

DATE: June 23, 2011
TO: Mr. Tom Hellen, P.E.
City of Hailey
115 Main Street South, Suite H
Hailey, ID 83333
FROM: Cathy Cooper, P.E.
Roxanne Brown, Water Rights Specialist
RE: DRAFT - Water issues associated with the proposed Quigley Canyon annexation
FILE: 330.0050

Introduction

Quigley Green Owners, LLC (Developer) has provided the City of Hailey (City) with a draft *Annexation and Development Agreement* (dated March 28, 2011) for the City's consideration. The agreement proposes annexation of Quigley Canyon Ranch to the City. The City requested that SPF Water Engineering, LLC (SPF) review the draft agreement and provide analysis of water-supply issues related to the proposed Quigley Canyon Ranch annexation. SPF previously reviewed a 2008 annexation proposal by the Developer (see SPF memorandum dated December 31, 2008). Our review of the 2011 annexation proposal included the following tasks:

1. Review the proposal with regards to the development's requirements from Hailey's municipal water system.
2. Discuss a separate pressurized irrigation system.
3. Review water rights appurtenant to the Quigley Canyon Ranch property.

Conclusions and recommendations from this review are summarized below.

Summary and Recommendations

The City of Hailey Municipal water system can serve the proposed development. Table 1 lists new facilities that would be required to serve the proposed development. Table 1 also provides budgetary cost estimates for these facilities, with the expected cost sharing based on the development agreement. It is very important to note that these costs are preliminary and based on our understanding of the proposed development and a quick assessment of what facilities may be required. It does not appear from reading the development agreement that a separate irrigation system for the development would be provided by the developer. We specifically recommend in Table 1 that the City determine if a separate irrigation system is desired, and, if so, open discussions with the developer on cost sharing for the proposed system. The annexation and development agreement proposes offsetting City costs with the value of land and water rights to be conveyed by the developer to the City. We have included these line items in Table 1, and recommend that these values be determined by a qualified appraiser. Furthermore, costs outside of water (such as schools, roads, and wastewater) are not included in Table 1.

Item	Estimated Total Costs	Developer Pays (per Annexation and Development Agreement)	City Costs	Comments	Recommendations
Municipal Water System Facilities					
Well and Well House	\$750,000	\$402,685	\$347,315	Based on estimated MDD = 745 gpm, Developer pays for 400 gpm capacity	Developer pays for well capacity equal to Maximum Day Demand for the proposed development.
Well Site Acquisition	\$50,000	\$0	\$50,000	Estimate of lot value	Current well lot does not appear to meet minimum IDEQ setback requirements from surface water.
Booster Pump Station	\$500,000	\$0	\$500,000	Not identified in proposal	Developer pays for booster pump station as it will only serve homes in the development.
Water Distribution System	\$1,000,000	\$1,000,000	\$0	Estimate of distribution system costs	
Pressure Reducing Station	\$100,000	\$0	\$100,000	Not identified in proposal	Developer pays for pressure reducing station, it will be part of the development distribution system. May or may not be required depending on final system design
Peaking and Fire Storage	\$450,000	\$0	\$450,000	Not identified in proposal	Note that the City has already expended the costs of providing storage volume in Quigley Tank. Peaking storage at 240,000 gallons is calculated at \$1.50 per gallon. Fire storage at 180,000 gallons is calculated at \$0.50 per gallon since the City must maintain fire storage volume for their own uses. City may consider charging the developer for storage volume they have already constructed and paid for.
Irrigation System Facilities					
Irrigation Well	\$100,000	\$0	\$100,000	Use existing irrigation wells, if possible.	City develop plan for whether separate irrigation system will be desired in the development. Determine who pays for what.
Separate Pressurized Irrigation System (piping)	\$600,000	\$0	\$600,000	Assume separate P.I. System will be in selected areas only	
Quigley Canyon Creek Intake Structure	\$50,000	\$0	\$50,000		
Irrigation Storage (lined pond)	\$75,000	\$0	\$75,000		
Irrigation Pump Station	\$150,000	\$0	\$150,000		
Water Rights Permitting Costs					
Water rights - irrigation	\$2,500	\$0	\$2,500	Transfer application	These cost estimates do not include legal and technical consulting fees associated with resolving protests to the applications. We anticipate these water right actions WOULD be protested, resulting in total costs that are substantially higher.
Water Rights - Potable	\$3,500	\$0	\$3,500	Water Right for new municipal well (permit or transfer application)	
Value of Real Property					
Open Space conveyed to City					Value should be established by appraisal and then deducted from infrastructure cost, where appropriate.
Water Rights					
Totals	\$3,831,000	\$1,402,685	\$2,428,315		
Notes:					
1. This table does not include costs for roadways, wastewater facilities or school facilities, which were outside the scope of this review.					
2. Costs shown in this table are estimates based on reasonable assumptions by SPF. Costs are included to frame the components of the proposed agreement for further discussion with Developer.					

