

PACIFIC groundwater GROUP

**WRIA 44/50
GROUNDWATER ELEVATION MONITORING REPORT
(2007 WATER YEAR)
EXEMPT WELL WATER USE PHASE 2**

March 2008

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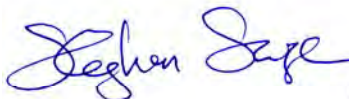

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SIGNATURE

This report, and Pacific Groundwater Group's work contributing to this report, were reviewed by the undersigned and approved for release.

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Jack Linville
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Nature Conservancy (Chuck Warner)
Jim Johncox
Roy Downes
Pete Muslin (Johnson well)
Rod and Russell Peterson (Johnson well operators)
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Paul Wittig

Chelan Hills & Chelan Springs:

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Tom Corcoran

Badger Mountain:

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Bruce Moulton
Dan Robins

Foster Creek:

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Lee Hemmer
Ray Henton
Terry Hunt
Barry Watson (Malone well)

1.0 SUMMARY OF FINDINGS

Groundwater elevations in Water Resource Inventory Area (WRIA) 44/50 fluctuated seasonally between a high spring elevation and low late summer to fall elevation in most monitored wells. Seasonal fluctuations ranged from an apparent 20 feet to less than 1 foot. In general, shallow wells within the alluvial aquifer displayed the largest seasonal fluctuations, while deeper wells within the basalt aquifer displayed little to no seasonal fluctuations. Groundwater within the basalt aquifer is influenced by a more regional source and, therefore, groundwater elevations are less responsive to local recharge events.

Fluctuations in groundwater elevations are generally consistent from one year to the next with slight variations. However, an overall pattern of decline is noted in the minimum annual water levels of the PID and Biram located in the Lower Moses Coulee. The apparent decline may be due to variations in annual usage in that area. Statistical analysis is required to evaluate the validity and source of the decline.

Peak groundwater elevations generally decreased from 2006. The decrease is likely related to the lower precipitation in 2007 than 2006. Precipitation records for the area indicate the total precipitation for the 2007 water year was about 4 inches lower than 2006.

Three new monitoring sites were added to the WRIA 44/50 long term monitoring program during the 2006 water year: the Chelan Hills, Chelan Springs, and the Badger Mountain areas. However, data have only become available for this water year because of equipment malfunctions. Four monitoring wells were also added to the Upper Moses Coulee network, including the Johncox, TNC, Johnson, and Downes wells.

2.0 INTRODUCTION

The subsequent sections provide an introductory discussion on the following: (1) the purpose of

this study and this report; (2) background on the exempt well water use study; (3) a summary of the hydrogeology of the area; and (4) a description of the monitoring system and method of well selection.

2.1 PURPOSE OF STUDY AND REPORT

Many areas across Washington State are experiencing growth in the number of houses with exempt wells and septic tanks. This growth is unregulated and can result in declines in groundwater quantity and quality.

The purpose of this study is to monitor long-term trends in groundwater elevations in areas identified during the Phase 1 Exempt Well Water Use Study as potential for future groundwater level declines. These areas include Chelan Springs, Chelan Hills, Rimrock Meadows, and Badger Mountain. Existing monitoring sites in the Foster Creek and the Lower and Upper Moses Coulee were also added to the long-term monitoring program. These sites were instrumented during previous studies and continued monitoring will provide useful information on long-term trends in groundwater elevations throughout WRIA 44/50. All long-term groundwater monitoring sites are shown in **Figure 1**.

The purpose of this report is to provide a summary of groundwater elevation trends observed at the monitoring sites up to the end of the 2007 water year (October 2007). Monitoring began as early as 2003 at some sites and as late as 2007 at other sites.

This work was performed, and this report prepared, using generally accepted hydrogeologic practices used at this time and in this vicinity, for exclusive application to the WRIA 44/50 Watershed Planning process and for the exclusive use of the Foster Creek Conservation District, the WRIA 44/50 Planning Unit, and their agents. This is in lieu of other warranties, express or implied.

2.2 EXEMPT WELL WATER USE BACKGROUND

To address the issue of exempt well water use, the Water Resource Inventory Area (WRIA) 44/50 Watershed Planning Unit (Douglas County Watershed Planning Association, 2004) proposed an Exempt Well Water Use Study.

Pacific Groundwater Group (PGG) performed an initial Phase 1 Exempt Well Water Use Study in four areas of Douglas County in 2005: Chelan Springs, Chelan Hills, Rimrock Meadows/Sagebrush Flats, and Badger Mountain. These areas were identified as high growth in exempt well water use. The phase 1 study involved the following elements:

- A water balance calculation comparing current and future groundwater use to recharge.
- A groundwater level survey to compare current groundwater levels to levels at the time of drilling.
- A nitrate loading calculation to assess effects on water quality at full build-out conditions.

The results of the Phase 1 study suggest the potential for groundwater level declines exists in all study areas except for Chelan Springs and that nitrate loading at full build-out conditions should have minimal impacts on groundwater in all areas except possibly Rimrock Meadows, an area that could experience relatively dense development (PGG, 2006a).

Another component of the Phase 2 Exempt Well Water Use Study is monitoring long-term trends in groundwater elevations. Four sites were initially instrumented for long-term monitoring: Lower Moses Coulee, Upper Moses Coulee, Jameson/Grimes Lake Area, and Foster Creek (**Figure 1**). Surface water elevations are also monitored at the Jameson/Grimes Lake site. The first annual report on long-term groundwater elevations summarized monitoring up to October 2005 at these four sites (PGG, 2006b). Since then three additional sites (The Chelan Hills, Chelan Springs, and the Bader Mountain areas) were added to the monitoring program (**Figure**

1). As of December 2006, the monitoring program for the Phase 2 Exempt Well Use Study consists of six sites with a total of 22 monitored wells and 2 lake stations (**Table 1**). Well logs for each monitored well are provided in **Appendix A**.

2.3 HYDROGEOLOGY

The hydrogeology of the study area is described in the WRIA 44/50 Final Phase 2 Basin Assessment April 2003 (PGG, 2003a) and in the WRIA 44/50 Foster Creek and Lower Moses Coulee Level 2 Hydrogeologic Assessment September 2003 (PGG, 2003b). The following summary is drawn predominantly from those reports.

WRIAs 44 and 50 are underlain predominantly by the Miocene basaltic rocks of the Columbia River Basalt Group. The basalt sequence is generally 2,000 to 3,000 feet thick in the area and is made up of numerous individual basalt flows ranging from a few tens of feet to about 300 feet thick; the average thickness is about 100 feet. Interbed deposits, often consisting of mudstones, siltstones, and sandstones, separate many of the individual basalt flows. The tops and bottoms of the flows are typically more permeable than flow interiors because of rubble zones, vesicles, and fractures. These zones form the principal aquifers within the basalt. Flow interiors are generally dense and less permeable. Openings caused by minor vertical cooling fractures provide some limited, primarily vertical, permeability in the central part of the flows.

In the Chelan Hills and Chelan Springs area, the Columbia River Basalt Group thins in the direction of the Cascades Mountains. In this area along the Columbia River valley, older, light-colored granitic rocks can be seen in outcrops underlying the Columbia River Basalt. Water saturated fractures in these older rocks provide some water supply to wells in this area.

The Ellensburg formation and other unconsolidated deposits, consisting of sand and gravel with varying amounts of clay and silt, overlie the basalts in many areas. These deposits are gener-

ally less than 50 feet thick on the plateau but may be as much as 300 feet thick on the banks of the Columbia River and in Moses Coulee. In these areas the unconsolidated deposits form a productive aquifer referred to as the alluvial aquifer.

All wells included in this analysis are completed in either the basalt aquifer or alluvial aquifer, except for the Corcoran and Nystrom wells in the Chelan Hills and Chelan Springs area, which are completed in the older fractured granitic rocks (**Table 1**).

2.4 MONITORING SYSTEM

Selection of monitored wells at each site includes the following criteria:

- Favorable location in study area.
- Permission granted by well owner.
- Well head accessibility (pitless adaptor versus top seal). Instrumenting wells with pitless adaptors is preferred, but modifications to instrument top seals is possible with owner's permission.
- Water levels in well recover to static conditions between pumping periods.

These criteria limit the number of potential wells available for monitoring at each site. For example, in the Chelan Hills and Chelan Springs area, the preferred number of wells (3 at each site) could not be achieved because the above criteria could not be met.

The monitoring system at each site uses Solinst LT Leveloggers transducers to measure and record both groundwater levels and barometric pressure at six different sites within WRIA 44/50 (**Figure 1**). The wells are all privately owned domestic, irrigation, or stock watering wells. Monitoring in Lower Moses Coulee and Foster Creek area began in 2003. Monitoring in Upper Moses Coulee and Jamison Lake began in 2004. Monitoring in the Chelan Springs, Chelan Hills, and Badger Mountain areas began in 2006.

Data are downloaded in the spring and fall each year with a laptop computer and imported into an MS Access database so they can be stored, modified, and managed as needed. Water levels are corrected for barometric pressure because the transducers are not vented to the atmosphere.

3.0 RESULTS OF LONG-TERM GROUNDWATER ELEVATION MONITORING

The following subsections provide a brief summary of annual precipitation records during the monitoring period followed by results of the long-term groundwater elevation monitoring up to the end of the 2007 water year (October 1, 2007) at each site. Site maps and hydrographs are provided in **Figures 2-33**.

3.1 PRECIPITATION RECORDS

The Western Regional Climate Center (WRCC) operates a number of Remote Automated Weather Stations (RAW), providing daily values of total precipitation. The WRCC operates a RAW station at the town of Douglas, located in the central portion of WRIA 44/50, and at the town of Nespelem, just north of WRIA 44/50 (**Figure 1**).

The precipitation records indicate that the 2006 water year was a substantially wetter year than the 2004 or 2005 water years. Precipitation during the 2007 water year decreased from the 2006 peak but was still above the 2004 and 2005.

The total annual precipitation reported at the Nespelem RAW station for water years 2004 through 2007 were 10.44, 10.99, 16.30, and 12.01 inches respectively. The total annual precipitation reported at the Douglas RAW station for water years 2004 through 2007 were 5.88, 8.89 and 10.89, 5.11 inches respectively. The 2007 Douglas data appear low because the record is missing for much of January through March.

3.2 LOWER MOSES COULEE

Lower Moses Coulee (**Figure 2**), from Rattle Snake Springs to the Columbia River, is approximately 20 miles long and 1 mile wide with steep basalt cliffs rising up to 1500 feet above the valley floor. The surface elevation of the valley floor ranges from 1100 feet (relative to mean sea level, msl) near McCartney Creek to 850 feet msl near the Columbia River.

3.2.1 Monitoring Network

Groundwater elevation monitoring in the Lower Moses Coulee commenced in late spring of 2003. Monitored wells include: Palisades Irrigation District (PID), King, Biram, Linville North, and Linville South (**Table 1**). Groundwater elevations were monitored in the King well from May 2003 to December 2003, after which monitoring in this well was terminated and therefore not included in this report. Monitoring continues in the remaining wells. None of the wells are currently used for water supply.

3.2.2 Seasonal Fluctuations

Groundwater elevations in all monitored wells display distinct seasonal fluctuations (**Figures 3-6**). In all wells, groundwater elevations increase during the wet winter months reaching their peaks in April after the spring snow melt and decrease during the dry summer months reaching their low in early October before the start of the wet winter months.

Seasonal fluctuations in groundwater elevations result from seasonal cycles in local groundwater recharge. Local recharge in the Lower Moses Coulee is derived from infiltrating precipitation and snow melt within the coulee itself and from infiltrating surface water sources, both of which contribute more recharge during the wet winter and spring months. Surface water sources include Douglas and McCartney Creeks, which enter the coulee near its upper reaches and lose all their water to the highly permeable alluvial aquifer, except during exceptionally large runoff

events when Douglas Creek has been known to flow all the way to the Columbia River.

In general the seasonal fluctuations in groundwater elevations are most pronounced in the shallow alluvial aquifer where recharge lag times are short. Driller's logs indicate that the Linville South and PID wells are completed within the alluvial aquifer. A driller's log is not available for the Biram monitored well; however, based on its depth and a driller's log for Biram's second well 50 feet away, the Biram well is likely completed within the alluvial aquifer. Seasonal fluctuations observed in these wells range from over 11 feet in the Linville South well to about 6 feet in the PID and 5 feet in the Biram well. The larger seasonal fluctuations observed in the Linville South well may be related to heterogeneities within the aquifer, bedrock slope, and/or irrigation withdrawals.

3.2.3 Summer Fluctuations

Groundwater elevations in the Linville North, Linville South, and Biram wells also display smaller, shorter time-scale fluctuations during the summer months in addition to the seasonal fluctuations described above. These smaller fluctuations are not observed in the PID well, which is located in the upper reaches of the coulee.

The smaller fluctuations observed during the summer months are likely in response to variable groundwater withdrawal during summer irrigation. The Palisades Irrigation District near Palisades in the upper reaches of the coulee uses surface water from Douglas Creek for irrigation and may explain the lack of summer fluctuations observed in that well.

3.2.4 Long Term Trends

Four complete years of monitoring have now been collected in the Lower Moses Coulee and preliminary long-term trends can begin to be assessed.

Groundwater elevations appear to generally correlate with precipitation. The decrease in eleva-

tions between the 2006 and 2007 water years is likely due to this correlation. Groundwater elevations are stable for the duration of the record in the Linville wells but an overall pattern of decline is noted in the PID and Biram minimum annual water levels (**Figures 4 and 5**). The apparent decline may be due to variations in annual usage in that area. Statistical analysis is required to evaluate the validity and source of the decline.

3.3 UPPER MOSES COULEE

Upper Moses Coulee from Jameson Lake to Lower Moses Coulee is approximately 20 miles long and follows McCarteny Creek (**Figure 7**). The surface elevation along the Upper Moses Coulee ranges from 1800 feet msl near Jameson Lake to 850 feet msl near the upper reaches of Lower Moses Coulee.

3.3.1 Monitoring Network

Groundwater elevation monitoring in the Upper Moses Coulee was initiated in the summer of 2004. Groundwater elevation time series plots are presented in **Figures 8-12**. Initial wells included Bechtol, Mayer, and The Nature Conservancy [TNC] (**Table 1**). Monitoring of the Bechtol well was terminated in May 2005 and is therefore no longer presented. The data was included in the 2005 Water Year report.

The Johnson irrigation well, owned by Pete Muslin and operated by Rod and Russell Peterson, was added to the monitoring network in September 2006. The Johnson well is completed in the alluvial aquifer.

Three additional wells were added to the Upper Moses Coulee long term groundwater monitoring program in 2007; the NAAC Rimrock Meadows deep irrigation well, the Downes domestic well, and the Johncox domestic well (**Figure 7**).

The NAAC Rimrock Meadows irrigation well is a deep basalt aquifer well (738-ft deep). Monitoring of the NAAC deep well provides informa-

tion on long term groundwater trends in deeper portions of the basalt aquifer.

The Downes domestic well, owned by Pete Muslin, is completed in the upper most portions of the basalt aquifer near Camel Springs where McCartney Creek first gains water south of Jameson Lake. Monitoring in this location provides information on groundwater trends and their influence on surface water flow in McCartney Creek.

The Johncox well, completed in the basalt aquifer in the Rimrock Meadows area, was part of the initial long term monitoring program for the Upper Moses Coulee, but obstructions in the well head led to instrumentation problems. Jim Johncox has granted permission for the well head to be modified to accommodate data instrumentation.

Continued monitoring in the Upper Moses Coulee area also provides observations in groundwater elevations for the Rimrock Meadows area, an area within the Upper Moses Coulee which may experience a substantial increase in the number of unregulated exempt water supply wells.

3.3.2 Observations

Groundwater levels in the Mayer well showed a slow decline of about 0.6-ft throughout the 2005 water year, with no apparent seasonal fluctuation; groundwater levels have since recovered by about 0.5-ft during the wet season of 2006 (**Figure 8**). The declining levels during the 2005 water year may have been due to the low precipitation years of 2004 and 2005. The wetter 2006 water year may have brought some recovery back. During the 2007 water year, a 10 day rise of approximately 2 feet was noted from February 10 to February 20, 2007. At the time of the last download in October of 2007, the water levels were still recovering. The source of this water level rise is unknown. The small instantaneous drops in groundwater levels in **Figure 8** are in response to pumping in the well.

The scatter evident in the Johncox (**Figure 9**) groundwater elevation record is due to pumping

and recovery of the well. The water levels show a seasonal variation of approximately two feet and are stable between seasons.

Groundwater elevations in the TNC well (**Figure 10**) declined approximately two feet from April to October 2007. The decline is likely in response to irrigation pumpage in the area. More data is required to evaluate this water level record.

The groundwater elevation record for the Johnson (**Figure 11**) well is typical for an irrigation well. Groundwater elevations rose from October 2006 until the beginning of the irrigation season in April, 2007. At that time, groundwater elevations began to decline in response to pumping. The two sets of reading for the irrigation season indicate the groundwater elevations during pumping and non-pumping periods. Water level recovery is evident beginning in October of 2007.

The seasonal groundwater elevation change in the Downes well (**Figure 12**) is approximately one foot. More data is required to evaluate this water level record.

3.4 JAMESON AND GRIMES LAKE

Jameson and Grimes Lake are contained behind a glacial moraine in the upper most reaches of Moses Coulee (**Figure 13**). Grimes Lake is approximately 2 miles upgradient of Jameson Lake and approximately 40 feet higher in elevation than Jameson Lake. Discharge to the lakes and the surrounding alluvial aquifer is derived mainly from precipitation, snow melt, runoff from storm events, and upward flow from the underlying basalt aquifer.

Throughout the first part of the 20th century, the lake level in Jameson Lake rose, apparently as a result of agricultural practices in the surrounding watershed. The lake water elevation is now controlled by ditch and culvert structures at the south end of the lake. Details on the historical and current lake water quality can be found in

WRIA 44/50 Water Quality Assessment Jameson and Grimes Lakes (Pacific Groundwater Group and Water Quality Engineering, 2004) and a more detailed discussion on the hydrogeology of the Jameson Lake area can be found in *WRIA 44/50 Jameson Lake and Moses Coulee Flood Mitigation Hydrogeologic Assessment* (PGG, 2006c).

3.4.1 Monitoring Network

Lake level monitoring in Grimes and Jameson Lake was initiated in May 2004. Lake levels are monitored at the northern end of Jameson Lake and along the southern portion of the western shoreline of Grimes Lake (**Figure 13**). The Grimes lake station was initially located at the southern end of the lake but was relocated to its current position in September 2006 because of freeze and thaw movement at its old location. The transducers are housed in 2-inch diameter PVC pipes attached to a steel fence post within the lake.

Groundwater level monitoring of the shallow alluvial aquifer was initiated in March 2005 at the Matthiesen Resort (Matthiesen well) adjacent to Jameson Lake. Groundwater level monitoring of the deep alluvial aquifer was initiated in late August 2006 with the installation of a deep groundwater monitoring well (PGG-1) on the north end of Jameson Lake.

All four monitoring stations were surveyed for their northing (y), easting (x), and elevation (z) positions in September 2006. Hydrographs for all four stations are shown in **Figures 14-17**.

3.4.2 Observations

The water level in Grimes Lake is about 40 ft higher than Jameson Lake throughout the year indicating a hydraulic gradient (slope) of 0.004 ft/ft between the two lakes. Water level elevations of both lakes display similar seasonal fluctuations of about 2 feet (**Figures 13 and 14**). Both lakes reach their peak levels by early May and declined to their lows by early October before the start of the wet winter months. Seasonal fluctuations during the period of record were

fairly similar for both lakes; however, water levels in Jameson Lake were approximately 0.35 feet higher during the 2006 water year compared to the 2005 and 2007 water years. The water level elevation in Grimes Lake continued to increase over the 2005-2007 period.

The increased variability (small scale fluctuations of less than 0.5 feet) noted in 2006 diminished during 2007. Peak water levels in both lakes are likely dampened by the ditch and culvert control structures at the outlet of Jameson Lake.

Groundwater elevations in the Mattheisen water supply well (**Figure 16**) are closely tied to the Jameson Lake elevation indicating a strong hydraulic connection between the aquifer and the lake in this vicinity. Groundwater elevations in deep monitoring well PGG-1 indicate approximately one foot of seasonal variation since monitoring was initiated in late August 2006 (**Figure 17**). The groundwater elevation in PGG-1 is about 8.5-ft higher than the Jameson Lake level indicating an upward groundwater gradient at the north end of the lake. The upward vertical gradient between PGG-1 and Jameson Lake is 0.05 ft/ft. Continued monitoring will indicate if there are any seasonal or long term trends.

3.5 FOSTER CREEK

Foster Creek drains approximately 660 square miles and lies north of Jameson and Grimes Lake (**Figure 18**).

3.5.1 Monitoring Network

Groundwater monitoring of six wells in the Foster Creek area was initiated in the summer of 2003 (**Table 1**). Three monitored wells, completed within the alluvial aquifer, are located within the valley of Foster Creek (Malone, Henton and Hanford) and three monitored wells are located along the uplands above Foster Creek (Hammons, Hemmer, and Hunt); the Hunt and Hemmer wells are completed within the basalt aquifer and the Hammons well is completed

within the alluvial aquifer. Upland elevations are approximately 1000 feet higher than the valley.

Hydrographs for all monitored wells are shown in **Figures 19** through **24**. The barometric pressure transducer malfunctioned from December 2004 to February 2005; data values jump sporadically on all hydrographs for this period. The barometric pressure transducer was subsequently replaced in June of 2005. The barometric pressure transducer again recorded a few anomalies (zero readings) during the months of December 2005 and January 2006, but appears to have resumed its functionality after January 2006. The functionality of the barometer will be investigated in during the spring 2007 download.

The following data gaps occur in the Hunt, Handford and Hammons wells:

- The transducer in the Hunt monitoring well malfunctioned and was subsequently replaced between April 2004 and June 2005.
- October 2005 to May 2006 data from the Handford well was inadvertently overwritten during the May 2006 download. The logger was removed to attempt data retrieval but was unsuccessful. The logger was subsequently replaced in late June 2006.
- Data from the Hammons well from June 2006 to October 2006 is unreliable because the recorded data was off by about 2-ft from the hand measured data and could therefore not be correlated to groundwater elevations.

3.5.2 Valley Observations

Groundwater elevations in monitored wells within the Foster Creek valley display variable amounts of seasonal fluctuations. Fluctuations are generally between 2 and 3 feet, although higher fluctuations are apparent in the Hanford well due to pumping of the well.

Seasonal fluctuations range from about 2 foot in the Malone and well to over 3 feet in the Henton well (**Figures 19, 20, and 21**). Groundwater elevations in the Henton and Hanford wells begin to rise in September reaching their peak in

February or March and then gradually decline reaching their low in August. In comparison, the seasonal peaks and lows in the Malone well occur about two months later.

The 2007 peak groundwater elevation is slightly lower by about 0.5 feet in the Malone well compared to 2006, likely a result of reduced precipitation. The 2007 peak groundwater elevation in the Henton well is higher by about 1.5 feet compared to 2006; however, water level changes in the Henton well are harder to discern because of frequent pumping. Data for the 2006 peak groundwater elevation in the Hanford is not available.

The seasonal fluctuations in the valley monitored wells result from cycles in local recharge derived from infiltrating precipitation, snow melt, and storm runoff. The lower 2007 peak groundwater elevations are likely due to the dryer 2007 water year.

3.5.3 Upland Observations

Trends in groundwater elevations along the upland wells are variable. Within the Hammons well, seasonal fluctuations of about 3 feet were observed during the 2004 and 2005 water years reaching its lowest observed level during the fall of 2005 (**Figure 22**). Water levels then increased over 6 feet during the spring 2006 season and another foot during the 2007 season.

Water levels also increased over 4 feet during the spring 2006 season in the Hunt well (**Figure 23**) but only 2 feet in 2007. Unlike the monitored wells in the Foster Creek valley, the groundwater elevations in the Hammons and Hunt wells increase rapidly in the early spring, likely in response to snow melt, and then gradually decline during the summer and fall before leveling off during the winter months. Rapid changes in groundwater elevations are common in uplands which are typically considered recharge areas for aquifer systems.

Declines seen in all of the wells during 2004 and 2005 water years have continued their recovery during the 2006 and 2007 seasons.

3.6 CHELAN HILLS / CHELAN SPRINGS

Chelan Hills and Chelan Springs were incorporated into the long term groundwater monitoring program in 2006. The sites are located about 30 miles north of Wenatchee along the Columbia River near Chelan Falls (**Figure 1**). Chelan Springs is a 6,731 acre area in the McNeil Canyon area and Chelan Hills is a 7,637 acre area immediately south and adjacent to the Chelan Springs (**Figure 25**). Both sites occur along the eastern slopes of the Columbia River valley. Many springs emanate within the study area indicating a groundwater discharge area fed by more than water recharging directly within it; likely from upland recharge. Both areas have experienced relatively consistent growth since 1988.

3.6.1 Monitoring Network

Four domestic wells were instrumented with pressure transducers in the Chelan Hills and Chelan Springs area in 2006. However, data is only available beginning this year due to instrument error. In the Chelan Hills area, the Luce and Sandum wells were instrumented on May 9, 2006. In the Chelan Springs area, the Nystrom well was instrumented on May 9, 2006 and the Cocoran well was instrumented on November 8, 2006 (**Table 1**). All wells except the Luce well are completed in fractured granite. The Luce well is completed in the basalt aquifer. Data from the Cocoran well will not be reported until the 2007 water year report.

3.6.2 Observations

Time series plots of groundwater elevations for the Chelan wells are presented in **Figures 26-28**. Groundwater elevations in the Luce well indicate a 3-foot annual variation with the highest water levels in April and lowest in October. The data dispersion evident in the first half of water year 2007 is likely due to instrument error.

