WATER TRANSFER WORKING GROUP PROJECT DESCRIPTION

APPLICATION NO./COURT CLAIM NO.		
KITT 11-11 / 00296		
APPLICANT NAME	CONTACT NAME	TELEPHONE NO.
MTA Holdings LLC	Jeff Slothower	509-925-6916
WATER RIGHT HOLDER'S NAME (if different)		EMAIL
		jslothower@lwhsd.com

DATE OF APPLICATION	PRIORITY DATE
September 20, 2011	May 20, 1885

WATER SOURCE:	CROP:
Yakima River	Pasture
INSTANTANEOUS QUANTITY:	ANNUAL QUANTITY:
Existing: 1.5 cfs Proposed: Water Right A: .87 cfs Water Right B: .63 cfs	Existing: 589 af/yr Proposed: Water Right A: 341.632 af/yr Water Right B: 247.388 af/yr
PERIOD OF USE:	
Existing: April 1 to October 15 Proposed: Water Right A: April 1 to October 15 Water Right B: April 1 to October 15	
PLACE OF USE:	PURPOSE OF USE:
Existing: The NW¼NE¼SW¼, the E½E½SW¼ and that portion of the NW¼SE¼ lying southwest of the Northern Pacific Railroad, all in Section 34, T. 18 N., R. 18 E.W.M. Proposed: Water Right A: See Exhibit A Water Right B: The NW¼NE¼SW¼, the E½E½SW¼ and that portion of the NW¼SE¼ lying southwest of the Northern Pacific Railroad, all in Section 34, T. 18 N., R. 18 E.W.M.	Existing: Irrigation of 60 acres Proposed: Water Right A: Irrigation of 34.8 acres Water Right B: Irrigation of 25.2 acres (to be donated to trust on a temporary basis)
IRRIGATION METHOD:	

CONSUMPTIVE USE CALCULATION:
Pursuant to RCW 90.03.380, a consumptive use analysis is not required for this transfer.

NARRATIVE DESCRIPTION OF PROJECT:

The proposed change will change the point of withdrawal of the portion of the water right used to irrigate 34.8 acres to a pond located on land owned by the applicant, which pond is in hydraulic continuity with the Yakima River. The proposed change will also change the place of use to property owned by the applicant.

The total proposed place of use is 54.53 acres. 19.73 acres of the proposed place of use will not be irrigated. Thus, the total number of acres to be irrigated is 34.8 acres.

The water right as confirmed in *Ecology v. Acquavella* was 1.5 cfs, 589 acre-feet per year for the irrigation of 60 acres. Thus, each acre of the right uses .025 cfs and 9.817 acre-feet per year.

The quantity of water sought to be changed is therefore .87 cfs (34.8 x .025 = .87) and 341.632 acre-feet (34.8 x. 9.817 = 341.632).

The remainder of the water right, .63 cfs (25.2 x .025 =0.63) and 247.388 acre-feet (25.2 x 9.817 = 247.388), will remain unchanged. The place of use and point of diversion will remain unchanged, however, the remainder of the water right will be donated to trust on a temporary basis. A technical memorandum that analyzes potential impacts of this transfer is attached hereto as Exhibit B. This transfer is similar to a transfer approved by the Water Transfer Working Group in 2009/2010 that moved a similar water right to a groundwater well.

EXHIBIT A

EXHIBIT A

Water Right A:

That portion of the South Half of the Southeast Quarter of Section 3, Township 17 North, Range 18, East W.M., in the County of Kittitas, State of Washington, which lies Southwesterly of the Southwesterly boundary line of PSH 3 (SR90):

AND

That portion of the North Half of the Northeast Quarter of Section 10, Township 17 North, Range 18 East, W.M., in the County of Kittitas, State of Washington, which lies Southwesterly of the Southwesterly boundary line of PSH 3 (SR90);

AND

That portion of the Southwest Quarter of the Northeast Quarter of Section 10, Township 17 North, Range 18 East, W.M., in the County of Kittitas, State of Washington, which is described as follows:

A tract of land bounded by a line beginning at a point 370.4 feet West of the Northeast corner of said Quarter of Quarter section, and running thence West 800 feet to the low water mark of the Yakima River; thence along said low water mark South 250 feet; thence South 41°38' East 581.44 feet; thence South 80° East, 570 feet; thence South 33°50' East, 45 feet to the North boundary line of the County Road; thence North 56°10' East, 174 feet; and thence North 18°05' West, 814 feet to the point of beginning;

AND

That portion of the South Half of the Northeast Quarter of Section 10, Township 17 North, Range 18 East, W.M., in the County of Kittitas, State of Washington, which is described as follows:

A tract of land bounded by a line beginning at the Southwest corner of the Southeast Quarter of the Northeast Quarter of the Northeast Quarter, and running thence West 660 feet; thence South 694.9 feet to the Northwesterly boundary line of the right of way of the County Road; thence North 56°10' East, along the Northwesterly boundary line of said right of way, 794.5 feet; and thence North 252.5 feet to the point of beginning;

AND

A tract of land bounded by a line beginning at the Southwest corner of the Northeast Quarter of the Northeast Quarter in Section 10, Township 17 North, Range 18 East, WM., in the County of Kittitas, State of Washington, and running thence West 370.4 feet; thence South 18°05' East, 814 feet to the Northwesterly boundary line of the right of way of the County Road; thence North 56°10' East, along the Northwesterly boundary line of said right of way, 141.8 feet; and thence North 694.9 feet to the point of beginning;

AND

That portion of the Northeast Quarter of the Southeast Quarter of the Northeast Quarter of Section 10, Township 17 North, Range 18 East, W.M., lying Northerly of the Northerly Right of Way line of County Road known as Umptanum Road formerly known as Damman Road.