Table 1. Municipal and Irrigation Water System Facilities and Water Right Permitting Costs that may be Required to Serve Proposed Quigley Canyon development.

Background

The proposed Quigley Canyon Ranch development area encompasses approximately 912 acres (Figure 1) in Quigley Canyon northeast of the City of Hailey. The development is being planned for approximately 444 residential units and a possible school site.

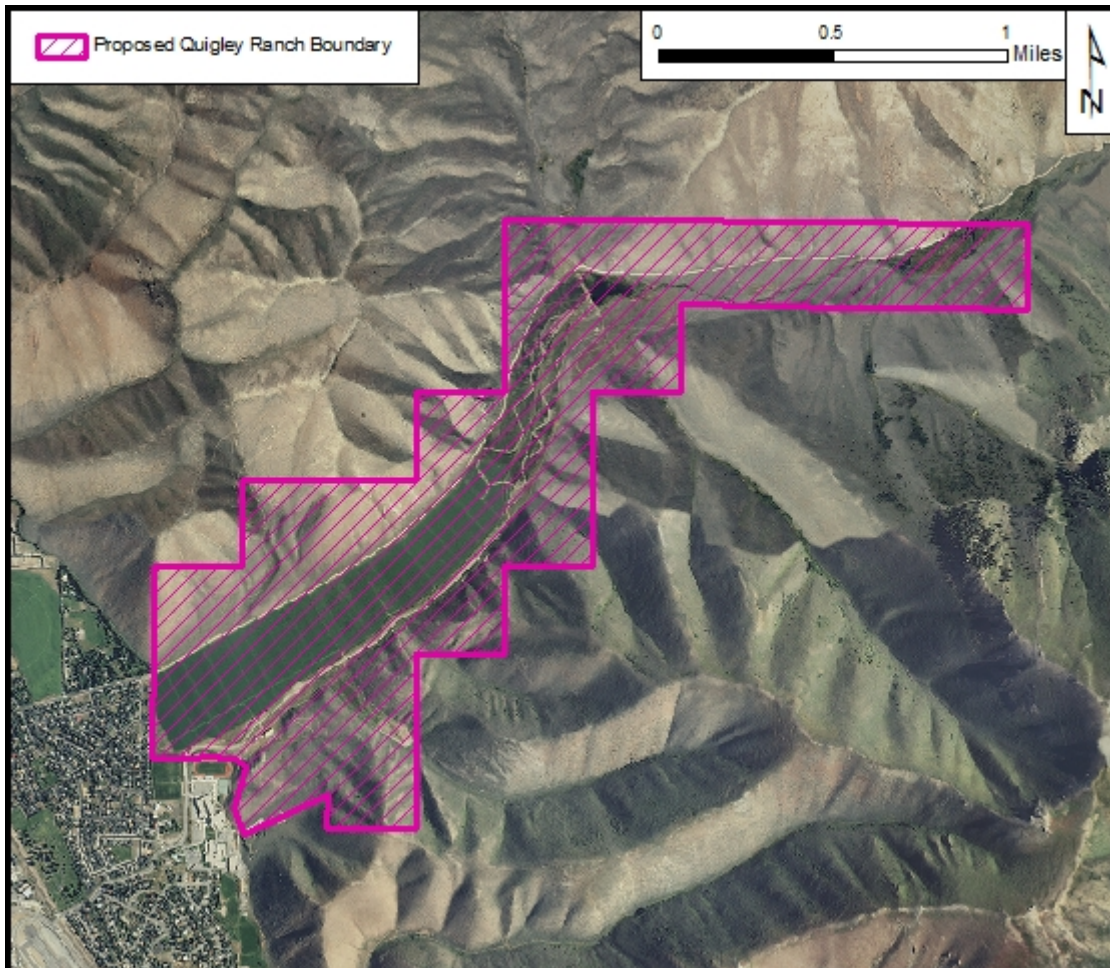


Figure 1: Quigley Canyon Ranch location map.

Municipal Water Supply

The Developer proposes that the City provide water service to the Quigley Canyon development consistent in extent and cost to services provided for all other City properties.

Domestic and Irrigation Use from the Municipal Water System

From the Master Plan map provided by the Developer and recent analysis of the City system¹, we estimate Maximum Day Demand (MDD) for the proposed development at 745 gpm. Note that current MDD per connection in Hailey's system is 1.67 gpm/connection. We assume that irrigation of the school yard, any open spaces, and residential lots of more than ½ acre would be from a separate irrigation system, not from the City's municipal system. If additional irrigation will be supplied from the City's water system, or lower water use is anticipated in this development, the appropriate adjustments to these calculations should be made.

¹ "City of Hailey Water System Source of Supply Investigation", SPF Water Engineering, 2008.

444 residences *1.67 gpm/connection = 741.5 gpm (assume irrigation of a maximum ½ acre per residence)

School (no irrigation) = 15 gpd per student * 300 students = 3.1 gpm

Total Estimated Maximum Day Demand (MDD) = 745 gpm

MDD is the amount that must be available from supply sources every day. The City has adequate volume available in Quigley Tank to provide peaking flows to the proposed development.

Fire Protection Flows

The Quigley Canyon development would rely on water from the City of Hailey's water system to provide fire protection flows. Fire protection requirements are anticipated to be 1,500 gpm for a 2-hour period². The school will likely need to be constructed with fire walls and a fire suppression sprinkler system in order to meet an available fire flow of 1,500 gpm for 2 hours.

The City has adequate volume available in Quigley Tank to provide fire protection flows to the proposed development.

Water Requirement Summary

