

Well Reporting Upgrades: Supplemental Materials

Washington State Department of Ecology
Water Resources Program

Well Report Location Accuracy Study
Completed by Andrea Lauden on July 15, 2019

Introduction

The purpose of this study is to quantify the accuracy of Public Land Survey System (PLS; reported as township, range, section, ¼ and ¼-¼) locations as reported on well reports in the Department of Ecology's (Ecology) Well Report Database. Property owners, well drillers, and environmental planners frequently use Ecology's Well Report Viewer, which typically displays well locations at the ¼-¼ centroid of their PLS location. Ecology seeks to improve the accuracy of the Well Report Viewer for these users. The analysis was completed in November of 2018 based on the data available at that time.

Analysis

A representative sample of Public Land Survey (PLS) sections were chosen for the analysis to represent well reports statewide. Two sections were chosen from each of the four regions (Northwest, Southwest, Central and Eastern), containing approximately 50 Notices of Intent (NOIs) each. Several well reports that predate the NOI system were also included. One section per region is in an urban area, with mostly resource protection wells (RP). The other section per region is in a rural area with mostly water wells (WW). A full record of the well reports used in this study is provided in Appendix A.

The PLS locations provided in each well report were analyzed for accuracy by comparing the PLS location against other location information on the well report, including but not limited to: parcel number, well street address, property owner address, property owner name, project name, and latitude/longitude. If no other location information was available, the PLS location was assumed to be correct (see further discussion in the Conclusion).

If any of the other location information was determined to be reliable (parcel number verified on the county website, property owner/project name verified with the street address in an online records search, etc.) and located in a different PLS location than was listed on the well report, this correct PLS location was added to Appendix A (shown as a yellow highlighted field), and the report noted as Reported Incorrectly. If the PLS location in the database record did not match the PLS location written on the well report, the PLS location on the well report was verified, corrected in the database and Appendix A (shown as an orange highlighted field), and the report noted as Miskeyed. The errors and average number and percentages of errors are displayed in Table 1 and Figures 1. Incorrectly Reported percent errors range from 12-35%, with an average error rate of 24%.

Miskeyed percent errors range from 0-5%, with an average error rate of 3%. Because of the lower degree of significance of Miskeyed errors compared to Incorrectly Reported errors, they are not further analyzed in this study.

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Township Range Section	Region-Type	Total Reports	Incorrectly Reported	% Incorrectly Reported	Miskeyed	% Miskeyed
35N 4E 11	NW-WW	44	8	18%	1	2%
24N 4E 21	NW-RP	53	15	28%	2	4%
20N 3W 32	SW-WW	42	8	19%	2	5%
20N 2E 10	SW-RP	40	14	35%	0	0%
9N 24E 27	C-WW	49	14	29%	0	0%
13N 19E 30	C-RP	63	16	25%	2	3%
6N 36E 7	E-WW	43	5	12%	1	2%
25N 43E 15	E-RP	61	9	15%	1	2%
Average		49	12	24%	1	3%

Table 1: Summary table of PLS location errors and the average number of errors.

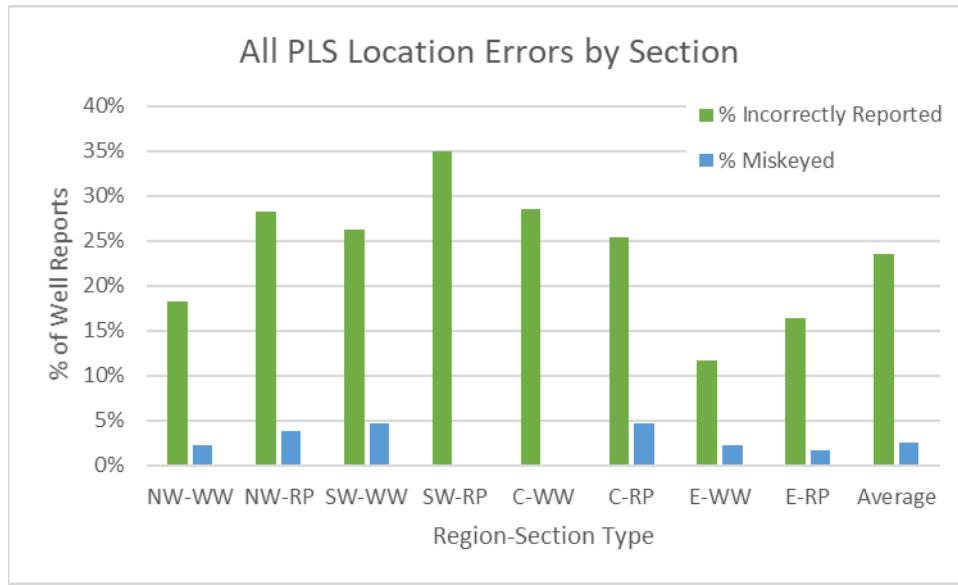


Figure 1: Reported Incorrectly and Miskeyed location errors by section, and the average of all sections.

The driller location errors were then further analyzed to better understand the scale of the error, i.e. distances of the reported location from the correct location, as shown in Figures 3 and 4. The Incorrectly Reported locations were broken down into whether the correct location was within the same section as the reported location i.e. the error was in the reporting of the $\frac{1}{4}$ or $\frac{1}{4} \frac{1}{4}$ (" $\frac{1}{4} \frac{1}{4}$ ", in Figure 3), or if the location error was on the scale of township, range, or section ("TRS" in Figure 3). The majority, 72% of the errors, were found to be on the scale of the $\frac{1}{4}$ or $\frac{1}{4} \frac{1}{4}$, and 28% were found to be on the scale of township, range or section.

One reason that the $\frac{1}{4}$ and $\frac{1}{4} \frac{1}{4}$ might be reported incorrectly on a well report is that many previous versions of well report forms had the same label for the



$\frac{1}{4}$ and $\frac{1}{4}-\frac{1}{4}$ fields (see Figure 2), with the distinction inferred from their order. This could have resulted in confusion either by the driller reporting the location and switching the order, or by an Ecology employee adding the incorrect order to the database. The $\frac{1}{4}$ or $\frac{1}{4}-\frac{1}{4}$ errors were broken down into whether the reported location was the switched version of the correct location. 21% of $\frac{1}{4}$ or $\frac{1}{4}-\frac{1}{4}$ errors were the result of switching.

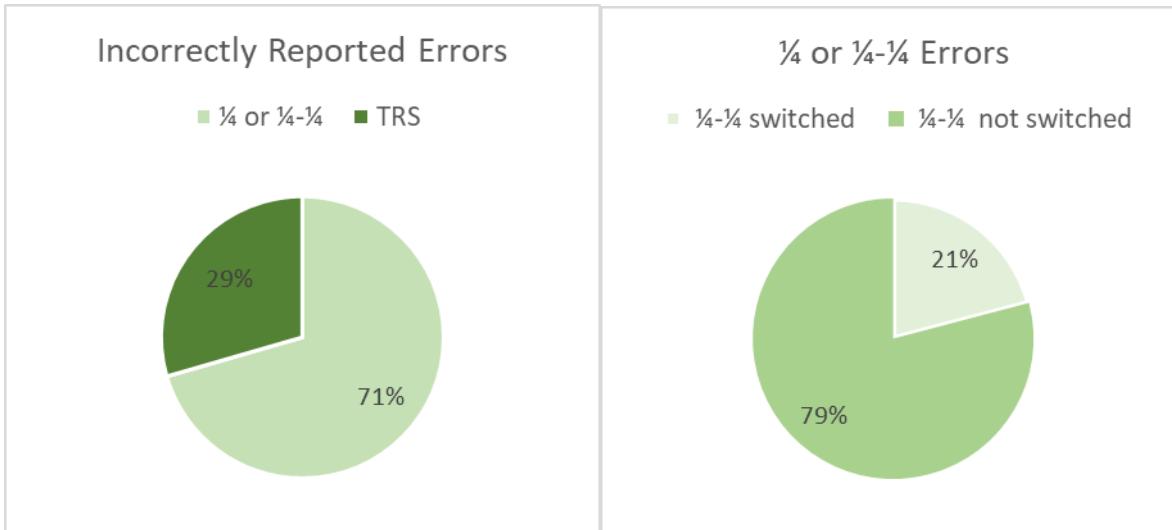


Figure 3: Incorrectly Reported location errors, broken down into the scale of the location error, $\frac{1}{4}$ or $\frac{1}{4}-\frac{1}{4}$ vs. township, range or section (TRS).

Figure 4: Incorrectly Reported $\frac{1}{4}$ or $\frac{1}{4}-\frac{1}{4}$ location errors, broken down into the nature of the error, whether the $\frac{1}{4}$ and $\frac{1}{4}-\frac{1}{4}$ were switched or not.

All of the NOIs were then broken down by the date that construction or decommissioning was completed, and the Incorrectly Reported location percent error was calculated for each decade (Table 2 and Figure 6). Although the number of well reports increase over time, the location error rate has not changed significantly since the 1980s.

Decade	Total	Incorrectly Reported	% Incorrectly Reported
2010-2018	133	30	23%
2000-2009	124	35	28%
1990-1999	76	19	25%
1980-1989	27	7	26%
1970-1979	22	1	5%
1960-1969	4	0	0%
1950-1959	3	0	0%
1940-1949	1	0	0%
1920-1929	1	1	100%
1910-1919	1	0	0%
Total/ Average %		392	88
			24%

Table 2: Summary of Incorrectly Reported errors broken down by decade that construction or decommissioning was completed.

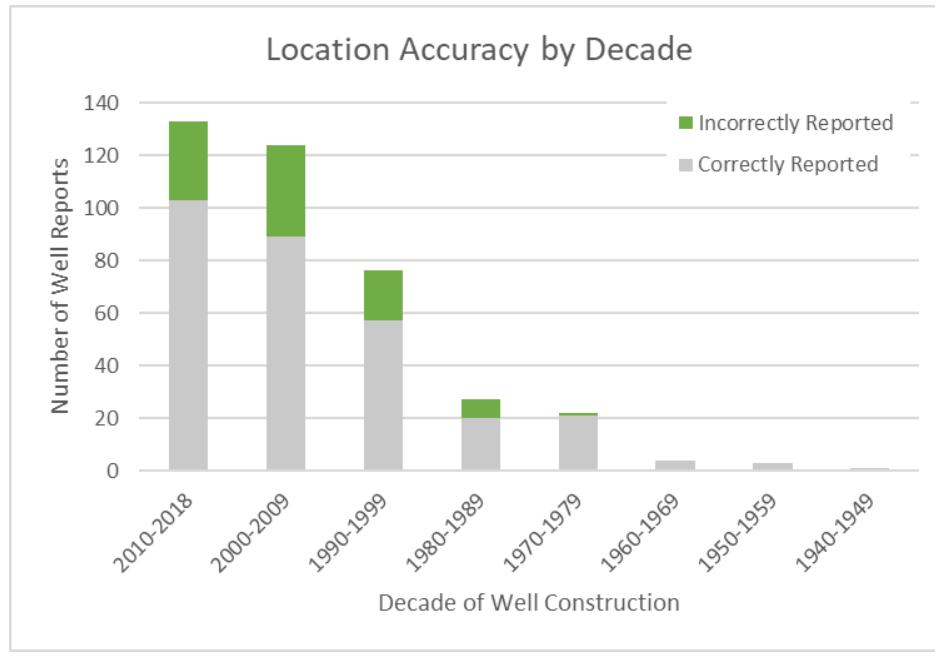


Figure 6: Location accuracy of all sections analyzed in this study, by decade that construction or decommissioning was completed.

The Incorrectly Reported percent error was then calculated for the NOIs from water well majority (WW) sections and resource protection majority (RP) sections by decade (Figure 8). Although the percent error by decade for all well reports (Table 2) does not have a clear trend over time, the percent error of water well majority sections has increased significantly over time from 15% in 1990-1999 to 45% in 2010-2018. Error percentages of resource protection majority sections do not follow a clear trend over multiple decades, but have notably decreased from 35% in 2000-2009 to 16% in 2010-2018.

Decade	All WW Sections			All RP Sections		
	Total	Incorrectly Reported	% Incorrectly Reported	Total	Incorrectly Reported	% Incorrectly Reported
2010-2018	22	12	55%	111	18	16%
2000-2009	73	17	23%	51	18	35%
1990-1999	47	9	19%	29	10	34%
1980-1989	11	0	0%	16	7	44%
1970-1979	17	0	0%	5	1	20%
1960-1969	4	0	0%	0	0	-
1950-1959	2	0	0%	1	0	0%
1940-1949	1	0	0%	0	0	-
1920-1929	0	0	-	1	1	100%
1910-1919	1	0	0%	0	0	-
Total/Average %	178	38	21%	214	55	26%

Table 3: Summary of Incorrectly Reported location errors broken down by decade that construction or decommissioning was completed, and by type of section (water well (WW) or resource protection (RP) majority).

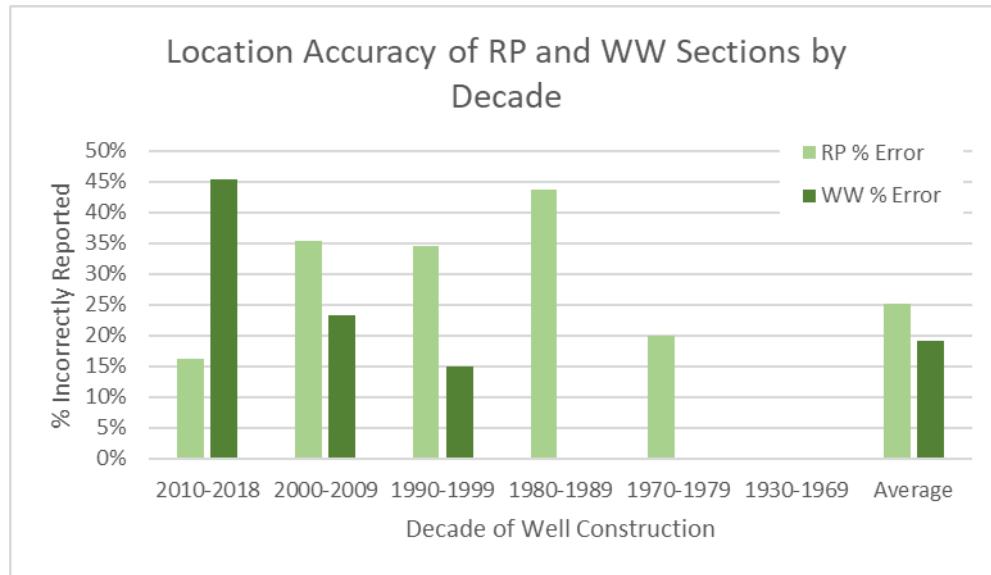


Figure 8: Percent of Incorrectly Reported locations of both resource protection and water well majority sections by decade.

