McGrane Water Engineering, LLC

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May 10, 2017 ***(Revised October 12, 2017)***

Mr. JC York
J&T Consulting, Inc.
305 Denver Avenue, Suite D
Ft. Lupton, CO 80621

Via email at: jcyork@j-tconsulting.com

RE: Bennett Pit - Slurry Wall Assessment

Dear Mr. York:

The proposed Bennett gravel pit mine is located approximately 3 miles south of Platteville, Colorado in Sections 1 and 12, Township 2 North, Range 67 West (6th PM). The South Platte River (SPR) is located immediately east of the proposed pit site. As part of the mine permit application process, the mine consultant, J&T Consulting, Inc. (JT) requested that McGrane Water Engineers, LLC. (MWE) determine the hydrologic impacts of installing a slurry wall around the Bennett pit prior to mining. Anticipated impacts include a rise in the water table on the up-gradient side of the slurry wall compared to predevelopment conditions, and a decline in the water table on the down gradient side. Water level increases to within 10 feet of the surface on the up-gradient side of the pit could flood existing structures such as basements or cause water logging (over saturation) and phreatophyte growth. A decline in water levels on the down gradient side could reduce the aquifer saturated thickness and well yields.

Results

Using a MODFLOW model with reasonable boundary conditions and aquifer properties, we determined that water levels on the up-gradient side (southwest) of the mine will increase up to 2 feet and water levels will likely decrease on the downgradient (northwest) side up to 2 feet. A detailed discussion of the Hydrogeologic analysis, model parameter selection and assumptions, and sensitivity analysis is included in Appendix A (Groundwater Evaluation and Modeling).

Nine up-gradient wells can be expected to have over 0.5 foot increases in water levels as a result of the slurry wall (Figure A5). Two upgradient wells (Kuipers (permit no. 15052-R) and Vincent (permit no. 829-R) already have reported pre-mining water levels less than 10 feet as highlighted in red on Table 1. The remaining wells either have reported depths to water exceeding 10 feet so as long as those measurements are accurate, we do not anticipate any water level impacts. There is one downgradiente well with a reported depth to water of four feet (Lewis, permit no. 61228-F) which should experience a slight decline (approximately 0.5 feet) in water levels. Since well yield is proportional to the saturated thickness, we would expect less than a 2% decline in the maximum theoretical pumping rate of the Lewis well which is insignificant.

Table 1 provides tabulated well data that includes: well location relative to the upgadient or downgradient side of the pit; permitted yield and water level depth below ground surface (bgs); calculated saturated thickness; and model results.

Table 1 – Wells within area of Influence of Proposed Slurry Wall

Location	Registered Well Owner	Permit No.	Town-ship	Rng	Sec	Qtr-Qtr	Well Depth (ft bgs)	Well Yield (gpm)	Static Water Level (ft bgs)	Sat. Thick. (ft)	Model Results			
											Max. Change in Water Levels (ft)	Future Depth to Water ft (bgl)	Future Sat. Thick. (ft)	% Change in Sat. Thick.
Upgradient Wells:	VINCENT ROLLIE J	68631	2 N	67 W	12	NESW	32	15	18	14	1.4	16.6	15.4	10%
	MULHAUSEN GEORGE W.	132579	2 N	67 W	11	SENE	35	20	ND	NA	0.6	Uncertain	Uncertain	Uncertain
	KUIPERS KACEY	295458	2 N	67 W	12	SWNW	45	15	20	25	0.75	19.25	25.75	3%
	KUIPERS	15051-R	2 N	67 W	12	SWNW	49	1125	12	37	1.6	10.4	38.6	4%
	KUIPERS	15052-R	2 N	67 W	12	SENW	15	1800	3	12	1.6	1.4	13.6	13%
	CARLSON MARY E	51071-A	2 N	67 W	11	NENE	70	15	25	45	0.5	24.5	45.5	1%
	VINCENT ROLLIE J	52-WCB	2 N	67 W	12	SESW	34	750	ND	NA	1.6	Uncertain	Uncertain	Uncertain
	VINCENT R J	829-R	2 N	67 W	12	SESW	30	1175	5	25	0.5	4.5	25.5	2%
	VINCENT R J	830-R	2 N	67 W	12	SWSW	50	500	22	28	0.5	21.5	28.5	2%
Downgradient Wells:	LEWIS WILLIA	61228-F	2 N	67 W	1	SESW	33	1100	4	29	-0.5	4.5	28.5	-2%

As discussed in Appendix A, the expected increase in water levels on the upgradient side of the pit and decreases in water levels on the downgradient side are likely within the expected natural seasonal fluctuations (approximately 2 feet) that occur during spring runoff.

The model results indicate that groundwater levels will likely rise into the abandoned channel located on the west side of the pit and could potential impact unidentified buried structures such as basements or cellars in that vicinity. We do not believe increased water levels in the abandoned channel will cause any additional problems because the increase is within normal expected water level fluctuations and because additional surface water will likely travel to the north where it will recharge the aquifer. **Therefore, we conclude that potential impacts are likely insignificant.**

Model Uncertainty

Whether hydrologic impacts associated with future mining are significant depends on numerous factors including: 1) actual well location relative to the pit and slurry wall (sometimes the permit location is not accurate); 2) the location and depth of vulnerable structures such as homes with basements; and 3) the location, magnitude and timing of well pumping and recharge (from precipitation, agriculture return flows, and canal seepage). Therefore, future monitoring is necessary to further evaluate hydrologic impacts.

Monitoring and Mitigation

We believe the existing five well monitoring system around the pit are adequate to monitor the seasonal water level changes and evaluate potential impacts of the proposed mine slurry wall.

If elevated upgradient water levels are significant, the mine could install a drain that intercepts groundwater on the upgradient side of the pit and transport it to the upgradient side where it could be recharge the aquifer to mitigate downgradient impacts. This could be a passive system that operates whenever water levels rise. JT has indicated that drains such as have been successfully installed and used at other mine site. The depth, location, and size of a drain will depend on the timing and location of rising water and hydrologic properties of the aquifer and can be designed using the existing model.

Recommendations

Although we do not believe the proposed mine will have any significant impacts to adjacent well owners, we do recommend:

1. Continued monitoring of five existing monitoring wells located outside the proposed pit slurry wall area. We recommend measuring water levels on a monthly basis until seasonal fluctuations are better refined.
2. Installing a stage level recorder within the abandoned channel located on the west side of the pit to evaluate water levels; and
3. If after the slurry wall is installed and water level increases exceed 2 feet and cause negative impacts, we recommend that a drain be installed to allow rising water to be intercepted, transported to the downgradient side of the pit and allowed to recharge. It is also possible to design the drain to discharge intercepted groundwater back into the river.

If you have any questions, please give me a call.