Combined, we project that water requirements for the proposed development from the City's Municipal water system will be for a maximum day demand of 745 gpm. Peaking and fire suppression storage will be provided from storage volume currently available in the City's Quigley Tank.

Municipal Water Facilities

This section provides a review of the municipal water system facilities that are expected to be required to serve the proposed Quigley Canyon development. The Developer proposes that water for the development be supplied by the City through its existing public water system, with the addition of a new municipal well on the Quigley property.

Facilities Required to Supply Municipal Water from the City of Hailey

New Well and Well House. The City's water system is currently at or slightly short of supply capacity. A new well would be constructed in Quigley Canyon, and we recommend that it provide at least Maximum Day Demand for the proposed development. The best well capacities are anticipated at the lower end of the valley. The well would pump to the City's Quigley Tank, which has an overflow elevation of 5,530.30 feet. Alternatively, if the well is located in a pressure zone higher than Quigley Tank, it could pump to the higher hydraulic grade line (HGL), and then be pressure-reduced to fill Quigley Tank. Based on the Master Plan map of the development provided by the Developer, we estimate MDD at 745 gpm. The well lot must be selected so that the well location can meet IDEQ requirements (listed below). The current proposed well lot does not appear to have a location where the well can be located more than 500 feet from surface water and 50 feet from all roads and parking areas. If a well is closer than 500 feet to surface water, additional permitting and testing is required.

Minimum separation distances required by IDEQ for new public water system wells:

1. Gravity wastewater line 50 feet
2. Any potential source of contamination 50 feet
3. Pressure wastewater line 100 feet
4. Class A Municipal Reclaimed Wastewater Pressure distribution line 50 feet
5. Individual home septic tank 100 feet
6. Individual home disposal field 100 feet

² Homes or other buildings with fire calculation areas (all area under one roof) greater than 3,600 ft² may require sprinkler systems and/or greater fire protection flows (fire protection flow requirements are determined by the local fire authority).