The high dispersion in the Nystrom and Cocoran groundwater elevations are indicative of data

errors so no conclusion can be drawn. Future data will indicate whether the variability is natural or an artifact of measurement error.

3.7 BADGER MOUNTAIN

Badger Mountain was incorporated into the long term groundwater monitoring program in 2006. The site is located northeast of East Wenatchee, between East Wenatchee and Waterville (**Figure 1**). Badger Mountain is located on a local topographic high and therefore has no up-gradient recharge area. As such, it may be susceptible to groundwater declines if development of the area continues.

3.7.1 Monitoring Network

Four domestic wells were instrumented with pressure transducers at the Badger Mountain site on May 9, 2006: the Murray, Mouton, Robbins and Wilcox wells (**Figure 29** and **Table 1**). The Murray, Moulton, and Robins wells are currently used for domestic water supply. The Wilcox well is a domestic water supply well currently unused. All wells are completed within the basalt aquifer.

3.7.2 Observations

Time series plots of groundwater elevations for the Badger Mountain wells are presented in **Figures 30-33**. Groundwater elevations in the Moulton well (**Figure 30**) appear to vary 15 to 20 feet annually. However, a number of issues suggest there may be an error associated with the hand measurements. These include the linear nature of the groundwater elevations between hand measured points, the coincidence of the highest annual water level with the hand measurement, and the relatively flat transducer response in the beginning of water year 2007 compared to the significant change in hand measurements. Future data will indicate whether the variability is natural or an artifact of measurement error.

The Murray well (**Figure 31**) indicates approximately two feet of annual water level variation.

The increased reading dispersion seen in water year 2007 is likely due to instrument error.

The Robins well (**Figure 32**) indicates over 10 feet of water level change annually, with the peak water levels occurring in June.

Groundwater elevations in the Wilcox well (**Figure 33**) remained essentially constant throughout the 2007 water year, although they showed much higher variability during the winter months. Much of the variability appears to be associated with barometric changes more than water level variation.

4.0 REFERENCES

Douglas County Watershed Planning Associations, 2004. *Watershed Management Plan, Moses Coulee and Foster Creek Watershed, WRIA 44&50*

Pacific Groundwater Group, 2003a. *WRIA 44/50 Final Phase 2 Basin Assessment April 2003*. Prepared for Foster Creek Conservation District.

Pacific Groundwater Group, 2003b. *WRIA 44/50 Foster Creek and Lower Moses Coulee Level 2 Hydrogeologic Assessment September 2003 Draft*. Prepared for Foster Creek Conservation District.

Pacific Groundwater Group and Water Quality Engineering, 2004. *WRIA 44/50 Water Quality Assessment Jameson and Grimes Lakes*. Prepared for Foster Creek Conservation District.

Pacific Groundwater Group, 2006a. *WRIA 44/50 Exempt Well Water Use Study*. Prepared for Foster Creek Conservation District

Pacific Groundwater Group, 2006b. *WRIA 44/50 Groundwater Elevation Monitoring Report Exempt Well Water Use Phase 2*. Prepared for Foster Creek Conservation District.

Pacific Groundwater Group, 2006c. *Jameson Lake and Moses Coulee Flood Mitigation Hydrogeologic Assessment Review Draft*. Prepared for Foster Creek Conservation District.

Pacific Groundwater Group, 2007. *WRIA 44/50 Rimrock Basin Assessment*. Technical Memorandum prepared for Foster Creek Conservation District.

TABLE 1: Groundwater and Surface Water Monitoring Sites (WRIA 44/50)

	Well Use	Aquifer	*MP Elevation (ft)	Well Depth (ft)	Start of Data Collection	Status
Lower Moses Coulee						
Biram	Unused	Alluvial	920.3	135	5/6/2003	
Linville N	Unused	Basalt	906.5	240	5/6/2003	
Linville S	Unused	Alluvial	849.0	251	6/25/2003	
PID (Palisades Irrigation District)	Unused	Alluvial	1029.4	160	5/7/2003	
King	Unused	Basalt	981.7	139	5/6/2003	discontinued 12/3/03
Upper Moses Coulee						
Downes	Domestic	Basalt	1640	200	11/27/2006	
Johncox	Domestic	Basalt	1600	150	3/8/2006	
Johnson (aka Peterson)	Irrigation	Alluvial	1554	191	9/19/2006	
Mayer	Domestic	Basalt	1569	80	8/10/2004	
Rimrock	Community	Basalt	1570	738	1/18/2007	faulty logger
TNC	Unused	Basalt	1888	705	2/9/2005	
Bechtol	Livestock	Unknown	2050	>195	8/10/2004	discontinued 5/31/05
Jameson Lake						
Grimes Lake	NA	NA	1837.57	NA	4/28/2004	
Jameson Lake	NA	NA	1797.71	NA	4/28/2004	
PGG-1 (Jameson Test Well)	Monitoring Well	Alluvial	1805.41	152	8/31/2006	
Matthiesen	Domestic	Alluvial	1800.86	41	3/2/2005	
Foster Creek						
Hammons	Unused	Alluvial	2126	57	7/9/2003	
Handford	Unused	Alluvial	896	45	7/9/2003	
Hemmer	Livestock	Basalt	2178	200	7/9/2003	
Henton	Irrigation	Alluvial	971	90	7/9/2003	
Hunt	Old Domestic	Basalt	2087	290	8/5/2003	
Malone	Unused	Alluvial	1663	64	7/9/2003	
Chelan Hills - Chelan Springs						
Corcoran	Domestic	Granite	1978	165	11/8/2006	faulty logger
Luce	Domestic	Basalt	1913	59	5/9/2006	
Nystrom	Domestic	Granite	2247	205	5/9/2006	
Sandum	Domestic	Granite	967	485	5/9/2006	discontinued 10/20/06
Badger Mountain						
Moulton	Domestic	Basalt	3881	299	5/10/2006	
Murray	Domestic	Basalt	3659	140	5/9/2006	logger stuck
Robins	Domestic	Basalt	4078	125	5/11/2006	
Wilcox	Unused	Basalt	4053	210	5/9/2006	

*Measuring Point Elevations (except Jameson Lake Area) surveyed with GPS hand held receiver (vertical accuracy estimated to be +/- 10-ft).







Jameson Lake Stations professionally surveyed (vertical accuracy +/- 0.10-ft)

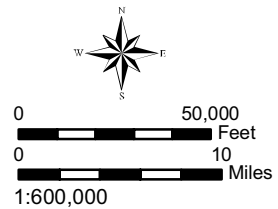
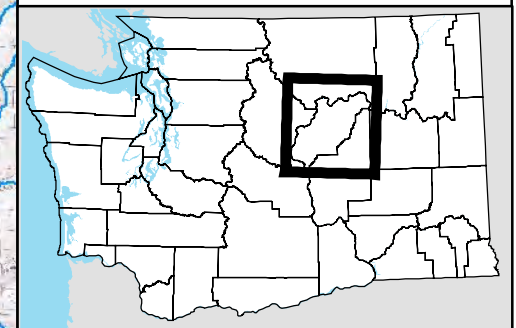
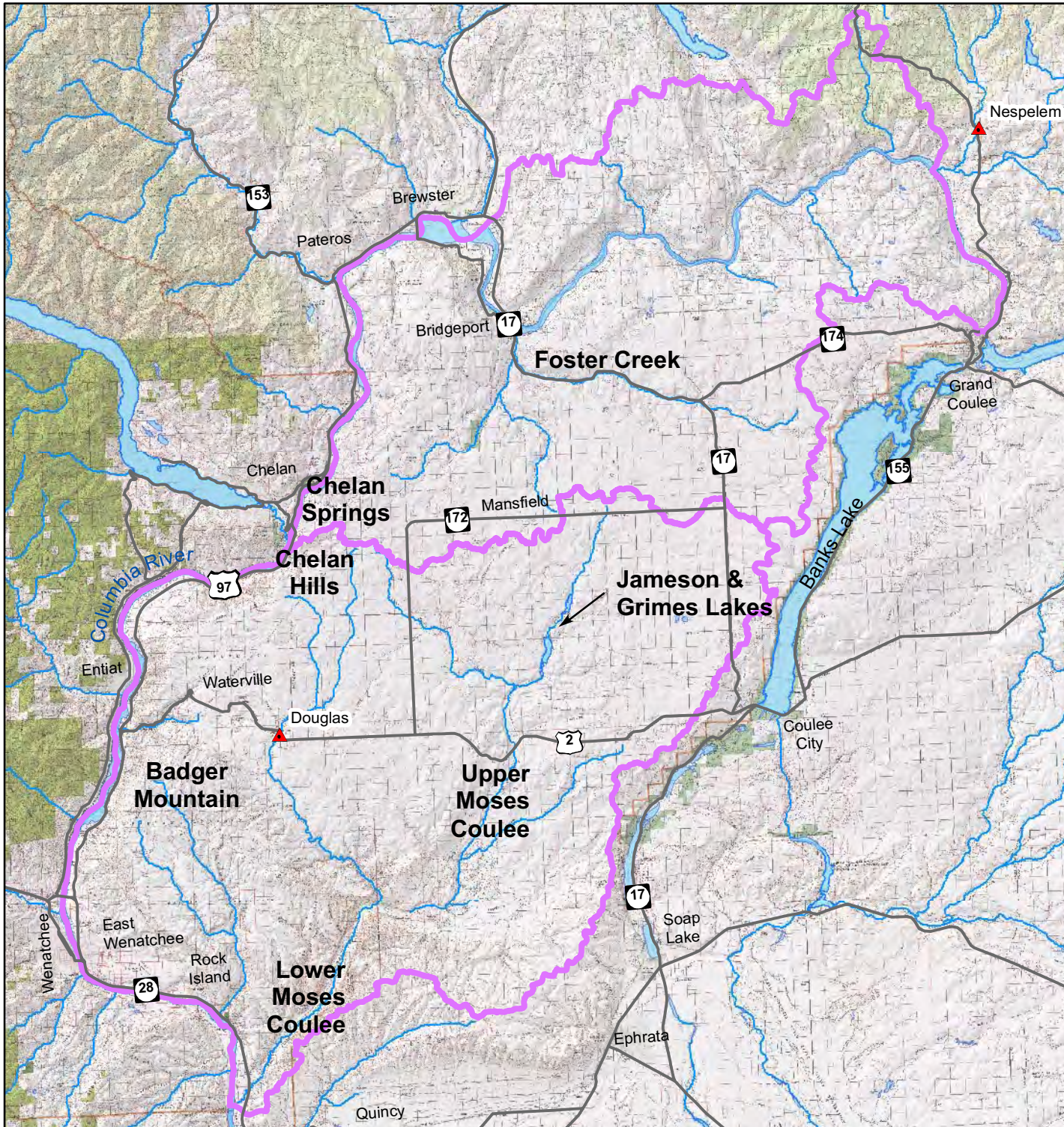
Grimes Lake Station Moved in Sept. 2006 (elevation in table is for new station site)

Datum: NAVD88

WRIA 44/50
Groundwater Elevation Monitoring
Exempt Well Water Use Phase 2


FIGURE 1
Monitoring Sites

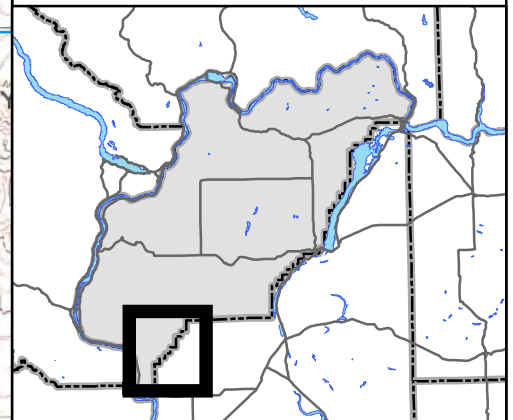
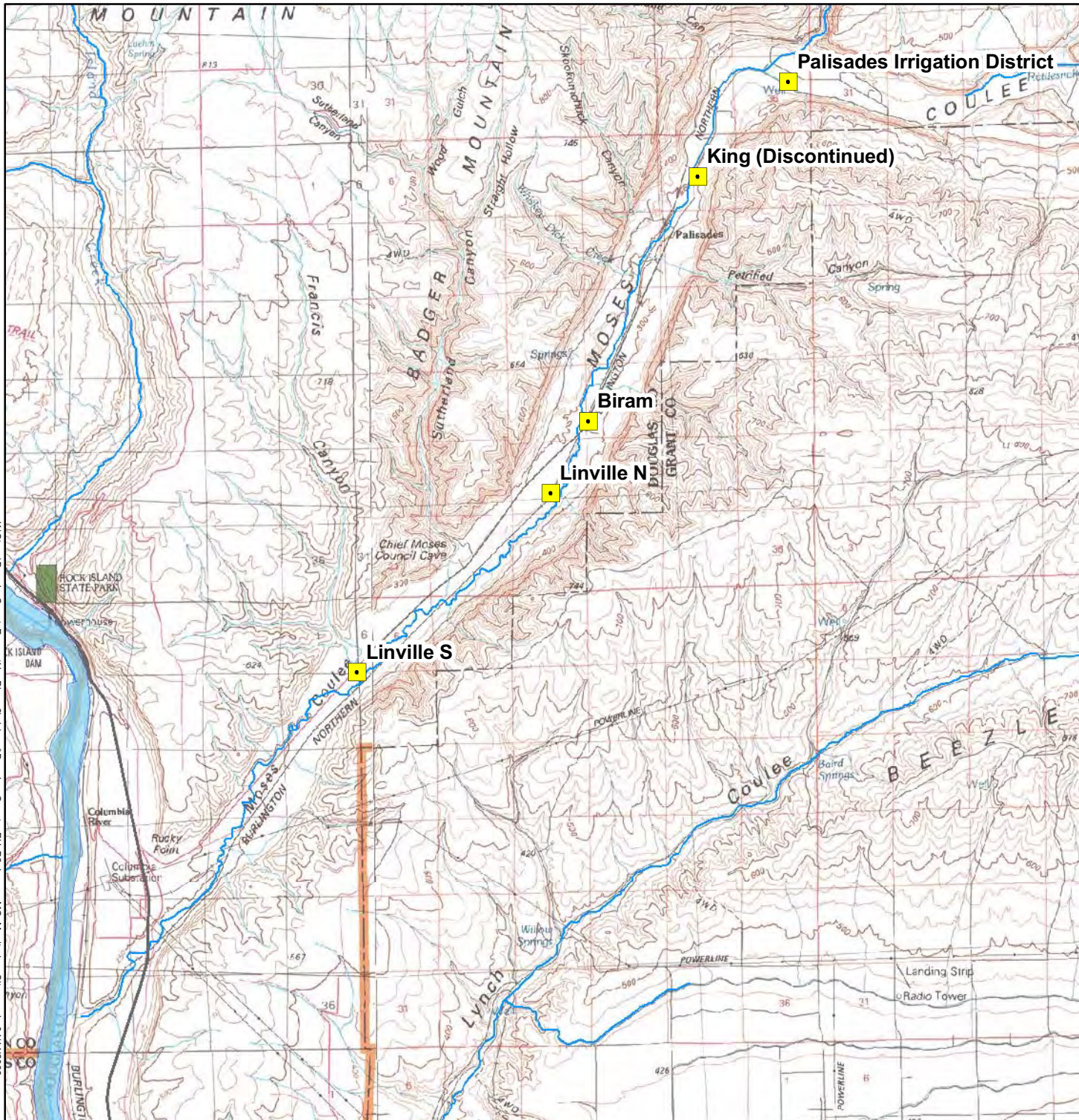
-  Precipitation RAW Stations
-  WRIAs 44 & 50 Boundaries
-  Lakes
-  State Routes
-  County Line
-  Rivers & Streams



WRIA 44/50
Groundwater Elevation Monitoring
Exempt Well Water Use Phase 2

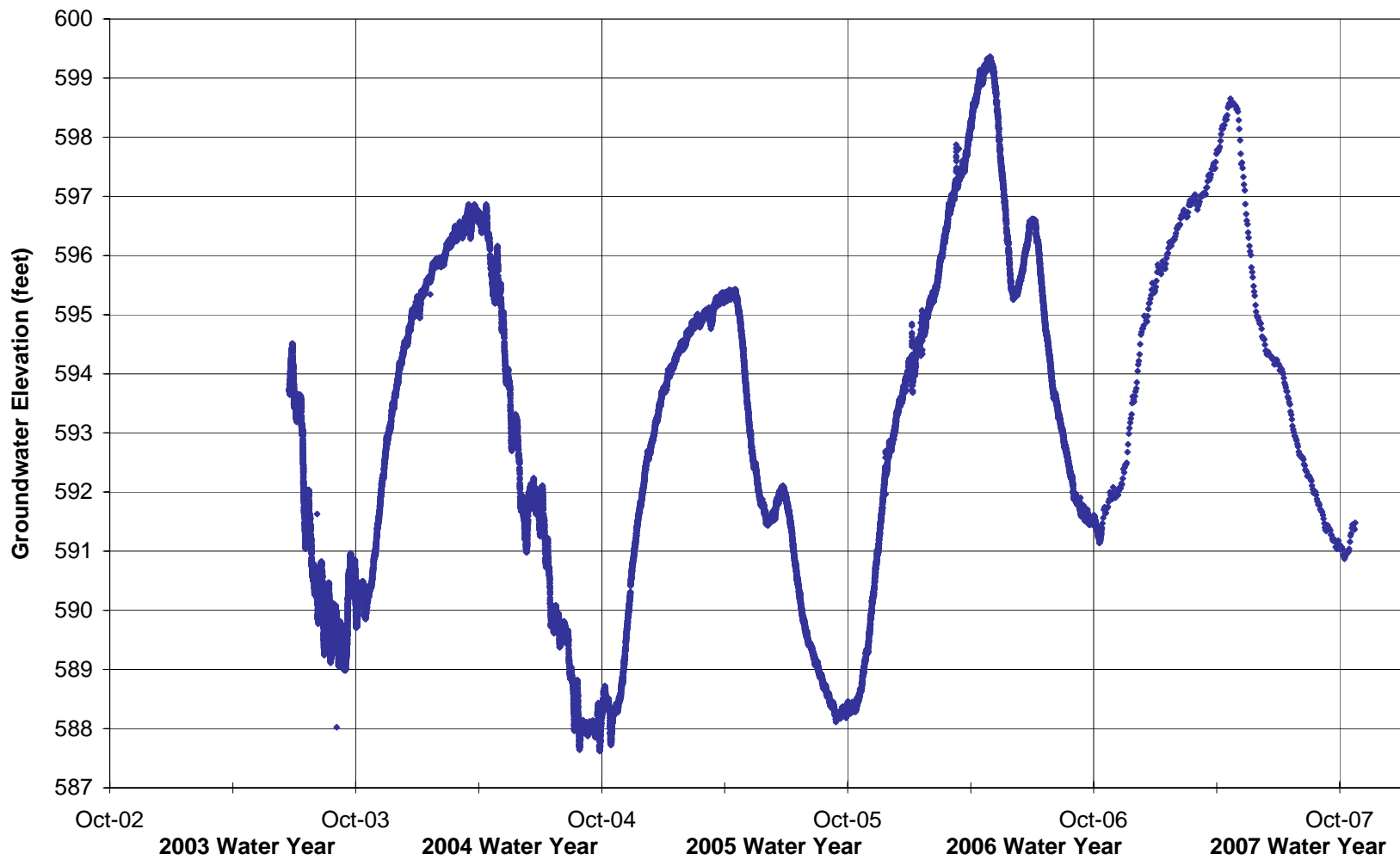
FIGURE 2
Lower Moses Coulee
Monitoring Sites