Conclusion

In this study, 24% of well reports were reported with an inaccurate PLS location. Of these, 71% were reported in the correct section but incorrect $\frac{1}{4}$ or $\frac{1}{4}-\frac{1}{4}$. No clear trend exists in the PLS location accuracy over time for all reports, but the error rate for water well reports has decreased over the past few decades, whereas that of resource protection well reports has increased.

In order to simplify this study, the PLS location was assumed to be correct when it could not be verified with additional information on the well report. The location error rate in this study is therefore a conservative assessment, and the error rate could be higher. The vast majority of well reports in this study could be verified, whereas only three sections included well report locations that could not be verified. Within the resource protection well majority section in the Central Region (C-RP), 2% of PLS well report locations could not be verified, nor could 7% of well report locations in the resource protection well majority section in the Eastern Region (E-RP).

More notably, 33% of well report PLS locations in the Central Region's water well report majority section (C-WW) could not be verified. One reason for this disparity could be because Benton County, the location of this section, has limited property owner records (deed and sales history) available on the Assessor's Property Search website. There are several other differences between the sections included in this study that could account for this disparity, including, date of construction and inconsistencies in drillers' and drilling companies' reporting practices.

Further studies are recommended to better understand these difficulties in verifying PLS locations, and develop additional methods for verifying well report locations. Further studies are also recommended to better understand the cause of errors in PLS location reporting.

Yellow = Reported Incorrectly

Orange = Miskeyed

Grey = Cannot Verify

Northwest Region Water Well Majority Section (NW-WW)

Well Report ID	Well Tag	NOI Number	Well Owner	T	R	S	1/4	1/4-	County	Well Type	Date Completed	Parcel
416647	ALT249	W207510	BARBARA JOHNSON	35	4	E 11	NE	NW	Skagit	W	8/25/2005	p100991
74911		W016171	BILL SWARTZ	35	4	E 11	SW	SE	Skagit	W	10/27/1994	
86971	ACG762	W069012	BRUCE HUGE	35	4	E 11	NE	NE	Skagit	W	3/21/1996	
75805	ALN057	48269	CHESTER SWINDLE	35	4	E 11	SE	SW	Skagit	W	2/9/1993	
407277	ALQ135	W167345	COLLEEN HELGESON	35	4	E 11	SW	SE	Skagit	W	4/2/2005	
379577	AKF858		CRAIG GREENOUGH	35	4	E 11	SE	NE	Skagit	W	5/23/1992	
76687		18167	DAVID MISCHKE	35	4	E 11	SE	SE	Skagit	W	10/8/1994	
			DIEDRICK AND MARY									
397970	AKY555	W167684	BRUN	35	4	E 11	SE	SE	Skagit	W	7/17/2004	
551563	APF723		DON ANDERSON	35	4	E 11	SW	NE	Skagit	W	9/8/2008	P36190
77261		48263	DOUG ARGO	35	4	E 11	SE	SW	Skagit	W	3/18/1993	
414278	ALT968	W185404	ERIC & NORA JENSEN	35	4	E 11	NE	NE	Skagit	W	7/1/2005	
374072	AKY590	W167663	ERIC AND NORA JENSEN	35	4	E 11	NE	NE	Skagit	W	12/6/2003	
441283	ALT988	W185458	ERIC AND NORA JENSON	35	4	E 11	NE	SW	Skagit	W	2/6/2006	P1222
86950	ACD165	W052368	ERIC JENSEN	35	4	E 11	NE	NW	Skagit	W	11/26/1996	
77753			ERNIE PARKER	35	4	E 11	SW	SE	Skagit	W	6/29/1983	
78483		70346	GLEN ARBUCKLE	35	4	E 11	NE	NE	Skagit	W	8/25/1997	
190648	AES552	W110056	GREG BENNETT	35	4	E 11	NE	SE	Skagit	W	8/31/1999	
247159	AFF295	W116545	HEER KEVIN	35	4	E 11	NE	SE	Skagit	W	5/19/2000	
79532		W065319	JEFF WOOD	35	4	E 11	SE	SW	Skagit	W	10/6/1995	
80513			JUNIOR PIPPIN	35	4	E 11	SE	SE	Skagit	W	9/26/1979	
345931	AHB766	W161888	JUNIOR PIPPIN	35	4	E 11	SE	SE	Skagit	W	10/2/2002	P101550
87286	ACS036	W100929	KAREN GAUDRY	35	4	E 11	NE	SW	Skagit	W	4/23/1998	
236001	AFF294	W118455	KEVIN HEER	35	4	E 11	NE	SE	Skagit	W	5/17/2000	
460447	APN910	W247646	MARTY LOBERG	35	4	E 11	NW	NE	Skagit	W	11/1/2006	
460448	APN909	W247645	MARTY LOBERG	35	4	E 11	NW	NE	Skagit	W	10/31/2006	
554966	APF319	WE08996	Northern Reign Dev.	35	4	E 11	NW	NE	Skagit	W	9/9/2008	P36184
554967	APF318	WE08995	Northern Reign Dev.	35	4	E 11	NW	NE	Skagit	W	9/9/2008	P36184
554969	APF316	WE08993	Northern Reign Dev.	35	4	E 11	NW	NE	Skagit	W	9/4/2008	P36184

Well Report ID	Well Tag	NOI Number	Well Owner	T	R	S	1/4	1/4-1/4	County	Well Type	Date Completed	Parcel
554970	APF323	WE08998	Northern Reign Dev.	35	4	E	11	NW	NE	Skagit	W	9/15/2008 P36184
554971	APF322	WE08997	Northern Reign Dev.	35	4	E	11	NW	NE	Skagit	W	9/16/2008 P36184
554968	APF317	WE08994	Northern Reign Dev~	35	4	E	11	NW	NE	Skagit	W	9/8/2008 P36184
366421	AKY568	W154397	PERRY DALABA	35	4	E	11	SE	NE	Skagit	W	7/14/2003
82929			PETER POLLARD	35	4	E	11	SE	NW	Skagit	W	8/15/1983
83160			RALPH HINEGARD NER	35	4	E	11	SE	NE	Skagit	W	7/15/1992
83194			RANDY MUNSKE	35	4	E	11	NW	NE	Skagit	W	10/10/1996
190221	ACS070	W077530	RANDY MANSKE	35	4	E	11	NW	NE	Skagit	W	2/27/1999
83578		36026	RICK TINGLEY	35	4	E	11	SE	SW	Skagit	W	4/28/1993
190505	AEN134	W107096	SALLY HOUGHTON	35	4	E	11	SE	SE	Skagit	W	6/9/1999
355612	AKY802	W153940	STEVE TORGERSON	35	4	E	11	SW	NW	Skagit	W	3/17/2003 35041130020004
330011	AGQ230	W147572	STEVE WEATHERBY	35	4	E	11	SE	SW	Skagit	W	10/19/2001 350411-11-004-0400
85125			THOMAS SPENCER	35	4	E	11	NE	NE	Skagit	W	8/10/1992
412046	ALQ137	W167322	TOM BARNTS	35	4	E	11	NW	NE	Skagit	W	5/23/2005
903674	BHX555	WE17416	WILLIAM SHERLOCK	35	4	E	11	NE	NW	Skagit	W	11/26/2013 35041110040100
937147	BHX573	WE18499	WILLIAM SHERLOCK	35	4	E	11	NE	NW	Skagit	W	7/1/2014 35041110040300

Northwest Region Resource Protection Well Majority Section (NW-RP)

Well Report ID	Well Tag	NOI Number	Well Owner	T	R	S	1/4	1/4-1/4	County	Well Type	Date Completed	Parcel
107199		20228	SEATTLE WATER SEISMIC STUDY	24	5	E	21	NE	NW	King	W	1991
107847		40541	THOMAS RESIDENCE	24	4	E	21	NW	NW	King	R	1990
519973		AE02866	JIMMY PHAN	24	4	E	21	SW	SE	King	A	2/1/2008
519974		AE02866	JIMMY PHAN	24	4	E	21	SW	SE	King	A	2/1/2008
561945		AE03481	DANNY LAO	24	4	E	21	NW	SW	King	A	6/25/2008
561946		AE03481	DANNY LAO	24	4	E	21	NW	SW	King	A	6/25/2008
566829		AE04924	Vern L. Avery Whitman Environmental	24	4	E	21	NW	NE	King	A	12/12/2008
566836		AE04925	Vern L. Avery Whitman Environmental	24	4	E	21	NW	NE	King	A	12/12/2008
566837		AE04925	Vern L. Avery Whitman Environmental	24	4	E	21	NW	NE	King	A	12/12/2008
566838		AE04925	Vern L. Avery Whitman Environmental	24	4	E	21	NW	NE	King	A	12/12/2008
566839		AE04925	Vern L. Avery Whitman Environmental	24	4	E	21	NW	NE	King	A	12/12/2008
632243		AE08095	Kim On Geo Group NW	24	4	E	21	NW	SE	King	A	1/6/2010
632245		AE08095	Kim On Geo Group NW	24	4	E	21	NW	SE	King	A	1/6/2010
632247		AE08095	Kim On Geo Group NW	24	4	E	21	NW	SE	King	A	1/6/2010
632249		AE08095	Kim On Geo Group NW	24	4	E	21	NW	SE	King	A	1/6/2010
632251		AE08095	Kim On Geo Group NW	24	4	E	21	NW	SE	King	A	1/6/2010
775294		AE15348	Lay Pac Hong	24	4	E	21	NW	NE	King	A	11/4/2011
930542		AE28664	1130 Rainier LLC	24	4	E	4	SW	NW	King	A	9/8/2014

930598		AE28665	1130 Rainier LLC	24	4	E	4	SW	NW	King	A	9/8/2014	71323004353
930600		AE28665	1130 Rainier LLC	24	4	E	4	SW	NW	King	A	9/8/2014	71323004353
930602		AE28666	1130 Rainier LLC	24	4	E	4	SW	NW	King	A	9/9/2014	7132300305
930604		AE28666	1130 Rainier LLC	24	4	E	4	SW	NW	King	A	9/9/2014	7132300305
956873		AE28967	Khmer Buddhist Society	24	4	E	21	SE	NE	King	A	9/30/2014	
956875		AE28967	Khmer Buddhist Society	24	4	E	21	SE	NE	King	A	9/30/2014	
931360		AE29401	Usaisa Pacific Inv	24	4	E	21	SW	SW	King	A	10/28/2014	
931361		AE29401	Usaisa Pacific Inv	24	4	E	21	SW	SW	King	A	10/28/2014	
931371		AE29401	Usaisa Pacific Inv	24	4	E	21	SW	SW	King	A	10/28/2014	
956837		AE29584	Foley	24	4	E	21	NW	SW	King	A	11/11/2014	
956840		AE29584	Foley	24	4	E	21	NW	SW	King	A	11/11/2014	
956841		AE29584	Foley	24	4	E	21	NW	SW	King	A	11/11/2014	
1044594		AE33370	Allen	24	4	E	21	NE	SW	King	A	8/14/2015	4174600334
1114591		AE34289	Vuong	24	4	E	21	NE	NW	King	A	10/16/2015	
1114592		AE34289	Vuong	24	4	E	21	NE	NW	King	A	10/16/2015	
1114594		AE34289	Vuong	24	4	E	21	NE	NW	King	A	10/16/2015	
1539087		AE35362	TP Construction	24	4	E	21	NE	NE	King	A	1/6/2016	
1539088		AE35362	TP Construction	24	4	E	21	NE	NE	King	A	1/6/2016	
1568073		AE37772	Northwest Builders Finance	24	4	E	21	NE	NE	King	A	6/8/2016	
1568074		AE37772	Northwest Builders Finance	24	4	E	21	NE	NE	King	A	6/8/2016	
1573742		AE38240	JK Ventures	24	4	E	21	NE	NE	King	A	7/6/2016	
1629927		AE41030	Dwell Development	24	4	E	21	NE	NE	King	A	1/11/2017	
1629930		AE41030	Dwell Development	24	4	E	21	NE	NE	King	A	1/11/2017	
1629931		AE41030	Dwell Development	24	4	E	21	NE	NE	King	A	1/11/2017	
1610458		AE41423	Segi	24	4	E	21	NE	SW	King	A	2/10/2017	
1610460		AE41423	Segi	24	4	E	21	NE	SW	King	A	2/10/2017	
1680705		AE46648	City Of Seattle	24	4	E	21	SE	SE	King	A	12/20/2017	
363347		E004682	SOUND TRANSIT	24	4	E	21	NE	NE	King	R	4/8/2003	

			ENVIRONMENTAL PARTNERS									
363348		E004682	SOUND TRANSIT ENVIRONMENTAL PARTNERS	24	4	E	21	NE	NE	King	R	4/8/2003
363349		E004682	SOUND TRANSIT ENVIRONMENTAL PARTNERS	24	4	E	21	NE	NE	King	R	4/8/2003
363350		E004682	SOUND TRANSIT ENVIRONMENTAL PARTNERS	24	4	E	21	NE	NE	King	R	4/8/2003
363351		E004682	SOUND TRANSIT ENVIRONMENTAL PARTNERS	24	4	E	21	NE	NE	King	R	4/8/2003
363352		E004682	SOUND TRANSIT ENVIRONMENTAL PARTNERS	24	4	E	21	NE	NE	King	R	4/8/2003
363353		E004682	SOUND TRANSIT ENVIRONMENTAL PARTNERS	24	4	E	21	NE	NE	King	R	4/8/2003
363354		E004682	SOUND TRANSIT ENVIRONMENTAL PARTNERS	24	4	E	21	NE	NE	King	R	4/8/2003
363355		E004682	SOUND TRANSIT ENVIRONMENTAL PARTNERS	24	4	E	21	NE	NE	King	R	4/8/2003
363356		E004682	SOUND TRANSIT ENVIRONMENTAL PARTNERS	24	4	E	21	NE	NE	King	R	4/8/2003