Sincerely,

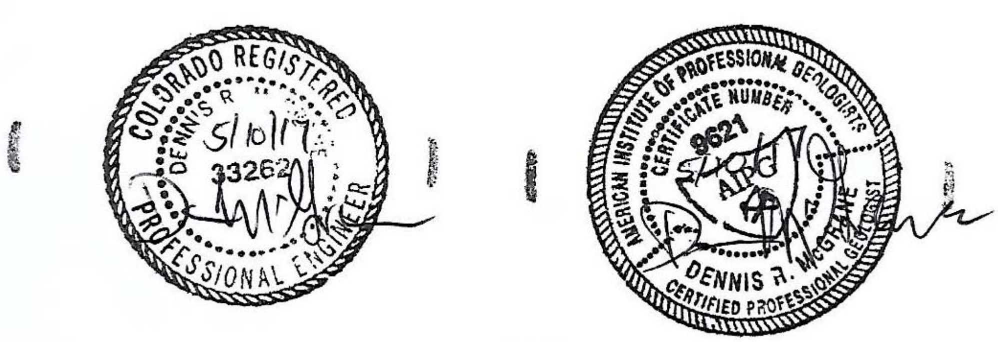
McGrane Water Engineers, Inc.

Dennis McGrane

Dennis McGrane, P.E., C.P.G

Professional Credentials

The technical material in this report was prepared by or under the supervision and direction of Dennis McGrane P.E, C.P.G., whose seal as a Professional Engineer in the State of Colorado and American Institute of Professional Geologists (AIPG) Certified Profession Geologist (CPG) are affixed below:



Dennis McGrane, P.E., C.P.G.

APPENDIX A – GROUNDWATER EVALATION AND MODELING

Hydrologic Setting

The proposed Bennett pit is located approximately three miles south of Platteville, Colorado on the west side of the South Platte River (SPR). The applicant would mine sand and gravel that makes up the SPR alluvial aquifer (Lindsay and others, 1998 and 2005). The mine applicant's engineer, JT Consulting supervised the drilled of fourteen boreholes around the pit to evaluate the resource. Figure A1 is a Google Earth image that shows: the planned pit, existing permitted wells with the owner and permit number, pit exploration boreholes and the model boundary. Most of the existing permitted wells are used for domestic water supply and irrigation uses.

Figure A2 shows the surficial geology (Soiser, 1965), well and SPR water level elevations and water level elevation contours at 10 foot intervals. The alluvium within the model areas consists of alluvial sand and gravel (Qal) located adjacent to the SPR river channel and older terrace alluvium (Qss) along the western model boundary. Water level elevations above mean sea level (msl) were calculated at each well by subtracting the depth to water listed in the well permit completion report from the site elevations obtained from 10-meter DEM data. The location of the water elevation contour lines were modified from Robson (2000) using the more recent well data. Water level contours within the more permeable modern alluvium (Qal) flow parallel to the SPR while groundwater in the lower permeability terrace deposits (Qss) flow more towards the river to the northeast.

Seasonal Water Level Changes

Table A1 shows weekly water level measurements taken in the five pit exploration holes that were completed as monitoring wells. Between March 21st and May 4, 2017, the depth to water has rose from between 4.1 to 6.2 feet to between 2.6 and 4.3 feet below ground level. We expect seasonal water levels next to the SPR to fluctuate in proportion to increases in river stage at the Ft. Lupton Gage gage (USGS no. 06721000) which normally increases 1 to 2 feet during the spring runoff period.

Well Data

Table A2 includes tabulated well permit data from 38 alluvial wells located within the modeled area. Well depths range from 15 to 83 feet and average 46 feet, and well yields range from less than 15 gpm for domestic wells to 1,800 for irrigation wells. The depth to water ranges from 3 to 33 feet and averages approximately 18 feet. The calculated saturated alluvial thicknesses range from 12 to 68 feet and average approximately 33 feet. We believe 68 feet is excessive because well drillers typically drill 5 to 20 feet into decomposed bedrock before completing an alluvial well.

Table A2 shows the borehole data obtained from 18 recent test holes dug around the pit. The average saturated thickness of the boreholes is approximately 34 feet which is consistent with the average saturated thickness for all wells within the model area.. We therefore used a constant 34 foot thickness in our groundwater model. Figure A3 shows the reported well depth and yields. Figure A4 shows the well and borehole saturated thicknesses.

Aquifer Permeability

The aquifer hydraulic conductivity (K) is the measure of aquifer permeability in feet per day (ft/dy). The Colorado Division of Water Resources (DNR) complied available K data for an extensive groundwater model used for the South Platte Decision Support System (CDM-Smith, April, 2013). SPDSS Task 43.3 (CDM-Smith, December 6, 2006, Figure 5c) shows contoured K's in our model area ranging from 450 to 650 ft/day. We used an average K of 550 ft/day for the area underlain by modern alluvium (Qal) and a K of 55 ft/day for lower permeability terrace silt, sand and gravels (Qss) located west of the Meadow Island Ditch No. 1. The lower K was necessary to create the observed bend in water level contours shown in Figure A2.

The aquifer Transmissivity (T) is product of the average saturated thickness (34 feet) and average K (550 ft/day) which is approximately 140,000 gpd/ft. This is consistent with the SPDSS model T which was between 100,000 and 200,000 gpd/ft as shown in Figure 7A of SPDSS Task 43.3 (CDM-Smith, December 6, 2006).

Model Construction

We used the USGS (McDonald and Harbaugh, 1988) MODFLOW modeling program to evaluate the future effects of the Bennett pit. We used the Visual Modflow (VM) classic interface (version 4.6.0.167) to construct, run and display model results. The SPR is simulated across the entire model with the proposed Bennett Pit located in the center. The model is 10,600 feet north to south and 9,400 feet east to west, consisting of 106 rows and 94 columns using 100 foot square model cells.

Model Boundary Conditions

Model boundary conditions include the SPR; bedrock boundaries; upgradient and downgradient aquifer inflows and outflows and the eastern and western sides of the model which act as no flow boundaries.

We assigned model river cell stage elevations at 1 foot increments where 10m DEM data contours crossed the SPR, and used the VM interface to interpolate stage elevations in between. The southernmost up-gradient elevation was 4845 ft (msl) and the northern most down gradient elevation was 4822 feet (msl).

The water level gradient from south to north are tied to these "average" river elevations because the streambed conductance term (COND) is extremely high which allows water to move freely between the river and the underlying aquifer. We calculated river cell conductance (COND) as the product of the streambed unit conductance (Ksb/m) times the wetted river area (length * width). The results of a nearby (site SC-07) vertical leakance test (CDM-Smith, June 9, 2006, Figure 2) indicate that the vertical streambed hydraulic conductivity (Ksb) is approximately 331 ft/day.

However, tests conducted in 2009 by Leonard Rice Engineers just south of the model in Twn. 2N., Rng. 66W., Sec. 18, arrived at a Ksb value of 37 ft/day (Miller, 2009). We believe 37 ft/day is more accurate because it was determined through rigorous aquifer testing and not simply a short-term vertical leakance test. We measured the streambed width to be approximately 75 feet from a Google Earth image, and calculated the model cell conductance (COND) to be 270,000 ft^2/day (37 ft/day/ft * 100 ft * 75 ft) which is a very high value.

