KELLER associates

131 SW 5th Avenue, Suite A • Meridian, ID 83642
208.288.1992 phone • 208.288.1999 fax • www.kellerassociates.com

July 9, 2012

Mike May
Sr. Water Quality Specialist
Department of Environmental Quality
State Office
1410 North Hilton
Boise, Idaho, 83706

Re: City of Dietrich Environmental Information Document Addendum

Dear Mr. May:

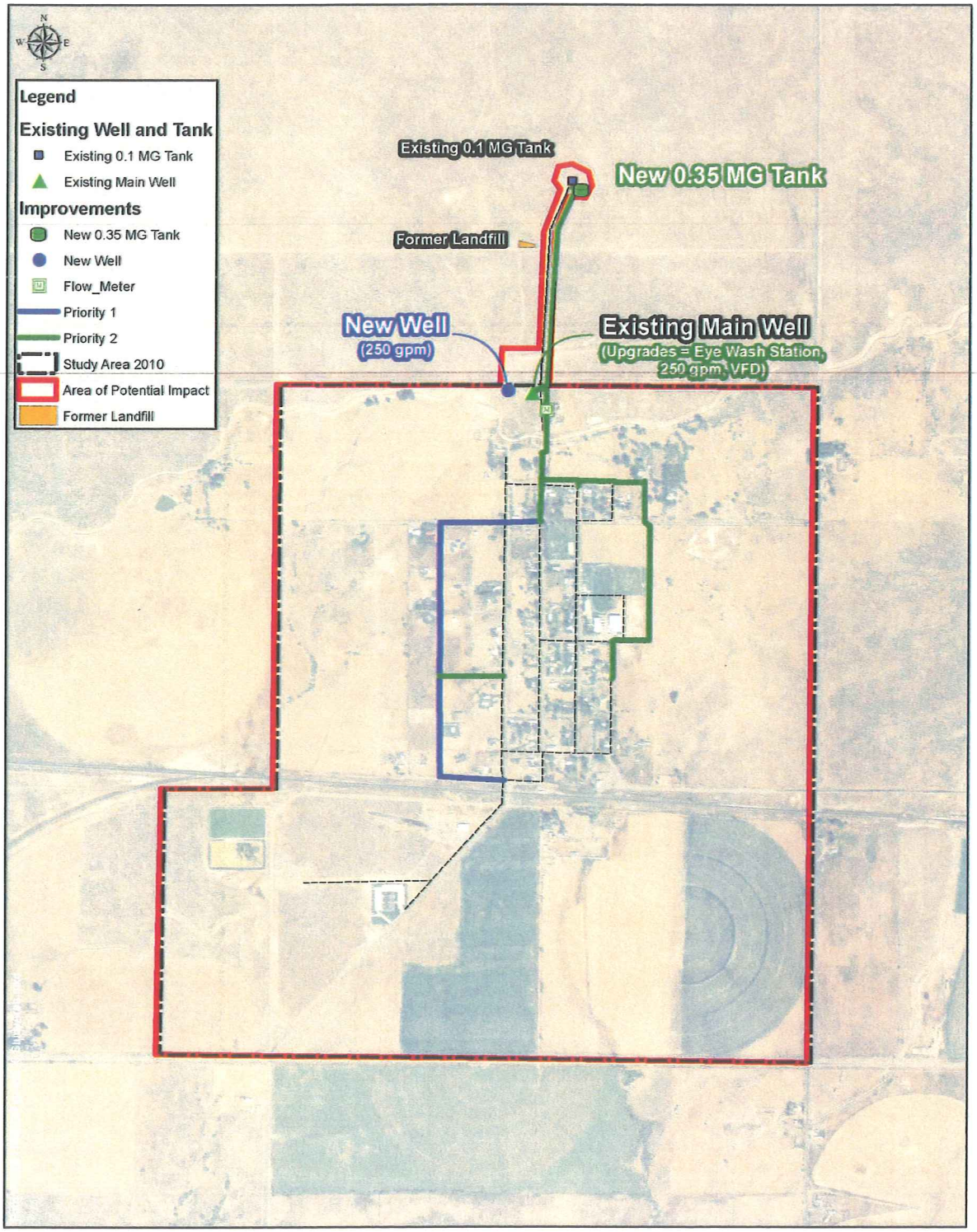
Please find this letter in response to your email dated June 15, 2011 requesting additional information regarding the *City of Dietrich, Water System Improvements Environmental Information Document (EID).* This letter constitutes a letter addendum to the original EID approved by DEQ on April 13, 2012. Responses have been prepared for each bullet in the June 15th email (attached for reference). Keller Associates has prepared responses to each of these comments.