363357		E004682	SOUND TRANSIT ENVIRONMENTAL PARTNERS	24	4	E	21	NE	NE	King	R	4/8/2003	
363358		E004682	SOUND TRANSIT ENVIRONMENTAL PARTNERS	24	4	E	21	NE	NE	King	R	4/8/2003	
566832		EE00857	Vern L. Avery Whitman Environmental	24	4	E	21	NW	NE	King	R	12/12/2008	3677400175
566833		EE00857	Vern L. Avery Whitman Environmental	24	4	E	21	NW	NE	King	R	12/12/2008	3677400175
566834		EE00857	Vern L. Avery Whitman Environmental	24	4	E	21	NW	NE	King	R	12/12/2008	3677400175
566835		EE00857	Vern L. Avery Whitman Environmental	24	4	E	21	NW	NE	King	R	12/12/2008	3677400175
109106	AAY686	R011798	NORTH COAST CHEMICAL	24	4	E	21	SW	SW	King	R	11/8/1993	
109107	AAY687	R011798	NORTH COAST CHEMICAL	24	4	E	21	SW	SW	King	R	11/8/1993	
109108	AAY688	R011798	NORTH COAST CHEMICAL	24	4	E	21	SW	SW	King	R	11/8/1993	
109112	AAY701	R011798	NORTH COAST CHEMICAL	24	4	E	21	SW	SW	King	R	11/8/1993	
109130	AAY748	R011798	NORTH COAST CHEMICAL	24	4	E	21	SW	SW	King	R	11/9/1993	
109131	AAY749	R011798	NORTH COAST CHEMICAL	24	4	E	21	SW	SW	King	R	11/9/1993	
109132	AAY750	R011798	NORTH COAST CHEMICAL	24	4	E	21	SW	SW	King	R	11/9/1993	
385679	ALQ417	R040669	BARRIER MOTORS	25	5	E	28	SW	NW	King	R	8/6/2004	
385680	ALQ418	R040669	BARRIER MOTORS	25	5	E	28	SW	NW	King	R	8/6/2004	

385681	ALQ419	R040669	BARRIER MOTORS	25	5	E	28	SW	NW	King	R	8/6/2004	
368539	AKS437	R052101	PORT OF SEATTLE	23	4	E	21	NW	SW	King	R	7/28/2003	
361222	AHQ930	R063358	SOUND TRANSIT ENVIRONMENTAL PARTNERS	24	4	E	21	NE	NE	King	R	4/28/2003	
361223	AHQ931	R063358	SOUND TRANSIT ENVIRONMENTAL PARTNERS	24	4	E	21	NE	NE	King	R	4/28/2003	
361224	AHQ932	R063358	SOUND TRANSIT ENVIRONMENTAL PARTNERS	24	4	E	21	NE	NE	King	R	4/28/2003	
420625	APM439	R066686	NORTH COAST CHEMICALS	24	4	E	21	SW	SW	King	R	8/18/2005	
420627	APM440	R066686	NORTH COAST CHEMICALS	24	4	E	21	SW	SW	King	R	8/18/2005	
421060		R066954	NORTH COAST CHEMICALS	24	4	E	21	SW	SW	King	R	9/14/2005	
421062		R066954	NORTH COAST CHEMICALS	24	4	E	21	SW	SW	King	R	9/14/2005	
421063		R066954	NORTH COAST CHEMICALS	24	4	E	21	SW	SW	King	R	9/14/2005	
421064		R066954	NORTH COAST CHEMICALS	24	4	E	21	SW	SW	King	R	9/14/2005	
421066		R066954	NORTH COAST CHEMICALS	24	4	E	21	SW	SW	King	R	9/14/2005	
421068		R066954	NORTH COAST CHEMICALS	24	4	E	21	SW	SW	King	R	9/14/2005	
421070		R066954	NORTH COAST CHEMICALS	24	4	E	21	SW	SW	King	R	9/14/2005	
421071		R066954	NORTH COAST CHEMICALS	24	4	E	21	SW	SW	King	R	9/14/2005	
421073		R066954	NORTH COAST CHEMICALS	24	4	E	21	SW	SW	King	R	9/14/2005	
421074		R066954	NORTH COAST CHEMICALS	24	4	E	21	SW	SW	King	R	9/14/2005	

421075		R066954	NORTH COAST CHEMICALS	24	4	E	21	SW	SW	King	R	9/14/2005	
421077		R066954	NORTH COAST CHEMICALS	24	4	E	21	SW	SW	King	R	9/14/2005	
421078		R066954	NORTH COAST CHEMICALS	24	4	E	21	SW	SW	King	R	9/14/2005	
421080		R066954	NORTH COAST CHEMICALS	24	4	E	21	SW	SW	King	R	9/14/2005	
421082		R066954	NORTH COAST CHEMICALS	24	4	E	21	SW	SW	King	R	9/14/2005	
421083		R066954	NORTH COAST CHEMICALS	24	4	E	21	SW	SW	King	R	9/14/2005	
421085		R066954	NORTH COAST CHEMICALS	24	4	E	21	SW	SW	King	R	9/14/2005	
421087		R066954	NORTH COAST CHEMICALS	24	4	E	21	SW	SW	King	R	9/14/2005	
421088		R066954	NORTH COAST CHEMICALS	24	4	E	21	SW	SW	King	R	9/14/2005	
421089		R066954	NORTH COAST CHEMICALS	24	4	E	21	SW	SW	King	R	9/14/2005	
421090		R066954	NORTH COAST CHEMICALS	24	4	E	21	SW	SW	King	R	9/14/2005	
421091		R066954	NORTH COAST CHEMICALS	24	4	E	21	SW	SW	King	R	9/14/2005	
421093		R066954	NORTH COAST CHEMICALS	24	4	E	21	SW	SW	King	R	9/14/2005	
421095		R066954	NORTH COAST CHEMICALS	24	4	E	21	SW	SW	King	R	9/14/2005	
421097		R066954	NORTH COAST CHEMICALS	24	4	E	21	SW	SW	King	R	9/14/2005	
421099		R066954	NORTH COAST CHEMICALS	24	4	E	21	SW	SW	King	R	9/14/2005	
421100		R066954	NORTH COAST CHEMICALS	24	4	E	21	SW	SW	King	R	9/14/2005	
421102		R066954	NORTH COAST CHEMICALS	24	4	E	21	SW	SW	King	R	9/14/2005	
421104		R066954	NORTH COAST CHEMICALS	24	4	E	21	SW	SW	King	R	9/14/2005	

421105		R066954	NORTH COAST CHEMICALS	24	4	E	21	SW	SW	King	R	9/14/2005	
421107		R066954	NORTH COAST CHEMICALS	24	4	E	21	SW	SW	King	R	9/14/2005	
421109		R066954	NORTH COAST CHEMICALS	24	4	E	21	SW	SW	King	R	9/14/2005	
421111		R066954	NORTH COAST CHEMICALS	24	4	E	21	SW	SW	King	R	9/14/2005	
421112		R066954	NORTH COAST CHEMICALS	24	4	E	21	SW	SW	King	R	9/14/2005	
421113		R066954	NORTH COAST CHEMICALS	24	4	E	21	SW	SW	King	R	9/14/2005	
421114		R066954	NORTH COAST CHEMICALS	24	4	E	21	SW	SW	King	R	9/14/2005	
421115		R066954	NORTH COAST CHEMICALS	24	4	E	21	SW	SW	King	R	9/14/2005	
421116		R066954	NORTH COAST CHEMICALS	24	4	E	21	SW	SW	King	R	9/14/2005	
421117		R066954	NORTH COAST CHEMICALS	24	4	E	21	SW	SW	King	R	9/14/2005	
421118		R066954	NORTH COAST CHEMICALS	24	4	E	21	SW	SW	King	R	9/14/2005	
421119		R066954	NORTH COAST CHEMICALS	24	4	E	21	SW	SW	King	R	9/14/2005	
775300	BHH716	RE06492	Lay Pac Hong	24	4	E	21	NW	NE	King	R	11/4/2011	3677400175
775302	BHH717	RE06492	Lay Pac Hong	24	4	E	21	NW	NE	King	R	11/4/2011	3677400175
775304	BHH718	RE06492	Lay Pac Hong	24	4	E	21	NW	NE	King	R	11/4/2011	3677400175
544593		SE02105	JIMMY PHAN	24	4	E	21	SW	SE	King	R	2/1/2008	
544594		SE02105	JIMMY PHAN	24	4	E	21	SW	SE	King	R	2/1/2008	
562044		SE02580	DANNY LAO	24	4	E	21	NW	SW	King	R	6/25/2008	
562045		SE02580	DANNY LAO	24	4	E	21	NW	SW	King	R	6/25/2008	
566827		SE03712	Vern L. Avery Whitman Environmental	24	4	E	21	NW	NE	King	R	12/12/2008	3677400175
632167		SE06198	kim On Geo Group NW	24	4	E	21	NW	SE	King	R	1/6/2010	
632235		SE06198	kim On Geo Group NW	24	4	E	21	NW	SE	King	R	1/6/2010	

632237		SE06198	kim On Geo Group NW	24	4	E	21	NW	SE	King	R	1/6/2010	
632239		SE06198	kim On Geo Group NW	24	4	E	21	NW	SE	King	R	1/6/2010	
632241		SE06198	kim On Geo Group NW	24	4	E	21	NW	SE	King	R	1/6/2010	
775292		SE44046	Lay Pac Hong	24	4	E	21	NW	NE	King	R	11/4/2011	3677400175
930541		SE52602	1130 Rainier LLC	24	4	E	4	SW	NW	King	R	9/8/2014	7132300445
930597		SE52603	1130 Rainier LLC	24	4	E	4	SW	NW	King	R	9/8/2014	71323004353
930599		SE52603	1130 Rainier LLC	24	4	E	4	SW	NW	King	R	9/8/2014	71323004353
930601		SE52604	1130 Rainier LLC	24	4	E	4	SW	NW	King	R	9/9/2014	7132300305
930603		SE52604	1130 Rainier LLC	24	4	E	4	SW	NW	King	R	9/9/2014	7132300305
956872		SE52798	Khmer Buddhist Society	24	4	E	21	SE	NE	King	R	9/30/2014	
956874		SE52798	Khmer Buddhist Society	24	4	E	21	SE	NE	King	R	9/30/2014	
931358		SE53061	Usaisa Pacific Inv	24	4	E	21	SW	SW	King	R	10/28/2014	
931359		SE53061	Usaisa Pacific Inv	24	4	E	21	SW	SW	King	R	10/28/2014	
931370		SE53061	Usaisa Pacific Inv	24	4	E	21	SW	SW	King	R	10/28/2014	
939841		SE53061	Interfor	30	7	W	12	SW	SW	Clallam	R	10/2/2014	
956836		SE53189	Foley	24	4	E	21	NW	SW	King	R	11/11/2014	
956838		SE53189	Foley	24	4	E	21	NW	SW	King	R	11/11/2014	
956839		SE53189	Foley	24	4	E	21	NW	SW	King	R	11/11/2014	
1044593		SE55641	Allen	24	4	E	21	NE	SW	King	R	8/14/2015	4174600334
1114589		SE56226	Vuong	24	4	E	21	NE	NW	King	R	10/16/2015	
1114590		SE56226	Vuong	24	4	E	21	NE	NW	King	R	10/16/2015	
1114593		SE56226	Vuong	24	4	E	21	NE	NW	King	R	10/16/2015	
1539085		SE56964	TP Construction	24	4	E	21	NE	NE	King	R	1/6/2016	
1539086		SE56964	TP Construction	24	4	E	21	NE	NE	King	R	1/6/2016	
1568071		SE58635	Northwest Builders Finance	24	4	E	21	NE	NE	King	R	6/8/2016	
1568072		SE58635	Northwest Builders Finance	24	4	E	21	NE	NE	King	R	6/8/2016	
1573741		SE58910	JK Ventures	24	4	E	21	NE	NE	King	R	7/6/2016	
1629926		SE60799	Dwell Development	24	4	E	21	NE	NE	King	R	1/11/2017	

1629928		SE60799	Dwell Development	24	4	E	21	NE	NE	King	R	1/11/2017	
1629929		SE60799	Dwell Development	24	4	E	21	NE	NE	King	R	1/11/2017	
1610457		SE61076	Segi	24	4	E	21	NE	SW	King	R	2/10/2017	
1610459		SE61076	Segi	24	4	E	21	NE	SW	King	R	2/10/2017	
1680704		SE64580	City Of Seattle	24	4	E	21	SE	SE	King	R	12/20/2017	
102486			CLAYTON VW REPAIR	24	4	E	21	NE	NE	King	R	5/13/1991	
103955			HANS HOMANN	24	4	E	27	NW	NW	King	W	10/11/1988	
104927			KLOKSTAD CONST.	25	4	E	21	SW	NE	King	W	9/26/1988	

Southwest Region Water Well Majority Section (SW-WW)

Well Report ID	Well Tag	NOI Number	Well Owner	T	R	S	1/4	1/4-1/4	County	Well Type	Date Completed	Parcel
1573934		AE38167	MASON TRANSIT AUTHORITY	20	3	W	31	SW	NW	Mason	A	7/13/2016 320310060010
1573936		AE38167	MASON TRANSIT AUTHORITY	20	3	W	31	SW	NW	Mason	A	7/13/2016 320310060010
1573938		AE38167	MASON TRANSIT AUTHORITY	20	3	W	31	SW	NW	Mason	A	7/13/2016 320310060010
1573933		SE58867	MASON TRANSIT AUTHORITY	20	3	W	31	SW	NW	Mason	R	7/13/2016 320310060010
1573935		SE58867	MASON TRANSIT AUTHORITY	20	3	W	31	SW	NW	Mason	R	7/13/2016 320310060010
1573937		SE58867	MASON TRANSIT AUTHORITY	20	3	W	31	SW	NW	Mason	R	7/13/2016 320310060010
33234			BERT BELL	20	3	W	32	NW	SW	Mason	W	2/15/1965
33235			BERT BELL	20	3	W	32	NW	SW	Mason	W	5/8/1960
43386	ACY613	W092299	CARL FORSMAN	20	3	W	32	SW	NW	Mason	W	2/12/1998
33778			CARL ROBERTS	20	3	W	32	NW	NE	Mason	W	4/24/1987
427890	ALL444	W192399	CHARLES KNAPP	20	3	W	32	NE	SE	Mason	W	11/2/2005 320321396180
34127			CLARENCE WIVELL	20	3	W	32	NE	SW	Mason	W	1978
43489	AEC506	W097713	CLINTON WEAVER	20	3	W	32	NW	SE	Mason	W	5/12/1998
251403	AEG646	W129411	CLYOE KNIGHT	20	3	W	32	NW	NW	Mason	W	7/20/2000
331018	AFT421	W129444	DALE AND ROSE NYE	20	3	W	32	NW	NW	Mason	W	1/30/2002
34490		21203	DAVE KAMIN	20	3	W	32	SW	NE	Mason	W	4/3/1989
340288	AFR378	W125272	DAVE KAMIN	20	3	W	32	SW	SE	Mason	W	6/7/2002
340290	AFR379	W125273	DAVE KAMIN	20	3	W	32	SW	SE	Mason	W	6/10/2002
1594059	BJN861	WE25593	Dave Kuligowski	20	3	W	32	SW	SE	Mason	W	10/11/2016 320323400050
34536		45573	DAVID CAUGHLIN	20	3	W	32	NW	NW	Mason	W	10/29/1991
301089	AEP859	W130398	HOMER STONE	20	3	W	32	SW	NW	Mason	W	10/14/2000
938169	BIG803	WE19287	Jared Hanson	20	3	W	32	SW	NE	Mason	W	10/24/2014 320323100020
1604836			JEFF BRADY	20	3	W	32	SE	NE	Mason	W	5/17/1996 320323400000

