George Wuerch, Mayor

Fecal Coliform at Anchorage Swimming Beaches

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MUNICIPALITY OF ANCHORAGE
WATERSHED MANAGEMENT PROGRAM

December 2002

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Office of Planning, Development & Public Works

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WATERSHED MANAGEMENT

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1.0 Introduction

The Municipality of Anchorage (MOA) Watershed Management Services (WMS) is required to monitor fecal coliform bacteria levels during the summer at the MOA Sports and Recreation Section-maintained swimming beaches to comply with the U. S. Environmental Protection Agency (EPA) National Pollution Discharge Elimination System (NPDES) Permit (No. AKS05255-8). To fulfill this requirement, water samples are collected at Goose Lake and Jewel Lake and analyzed for fecal coliform. The sampling results are communicated to the MOA Department of Health and Human Services and Sports and Recreation.

While fecal coliform itself is not harmful, it is used as an indicator for the presence of other harmful pathogens that can be present in warm-blooded animals. Alaska water quality standards state that fecal coliform levels may not exceed 20 colonies per 100 milliliter (col / 100 ml) for drinking water and 100 colonies per 100 ml for recreational contact (ADEC 1999). The purpose of monitoring fecal coliform is to ensure compliance with state and federal standards for bacteria.

2.0 Methods

Samples were collected and analyzed for fecal coliform levels once a month from May to September at Goose and Jewel Lake swimming beaches. A trained scientist sampled each lake and a certified laboratory analyzed the samples using the fecal coliform membrane filter method procedure (9222 D). See the 2000 Swimming Beach Monitoring Report for additional sampling methods (HDR 2001).

3.0 Results and Discussion

Fecal coliform sampling and laboratory testing occurred once a month at the swimming beaches between May and September. Table 1 shows the results of the sampling efforts.

Table 1. 2002 MOA Swimming Beach Fecal Coliform Monitoring Laboratory Data.

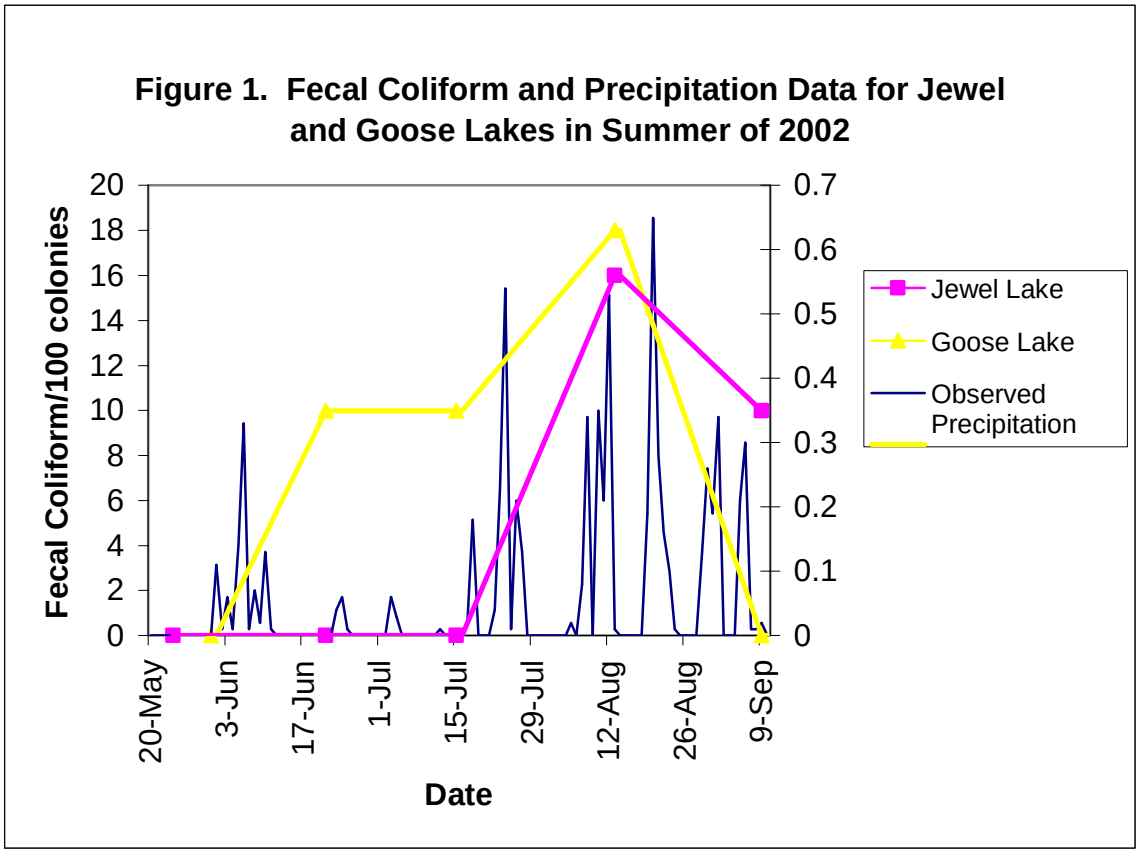
Date	Fecal Coliform/100 ml	
	Jewel Lake	Goose Lake
31-May	0	0
21-Jun	0	10
15-Jul	0	10
13-Aug	16	18
9-Sep	10	0