 Groundwater Level Monitored Well



0 10,000
0 2
1:120,000
Feet
Miles





Note: Scale modified from standard report scale

Figure 3
Linville South Well Hydrograph

WRIA 44/50
 Groundwater Elevation Monitoring
 Exempt Well Water Use Phase 2



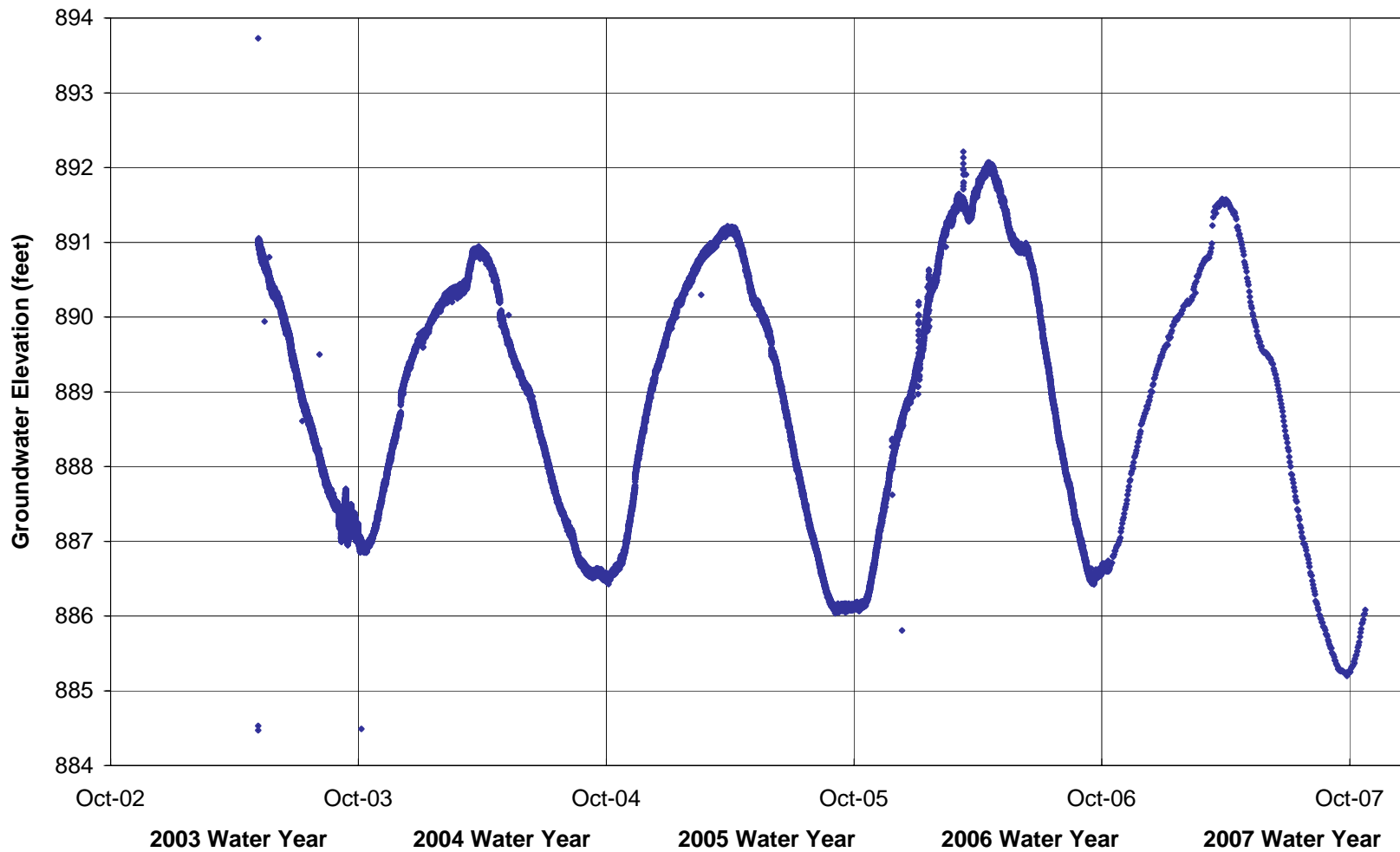


Figure 4
Palisades Irrigation District (PID) Well
Hydrograph

WRIA 44/50
 Groundwater Elevation Monitoring
 Exempt Well Water Use Phase 2



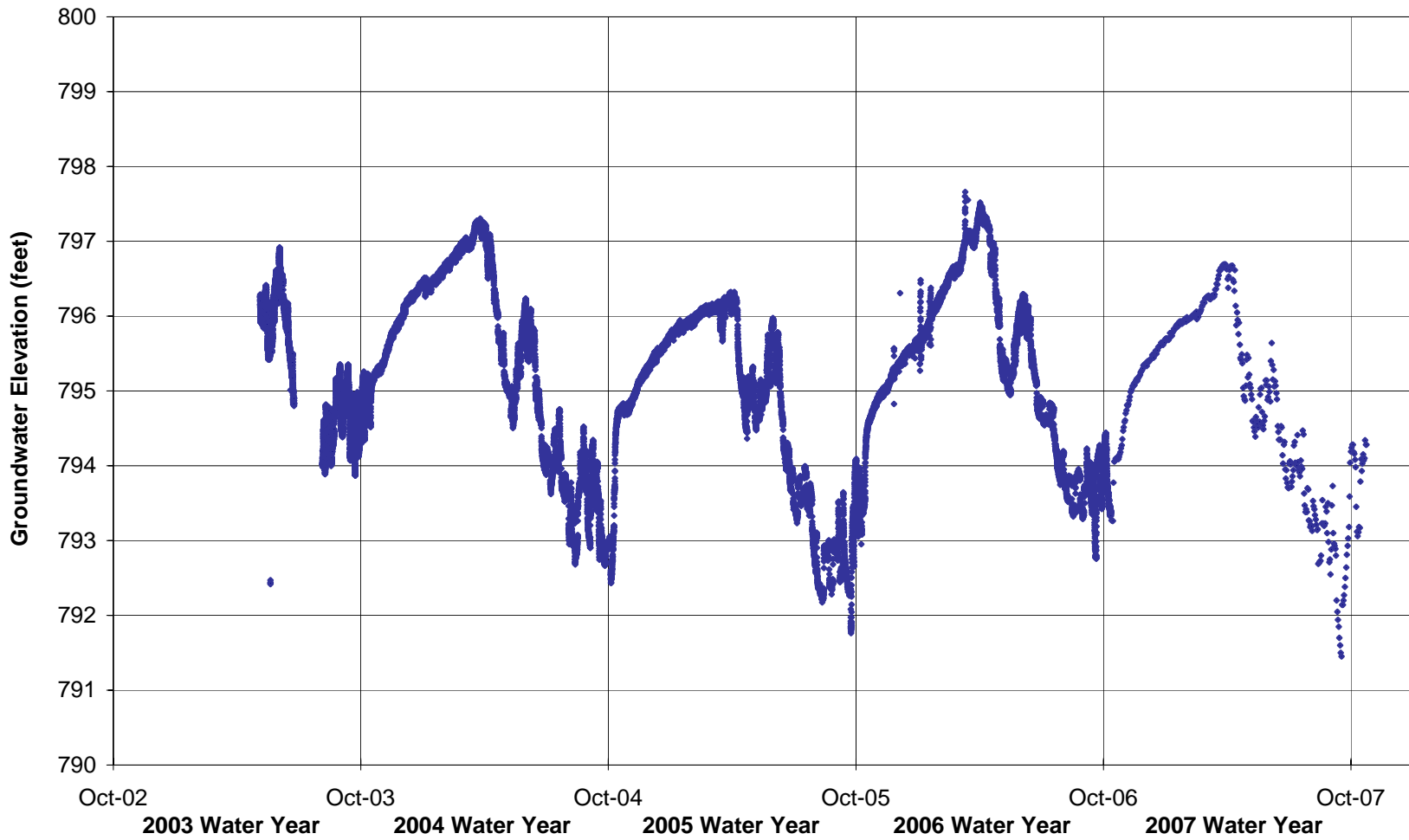


Figure 5
Biram Well Hydrograph

WRIA 44/50
 Groundwater Elevation Monitoring
 Exempt Well Water Use Phase 2



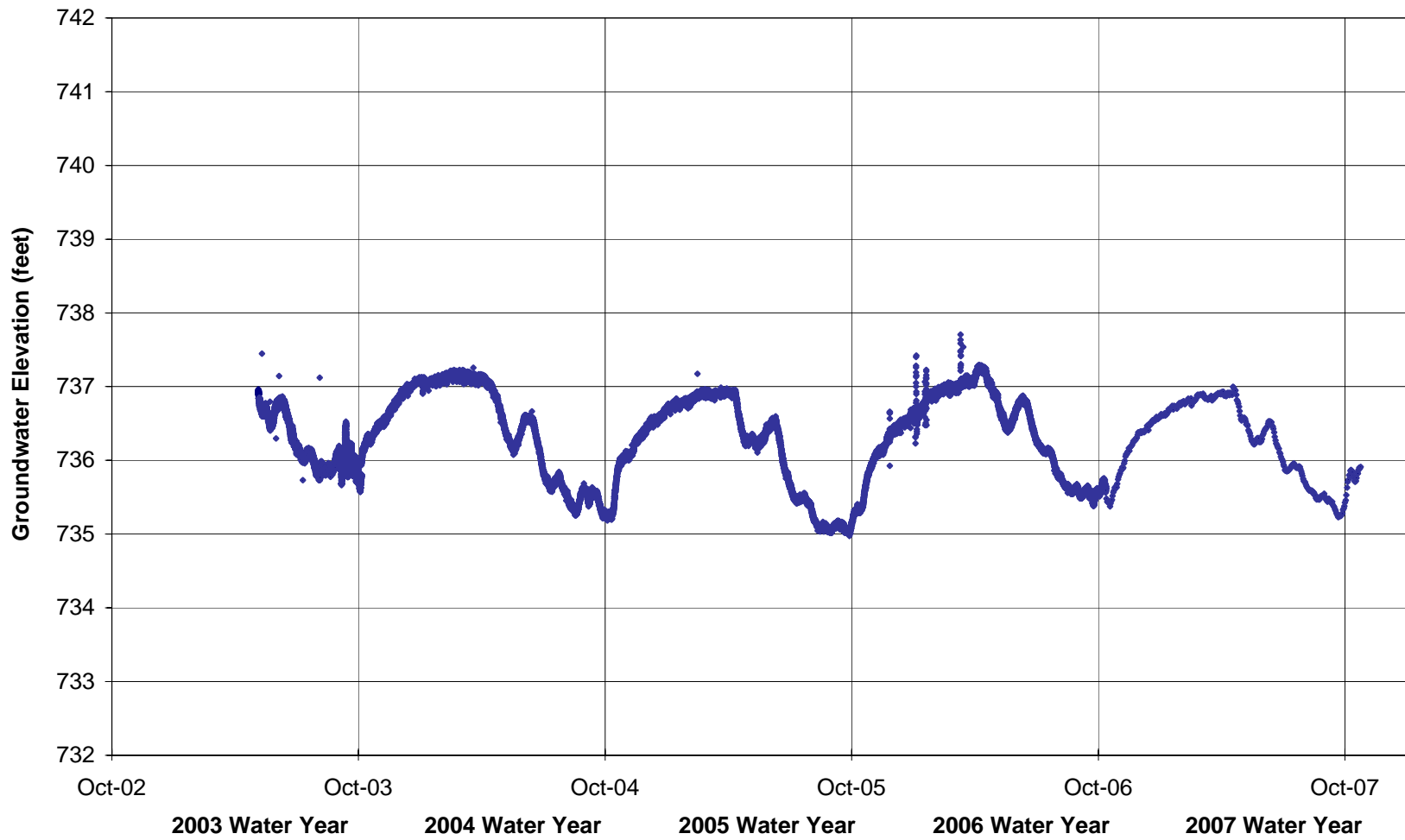



Figure 6
Linville North Well Hydrograph

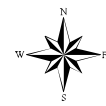
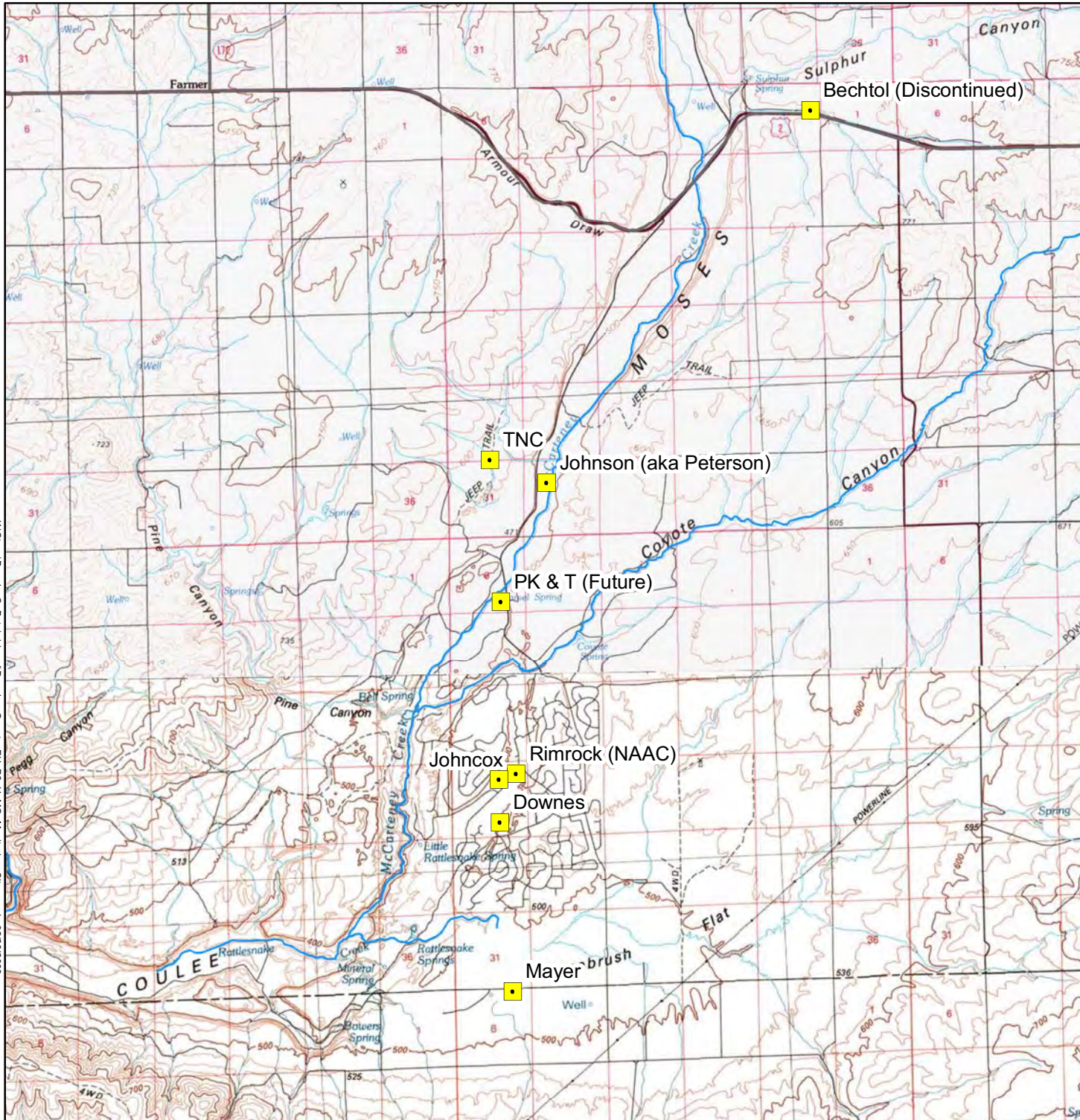
WRIA 44/50
Groundwater Elevation Monitoring
Exempt Well Water Use Phase 2



WRIA 44/50
Groundwater Elevation Monitoring
Exempt Well Water Use Phase 2

FIGURE 7
Upper Moses Coulee
Monitoring Sites

 Groundwater Level Monitored Well



0 10,000
0 2
1:120,000

Feet
Miles



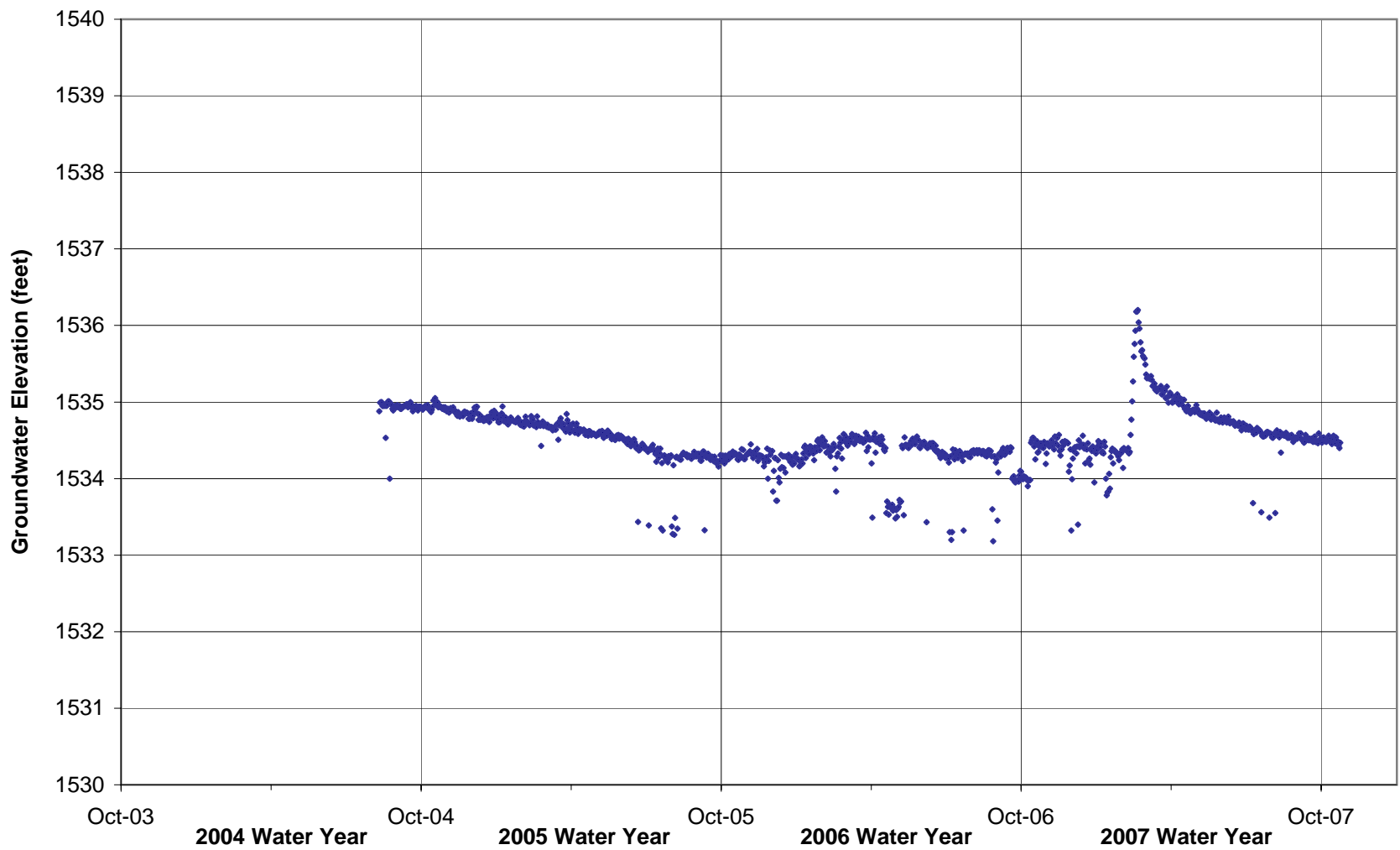
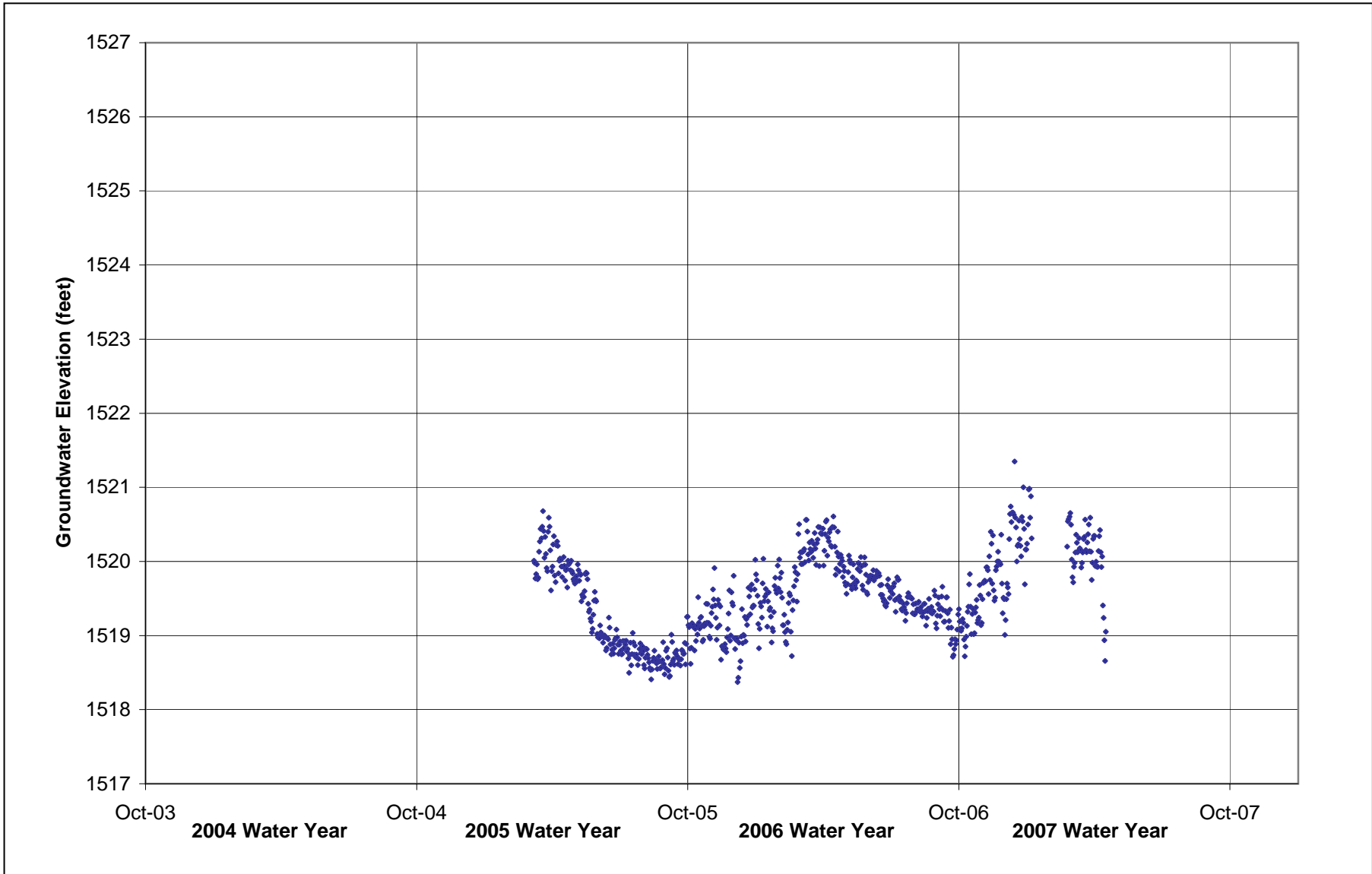


Figure 8
Mayer Well Hydrograph

WRIA 44/50
Groundwater Elevation Monitoring
Exempt Well Water Use Phase 2



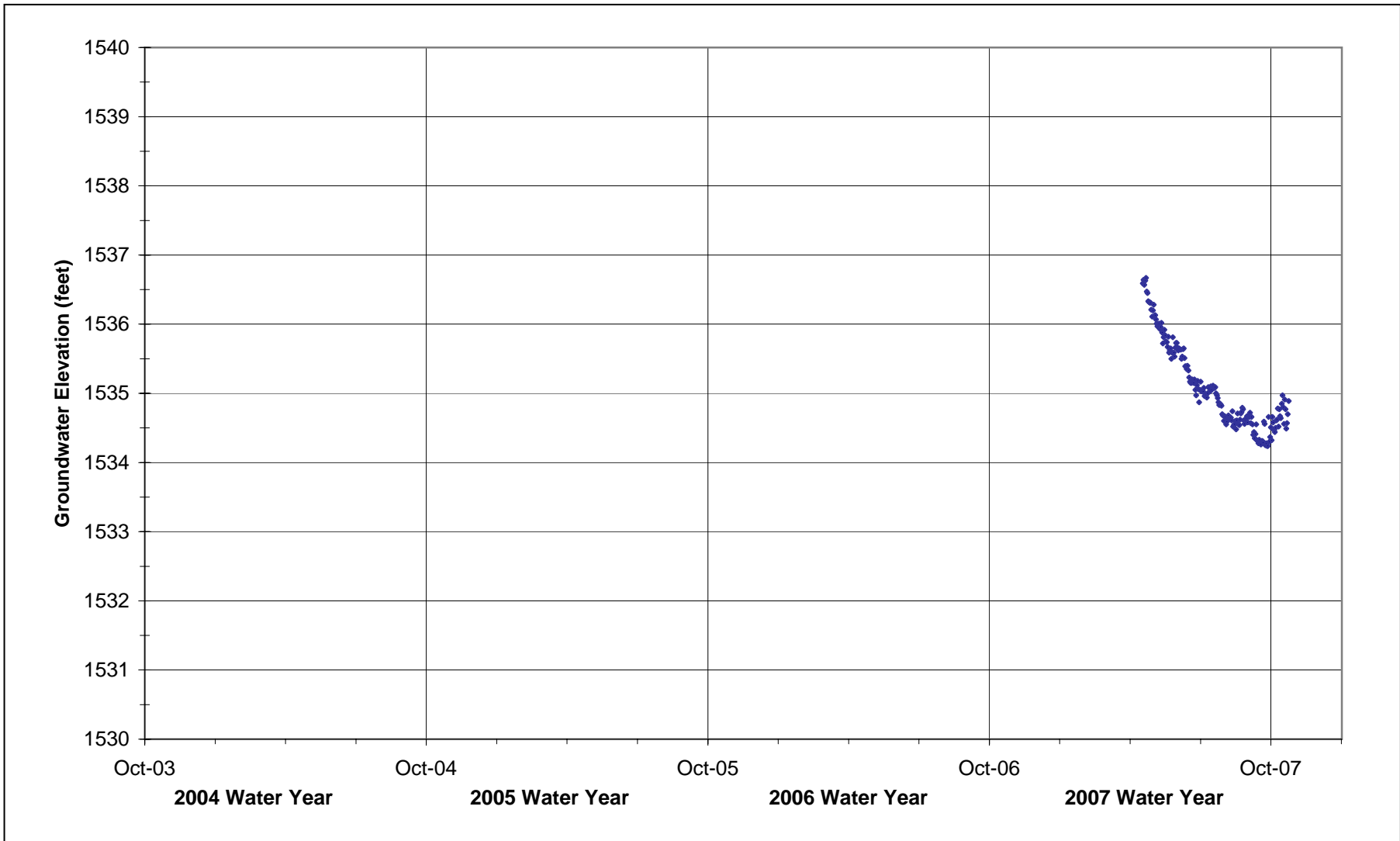


No datais available for April - October 2007

Figure 9
Johncox Well Hydrograph

WRIA 44/50
 Groundwater Elevation Monitoring
 Exempt Well Water Use Phase 2





Data before 4/17/2006 is not valid because the logger was likely above water level based on hand measurements

Figure 10
TNC Observation Well Hydrograph

WRIA 44/50
Groundwater Elevation Monitoring
Exempt Well Water Use Phase 2



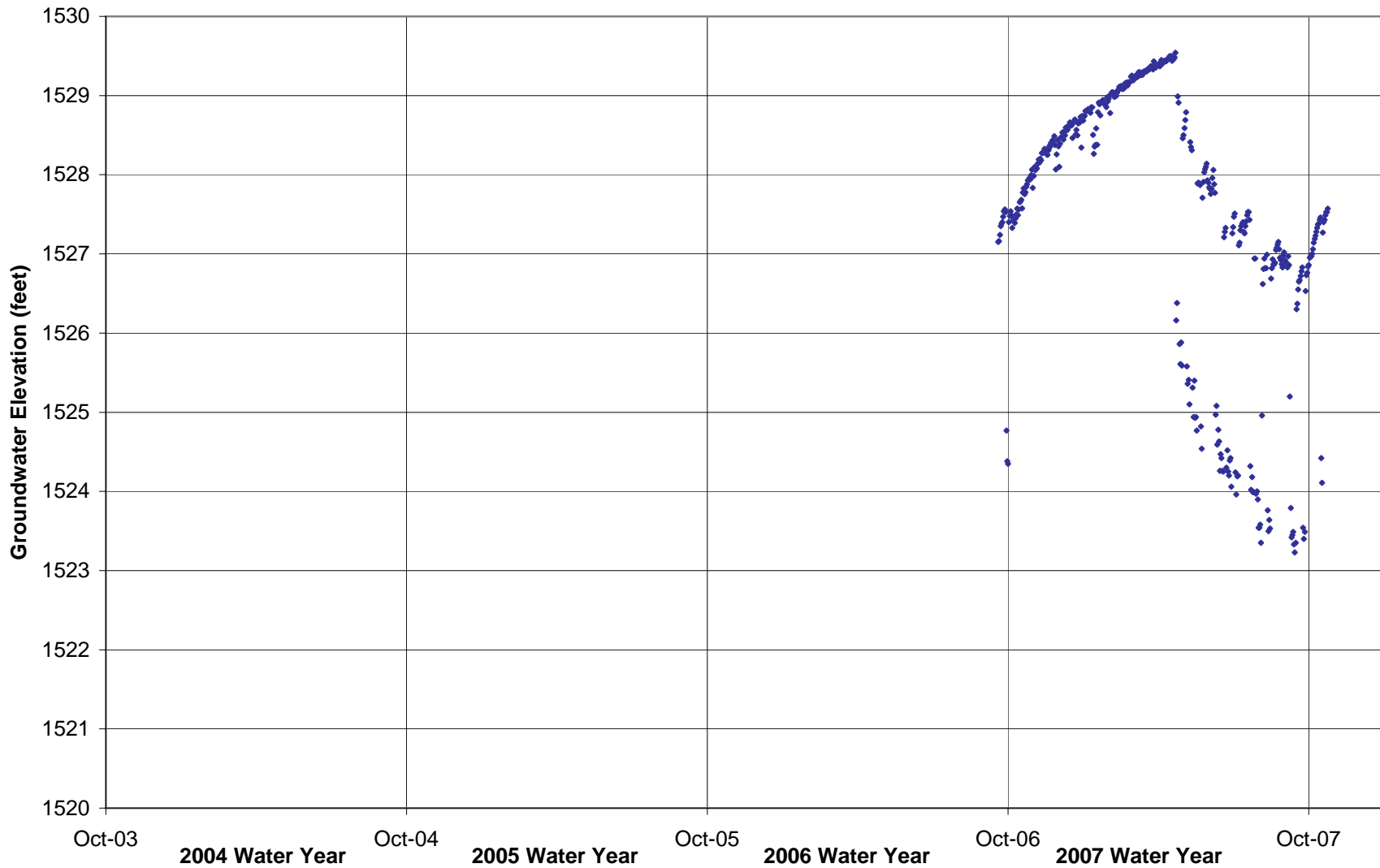


Figure 11
Johnson (aka Peterson) Well Hydrograph

WRIA 44/50
 Groundwater Elevation Monitoring
 Exempt Well Water Use Phase 2



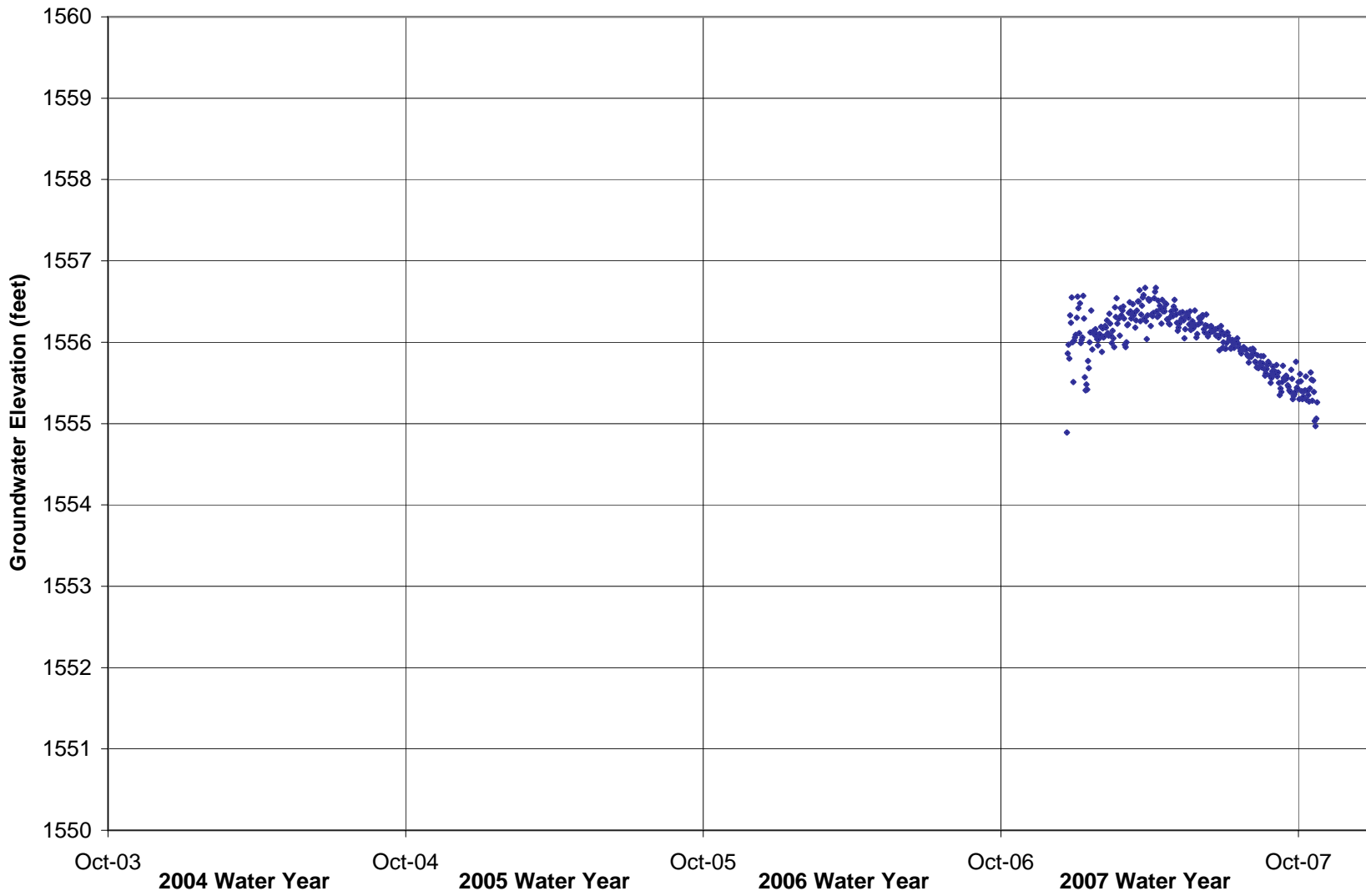




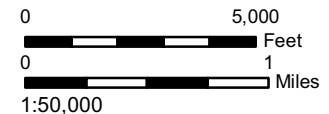
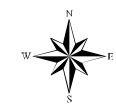
Figure 12
Downes Well Hydrograph