1st Bullet—The old landfill which is illustrated in the figure below was mentioned during the site walk-through directly after the design kickoff meeting held on April 24, 2012 attended by representatives of DEQ, the design team, City, and the Big Wood River Canal Company.

2nd Bullet—The following information was obtained from City officials, residents, and the BLM. In 1977 Lincoln County applied for a Recreation Public Purposes (R&PP) Act lease for a 20-acre area. This area had previously been used as a landfill by the City of Dietrich, but City records did not contain any information about the landfill since the landfill was not in City limits. Lincoln County's Lease application indicated that the area would be used as a transfer site and that the solid waste collected at the site would be hauled to the Shoshone Landfill. The R&PP Lease was issued to Lincoln County on January 13, 1978. Compliance checks and letters in the file indicate that the area was not being used as a transfer site, but was used as a landfill where trash was dumped and buried. In 1982 the lease was extended for only a limited time until the County found another location and in 1985 the R&PP lease expired. The file did not contain any details regarding inspections or compliance with waste disposal laws, but it did identify that the waste disposal facility was removed and the area was reseeded by 1987.

The refuse that was put in the land fill was mostly household garbage. Small landfills throughout the county that people used to dump their garbage was common at that time. The Mayor recalls people simply dumping their garbage out in the desert in holes in the ground about 20 feet wide and about 50 to 100 yards long.

3rd Bullet—The figure below shows the landfill boundaries and the location of the new well in conjunction with the area of project effect and proposed improvements.



4th Bullet—A discussion of impacts of the proposed well location on the points on the EID checklist Section D. The proposed well site is approximately 325' west of the dot illustrating the new well site in the original EID documentation. The adjustment of the well site poses no change to the determination in the approved EID for the following environmental elements: a-physical aspects, b-climate, c-population, d-economics and social profile, e-land use, h-wild and scenic rivers, j-flora and fauna, k-recreation and open space, l-agricultural lands, m-air quality, n-energy, and o-regionalization. The following environmental elements warrant additional discussion.

f-floodplains: The only water body in the vicinity of the well site is the Dietrich Main Canal which is an irrigation delivery facilities with no mapped floodplain.

g-wetlands: The wetlands inventory completed by North Wind Resource Consulting as part of the original environmental information document (included in Appendix F) included the area within a 500-foot radius of the existing well. The proposed well site is within this 500-foot radius. No wetlands were identified within 150 feet of the proposed well site, consequently the proposed well site does not pose an adverse effect to wetlands.

i-cultural resources: The cultural survey completed by North Wind Resource Consulting as part of the original environmental information document (included in Appendix G) included the area within a 500-foot radius of the existing well. The proposed well site is within this 500-foot radius. No cultural resources were identified within the 500-foot radius of the existing well, consequently the proposed well site does not pose an adverse effect to cultural resources.

surface water, groundwater, and public health: A discussion of the potential impacts of the new well site to these environmental elements is discussed in detail in Bullet 5 and 6.

5th Bullet—

Aquifer configuration

The Dietrich area is within the Eastern Snake River Plain Aquifer (ESPA). This aquifer is comprised of highly inhomogeneous strata of basalt flow of varying ages and thicknesses with generally high transmissivity. Well drilling records in the Dietrich area confirm the general lithology of the ESPA, indicating layers of basalt with varying degrees of fracturing and which may or may not be water-bearing. Water-bearing strata are generally present at depths of 250 to 420 feet or greater but vary greatly between wells. It is likely that the aquifer at the new Dietrich well will be under unconfined or water table conditions.

Water table contour maps developed by the Idaho Department of Water Resources in conjunction with the development of the Eastern Snake Plan Aquifer groundwater model indicate a flow direction generally west-southwest in the Dietrich area. The flow direction is 245 degrees clockwise from north and the gradient is 14.6 ft/mile across the city.

Minimal information is provided by drilling records from which aquifer hydraulic properties could be estimated. Based on one pumping test of the existing Dietrich well, estimated hydraulic conductivity is 130 ft/day. The calibrated value in the Eastern Snake Plain Aquifer groundwater model is 538 ft/day at this location. IDEQ used 1800 ft/day in its source water delineation modeling report. Aquifer thickness is assumed to be 200 feet at this location. Porosity is difficult to estimate in fractured basalt, but was assumed to be 0.15.