We constructed the model using a constant 34 foot depth to bedrock from the water table which was determined by the stream gradient.

Aquifer subflow in and out of the model was calculated by running the model after assigning constant heads on the southeast side of the model at 4845 feet and assigning a values of 4820 feet on the southeast side of the model. Constant heads on the west side of the model were set at 4840 feet which is below the Lupton Bottom Ditch. The 4840 foot water level contour elevation is sustained by inflow from the older alluvium (Qss) and leakage from the Lupton Bottom Ditch. No flow boundaries are assumed on the east and west sides of the model where minimal effects of the mine are expected.

Model Runs and Results

We conducted two model runs to evaluate the hydrologic effects of installing a slurry wall around the Bennett Pit. Run <SS4_noPit> simulates the pre-mine water table. Figure A5 shows the resulting water table gradient through the model area and proposed pit site. The resulting heads are very close to the water level contour targets shown on the underlying base map. Through the pit area, measured verses modeled water levels at the five pit site monitoring wells are within 0.5 feet (Root Mean Squared Residual = 0.439 feet). Table A4 shows that aquifer inflows and outflows for the pre-pit steady state run (SS4noPit) of approximately 3.5 cfs with river inflows and outflows of approximately 3 cfs.

In run <SS4_wPit>, the pit model cells are turned off to simulate the effect of the slurry wall. Figure A6 is the contoured difference in model output heads between the post-pit run <SS4wPit> minus the model cell head output from the pre-pit run <SS4noPit>. Positive values on the southwest side of the pit reflect mounding and negative values on the north side reflect lower water levels in the “shadow” of the pit. Figure A6 shows that nine up-gradient wells are within the area where the expected rise in water levels increase between 0.5 and 2.0 feet. The letter report Table 1 provides tabulated well data that includes: well location (upgradient or downgradient) relative to the pit; permitted yield and water level depth below ground surface (bgs), calculated saturated thickness, and model results. Two of those wells (Kuipers (permit no. 15052-R) and Vincent (permit no. 829-R) already have reported pre-mining water levels less than 10 feet. The rest of the wells either have reported depths to water exceeding 10 feet or no recorded levels so anticipated impacts are “uncertain.”

The model results indicate that groundwater levels will likely rise into the abandoned channel located on the west side of the pit and could potential impact unidentified buried structures such as basements or cellars in that vicinity. We do not believe increased water levels in the abandoned channel will cause any additional problems because the increase is within normal expected water level fluctuations of approximately two to three feet (see Seasonal Water Level Changes) and because any additional groundwater that comes to the surface will likely travel northward and recharge in the “shadow” of the pit.

Model Sensitivity

The model results are insensitive to differences in hydraulic conductivities (K) since mound height is inversely proportional to K and aquifer inflow is directly proportional to K. Therefore, since the aquifer gradient and thickness are constant, an increase in K will cause a proportional increase in model inflows which would increase mound height proportionally, but this does not occur because the higher K causes a proportional decline in mound build-up.

The model results are very sensitive to the existence of the river but there is no realistic chance that the river will ever not flow in this area due to the large amount of agricultural and municipal return flows and the strict regulation of well pumping. Model results are insensitive to streambed leakance since the streambed is so permeable that large amounts of water can easily move between the river and aquifer.

We believe however that the model results in report Table 1 are sensitive to nonmodeled variables including: 1) the actual location of wells located on the up-gradient side of the pit; 2) the accuracy of reported water level depths; and 3) the timing, location, and magnitude of various types of recharge such as precipitation and canal recharge. Therefore, future monitoring is recommended as discussed in the main body of the report.

Sources

CDM-Smith, April, 2013a. South Platte Decision Support System Alluvial Groundwater Model Report.

CDM-Smith, December 6, 2006. SPDSS Phase 3, Task 34.3 South Platte Alluvium Region Aquifer Property Technical Memoradum.

CDM-Smith, June 9, 2006. SPDSS Phase 3, Task 34.3 Streambed Conductance Technical Memoradum.

Lindsay, D.A., Langer, W.H., and Knepper, D.H., 2005. Stratigraphy, Lithology, and Sedimentary Features of Quaternary Alluvial Deposits of the South Platte River and Some of its Tributaries East of the Front Range, Colorado. U.S. Geological Survey Professional Paper 1705.

Lindsey, D. A., Langer, W. H., and Shary, J. F., 1998, Gravel deposits of the South Platte River valley north of Denver, Colorado, Part B - Quality of gravel deposits for aggregate: U. S. Geological Survey Open-File Report 98-148-B, 24 p.

McDonald, M.G., and Harbaugh, A.W., 1988, A modular three-dimensional finite-difference ground-water flow model: Techniques of Water-Resources Investigations of the United States Geological Survey, Book 6, Chapter A1, 586 p.

Miller Groundwater Engineering, June 29, 2009. Groundwater model evaluations of the Broomfield Well Field. Letter report to Dennis McGrane, Leonard Rice Engineers, Inc.

Soister, Paul E., 1965. Geologic Map of the Platteville Qaudrangle, Weld County, Colorado. US Geological Survey Qaudrangle Map GQ-399.