EXCEPTING FROM ALL OF THE ABOVE:

1. A strip of land within the Northwest Quarter of the Northeast Quarter of Section 10, Township 17 North, Range 18 East, W.M., in the County of Kittitas, State of Washington, thirty (30) feet in width, being fifteen (15) feet on either side of the center line of the irrigating ditch of the Bull Canal Company as it existed on June 24, 1908, as conveyed to Bull Canal Company by deed recorded September 29, 1908, in Volume 17 of Deeds, page 320.

2. A strip of land within the Northeast Quarter of Section 10, Township 17 North, Range 18 East, W.M ., in the County of Kittitas, State of Washington, thirty (30) feet in width being fifteen (15) feet on either side of the centerline, being the center of a Slough running near the North boundary line of the South Half of the Northeast Quarter of said Section 10, as conveyed to the Bull Canal Company by deed recorded October 6, 1908, in Volume 18 of Deeds, page 125, under Auditor's File No. 22172.

3. Any portion of the South Half of the Southeast Quarter of said Section 3, as conveyed to the City of Ellensburg, Washington, by Deeds recorded May 23, 1972, under Auditor's File No.'s 375397 and 375398, which property lies V\esterly of the East boundary line (tow of the slope) of the River Dike as it existed on December 10, 1970.

4. Any portion thereof within the Northwest Quarter of the Northeast Quarter and the Southwest Quarter of the Northeast Quarter of said Section 10, as conveyed to the City of Ellensburg, Washington by deeds recorded May 23, 1972, under Auditor's File No.'s 375397 and 375398, which property lies Westerly of the East boundary line (tow of the slope) of the River Dike as it existed on December 10, 1970.

5. That portion of the South Half of the Northeast Quarter of said Section 10, as conveyed to Kittitas County for a county road and appurtenances, by deed recorded January 27, 1987, in Volume 256, page 150, under Auditor's File No. 502062.

6. That portion of the Northeast Quarter of the Southeast Quarter of Section 10, Township 17 North, Range 18 East, WM. conveyed to the State of Washington by deed recorded September 30, 1965, under Auditor's File No, 324491.

EXHIBIT B

Aspect CONSULTING

MEMORANDUM

Project No.: 080040

November 9, 2011

To: Jeff Slothower, Lathrop, Winbauer, Harrel, Slothower & Denison, LLP

From:

11-9-11

Joe Morrice, LHG
Senior Hydrogeologist

Tim Flynn, LHG
Principal Hydrogeologist

Re: Hydrogeologic Evaluation, MTA Holdings' Water Right Change

This memorandum presents a hydrogeologic evaluation of a proposed change in the point of diversion of an existing irrigation water right owned by MTA Holdings, LLC (MTA Holdings) from the Yakima River to a pond located about ¼ mile from the river. As discussed below, we conclude that:

- Water at the proposed pond point of diversion is derived from shallow groundwater in coarse-grained Yakima River alluvium and is in hydraulic continuity with the Yakima River;
- Diverting water from the pond would not impair other nearby water rights or water right permit-exempt well users; and
- Diverting water from the pond would cause less reduction in flows in the Yakima River during the irrigation season, but would likely result in residual reductions in flows extending past the authorized irrigation season. This change in the timing of effects on river flows would have a benefit to salmon spawning and rearing habitat late in the irrigation season, and would not negatively impact river management operations.

The following sections provide the basis for these conclusions, including:

- Summary of the proposed water right change;
- Description of hydrogeologic conditions at the site, and evaluation of whether the new point of diversion is in hydraulic continuity with the Yakima River;

- Evaluation of whether use of the new point of diversion could impair other groundwater rights or water right permit-exempt wells; and
- Evaluation of potential changes in the timing of when diversions are realized at the Yakima River and whether those changes would adversely affect river management operations or salmon habitat.

Summary of Proposed Change

MTA Holdings has requested a change to Yakima River Basin Adjudication Court Claim No. 00296 (Court Claim No. 00296), which authorizes a surface water diversion from the Yakima River for the purpose of seasonal irrigation use from April 1 to October 15. Court Claim No. 00296 authorizes a total annual use of 589 acre-feet per year (afy) for irrigation of 60 acres, with a maximum diversion rate of 1.5 cubic feet per second (cfs). The original point of diversion is from the Yakima River in the SW¼NE¼ of Section 29, Township 18 North, Range 18 East Willamette Meridian. The location of the original point of diversion is shown on Figure 1.

In 2008 the water right was temporarily donated to the Washington State Trust Water Rights Program, changing the purpose of use for the 2008 irrigation season from irrigation to instream flow in the Yakima River. The temporary donation was subsequently extended to the 2009 through 2011 irrigation seasons.

Under the proposed change, the place of use and point of diversion for 0.87 cfs and 341.632 afy of the water right would be changed to property owned by MTA Holdings about 3.5 miles southeast of the original point of diversion and about ¼ mile east of the Yakima River. The requested point of diversion, shown on Figure 1, is a pond located in the NE¼NE¼ and SE¼NE¼ of Section 10, Township 17 North, Range 18 East Willamette Meridian. The remaining 0.63 cfs and 247.388 afy available under this water right would be transferred temporarily to Ecology's Trust Water Rights Program.

Hydrogeologic Conditions and Hydraulic Continuity

This evaluation of hydrogeologic conditions at the site is based on well logs from the site and nearby properties that were obtained from the Department of Ecology website and a site visit performed by Joe Morrice of Aspect Consulting to confirm surficial geology at the site. Representative well logs from the area are included as Attachment 1.

