

United States
Department of
Agriculture

Forest
Service

Boise Adjudication Team,
Recreation and Lands
Intermountain Region

380 ParkCenter, Suite 330
Boise, ID 83706

Reply to: 2540

September 23, 1999

Allen Merritt
Idaho Department of Water Resources
1341 Fillmore Street, suite 200
Twin Falls, ID 83301-3380

RECEIVED

SEP 24 1999

Department of Water Resources
Southern Region

Dear Allen:

We appreciate the opportunity to provide more information regarding the consumptive and/or non-consumptive nature of our recent application for water permit No. 45-07745. This application is for commercial use primarily for the purpose of snowmaking at Pomerelle Ski Area.

The Forest Service has approved development of some new facilities and activities at Pomerelle. One activity approved by the Forest Service is snowmaking with no increase in existing surface water diversions. The construction of 3 small reservoirs to collect and store surface runoff when the snow melts in the spring is an activity approved by the Forest Service. Water thus stored would be used in the approved snowmaking operation. Snowmaking would occur approximately 16 hours per day for 55 days between October 15 and December 31 each year. This information is reflected in application No. 45-07745.

Brockway Engineering has provided considerable information with regard to development at Pomerelle. Their calculations with respect to snowmaking indicate a total of 19.4 acre-feet per season will be required. With a reasonable estimate of consumptive use at 10% of the total volume, 1.94 acre-feet will be consumed. (This consumptive use estimate of 10% is the same estimated consumptive use identified in similar snowmaking proposals at Bogus Basin and Sun Valley. These applications were determined by the Department to be non-consumptive and were approved.) The balance, 17.5 acre-feet will be on the slopes in the form of man-made or artificial snow. All the artificial snow will be below the reservoirs and contribute to spring runoff. The increased mass of snow on the ski slopes combined with artificial snow being more dense than natural snow results in more snow melting over an extended period of time in the Spring. The result is an estimated net increase of 7.01 acre-feet of runoff extending later into the summer season. Selected parts of the Brockway report are attached. The complete report and calculations are available upon request.

This information leads us to conclude and suggest to you that snowmaking at Pomerelle as approved by the Forest Service and the associated water use as applied for in application No. 45-07745 is non-consumptive. Although water is stored in the reservoirs and other water is diverted through the existing water delivery system, it is actually being redistributed on the mountainside

with a net gain of water available during any year. It needs to be emphasized that the increased water flow that can be directly attributed to snowmaking will be during the summer. This would seem to be a direct benefit to the public and downstream irrigators.

Mitigation that could be offered at this time is difficult to determine given that snowmaking is calculated to actually increase water production and the fact that potential injury to other parties is speculative at this time. However, we would be anxious to mitigate perceived consumptive use and injury as determined by the Department as part of this application process.

We would hope to work with the Department and provide such technical information and restructure or amend the application as necessary to obtain approval and a permit to develop water in accordance with provision numbers 6, 9a and 9b of the Amended Moratorium Order for the Eastern Snake River Plain Area And The Boise River Drainage Area. We believe this application for a water use permit is consistent with the Moratorium. It actually results in a net gain of water that will be available for water uses downstream off the National Forest. It contributes to groundwater recharge. It eases the very conditions that necessitated the moratorium in the first place.

We believe this proposed use of water to be non-consumptive; that it protects and contributes to the public interest with respect to water use, water conservation and public recreation; and that the only effects it will have on existing water rights will be positive such that mitigation would not be necessary.

We request the processing and publication of this application be expedited. If you have any question about this matter, please contact Steve Spencer at (208) 387-0835.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael E. Collette", written in a cursive style.

MICHAEL E. COLLETTE
Team Leader

Attachment

cc: Roger Ling

Item 3: Effect on Howell Creek Watershed

You also requested an analysis of the projected water usage for snowmaking, and the potential impact on the Howell Creek watershed. The proposal involves artificial creation of snow using two standard 60-gpm guns. The process will occur over a 75-day period from October 15 through December 31 each year, with approximately 55 days of actual snowmaking occurring within this period for 16 hours per day.

Calculations showing the estimated total water requirement are provided with this letter. A total of 19.4 acre-feet per season will be required for snowmaking. It is proposed to supply this water through a combination of withdrawal from Howell Creek via the existing pump during the snowmaking period, and from on-hill storage filled chiefly from snowmelt in the Spring. An analysis of the timing and magnitude of water uses and the effects on Howell Creek was performed assuming a maximum of 27 gpm can be withdrawn from the creek. 27 gpm withdrawn for 75 days provides 8.9 acre-feet, or about 46% of the total water requirement. The remaining 10.5 ac-ft will be supplied from on-hill storage.

