City and Borough of Sitka
Public Works Department
Water Division

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2017 WATERSHED CONTROL REPORT

This Watershed Control Report (WCR) addresses the requirements as follows:

A) IDENTIFY ANY SPECIAL CONCERNS ABOUT THE WATERSHED AND HOW THEY ARE BEING HANDLED

B) DESCRIBE ACTIVITIES IN THE WATERSHED THAT EFFECT WATER QUALITY

C) PROJECT WHAT ADVERSE ACTIVITIES ARE EXPECTED TO OCCUR IN THE FUTURE AND DESCRIBE HOW THE PUBLIC WATER SYSTEM EXPECTS TO ADDRESS THEM.

D) REPORT CERTIFICATION STATEMENT AND SIGNATURES

A) IDENTIFY ANY SPECIAL CONCERNS ABOUT THE WATERSHED AND HOW THEY ARE BEING HANDLED

RECREATION: During 2017 the Blue Lake access road was closed to the public. Historically, the primary human activity in the watershed is sightseeing from the vista point overlooking Blue Lake. The view of the lake and surrounding mountains is popular with both locals and visitors alike. Many people do not even leave their cars for this activity and in the past even fewer have walked down the steep switchback to the water's edge some 350 feet below. With the dam raised and the lake level 83 feet higher, access to the water's edge will be much easier. A new upper gate limits vehicular access to the water. Fishing, hunting, hiking and guided bike tours to the vista point are other activities for the more hearty that are expected to return in 2018. The USFS opened the road on May 14, 2018. Recreational activity will be monitored to evaluate the level of activity and the effect on Water Quality. To date, recreational activities have not resulted in "special concerns" for Blue Lake Water Quality.

With the access road closed to the public for all of 2017 there was very little human recreation in the watershed. Recreation was limited to a few people who have walked or biked to the lake to fish for trout from the bank or via kayak. Increased public awareness has reduced the amount of littering near the vista point and shore line. The City and Borough of Sitka (CBS) Water Department encourages public involvement in keeping the watershed clean and in the past has worked with various community groups for large scale litter clean up, although this has not been necessary for many years. There is no indication that fishing, hunting, hiking, or camping has increased. CBS will continue to monitor the use of the area by camping permit and inspection visits now that the road is open for the summer. There have been no indications that current or expected future levels of human activities in the Blue Lake watershed are having or will have any adverse effects on source water quality. At this time recreation poses a minimal contamination threat.

VANDALISM: There have been very few acts of vandalism in the past and none since the access was restricted in 2013. New signs were installed in December 2014. To date there have been no deliberate or accidental activities that have impacted the water intake or water quality. The original intake was near the access point on the shore line. The new intake structure/tunnel entrance is no longer near the public access to the shore line. The intake structure/tunnel entrance is located around a sheer cliff rock outcrop and closer to the face of the dam. CBS plans to maintain public access to the lake similar to what was previously available by use of a gate that has been installed at the crest of the road just inside the watershed. Water quality monitoring in 2017 continues to verify that we do not have any "special concerns" with the Blue Lake Watershed or its water quality due to vandalism.

DIOXIN: In 1996, the community of Sitka requested the Agency for Toxic Substances and Disease Registry (ATSDR) to determine if the Blue Lake water supply is safe for consumption. The ATSDR concluded: "... the potential exposure to dioxin in the water is not of public concern".

CRYPTOSPORIDIUM: Is a microscopic parasite that is regulated by the EPA. CBS voluntarily tested for this waterborne pathogen in our raw water source in 1998 and 1999. The results (zero and 1.6 oocysts/100L, respectively) were published in the annual Consumer Confidence Reports (CCR) for those years. These results are significantly lower than the average of 43 oocysts/100L reported in a national study (EPA Dec., 1993). CBS is complying with EPA's Cryptosporidium inactivation requirements. In 2015 CBS completed construction of an ultraviolet light (UV) disinfection system which was added to our treatment processes to inactivate Cryptosporidium, and to add a second disinfection barrier to comply with this rule. The UV facility started up for testing in May 2015 and has been running continuously since. DEC is in the process of reviewing the final drawings and will likely issue a Final Approval To Operate upon completion of their review.

B) ACTIVITIES IN THE WATERSHED THAT EFFECT WATER QUALITY

LANDSLIDES AND AVALANCHES: Both occur and may affect water quality. Slides and avalanches are naturally occurring and not affected by the limited human activity in the watershed. Slide control is considered unfeasible due to the steepness of the terrain and therefore, not recommended. Sitka has experienced increases in turbidity during significant rain events. These higher than normal turbidity readings could not be specifically related to a known slide or slides. Slides have not been observed during inspections of the watershed. It is possible for underwater slides to occur, especially since the lake elevation increased with the dam raising. CBS continues to use 2 additional Hach 1720E turbidimeters to monitor the water quality of the lake. One is installed off the penstock at the Blue Lake Campground hydro which serves as an advanced warning of turbidity on the way to Blue Lake Water Plant. The other turbidimeter was installed near the end of the transmission main at the CCF (Jarvis Street Corrosion Control Facility). The Water Division will continue to use these for routine monitoring.