Laboratory results show that, with the exception of August, Jewel Lake had non-detectable levels of fecal coliform throughout the summer.

Goose Lake fecal coliform levels were lower this year, between 10 and 80 colonies in 100 ml water sample. Fecal coliform was detected at Goose Lake all sampling events except for May, with the highest recorded level (18 colonies / 100 ml) observed in mid-August.

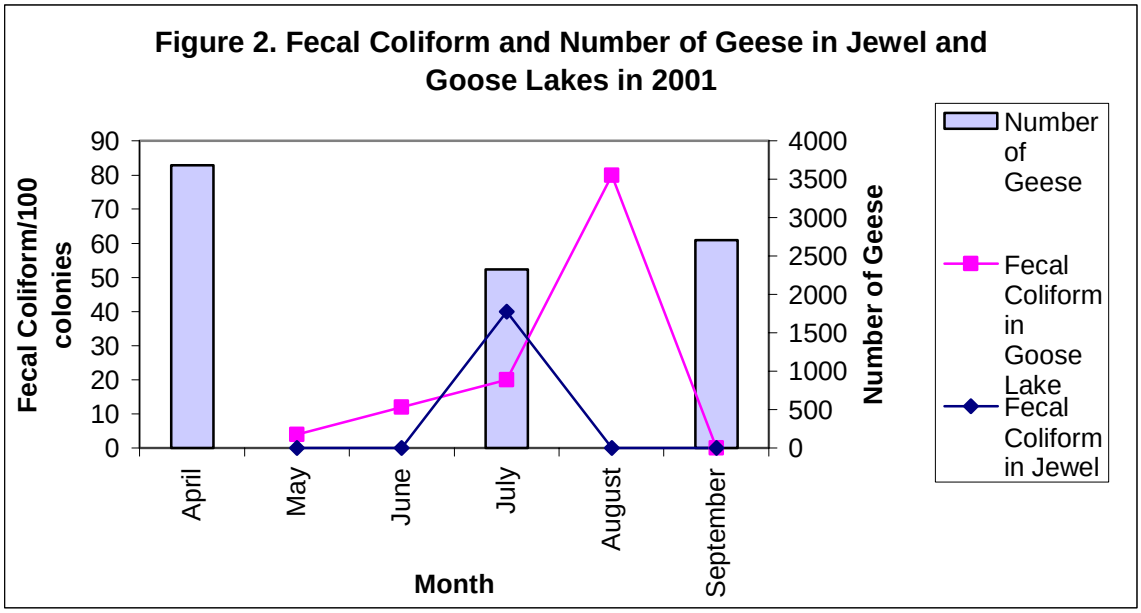
Although fecal coliform levels were lower in the summer of 2002 than in previous years, the trend seems to be consistent with the historical data in that the highest levels of fecal coliform occur in July and August.

