

Introduction

Government Peak is the site of a current and proposed ski area in Hatcher Pass, near Palmer, Alaska. Before development proceeds, we would like to know the characteristics of the creeks in the watershed. Since the east face of Govt. Peak is being considered for a downhill ski area, and the south face for nordic skiing, we chose to study a creek on both faces to see if the different mountain aspects influence the inorganic qualities of the creeks. We studied Government Creek on the south face and an unnamed creek at mile 11 of the Willow-Fishhook Road on the east face. As development proceeds, it is our hope that the creeks will continue to be monitored as a means to protect their health.

Materials and methods

We used Hach portable sampling kits to measure turbidity, phosphate level, hardness, nitrates, dissolved oxygen, alkalinity, iron, chlorinity and ammonia. We measured temperature, pH, flow rate and discharge as well. Both creeks were sampled within two weeks in October and at about the same time of day.

Fig. 1: Map of the Hatcher Pass Ski Area (proposed)

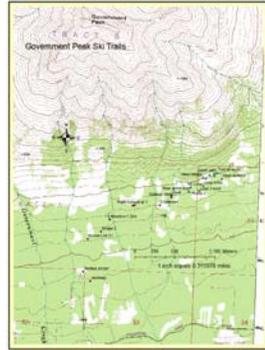
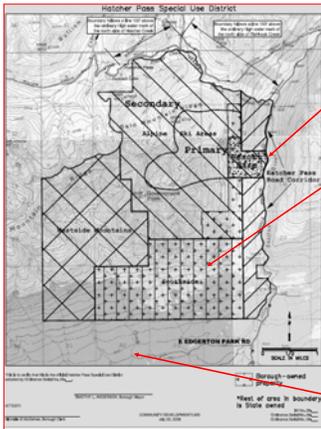


Fig. 2 Nordic ski area on south face



Government Creek

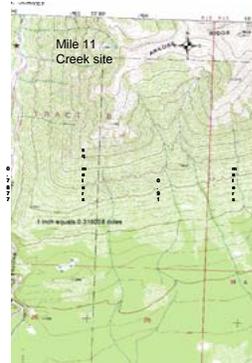


Fig. 3 Mile 11 creek site



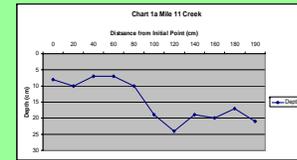
Mile 11 creek

Results

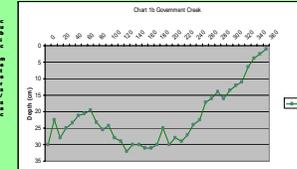
Chart 1a presents data for mile 11 creek.

Chart 1b presents data for Government Creek.

Both creeks have similar characteristics, making it unlikely that aspect has an effect on them. These data values provide a baseline from which to assess any changes that may be due to development in the area.



The Mile 11 creek flow rate is .5 m/s, area is .303 sq. meters, discharge is .001503722 cubic meters per second



Government Creek flow rate is .91m/s, area is 0.7877 sq. meters, discharge is .716807 cubic meters per second

Table 1 shows data from each test at mile 11 creek and Government Creek.

	Government Creek	Mile 11 creek
Date	10/24/2006	10/20/2006
Time	2:54pm	2:30pm
Temperature	2C	na
pH	7.7	8.4
Turbidity	0	0
Dissolved Oxygen	15mg/l	13mg/l
Iron	0	0
Nitrate	0	2
Phosphate	1ppm	1
Alkalinity	80	60
Hardness	85.5 mg/L	68.4mg/l
Free chlorine	0	0
Total Chlorine	0	0
Flow rate estimate	1.15m/s	2.02m/s

Conclusions

Our results show that both creeks have similar physical characteristics. Government Creek is a larger creek, with greater flow, but it appears that the aspect of the creek does not affect its chemical and physical characteristics. Both creeks should continue to have similar traits. Therefore, if development occurs, both creeks should remain similar. Since the mile 11 creek is at the downhill resort base and government creek is in a residential area, any deviation from baseline results may be suspected to be due to commercial development.

List of References

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- Mitchell, Mark K., Stapp, William B., Field Manual for Water Quality Monitoring. Thomson-Shore, Inc. Dexter, Michigan, 1996

For further information

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