The well logs indicate the area near the site and the river is underlain by a layer of unconsolidated sand, cobbles, and gravels, with thickness of up to approximately 30 feet. This unit is interpreted to be recent alluvium from the Yakima River. Underlying the recent alluvium are coarse-grained, cemented and non-cemented gravels and sands, locally containing cobbles or clay. These are interpreted to be older alluvial, glacial, and undifferentiated sedimentary deposits. Two well logs (Nelson and Keller) describe basalt underlying the cemented gravels and cobbles at depths of 96 and 135 feet below ground surface (bgs). No evidence of any continuous low permeability confining units or other impediments to groundwater flow was identified in the recent alluvium or undifferentiated older alluvial and glacial deposits based on the well logs.

Depth to groundwater reported on the well logs is relatively shallow, ranging from 9 to 21 feet bgs. Ground surface elevation at the well locations, based on United States Geological Society (USGS) topographic maps and the reported quarter-quarter section locations of the wells, is about 10 to 20 feet above typical river levels. Subtracting depth to water from the ground surface elevations indicates that groundwater levels in these wells are about the same elevation as the river.

The proposed point of diversion is a shallow pond located about ¼ mile east of the Yakima River. Based on USGS topographic maps, ground surface at the pond is less than 10 feet above typical river levels. Review of aerial photographs and discussions with MTA Holding's representative during the site visit indicate that the pond was historically filled by a surface water diversion from the Yakima River; however, the conveyance to the pond has been filled and graded, and water in the pond is now derived from adjacent groundwater inflow and therefore reflects the local shallow water table. The pond is unlined, and coarse cobbles and gravels, similar to the alluvium described on nearby well logs, are exposed along the banks of the pond. At the time of the site visit (October 21, 2011) water level in the pond was about 5 feet below ground surface, or approximately equal to the Yakima River stage.

Based on the coarse-grained nature of the recent alluvium and cemented gravels; the similar water levels in the pond, river, and nearby groundwater wells; and lack of any barrier to groundwater flow between the pond and the river, we conclude that water in the pond is in hydraulic continuity with the Yakima River.

Impairment Analysis

The proposed diversion from the pond will remove water from the groundwater system in continuity with the Yakima River, influencing groundwater elevations near the site. Additionally, changing the point of diversion from a direct diversion from the Yakima River to the pond will alter the timing of when water diversions are realized at the river. During the irrigation season diversions from the pond will have less immediate effect on the river than the original diversion; however, residual effects of diversions from the pond on river flows will likely extend past the currently authorized irrigation season. The potential for the proposed diversion to impair groundwater or surface water users, including United States Bureau of Reclamation (USBR) operations on the Yakima River, is evaluated in the following sections.

Impairment of Groundwater Rights

Ecology's database of water well reports and water rights records were reviewed to identify groundwater rights and potential water right permit-exempt domestic wells located near the proposed pond source. The two certificated groundwater rights closest to the site are located approximately ¼ to ½ mile southeast. Groundwater certificates G3-20600C and G4-10150C, owned by Schaake Packing Company, authorize use of 118 afy for stockwater and 166 afy for industrial purposes. The groundwater source for these rights is two wells. The well associated with G4-10150C is screened at depths of 710 to 740 feet bgs, and the well associated with G3-20600C is screened at depths of 740 to 790 feet bgs.

The closest apparent permit-exempt wells are mapped in Ecology's well log database as being about ¼ mile from the site. Well logs are included in Attachment 1. One of these wells (Par Five, Inc.) is

located on-site and was drilled by the previous property owner. The other three wells are located off-site. These wells are completed at depths of 85 to 185 feet bgs and tap either the cemented sands and gravels or the underlying basalt. Based on the total well depth and depth to water reported for these wells, total available drawdown ranges from about 80 to 175 feet.

The potential for impairment of groundwater wells was evaluated by estimating the expected change in water levels in the well closest to the proposed pond source at the end of a full season of diversions. For the purpose of this analysis, it was assumed that diverting water from the pond will have the same effect on groundwater levels as pumping from a shallow well at the same location. Additionally, it was assumed that water is diverted from the pond at a continuous rate of 390 gallons per minute (gpm), equivalent to diverting 341.6 acre-feet over the authorized irrigation season of April 1 to October 15 (198 days).

A transmissivity of 1,500 feet squared per day (ft^2/day) was assumed for the alluvial deposits, based on an approximately 30 foot thickness of the saturated gravel and cobble deposits and an assumed hydraulic conductivity of 50 feet per day (ft/d). Storativity of 0.2 was assumed, based on typical specific yield for sands and gravels. Using these assumptions with the Theis nonequilibrium equation (Theis, 1935) corrected for unconfined conditions using the method of Jacob (1944) results in an estimated drawdown at a distance of ¼ mile of 3.8 feet at the end of the irrigation season. Given the large available drawdown at nearby wells relative to the predicted drawdown, diverting water from the on-site pond will not impair existing groundwater rights or exempt domestic wells.

Effects on Flows in the Yakima River

Under the current surface water diversion, reductions in flow in the Yakima River occur immediately and are equal to the instantaneous rate of diversion. By changing to a pond source ¼ mile from the river the reductions in flow would be delayed and of lower magnitude during the irrigation season than under current conditions, as the effect of water diversion from the pond propagates through the alluvium. This "lag effect" would also result in diversion from the pond continuing to affect flows in the Yakima River after the end of the irrigation season.