Well Report ID	Well Tag	NOI Number	Well Owner	T	R	S	1/4	1/4-1/4	County	Well Type	Date Completed	Parcel
36789			JIM KILORAN	20	3	W	32	SW	NW	Mason	W	12/4/1986
313686		A049260	JIM THROCKMORTON	20	3	W	32	SW	NW	Mason	A	6/28/2001
313687		A049259	JIM THROCKMORTON	20	3	W	32	SW	NW	Mason	A	6/26/2001
37326			KEN STODDEN	20	3	W	32	NE	SW	Mason	W	2/10/1978
1604825			KEN STODDEN	20	3	W	32	NE	SW	Mason	W	3/10/1978
274679			KENNETH STODDEN	20	3	W	32	NE	SW	Mason	W	4/12/1991
1051182	BAH862	WE21522	Larry Stevens	20	3	W	32	SE	NW	Mason	W	8/11/2015
595129	BBE071	WE10120	LINDA SOLHEIM	20	3	W	32	NE	SW	Mason	W	6/30/2009
625705	AAF296		MADRONA INC	22	3	W	32	NE	SE	Mason	W	2009
313083	AFR366	W125241	MICHELLE SCHULER	20	3	W	32	NW	SE	Mason	W	8/16/2001
279009			NATHAN STOUT	20	3	W	32	SW	SE	Mason	W	1991
404182	AGP677	W176325	NATHAN STOUT	20	3	W	32	SW	SE	Mason	W	2/25/2005
443587	AGP677	W209208	NATHAN STOUT	20	3	W	32	SW	SE	Mason	W	4/14/2006
1604840			NATHAN STOUT	20	3	W	32	SW	SE	Mason	W	2006
486029	BAC316	WE06632	ROGER NORRIS	20	3	W	32	NW	SE	Mason	W	6/8/2007
331518	AFR372	W125266	SAM VALLEY	20	3	W	32	SW	NW	Mason	W	2/11/2002
601380	BBN070		SHELTON ELKS	20	3	W	32	SW	SW	Mason	W	2009
40209	BBN070		SHELTON ELKSLODGE	20	3	W	32	SW	SW	Mason	W	1974
248891	AEG439	W106868	STEVE KAMIN	20	3	W	32	NW	SW	Mason	W	4/16/2000
40428		44246	STEVE KARRAN	20	3	W	32	NW	SW	Mason	W	10/22/1992
383390	AFK580		WE AND U MOBILE PARK	20	3	W	32	NW	SW	Mason	W	10/13/1992
41382			WILLIAM KAMIN	20	3	W	32	SE	NW	Mason	W	10/3/1975
41439			WM SANTEE	20	3	W	32	NW	SW	Mason	W	12/19/1986

Southwest Region Resource Protection Well Majority Section (SW-RP)

Well Report ID	Well Tag	NOI Number	Well Owner	T	R	S	1/4	1/4-1/4	County	Well Type	Date Completed	Parcel	
334490		A053688	JOHN FARRELL	20	2	E	10	NW	SE	Pierce	A	1/28/2002	
334491		A053688	JOHN FARRELL	20	2	E	10	NW	SE	Pierce	A	1/28/2002	
361168	AHM565	A064226	GEOENGINEERS	20	2	E	11	NW	NW	Pierce	A	4/29/2003	
361170	AHM566	A064226	GEOENGINEERS	20	2	E	11	NW	NW	Pierce	A	4/29/2003	
361171	AHM567	A064226	GEOENGINEERS	20	2	E	11	NW	NW	Pierce	A	4/29/2003	
660666		AE09944	ARCO Delta Consultants	20	2	E	10	NE	SW	Pierce	A	7/16/2010	220101084
660668		AE09944	ARCO Delta Consultants	20	2	E	10	NE	SW	Pierce	A	7/19/2010	220101084
660670		AE09944	ARCO Delta Consultants	20	2	E	10	NE	SW	Pierce	A	7/19/2010	220101084
660672		AE09944	ARCO Delta Consultants	20	2	E	10	NE	SW	Pierce	A	7/19/2010	220101084
727800		AE13249	MAJ TACOMA~ LLC STANDTEC	20	2	E	1	NW	NE	Pierce	A	5/12/2011	ROW
727802		AE13249	MAJ TACOMA~ LLC STANDTEC	20	2	E	1	NW	NE	Pierce	A	5/13/2011	ROW
734091		AE13569	Donald Bosnick	20	2	E	10	SE	NE	Pierce	A	6/14/2011	220104165
734093		AE13569	Donald Bosnick	20	2	E	10	SE	NE	Pierce	A	6/14/2011	220104165
734095		AE13569	Donald Bosnick	20	2	E	10	SE	NE	Pierce	A	6/14/2011	220104165
734097		AE13569	Donald Bosnick	20	2	E	10	SE	NE	Pierce	A	6/14/2011	220104165
734099		AE13569	Donald Bosnick	20	2	E	10	SE	NE	Pierce	A	6/14/2011	220104165
734101		AE13569	Donald Bosnick	20	2	E	10	SE	NE	Pierce	A	6/14/2011	220104165
734103		AE13569	Donald Bosnick	20	2	E	10	SE	NE	Pierce	A	6/14/2011	220104165
734104		AE13569	Donald Bosnick	20	2	E	10	SE	NE	Pierce	A	6/14/2011	220104165
734106		AE13569	Donald Bosnick	20	2	E	10	SE	NE	Pierce	A	6/14/2011	220104165
777248		AE14814	Eaton Properties	20	2	E	11	NW	NW	Pierce	A	9/30/2011	
777250		AE14814	Eaton Properties	20	2	E	11	NW	NW	Pierce	A	9/30/2011	
777252		AE14814	Eaton Properties	20	2	E	11	NW	NW	Pierce	A	9/30/2011	
777254		AE14814	Eaton Properties	20	2	E	11	NW	NW	Pierce	A	9/30/2011	

Well Report ID	Well Tag	NOI Number	Well Owner	T	R	S	1/4	1/4-1/4	County	Well Type	Date Completed	Parcel
777256		AE14814	Eaton Properties	20	2	E	11	NW NW	Pierce	A	9/30/2011	
777258		AE14814	Eaton Properties	20	2	E	11	NW NW	Pierce	A	9/30/2011	
777260		AE14814	Eaton Properties	20	2	E	11	NW NW	Pierce	A	9/30/2011	
777262		AE14814	Eaton Properties	20	2	E	11	NW NW	Pierce	A	9/30/2011	
777264		AE14814	Eaton Properties	20	2	E	11	NW NW	Pierce	A	9/30/2011	
777266		AE14814	Eaton Properties	20	2	E	11	NW NW	Pierce	A	9/30/2011	
856445		AE21141	ARCO C/o Antea Group Antea Group	20	2	E	10	NE SW	Pierce	A	3/5/2013	
856447		AE21141	ARCO C/o Antea Group Antea Group	20	2	E	10	NE SW	Pierce	A	3/5/2013	
880946		AE24027	Maxmae LLC	20	2	E	10	SW NW	King	A	10/9/2013	9180200270
880948		AE24027	Maxmae LLC	20	2	E	10	SW NW	King	A	10/9/2013	9180200270
880950		AE24027	Maxmae LLC	20	2	E	10	SW NW	King	A	10/9/2013	9180200270
880963		AE24027	Maxmae LLC	20	2	E	10	SW NW	King	A	10/9/2013	9180200270
881016		AE24027	Maxmae LLC	20	2	E	10	SW NW	King	A	10/9/2013	9180200270
881018		AE24027	Maxmae LLC	20	2	E	10	SW NW	King	A	10/9/2013	9180200270
881049		AE24027	Maxmae LLC	20	2	E	10	SW NW	King	A	10/9/2013	9180200270
881053		AE24027	Maxmae LLC	20	2	E	10	SW NW	King	A	10/9/2013	9180200270
881071		AE24027	Maxmae LLC	20	2	E	10	SW NW	King	A	10/9/2013	9180200270
881073		AE24027	Maxmae LLC	20	2	E	10	SW NW	King	A	10/9/2013	9180200270
887259		AE24027	Maxmae LLC	20	2	E	10	SW NW	King	A	10/9/2013	9180200270
1222008		AE35057	City Of University Place	20	2	E	10	NE SE	Pierce	A	12/17/2015	
1582760		AE39087	BP West Coast Products	20	2	E	10	NE SW	Pierce	A	8/8/2016	
1619948		AE42466	University Place Presbyterian Church	20	2	E	10	NW SW	Pierce	A	4/11/2017	

Well Report ID	Well Tag	NOI Number	Well Owner	T	R	S	1/4	1/4-1/4	County	Well Type	Date Completed	Parcel	
1619949		AE42466	University Place Presbyterian Church	20	2	E	10	NW	SW	Pierce	A	4/11/2017	
1619950		AE42466	University Place Presbyterian Church	20	2	E	10	NW	SW	Pierce	A	4/11/2017	
1656151		AE46454	Former Haps Auto Wrecking	20	2	E	10	SE	NE	Pierce	A	12/11/2017	220104106
1721325		AE46613	Former Haps Auto Wrecking	20	2	E	10	NE	SE	Pierce	A	12/11/2017	220104106
1721327		AE46613	Former Haps Auto Wrecking	20	2	E	10	NE	SE	Pierce	A	12/11/2017	220104106
1695102		AE48242	Double Jong COrporation	20	2	E	10	NE	SE	Pierce	A	4/6/2018	6465000062
1695103		AE48242	Double Jong COrporation	20	2	E	10	NE	SE	Pierce	A	4/6/2018	6465000062
1695105		AE48242	Double Jong COrporation	20	2	E	10	NE	SE	Pierce	A	4/6/2018	6465000062
1763161		AE49849	Barnowe	20	2	E	10	NW	SE	Pierce	A	8/8/2018	6255000051
1763162		AE49849	Barnowe	20	2	E	10	NW	SE	Pierce	A	8/8/2018	6255000051
1763163		AE49849	Barnowe	20	2	E	10	NW	SE	Pierce	A	8/8/2018	6255000051
1763164		AE49849	Barnowe	20	2	E	10	NW	SE	Pierce	A	8/8/2018	6255000051
1763165		AE49849	Barnowe	20	2	E	10	NW	SE	Pierce	A	8/8/2018	6255000051
1763166		AE49849	Barnowe	20	2	E	10	NW	SE	Pierce	A	8/8/2018	6255000051
1763215		AE49849	Barnowe	20	2	E	10	NW	SE	Pierce	A	8/8/2018	6255000051
1763222		AE49849	Barnowe	20	2	E	10	NW	SE	Pierce	A	8/8/2018	6255000051
1763223		AE49849	Barnowe	20	2	E	10	NW	SE	Pierce	A	8/8/2018	6255000051
410709		E005808	KLEINFELDER INC	20	2	E	11	NW	NW	Pierce	R	5/27/2005	
1656159		EE06945	Former Haps Auto Wrecking	20	2	E	10	SE	NE	Pierce	R	12/11/2017	220104106
597998		GE00066	Puget Sound Energy	20	2	E	10	SW	SE	Pierce	R	5/28/2009	
33063		R016788	ARCO AM - PM	20	2	E	10	NE	SW	Pierce	R	4/21/1994	
311499		R046340	ARCO CORP	20	2	E	39	NW	NE	Pierce	R	1/29/2001	

Well Report ID	Well Tag	NOI Number	Well Owner	T	R	S	1/4	1/4-1/4	County	Well Type	Date Completed	Parcel
334488		R050479	JOHN FARRELL	20	2	E	10	NW SE	Pierce	R	1/28/2002	
334489		R050479	JOHN FARRELL	20	2	E	10	NW SE	Pierce	R	1/28/2002	
355107	AHM565	R054835	GEOENGINEERS	20	2	E	11	NW NW	Pierce	R	10/22/2002	
355108	AHM567	R054835	GEOENGINEERS	20	2	E	11	NW NW	Pierce	R	10/25/2002	
410965		R066723	KLEINFELDER INC	20	2	E	11	NW NW	Pierce	R	5/27/2005	
410967		R066723	KLEINFELDER INC	20	2	E	11	NW NW	Pierce	R	5/27/2005	
410968		R066723	KLEINFELDER INC	20	2	E	11	NW NW	Pierce	R	5/27/2005	
410969		R066723	KLEINFELDER INC	20	2	E	11	NW NW	Pierce	R	5/27/2005	
410970		R066723	KLEINFELDER INC	20	2	E	11	NW NW	Pierce	R	5/27/2005	
856485	BHS988	RE07862	Arco Antea	20	2	E	10	NE SW	Pierce	R	3/1/2013	
1582193	BHF809	re13166	BP WEST COAST PRODUCTS	20	2	E	10	NE SW	Pierce	R	8/8/2016	2000528000
1582195	BHF808	RE13166	BP WEST COAST PRODUCTS	20	2	E	10	NE SW	Pierce	R	8/8/2016	2000528000
1623689	BKJ041	RE14194	University Place Presbyterian Church	20	2	E	10	NW SW	Pierce	R	4/11/2017	
1623592	BJK040	RE14212	University Place Presbyterian Church	20	2	E	10	NW SW	Pierce	R	4/11/2017	
410321		S002950	KLEINFELDER INC	20	2	E	11	NW NW	Pierce	R	5/2/2005	
410322		S002950	KLEINFELDER INC	20	2	E	11	NW NW	Pierce	R	5/2/2005	
410323		S002950	KLEINFELDER INC	20	2	E	11	NW NW	Pierce	R	4/29/2005	
410324		S002950	KLEINFELDER INC	20	2	E	11	NW NW	Pierce	R	4/28/2005	
410325		S002950	KLEINFELDER INC	20	2	E	11	NW NW	Pierce	R	4/27/2005	