Capture zones

IDEQ for the Shoshone and Dietrich wells (IDEQ, 2009). This delineation was accomplished using the WhAEM model using the following aquifer parameters:

Hydraulic conductivity	1800 ft/day (with inhomogeneity elements added, final values ranged from 250 to 12,500 ft/day)
Aquifer thickness	200 feet
Porosity	0.15
Daily pumping rate	19,057 ft3/day

The capture zone delineated by IDEQ is shown on the attached figure. To place the zone, the capture zone delineated for the existing well was translated or shifted to the new well location. IDEQ had located the existing well too far north, however, so the translation actually resulted in shifting the IDEQ capture zone south-southwesterly about 280 feet. This delineation includes a 10-degree buffer on either side to account for parameter uncertainty and potential underestimation of the extent of the zone.

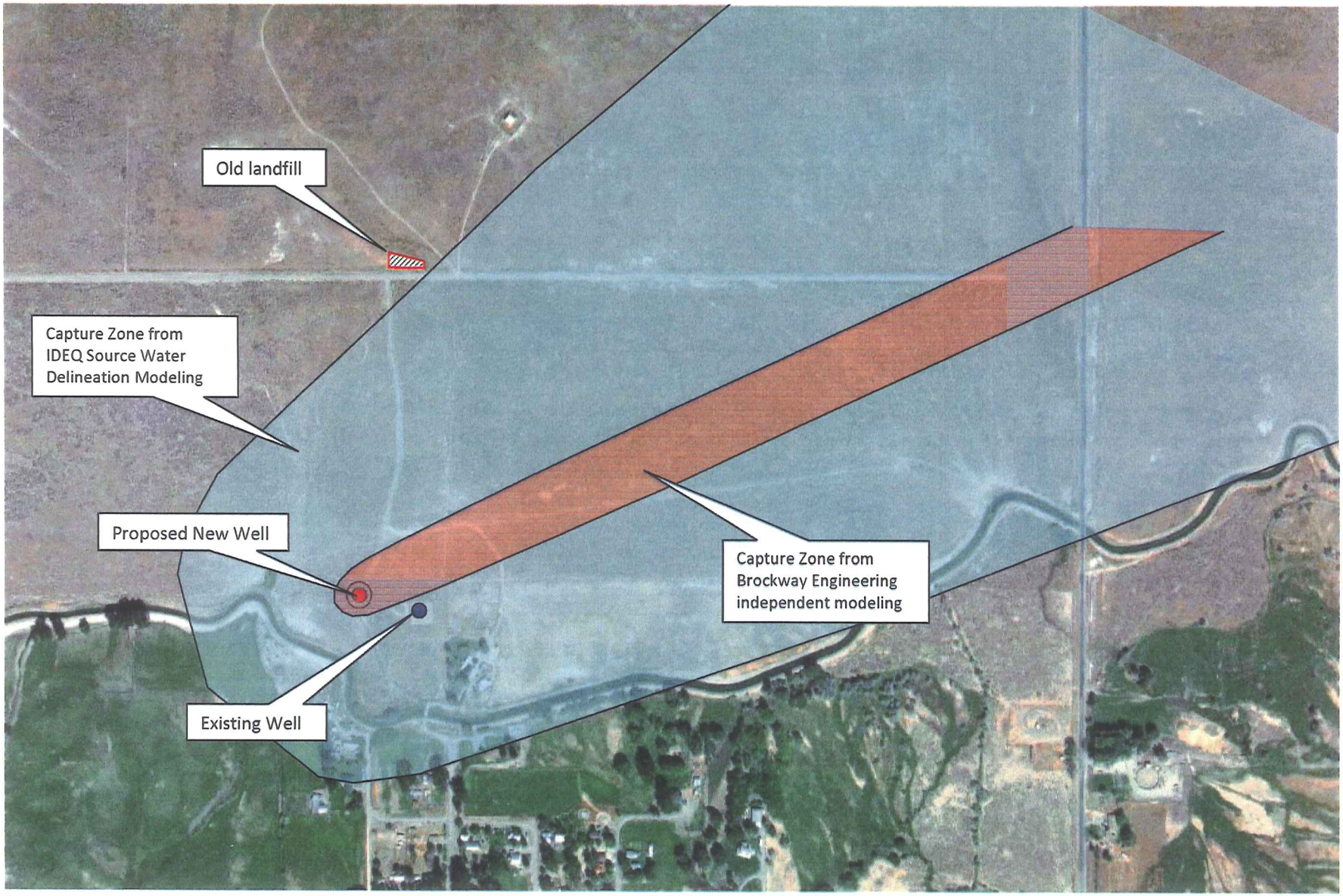
The IDEQ capture zone appears to be quite large given the small withdrawal from the well and experience with other capture zone modeling in similar situations. Therefore, an independent confirmation was attempted using the WhAEM model with the parameters described above. Areas of inhomogenities were not programmed, but a range of hydraulic conductivities were investigated, as follows:

130 ft/day	Conservatively low estimate based on Dietrich well pumping test
538 ft/day	ESPAM model final calibrated value for computational cell in which Dietrich well lies
1800 ft/day	Value utilized by IDEQ (2009)

The capture zone modeled with 130 ft/day has the greatest extent of the three and is shown on the attached figure. Even with the conservatively low hydraulic conductivity of 130 ft/day, and even if a 10-degree buffer were added on each side, the extent of the zone would be much smaller than the IDEQ capture zone. The reason for the major discrepancy is unknown at this time. Further independent evaluation was made using a different model – WinFlow 3.05, an analytical groundwater model similar to WhAEM – with the same parameters as above. The results were similar and the IDEQ capture zones could not be duplicated.

Potential impacts of landfill

A small, former landfill was situated on BLM land, approximately 1,400 feet north of the proposed well site. The landfill was used chiefly for household refuse from the residents of Dietrich, and was decommissioned in 1985. The landfill site lies wholly outside of the capture zone delineated independently and the capture zone from the IDEQ source water study. Based on this information, the potential for impact on the new well from the landfill activity is minimal.



City of Dietrich Estimated Capture Zones and Old Landfill Location

See accompanying narrative for assumptions regarding capture zone delineations.

IDEQ capture zone was translated about 280' south-southwest since the well was not in the correct location.

Brockway Engineering 7/5/2012
PRELIMINARY

6th Bullet—Upon completion of the new well, a controlled pumping test will be conducted. The results will be used to estimate aquifer hydraulic properties and provide confirmation that the capture zone analyses described above is reasonable and that the landfill site lies outside of the computed limits.

During the pumping test, water samples will be collected for comprehensive testing for the full slate of parameters for a new public water system. In addition to inorganic constituent, the testing will include VOCs, SOCs, metals, herbicides, and pesticides. The confirmed absence of constituents which typically arise from landfill infiltration will help verify that no impact on the well is occurring or will occur. If the presence of one or more of the above constituents is confirmed by the initial testing, potential actions will be evaluated as required by DEQ. Possible treatment alternatives could include chemical treatment and sequestration, well blending, or other practical treatment solutions.

Please find attached three stamped, revised reports. Please send the third stamped report to our office after your review. Please call myself with any questions at 288-1992.

Thank you,

KELLER ASSOCIATES, INC.