Lag Evaluation

This section presents the estimated lag between the start and stop of water diversions at the pond and when the effects will be realized at the river. An analytical stream depletion model (Schroeder, 1987) was applied to estimate the lag time and magnitude of effects at the river. This is the same analytical solution underlying the *Well Pumping Depletion Model* commonly used by Ecology for evaluating lag.

This analysis assumes the same hydrogeologic parameters and pumping schedule applied in the groundwater impairment analysis presented above. Results of this model are shown graphically on Figure 3, with the seasonal diversions from the pond shown in red and the estimated reduction in flow in the river shown in blue. Results of the model indicate that flow reductions in the Yakima River would be at a minimum at the start of the irrigation season, gradually increasing and reaching peak depletion about one week after the end of the irrigation season, then decreasing again until the start of the next irrigation season. The maximum predicted streamflow depletion rate was about 65 percent of the seasonal diversion rate.

Environmental Benefit of Proposed Change

The lag associated with the proposed diversion from the on-site pond would be positive for the management strategy of the Yakima River flow regime during the end of the irrigation season, and will not negatively impact fall and winter operations. The primary environmental benefit of the proposed change from the Yakima River diversion to a pond in hydraulic continuity with the river would be to spawning and incubation habitat for spring Chinook salmon in the upper Yakima River. Starting in September of each year, the USBR performs what is referred to as the flip-flop operation to encourage spring Chinook to spawn at lower river stage levels in the upper Yakima River above the Teanaway River. As described in the Interim Comprehensive Basin Operating Plan for the Yakima Project (USBR, 2002):

> "The flip-flop term derives from the fact that the Yakima and Naches Rivers form a "Y." In this operation, water from the three reservoirs in the upper Yakima River system (right side of the "Y") is used to meet irrigation demands downstream of the confluence of the Naches and Yakima Rivers through the first week of September, and water is retained in reservoirs of the Naches River arm (left side of the "Y") to the maximum extent possible. After the first week of September, reservoir operations are flip-flopped with demands downstream of the confluence of the Naches and Yakima Rivers being met from the Naches River system reservoirs and flows from the upper Yakima River system reservoirs are reduced. This operation reduces flows in the upper Yakima River at the time that fish spawn, forcing the fish to build redds at a lower elevation in the stream channel. As a result, less water is needed to be released during the winter to keep the redds under water and maintain the fish eggs."

Flow reductions in the upper Yakima River for the flip-flop operation begin on September 1st and last through the end of the irrigation season. Following the irrigation season, sufficient flows are maintained in the upper Yakima River to protect salmon redds through the incubation period (November through March), with water released from USBR storage as necessary.

The sources of flows in the Yakima River at the point of diversion currently authorized for use under Court Claim No. 00296 include unregulated (natural) flows, releases from the three reservoirs in the upper Yakima River system, and irrigation return flows. Releases from storage to meet irrigation demands have begun as early as May in dry years and as late as August in wet years, with an average start date of June 24.

As discussed previously, the proposed use of a pond source would result in less water removed from the Yakima River during the irrigation season than under the current surface water diversion. This would reduce flows and the need for releases from storage in the upper Yakima River required to meet irrigation demand, including during the late-season flip-flop operation. The reduced flows required during the flip-flop operation would in turn result in lower required flows during the winter salmon incubation period to protect salmon redds in the upper Yakima River.

The proposed change to a pond source would result in some reduction in flows in the Yakima River relative to current conditions after the end of the irrigation season. The proposed pond source is located well below the confluence of the Yakima River and the Teanaway River, whereas the flip-flop operations are intended to improve fish spawning and incubation habitat above the Teanaway

River. Therefore, additional releases from storage would not be required to offset the effects of the proposed change in order to protect salmon redds during the November through March incubation period.

Limitations

Work for this project was performed and this memorandum prepared in accordance with generally accepted professional practices for the nature and conditions of work completed in the same or similar localities, at the time the work was performed. It is intended for the exclusive use of Lathrop, Winbauer, Harrel, Slothower & Denison, LLP, for specific application to the referenced property. This memorandum does not represent a legal opinion. No other warranty, expressed or implied, is made.

Attachments

Figure 1 – Existing and Proposed Points of Diversion
Figure 2 – Proposed Point of Diversion and Place of Use
Figure 3 – Stream Depletion Model Results