FIGURES

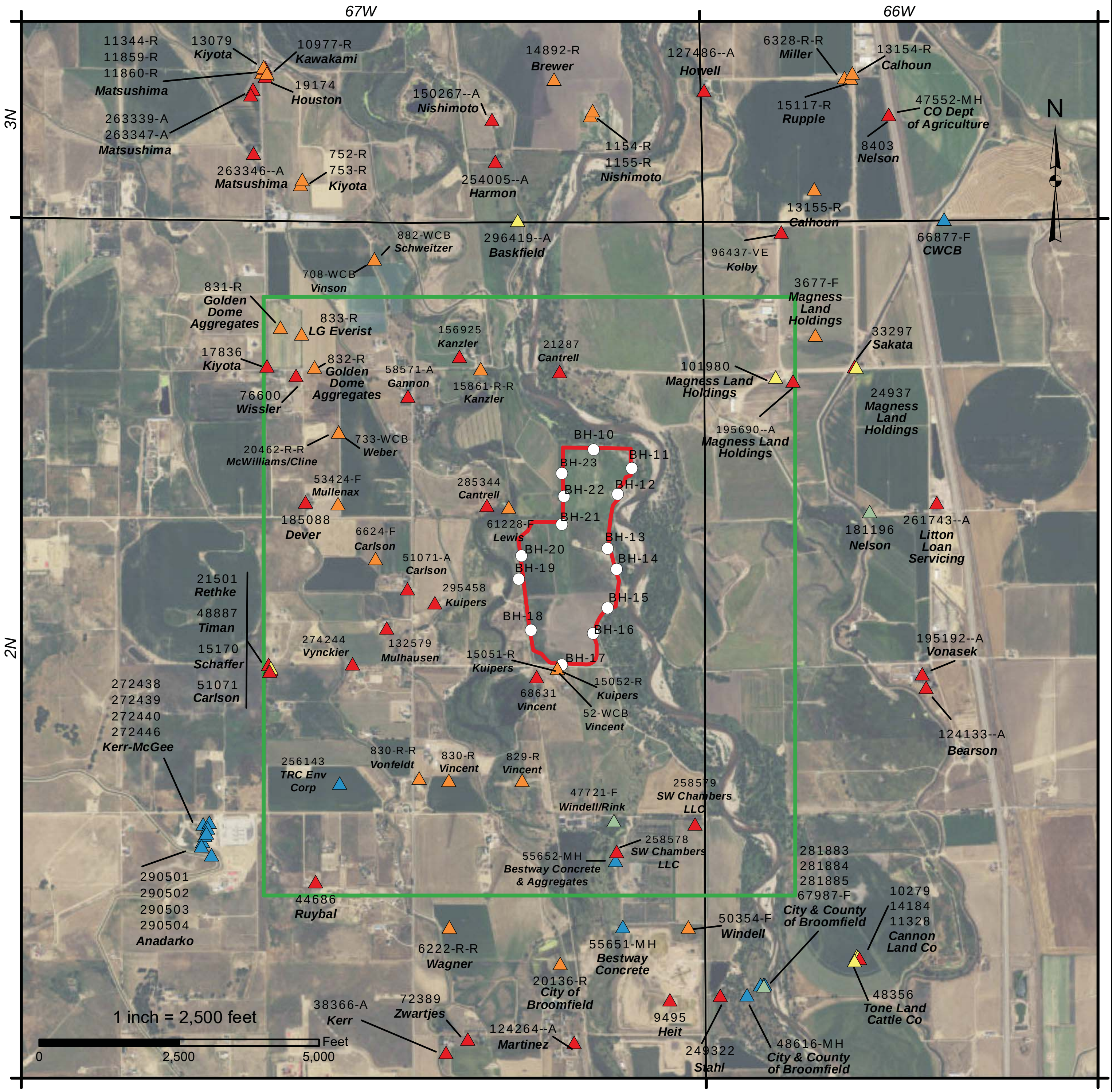


Figure A-1

Vicinity Wells
(Well Owners and Permit Numbers)

Bennett Gravel Pit
Weld County, Colorado

Map Legend

- Borehole
- Gravel Pit Slurry Wall Extent
- Model Extent
- *△ Well Permit Number / Well Owner

DWR Constructed Well*
Well Use

- DOMESTIC
- IRRIGATION
- STOCK
- COMMERCIAL
- OTHER

Sources:
DWR, Hydrobase, 033017; BLM Geocommunicator
J&T Consulting Figure dated 2.22.17
ESRI USGS Topo Basemap

Date: May 3, 2017
Projection: CO State Plane, North (2011), ft; NAD83

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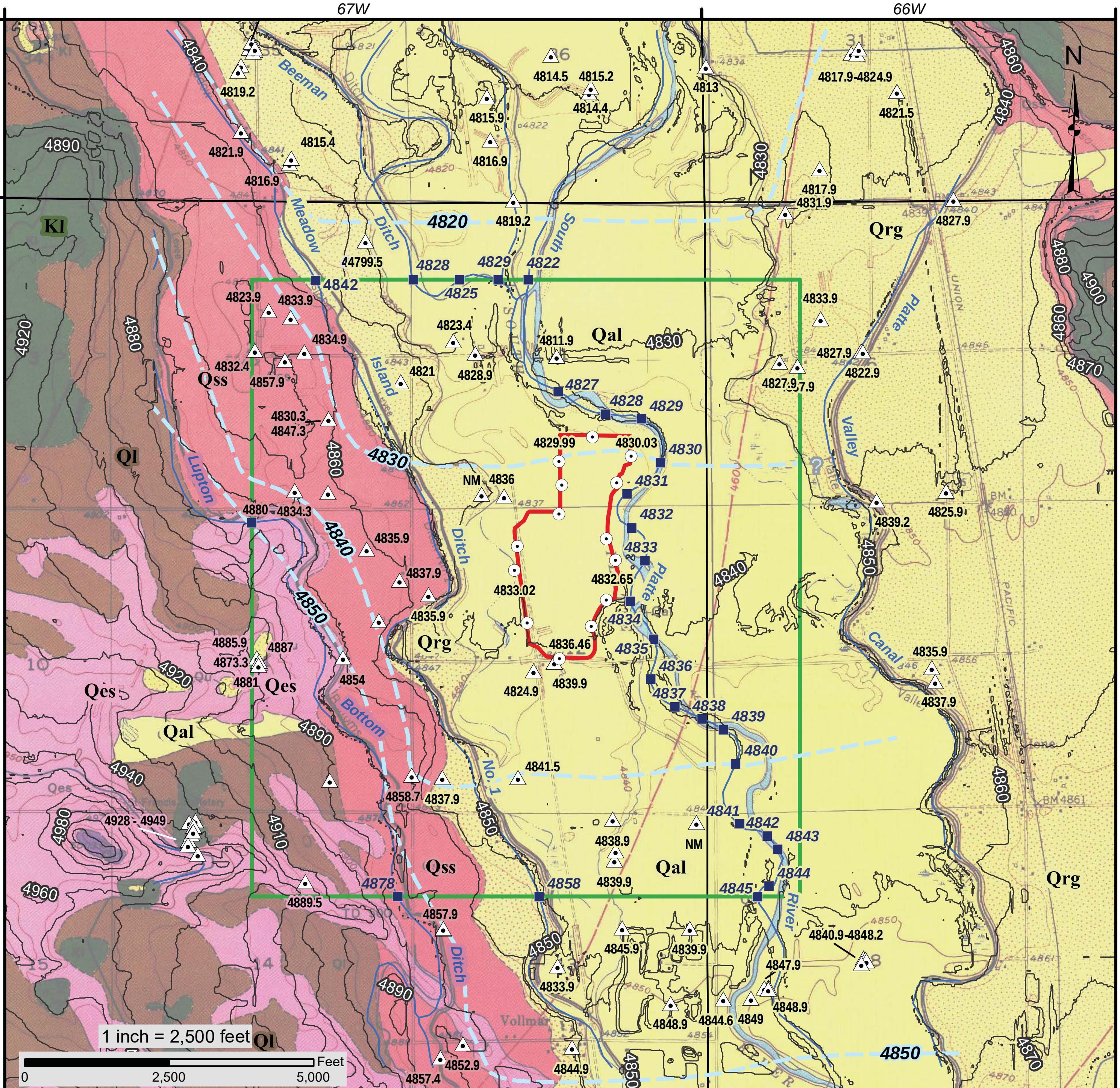

Figure A-2

Geology and Water Level Elevations

Bennett Gravel Pit
Weld County, Colorado

Map Legend

- Borehole
- DWR Water Well (SWL elevation labeled adjacent to point)
- Gravel Pit Slurry Wall Extent
- Model Extent
- Ground Surface Elevation Contour
  Contour Interval = 10 ft
- Water Level Elevation Contour
  Contour Interval = 10 ft

Geologic Units

(from Soister, 1965)

Qal - Alluvium
Qc - Colluvium
Qes - Eolian sand
Qss - Terrace sand and silt
Qrg - River gravel
Ql - Loess
Kl - Laramie Formation