Justin Walker, P.E.
Project Manager

cc: Don Heiken (City of Dietrich)
Chuck Brockway Jr.
File

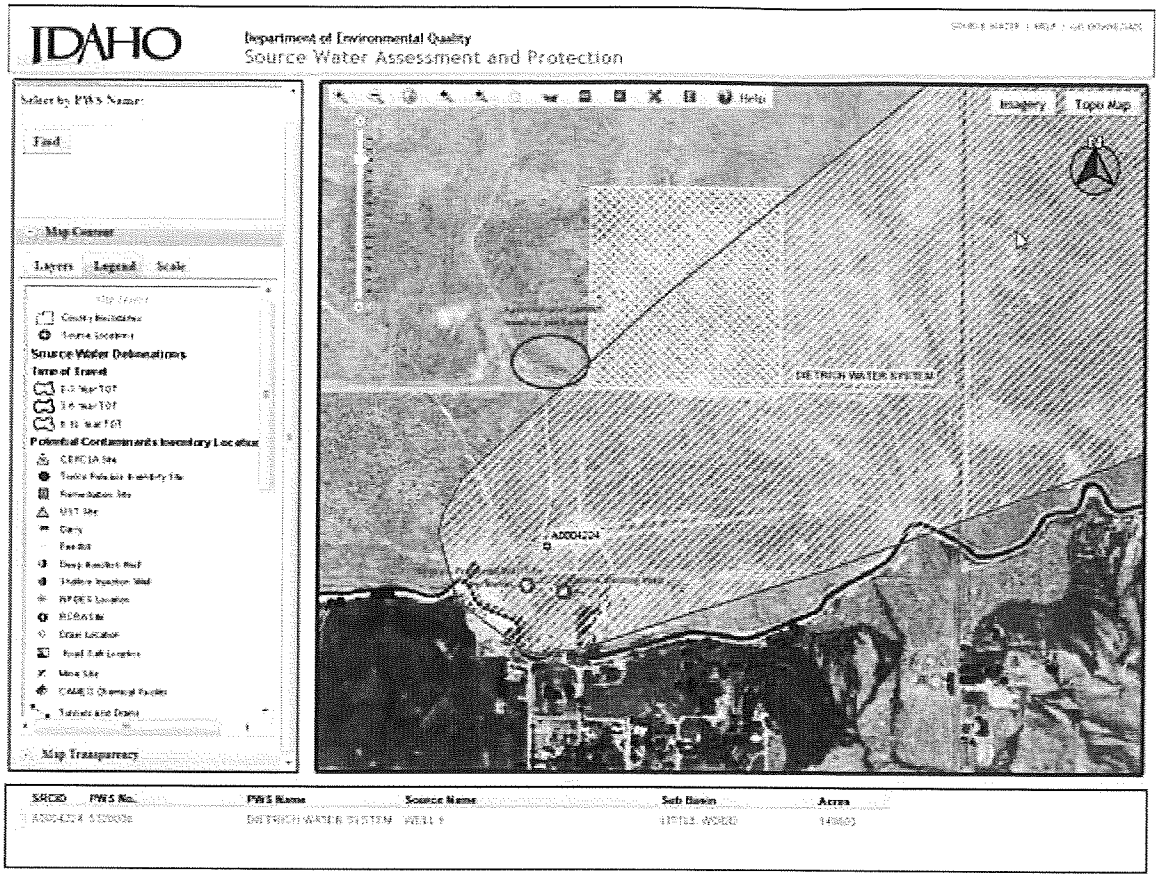
Justin Walker

From: Michael.May@deq.idaho.gov
Sent: Friday, June 15, 2012 9:11 AM
To: Justin Walker
Cc: Brian.Reed@deq.idaho.gov
Subject: Request for addendum to Dietrich drinking water EID
Attachments: image002.jpg; 8320006-Shoshone-Dietrich Modeling Report.pdf

Justin,

I think the way to handle the well location and landfill issues with respect to the EID is to issue a short addendum to the EID. The point of the addendum will be to demonstrate whether the newly-discovered presence of the landfill invalidates the FONSI. I think the addendum should address the following points:

- How the landfill came to your attention after the FONSI had been published;
- Summarize whatever you know about the history of the landfill: how long it operated, what kind of refuse was accepted, how and when it was closed, the topography and direction of runoff;
- Add the landfill location to the map showing the PPPA/APE and project features;
- State how the changed well location affects the EID discussion in each of the major points on the EID Checklist section D. I expect that most of this can be handled by a list of the points that are unaffected. At least the following will require some brief discussion: (g) wetlands, (f) floodplains, (i) cultural resources, (n) surface water and ground water and (o) public health (see next bullet). As you pointed out earlier, the archaeological survey included the new well location. The wetlands inventory did not appear to do so, but you should be able to address that with your knowledge of the site.
- Include a brief discussion of the groundwater conditions, and Brockway's professional opinion of the likelihood of impacts to the well. I recommend a map showing the landfill location superimposed on the well capture zones from the source water assessment available from <www.deq.idaho.gov/water/swaOnline/SearchSwa.aspx>. I am attaching the technical report that describes how the ground water modeling was done for that SWA. Your map could look something like this quick-and-dirty figure I put together, but with accurate landfill and well locations.



- Discuss any mitigation measures that will be taken to ensure that the water supply will not be adversely affected by the landfill. Include monitoring (even the normal monitoring that is done for new well acceptance), the analytical "action levels" that would trigger some kind of further action, and the kinds of actions that could be taken in case of impacts. It is not necessary to give an exhaustive list of possible treatment options; a few sentences should suffice. Identify any conditions for which treatment is unlikely to be feasible. I realize most of this is the ordinary process used to get a new well designed, installed and approved; that is the point of the discussion.

This looks like a long list, but I believe it can be addressed in a few pages, without a large effort. If you have any questions or suggestions, please contact me.

Mike May
Sr. Water Quality Specialist
Idaho Department of Environmental Quality
1410 North Hilton
Boise, Idaho 83706
(208) 373-0406
Michael.May@deq.idaho.gov