V:\080040 MTA\Deliverables\MTA_HydroEvaluation.doc

FIGURE 1

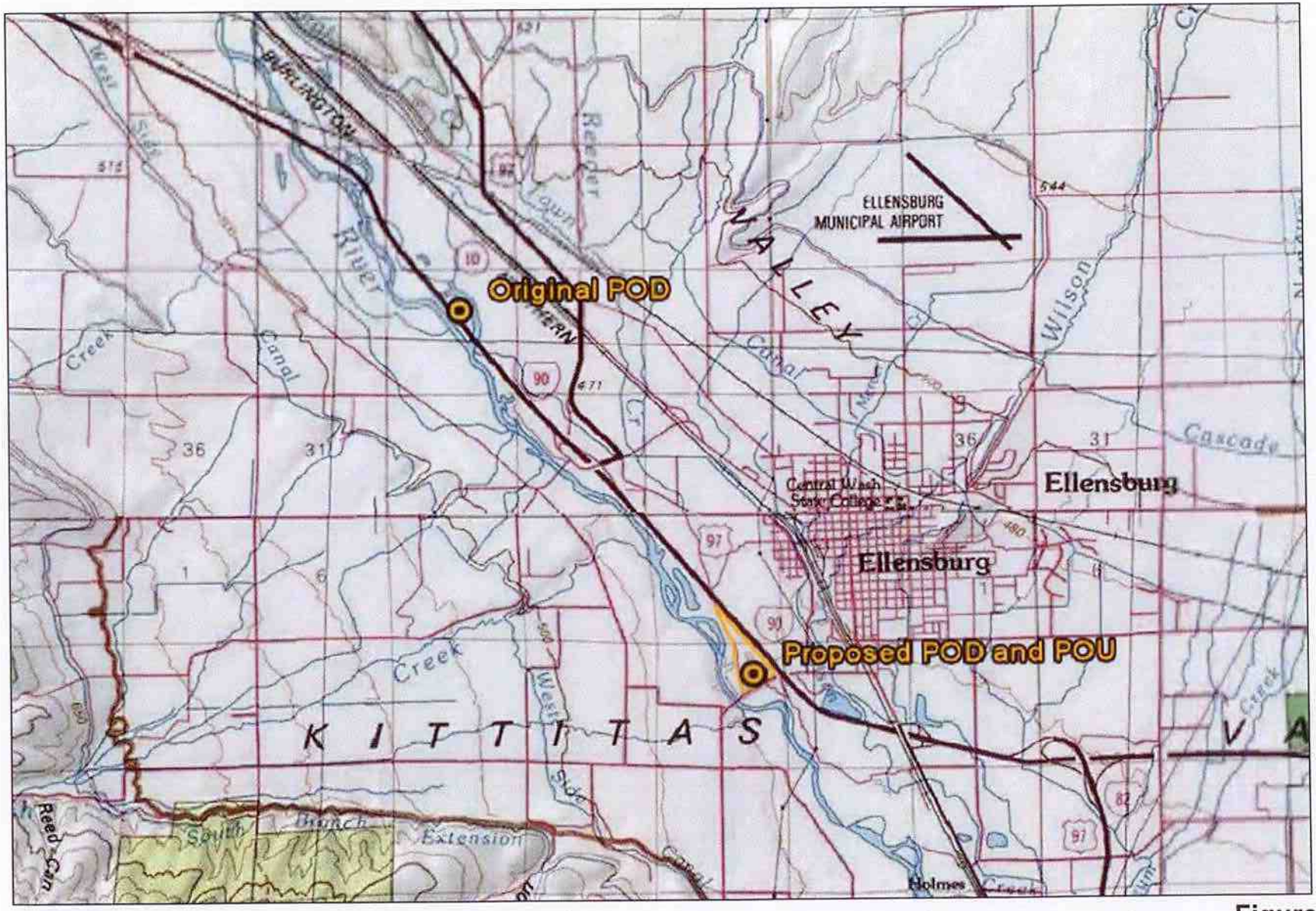

Figure 1

Existing and Proposed Points of Diversion

MTA Holdings, Ellensburg, WA

Aspect Consulting

11/9/2011

V:\080040 MTA\Deliverables\Figs 1 and 2

2012-01

2012-01

FIGURE 2

Figure 2
Proposed Point of Diversion and Place of Use
MTA Holdings, Ellensburg, WA