Sources:
USGS, 10m DEM
Soister, 1965 (Geologic Map)
DWR Hydrobase

Date: May 3, 2017
Projection: CO State Plane, North (2011), ft; NAD83

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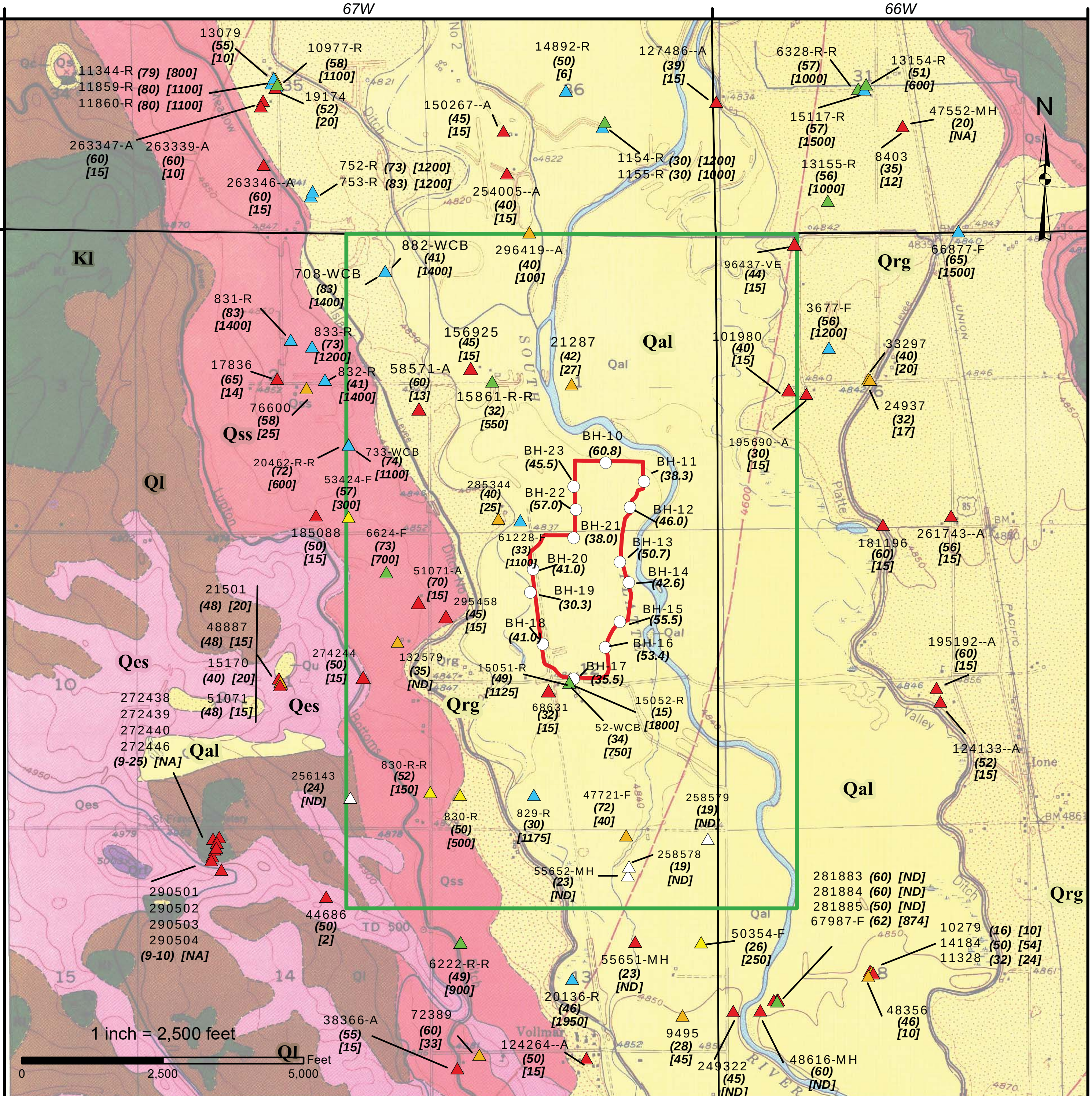


Figure A-3

Well Depth and Yield

(from well permit completion reports)

Bennett Gravel Pit
Weld County, Colorado

Map Legend

- Borehole
- Gravel Pit Slurry Wall Extent
- Model Extent
- *△ Well Permit Number *(well depth - ft)* *[yield - gpm]*

Well Yield* *(gpm)*

- 0 - 15
- 16 - 100
- 101 - 500
- 501 - 1000
- 1001 - 1950
- No Yield Data

Geologic Units *(from Soister, 1965)*

- **Qal** - Alluvium
- **Qc** - Colluvium
- **Qes** - Eolian sand
- **Qss** - Terrace sand and silt
- **Qrg** - River gravel
- **Ql** - Loess
- **Kl** - Laramie Formation

Sources:
DWR, Hydrobase, 033017; BLM Geocommunicator
J&T Consulting Figure dated 2.22.17
Soister, 1965 (Geologic Map)