To document runoff and base flow patterns in Howell Creek, gauging stations were established at Bennett Road and at Howell Canyon Road (see attached map). Current meter measurements at varying flow rates were used to develop rating curves. Staff gauges at the rated sections have been read at least twice per week since May 1997. The attached hydrographs show the discharge at the two locations for May 1997 through October 1998.

During the snowmaking period, the discharge in Howell Creek decreases to a nearly constant level of 2.0 cfs at Bennett Road and 2.4 cfs at Howell Creek Road. The total average volumetric discharge of the creek during this period is 297.5 and 357.5 ac-ft, respectively. The total water withdrawn from the creek for snowmaking is estimated to be 2.5 to 3.0% of the creek discharge during the snowmaking period.

Snowmaking water is applied to the hill, and is stored on the hill along with the natural snowpack. During the snowmaking process, some of the water is consumptively used. Based on previous studies by Brockway Engineering for the Sun Valley Company and for Bogus Basin, a reasonable average estimate of consumptive use is 10% of the total volume. Thus, of the 19.4 acre-feet used for snowmaking, about 1.94 acre-feet will be consumed, leaving 17.5 acre-feet on the hill to contribute to runoff. The attached calculations show that the net effect on Spring surface runoff will be an increase of 7.0 acre-feet. The timing of the runoff will also be altered slightly, since artificial snow is generally denser than natural snow and melts more slowly. The runoff hydrograph will therefore be slightly extended.

Item 4: Effect on Existing Water Rights

As shown, the net annual effect of the proposed snowmaking on the Howell Creek drainage will be a decrease of 1.94 acre-feet. This is a very small percentage of the annual basin runoff, and is about 2.5 to 3.0% of the creek discharge during the proposed snowmaking period. If any overflow back to the creek occurs, the net decrease in creek discharge will be less.

Irrigation rights do exist on Howell Creek south of Albion. These rights will not be affected by the proposed snowmaking, and may in fact benefit from the augmented Spring runoff. The only other known water right on Howell Creek with a period of use corresponding to the proposed snowmaking period is 45-07642, a license for hydropower use. However, condition No. 7 on this license explicitly states that the right shall be junior and subordinate to all non-hydropower rights, whatever the priority and whenever they were initiated.

Please do not hesitate to call if you have any questions.

Sincerely,

Charles G. Brockway

enc

cc: Woody Anderson

WATER BALANCE ANALYSIS FOR PROPOSED SNOWMAKING AT THE POMERELLE SKI AREA

Brockway Engineering, PLLC 3/1/99

27 gpm max pumping from Howell Creek during snowmaking period
Assume no spill back to creek during snowmaking (all water stored on hill)
New earthen storage reservoir filled with Spring snowmelt

Snowmaking period	10/15 - 12/31
Total days in period	75
No. of days of snowmaking	55
Number of snowmaking guns	2
Output of guns	60 gpm
Operating hours / day	16 hrs/day
Volume of water required for snowmaking	19.4 acre-feet
Average daily demand of guns	115200 gpd
Average flow rate to guns	80 gpm

During snowmaking period:

	Bennet Rd	Howell Rd	
Howell Creek average flow	2.0	2.4 cfs	
Total creek volumetric discharge	297.5	357.0 acre-feet	
Pumping rate	27	27 gpm or	0.06 cfs
Volume pumped from creek for snowmaking	8.9	8.9 acre-feet	
Percent of total discharge	3.0%	2.5%	
Estimated consumptive use percentage	10.0%		
Total annual consumptive use	1.94	ac-ft	

Howell Creek average discharge volumes:

	Bennet Rd	Howell Rd
Estimated average annual surface runoff	2050	3930 ac-ft (measured at rated section)
Estimated average base flow discharge	830	1000 ac-ft (210 days)
Estimated average annual discharge	2880	4760 ac-ft

SUMMARY

Total applied to hill 10/15 - 12/31	19.45 ac-ft
Taken from creek during 10/15 - 12/31	8.95 ac-ft (27 gpm for 75 days)
Spring runoff stored	10.50 ac-ft (total required minus creek pumpage)
Lost to consumptive use	1.94 ac-ft
Volume which melts and contributes to runoff	17.50 ac-ft
NET EFFECT ON SPRING / SUMMER RUNOFF	7.01 ac-ft
NET EFFECT ON CREEK FROM 10/15 TO 12/31	-8.95 ac-ft
NET EFFECT ON ANNUAL BASIS	-1.94 ac-ft

HOWELL CREEK DISCHARGE 1997 AND 1998

Channel sections rated 5/97 - 9/97 by Brockway Engineering