Well Report ID	Well Tag	NOI Number	Well Owner	T	R	S	1/4	1/4-1/4	County	Well Type	Date Completed	Parcel
410330		S002950	KLEINFELDER INC	20	2	E	11	NW NW	Pierce	R	5/3/2005	
410331		S002950	KLEINFELDER INC	20	2	E	11	NW NW	Pierce	R	5/3/2005	
410332		S002950	KLEINFELDER INC	20	2	E	11	NW NW	Pierce	R	5/3/2005	
410333		S002950	KLEINFELDER INC	20	2	E	11	NW NW	Pierce	R	5/3/2005	
410334		S002950	KLEINFELDER INC	20	2	E	11	NW NW	Pierce	R	5/2/2005	
410335		S002950	KLEINFELDER INC	20	2	E	11	NW NW	Pierce	R	5/2/2005	
410336		S002950	KLEINFELDER INC	20	2	E	11	NW NW	Pierce	R	4/29/2005	
410337		S002950	KLEINFELDER INC	20	2	E	11	NW NW	Pierce	R	4/29/2005	
410338		S002950	KLEINFELDER INC	20	2	E	11	NW NW	Pierce	R	4/29/2005	
410339		S002950	KLEINFELDER INC	20	2	E	11	NW NW	Pierce	R	4/28/2005	
410340		S002950	KLEINFELDER INC	20	2	E	11	NW NW	Pierce	R	4/28/2005	
410341		S002950	KLEINFELDER INC	20	2	E	11	NW NW	Pierce	R	4/28/2005	
410342		S002950	KLEINFELDER INC	20	2	E	11	NW NW	Pierce	R	4/27/2005	
410343		S002950	KLEINFELDER INC	20	2	E	11	NW NW	Pierce	R	4/27/2005	
410344		S002950	KLEINFELDER INC	20	2	E	11	NW NW	Pierce	R	4/27/2005	
410345		S002950	KLEINFELDER INC	20	2	E	11	NW NW	Pierce	R	4/28/2005	
410346		S002950	KLEINFELDER INC	20	2	E	11	NW NW	Pierce	R	4/26/2005	
410347		S002950	KLEINFELDER INC	20	2	E	11	NW NW	Pierce	R	4/26/2005	

Well Report ID	Well Tag	NOI Number	Well Owner	T	R	S	1/4	1/4-1/4	County	Well Type	Date Completed	Parcel
410348		S002950	KLEINFELDER INC	20	2	E	11	NW NW	Pierce	R	4/26/2005	
410349		S002950	KLEINFELDER INC	20	2	E	11	NW NW	Pierce	R	4/25/2005	
410351		S002950	KLEINFELDER INC	20	2	E	11	NW NW	Pierce	R	4/25/2005	
410352		S002950	KLEINFELDER INC	20	2	E	11	NW NW	Pierce	R	4/25/2005	
410353		S002950	KLEINFELDER INC	20	2	E	11	NW NW	Pierce	R	4/25/2005	
410354		S002950	KLEINFELDER INC	20	2	E	11	NW NW	Pierce	R	4/25/2005	
410355		S002950	KLEINFELDER INC	20	2	E	11	NW NW	Pierce	R	4/25/2005	
311492		S007666	ARCO CORP	20	2	E	39	NW NE	Pierce	R	1/29/2001	
311493		S007666	ARCO CORP	20	2	E	39	NW NE	Pierce	R	1/29/2001	
311494		S007666	ARCO CORP	20	2	E	39	NW NE	Pierce	R	1/29/2001	
311495		S007666	ARCO CORP	20	2	E	39	NW NE	Pierce	R	1/29/2001	
311496		S007666	ARCO CORP	20	2	E	39	NW NE	Pierce	R	1/29/2001	
311497		S007666	ARCO CORP	20	2	E	39	NW NE	Pierce	R	1/29/2001	
311498		S007666	ARCO CORP	20	2	E	39	NW NE	Pierce	R	1/29/2001	
311505		S007666	ARCO CORP	20	2	E	39	NW NE	Pierce	R	1/29/2001	
311506		S007666	ARCO CORP	20	2	E	39	NW NE	Pierce	R	1/29/2001	
311507		S007666	ARCO CORP	20	2	E	39	NW NE	Pierce	R	1/29/2001	
660674		SE07581	ARCO Delta Consultants	20	2	E	10	NE SW	Pierce	R	7/16/2010	220101084
660676		SE07581	ARCO Delta Consultants	20	2	E	10	NE SW	Pierce	R	7/16/2010	220101084
660678		SE07581	ARCO Delta Consultants	20	2	E	10	NE SW	Pierce	R	7/19/2010	220101084
660680		SE07581	ARCO Delta Consultants	20	2	E	10	NE SW	Pierce	R	7/19/2010	220101084
734073		SE42885	Donald Bosnick	20	2	E	10	SE NE	Pierce	R	6/14/2011	220104165
734075		SE42885	Donald Bosnick	20	2	E	10	SE NE	Pierce	R	6/14/2011	220104165
734077		SE42885	Donald Bosnick	20	2	E	10	SE NE	Pierce	R	6/14/2011	220104165
734079		SE42885	Donald Bosnick	20	2	E	10	SE NE	Pierce	R	6/14/2011	220104165

Well Report ID	Well Tag	NOI Number	Well Owner	T	R	S	1/4	1/4-1/4	County	Well Type	Date Completed	Parcel	
734081		SE42885	Donald Bosnick	20	2	E	10	SE	NE	Pierce	R	6/14/2011	220104165
734083		SE42885	Donald Bosnick	20	2	E	10	SE	NE	Pierce	R	6/14/2011	220104165
734085		SE42885	Donald Bosnick	20	2	E	10	SE	NE	Pierce	R	6/14/2011	220104165
734087		SE42885	Donald Bosnick	20	2	E	10	SE	NE	Pierce	R	6/14/2011	220104165
734089		SE42885	Donald Bosnick	20	2	E	10	SE	NE	Pierce	R	6/14/2011	220104165
777214		SE43704	Eaton Properties	20	2	E	11	NW	NW	Pierce	R	9/30/2011	
777216		SE43704	Eaton Properties	20	2	E	11	NW	NW	Pierce	R	9/30/2011	
777218		SE43704	Eaton Properties	20	2	E	11	NW	NW	Pierce	R	9/30/2011	
777220		SE43704	Eaton Properties	20	2	E	11	NW	NW	Pierce	R	9/30/2011	
777222		SE43704	Eaton Properties	20	2	E	11	NW	NW	Pierce	R	9/30/2011	
777224		SE43704	Eaton Properties	20	2	E	11	NW	NW	Pierce	R	9/30/2011	
777226		SE43704	Eaton Properties	20	2	E	11	NW	NW	Pierce	R	9/30/2011	
777228		SE43704	Eaton Properties	20	2	E	11	NW	NW	Pierce	R	9/30/2011	
777230		SE43704	Eaton Properties	20	2	E	11	NW	NW	Pierce	R	9/30/2011	
777268		SE43704	Eaton Properties	20	2	E	11	NW	NW	Pierce	R	9/30/2011	
880952		SE49564	Maxmae LLC	20	2	E	10	SW	NW	King	R	10/9/2013	9180200270
880954		SE49564	Maxmae LLC	20	2	E	10	SW	NW	King	R	10/9/2013	9180200270
880955		SE49564	Maxmae LLC	20	2	E	10	SW	NW	King	R	10/9/2013	9180200270
880957		SE49564	Maxmae LLC	20	2	E	10	SW	NW	King	R	10/9/2013	9180200270
880959		SE49564	Maxmae LLC	20	2	E	10	SW	NW	King	R	10/9/2013	9180200270
880961		SE49564	Maxmae LLC	20	2	E	10	SW	NW	King	R	10/9/2013	9180200270
880965		SE49564	Maxmae LLC	20	2	E	10	SW	NW	King	R	10/9/2013	9180200270
880967		SE49564	Maxmae LLC	20	2	E	10	SW	NW	King	R	10/9/2013	9180200270
881051		SE49564	Maxmae LLC	20	2	E	10	SW	NW	Pierce	R	10/9/2013	9180200270
1222007		SE56730	City Of University Place	20	2	E	10	NE	SE	Pierce	R	12/17/2015	

Well Report ID	Well Tag	NOI Number	Well Owner	T	R	S	1/4	1/4-1/4	County	Well Type	Date Completed	Parcel	
1582765		SE59464	BP West Coast Products	20	2	E	10	NE	SW	Pierce	R	8/8/2016	
1619945		SE61780	University Place Presbyterian Church	20	2	E	10	NW	SW	Pierce	R	4/11/2017	
1619946		SE61780	University Place Presbyterian Church	20	2	E	10	NW	SW	Pierce	R	4/11/2017	
1619947		SE61780	University Place Presbyterian Church	20	2	E	10	NW	SW	Pierce	R	4/11/2017	
1721321		SE64550	Former Haps Auto Wrecking	20	2	E	10	NE	SE	Pierce	R	12/11/2017	220104106
1721328		SE64550	Former Haps Auto Wrecking	20	2	E	10	NE	SE	Pierce	R	12/11/2017	220104106
1695100		SE65652	Double Jong COrporation	20	2	E	10	NE	SE	Pierce	R	4/6/2018	6465000062
1695101		SE65652	Double Jong COrporation	20	2	E	10	NE	SE	Pierce	R	4/6/2018	6465000062
1695104		SE65652	Double Jong COrporation	20	2	E	10	NE	SE	Pierce	R	4/6/2018	6465000062
1763155		SE66695	Barnowe	20	2	E	10	NW	SE	Pierce	R	8/8/2018	6255000051
1763156		SE66695	Barnowe	20	2	E	10	NW	SE	Pierce	R	8/8/2018	6255000051
1763157		SE66695	Barnowe	20	2	E	10	NW	SE	Pierce	R	8/8/2018	6255000051
1763158		SE66695	Barnowe	20	2	E	10	NW	SE	Pierce	R	8/8/2018	6255000051
1763159		SE66695	Barnowe	20	2	E	10	NW	SE	Pierce	R	8/8/2018	6255000051
1763160		SE66695	Barnowe	20	2	E	10	NW	SE	Pierce	R	8/8/2018	6255000051
1763214		SE66695	Barnowe	20	2	E	10	NW	SE	Pierce	R	8/8/2018	6255000051
1763220		SE66695	Barnowe	20	2	E	10	NW	SE	Pierce	R	8/8/2018	6255000051
1763221		SE66695	Barnowe	20	2	E	10	NW	SE	Pierce	R	8/8/2018	6255000051
274072		A11987	B - P STATION / TACOMA	20	2	E	11	NW	NW	Pierce	R	1995	
274073		A11987	B - P STATION / TACOMA	20	2	E	11	NW	NW	Pierce	R	1995	
274074		A11987	B - P STATION / TACOMA	20	2	E	11	NW	NW	Pierce	R	1995	

Well Report ID	Well Tag	NOI Number	Well Owner	T	R	S	1/4	1/4-1/4	County	Well Type	Date Completed	Parcel
274075		A11987	B - P STATION / TACOMA	20	2	E	11	NW	NW	Pierce	R	1995
274076		A11987	B - P STATION / TACOMA	20	2	E	11	NW	NW	Pierce	R	1995

Central Region Water Well Majority Section (C-WW)

Well Report ID	Well Tag	NOI Number	Well Owner	T	R	S	1/4	1/4-1/4	County	Well Type	Date Completed	Parcel	
555340	AHP330	A107250	ELISANDRO CANTU	9	24	E	27	NE	SE	Benton	A	8/7/2008	127944127410001
147632	ABL848	W048909	Tom Honeycut	9	24	E	27	SW	SW	Benton	W	12/28/1994	
148233	ACE716	W086655	John Olsen	9	24	E	27	SW	SW	Benton	W	6/13/1996	
148249	ACE746	W086656	John Olsen	9	24	E	27	NW	SW	Benton	W	7/25/1996	
148762	ADB784	W087772	KENNY RIEL	9	24	E	27	NW	SW	Benton	W	8/12/1997	
148244	ACE734	W087814	JOHN OLSEN CONSTR	9	24	E	27	NE	SE	Benton	W	3/22/1997	
148234	ACE717	W087815	JOHN OLSEN CONSTR	9	24	E	27	NW	NE	Benton	W	12/5/1996	
148245	ACE735	W087824	JOHN OLSEN CONST	9	24	E	27	NE	SE	Benton	W	3/24/1997	
148712	ACX477	W093760	OLGA & JAVIER MEZA	9	24	E	27	SW	NE	Benton	W	3/18/1998	
148911	AEG424	W104873	JOHN OLSEN	9	24	E	27	NE	SE	Benton	W	10/30/1998	
148912	AEG425	W104874	JUAN MUÑOZ	9	24	E	27	SW	NE	Benton	W	12/21/1998	
148917	AEG435	W104884	JIM MARTIN	9	24	E	27	SE	SW	Benton	W	3/26/1999	
148951	AEL024	W110668	JESUS AGUAYO	9	24	E	27	NW	NW	Benton	W	5/8/1999	
302466	AFQ627	W127936	MONA SHRADER	9	24	E	27	SW	NE	Benton	W	12/27/2000	
315565	AGH808	W131580	JOHN OLSON	9	24	E	27	NE	SE	Benton	W	9/26/2001	
357178	AHP302	W164431	KENNY RIEL	9	24	E	27	NW	SW	Benton	W	3/18/2003	
515598	AHP330	W164555	ELISANDRO CANTU	9	24	E	27	NE	SE	Benton	W	8/28/2003	
541847	APT475	W182837	GREG RICHARDS	9	24	E	27	NE	NE	Benton	W	6/26/2007	12794103000006
524240	BAR800	W187637	RICK RIVARD	9	24	E	27	SW	NW	Benton	W	3/28/2008	127-943-011-291004 LOT 4
555343	BAR752	W187650	ELISANDRO CANTU	9	24	E	27	NE	SE	Benton	W	8/7/2008	12794412741001
461351	APK151	W205753	LARRY LOGES	9	24	E	27	NE	NE	Benton	W	8/25/2006	
430354	AKA082	W244158	RAFAEL ZEPEVA	9	24	E	27	SW	SW	Benton	W	11/8/2005	
430372	AKA093	W244170	EVARISTIO MILANEZ	9	24	E	27	SE	NW	Benton	W	1/23/2006	