Aspect Consulting
11/9/2011
V:\080040 MTA\Deliverables\Figs 1 and 2

2012-01

2012-01

FIGURE 3

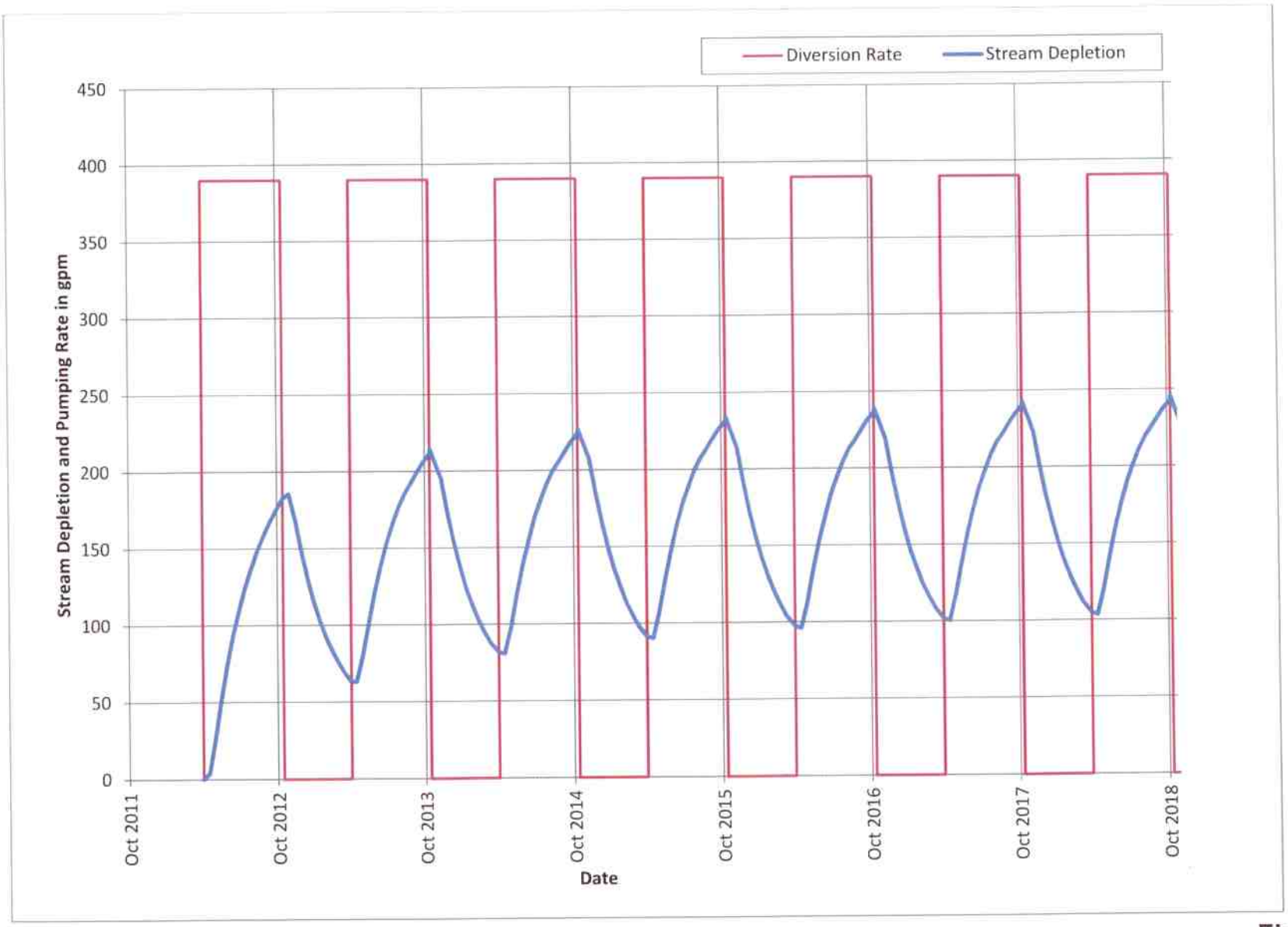

Figure 3
Stream Depletion Model Results
MTA Holdings, Ellensburg, WA

Aspect Consulting
11/9/2011
V:\080040 MTA\Deliverables\fig3Glover_stream only_short

2012-01

2012-01

ATTACHMENT 1

2012-01

File Original with Department of Ecology
Second Copy - Owner's Copy
Third Copy - Driller's Copy

WATER WELL REPORT

STATE OF WASHINGTON

101642

Notice of Intent W-136211

UNIQUE WELL I D # AGB-264

Water Right Permit No _____

(1) OWNER Name BRIAN NELSON Address 1083 UMPTANUM RD ELL

(2) LOCATION OF WELL County KITTITAS 1/4 NE 1/4 Sec 10 T 17 N R 18 WM

(2a) STREET ADDRESS OF WELL (or nearest address) 1083 UMPTANUM RD ELLENSBURG WASH ABS/H

TAX PARCEL NO _____

(3) PROPOSED USE: [X] Domestic [ ] Industrial [ ] Municipal [ ] Irrigation [ ] Test Well [ ] Other [ ] DeWater

(4) TYPE OF WORK. Owner's number of well (if more than one) _____
[X] New Well [ ] Deepened [ ] Reconditioned [ ] Decommission
Method: [ ] Dug [ ] Cable [X] Rotary [ ] Bored [ ] Driven [ ] Jetted

(5) DIMENSIONS Diameter of well 10X6 inches
Drilled 185 feet Depth of completed well 185 ft

(6) CONSTRUCTION DETAILS
Casing Installed
[X] Welded 6" Diam from +2 ft to 115 ft
[X] Liner installed 4 1/2" Diam from 105 ft to 183 ft
[ ] Threaded _____" Diam from _____ ft to _____ ft

Perforations [X] Yes [ ] No
Type of perforator used SKILSAW
SIZE of perforations 1/2 in by 1/4 in
40 perforations from 145 ft to 185 ft

Screens [ ] Yes [X] No [ ] K-Pac Location _____
Manufacturer's Name _____
Type _____ Model No _____
Diam _____ Slot Size _____ from _____ ft to _____ ft
Diam _____ Slot Size _____ from _____ ft to _____ ft

Gravel/Filter packed [ ] Yes [X] No [ ] Size of gravel/sand _____
Material placed from _____ ft to _____ ft

Surface seal [X] Yes [ ] No To what depth? 20 ft
Material used in seal BENTONITE
Did any strata contain unusable water? [X] Yes [ ] No
Type of water? IRON Depth of strata 40
Method of sealing strata off CASED OFF

(7) PUMP Manufacturer's Name _____
Type _____ H P _____

(8) WATER LEVELS Land-surface elevation above mean sea level _____ ft
Static level 9 ft below top of well Date 2/7/01
Artesian pressure _____ lbs per square inch Date _____
Artesian water is controlled by _____ (Cap, valve, etc.)

(9) WELL TESTS Drawdown is amount water level is lowered below static level
Was a pump test made? [ ] Yes [ ] No If yes, by whom? _____
Yield _____ gal /min with _____ ft drawdown after _____ hrs
Yield _____ gal /min with _____ ft drawdown after _____ hrs
Yield _____ gal /min with _____ ft drawdown after _____ hrs
Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test _____
Bailer test _____ gal /min with _____ ft drawdown after _____ hrs
Artest 40 gal./min with _____ ft drawdown after 1 hrs
Artesian flow _____ g p m Date _____
Temperature of water _____ Was a chemical analysis made? [ ] Yes [X] No

(10) WELL LOG or DECOMMISSIONING PROCEDURE DESCRIPTION
Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. Indicate all water encountered

MATERIAL	FROM	TO
DIRT	0	6
SAND - LARGE COBBLES	6	15
CEMENTED GRAVEL	15	22
SAND - GRAVEL	22	48
CLAY - GRAVEL	48	56
SAND - GRAVEL	56	70
YELLOW CLAY	70	81
CEMENTED GRAVEL	81	123
[illegible] - BROWN - CLAY	123	135
BROWN BASALT	135	148
FRACTURED - BASALT	148	176
BASALT - WATER BEARING	176	185