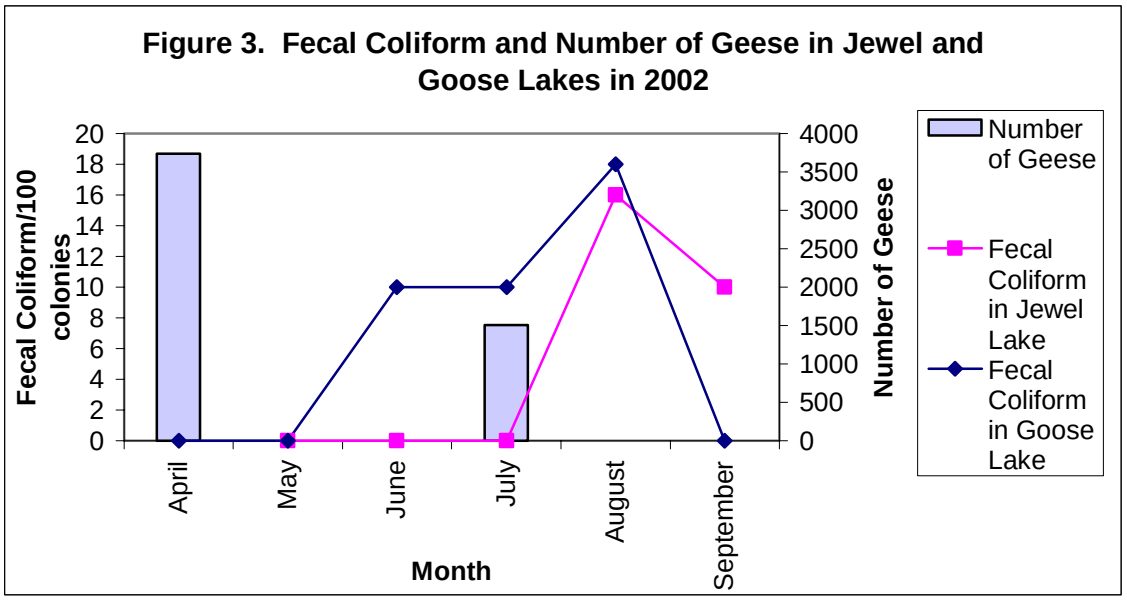
Several factors could be contributing to the deposition and transportation of the fecal coliform into the lakes. Figure 1 is a graph of fecal coliform levels in the summer of 2002 compared to amount of rainfall. The potential for geese as a source of fecal coliform and precipitation (runoff) as a mode of transportation are analyzed below.



It appears that both rainfall and fecal coliform levels in the lakes were highest in the month of August, thus the higher levels of fecal coliform could potentially be a result of more animal waste carried with the runoff into the lakes. However, more data points would be required to conduct conclusive statistical tests that predict relationship patterns between fecal coliform and precipitation.

Fecal coliform was also graphed with number of geese estimated in the Anchorage area over the summer of 2001 (Figure 2) and 2002 (Figure 3) (unpublished data courtesy of Alaska Department of Fish and Game, Division of Wildlife Conservation, Wildlife Program).





These limited data do not suggest there is a close connection between fecal coliform and the total number of geese observed in the Anchorage area during any given month. However the data presented do not account for geese behavior patterns throughout the season or their preferences for certain locations or waterbody types. The number of data points is low and statistical analyses would not be effective.

4.0 Conclusion

Laboratory results suggest fecal coliform levels in Jewel Lake and Goose Lake were well below Alaska water quality standards for drinking water and primary contact water recreation during the summer of 2002. As shown in this report, fecal coliform may increase with significant rain events later in the summer. Consideration may be given to increasing sampling frequency to twice a month for June, July, and August, as fecal coliform counts have historically increased during those months.

5.0 References

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U. S. Environmental Protection Agency's (EPA) National Pollution Discharge Elimination System (NPDES) Permit No. AKS05255-8.

6.0 Project Contributors

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