

Technical Memorandum

Subject: Use of Wyoming's Contract Storage Water in Fontenelle Reservoir

This memorandum addresses how Wyoming's use of its contract water in Fontenelle Reservoir could affect the state's remaining compact entitlements under the Colorado River Compacts. The Fontenelle Reservoir storage water right (permit no. 6629R), held by the Bureau of Reclamation (Reclamation), has a priority date of January 22, 1962 to store 345,397 acre-feet of water. As prescribed by the original storage right, the Reservoir was originally divided into three separate pools: a 190,250 acre-feet active pool, a 154,584 acre-feet inactive pool, and a 563 acre-feet dead pool. Authorized uses of Fontenelle Reservoir under the water right include: irrigation, domestic, industrial, municipal, stock watering, fish and wildlife and recreation as primary purposes, with power generation specified as the only secondary purpose.

The 154,584 acre-feet inactive pool was originally defined by the elevation of the proposed east and west canal outlet structures. The inactive pool has historically been used only for power production, recreation and fish and wildlife purposes. The elevation of the active pool, outlet structures and canals was established to convey water to irrigate the Seedskafee Project. Since the canals and other irrigation components were never constructed, Reclamation filed an application with the State Engineer in 1973 for an enlarged active capacity of 344,844 acre-feet, which includes the original active capacity of 190,250 acre-feet and previously inactive capacity of 154,584 acre-feet. The State Engineer granted Reclamation's request, documented by permit no. 9502R, which has a priority date of December 7, 1973. Therefore, all but the reservoir's 563 acre-feet dead pool is stored as active capacity under two water rights: 1) Permit No. 6629R with a priority date of January 22, 1962 for the original 190,250 acre-feet active pool and 2) Permit No. 9502R with a priority of December 7, 1973 for the 154,584 acre-feet pool.

Through 1962 and 1974 contracts with the United States, the State of Wyoming has the right to perpetually market 120,000 acre-feet of the original active capacity of 190,250 acre-feet. The 1974 contract provides the state the first right of refusal to purchase water from the remaining capacity of 70,250 acre-feet and the reactivated capacity of 154,584 acre-feet. In order to acquire water from the reactivated capacity, Wyoming would likely need to invest in the placement of rip-rap on the upstream slope of the dam, between the bottom of the original active capacity and the toe of the dam. Under current operations, this portion of the dam is not subjected to wave action.

The State of Wyoming presently has four active contracts for Fontenelle storage water: PacifiCorp has contracted for up to 35,000 acre-feet to be used as cooling water at their Jim Bridger Power Plant; FS Industries, has contracted for up to 10,000 acre-feet of water for producing chemical fertilizer at their Rock Springs facilities; Church and Dwight has contracted for up to 1,250 acre-feet of water for their "Arm and Hammer Baking Soda" production facility near Green River; and Exxon has contracted for up to 300 acre-feet for domestic purposes and for use in the production of natural gas at their Shute Creek Plant. These contracts could result in the ultimate use of 46,550 acre-feet per year of Fontenelle storage water. While these

contractors are annually making “readiness-to-serve” payments, there has never been a request for water delivery for use.

The River Basin Planning process was established, in part, to determine how much water is used within Wyoming and how much water remains for future development and use. As part of Wyoming’s River Basin planning process, a Green River Basin Plan was completed in 2001 and an update was completed in late 2010. The plans show an increase in water use within the basin over the time periods of study, the first plan estimated growth to 2030 and the update extended the growth projections to 2055. Table 1 shows the projected growth in demand for Green River Basin water from the updated plan. Three growth scenarios were used, Low, Moderate and High. The three scenarios were used to provide a range for potential future water use within the basin without exceeding our compact allocation.