Well Report ID	Well Tag	NOI Number	Well Owner	T	R	S	1/4	1/4-1/4	County	Well Type	Date Completed	Parcel
515493	APK102	W244183	LUPE MONTELANGO	9	24	E	27	NE	NE	Benton	W	4/29/2006
461349	APK142	W248554	STEVE VELOZ	9	24	E	27	NE	NE	Benton	W	10/10/2006
661806	BCS125	W268450	RICHARD THOMAS	9	24	E	27	SW	SE	Benton	W	7/8/2010
756587	BCJ747	W303170	Evanstio Milanez	9	24	E	27	SE	SW	Benton	W	10/3/2011
942170	BIF139	W355115	Evaristo Milanez	9	24	E	27	SW	SW	Benton	W	11/26/2014
942214	BIF138	W357590	Evaristo Milanez	9	24	E	27	SW	SW	Benton	W	11/25/2014
919372	BIF116	W357591	Charles Meyers	9	24	E	27	SE	SW	Benton	W	5/30/2014
903273	BCE937	W364747	Juan Ruvalcaba	9	24	E	27	SW	NW	Benton	W	1/13/2014
333532	ACW685	WE00309	JS PERKINS CONSTRUCTION	9	24	E	27	NE	SW	Benton	W	3/28/2002
333534	AGC686	WE00311	JS PERKINS CONSTRUCTION	9	24	E	27	NE	SW	Benton	W	3/29/2002
333504	ACW687	WE00315	JS PERKINS CONSTRUCTION	9	24	E	27	NW	SW	Benton	W	4/2/2002
333533	ACW688	WE00316	JS PERKINS CONSTRUCTION	9	24	E	27	NE	SW	Benton	W	4/3/2002
596745	APG726	WE09941	Paula Elidge	9	24	E	27	SW	SE	Benton	W	10/6/2008
709981	BBH433	WE12540	Caris-Sell Homes	9	24	E	27	SE	SW	Benton	W	1/21/2011
831172	BCF843	WE15482	Shane White	9	24	E	27	SE	SE	Benton	W	11/5/2012
354647	ACX425		FRED LAMB	9	24	E	27	SW	SE	Benton	W	2/18/1998
296420			GUY MURCHLAND	9	24	E	27	NE	NW	Benton	W	3/27/1970
141010			JACK BLEDSOE	9	24	E	27	NW	NE	Benton	W	8/24/1978
142005			JOSE CANTU	9	24	E	27	NW	N	Benton	W	7/26/1986
142226			KENNETH OLSON	9	24	E	27	SE	NW	Benton	W	4/25/1980
143272			MICHAEL G MORTIMORE	9	24	E	27	NE	SW	Benton	W	11/15/1976

Well Report ID	Well Tag	NOI Number	Well Owner	T	R	S	1/4	1/4-1/4	County	Well Type	Date Completed	Parcel
144804			ROBERT V MOFFORD	9	24	E	27	SW	NE	Benton	W	3/22/1978
145255			SANDERS HOUSE MOVERS	9	24	E	27	SW	NE	Benton	W	12/7/1977
145758		86892	TERRY DAVIS	9	24	E	27	SW	SW	Benton	W	3/29/1992
145845		36390	TIMBERLAND CONSTRUCTION	9	24	E	27	NE	NW	Benton	W	4/17/1990
146327			W E BEACON	9	24	E	27	SW	NW	Benton	W	3/30/1976

Central Region Resource Protection Well Majority Section (C-RP)

Well Report ID	Well Tag	NOI Number	Well Owner	T	R	S	1/4	1/4-1/4	County	Well Type	Date Completed	Parcel
130641		7281	MR. LEMUS	13	19	E	30	SE NE	Yakima	W	4/18/1989	191330-41422
128087		10398	JAMES HENNESS	13	19	E	30	SE NE	Yakima	W	11/30/1988	
134386	ABJ562	17842	PACIFIC REALTY ASSOC. L. P.	13	19	E	30	NE NW	Yakima	R	6/5/1996	
133609		21227	U S WEST COMMUNITCATIONS	13	19	E	30	NW NE	Yakima	R	6/18/1986	
127537		031534	HAHN MOTORS	13	19	E	30	NE SW	Yakima	W	1/31/1991	
128430		33708	JIM LEWIS	13	19	E	30	SE SE	Yakima	W	11/7/1989	
131300		86668	RAINIER PLASTICS CO.	13	19	E	30	SW NE	Yakima	A	6/19/1992	
127536		A000009	HAHN MOTOR	13	19	E	30	NE SW	Yakima	R	10/19/1993	
931049		A000009	Hahn Motor	13	19	E	30	NE SW	Yakima	A	10/19/1993	
255110		A020629	ASPEN ENVIRONMENTAL	13	19	E	30	NE SW	Yakima	A	12/21/1999	
255109		A020630	ASPEN ENVIRONMENTAL	13	19	E	30	NE SW	Yakima	A	12/21/1999	
255108		A020631	ASPEN ENVIRONMENTAL	13	19	E	30	NE SW	Yakima	A	12/21/1999	
255111		A020632	ASPEN ENVIRONMENTAL	13	19	E	30	NE SW	Yakima	A	12/21/1999	
931028		A021229	US West Business Resources	13	19	E	30	NW NE	Yakima	A	11/29/1994	
931029		A021229	US West Business Resources	13	19	E	30	NW NE	Yakima	A	11/29/1994	
931037		A021229	US West Business Resources	13	19	E	30	NW NE	Yakima	A	11/29/1994	
931038		A021229	US West Business Resources	13	19	E	30	NW NE	Yakima	A	11/29/1994	
931048		A021229	US West Business Resources	13	19	E	30	NW NE	Yakima	A	11/29/1994	
931050		A021229	US West Business Resources	13	19	E	30	NW NE	Yakima	A	11/29/1994	
931051		A021229	US West Business Resources	13	19	E	30	NW NE	Yakima	A	11/29/1994	

496462		A022546	U Haul	13	19	E	30	NW	SE	Yakima	A	2/16/1994	
496463		A022546	U Haul	13	19	E	30	NW	SE	Yakima	A	2/16/1994	
496464		A022546	U Haul	13	19	E	30	NW	SE	Yakima	A	2/14/1994	
496465		A022546	U Haul	13	19	E	30	NW	SE	Yakima	A	2/14/1994	
496466		A022546	U Haul	13	19	E	30	NW	SE	Yakima	A	2/15/1994	
496467		A022546	U Haul	13	19	E	30	NW	SE	Yakima	A	2/14/1994	
496468		A022546	U Haul	13	19	E	30	NW	SE	Yakima	A	2/14/1994	
496469		A022546	U Haul	13	19	E	30	NW	SE	Yakima	A	2/15/1994	
496470		A022546	U Haul	13	19	E	30	NW	SE	Yakima	A	2/16/1994	
496471		A022546	U Haul	13	19	E	30	NW	SE	Yakima	A	2/15/1994	
931062		A022546	U Haul	13	19	E	30	NW	SE	Yakima	A	2/16/1994	
		ASPEN ENVIRONMENTAL											
254731		A034466		13	19	E	30	SE	NW	Yakima	A	2/11/2000	19133042431
133234		A035031	US WEST COMMUNITCATIONS	13	19	E	30	NW	NE	Yakima	A	5/12/1994	
461447		A046453	MATTHEWS INVESTMENTS INC	13	19	E	30	SE	NW	Yakima	A	6/18/2001	191330- 42431
499569		A129753	AMERCO REAL ESTATE CO	13	19	E	30	NW	NE	Yakima	A	8/13/2007	19133021304
534132		AE03145	LYNDALE PARNERSHIPS	13	19	E	30	SW	NE	Yakima	A	4/22/2008	32547
534134		AE03145	LYNDALE PARNERSHIPS	13	19	E	30	SW	NE	Yakima	A	4/22/2008	32547
534136		AE03145	LYNDALE PARNERSHIPS	13	19	E	30	SW	NE	Yakima	A	4/22/2008	32547
732495		AE12987	PATRICIO RODRIGUEZ STRATA	13	19	E	30	NE	NE	Yakima	A	5/10/2011	191330- 42436
732499		AE12989	PACIFIC POWER/DAN NICHOLSON STRATA	13	19	E	30	NE	NW	Yakima	A	5/11/2011	191330-2012
732502		AE12990	STEPHEN WILLIAMS STRATA	13	19	E	30	NE	SW	Yakima	A	5/11/2011	191330- 42436
1044522		AE33318	Morton Capital Corporation	13	19	E	30	SE	SE	Yakima	A	8/11/2015	19133043432
1044524		AE33320	Morton Capital Corporation	13	19	E	30	SE	SE	Yakima	A	8/11/2015	19133043432

1044526		AE33320	Morton Capital Corporation	13	19	E	30	SE	SE	Yakima	A	8/11/2015	19133043432
1592376		AE38788	Mcdonalds Usa	13	19	E	30	NE	SW	Yakima	A	8/8/2016	
1592377		AE38788	Mcdonalds Usa	13	19	E	30	NE	SW	Yakima	A	8/8/2016	
1592378		AE38788	Mcdonalds Usa	13	19	E	30	NE	SW	Yakima	A	8/8/2016	
1592379		AE38788	Mcdonalds Usa	13	19	E	30	NE	SW	Yakima	A	8/8/2016	
1592380		AE38788	Mcdonalds Usa	13	19	E	30	NE	SW	Yakima	A	8/8/2016	
1592381		AE38788	Mcdonalds Usa	13	19	E	30	NE	SW	Yakima	A	8/8/2016	
1638300		AE43667	Don Jones	13	19	E	30	SE	SW	Yakima	A	6/21/2017	191330-43429
1638301		AE43667	Don Jones	13	19	E	30	SE	SW	Yakima	A	6/21/2017	191330-43429
1696390		AE47183	SBP HOLDINGS INC	13	19	E	30	NW	SE	Yakima	A	2/28/2018	19133024021
1696396		AE47183	SBP HOLDINGS INC	13	19	E	30	NW	SE	Yakima	A	2/28/2018	19133024021
1696411		AE47183	SBP HOLDINGS INC	13	19	E	30	NW	SE	Yakima	A	2/27/2018	19133024021
1044523		EE05705	Morton Capital Corporation	13	19	E	30	SE	SE	Yakima	R	8/11/2015	19133043432
1044525		EE05705	Morton Capital Corporation	13	19	E	30	SE	SE	Yakima	R	8/11/2015	19133043432
847938		GE00397	CNG Corp	13	19	E	30	NW	NW	Yakima	R	12/14/2012	191330-22001
931060		R004268	Hahn Motors	13	19	E	30	NE	SW	Yakima	R	2/6/1995	
931061	BIN808	R004268	Hahn Motors	13	19	E	30	NE	SW	Yakima	R	2/6/1995	
631700	BIN805	R005715	CAMERON YAKIMA/SHELL OIL	13	19	E	30	SE	NW	Yakima	R	8/17/1998	
631702	BIN807	R005715	CAMERON YAKIMA/SHELL OIL	13	19	E	30	SE	NW	Yakima	R	8/17/1998	
631703	BIN815	R005715	CAMERON YAKIMA/SHELL OIL	13	19	E	30	SE	NW	Yakima	R	8/20/1998	
631705		R005715	CAMERON YAKIMA/SHELL OIL	13	19	E	30	SE	NW	Yakima	R	8/21/1998	
631707		R005715	CAMERON YAKIMA/SHELL OIL	13	19	E	30	SE	NW	Yakima	R	8/18/1998	
631708	BIN813	R005715	CAMERON YAKIMA/SHELL OIL	13	19	E	30	SE	NW	Yakima	R	8/19/1998	
631713	BIN814	R005715	CAMERON YAKIMA/SHELL OIL	13	19	E	30	SE	NW	Yakima	R	8/20/1998	

631715	BIN812	R005715	CAMERON YAKIMA/SHELL OIL	13	19	E	30	SE	NW	Yakima	R	8/20/1998	
631717	BIN811	R005715	CAMERON YAKIMA/SHELL OIL	13	19	E	30	SE	NW	Yakima	R	8/20/1998	
134190	AAO857	R009629	U - HAUL	13	19	E	30	NW	SE	Yakima	R	2/15/1994	
930914	ABT559	R017842	Pacific Realty Assoc	13	19	E	30	NE	NW	Yakima	R	6/4/1996	
930939	ABT560	R017842	Pacific Realty Assoc	13	19	E	30	NE	NW	Yakima	R	6/4/1996	
930940	ABT562	R017842	Pacific Realty Assoc	13	19	E	30	NE	NW	Yakima	R	6/5/1996	
930974	ABT561	R017842	Pacific Realty Assoc	13	19	E	30	NE	NW	Yakima	R	6/4/1996	
930922	ACP720	R017911	Pac Trust (Tom Wittaler)	13	19	E	30	NE	NW	Yakima	R	8/18/1997	
930948		R017911	Pac Trust (Tom Wittaler)	13	19	E	30	NE	NW	Yakima	R	8/19/1997	
930949		R017911	Pac Trust (Tom Wittaler)	13	19	E	30	NE	NW	Yakima	R	8/19/1997	
930973		R017911	Pac Trust (Tom Wittaler)	13	19	E	30	NE	NW	Yakima	R	8/18/1997	
930906		R027905	Sunfair Associates	13	19	E	19	NW	SE	Yakima	R	6/5/1997	
930907		R027905	Sunfair Associates	13	19	E	19	NW	SE	Yakima	R	6/5/1997	
930908		R027905	Sunfair Associates	13	19	E	19	NW	SE	Yakima	R	5/27/1997	
930911		R027905	Sunfair Associates	13	19	E	19	NW	SE	Yakima	R	6/5/1997	
353820	AHR176	R054072	511 LAND VENTURES LLC	13	19	E	30	SE	NE	Yakima	R	1/24/2003	191330-42441
468817	ALM048	R070630	UHAUL & KIA	13	19	E	30	NW	NE	Yakima	R	11/29/2006	19133021031
1650538	BKA314	RE14820	Project Hudson	13	19	E	30	NW	SW	Yakima	R	8/22/2017	19133023569
1650540	BKA318	RE14820	Project Hudson	13	19	E	30	NW	SW	Yakima	R	8/24/2017	19133023569
1650541	BKA313	RE14820	Project Hudson	13	19	E	30	NW	SW	Yakima	R	8/22/2017	19133023569
1650542	BKA317	RE14820	Project Hudson	13	19	E	30	NW	SW	Yakima	R	8/23/2017	19133023569
1650547	BKA311	RE14820	Project Hudson	13	19	E	30	NW	SW	Yakima	R	8/22/2017	19133023569
1650548	BKA315	RE14820	Project Hudson	13	19	E	30	NW	SW	Yakima	R	8/23/2017	19133023569
1650549	BKA312	RE14820	Project Hudson	13	19	E	30	NW	SW	Yakima	R	8/22/2017	19133023569
1650550	BKA319	RE14820	Project Hudson	13	19	E	30	NW	SW	Yakima	R	8/24/2017	19133023569
1650553	BKA316	RE14820	Project Hudson	13	19	E	30	NW	SW	Yakima	R	8/23/2017	19133023569
581674		S001515	PRATT HANSEN	13	19	E	30	SE	SE	Yakima	R	1/1/1999	
581675		S001515	PRATT HANSEN	13	19	E	30	SE	SE	Yakima	R	1/1/1999	
581676		S001515	PRATT HANSEN	13	19	E	30	SE	SE	Yakima	R	1/1/1999	
581677		S001515	PRATT HANSEN	13	19	E	30	SE	SE	Yakima	R	1/1/1999	