WRIA 44/50
Groundwater Elevation Monitoring
Exempt Well Water Use Phase 2



FIGURE 13
Jameson & Grimes Lake
Monitoring Sites

-  Surface Water Level Monitoring Station
-  Groundwater Level Monitored Well



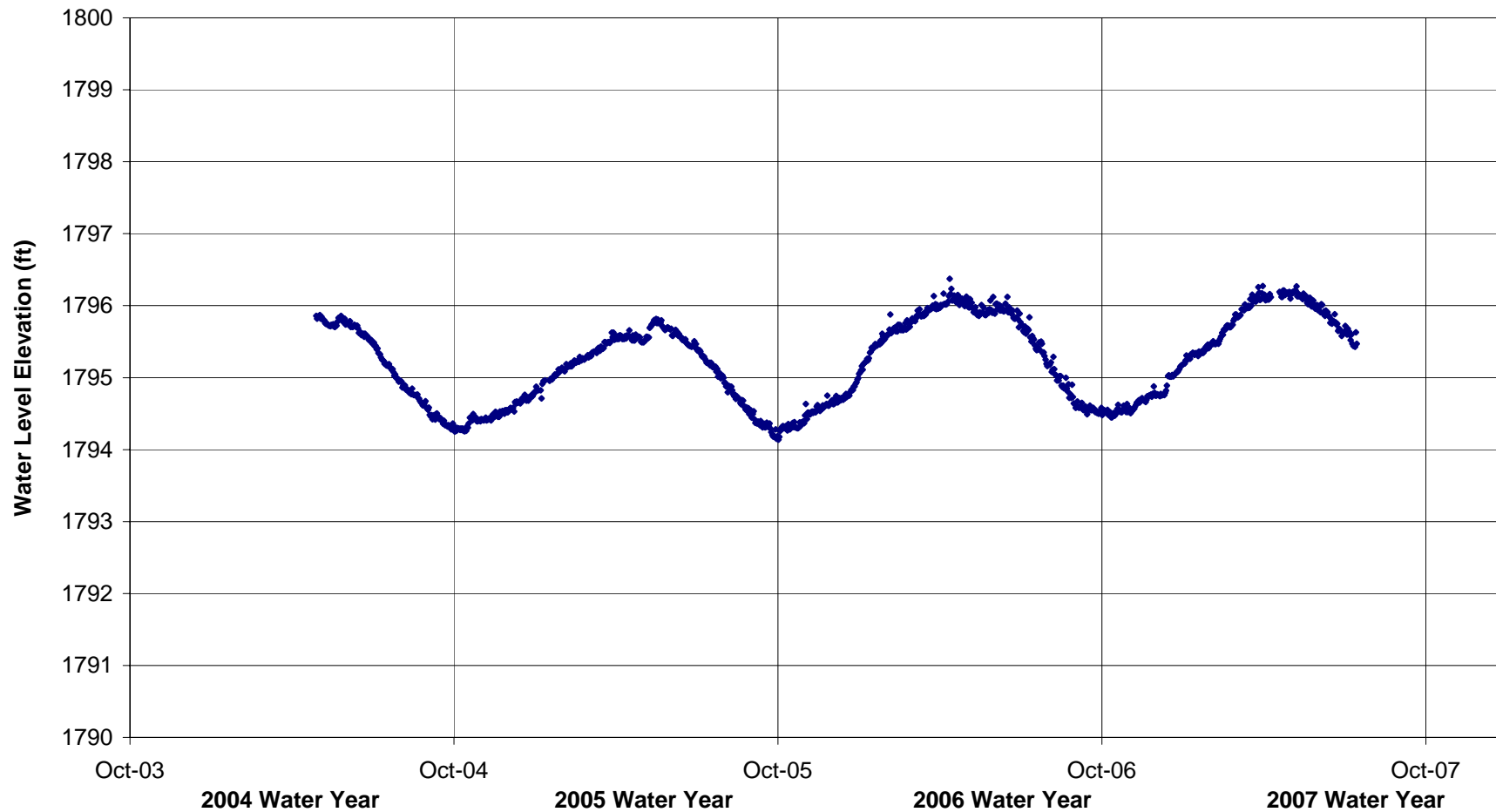
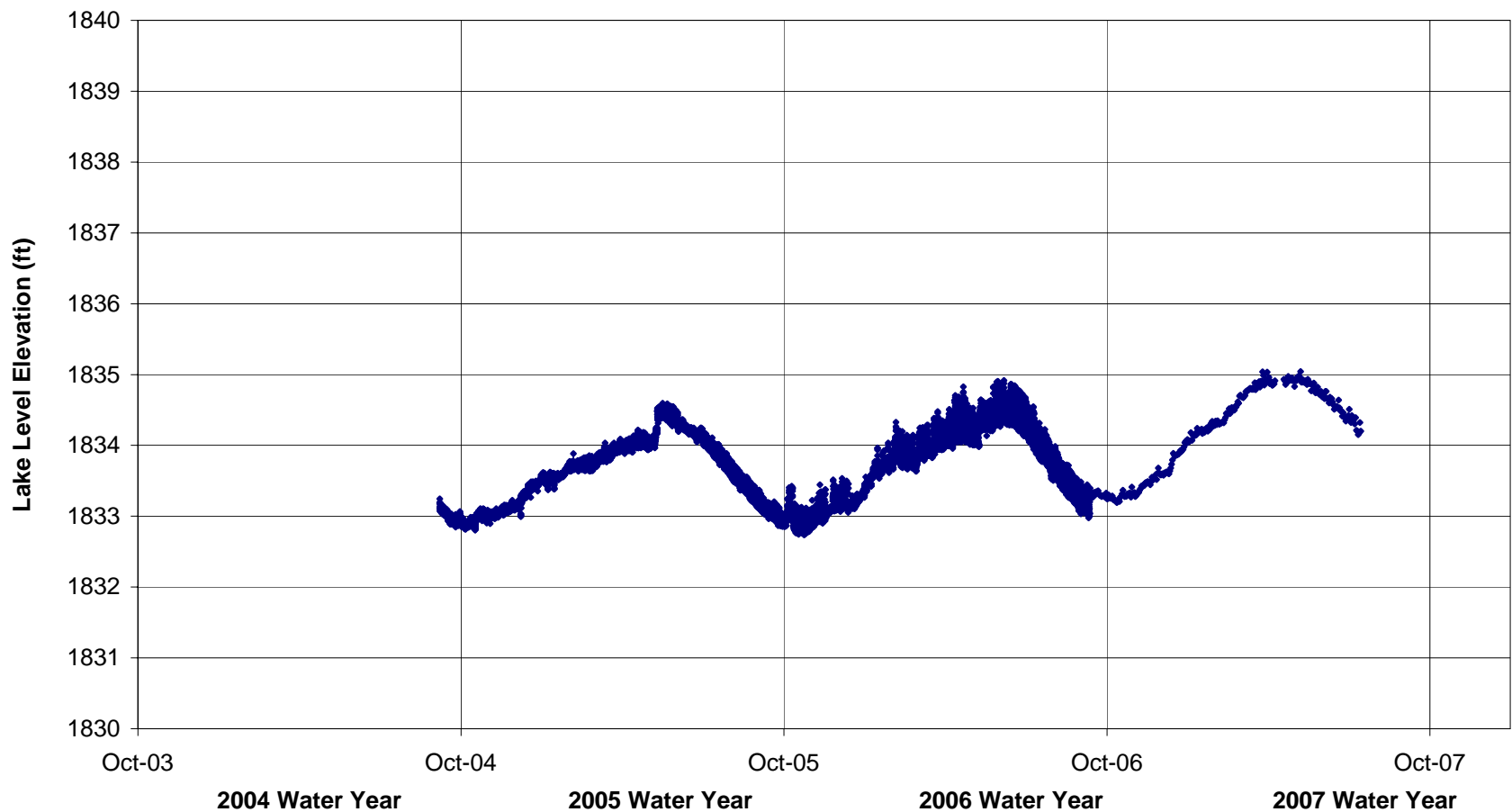


Figure 14
Jameson Lake Hydrograph

WRIA 44/50
 Groundwater Elevation Monitoring
 Exempt Well Water Use Phase 2





History of Grimes Station:

Originally 7.87' below Bench Mark (BM) = 1836.6
 Spring 05 moved up 0.25 (7.62' below BM) = 1836.9
 Spring 06 moved up another 0.47' (7.15' below BM) = 1837.4
 Station Moved 9/12/06 to new location where less ice expected. = 1837.5715

Figure 15
Grimes Lake Hydrograph

WRIA 44/50
 Groundwater Elevation Monitoring
 Exempt Well Water Use Phase 2



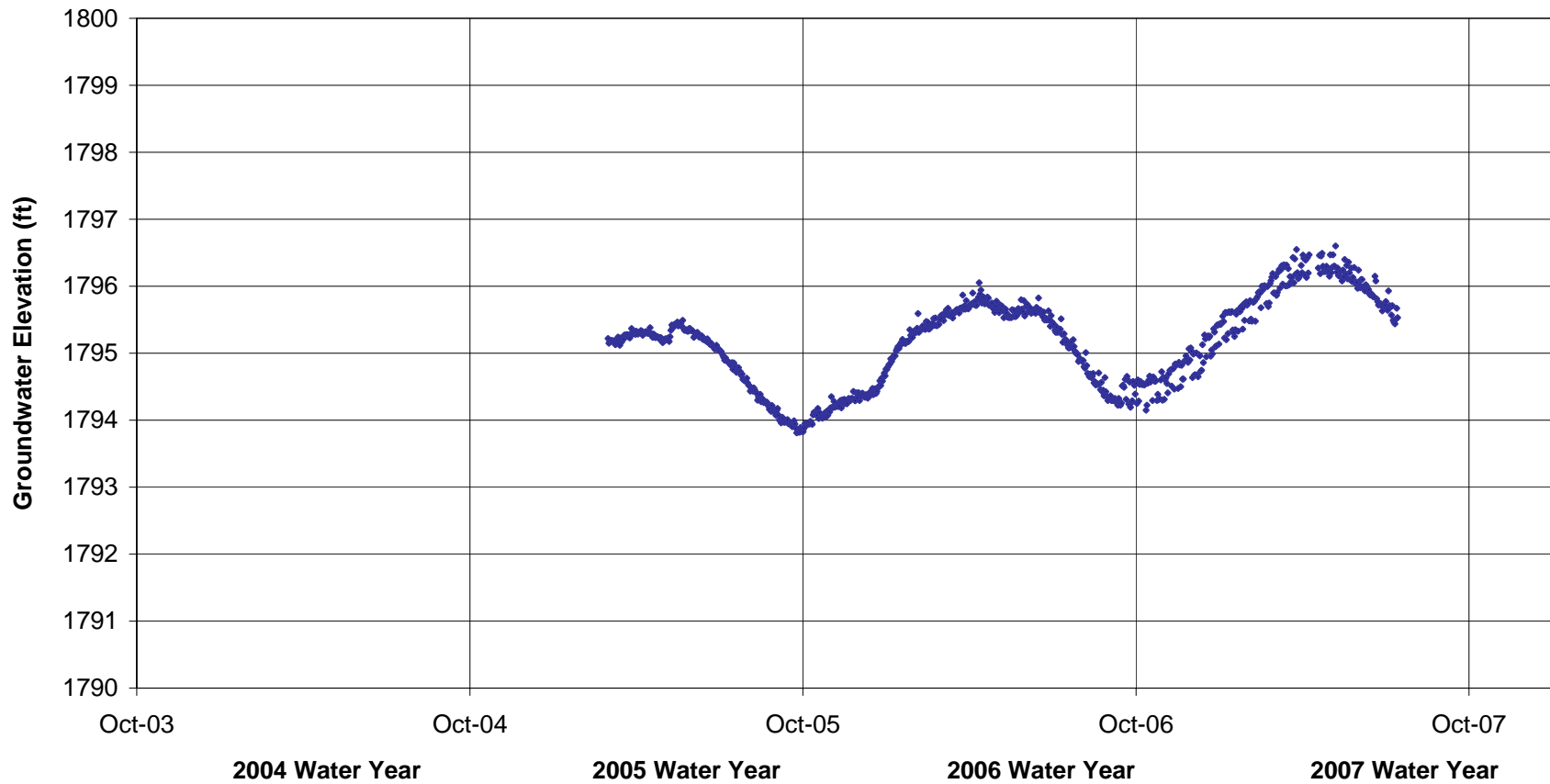


Figure 16
Mathiesen Well Hydrograph

WRIA 44/50
 Groundwater Elevation Monitoring
 Exempt Well Water Use Phase 2



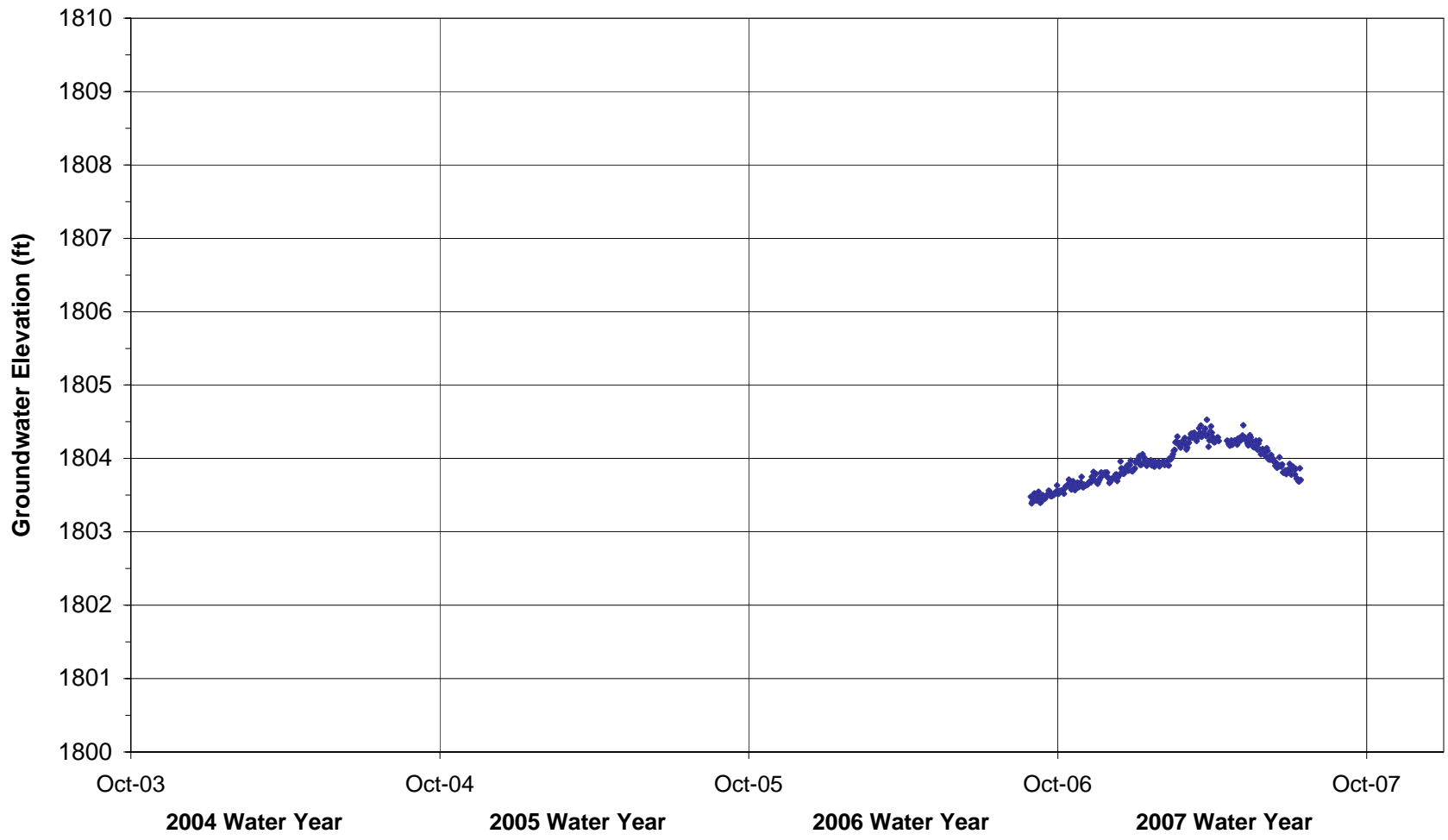



Figure 17
PGG-1 Well Hydrograph

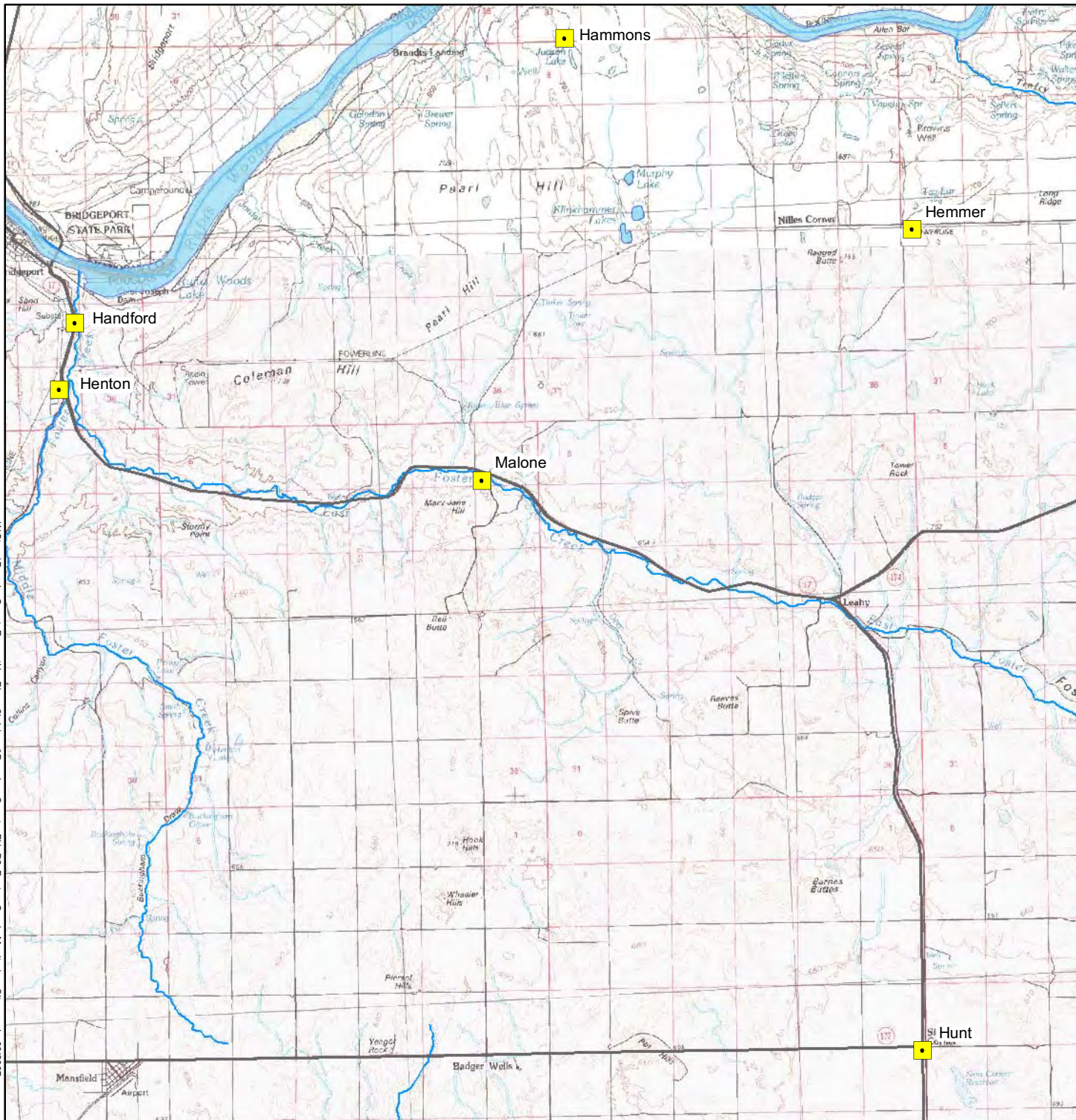
WRIA 44/50
 Groundwater Elevation Monitoring
 Exempt Well Water Use Phase 2



