rate due to decreases in light availability for photosynthesis because of cloudy (turbid) water. Turbidity also increases water temperature because suspended particles absorb heat. Higher temperatures can result in lower dissolved oxygen in the water and can cause physical stress in fish and decreased egg survival rates. Excessive sediment found in highly turbid waters can clog the gills of fish and bury bottom dwelling creatures and fish eggs if it settles to the bottom.

Q6. How did DEC establish the natural level of turbidity?

A6. A turbidity natural condition site was sampled in a location upstream of motorized boating. The natural condition site was geologically comparable to the downstream test sites where motorized boating is common.

Q7. You say that the Little Susitna River is not meeting the water quality standards for recreational use. Does that mean the increased turbidity is affecting the fish? What about boating or other recreational activities?

A7. Fish are protected under the aquatic life standard, and the excess turbidity do not meet the persistent threshold to state that it is clearly impaired. However, independent studies in the lower Little Susitna River show that the excess turbidity may be affecting the fish. Turbidity decreases primary production (i.e., plants and zooplankton) by decreasing light penetration, reduces

macroinvertebrates that are a food source for fish, and negatively influences how juvenile salmonids move and feed in the river. A decline in primary production in the river has been linked to the increased turbidity levels. Decreases in primary productivity are considered a factor in declining fisheries. Since this is the situation, DEC has determined the aquatic life use is threatened.

Turbidity pollution can cause the river water to be cloudier than usual and hide hazards to navigation or obstacles in the river. Besides these dangers, excess turbidity is often considered aesthetically displeasing by giving the river a "muddy" appearance. These impacts affect boating recreation including fishing activities.

Q8. How do you know the likely primary cause is boats? Couldn't it be another source?

A8. Other possible turbidity sources were also investigated along with motorized boats. All other potential sources of turbidity were either too limited to be the primary cause of the turbidity increase or had a pattern that did not coincide with the timing of the other sources (i.e,. too spiky for storm events). The evidence points to motorized boats re-suspending fine sediments in the water column and river bottom through jet intakes and boat wakes. However, other possible sources should also be further explored during the development of options to reduce turbidity and improve water quality.

Q9. Is DEC trying to ban all boats on the Little Susitna River?

A9. No. The next step is to investigate solutions to the problem. For petroleum hydrocarbons, the new regulation by the Alaska Board of Fisheries may solve the problem. For turbidity, there will need to be stakeholder and agency dialogue on possible solutions.

Q10. Did DEC purposefully take samples at times when there would be higher motorized boat use of the river?

A10. The sampling plans were intentionally designed to look at times and locations where we expected to find higher concentrations of pollutants, but it also included sampling times and locations where we expected to find lower concentrations. This helped us determine the range and timing of contamination and helped us get a better understanding of the problems and possible solutions. Both turbidity and petroleum hydrocarbons utilize an averaging period for evaluating the results. This helps to take into account both busy times and less busy times.

Q11. The king salmon fishery is more restricted now than during the years of sampling. Why is it being included for turbidity?

A11. It is true that the king salmon fishery has been more restricted in recent years, which has reduced boat traffic in May and June. However, if future king salmon runs have less restrictions, motorized boat usage would most likely increase as well. DEC has to include the past water quality data for May and June and work with other agencies and the community to determine "fixes" that will still work when the fisheries recover and boating activity increases to previous levels.

Q12. Why doesn't DEC collect data now and show there is no impairment?

A12. DEC is planning to conduct water quality monitoring once new controls (i.e., boat motor restrictions) have been fully implemented and enforced. In the meantime, DEC, the Alaska Department of Natural Resources, and the Alaska Department of Fish and Game will continue working with the community to implement measures that are expected to help reduce levels of petroleum and turbidity in the river. If the water quality monitoring results show the river is meeting the petroleum hydrocarbon and/or turbidity allowed limits, then DEC will remove the impaired water status in a future Integrated Report.

Q13. This the first I've heard of these issues. Has DEC consulted with other agencies and people knowledgeable about the river?

A13. Yes. DEC has worked closely with the Departments of Fish and Game and Natural Resources for several years on the petroleum hydrocarbon and turbidity water quality issues. DEC has also given public presentations in the Matanuska-Susitna Borough on the water sampling results. For several years now, DEC has supported a Clean Boating campaign in southcentral Alaska, including posting clean boating signs at the Little Susitna Public Use Facility boat launch and handing out information and clean boating kits to people using the boat launch.

Q14. No one uses the river for drinking water or for swimming. The most contact with the water is while wading or pulling in a fish. Why are you calling it impaired?

A14. Waters in Alaska must meet the standards for all designated uses. When a waterbody does not meet a standard, DEC must report it and work to address the problem. All designated uses of waterbodies are important to maintain and restore.

Q15. Is the turbidity data you collected sufficient? Does it capture a range of conditions such as high and low water years?

A15. Yes. DEC believes the data collected is sufficient to compare to the water quality criteria. DEC collected over 10,000 data points, including an array of data at different river flow conditions. The analysis incorporates multiple years of data.