Table 1. Projected Use of Wyoming's Upper Colorado River Compact Allocation

Surface Water	Projected Growth Scenarios			
	Acre-Feet per Year			
	Current Condition	2010 - 50 Yr Projection		
	Low	Moderate	High	
Wyoming's Share of the Upper Colorado River Water	847,000	847,000	847,000	847,000
Estimated Depletions	598,000	608,295	680,076	788,675
Remaining Compact Allocation	249,000	238,705	166,924	58,325

Estimates of Wyoming’s Share of the Upper Colorado River Water are provided by the State Engineer’s Office

In the high growth scenario, the majority of Wyoming’s share of the Upper Colorado River will be used. The 2010 plan shows there would only be 58,325 acre-feet per year of Wyoming’s share remaining. As of 2010, the 120,000 acre feet of Fontenelle water has been “developed” but not “used.” Therefore, the 120,000 acre-feet of water was not included in Table 1 “Estimated Depletions” under the current condition or growth scenarios.

The availability of the 120,000 acre feet must be considered in future water planning because its ultimate use could reduce the amount of water available for other future projects and uses. The updated plan indicates that as the basin grows there will be an increased demand for industrial development water. Industrial water use would increase more than other water uses by percentage. For example, agricultural water use is the largest water use in the basin but it is not expected to grow proportionally as much as industrial water use. Therefore, the most likely scenario for the use of the Fontenelle storage water is to meet future industrial demands.

Table 2 shows the industrial water use under the three growth scenarios presented in the 2010 plan.

Table 2. Green River Basin Industrial Water Use Projections

Growth Scenario	Consumptive Use Acre-Feet per Year		
	Current	2055	Difference
Low Growth			
Electric Power	39,700	50,000	10,300
Soda Ash	16,400	30,800	14,400
Other	700	2,500	1,800
Total	56,800	83,300	26,500
Moderate Growth			
Electric Power	39,700	65,000	25,300
Soda Ash	16,400	48,500	32,100
Other	700	10,200	9,500
Total	56,800	123,700	66,900
High Growth			
Electric Power	39,700	115,000	75,300
Soda Ash	16,400	75,200	58,800
Other	700	16,200	15,500
Total	56,800	206,400	149,600

The following exercise is offered to determine the effects of the use of the Fontenelle water on Wyoming’s remaining compact allocation provided in Table 1. The following table (Table 3) depicts the amount of Fontenelle water that would be left if all of the increases in industrial consumptive use under the three growth scenarios depicted in Table 2 come from Wyoming’s contracted share of water in Fontenelle Reservoir for all growth.

Table 3. Projected Use of Fontenelle Water, Acre-Feet per Year

	Current	Low Growth	Moderate Growth	High Growth
Fontenelle Storage Water	120,000	120,000	120,000	120,000
Projected Use	0	26,500	66,900	120,000
Amount Remaining	120,000	93,500	53,100	0

The “Amount Remaining,” depicted in Table 3 would be considered “developed” but “unused.” In order to determine the effects on Wyoming’s remaining compact allocation if the remaining Fontenelle water is used, Table 4 deducts the “Amount Remaining” in Table 3 from the “Remaining Compact Allocation” from Table 1.

Table 4. Remaining Compact Allocation Available for Development Acre Feet per Year

	Current	Low Growth	Moderate Growth	High Growth
Remaining Compact Allocation	249,000	238,705	166,924	58,325
Fontenelle Water Remaining	120,000	93,500	53,100	0
Available for Development	129,000	145,205	113,824	58,325

“Available for Development” provided in Table 4 is an indication of Wyoming’s remaining compact allocation that would be available for development even if all of the 120,000 acre feet of storage water in Fontenelle Reservoir is used. Further, if Wyoming exercised its right of first refusal for the additional purchase of 224,834 acre feet of capacity in Fontenelle Reservoir, our remaining compact allocation would be fully depleted under all growth scenarios.

This exercise is not suggesting that Wyoming should spend its remaining compact allocation for industrial purposes through the use of Fontenelle water. Wyoming also has goals to provide additional municipal and irrigation water in the basin. However, through its investments in Fontenelle Reservoir, Wyoming has “developed” its remaining compact allocation and it should not be considered by others for downstream purposes.

For more information see Wyoming Green River Basin Plan II online at <http://waterplan.state.wy.us/plan/green/green-plan.html>