581678		S001515	PRATT HANSEN	13	19	E	30	SE	SE	Yakima	R	1/1/1999	
581679		S001515	PRATT HANSEN	13	19	E	30	SE	SE	Yakima	R	1/1/1999	
581680		S001515	PRATT HANSEN	13	19	E	30	SE	SE	Yakima	R	1/1/1999	
343261		S011523	GEORGE COSON	13	19	E	30	NW	NE	Yakima	R	5/1/2002	191330-21032
343262		S011523	GEORGE COSON	13	19	E	30	NW	NE	Yakima	R	5/1/2002	191330-21032
361698		S012807	BURLINGTON NORTHERN SANTA FE	13	19	E	30	NW	SW	Yakima	R	4/18/2003	
361699		S012807	BURLINGTON NORTHERN SANTA FE	13	19	E	30	NW	SW	Yakima	R	4/18/2003	
361700		S012807	BURLINGTON NORTHERN SANTA FE	13	19	E	30	NW	SW	Yakima	R	4/18/2003	
361701		S012807	BURLINGTON NORTHERN SANTA FE	13	19	E	30	NW	SW	Yakima	R	4/18/2003	
361702		S012807	BURLINGTON NORTHERN SANTA FE	13	19	E	30	NW	SW	Yakima	R	4/18/2003	
361703		S012807	BURLINGTON NORTHERN SANTA FE	13	19	E	30	NW	SW	Yakima	R	4/18/2003	
534137		SE02312	LYNDALE PARNSHIPS	13	19	E	30	SW	NE	Yakima	R	4/22/2008	32547
534138		SE02312	LYNDALE PARNSHIPS	13	19	E	30	SW	NE	Yakima	R	4/22/2008	32547
534139		SE02312	LYNDALE PARNSHIPS	13	19	E	30	SW	NE	Yakima	R	4/22/2008	32547
732493		SE09653	PATRICIO RODRIGUEZ STRATA	13	19	E	30	NE	NE	Yakima	R	5/10/2011	191330-42436
732497		SE09654	PACIFIC POWER/DAN NICHOLSON STRATA	13	19	E	30	NE	NW	Yakima	R	5/11/2011	191330-2012

732500		SE09655	STEPHEN WILLIAMS STRATA	13	19	E	30	NE	SW	Yakima	R	5/11/2011	191330- 42436
1044521		SE55604	Morton Capital Corporation	13	19	E	30	SE	SE	Yakima	R	8/11/2015	19133043432
1592370		SE59251	Mcdonalds Usa	13	19	E	30	NE	SW	Yakima	R	8/8/2016	
1592371		SE59251	Mcdonalds Usa	13	19	E	30	NE	SW	Yakima	R	8/8/2016	
1592372		SE59251	Mcdonalds Usa	13	19	E	30	NE	SW	Yakima	R	8/8/2016	
1592373		SE59251	Mcdonalds Usa	13	19	E	30	NE	SW	Yakima	R	8/8/2016	
1592374		SE59251	Mcdonalds Usa	13	19	E	30	NE	SW	Yakima	R	8/8/2016	
1592375		SE59251	Mcdonalds Usa	13	19	E	30	NE	SW	Yakima	R	8/8/2016	
1638298		SE62540	Don Jones	13	19	E	30	SE	SW	Yakima	R	6/21/2017	191330- 43429
1638299		SE62540	Don Jones	13	19	E	30	SE	SW	Yakima	R	6/21/2017	191330- 43429
136119	AEG002	W090097	VOELKER FRUIT	13	19	E	30	SW	SE	Yakima	W	7/9/1998	
949371	BIN809			13	19	E	30	SE	NW	Yakima	R	2015	191330-42
949407	BIN806			13	19	E	30	SE	NW	Yakima	R	2015	191330-42
949408	BIN810			13	19	E	30	SE	NW	Yakima	R	2015	191330-42
124146			ANTONIO SANCHEZ	13	19	E	30	SW	SE	Yakima	W	2/11/1985	
124462			BILL SHIELDS	13	19	E	30	SW	NE	Yakima	W	10/22/1984	
949360	BIN818		Burlington Northern- Santa Fe Railway Co	13	19	E	30	NW	NE	Yakima	R	2015	191330- 24902
949377	BIN817		Burlington Northern- Santa Fe Railway Co	13	19	E	30	NW	NE	Yakima	R	2015	191330- 24902
124870			CAMERON YAKIMA	13	19	E	30	SE	NW	Yakima	R	8/22/1989	
292311			CAMERON YAKIMA	13	19	E	30	SE	NW	Yakima	R	8/23/1989	
292312			CAMERON YAKIMA	13	19	E	30	SE	NW	Yakima	R	8/23/1989	
292313			CAMERON YAKIMA	13	19	E	30	SE	NW	Yakima	R	8/25/1989	
329311			CITY OF ICE DELIVERY CO.	13	18	E	24	NE	NE	Yakima	W		
127663			HARRY STOTSENBERG	13	19	E	30	SE	SE	Yakima	W	4/2/1986	
128408			JIM HENNESS	13	19	E	30	SE	NE	Yakima	W	2/17/1977	
128937			JOSE C NUNEZ	13	19	E	30	SE	NE	Yakima	W	4/15/1977	
329312			METROPOLITAN PARK DIST. OF YAKIMA	13	19	E	30	NW	NW	Yakima	W	1957	

130828			NOEL CANNING CORP	13	19	E	30	NE	NW	Yakima	W	3/12/1977	
292519			O M MEACHAM	13	19	E	30	SE	SE	Yakima	W	4/5/1976	
131298			RAINIER PLASTICS	13	19	E	30	SW	NE	Yakima	W	2/13/1982	
131299			RAINIER PLASTICS	13	19	E	30	SW	NE	Yakima	W	2/10/1982	
133860			YAKIMA PRECAST	13	19	E	30	NE	SW	Yakima	W	10/26/1984	

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Well Report ID	Well Tag	NOI Number	Well Owner	T	R	S	1/4	1/4-1/4	County	Well Type	Date Completed	Parcel
162939			AL - MAC DEVELOPEMENT	6	36	E	7	NE NW	Walla Walla	W	5/27/1981	
162940			AL - MAC DEVELOPEMENT CO.	6	36	E	7	NE NW	Walla Walla	W	2/23/1977	
491677	BAC854	W206292	BEN CASE	6	36	E	7	SW SE	Walla Walla	W	8/20/2007	360607340001
491675	BAC855	W206293	BRAD/AMY NIELSEN	6	36	E	7	SW SE	Walla Walla	W	8/21/2007	360607340002
422652			CALVIN RICK	6	36	E	7	SE NW	Walla Walla	W	11/13/1992	
453770	APC663	W216125	CAPRI WALLA WALLA	6	36	E	7	NW SE	Walla Walla	W	9/13/2006	36-06-07-56-0010
493567	APC272	W211715	CASH FRACKIEWICS	6	36	E	7	NE SW	Walla Walla	W	9/13/2007	36-06-07-56-0005
384906	AHE448	W162844	CLIFFORD AND LILA PAFFILE	6	36	E	7	NW NE	Walla Walla	W	7/27/2004	36-06-07-21-0018
483119	APC261	W211702	DAN FAYETTE	6	36	E	7	SE NE	Walla Walla	W	6/5/2007	36-06-07-55-0003
411691	AHE478	W179700	DAVE KONEN	6	36	E	7	SE SE	Walla Walla	W	7/6/2005	360607540003
484558	APC263	W211707	DENNIS MURPHY	6	36	E	7	SW NE	Walla Walla	W	6/19/2007	36-06-07-31-0017
165710			DON GREENWALD	6	36	E	7	SE NW	Walla Walla	W	6/5/1987	36-0607-42-0001
165711		34431	DON GREENWALT	6	36	E	7	SE NW	Walla Walla	W	8/25/1993	
382036	AHE444	W162845	EDWARD LEWIS	6	36	E	7	SW NW	Walla Walla	W	6/2/2004	36-06-07-32-0013
872502	APJ324	W351453	Edward Parks	6	36	E	7	SE SE	Walla Walla	W	4/8/2013	360607550002
1633952	BJD435	WE27759	Edward Thomas	6	36	E	7	NE SW	Walla Walla	W	6/9/2017	36060750007
422650	AHC363	W123885	GARY REIBER	6	36	E	7	SE NE	Walla Walla	W	10/12/2001	
422654			GARY/GRACE REIBER	6	36	E	7	SE NE	Walla Walla	W	9/13/1991	

Well Report ID	Well Tag	NOI Number	Well Owner	T	R	S	1/4	1/4-1/4	County	Well Type	Date Completed	Parcel	
422651	AAN983	W005689	GREG BASEL	6	36	E	7	SW	SW	Walla	W	5/21/1996	
342891	AAZ354	W004438	GREG BOSSINI	6	36	E	7	NW	SW	Walla	W	10/4/1994	
167499			H. P. GRAHAM	6	36	E	7	NE	NE	Walla	W	7/22/1973	
930931	BHW649	WE19476	Heidi Buratto	6	36	E	7	NW	SE	Walla	W	10/22/2014	360607560011
408140	AHE470	W179692	JEAN FRANCOIS POLLET	6	36	E	7	SW	SW	Walla	W	3/23/2005	36-06-07-33-0001
864087	APJ329	W351458	John Jex - J & S Vineyards LLC	6	36	E	7	NW	SE	Walla	W	7/9/2013	36060756009
293904			JOHN LOGAN	6	36	E	7	SW	NW	Walla	W	4/10/1957	
169206			JOHN SHUMACHER	6	36	E	7	NW	SW	Walla	W	8/5/1952	
169254			JOHN YENNEY, ET AL	6	36	E	7	NE	NE	Walla	W	2/6/1946	
169255			JOHN YENNEY, ET AL	6	36	E	7	SW	NW	Walla	W	1912	
763883	APJ308	W277860	Justin Basel	6	36	E	7	SW	SW	Walla	W	7/28/2011	360607570002
293946			LAWRENCE & MARY PRESO	6	36	E	7			Walla	W	7/29/1968	
170021			LESTER BORDER	6	36	E	7	NE	NW	Walla	W	9/15/1975	
170120			LLOYD OSBORN	6	36	E	7	NE	NW	Walla	W	6/17/1974	
170193			LOUIS BOSSINI	6	36	E	7	NW	SW	Walla	W	2/18/1985	
293990			LOUIS BOSSINI	6	36	E	7	NW	SW	Walla	W	8/22/1968	
1592882	BJD417	WE25497	Matt Huse	6	36	E	7	NE	NW	Walla	W	9/29/2016	360607530012
171092			NICK MORAMARCO	6	36	E	7	SE	SW	Walla	W	1/8/1993	

Well Report ID	Well Tag	NOI Number	Well Owner	T	R	S	1/4	1/4-1/4	County	Well Type	Date Completed	Parcel		
483120	APC260	W211701	RAY/DIANA GOFF	6	36	E	7	SW	SW	Walla	Walla	W	6/4/2007	36-06-07-57-0001
432690	ALR940	W216109	SCOTT SEARS	6	36	E	7	NE	SW	Walla	Walla	W	2/28/2006	
799488	BCE236	WE14496	Shivell Construction	6	36	E	7	NE	SE	Walla	Walla	W	4/25/2012	
315894	AHC365	W123887	STIMSON LANE VINEYARDS & ESTATES	6	36	E	7	SW	NW	Walla	Walla	W	11/6/2001	
443609	ALR069	W238563	TODD ANDERSON	6	36	E	7	SW	SE	Walla	Walla	W	6/12/2006	36-06-07-34-0003
422653			TOM SEINER	6	36	E	7	SE	NE	Walla	Walla	W	10/10/1991	
173899			VIOLA WHITELEY	6	36	E	7	SW	NE	Walla	Walla	W	10/5/1976	