RECEIVED
MAY 22 2001
DEPARTMENT OF ECOLOGY
WELL DRILLING UNIT

DEPT OF ECOLOGY Received MAY 20 2001 CENTRAL REGION OFFICE

Work Started 2/6/01 Completed 2/7/01

WELL CONSTRUCTION CERTIFICATION

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief

Type or Print Name CRAIG VERMEER License No 2428
(Licensed Driller/Engineer)

Trainee Name _____ License No _____

Drilling Company HOPPEN BROTHERS DRILLING

(Signed) _____ License No 2428
(Licensed Driller/Engineer)

Address 781 COMMI RIDGE RD

Contractor's Registration No HOPBRD01003 Date 2/7/01

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (360) 407-6600. The TDD number is (360) 407-6006

ECY 050-1-20 (11/98)

2012-01

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

2012-01

WATER WELL REPORT

Original & 1st copy – Ecology, 2nd copy – owner, 3rd copy – driller

Construction/Decommission ("x" in circle) 380961

☒ Construction

○ Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

CURRENT
Notice of Intent No. W-272472

Unique Ecology Well ID Tag No. BAE-636

Water Right Permit No. _____

Property Owner Name DAVE KELLER

Well Street Address BROWN RD

City E-BURG County KITTITAS

Location NW 1/4-1/4 NE 1/4 Sec 10 Twn 17 R 18 (EWM or WWM) circle one

Lat/Long (s, t, r Still **REQUIRED**) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____

Tax Parcel No. 17181 0052-0003

PROPOSED USE: ☒ Domestic ☐ Industrial ☐ Municipal ☐ DeWater ☐ Irrigation ☐ Test Well ☐ Other _____

TYPE OF WORK: Owner's number of well (if more than one) _____

☒ New well ☐ Reconditioned ☐ Deepened — *Method:* ☐ Dug ☐ Bored ☐ Driven ☐ Cable ☒ Rotary ☐ Jetted

DIMENSIONS: Diameter of well 6 inches, drilled 170 ft. Depth of completed well 170 ft.

CONSTRUCTION DETAILS

Casing Installed: ☒ Welded 6" Diam. from +2 ft. to 108 ft.
☒ Liner installed 4½" Diam. from 90 ft. to 170 ft.
☐ Threaded _____" Diam. from _____ ft. to _____ ft.

Perforations: ☒ Yes ☐ No
Type of perforator used SKILSAW
SIZE of perfs 9 in. by ¼ in. and no. of perfs 30 from 130 ft. to 170 ft.

Screens: ☐ Yes ☒ No ☐ K-Pac Location _____
Manufacturer's Name _____
Type _____ Model No. _____
Diam. _____ Slot size _____ from _____ ft. to _____ ft.
Diam. _____ Slot size _____ from _____ ft. to _____ ft.

Gravel/Filter packed: ☐ Yes ☒ No ☐ Size of gravel/sand _____
Materials placed from _____ ft. to _____ ft.

Surface Seal: ☒ Yes ☐ No To what depth? 20 ft.
Material used in seal BENTONITE
Did any strata contain unusable water? ☐ Yes ☒ No
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

PUMP: Manufacturer's Name _____
Type: _____ H.P. _____

WATER LEVELS: Land-surface elevation above mean sea level _____ ft.
Static level 21 ft. below top of well Date 7/5/10
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? ☐ Yes ☒ No If yes, by whom? _____
Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.
Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.
Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.
Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test _____
Bailer test _____ gal./min. with _____ ft. drawdown after _____ hrs.
Airtest 30+ gal./min. with stem set at 160 ft. for 1 hrs.
Artesian flow _____ g.p.m. Date _____
Temperature of water _____ Was a chemical analysis made? ☐ Yes ☒ No

CONSTRUCTION OR DECOMMISSION PROCEDURE

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

MATERIAL	FROM	TO
DIRT	0	3
COBBLES & GRAVEL	3	17
BROWN CEMENTED GRAVEL	17	96
BROWN BROKEN BASALT-CLAY	96	147
BROWN BROKEN BASALT GRAVEL & WATER	147	170

RECEIVED
JUL 28 2010
DEPARTMENT OF ECOLOGY - CENTRAL REGIONAL OFFICE

Start Date 6/29/10 Completed Date 7/5/10

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Engineer ☐ Trainee Name (Print) CHARLES WAMSLEY
Driller/Engineer/Trainee Signature C Wamsley
Driller or trainee License No. 2428 1058

Drilling Company HIDDEN RIVERS DRILLING INC
Address P.O. BOX 891
City, State, Zip SELAH, WA 98942
Contractor's Registration No. HIDDERS90K Date 7/5/10

If TRAINEE,
Driller's Licensed No. _____
Driller's Signature _____

Ecology is an Equal Opportunity Employer.

ECY 050-1-20 (Rev 3/05) **The Department of Ecology does NOT warranty the Data and/or Information on this Well Report.**

2012-01

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

WATER WELL REPORT

STATE OF WASHINGTON

Start Card No. W089702
UNIQUE WELL I.D. # ACL146
Water Right Permit No. _____

(1) OWNER: Name Par Five Inc Address 1201 Umptanum rd Ell. Wa 98926

(2) LOCATION OF WELL: County Kittitas ne 1/4 ne 1/4 Sec 10 T. 17 N., R. 18 W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) _____

(3) PROPOSED USE: [X] Domestic [ ] Industrial [ ] Municipal [ ] Irrigation [ ] Test Well [ ] Other [ ] DeWater

(4) TYPE OF WORK: Owner's number of well (if more than one) _____
Abandoned [ ] New well [X] Method: Dug [ ] Bored [ ] Deepened [ ] Cable [ ] Driven [ ] Reconditioned [ ] Rotary [X] Jetted [ ]

(5) DIMENSIONS: Diameter of well 10" 6" inches. Drilled 85 feet. Depth of completed well 85 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6" Diam. from +2 ft. to 83 ft. Welded [X]
Liner installed [ ] _____" Diam. from _____ ft. to _____ ft.
Threaded [ ] _____" Diam. from _____ ft. to _____ ft.