DEBRIS REMOVAL: In 1995, the CBS Electrical Department, in coordination with the Water Department, began an annual debris removal project in the intake area. Clean ups typically occurred onshore only and occurred when the lake level subsided enough to leave the debris high and dry. The trend of decreasing amounts of debris coupled with the structured annual cleanup resulted in reduced potential water quality impacts from the removal efforts. This routine practice reduced the effort required to perform the clean up as well as prevented water quality degradation resulting from accumulating debris. These annual preventative maintenance projects have shown only slight effects in some years on turbidity and no noticeable effect on overall water quality.

Since Blue Lake Expansion there has been surprisingly little debris accumulation near the dam and intake area. When debris accumulates near the dam and intake area, the debris will be collected and removed from the lake using the concrete utility service ramp. No adverse water quality impacts are anticipated from this debris management.

As expected, decay of organic matter, such as alder and salmon berry leaves, hemlock and spruce needles is gradually increasing the total organic carbon (TOC) and regulated disinfection by-products (TTHM & HAA5) in our drinking

water. These parameters will continue to be closely monitored. If increases in TOC and related disinfection by-products continue to occur, they are expected to gradually decrease back to the previous low levels once lake stabilization occurs. This gradual rise in TOC followed by a return to previous levels has been reported for other reservoirs where the level was raised.

An increased concentration of floating hemlock needles were visible near the dam as the lake filled to a higher level. The amount of needles seen and captured has decreased since the original filling of the lake after the dam was raised. A small amount of plant matter is expected as the lake fills to new levels. The new intake has an air-bubble curtain in front of it to form a barrier for small debris.

C. PROJECT WHAT ADVERSE ACTIVITIES ARE EXPECTED TO OCCUR IN THE FUTURE AND DESCRIBE HOW THE PUBLIC WATER SYSTEM WILL ADDRESS THEM

HUMAN ACTIVITIES: The Forest Plan for the Tongass National Forest became final in May 1997. This plan changed the federal land use designation of Blue Lake and Indian River watersheds to: "MUNICIPAL WATERSHEDS" which emphasizes protection of municipal water supplies and flows by assuring that watershed planning, maintenance, and activities comply with State of Alaska Drinking Water Regulations and Water Quality Standards for water supply. The Forest Plan was reviewed in 2007; no changes affected the designated watershed areas.

Management prescriptions include the provision for the Forest Service to consult, coordinate, and seek concurrent approval from City and Borough of Sitka on various activities, and directs development of a written agreement consistent with 18 AAC 80.520 (c)(3). The "Municipal Watershed" designation itself provides commitment by the landowner to control human activities that may have an adverse impact on the microbiological quality of the water supply, which 18 AAC 80.520 (c) (3) seeks. Since the initial project construction, no land development had taken place within the watershed until the 2013/14 construction activity for the dam expansion. No additional land development is expected after completion of the dam construction. New fencing was installed to protect the public from the steep slopes around the areas made more accessible by the dam project which will limit access into the watershed.

Raising the elevation of the dam and filling the lake may affect the drinking water quality. The project has given water quality a very high priority as a special water quality monitoring plan was established. Of particular interest is the flooding of 430 additional acres as the lake fills. The new intake tunneled into the rock face near the dam was constructed on a sheer rock face away from potential shoreline contamination to help maintain/improve water quality. The new intake draws water from approximately the same depth below the lake's surface as the original intake to maintain the same relationship with the lake's thermocline.

There are no projected improvements to enhance recreation inside the Blue Lake Watershed. Overnight camping continues to be monitored by permit and the CBS Watershed Ordinance (No. 92-1091) prohibits any act that would degrade water quality either directly or indirectly. Overnight camping seldom occurs. Permits provide information to the campers about the watershed and the watershed rules. Campers register with the police department (24 hour/day); and a copy of the permit is sent to the Water Department Office. There were no camping permits issued in 2017. The CBS Electrical Department inspects the Blue Lake access road and the penstock closure facility on a regular basis, coordinating with the Water Department as it relates to watershed activities. The CBS Water Division will closely monitor water quality for impacts due to the new lake level.

FUTURE HUMAN ACTIVITIES: Public interest in drinking water continues to increase throughout the country and Sitka is no exception. CBS's water operators continue to conduct facility tours which include watershed protection information. The citizens of Sitka have become more aware of the need to protect their drinking water source. Each year has required less effort to clean up after the public.

The Sitka Police Department conducts inspections when the Blue Lake access road is open to the public. Their presence at the overlook point is a deterrent to vandalism and improper use of the area. The CBS, in conjunction with the USFS could close the road to eliminate vehicular traffic into the Blue Lake Watershed if vandalism or water quality issues arise. The USFS typically prohibits access to motorized vehicles from the first significant snow fall until after all snow has melted off the road the following year.

The Electric and Water Departments have designed an access gate to maintain access restrictions similar to those naturally provided by the previous steep switchback road. It is unknown how the higher lake elevation will affect human activity at the lake. The CBS Water Division will monitor human activity and its effect on water quality and report in future years.

D. REPORT CERTIFICATION

The USFS and CBS are the owners of the Watershed. For water system and water quality related activities the operator is CBS.

I hereby certify the contents of this report to be true and correct to the best of my knowledge.

Signature: Shilo Williams Date: June 28, 2018

Shilo Williams, CBS Environmental Superintendent