7. Individual home seepage pit 100 feet
8. Privies 100 feet
9. Livestock 50 feet
10. Drain field - standard subsurface disposal module 100 feet
11. Absorption module - large soil absorption system 150 - 300 feet, see IDAPA 58.01.03
12. Surface water more than 500 feet (if less than 500 feet from surface water, a "Ground Water Under the Direct Influence" of surface water investigation would be required).
13. Storm water facilities disposing storm water originating off the well lot 50 feet
14. Municipal or industrial wastewater treatment plant 500 feet
15. Reclamation and reuse of municipal and industrial wastewater sites See IDAPA 58.01.17
16. Bio solids application site 1,000 feet
17. Roadways/parking 50 feet

Storage. With MDD provided from the new well, the City could provide peaking and fire storage from space available in Quigley Tank. The estimated peaking storage volume requirement for the development is approximately 240,000 gallons (22.5% of MDD per connection, per IDEQ guidelines). The required fire storage volume is 180,000 gallons (1,500 gpm for 2 hours). Note that the City must maintain fire storage for its own use, regardless of whether Quigley Canyon Ranch moves forward. The City already has adequate peaking and fire storage volume in Quigley Tank to accommodate the proposed development demands and could choose to charge the Developer for the portion of peaking and fire storage space required for the development.

Booster Pump Station/Pressure Reducing Station. The portion of the development located below approximate elevation 5,415 feet can be served by gravity from Quigley Tank (a minimum pressure of 45 psi could be provided up to this elevation from the Quigley Tank). The remainder of the development will require a booster pump station to provide 1) MDD plus fire flows, and 2) peak hour demands with the largest pump out of service (IDEQ requirements). The booster pump station could be sized in one of two ways: (1) pump into a closed system and provide firm pumping capacity for peak-hour and maximum-day flows, plus fire protection flows, or (2) pump to a small storage reservoir that is located approximately 104-feet (45 psi) above the highest service connection and provide firm pumping capacity for maximum day demands. This reservoir would provide peaking and fire storage for the higher-elevation homes. A generator would be required for either of the booster-pump station scenarios. From a brief look at the contour mapping near the proposed development, it does not appear that a reservoir site is readily available above the highest-elevation homes, so the booster-pumping scenario 1 is more likely the better option and has therefore been assumed in this analysis. Depending on the water system design for the proposed development, and the location of the well, a pressure reducing station may be required.

Distribution System. A distribution system in accordance with City standards would need to be installed throughout the proposed development. The development agreement indicates that the developer would install this system at their cost.

Irrigation Water Supply

We do not see any mention in the draft annexation and development agreement of the developer providing any irrigation system facilities. If the City desires a separate irrigation system in the proposed development, we anticipate that it would require some or all of the following facilities:

- Separate irrigation distribution system
- Lined storage pond
- Pump Station
- Irrigation well(s)

- Quigley Canyon Creek surface water intake structure

If the City plans to utilize the existing irrigation water rights that the developer contemplates conveying to the City or reclaimed wastewater at some point in the future, the City should consider requiring the developer to install, at a minimum, the distribution system for the separate pressurized irrigation system.

Water Rights

Existing Water Rights

The Developer proposes conveyance of water rights appurtenant to the Quigley property to the City on or before approval of the final subdivision plat for the first development phase. The water rights would be conveyed without warranty according to the agreement. The Developer further proposes the City agree to lease portions of the water rights back to the landowner to be used for irrigation purposes on the remaining undeveloped land (at a rate not to exceed \$1,000 per year).

A majority of the Quigley water rights have been subject to the on-going Snake River Basin Adjudication (SRBA). All objections to those water rights have been resolved, and Special Master Brigitte Bilyeu has issued her *Special Master's Report and Recommendations* which recommends the water rights be decreed as shown in Table below. The exception is water right 37-8283 (also shown in Table 2), which was licensed by the State of Idaho in 1999 and was not subject to the SRBA.