Date: May 3, 2017
Projection: CO State Plane, North (2011), ft; NAD83

McGrane Water Engineering, LLC

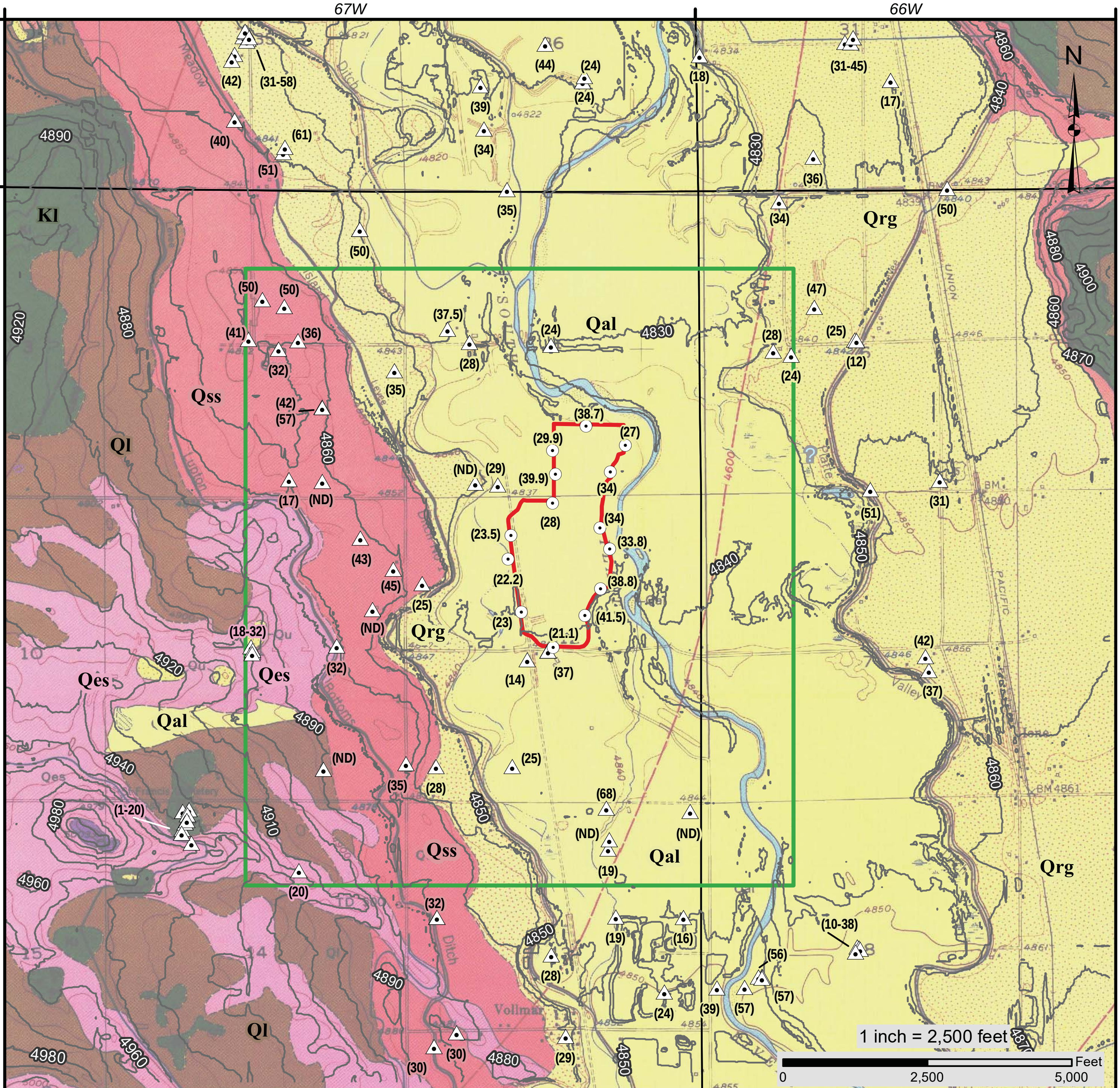


Figure A-4

Well and Borehole Saturated Thickness

Bennett Gravel Pit
Weld County, Colorado

Map Legend

- Borehole*
- DWR Water Well*
- Gravel Pit Slurry Wall Extent
- Model Extent
- Ground Surface Elevation Contour
  Contour Interval = 10 ft

*Saturated thickness in parantheses adjacent to well (ft)

Geologic Units
(from Soister, 1965)

- **Qal** - Alluvium
- **Qc** - Colluvium
- **Qes** - Eolian sand
- **Qss** - Terrace sand and silt
- **Qrg** - River gravel
- **Ql** - Loess
- **Kl** - Laramie Formation

Sources:
USGS, 10m DEM
Soister, 1965 (Geologic Map)
DWR Hydrobase

Date: May 3, 2017
Projection: CO State Plane, North (2011), ft; NAD83

McGrane Water Engineering, LLC

Figure A5 – Predevelopment Steady State Water Elevations (Run SS4noPit) and Calibration Targets

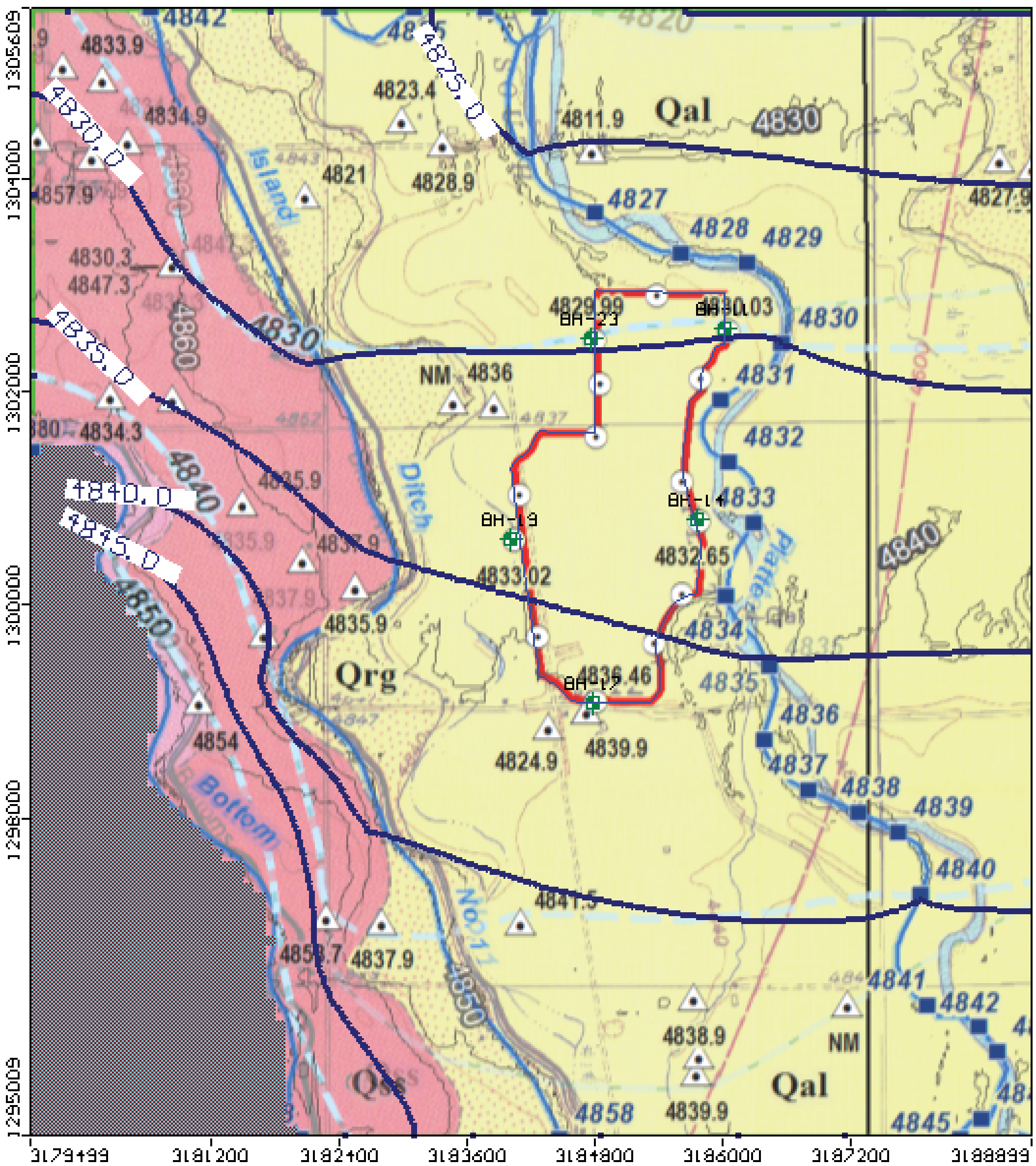
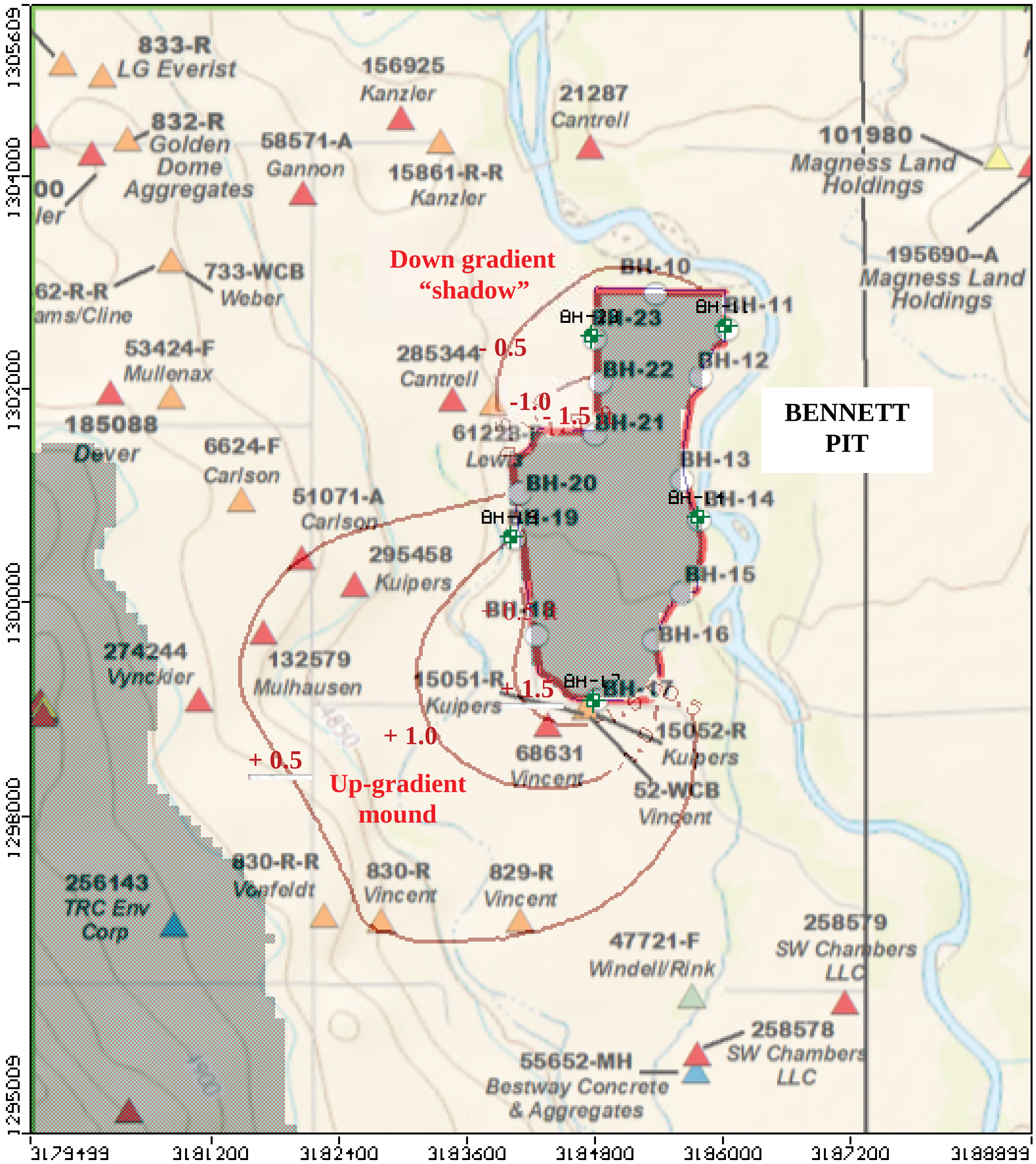


