

MEMORANDUM

Date: November 15, 2010
To: File
From: Nick Van Dyke
Re: Approved Transfer 76375, City of Rexburg, ESPA modeling follow up

This memo addresses a new point of diversion that was authorized by Transfer 76375. The transfer allowed for the drilling of 3 new wells for the City of Rexburg's municipal system and also combined 6 existing wells under rights 22-7074, 22-7175, 22-7176, 22-7617, and 22-7754 so that all 5 rights listed the total 9 points of diversion. There were concerns regarding one of the new wells, referred to as proposed well 2, located in the SENE, Sec 35, T06N, R39E B.M. Copied below is the Injury to Other Water Rights section of the transfer review memo that explains the concern.

Injury to Other Water Rights: A non-standard ESPA modeling analysis method had to be used for this transfer because the model was not designed for how a municipal system operates. A centroid approach was suggested and given the green light by the Department's Hydrology Section. The centroids were weighted on diversion amounts from the existing and proposed wells. Using this technique, the centroids ended up in adjacent cells – rendering the need for modeling null. However a model run was done by Rocky Mtn and results showed the triggers for mitigation were not met. Two limiting conditions were developed to limit the "northern wells" (existing wells under 22-7754 and 22-7074 and proposed well 1) to 4.34 cfs and the "southern wells" (existing wells under 22-7617, 22-7175, 22-7176, and proposed wells 2 and 3) to 12.49 cfs (existing diversion rates). This was done to keep diversions within adjacent cells post-transfer. See attached diagram for illustration.

A third scenario needed to be addressed where water could be moved across non-adjacent cells given certain circumstances: If proposed well 3 does not produce very well, proposed well 2 does, and a certain amount of water pumped from existing wells under rights 22-7175 and 22-7176, or what was anticipated to come out of proposed well 3 is then shifted over to proposed well 2 – the move would be across non-adjacent cells. In response Rocky Mtn modeled a worst-case scenario where the full design pumping capability of proposed well 2 would be moved across non-adjacent cells. The result showed a maximum change ratio of 9% in the Ashton to Rexburg reach. All other reaches were well below 10%. No mitigation required. The model run is attached.

However there was concern proposed well 2 could end up producing more than 6.68 cfs (1612 af per trimester) if design capacity changed. I asked Rocky Mtn to model what would be the highest amount of diversion proposed well 2 could divert before triggering mitigation. In response the designed capacity of 6.68 cfs/1612 af per trimester was submitted. Though not the ceiling amount for what could be shifted over to proposed well 2, a condition limiting proposed well 2 to 6.68 cfs will be on the transfer.

The 6.68 cfs limit is not the highest amount that could conceivably be pumped from proposed well 2 before triggering mitigation but was used as the limit in transfer 76375 because that is what the applicant's consultant submitted. It is possible proposed well 2 ends up producing more than 6.68 cfs. If at a later time an increase in the rate limit for proposed well 2 is requested, modeling should include the 6.68 cfs with whatever amount is additionally requested.