Water Right No.	Source	Tributary to	Priority Date	Authorized Diversion Rate (cfs) ¹	Authorized Diversion Volume (af/y) ^{2,3}	Irrigated Area (acres) ^{4,5}
37-2784A	Quigley Creek	Sinks	1/3/1967		16.0	154.0
37-7693	Quigley Creek	Sinks	12/16/1977	5.27	30.0 (storage) 900.0 (irrigation)	276.5
37-8283	Quigley Creek	Big Wood River	9/23/1986	0.12	35.0 (storage) 6.7 (stockwater)	
37-19736	Quigley Creek	Sinks	4/15/1880	2.28		276.5
37-20902	groundwater		7/21/1966	2.01	340.2	113.4
37-21348 ⁶	groundwater		4/15/1985		35.0	10.0
37-21349 ^{6,7}	groundwater		10/28/1969		56.7	

1. Rights 37-2784A, 37-7693 and 37-19736 are limited to a combined diversion rate of 5.53 cfs.
2. Rights 37-2784A and 37-7693 are limited to a total annual storage volume of 30 acre-feet.
3. Rights 37-2784A, 37-7693, 37-19736, 37-20902, 37-21348 and 37-21349 are limited to a total annual diversion volume of 967.7 acre-feet at the field headgate.
4. Rights 37-2784A, 37-7693, 37-19736, 37-20902, 37-21348 and 37-21349 are limited to the irrigation of a combined total of 276.5 acres in a single irrigation season.
5. Rights 37-20902, 37-21348, and 37-21349 are limited to the irrigation of a combined total of 123.4 acres in a single irrigation season.
6. Rights 37-20902, 37-21348, and 37-21349 are limited to a combined diversion rate of 2.01 cfs.
7. Rights 37-20902 and 37-21349 are limited to the irrigation of a combined total of 113.4 acres in a single irrigation season.

Table 2. Quigley Canyon Ranch water right summary.

The Quigley water rights authorize diversion of 5.53 cfs (2,500 gpm) from Quigley Creek for irrigation of 276.5 acres. (See Figure 2) The rights also authorize diversion of 2.01 cfs (900 gpm) from groundwater wells for irrigation of an additional 123.4 acres. These water rights can continue to be used for the irrigation of common areas (e.g. parks, school yards, or a golf course), and/or residential landscaping as long as the elements of the water rights (diversion rate, annual diversion volume, and authorized irrigated area) are not exceeded. However, due to overlaps between the groundwater rights and the rights from Quigley Creek, no more than a total of 276.5 acres could be irrigated annually.

A transfer application must be filed with IDWR if the nature of use is changed (e.g. irrigation is replaced by commercial use, municipal use, or additional pond storage) or significant changes are made to the irrigated place of use. IDWR will consider actual historical consumptive use (CU) volume when processing a transfer application proposing a change in the nature of use of the water rights. ERO Resources originally reported that alfalfa hay and small grains had been irrigated on the ranch and they speculated that IDWR would likely recognize a consumptive use (CU) of up to 2.5 acre-feet per acre.³ We expect IDWR would require a careful analysis of historical cropping patterns on the Quigley Canyon Ranch if a transfer is submitted changing the nature of use of the water rights. Estimates of CU values based on an analysis of the cropping patterns, local weather station data, and evapotranspiration characteristics of the crops grown might limit the transferrable CU volume to a range from 2.0 to 2.6 acre-feet per acre.

The water rights may have value to the City for irrigation of common space and residential lots within the Quigley development. In addition, water right 37-19736, with its 1880 priority date, may have value in the future for mitigation of consumptive use by the City during a curtailment action under conjunctive administration of water rights in the Wood River Valley. We believe the base value of the water rights should be determined by a qualified real-property appraiser with specific experience in the appraisal of water rights in Idaho. We also recommend that appraised value be used in any further negotiations with the Developer. A more specific value for the water rights can be determined once the base value is established by appraisal, and a list of possible uses for the rights is developed by the City (e.g. irrigation within the development, transfer to municipal use, or mitigation for new or existing water uses).