Figure A6 – Change in Water Levels with Pit (Run SS4wPit – SS4noPit)



TABLES

Table A1 – Pit Borehole Water Levels (Spring, 2017)

	JT BH-11		JT BH-14		JT BH-17		JT BH-19		JT BH-23	
Location:	Northeast Side		East Side		South Side		Southwest Side		Northwest Side	
Well Elevation (ft):	4836.78		4839.9		4843.54		4841.4		4835.99	
Ground Elevation (ft):	4834.54		4837.46		4841.21		4839.1		4833.42	
Date	**Depth (ft)**	**Elev. (ft_msl)**	**Depth (ft)**	**Elev. (ft_msl)**	**Depth (ft)**	**Elev. (ft_msl)**	**Depth (ft)**	**Elev. (ft_msl)**	**Depth (ft)**	**Elev. (ft_msl)**
21-Mar-17	5.4	4829.1	5.6	4831.9	4.9	4836.3	6.2	4832.9	4.1	4829.3
28-Mar-17	4.8	4829.8	5.0	4832.5	5.0	4836.2	6.2	4832.9	3.8	4829.7
5-Apr-17	4.5	4830.0	4.8	4832.7	4.8	4836.5	6.0	4833.0	3.4	4830.0
11-Apr-17	5.1	4829.5	5.2	4832.2	5.3	4836.0	6.2	4832.9	3.9	4829.5
20-Apr-17	5.0	4829.5	5.1	4832.3	5.3	4835.9	6.0	4833.0	3.8	4829.7
27-Apr-17	4.7	4829.9	4.5	4833.0	5.2	4836.0	5.1	4833.9	3.1	4830.3
4-May-17	4.3	4830.3	3.6	4833.8	4.1	4837.1	3.3	4835.8	2.6	4830.8
Change (ft) to Date:	1.2		1.9		0.8		2.9		1.5	