Perforations: Yes [ ] No [X]
Type of perforator used _____
SIZE of perforations _____ in. by _____ in.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.

Screens: Yes [ ] No [X]
Manufacturer's Name _____
Type _____ Model No. _____
Diam. ____ Slot size _____ from _____ ft. to _____ ft.
Diam. ____ Slot size _____ from _____ ft. to _____ ft.

Gravel packed: Yes [ ] No [X] Size of gravel _____
Gravel placed from _____ ft. to _____ ft.

Surface seal: Yes [X] No [ ] To what depth? 20 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes [ ] No [X]
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

(7) PUMP: Manufacturer's Name _____
Type: _____ H.P. _____

(8) WATER LEVELS: Land-surface elevation above mean sea level _____ ft.
Static level 4 ft. below top of well Date _____
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes [ ] No [ ] If yes, by whom? _____
Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.
" " " "
" " " "
Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test _____
Bailer test _____ gal./min. with _____ ft. drawdown after _____ hrs.
Airtest 15 gal./min. with stem set at 85 ft. for 1 hrs.
Artesian flow _____ g.p.m. Date _____
Temperature of water _____ Was a chemical analysis made? Yes [ ] No [ ]

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL	FROM	TO
Topsoil Brown m	0	3
Cemented Gravel w/Clay bl.br H	3	11
Gravel river rock cobbels	11	27
Boulders sandstone Bl.Br. VH		
Cemented Gravel Black Br. Orangish	27	38
Cemented Gravel Yellow Clay Malty Color MH	38	46
Cemented Gravel Sandstone malty color MH	46	59
Cemented Gravel yell. clay malty color MH	59	63
Cemented Gravel tan clay malty color MH	63	65
Cemented Gravel tan clay malty color MH	65	72
Cemented Gravel Sandstone malty Color H	72	85

AUG - 1 1997

Work Started 7/29/97 19. Completed 7/30/97 19

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME Water Man Well Drilling (PERSON, FIRM OR CORPORATION) (TYPE OR PRINT)
Address 10c Berriman ln. Selah Wa 98942
(Signed) _____ (WELL DRILLER) License No. 1335
Contractor's Registration No. WATERMW061J2 7/30/97 19

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6600. The TDD number is (206) 407-6006.

ECY 050-1-20 (9/93) * * *

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OWNE

WATER WELL REPORT

STATE OF WASHINGTON

Start Card No. 28728

File Original and First Copy with Department of Ecology
Second Copy—Owner's Copy
Third Copy—Driller's Copy

Water Right Permit No. L

(1) OWNER: Name RAY OWENS Address Brown Rd.

(2) LOCATION OF WELL: County Kittitas SW ¼ NE ¼ Sec 10 T 17 N., R 18 W.M.

(2a) STREET ADDDRESS OF WELL (or nearest address)

(3) PROPOSED USE: [X] Domestic [ ] Irrigation [ ] DeWater [ ] Industrial [ ] Test Well [ ] Municipal [ ] Other

(4) TYPE OF WORK: Owner's number of well (if more than one)
Abandoned [ ] New well [X] Deepened [ ] Reconditioned [ ] Method: Dug [ ] Cable [ ] Rotary [ ] Bored [ ] Driven [ ] Jetted [ ]

(5) DIMENSIONS: Diameter of well inches.
Drilled feet. Depth of completed well ft.

(6) CONSTRUCTION DETAILS:
Casing installed: [6] " Diam. from 0 ft. to 140 ft.
Welded [X] Liner installed [ ] Threaded [ ] " Diam. from ft. to ft.
" Diam. from ft. to ft.

Perforations: Yes [ ] No [X]
Type of perforator used
SIZE of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: Yes [ ] No [X]
Manufacturer's Name
Type Model No.
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes [ ] No [ ] Size of gravel
Gravel placed from ft. to ft.

Surface seal: Yes [X] No [ ] To what depth? 20 ft.
Material used in seal
Did any strata contain unusable water? Yes [ ] No [ ]
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name
Type: H.P.

(8) WATER LEVELS: Land-surface elevation above mean sea level
Static level 20 ft. below top of well Date 7-27-90
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes [ ] No [ ] If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test
Bailer test gal./min. with ft. drawdown after hrs.
Airtest 20 gal./min. with stem set at 175 ft. for 2 hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes [ ] No [ ]

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL	FROM	TO
SILT	0	4
CEMENTED COBBLES	4	50
SANDSTONE	50	60
CEMENTED GRAVEL	60	130
SANDSTONE + GRAVEL	130	180

RECEIVED
SEP 10 1990
DEPARTMENT OF ECOLOGY
CENTRAL REGION OFFICE

ENTERED

Work started 7-26 19 90 Completed 7-27 19 90

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME Bach Drilling Co (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)

Address RT 5, Box 1010, Ellensburg, WA.

(Signed) Mike Bach (WELL DRILLER) License No. 22

Contractor's Registration No. MIKEBDC133N4 Date 8-3 19 90

(USE ADDITIONAL SHEETS IF NECESSARY)

ECY 050-1-20 (10/87) -1329-

2012-01

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.