New Water Rights

We project that the Quigley Canyon development will require up to 745 gpm for domestic and irrigation purposes from the City of Hailey Municipal Water System. The development agreement proposes that all costs for water rights permitting are borne by the City. The City can apply for additional municipal water rights at this time.

Successful permitting may require the use of existing Quigley Canyon Ranch (or other) water rights to mitigate for the impact of new municipal withdrawals for consumptive use (e.g. irrigation). Water right 37-19736, as the most senior of the Quigley Canyon Ranch water rights, would be best suited for mitigation, if necessary.

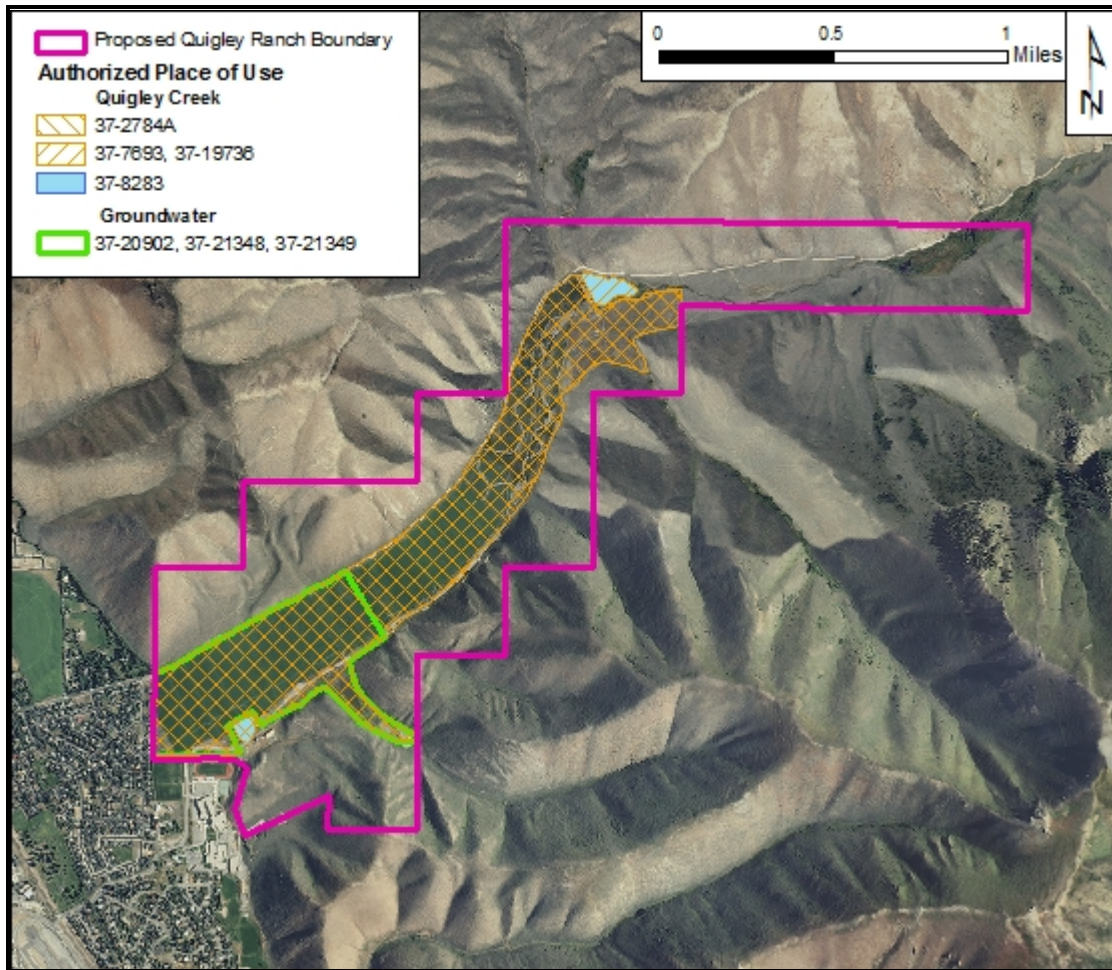


Figure 2: Authorized places of use for Quigley Canyon Ranch water rights.