Table A2 – Well Permit Data

Perm. NO.	Applicant	Twnshp	Rng	Sec	Qtr-Qtr	Use	Well Depth (ft bgs)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	Well Yield (gpm)	Static Water Level (ft bgs)	Grnd Elev. (USGS 10m DEM)	Sat. Thick. (ft)
832-R	GOLDEN DOME AGGREGATES LLC	2 N	67 W	2	SWNE	iRRIG.	41	ND	ND	1400	5	4862.9	36
101980	MAGNESS LAND HOLDINGS LLC	2 N	67 W	6	NESW	DOM.	30	10	30	15	6	4843.9	24
833-R	L G EVERIST INC	2 N	67 W	2	SWNE	iRRIG.	73	ND	ND	1200	23	4856.9	50
17836	KIYOTA DAISY F	2 N	67 W	2	NWNE	DOM.	65	ND	ND	14	24	4856.4	41
76600	WISSLER CLIFTON	2 N	67 W	2	NWSE	DOM.	58	38	58	25	26	4860.9	32
185088	DEVER DARREL A	2 N	67 W	2	SWSE	HOUSE.	50	30	50	15	33	4867.3	17
831-R	GOLDEN DOME AGGREGATES LLC	2 N	67 W	2	SWNE	iRRIG.	83	ND	ND	1400	33	4856.9	50
21501	RETHKE MIKE & CANDICE	2 N	67 W	11	NESE	DOM.	48	36	48	20	16	4903.0	32
48887	TIMAN WILLIAM	2 N	67 W	11	SESW	DOM.	48	ND	ND	15	20	4905.9	28
15170	SCHAFFER RICHARD L & KATHLEEN E	2 N	67 W	11	NWSE	STOCK	40	ND	ND	20	22	4903.0	18
51071	CARLSON JAMES	2 N	67 W	11	NENE	DOM.	48	34	48	15	30	4903.3	18
44686	RUYBAL CILIMON E.	2 N	67 W	14	NWNE	DOM.	50	ND	ND	2	30	4919.5	20
47721-F	JOHN T WINDELL & LAURANNE RINK	2 N	67 W	13	NWNE	COM.	72	19	29	40	4	4842.9	68
20462-R-R	MCWILLIAMS STEVEN S &	2 N	67 W	2	NESE	iRRIG.	72	32	72	600	15	4862.3	57
51071--A	CARLSON MARY E	2 N	67 W	11	NENE	DOM.	70	15	70	15	25	4862.9	45
6624-F	CARLSON JAMES	2 N	67 W	11	NENE	iRRIG.	73	53	73	700	30	4865.9	43
733-WCB	WEBER J W	2 N	67 W	2	SESE	iRRIG.	74	44	74	1100	32	4862.3	42
156925--A	KANZLER DANDLD	2 N	67 W	1	SWNW	DOM.	45	25	45	15	7.5	4830.9	37.5
15051-R	KUIPERS JOHN	2 N	67 W	12	SWNW	iRRIG.	49	ND	ND	1125	12	4842.9	37
58571--A	GANNON	2 N	67 W	2	NESE	DOM.	60	40	60	13	25	4846.0	35
830-R-R	VONFELDT DANIEL	2 N	67 W	12	SWSW	iRRIG.	52	30	50	150	17	4875.7	35
274244	VYNCKIER DONDLD & LOIS	2 N	67 W	11	SENE	DOM.	50	18	50	15	18	4872.0	32
61228-F	LEWIS WILLIAM	2 N	67 W	1	SESW	iRRIG.	33	23	33	1100	4	4840.0	29
830-R	VINCENT R J	2 N	67 W	12	SWSW	iRRIG.	50	ND	ND	500	22	4859.9	28
195690--A	MAGNESS LAND HOLDINGS LLC	2 N	66 W	6	NWSW	STOCK	40	20	40	15	12	4839.9	28
15861-R-R	KANZLER DONDLD & SHIRLEY	2 N	67 W	1	SWNW	iRRIG.	32	20	30	550	4	4832.9	28
295458	KUIPERS KACEY	2 N	67 W	12	SWNW	DOM.	45	25	45	15	20	4855.9	25
829-R	VINCENT R J	2 N	67 W	12	SESW	iRRIG.	30	ND	ND	1175	5	4846.5	25
21287	CANTRELL HOWARD & VERONICA	2 N	67 W	1	SWSW	DOM.	42	33	42	27	18	4829.9	24
55652-MH	BESTWAY CONCRETE &	2 N	67 W	13	NWNE	OTHER	23	13	23	ND	4	4843.9	19
68631	VINCENT ROLLIE J	2 N	67 W	12	NESW	DOM.	32	24	32	15	18	4842.9	14
15052-R	KUIPERS JOHN	2 N	67 W	12	SENW	iRRIG.	15	ND	ND	1800	3	4842.9	12
53424-F	MULLENDX MARK D	2 N	67 W	2	SWSE	iRRIG.	57	ND	ND	300	ND	4863.9	ND
285344	CANTRELL HOWARD & VERONICA	2 N	67 W	1	SESW	DOM.	40	ND	ND	25	ND	4842.9	ND
132579	MULHAUSEN GEORGE W.	2 N	67 W	11	SENE	DOM.	35	ND	ND	20	ND	4864.9	ND
52-WCB	VINCENT ROLLIE J	2 N	67 W	12	SESW	iRRIG.	34	ND	ND	750	ND	4842.9	ND
256143	TRC ENVIRONMENTAL	2 N	67 W	11	SESE	OTHER	24	14	24	ND	ND	4890.9	ND
258578	SW CHAMBERS LLC	2 N	67 W	13	NWNE	DOM.	19	9	19	ND	ND	4843.9	ND
258579	SW CHAMBERS LLC	2 N	67 W	13	NENE	DOM.	19	9	19	ND	ND	4844.9	ND
					Minimum		15.0	9.0	19.0	2.0	3.0	4829.9	12.0
					Maximum		83.0	53.0	74.0	1800.0	33.0	4919.5	68.0
					Average		46.8	26.0	44.5	432.6	17.6	4860.5	32.6

Table A3 – Bennett Pit Borehole Data

Borehole ID	30 DEM Elev.	COSPN_X	COSPN_Y	Hole Depth (ft)	Depth to Weathered Bedrock (ft)	Depth to Bedrock (ft)	Depth to Water (ft)	Water Elev. (msl)	Sat. Thick (ft)
BH-10	4833.9	3185356.6	1302925.6	60.8	44.7	47.0	6.0	4827.9	41.0
BH-11	4832.9	3186033.7	1302593.7	38.3	31.5	34.5	4.5	4828.4	30.0
BH-12	4833.9	3185778.9	1302135.3	46.0	37.0	38.0	3.0	4830.9	35.0
BH-13	4834.9	3185599.7	1301164.4	50.7	38.0	39.2	4.0	4830.9	35.2
BH-14	4836.7	3185764.1	1300792.2	42.6	38.0	40.0	4.2	4832.5	35.8
BH-15	4839.9	3185603.8	1300098.6	55.5	43.3	45.3	4.5	4835.4	40.8
BH-16	4840.9	3185340.0	1299645.8	53.4	46.5	46.8	5.0	4835.9	41.8
BH-17	4842.9	3184786.6	1299086.1	35.5	25.6	26.4	4.5	4838.4	21.9
BH-18	4842.9	3184233.3	1299705.7	41.0	27.0	34.0	4.0	4838.9	30.0
BH-19	4839.4	3184011.0	1300617.3	30.3	28.0	30.0	5.8	4833.6	24.2
BH-20	4838.9	3184061.2	1301035.1	41.0	27.5	29.0	4.0	4834.9	25.0
BH-21	4836.9	3184782.2	1301596.2	38.0	32.5	37.2	4.5	4832.4	32.7
BH-22	4835.9	3184826.0	1302088.8	57.0	43.5	45.0	3.6	4832.3	41.4
BH-23	4834.9	3184778.9	1302506.4	45.5	34.0	40.0	4.1	4830.8	35.9
Average				45.4	35.5	38.0	4.4	4833.1	**33.6**

Table A4 – Model Mass Balance (Run SS4 (wPit)

MODEL OUTFLOW	**(cfs)**	**MODEL INFLOW**	**(cfs)**	**IN-OUT**
Storage	0	Storage	0	0.00
constant Head	3.50	constant Head	3.46	-0.035
River Leakage	2.96	River Leakage	2.99	0.035
Total	6.46	**Total**	6.46	0.00