WRIA 44/50
Groundwater Elevation Monitoring
Exempt Well Water Use Phase 2

FIGURE 18 Foster Creek Monitoring Sites

 Groundwater Level Monitored Well

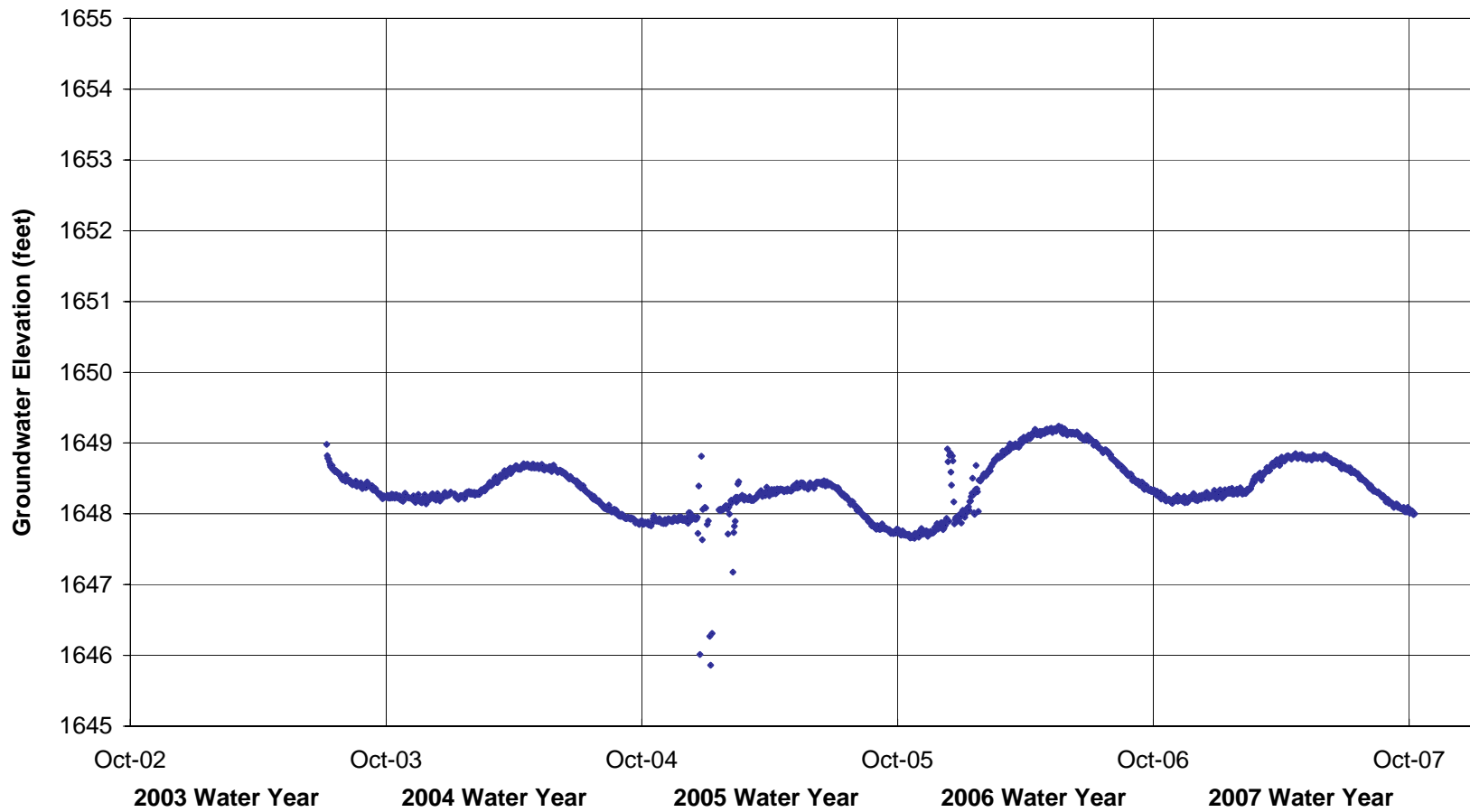


0 12,000
0 2
1:144,000

Feet
Miles



K:\StevenDouglasCountyExemptUsePhase2\gis\mxd\Douglas_County_EU_P2_Foster_Creek_Monitoring_Sites.mxd - 03/20/2007

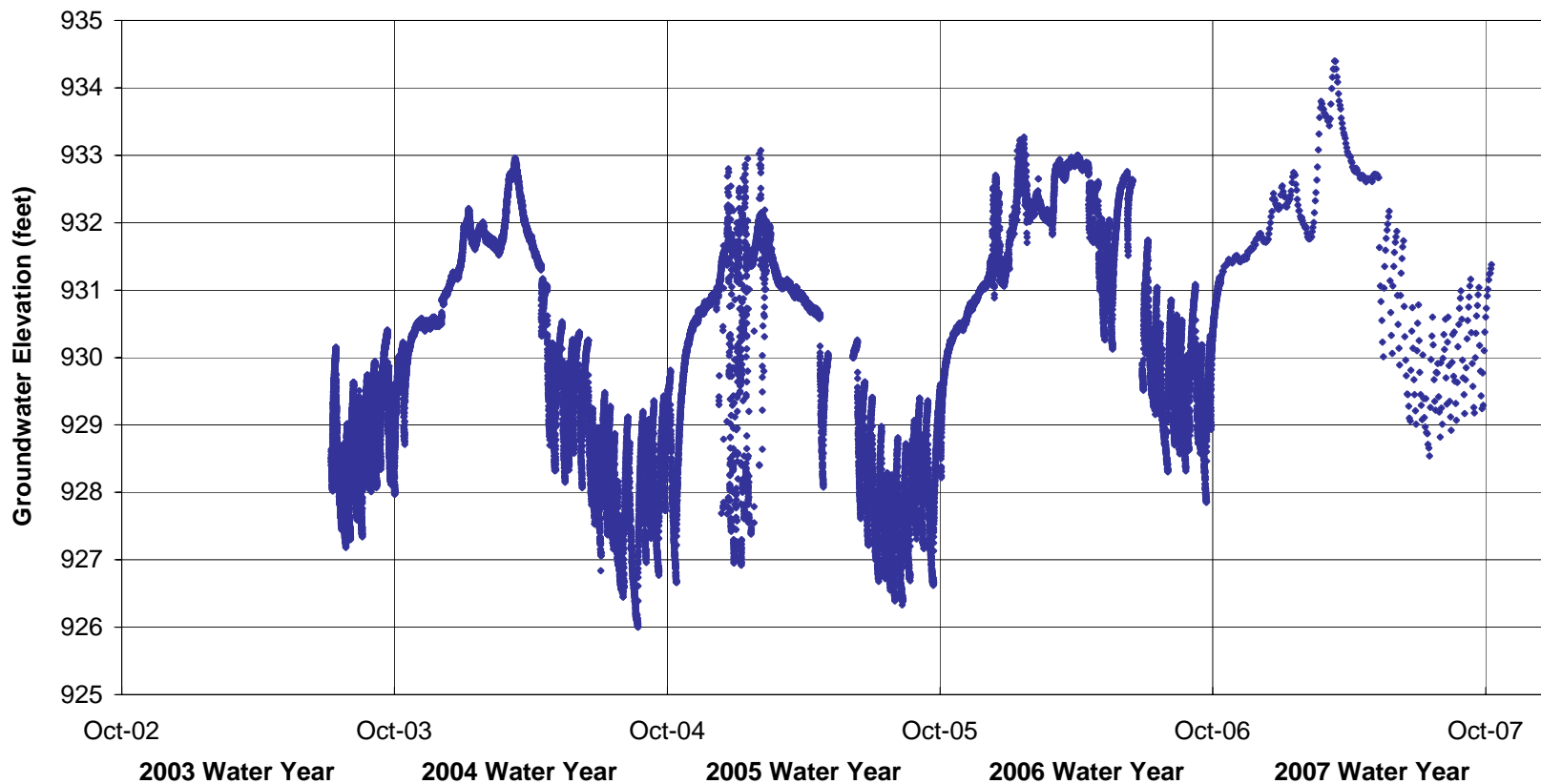


Jumps in data related to barometer malfunction.

Figure 19
Malone Well Hydrograph

WRIA 44/50
Groundwater Elevation Monitoring
Exempt Well Water Use Phase 2





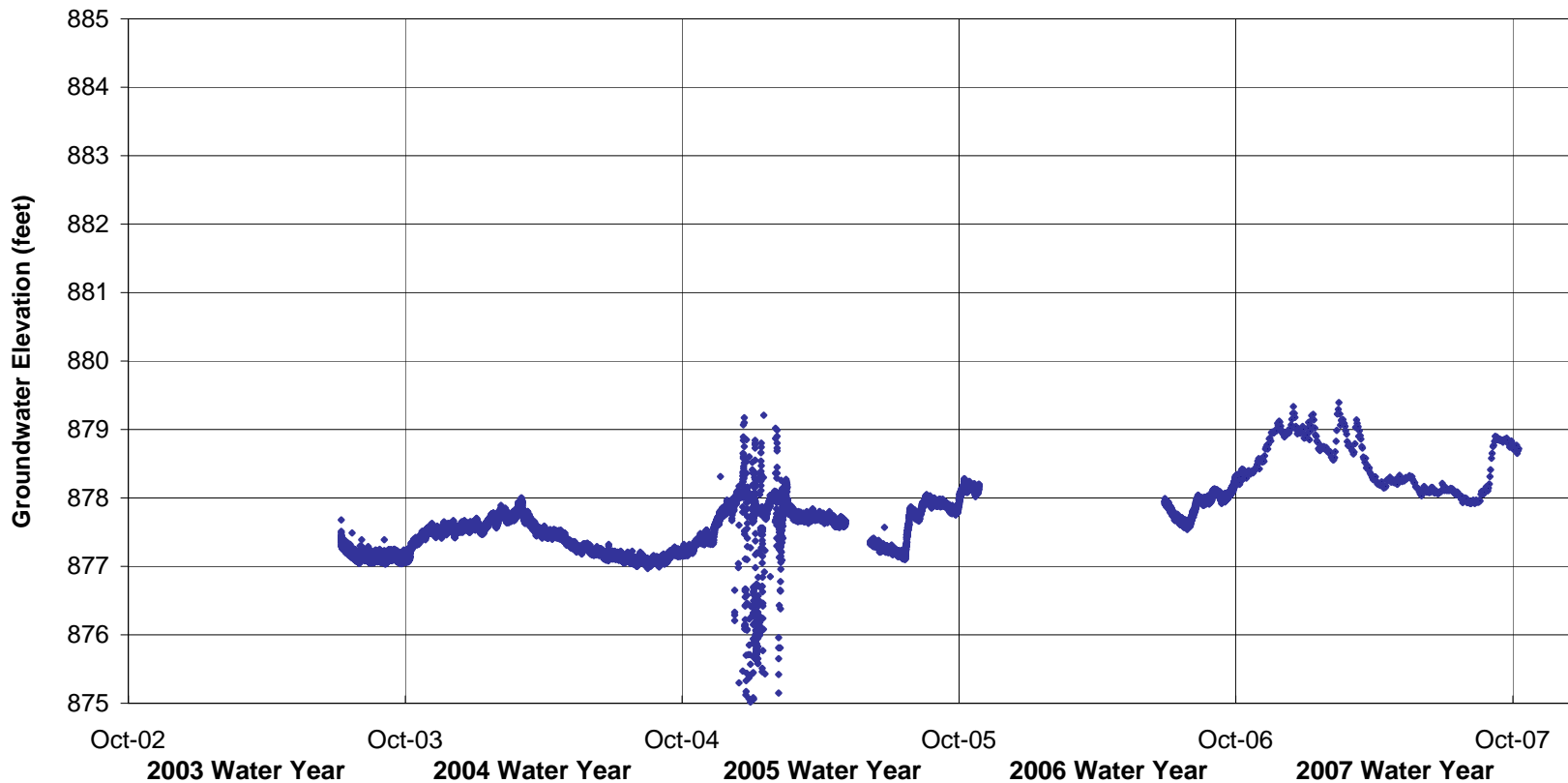
Jumps between 12/04 and 2/05 due to the barometer logger malfunctioning.
 Small gap in data (5/4/05 to 6/10/05) while logger was replaced.
 Possible logger malfunction 6/15/06 to 6/28/06 (data not included)

Summer fluctuations due to pumping of monitored well

Figure 20
Henton Well Hydrograph

WRIA 44/50
 Groundwater Elevation Monitoring
 Exempt Well Water Use Phase 2



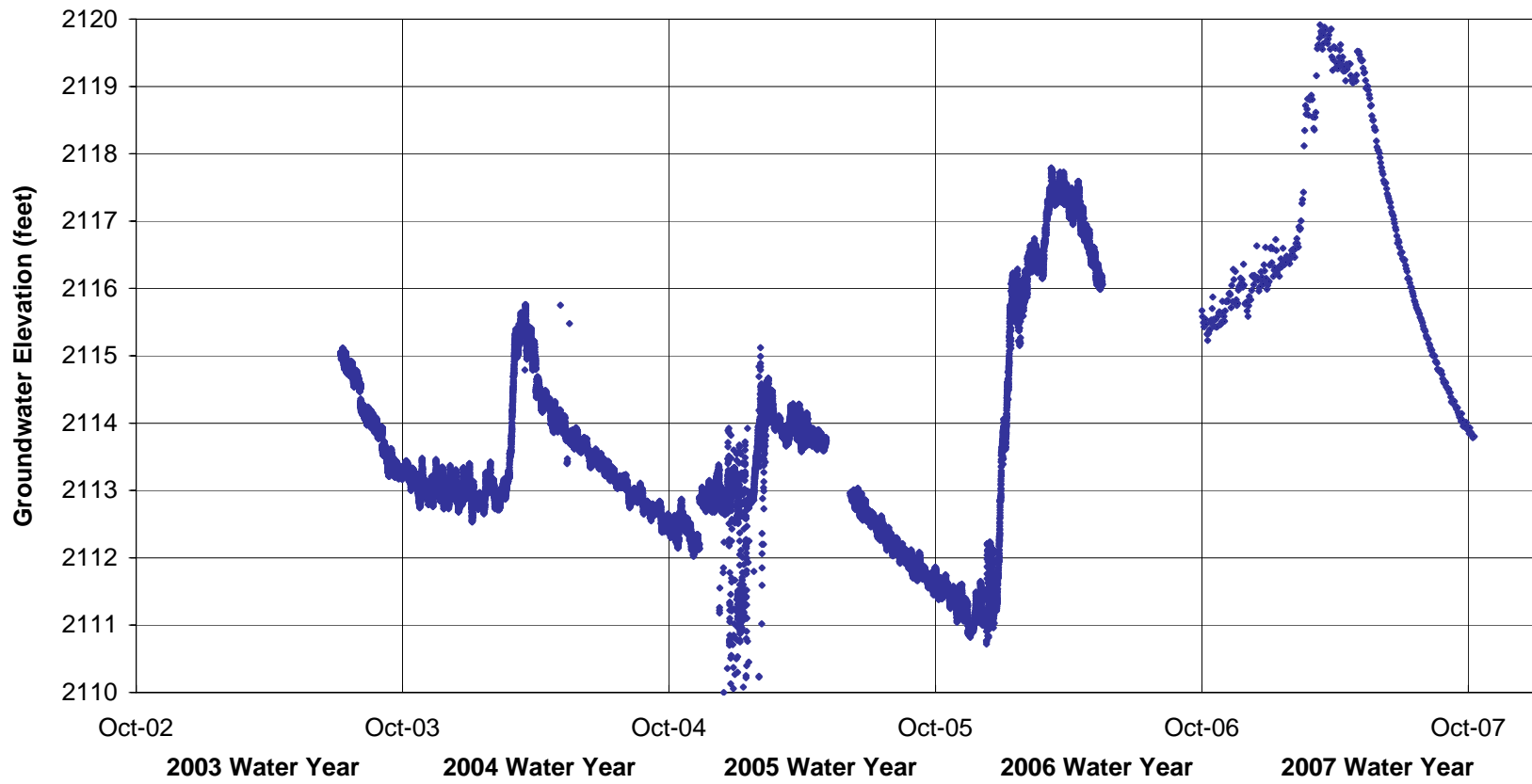


Jumps between 12/04 and 2/05 due to the barometer logger malfunctioning.
 Small gap in data (5/4/05 to 6/10/05) while logger was replaced.
 Data collected June 06 to Oct. 06 lost.

Figure 21
Handford Well Hydrograph

WRIA 44/50
 Groundwater Elevation Monitoring
 Exempt Well Water Use Phase 2



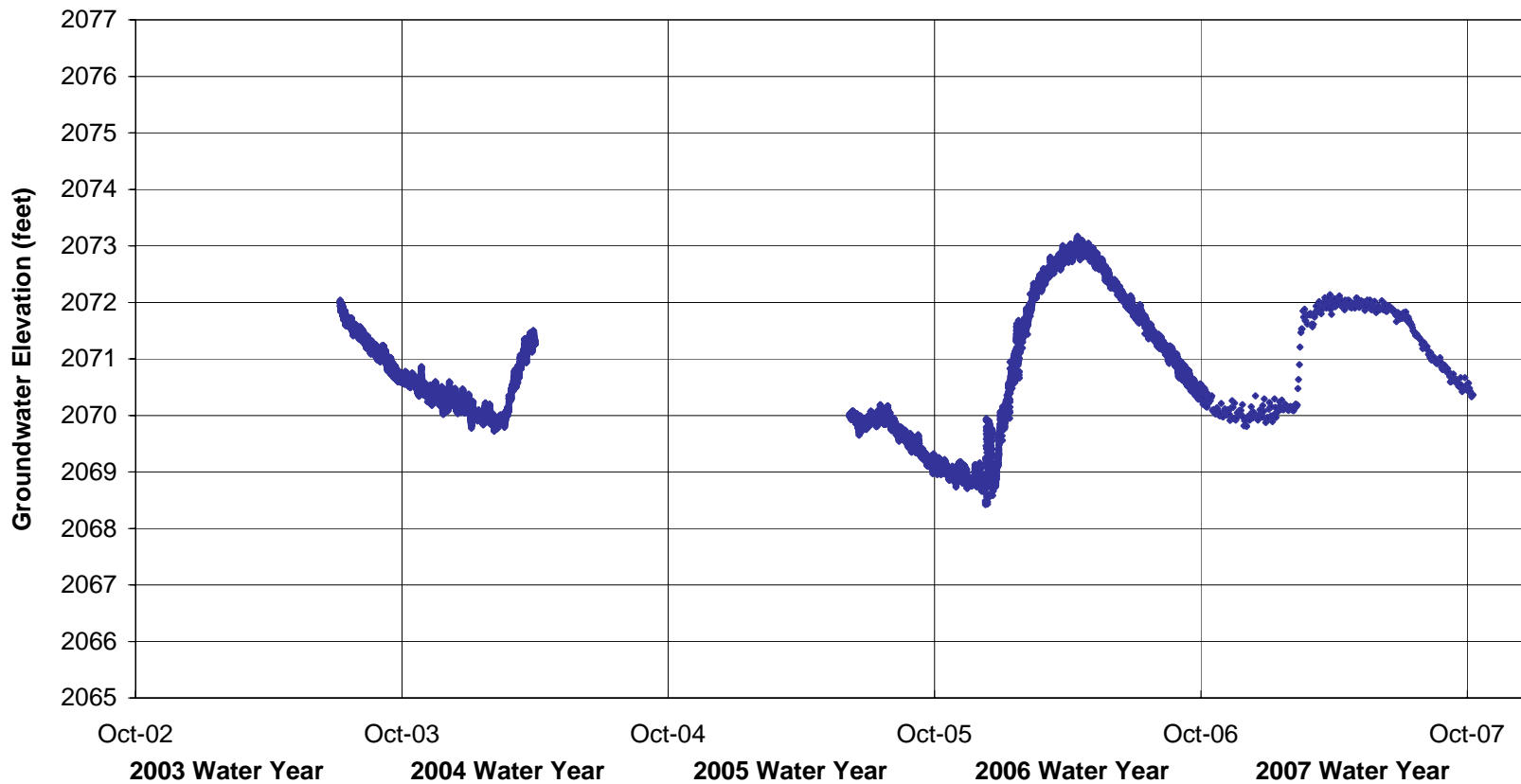


Jumps between 12/04 and 2/05 due to the barometer logger malfunctioning.
 Small gap in data (5/4/05 to 6/10/05) while logger was replaced.
 This well has no pump in it.
 Data collected June 22, 2006 to October 1, 2006 unreliable.

Figure 22
Hammons Well Hydrograph

WRIA 44/50
 Groundwater Elevation Monitoring
 Exempt Well Water Use Phase 2



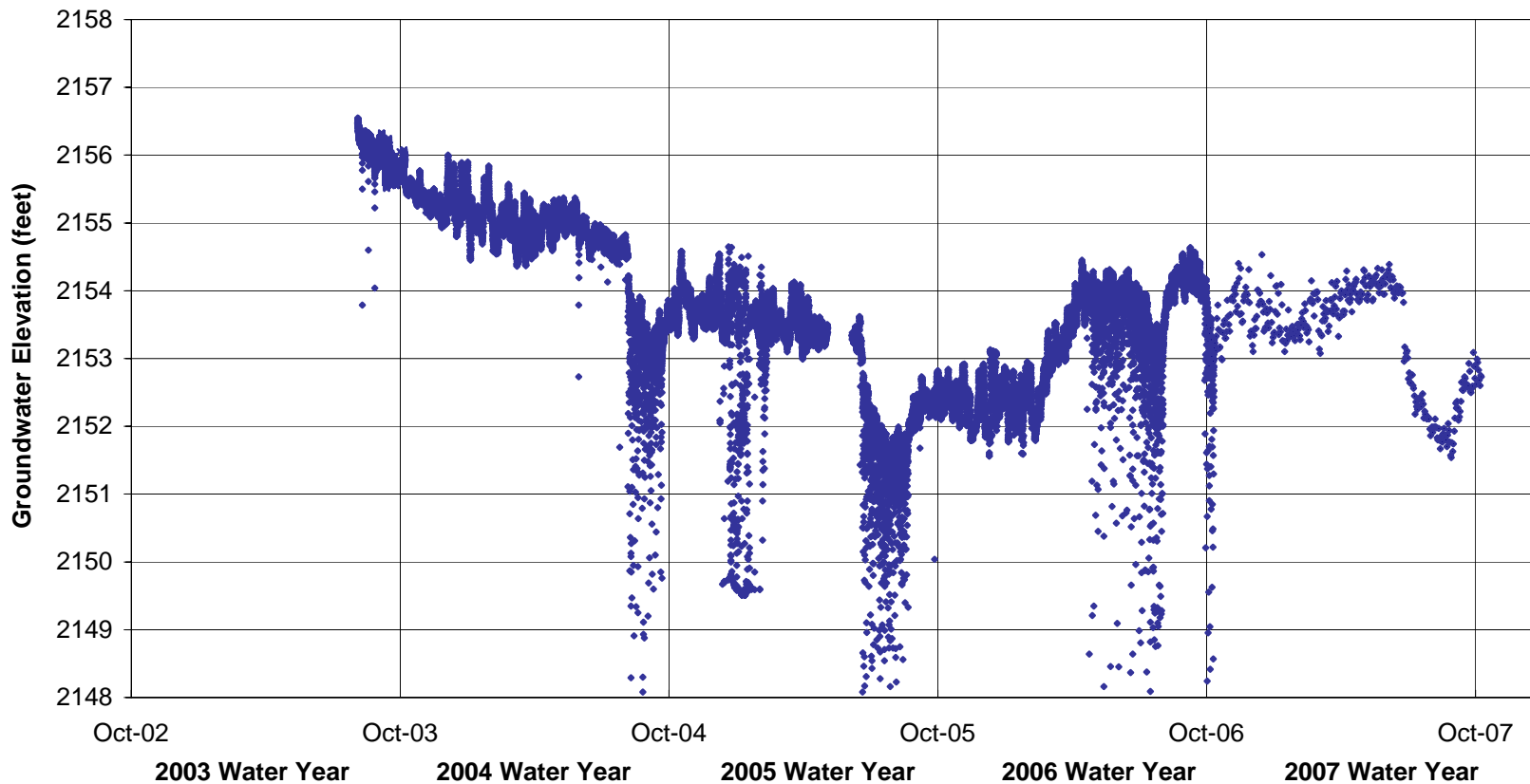


Data from April 2004 to June 2005 is unreliable because of logger malfunction and is therefore not displayed. The logger was replaced in June 2005.

Figure 23
Hunt Well Hydrograph

WRIA 44/50
Groundwater Elevation Monitoring
Exempt Well Water Use Phase 2





Jumps between 12/04 and 2/05 due to the barometer logger malfunctioning.
 Small gap in data (5/4/05 to 6/10/05) while logger was replaced.

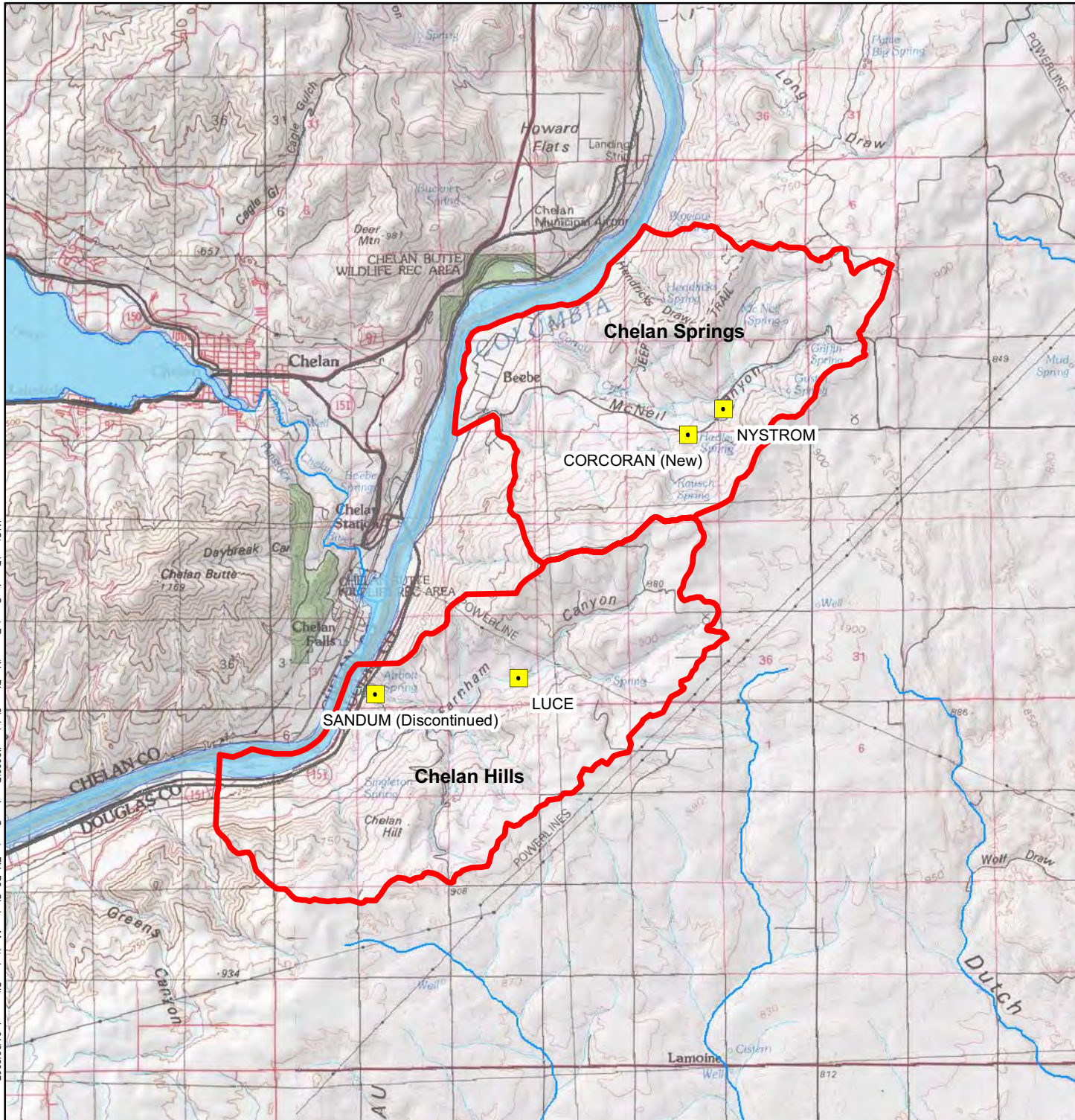
Late summer declines due to pumping of monitored well.



Figure 24
Hemmer Well Hydrograph

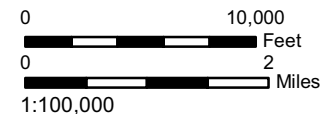
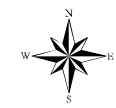
WRIA 44/50
 Groundwater Elevation Monitoring
 Exempt Well Water Use Phase 2



FIGURE 25
Chelan Hills and Chelan Springs
Monitoring Sites



-  Groundwater Level Monitored Well
-  Project Boundaries



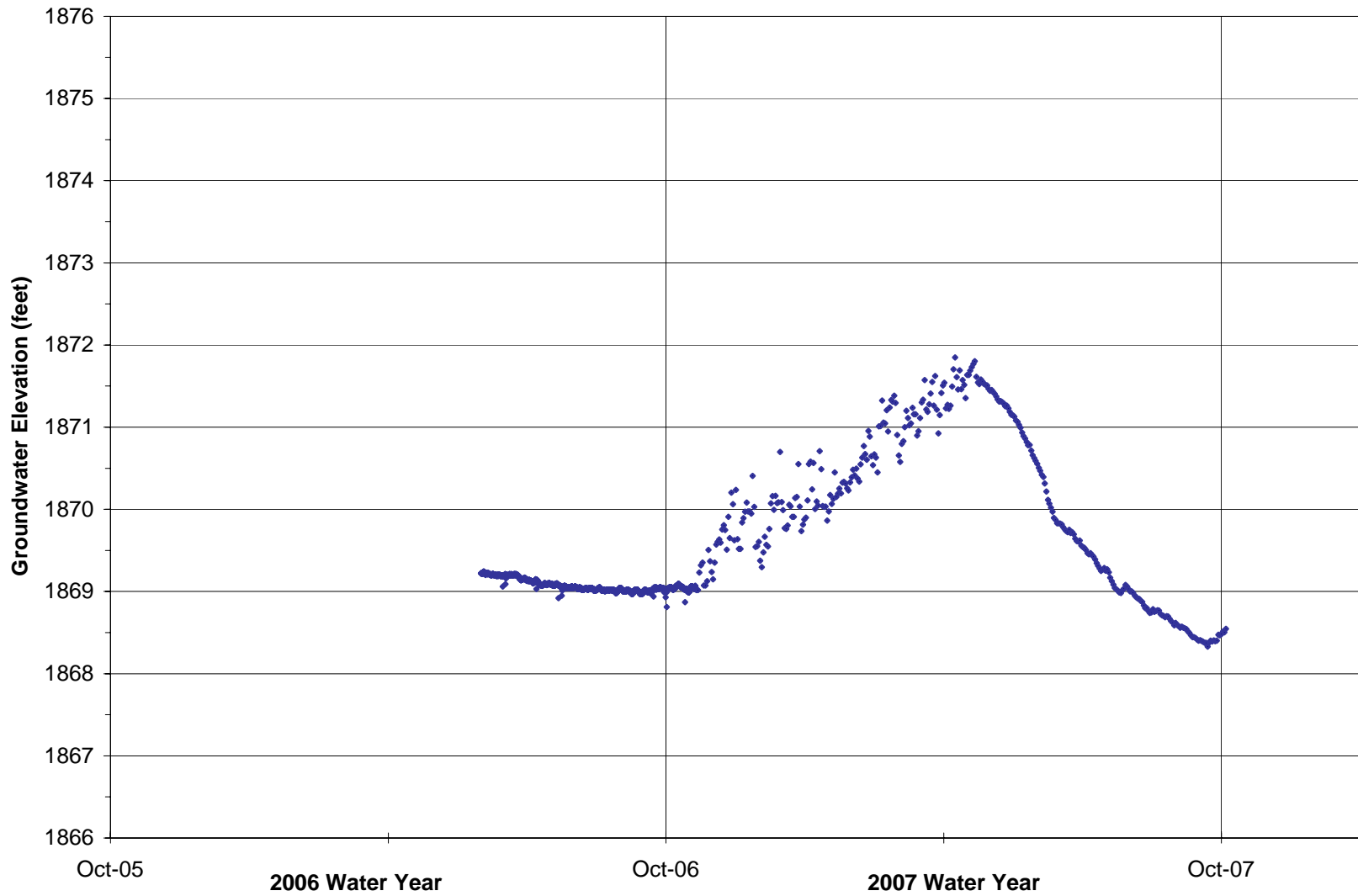


Figure 26
Luce Well Hydrograph

WRIA 44/50
Groundwater Elevation Monitoring
Exempt Well Water Use Phase 2



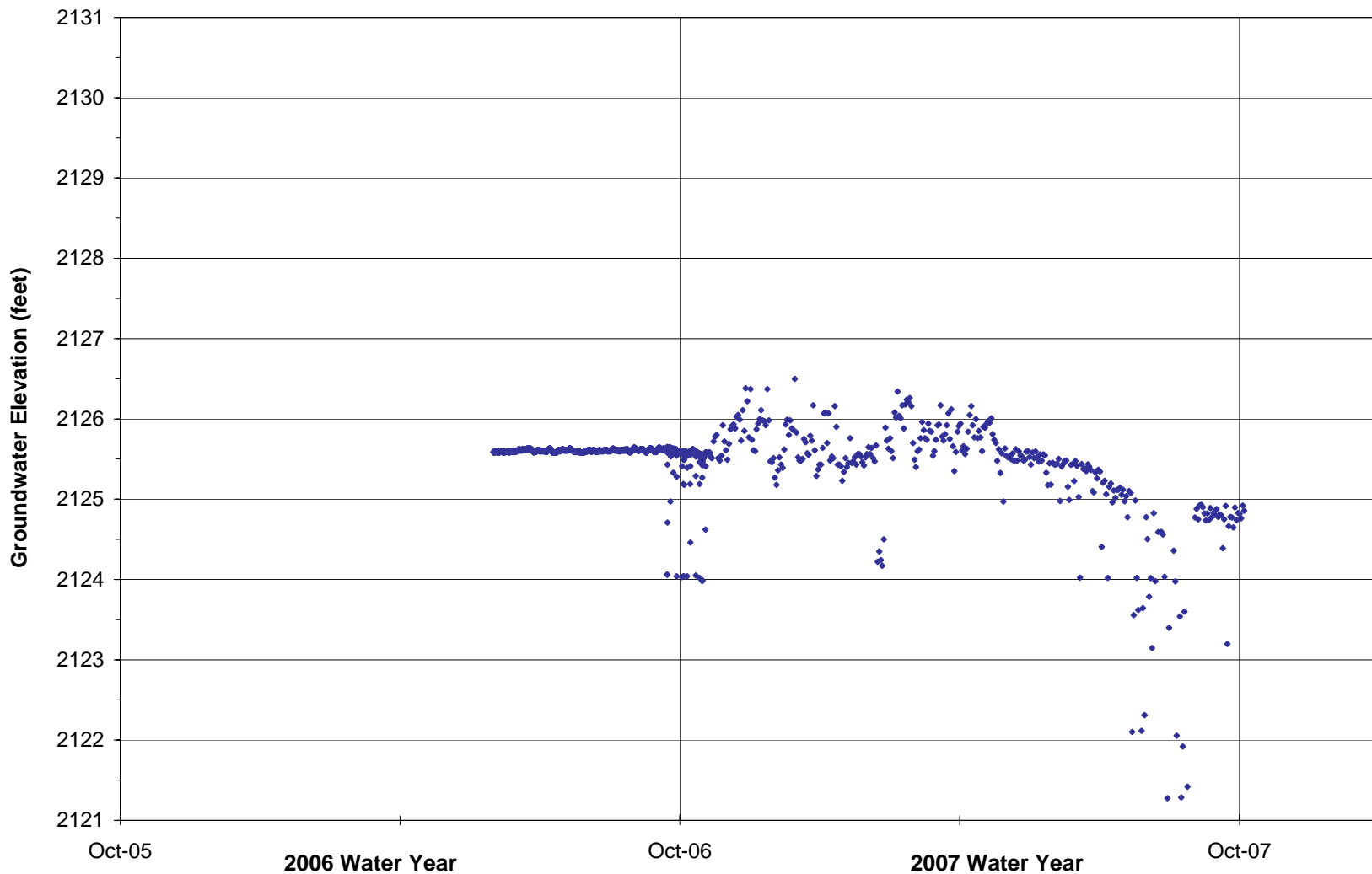
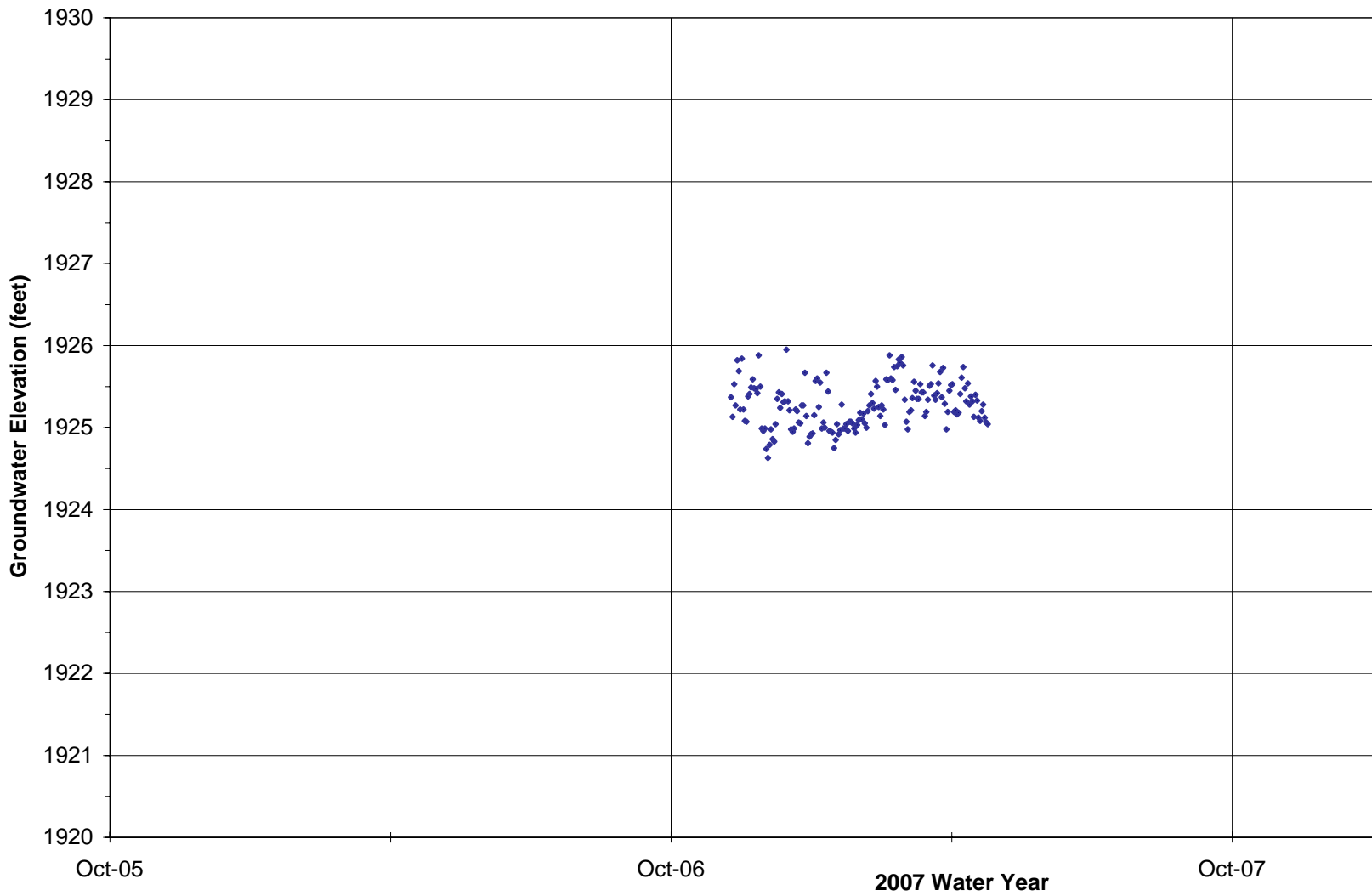


Figure 27
Nystrom Well Hydrograph

WRIA 44/50
Groundwater Elevation Monitoring
Exempt Well Water Use Phase 2





Faulty logger in Fall 2007


Figure 28
Cocoran Well Hydrograph

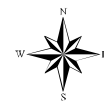
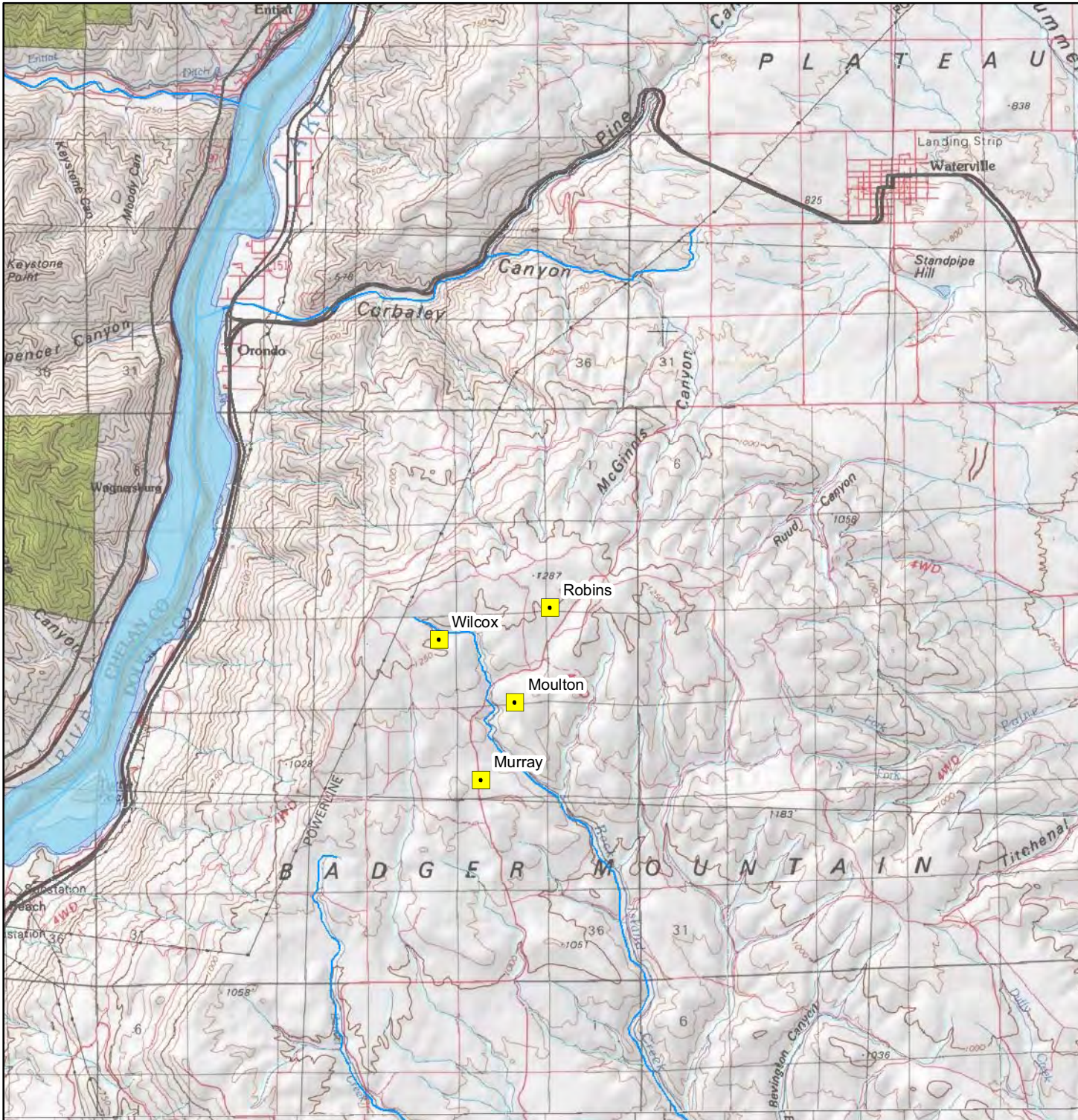
WRIA 44/50
Groundwater Elevation Monitoring
Exempt Well Water Use Phase 2



WRIA 44/50
Groundwater Elevation Monitoring
Exempt Well Water Use Phase 2

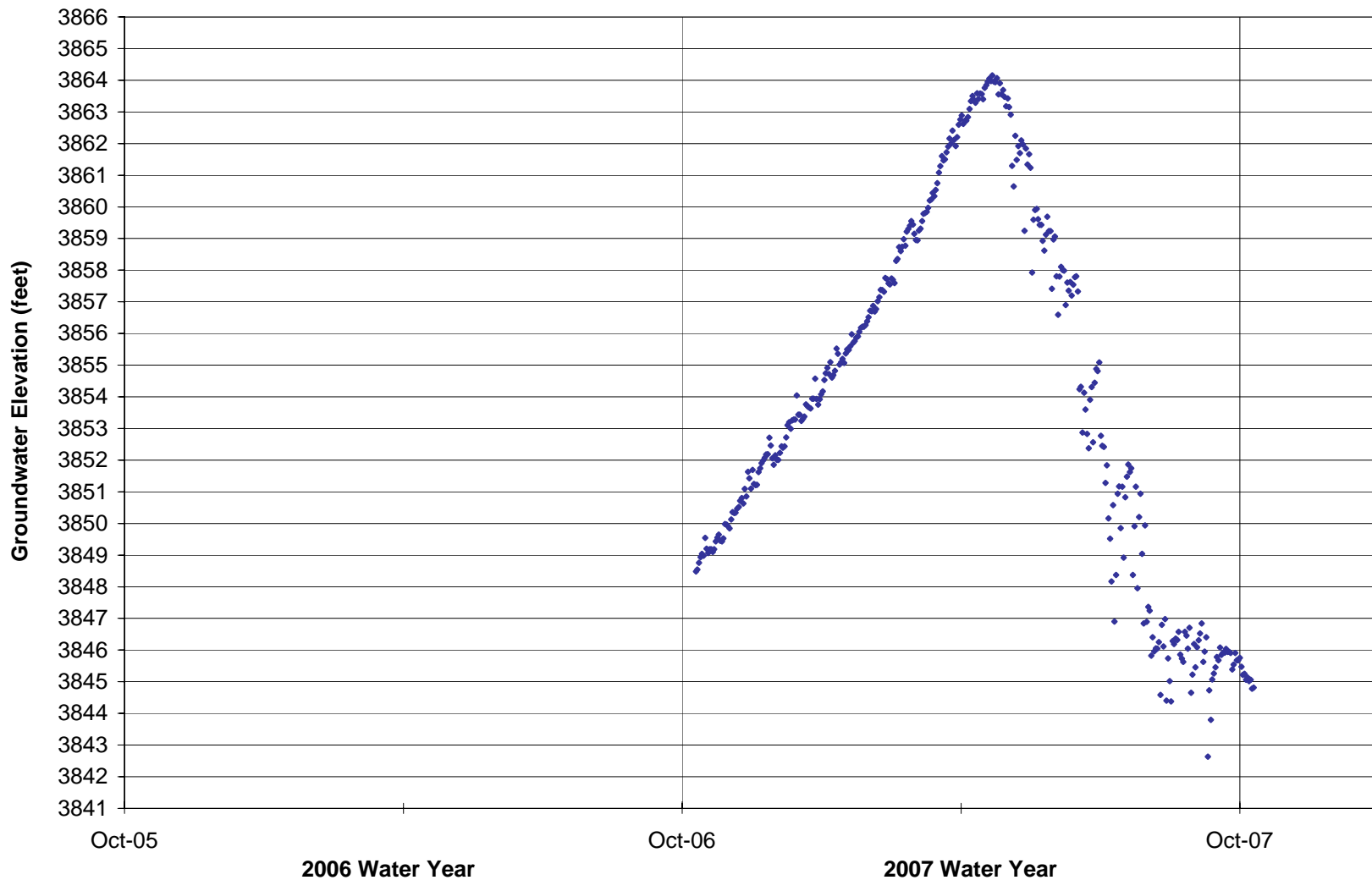
FIGURE 29
Badger Mountain
Monitoring Sites

 Groundwater Level Monitored Well



0 10,000 Feet
0 2 Miles
1:100,000



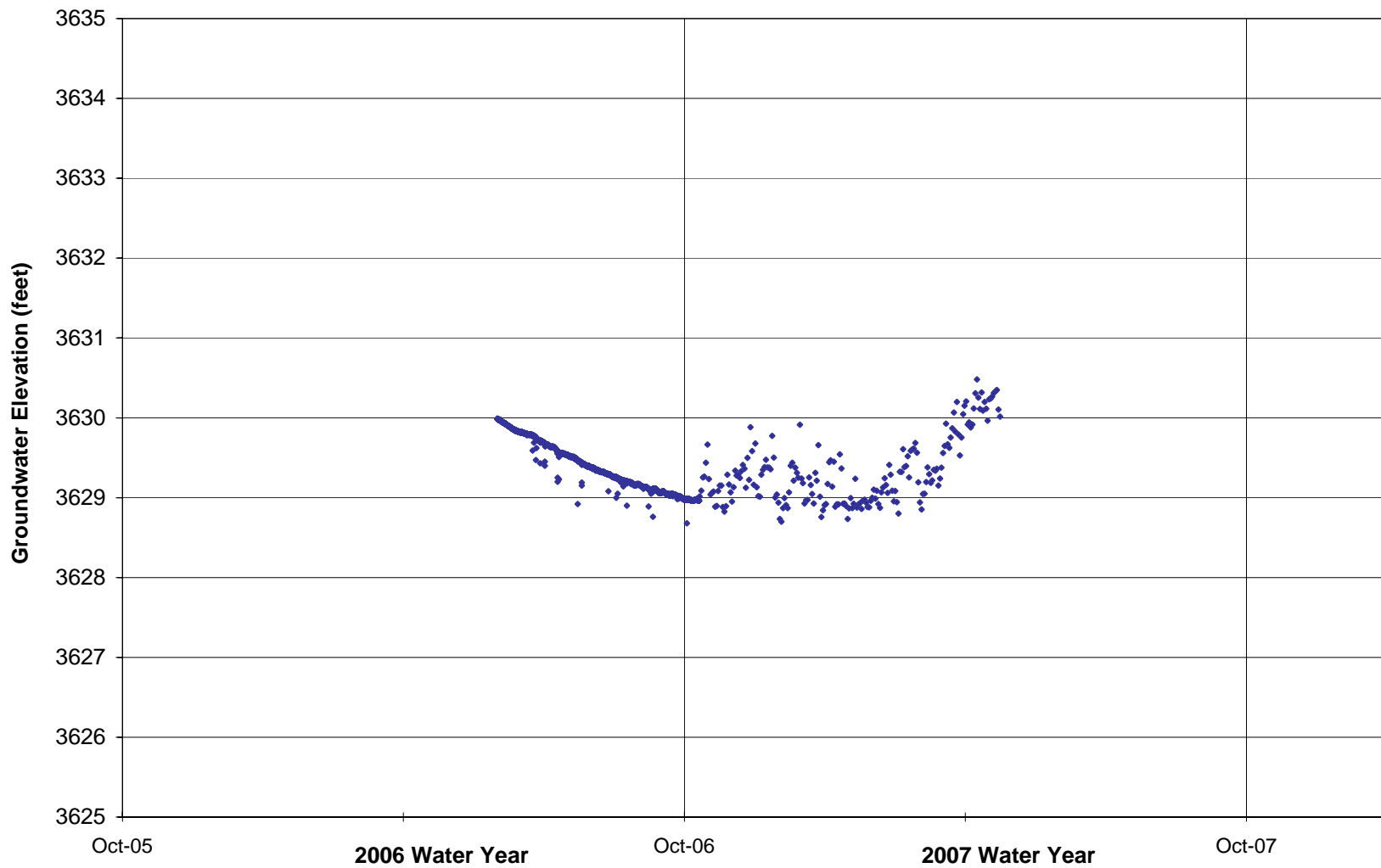


Note: Scale modified from standard report scale
 Pre-October 2006 data is unreliable due to faulty firmware

Figure 30
Moulton Well Hydrograph

WRIA 44/50
 Groundwater Elevation Monitoring
 Exempt Well Water Use Phase 2



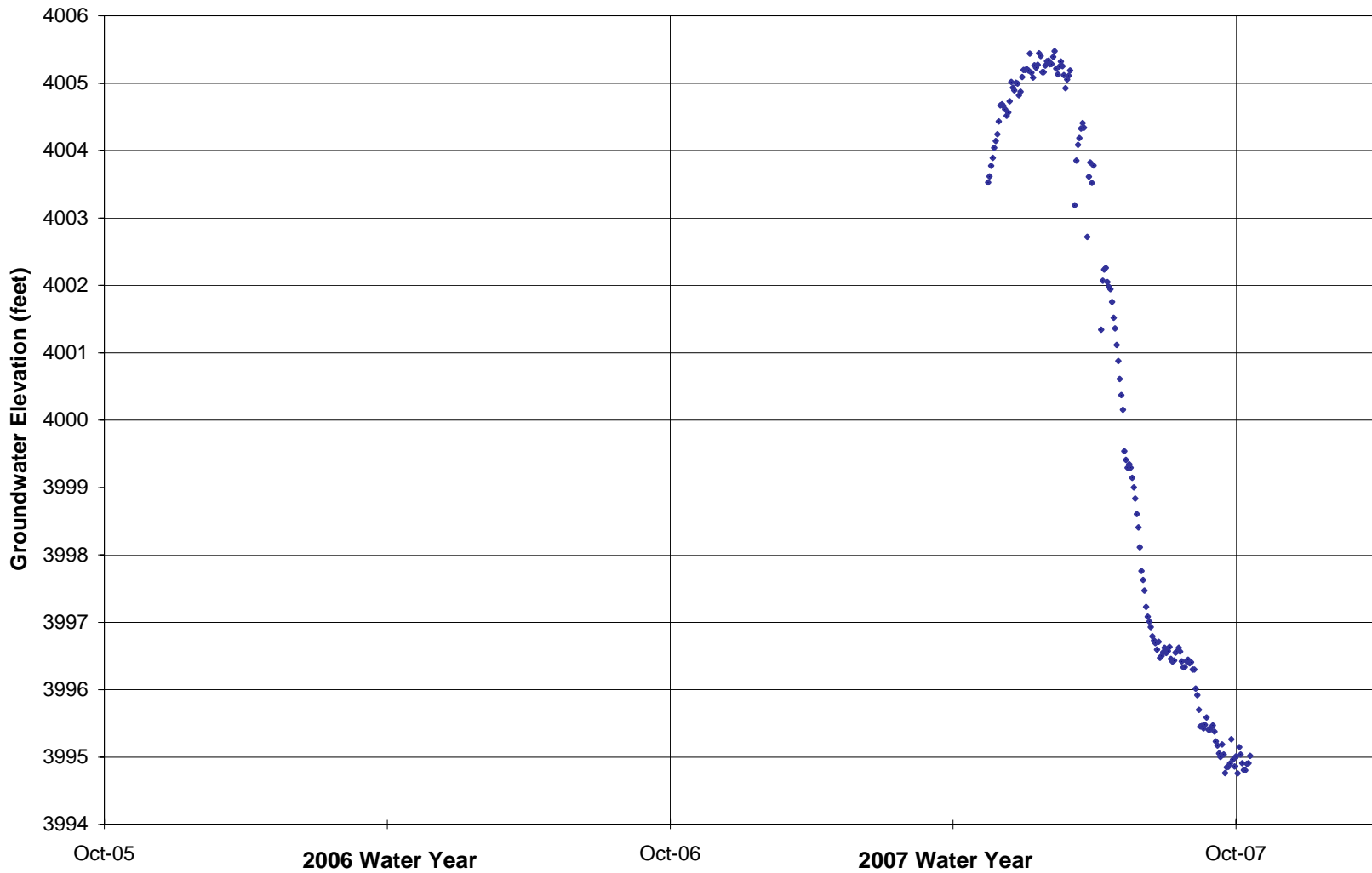


April 2006 to October 2006 - unable to retrieve logger

Figure 31
Murray Well Hydrograph

WRIA 44/50
Groundwater Elevation Monitoring
Exempt Well Water Use Phase 2



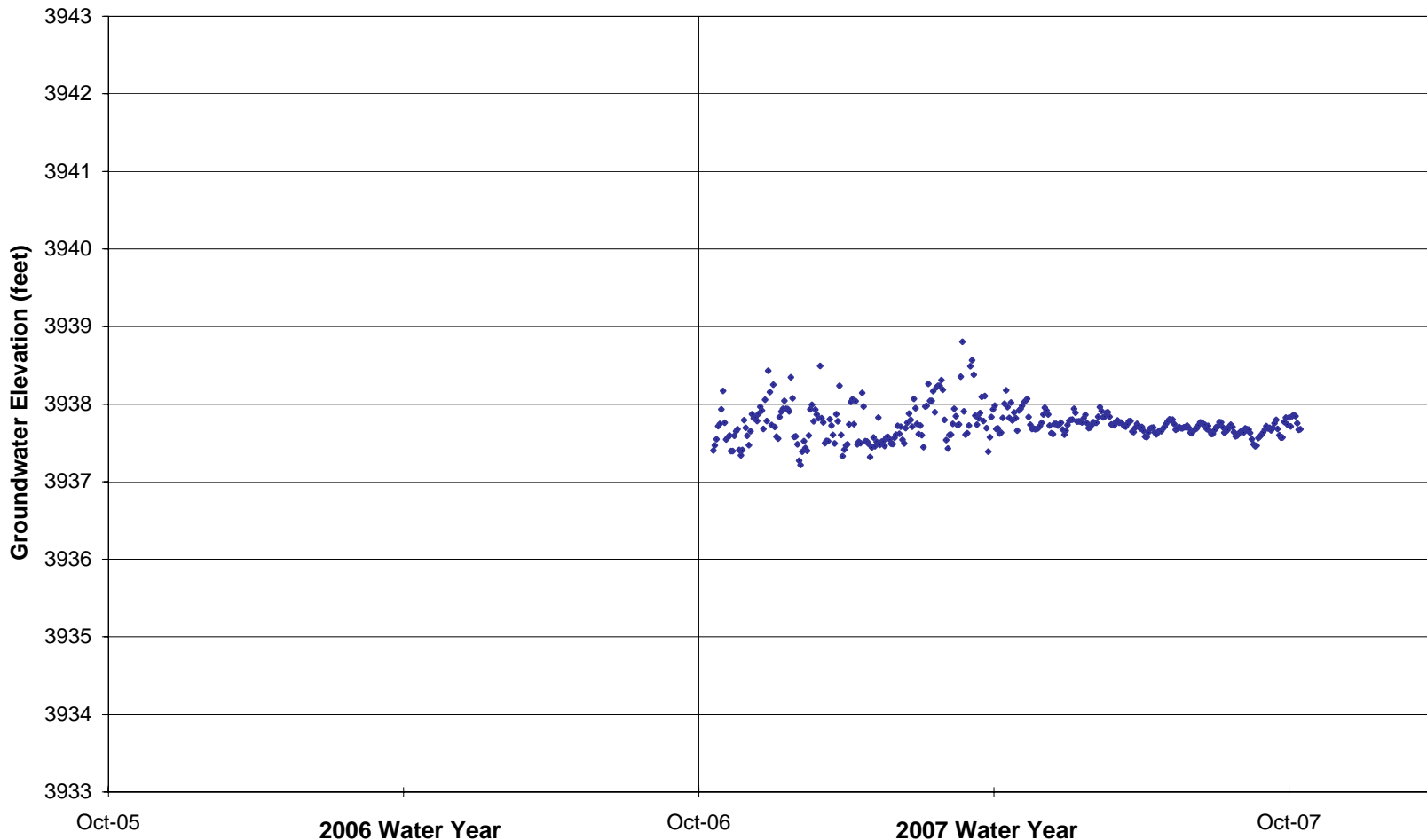


Note: Scale modified from standard report scale

Figure 32
Robins Well Hydrograph

WRIA 44/50
Groundwater Elevation Monitoring
Exempt Well Water Use Phase 2





Pre-October 2006 data is unreliable due to faulty firmware

Figure 33
Wilcox Well Hydrograph

WRIA 44/50
Groundwater Elevation Monitoring
Exempt Well Water Use Phase 2



APPENDIX A
MONITORED WELL LOGS

**LOWER MOSES COULEE
MONITORED WELL LOGS**

STATE OF WASHINGTON
DEPARTMENT OF CONSERVATION
AND DEVELOPMENT

WELL LOG

No. Decla. # 385

Date 1929, 19__

Cert. #321-D

Record by R. L. Davis, Jr.

Source G. W. Decla. Claim

Location: State of WASHINGTON

County Douglas

Area _____

Map _____

SW NE $\frac{1}{4}$ sec. 36 T23 N., R. 23 E. W.

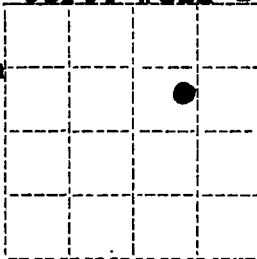


DIAGRAM OF SECTION

Drilling Co. _____

Address _____

Method of Drilling dug Date 1930 19__

Owner Palisades Irrigation District

Address Palisades, Wash. ington

Land surface, datum _____ ft. above
below _____

CORRE- LATION	MATERIAL	THICKNESS (feet)	DEPTH (feet)
------------------	----------	---------------------	-----------------

(Transcribe driller's terminology literally but paraphrase as necessary, in parentheses. If material water-bearing, so state and record static level if reported. Give depths in feet below land-surface datum unless otherwise indicated. Correlate with stratigraphic column, if feasible. Following log of materials, list all casings, perforations, screens, etc.)

	<u>Estimated from case history of neighboring wells</u>		
	<u>Soil</u>	<u>40</u>	<u>40</u>
	<u>Dry round stream bed rock</u>	<u>40</u>	<u>80</u>
	<u>Wet sand, stream " "</u>	<u>80</u>	<u>160</u>
<u>Pump Test:</u>			
	<u>Dim: 160' x 4'</u>		
	<u>SWL: 160'</u>		
	<u>Dd: none</u>		
	<u>Yield: 800 g.p.m.</u>		
	<u>Casing: not given, cement curbed from top to bottom</u>		

Turn up _____

Sheet _____ of _____ sheets

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.

WATER WELL REPORT

Start Card No. W 09053
 Unique Well I.D. # AET969
 Water Right Permit No.

STATE OF WASHINGTON

(1) OWNER: Name KING, STEPHEN Address 5473 8TH ST. SE EAST WENATCHEE, WA 98802-

(2) LOCATION OF WELL: County DOUGLAS - NW 1/4 SE 1/4 Sec 2 T 22 N., R 23E WM
 (2a) STREET ADDRESS OF WELL (or nearest address) PALISADES RD., PALISADES

(3) PROPOSED USE: DOMESTIC

(10) WELL LOG

(4) TYPE OF WORK: Owner's Number of well
 {If more than one}
 Method: ROTARY
NEW WELL

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 in formation.

(5) DIMENSIONS: Diameter of well 6 inches
 Drilled 139 ft. Depth of completed well 138 ft.

MATERIAL	FROM	TO
BROWN CLAY	0	32
BROKEN BASALT	32	49
BROWN CLAY BROKEN BASALT	49	54
BROKEN BASALT	54	139

(6) CONSTRUCTION DETAILS:
 Casing installed: 6 " Dia. from +3 ft. to 138 ft.
WELDED " Dia. from ft. to ft.
 " Dia. from ft. to ft.

Perforations: NO
 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: NO
 Manufacturer's Name
 Type Model No.
 Diam. slot size from ft. to ft.
 Diam. slot size from ft. to ft.

Gravel packed: NO Size of gravel
 Gravel placed from ft. to ft.

Surface seal: YES To what depth? 20 ft.
 Material used in seal BENTONITE
 Did any strata contain unusable water? NO
 Type of water? Depth of strata ft.
 Method of sealing strata off SEAL METHOD 1

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

(8) WATER LEVELS: Land-surface elevation
 above mean sea level ... ft.
 Static level 85 ft. below top of well Date 03/04/99
 Artesian Pressure lbs. per square inch Date
 Artesian water controlled by CAP

Work started 03/03/99 Completed 03/04/99

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

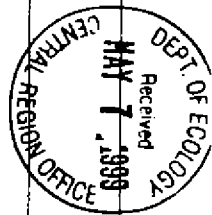
WELL CONSTRUCTOR CERTIFICATION:
 I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Recovery data
 Time Water Level Time Water Level Time Water Level

NAME TUMWATER DRILLING, INC.
 (Person, firm, or corporation) (Type or print)

Date of test / /
 Bailer test gal./min. ft. drawdown after hrs.
 Air test 70+ gal./min. w/ stem set at 137 ft. for 1 hrs.
 Artesian flow g.p.m. Date
 Temperature of water Was a chemical analysis made? YES

ADDRESS P.O. BOX 777
 [SIGNED] *Scott Hill* License No. 1249
 Contractor's
 Registration No. TUMWADI 1330 C Date 03/04/99



WATER WELL REPORT

STATE OF WASHINGTON

Permit No 9768

(1) OWNER: Name Jack Thompson address Palisades Wash
(2) LOCATION OF WELL: County Douglas SW $\frac{1}{4}$ SE $\frac{1}{4}$ Sec 28 T. 22 N., R. 23 W.M.
Bearing and distance from section or subdivision corner 1000' north and 250' E from South $\frac{1}{4}$ corner of sec 28

(3) PROPOSED USE: Domestic Industrial Municipal
Irrigation Test Well Other

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

(5) DIMENSIONS: Diameter of well 12 inches.
Drilled ft. Depth of completed well 240 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 12" Diam. from 0 ft. to 209 ft.
Threaded " Diam. from ft. to ft.
Welded " Diam. from ft. to ft.
Perforations: Yes No
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
Manufacturer's Name Model No
Type
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 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

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

(8) WATER LEVELS: Land-surface elevation above mean sea level ft.
Static level 213 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

Flow test gal./min. with ft. drawdown after hrs.

Temperature of water Was a chemical analysis made? Yes No

(10) WELL LOG:
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 formation.

MATERIAL	FROM	TO
Upper Burdian	0	20
Gravel	20	112
Brown Clay	112	205
Black Basalt	205	208
Brown Clay	208	216
Black Basalt	216	220
Large Gravel	220	223
Water Bearing		
Black Basalt	223	240

RECEIVED

AUG 30 1976

DEPARTMENT OF ECOLOGY
CENTRAL REGIONAL OFFICE

Work started 4-6, 1976 Completed 5-14, 1976

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Joy Drilling Co
(Type or print)

Address Moses Lake Wash

[Signed] Alan Thompson
(Well Driller)

License No. 0648 Date June 3, 1976

NOT A PRODUCTION WELL

LIMITED YIELD

9/7/76

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

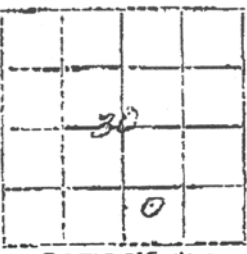
**UPPER MOSES COULEE
MONITORED WELL LOGS**

App# 8736
Doc# 9276

STATE OF WASHINGTON
DEPARTMENT OF CONSERVATION
DIVISION OF WATER RESOURCES

WELL LOG

Record by Driller
Source Well Report



Location: State of WASHINGTON
County Douglas
Area -
Map -
1/4 sec 30 T. 24 N. R. 25 E. W. - Direction of Section

Drilling Co. Frank L. Zimmerman
Address 2009 South Cedar Hill Road, Lake WA.
Method of Drilling Cable Date 24 Nov., 1968
Owner Glen Carrington
Address Box 845 Ephrata WA.
Land surface datum 1910 ft. ^{above} MSL
SWL: 315' Date 24 Nov 1968, 1968 Dura: 12 x 705'

CONSTRUCTION	MATERIAL	From (feet)	To (feet)
--------------	----------	-------------	-----------

(Transcribe driller's terminology literally but paraphrase as necessary, in parentheses, if material water-bearing, to state and record static level if reported. Give depths in feet below land-surface datum unless otherwise indicated. Correlate with stratigraphic column, if feasible. Following log of materials, list all casing, perforations, screens, etc.)

	<u>This is an old well repaired to 12"</u>		
	<u>0 - 575' log. for only data</u>		
	<u>at deeper portion of well</u>		
	<u>6" hole 575' - 705'</u>		
	<u>Gravel, black med. sand</u>	<u>575'</u>	<u>690'</u>
	<u>Gravel, black porous</u>	<u>690'</u>	<u>705'</u>
	<u>water-bearing</u>		
	<u>Pump: Worthington Turbine 125 HP</u>		
	<u>Pump Test: 500 gpm - 175' TD @ 10620</u>		
	<u>(24 Nov 1968)</u>		
	<u>Recovery Time 30 sec</u>		

STATE OF WASHINGTON
DEPARTMENT OF CONSERVATION
AND DEVELOPMENT

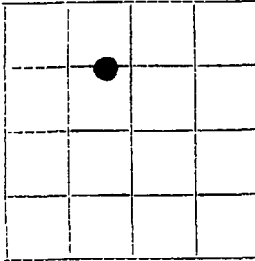
WELL LOG

No. Appli. 3138

Date Feb. 15, 1955

Record by Edwin L. Johnson

Source Driller's Record



Location: State of WASHINGTON

County Douglas

Area

Sec. SE 1/4 of NW 1/4 &

NE 1/4 SW 1/4 sec 32 T. 24 N., R. 25 E. W.

Diagram of Section

Drilling Co. Courtney Bach

Address Quincy, Washington

Method of Drilling Drilled Date, 19

Owner Edwin L. Johnson

Address Farmer, Washington

Land surface, datum ft above below

CORRE- LATION	MATERIAL	THICKNESS (feet)	DEPTH (feet)
------------------	----------	---------------------	-----------------

(Transcribe driller's terminology literally but paraphrase as necessary, in parentheses. If material water-bearing, so state and record static level if reported. Give depths in feet below land-surface datum unless otherwise indicated. Correlate with stratigraphic column, if feasible. Following log of materials, list all casings, perforations, screens, etc.)

	Gravel & clay	70	70
	Fine sand & silt	18	88
	Silt & clay	21	109
	Silt & clay	11	120
	Silt & clay	24	144
	Silt & clay	19	163
	Yellow clay & water	5	168
	gravel		
	Water gravel	23	191
	Pump Test:		
	Dia: 1 1/2" X 10"		
	SWL: 37'		
	DD: 10'		
	Yield: 900 g.p.m.		
	Casing 10 in dia from 0 to 191'		

Turn up

Sheet of sheets

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

WATER WELL REPORT

STATE OF WASHINGTON

Application No. _____

Permit No. G4-24488

(1) OWNER: Name NAAC of WASH. Address 116 - 1195

(2) LOCATION OF WELL: County Douglas - NE 1/4 NE 1/4 Sec 19 T. 23 N. R. 25 E M
 Bearing and distance from section or subdivision corner 910'S & 757' W of Corner Sec 19

(3) PROPOSED USE: Domestic Industrial Municipal
 Irrigation Test Well Other

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

(5) DIMENSIONS: Diameter of well 16" inches.
 Drilled 738 Depth of completed well 738 ft.

(6) CONSTRUCTION DETAILS:
 Casing installed: 16" Diam. from 0 ft. to 49' ft.
 Threaded 12" Diam. from 0 ft. to 305 ft.
 Welded " Diam. from _____ ft. to _____ ft.

Perforations: Yes No
 Type of perforator used MILKKNIFE
 SIZE of perforations 1/8" in by 4" in.
 perforations from 305 ft. to 320 ft.
 perforations from _____ ft. to _____ ft.
 perforations from _____ ft. to _____ ft.

Screens: Yes No
 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 No To what depth? _____ 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 GENERAL Electric
 Type HYDRO-PAC K HP 150

(8) WATER LEVELS: Land-surface elevation _____ ft.
 above mean sea level _____
 Static level 305 ft. below top of well Date April 1969
 Artesian pressure NO 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 WELL
 Was a pump test made? Yes No If yes, by whom? W. J. J. J.
 Yield: 1150 gal./min. with 60' ft. drawdown after 4 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
	<u>Immediately</u>				

Date of test April 1969
 Boiler test NO gal./min. with _____ ft. drawdown after _____ hrs.
 Artesian flow NO g.p.m. Date _____
 Temperature of water NO Was a chemical analysis made? Yes No

(10) WELL LOG:
 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 formation.

MATERIAL	FROM	TO
TOP SOIL	0	2
GRAVEL	7	27
CLAY	27	48
MED. HARD BASALT	48	195
POURIOUS ROCK WATER	195	205
TEST AT 250 GAL		
HARD GREY BASALT	205	305
SOFT BROWN BASALT	305	322
HARD GREY BASALT	322	431
BROKEN BROWN BASALT	431	500
HARD GREY BASALT	500	623
CHANGE TO 8" HOLE		
WILD BLACK BASALT	623	668
HARD GREY BASALT	668	712
INTER FLOOD WATER	712	738

RECEIVED

DEC 5 - 1977

DEPARTMENT OF ECOLOGY
 GENERAL REGIONAL OFFICE

Work started _____, 19____ Completed _____, 19____

WELL DRILLER'S STATEMENT:
 This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
 NAME Frank Zimmerman
 (Person, firm, or corporation) (Type or print)
 Address 116 - 1195
 (Signed) Frank Zimmerman
 (Well Driller)
 License No. 0548 Date 11/30, 1977

WATER WELL REPORT

STATE OF WASHINGTON

Notice of Intent W 123727

UNIQUE WELL ID # RFL 121

Water Right Permit No. 98020

97450

(1) OWNER: Name PK&T Inc Address 1430 Olympic Ave Edmonds Wa,

(2) LOCATION OF WELL County Douglas SW 1/4 SE 1/4 Sec 6 T 23 NR 25E WM G

(2a) STREET ADDRESS OF WELL (or nearest address) Rim Rock Rd

TAX PARCEL NO _____

(3) PROPOSED USE Domestic Industrial Municipal
 Irrigation Test Well Other
 DeWater

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

(5) DIMENSIONS Diameter of well 6 inches
Drilled 80 feet. Depth of completed well 80 ft

(6) CONSTRUCTION DETAILS
Casing Installed.
 Welded 6 " Diam from +2 ft to 60 ft
 Liner installed " Diam from " ft to " ft
 Threaded " Diam from " ft to " ft

Perforations. Yes No
Type of perforator used _____
SIZE of perforations _____ in by _____ in
_____ perforations from _____ ft to _____ 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 _____
Material placed from _____ ft to _____ ft

Surface seal Yes No To what depth? 18 ft
Material used in seal Bentonite
Did any strata contain unusable water? Yes No
Type of water? Surface Depth of strata 4-26
Method of sealing strata off Casing

(7) PUMP Manufacturer's Name _____
Type _____ HP _____

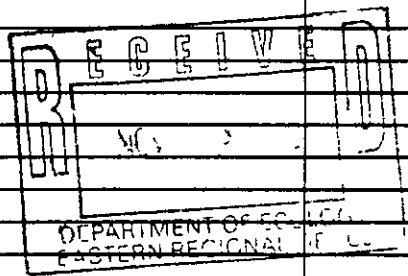
(8) WATER LEVELS Land surface elevation above mean sea level _____ ft
Static level 65 ft below top of well Date 10/13/00
Artesian pressure _____ lbs per square inch Date _____
Artesian water is controlled by _____ (Cap, valve, etc)

(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 _____
Bailey test _____ gal/min with _____ ft drawdown after _____ hrs
Artest 27 gal/min with 0 ft drawdown after 2 hrs
Artesian flow _____ g p m Date _____
Temperature of water _____ Was a chemical analysis made? Yes 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
Top Soil	0	4
Brown clay & water	4	16
Gravel & clay & water	16	26
Sticky Clay	26	60
Brown Basalt & water	60	64
Black Basalt	64	80



Work Started 10/11/00 Completed 10/12/00

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 Mitch Matthews License No 1267
(Licensed Driller/Engineer)
Trainee Name _____ License No _____
Drilling Company Mathews Drilling
(Signed) Mitch Matthews License No 1267
(Licensed Driller/Engineer)
Address 2317 Rd 10, 2 NE McL Wm 9837
Contractor's Registration No MATH EDC 11786 Date 10/17/00
(USE ADDITIONAL SHEETS IF NECESSARY)

**JAMESON LAKE AREA
MONITORED WELL LOGS**

WATER WELL REPORT

STATE OF WASHINGTON

Start Card No. 029000

Water Right Permit No. _____

(1) OWNER: Name Denny Smullen Address 233-31 Woods Cr Rd SACHWANET STA

(2) LOCATION OF WELL: County Douglas Lot 4 NW Sec 5 T 25 N. R 26 W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) Jamison Lake Resort

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

(4) TYPE OF WORK: Owner's number of well (if more than one) 2
Abandoned New well Method: Dug Bored
Despended Cable Driven
Reconditioned Rotary Jetted

(5) DIMENSIONS: Diameter of well 6 inches.
Drilled 40 feet. Depth of completed well 41 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6 Diam. from 41 ft. to 39 ft.
Welded Liner installed Threaded

Perforations: Yes No
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
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 No To what depth? 18 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 _____

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

(8) WATER LEVELS: Land-surface elevation above mean sea level 1600 ft.
Static level 12 ft. below top of well Date 10/18/90
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: 30 gal./min. with _____ ft. drawdown after _____ hrs.
" EST AIR LIFT "

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.
Airstest _____ gal./min. with stem set at _____ ft. for _____ 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
Overburden	0	3
Sand & Gravel, Dk Brown, Dry	3	12
Sand & Gravel, Moist	12	23
Gravel, Water bearing, w/ Broken Basalt	23	41

Work started 10/17 1990 Completed 10/18 1990

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 Eagle Pump & Supply (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)

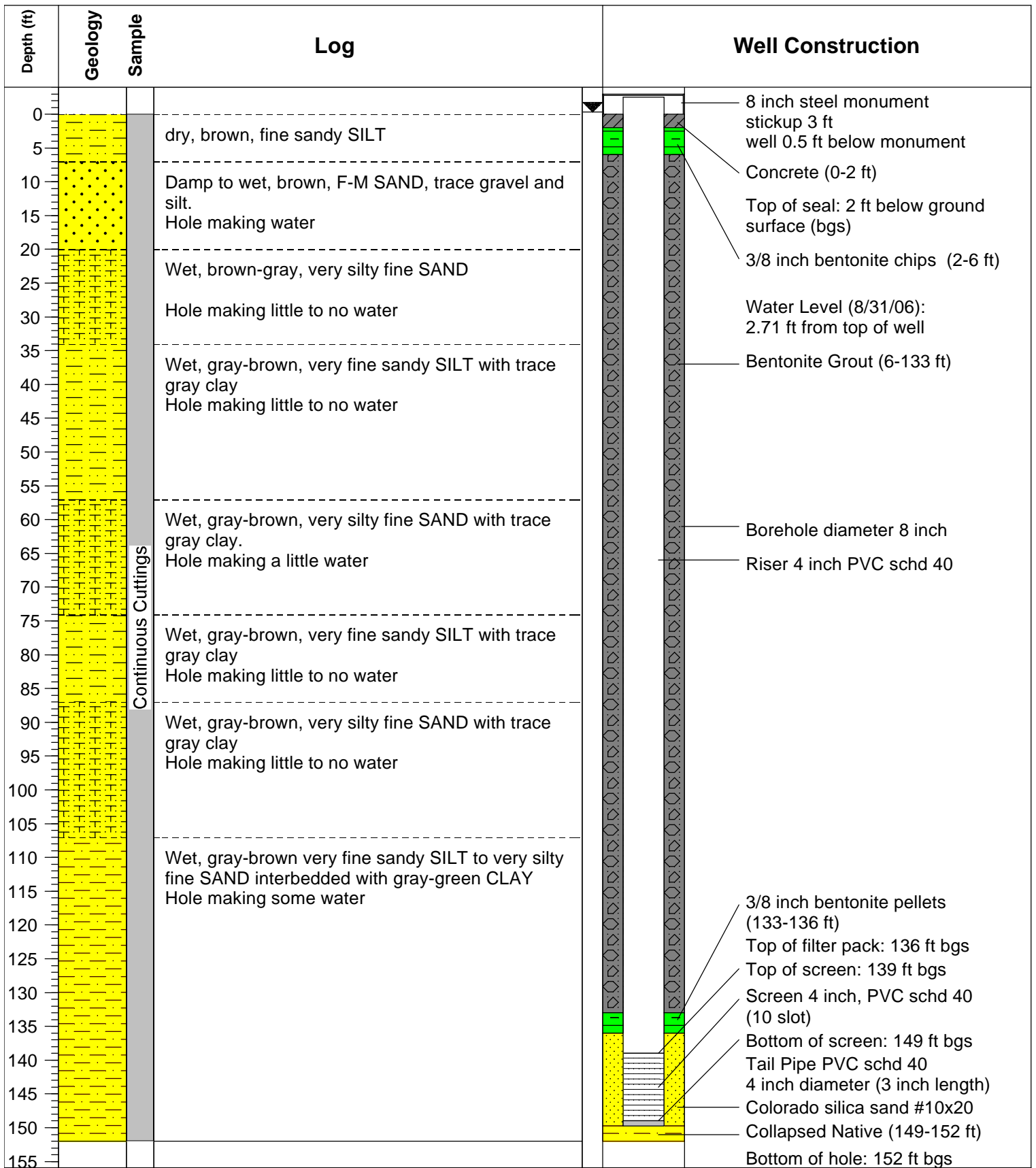
Address 316 W 5th Colville WA. 99114

(Signed) Mike Loom License No. 1451
(WELL DRILLER)

Contractor's Registration No. PS194MF Date 10/18 1990

(USE ADDITIONAL SHEETS IF NECESSARY)

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



Project Name: Douglas County Recharge
 Drilling Method: Air Rotary
 Driller: Roy Sink
 Firm: Environmental West Explorations
 Consulting Firm: PGG
 Logged by: Dawn Chapel
 Location: Jameson Lake, Douglas County

Well Name: PGG-1
 UWID: APK319
 MP Elevation: 1805.4059
 Datum: NAVD88
 Installed: 7/18/2006

Figure
GEOLOGIC LOG AND AS-BUILT
FOR MONITORING WELL PGG-1

Douglas County Recharge
 JS0604, PGG-1.lcf, 9/2006



**FOSTER CREEK
MONITORED WELL LOGS**

WATER WELL REPORT

STATE OF WASHINGTON

Application No. _____

Permit No. _____

(1) OWNER: Name Terry Hunt Address _____
LOCATION OF WELL: County Douglas NW Sec. 30 T. 27 N. R. 25E
_____ and distance from section or subdivision corner

(3) PROPOSED USE: Domestic Industrial Municipal
Irrigation Test Well Other

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

(5) DIMENSIONS: Diameter of well 8-6 inches.
Drilled 290 ft. Depth of completed well 290 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 8" Diam. from 0 ft. to 24 ft.
Threaded " Diam. from _____ ft. to _____ ft.
Welded " Diam. from _____ ft. to _____ ft.

Perforations: Yes No
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
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 No To what depth? 18 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 _____

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

(8) WATER LEVELS: Land-surface elevation _____ ft.
above mean sea level _____ ft.
Static level 60 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: 40 gal./min. with 0 ft. drawdown after 1 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 _____
Per test _____ gal./min. with _____ ft. drawdown after _____ hrs.
Artesian flow _____ g.p.m. Date _____
Temperature of water _____ Was a chemical analysis made? Yes No

(10) WELL LOG:

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 formation.

MATERIAL	FROM	TO
Soil	0'	10'
gravel & water	10'	120'
Acid Basalt Rock	116'	130'
porous Basalt & water	130'	182'
Acid Basalt Rock	182'	290'
Hole - cemented	290'	290'

Work started 7-24, 1979 Completed 7-30, 1979

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Four Star Drilling Co
(Person, firm, or corporation) (Type or Print)

Address Box 895 Coulee City

[Signed] Paul Cameron
(Well Driller)

License No. 124 Date 10-26, 1979

(USE ADDITIONAL SHEETS IF NECESSARY)

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

**CHELAN HILLS AND CHELAN SPRINGS
MONITORED WELL LOGS**

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

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

97312

WATER WELL REPORT

STATE OF WASHINGTON

Notice of Intent W109842
UNIQUE WELL ID # AFE 409

Water Right Permit No _____

(1) OWNER Name Roy Luce Address 37845 Mt. View Rd Auburn WA 98001

(2) LOCATION OF WELL County Douglas 1/4 E 1/2 Sec 33 T 27 NR 23 WM

(2a) STREET ADDRESS OF WELL (or nearest address) _____
TAX PARCEL NO _____

(3) PROPOSED USE Domestic Industrial Municipal
 Irrigation Test Well Other
 DeWater

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

(5) DIMENSIONS Diameter of well 8 inches
Drilled 61 feet Depth of completed well 59 ft

(6) CONSTRUCTION DETAILS
Casing Installed Welded Liner installed Threaded
Diam from 12 ft to 39 ft
Diam from _____ ft to _____ ft
Diam from _____ ft to _____ ft

Perforations Yes No
Type of perforator used _____
SIZE of perforations _____ in by _____ in
_____ perforations from _____ ft to _____ 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 _____
Material placed from _____ ft to _____ ft

Surface seal Yes No 18 To what depth? _____ ft
Material used in seal Leonton
Did any strata contain unusable water? Yes No
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

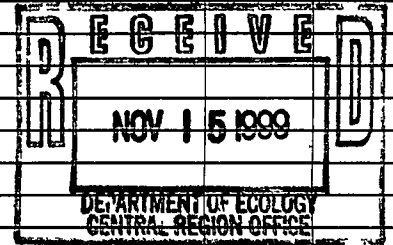
(7) PUMP Manufacturer's Name _____
Type _____ HP _____

(8) WATER LEVELS Land surface elevation above mean sea level _____ ft
Static level 41.5 ft below top of well Date 10-29-99
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
12 gpm air lift estimate
Date of test _____
Bailer test _____ gal/min with _____ ft drawdown after _____ hrs
Airtest 12 gal/min with 4 ft drawdown after 1 hrs
Artesian flow _____ g p m Date _____
Temperature of water _____ Was a chemical analysis made? Yes 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
<u>sandy loam</u>	<u>0</u>	<u>2</u>
<u>gravel & boulders</u>	<u>2</u>	<u>15</u>
<u>red silt & angular gravel</u>	<u>15</u>	<u>40</u>
<u>damp & highly gravel</u>	<u>40</u>	<u>46</u>
<u>silty sand</u>	<u>46</u>	<u>48</u>
<u>clay basalt angular gravel</u>	<u>48</u>	<u>59</u>



Work Started 10-28 99 Completed 10-29 99

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 Marshall Miller License No 1437
(Licensed Driller/Engineer)

Trainee Name _____ License No _____
Drilling Company MM Quality Drilling, LLC

(Signed) _____ License No 1437
(Licensed Driller/Engineer)

Address 22905 Riverview Rd, Chelan, WA 98816

Contractors Registration No MVMQUDLO33MM Date _____

(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

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

WATER WELL REPORT

STATE OF WASHINGTON

Start Card No. 48235

UNIQUE WELL I.D.# ABX 913

Water Right Permit No. _____

(1) OWNER: Name Jason Sundum Address HCR 80 Box 486 Chelan WA 98831

(2) LOCATION OF WELL: County Douglas SW 1/4 SW 1/4 Sec 32 T 27 N. R. 23 W.M.

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

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

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

(5) DIMENSIONS: Diameter of well 6 inches.
Drilled 485 feet. Depth of completed well 485 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 6 Diam. from 42 ft. to 45 ft.
Welded Liner installed Threaded Diam. from 6 ft. to 485 ft.
Diam. from _____ ft. to _____ ft.

Perforations: Yes No
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
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 No To what depth? 18 ft.
Material used in seal Leaktite
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 _____ ft.
Static level 150 ft. below top of well Date 7-19-95
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

1000 gallons per day
Date of test _____
Bailer test _____ gal./min. with _____ ft. drawdown after _____ hrs.
Airtest 25 gal./min. with stem set at 484 ft. for 3 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
sandy loam	0	8
gravel in silt	8	24
silty sands/gravel	24	43
soft white granite	43	150
orange soft granite @	150	155
med. hard black white gran.	155	305
green & white soft granite @	305	340
black white med hard granite	340	405
black hard granite with intermittent soft damp zones	405	485

JUL 24 1995

Work Started 7-14 19. Completed 7-19 1995

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 MVM Quality Drilling
(PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)
Address 760 Highland Rd. 98813
(Signed) MVM License No. 2437
(WELL DRILLER)

Contractor's Registration No. MVM QUP 138 NO Date 7-21 1995

(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 TOD number is (206) 407-6006.



WATER WELL REPORT

Application No.

STATE OF WASHINGTON

Permit No.

(1) OWNER: Name Don Nystrom Address 500 McNeil Canyon Rd, Drando Wa.

(2) LOCATION OF WELL: County Douglas - NE 1/4 NE 1/4 Sec. 13 T. 27 N., R. 23 W. M.
Lot 4 Div 3 Shelan Springs

(3) PROPOSED USE: Domestic Industrial Municipal
 Irrigation Test Well Other

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

New well Method: Dug Bored
 Deepened Cable Driven
 Reconditioned Rotary Jetted

(5) DIMENSIONS: Diameter of well 6 inches.
 Drilled 150 ft. Depth of completed well 205 ft.

(6) CONSTRUCTION DETAILS:
 Casing installed: " Diam. from ft. to ft.
 Threaded " Diam. from ft. to ft.
 Welded " Diam. from ft. to ft.

Perforations: Yes No
 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
 Manufacturer's Name

Type

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 No To what depth?

Material used in seal

Did any strata contain unusable water? Yes No
 Type of water?

(7) PUMP: Manufacturer's Name

Type:

(8) WATER LEVELS: Land-surface elevation above mean sea level ft.
 Static level 150 ft. below top of well Date

Artesian pressure

(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: 2 gal./min. with ft. drawdown after hrs.

Time	Water Level	Time	Water Level	Time	Water Level

Date of test

Bailer test: gal./min. with ft. drawdown after hrs.

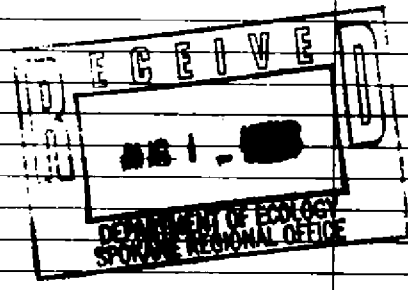
Artesian flow: g.p.m. Date

Temperature of water:

(10) WELL LOG:

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 formation.

MATERIAL	FROM	TO
<u>Decomposed Granite</u>	<u>55</u>	<u>205</u>



Work started 3-15 1988. Completed 3-16 1988.

WELL DRILLER'S STATEMENT

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Four Star Drilling (Person, firm, or corporation) (Type in print)

Address Box 37 Hartline Wa.

(Signed) [Signature] (Well Driller)

License No. 124 Date 3-16 1988

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

WATER WELL REPORT

STATE OF WASHINGTON

Start Card No. 50792

UNIQUE WELL ID. # ABL951

Water Right Permit No.

OWNER: Name Tom Cochran Address P.O. Box 4 Chelan Falls WA 98817

(2) LOCATION OF WELL: County Douglas 1/4 NE 1/4 Sec 23 T. 27 N. R. 23 W.M.

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

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

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

(5) DIMENSIONS: Diameter of well 8 7/8 inches.
Drilled 165 feet. Depth of completed well 165 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 8 Diam. from 7 2 ft. to 3 9 ft.
Welded Diam. from 7 2 ft. to 1 4 5 ft.
Liner installed by request at his request
Threaded

Perforations: Yes No
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
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 No To what depth? 18 ft.
Material used in seal sealant
Did any strata contain usable water? Yes No
Type of water? volume too small Depth of strata _____
Method of sealing strata off cased

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

(8) WATER LEVELS: Land-surface elevation _____ above mean sea level
Static level 85 ft. below top of well Date 10-14
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 _____
Baker test _____ gal./min. with _____ ft. drawdown after _____ hrs.
Airtest 6 gal./min. with stem set at 164 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
Top soil	0	4
cobble in silty gravel	4	19
silt	19	28
hard yellow clay	28	39
light orange	39	43
wet fine gravel in clay	43	46
clay bound gravel	46	145
decomposed granite	145	165

Work Started 10-12 19 94 Completed 10-14 19 94

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 MVM Quality Drilling
(PERSON, FIRM OR CORPORATION) (TYPE OR PRINT)
Address 760 Highland Rd. 98813
(Signed) MVHille License No. 1437
(WELL DRILLER)

Contractor's Registration No. MVMQUD138NO Date 10-24 19 94

(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.

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

**BADGER MOUNTAIN
MONITORED WELL LOGS**

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

WATER WELL REPORT

Start Card No W 170552
Unique Well I D # AKH866
Water Right Permit No

137784

STATE OF WASHINGTON

(1) OWNER Name MOULTON, BRUCE H Address 628 LOWE ST WENATCHEE, WA 98801

(2) LOCATION OF WELL County DOUGLAS SE 1/4 SE 1/4 Sec 14 T 24 N, R 21E WM
(2a) STREET ADDRESS OF WELL (or nearest address) 114 PONDEROSA RD, EAST WENATCHEE

(3) PROPOSED USE DOMESTIC

(10) WELL LOG R

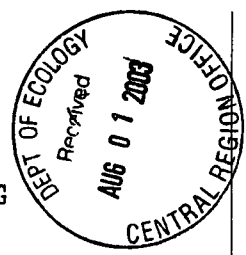
(4) TYPE OF WORK Owner's Number of well (If more than one)
NEW WELL Method ROTARY

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 in formation

(5) DIMENSIONS Diameter of well 6 inches
Drilled 299 ft Depth of completed well 299 ft

MATERIAL
BROWN CLAY
BROWN CLAY BROKEN BASALT
HARD BASALT WITH BROKEN LAYER(S)
BROKEN BASALT
BASALT
BROKEN BASALT WATER BEARING
BASALT
HARD BASALT
BROKEN BASALT WATER BEARING
HARD BASALT
FRACTURED BASALT WATER BEARING
HARD BASALT
BLACK CLAY
DARK BROWN CLAY

FROM	TO
0	2
2	11
11	108
108	118
118	127
127	131
131	143
143	158
158	161
161	258
258	266
266	289
289	291
291	299



(6) CONSTRUCTION DETAILS
Casing installed 6 " Dia from +1 5 ft to 18 5 ft
WELDED W/LINER 4 " Dia from 9 ft to 299 ft
" Dia from ft to ft

Perforations YES
Type of perforator used SKILL SAW
SIZE of perforations 125 in by 7 in
42 perforations from 139 ft to 159 ft
84 perforations from 259 ft to 299 ft
perforations from ft to ft

Screens NO
Manufacturer's Name
Type Model No
Diam slot size from ft to ft
Diam slot size from ft to ft

Gravel packed NO Size of gravel
Gravel placed from ft to ft

Surface seal YES To what depth? 18 ft
Material used in seal BENTONITE
Did any strata contain unusable water? NO
Type of water? Depth of strata ft
Method of sealing strata off SEAL METHOD 1

(7) PUMP Manufacturer's Name
Type H P

(8) WATER LEVELS Land surface elevation
Static level 24 ft above mean sea level Date 06/18/03
Artesian Pressure lbs per square inch Date
Artesian water controlled by

Work started 06/17/03 Completed 06/18/03

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

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

Recovery data
Time Water Level Time Water Level Time Water Level

NAME TUMWATER DRILLING, INC
(Person, firm, or corporation) (Type or print)
ADDRESS P O BOX 777
[SIGNED] License No 1249
Contractor's
Registration No TUMWADP 011 LZ Date 06/18/03

Date of test / /
Bailer test gal/min ft drawdown after hrs
Air test 4 5 gal/min w/ stem set at 298 ft for 3 25 hrs
Artesian flow g p m Date
Temperature of water Was a chemical analysis made? NO



WELL LOG CHANGE FORM

Instructions: Record any change made to the well log record on this form. Append this form to the well log image. File with the original.

WCL Log ID (Required) N/A Well Log ID 145034

Regional Office: CRO ERO NWRO SWRO

Type of Well: Water Resource

Notice of Intent: N/A Ecology Well ID Tag No. N/A

Property (Well) Owner's Name Ron Robins

Well Street Address _____

City _____ County Douglas Zip Code _____

Location: NW 1/4-1/4 NW 1/4 Sec 12 Twn 24 R 21 E or W (Circle One)

Lat./Long: (Required) Lat. Deg. _____ Lat. Min/Sec _____

Long. Deg. _____ Long. Min/Sec _____

Horizontal Collection Method Code _____

Tax Parcel No _____

Type of Work: New Well Reconditioned Deepened

Well Log Received Date / /

Well Diameter _____ (in inches) Well Depth _____ (in feet) Well Completed Date / /

Driller's Ecology License No. _____

Trainee's Ecology License No. _____

Reason/Source of Change (Required)

CORRECTION TO SECTION ONLY
Well is in Section 12, not 13.

Signature of Well Log Tracker (Required) EB Date 1/20/05

WATER WELL REPORT

State of Washington Date Printed: 17-Jun-2005 Log No. 16405
Construction/Decommission Original Construction Notice
Construction Construction Notice 175767

CURRENT
Notice of Intent No.: W190406
Unique Ecology Well I.D. No AKM235
Water Right Permit Number:

OWNER: MURRAY, EDWARD L.
OWNER ADDR: 519 N. FRENCH RD ARLINGTON, WA 98223

Well Street Address: LOT 7 BADGER MTN. "D"
City: Wenatchee, WA 98802 County: DOUGLAS
Location: 1/4 SW 1/4 Sec 23 T 24 R 21E EW
Lat/Long: Lat Deg Lat Min/Sec
(s, t, r still) Long Deg Long Min/Sec
REQUIRED)
Tax Parcel No.: 45100000700

PROPOSED USE: DOMESTIC

TYPE OF WOR Owners's Well Number: (If more than one well) 1
NEW WELL Method: ROTARY

DIMENSIONS Diameter of well: 6 inches
Drilled 140 ft. Depth of completed well 140 ft.

CONSTRUCTION DETAILS: Casing installed WELDED
Liner installed: PVC 6" Dia from +2 ft. to 18 ft.
4" Dia from 10 ft. to 140 ft. " Dia from ft. to ft.

Perforations: Yes Used In: Liner
Type of perforator used SKILL SAW
SIZE of perforations 6 in. b 1/8 in.
60 Perforation from 100 ft. to 140 ft.
Perforation from ft. to ft.
Perforation from ft. to ft.

Screens: No K-Pac Location
Manufacture's Name
Type: Model No
Diam. slot size from ft. to ft.
Diam. slot size from ft. to ft.

Gravel/Filter packed: No Size of Gravel
Material placed fro ft. to ft.

Surface seal: Yes To what depth 18 ft.
Seal method: Material used in seal BENTONITE
Did any strata contain unusable water No
Type of water Depth of strata
Method of sealing strata off

PUMP: Manufacture's name
Type: H.P. 0

WATER LEVELS Land-surface elevation above mean sea level: 0 ft.
Static level 60 ft. below top of well Date 05/19/2005
Artesian Pressure lbs per square inch Date
Artesian water controlled by

WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made No If yes, by whom
Yield gal/min with ft drawdown after
Yield gal/min with ft drawdown after
Yield gal/min with ft drawdown after

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

Time:	Water Leve	Time:	Water Leve	Time:	Water Leve
-------	------------	-------	------------	-------	------------

Date of test:
Bailer test gal/min ft drawdown after hrs.
Air test 20 gal/min w/ stem set at 140 ft. for 1 hours
Artesian flow gpm Date
Temperature of water Was a chemical analysis made No

CONSTRUCTION OR DECOMMISSION PROCEDURE
Formation: Describe by color, character, size of material and structure. Show thickness of aquifers and the kind and nature of the material in each stratum penetrated. Show at least one entry for each change in formation.

Material	From	To
BASALT COBBLE CLAY	0	2
BASALT MEDIUM	2	40
BASALT HARD	40	98
BROKEN BASALT	98	110
BASALT FRACTURED W/WATER	110	130
BASALT HARD	130	140

Notes:

Work starte 05/19/2005 Complete 05/20/2005

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 are true to my best knowledge and belief.

Driller Engineer Trainee
Name: MARTY RUGO License No.: 2038
Signature: *Marty Rugo*

If trainee, Licensed driller is License No.:
Licensed Driller Signature

Drilling Company:
NAME: FOGLE PUMP & SUPPLY, INC. Shop: REPUBLIC
ADDRESS: PO Box 456
Republic, WA 99166
Phone: 5097752878 Toll Free: 8008453500
E-Mail: foglewest@rcabletv.com
FAX: 5097750498 WEB Site: www.foglepump.com
Contractor's Registration No.: FOGLEPS095L4 Date Log Created: 06/17/2005

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

Water Right Permit No. _____

Start Card No. ~~W 0877-10~~

UNIQUE WELL I.D. # ACX 059

(1) OWNER: Name WILLY, GARY Address 9209 CRESCENT BAR N.W. QUincy WA 98845

(2) LOCATION OF WELL: County DOUGLAS SE 1/4 NE 1/4 Sec 15 T 24 N. R. 21E W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) 3 SW 17.5 BANNER MT, EAST WELMACHEE H

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

(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

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

MATERIAL	FROM	TO
EXISTING 6" WELL - Open	0	178
BASALT	178	182
BROKEN BASALT 1/2 - 1 cm	182	185
BASALT	185	189 1/2
BLACK CLAY	189 1/2	197
BROWN CLAY w/ S&S 20' - 20 1/2	197	208
BROWN VERY FINE SAND	208	211

(5) DIMENSIONS: Diameter of well 6 inches.
Drilled 33 feet. Depth of completed well 210 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 4 1/2 Diam. from 180 ft. to 210 ft.
Welded Liner installed Diam. from _____ ft. to _____ ft.
Threaded Diam. from _____ ft. to _____ ft.

Perforations: Yes No
Type of perforator used SKIL SAW
SIZE of perforations _____ in by _____ in.
42 perforations from 190 ft to 210 ft.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.

Screens: Yes No
Manufacturer's Name _____ Model No. _____
Type _____
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 No To what depth? _____ 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 _____ H.P. _____
Type: _____

(8) WATER LEVELS: Land surface elevation above mean sea level _____ ft.
Static level 116 ft below top of well Date 5-6-98
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 _____
Ballist test _____ gal./min. with _____ ft. drawdown after _____ hrs.
Artest 15 gal./min. with stem set at 210 ft. for 1 1/2 hrs.
Artesian flow _____ g.p.m. Date 5-6-98
Temperature of water _____ Was a chemical analysis made? Yes No

JUN 30 1998

DEPARTMENT OF ECOLOGY
CENTRAL REGION OFFICE

Work Started 5-6 19 _____ Completed 5-7 19 98

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 TIM WATER DRILLING INC.
(PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)
Address LEAVENWORTH WA
(Signed) Bill [Signature] License No. 1249
(WELL DRILLER)
Contractor's Registration No. WUWA02 1330C Date 5-26 19 98
(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) 407-8600. The TDD number is (206) 407-8006.



WELL LOG CHANGE FORM

Instructions: Record any change made to the well log record on this form
Then always append this form to the well log image File with the original

WCL Log ID (Required) _____ Well Log ID _____

Regional Office: CRO ERO NWRO SWRO

Type of Well: Water Resource

Notice of Intent _____ Ecology Well ID Tag No. _

Property (Well) Owner's Name _____

Well Street Address _____

City _____ County _____ Zip Code _____

Location 1/4-1/4 1/4 Sec Twn R E or W (Circle One)

Lat /Long: (Required) Lat. Deg Lat. Min/Sec

Long. Deg. Long Min/Sec

Horizontal Collection Method Code

Tax Parcel No _____

Type of Work: New Well Reconditioned Deepened Decommission

Well Log Received Date / /

Well Diameter (in inches) Well Depth (in feet) Well Completed Date / /

Driller's Ecology License No. _____

Trainee's Ecology License No _____

Reason/Source of Change (Required)

*No Notice of Intent (NOI) sent in for this well log.
Go to NOI# on this form for more information
regarding this well.*

Signature of Well Log Tracker (Required) *Deq Plummer* Date / /

ECY-WR-WLCF Rev. 10/02/02

*ACY059
W087140
3/31/03*