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Well Report ID	Well Tag	NOI Number	Well Owner	T	R	S	1/4	1/4-1/4	County	Well Type	Date Completed	Parcel	
178672		8393	DAMES & MOORE	25	43	E	15	NW	SW	Spokane	W	10/12/1989	
178673		8393	DAMES & MOORE	25	43	E	15	NW	SW	Spokane	W	10/12/1989	
178674		8393	DAMES & MOORE	25	43	E	15	NW	SW	Spokane	W	10/12/1989	
178675		8393	DAMES & MOORE	25	43	E	15	NW	SW	Spokane	W	10/12/1989	
209962		33109	THUNDERBIRD LUBRICATIONS	25	43	E	15	SW	SW	Spokane	R	1989	
209963		33109	THUNDERBIRD LUBRICATIONS	25	43	E	15	SW	SW	Spokane	R	1989	
210032		33115	UNOCAL BULK PLANT	25	43	E	15	SW	NW	Spokane	R	1989	
210033		33115	UNOCAL BULK PLANT	25	43	E	15	SW	NW	Spokane	R	1989	
210034		33115	UNOCAL BULK PLANT	25	43	E	15	SW	NW	Spokane	R	1989	
210035		33115	UNOCAL BULK PLANT	25	43	E	15	SW	NW	Spokane	R	1989	
159883		54051	UNOCAL	25	43	E	15	SW	NW	Spokane	W	5/31/1991	
457962		AE01980	SPOKANE CO	25	43	E	15	NE	SW	Spokane	A	10/30/2006	
543689		AE03286	null Spokane County GeoEngineers inc	25	43	E	15	SE	NW	Spokane	A	5/20/2008	county right of way
543691		AE03286	null Spokane County GeoEngineers inc	25	43	E	15	SE	NW	Spokane	A	5/20/2008	county right of way
543681		AE03288	null Spokane County 0188-121-00	25	43	E	15	NE	NW	Spokane	A	5/20/2008	ROW
543683		AE03288	null Spokane County 0188-121-00	25	43	E	15	NE	NW	Spokane	A	5/20/2008	ROW
543670		AE03292	null Spokane county 0188-121-00	25	43	E	15	SE	SW	Spokane	A	5/20/2008	ROW
543671		AE03292	null Spokane county 0188-121-00	25	43	E	15	SE	SW	Spokane	A	5/20/2008	ROW
543672		AE03292	null Spokane county 0188-121-00	25	43	E	15	SE	SW	Spokane	A	5/20/2008	ROW
639027		AE07100	Hafers Investments and Sales Mactec Engineering and Consulting	25	43	E	15	NE	NW	Spokane	A	9/21/2009	35151.0803
639029		AE07100	Hafers Investments and Sales Mactec Engineering and Consulting	25	43	E	15	NE	NW	Spokane	A	9/21/2009	35151.0803
639031		AE07100	Hafers Investments and Sales Mactec Engineering and Consulting	25	43	E	15	NE	NW	Spokane	A	9/21/2009	35151.0803

Well Report ID	Well Tag	NOI Number	Well Owner	T	R	S	1/4	1/4-1/4	County	Well Type	Date Completed	Parcel	
639033		AE07100	Hafers Investments and Sales Mactec Engineering and Consulting	25	43	E	15	NE	NW	Spokane	A	9/21/2009	35151.0803
639035		AE07100	Hafers Investments and Sales Mactec Engineering and Consulting	25	43	E	15	NE	NW	Spokane	A	9/21/2009	35151.0803
639037		AE07100	Hafers Investments and Sales Mactec Engineering and Consulting	25	43	E	15	NE	NW	Spokane	A	9/21/2009	35151.0803
639039		AE07100	Hafers Investments and Sales Mactec Engineering and Consulting	25	43	E	15	NE	NW	Spokane	A	9/21/2009	35151.0803
639041		AE07100	Hafers Investments and Sales Mactec Engineering and Consulting	25	43	E	15	NE	NW	Spokane	A	9/21/2009	35151.0803
639043		AE07100	Hafers Investments and Sales Mactec Engineering and Consulting	25	43	E	15	NE	NW	Spokane	A	9/21/2009	35151.0803
838250		AE18407	Trumark Industries Landau Associates	25	43	E	15	SE	SE	Spokane	A	8/2/2012	35154.3904
832919		AE19801	Kawaljit Khahera TetraTech	25	43	E	15	SE	NW	Spokane	A	11/15/2012	35154.1504
832921		AE19801	Kawaljit Khahera TetraTech	25	43	E	15	SE	NW	Spokane	A	11/15/2012	35154.1504
832923		AE19801	Kawaljit Khahera TetraTech	25	43	E	15	SE	NW	Spokane	A	11/15/2012	35154.1504
832925		AE19801	Kawaljit Khahera TetraTech	25	43	E	15	SE	NW	Spokane	A	11/15/2012	35154.1504
836695		AE19803	Jack Brace Landau Associates	25	43	E	15	SE	SE	Spokane	A	11/26/2012	35154.3903
836697		AE19803	Jack Brace Landau Associates	25	43	E	15	SE	SE	Spokane	A	11/26/2012	35154.3903
836699		AE19803	Jack Brace Landau Associates	25	43	E	15	SE	SE	Spokane	A	11/26/2012	35154.3903
836701		AE19803	Jack Brace Landau Associates	25	43	E	15	SE	SE	Spokane	A	11/26/2012	35154.3903
836703		AE19803	Jack Brace Landau Associates	25	43	E	15	SE	SE	Spokane	A	11/26/2012	35154.3903
836705		AE19803	Jack Brace Landau Associates	25	43	E	15	SE	SE	Spokane	A	11/27/2012	35154.3903
836707		AE19803	Jack Brace Landau Associates	25	43	E	15	SE	SE	Spokane	A	11/27/2012	35154.3903
836709		AE19803	Jack Brace Landau Associates	25	43	E	15	SE	SE	Spokane	A	11/27/2012	35154.3903
836711		AE19803	Jack Brace Landau Associates	25	43	E	15	SE	SE	Spokane	A	11/27/2012	35154.3903
836713		AE19803	Jack Brace Landau Associates	25	43	E	15	SE	SE	Spokane	A	11/27/2012	35154.3903
858807		AE20076	The Haskins Company	25	43	E	15	SE	SW	Spokane	A	12/18/2012	351544201

Well Report ID	Well Tag	NOI Number	Well Owner	T	R	S	1/4	1/4-1/4	County	Well Type	Date Completed	Parcel	
858816		AE20076	The Haskins Company	25	43	E	15	SE	SW	Spokane	A	12/18/2012	351544201
858817		AE20076	The Haskins Company	25	43	E	15	SE	SW	Spokane	A	12/18/2012	351544201
858818		AE20076	The Haskins Company	25	43	E	15	SE	SW	Spokane	A	12/18/2012	351544201
858819		AE20076	The Haskins Company	25	43	E	15	SE	SW	Spokane	A	12/18/2012	351544201
896639		AE24672	PetroCard Systems~ Inc. 3 Kings Environmental~ Inc.	25	43	E	15	SW	SW	Spokane	A	11/26/2013	351532701
896641		AE24672	PetroCard Systems~ Inc. 3 Kings Environmental~ Inc.	25	43	E	15	SW	SW	Spokane	A	11/26/2013	351532701
983491		AE30711	Bottling Group LLC	25	43	E	15	SE	SW	Spokane	A	2/20/2015	351544702
983492		AE30711	Bottling Group LLC	25	43	E	15	SE	SW	Spokane	A	2/20/2015	351544702
983493		AE30711	Bottling Group LLC	25	43	E	15	SE	SW	Spokane	A	2/20/2015	351544702
983494		AE30711	Bottling Group LLC	25	43	E	15	SE	SW	Spokane	A	2/20/2015	351544702
983495		AE30711	Bottling Group LLC	25	43	E	15	SE	SW	Spokane	A	2/20/2015	351544702
983496		AE30711	Bottling Group LLC	25	43	E	15	SE	SW	Spokane	A	2/20/2015	351544702
983497		AE30711	Bottling Group LLC	25	43	E	15	SE	SW	Spokane	A	2/20/2015	351544702
983498		AE30711	Bottling Group LLC	25	43	E	15	SE	SW	Spokane	A	2/20/2015	351544702
1032352		AE32269	Pacific Steel	25	43	E	15	NW	NE	Spokane	A	6/3/2015	
1032353		AE32269	Pacific Steel	25	43	E	15	NW	NE	Spokane	A	6/3/2015	
1032354		AE32269	Pacific Steel	25	43	E	15	NW	NE	Spokane	A	6/3/2015	
1032355		AE32269	Pacific Steel	25	43	E	15	NW	NE	Spokane	A	6/3/2015	
1032356		AE32269	Pacific Steel	25	43	E	15	NW	NE	Spokane	A	6/3/2015	
1538070		AE36253	Miller	25	43	E	15	SE	SW	Spokane	A	3/2/2016	352210503
1538071		AE36253	Miller	25	43	E	15	SE	SW	Spokane	A	3/2/2016	352210503
1538074		AE36253	Miller	25	43	E	15	SE	SW	Spokane	A	3/2/2016	352210503
1538075		AE36253	Miller	25	43	E	15	SE	SW	Spokane	A	3/2/2016	352210503
1538078		AE36253	Miller	25	43	E	15	SE	SW	Spokane	A	3/2/2016	352210503
1538079		AE36253	Miller	25	43	E	15	SE	SW	Spokane	A	3/2/2016	352210503
1565278		AE37160	Chicks - BNSF	25	43	E	15	NE	SW	Spokane	A	5/5/2016	
1565279		AE37160	Chicks - BNSF	25	43	E	15	NE	SW	Spokane	A	5/5/2016	
1565280		AE37160	Chicks - BNSF	25	43	E	15	NE	SW	Spokane	A	5/5/2016	
1565285		AE37161	Chicks - BNSF	25	43	E	15	NE	SE	Spokane	A	5/6/2016	
1565286		AE37161	Chicks - BNSF	25	43	E	15	NE	SE	Spokane	A	5/6/2016	
1565287		AE37161	Chicks - BNSF	25	43	E	15	NE	SE	Spokane	A	5/6/2016	
1565288		AE37161	Chicks - BNSF	25	43	E	15	NE	SE	Spokane	A	5/6/2016	

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1588475		AE38061	Jeff - BNSF	25	43	E	15	NE	SE	Spokane	A	7/8/2016	
1588476		AE38061	Jeff - BNSF	25	43	E	15	NE	SE	Spokane	A	7/8/2016	
1588477		AE38061	Jeff - BNSF	25	43	E	15	NE	SE	Spokane	A	7/8/2016	
1588478		AE38061	Jeff - BNSF	25	43	E	15	NE	SE	Spokane	A	7/8/2016	
1588479		AE38061	Jeff - BNSF	25	43	E	15	NE	SE	Spokane	A	7/8/2016	
1588480		AE38061	Jeff - BNSF	25	43	E	15	NE	SE	Spokane	A	7/8/2016	
1588481		AE38061	Jeff - BNSF	25	43	E	15	NE	SE	Spokane	A	7/8/2016	
1588482		AE38061	Jeff - BNSF	25	43	E	15	NE	SE	Spokane	A	7/8/2016	
1588483		AE38061	Jeff - BNSF	25	43	E	15	NE	SE	Spokane	A	7/8/2016	
1588484		AE38061	Jeff - BNSF	25	43	E	15	NE	SE	Spokane	A	7/8/2016	
1656077		AE46148	Wheatley Living Trust	25	43	E	15	SW	NE	Spokane	A	11/16/2017	351530703
1656078		AE46148	Wheatley Living Trust	25	43	E	15	SW	NE	Spokane	A	11/16/2017	351530703
1656079		AE46148	Wheatley Living Trust	25	43	E	15	SW	NE	Spokane	A	11/16/2017	351530703
1656080		AE46148	Wheatley Living Trust	25	43	E	15	SW	NE	Spokane	A	11/16/2017	351530703
1656081		AE46148	Wheatley Living Trust	25	43	E	15	SW	NE	Spokane	A	11/16/2017	351530703
924470	BIT203	GE00500	Avista Corporation	25	43	E	5	SW	NW	Spokane	R	7/2/2014	ROW
924455	BIT204	GE00505	Avista Corporation	25	43	E	15	SW	NW	Spokane	R	7/8/2014	ROW
160927	ABI070	R007606	CUMMINS	25	43	E	15	NE	NE	Spokane	R	11/14/1993	
181725		R014491	JELD - WEN	25	43	E	15	SE	SW	Spokane	R	6/24/1997	
566653	AEK201	R035113	CITY OF SPOKANE	25	43	E	15	SW	NW	Spokane	R	8/14/1998	
189635	AEK201	R035113	SAJB #136236. DC. 50	25	43	E	15	SW	NW	Spokane	R	8/14/1998	
409447	AKF116	R067518	GULL IND	25	43	E	15	SW	SW	Spokane	R	3/8/2005	5052320
409449	AKF115	R067518	GULL IND	25	43	E	15	SW	SW	Spokane	R	3/10/2005	5052320
579306	ALR665	R068817	COLUMBIA PAINT AND MFG	25	43	E	15	SW	SW	Spokane	R	3/21/2006	
579307	ALR666	R068817	COLUMBIA PAINT AND MFG	25	43	E	15	SW	SW	Spokane	R	3/21/2006	
579308	ALR667	R068817	COLUMBIA PAINT AND MFG	25	43	E	15	SW	SW	Spokane	R	3/21/2006	
579309		R068817	COLUMBIA PAINT AND MFG	25	43	E	15	SW	SW	Spokane	R	3/21/2006	
579311	ALR669	R068817	COLUMBIA PAINT AND MFG	25	43	E	15	SW	SW	Spokane	R	3/21/2006	
831592	BHP492	RE07810	Jack Brace	25	43	E	15	SE	SE	Spokane	R	11/28/2012	35154.3903
831594	BHP493	RE07810	Jack Brace Landau Associates	25	43	E	15	SE	SE	Spokane	R	11/28/2012	35154.3903
831596	BHP494	RE07810	Jack Brace Landau Associates	25	43	E	15	SE	SE	Spokane	R	11/29/2012	35154.3903
831598	BHP491	RE07810	Jack Brace Landau Associates	25	43	E	15	SE	SE	Spokane	R	11/29/2012	35154.3903
253200		S004135	IELD-WER OF SPOKANE	25	43	E	15	SE	SW	Spokane	R	2000	
315855		S007702	GAA PARTNERSHIP	25	43	E	11	SW	SW	Spokane	R	9/8/2000	

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340136		S012705	L AND M TRUCK SALES	25	43	E	15	NE	NE	Spokane	R	6/26/2002	
340137		S012705	L AND M TRUCK SALES	25	43	E	15	NE	NE	Spokane	R	6/26/2002	
340138		S012705	L AND M TRUCK SALES	25	43	E	15	NE	NE	Spokane	R	6/26/2002	
366600		S012821	NABISCO INC	25	43	E	15	SW	NW	Spokane	R	7/22/2003	
366601		S012821	NABISCO INC	25	43	E	15	SW	NW	Spokane	R	7/22/2003	
366602		S012821	NABISCO INC	25	43	E	15	SW	NW	Spokane	R	7/22/2003	
448999		S027753	FRANK SAMARGIS	25	43	E	15	NW	SE	Spokane	R	2/13/2006	
577016		SE01414	CITY OF SPOKANE STRATA	25	43	E	15	NW	NW	Spokane	R	8/18/2006	
577017		SE01414	CITY OF SPOKANE STRATA	25	43	E	15	NW	NW	Spokane	R	8/18/2006	
577019		SE01414	CITY OF SPOKANE STRATA	25	43	E	15	NW	NW	Spokane	R	8/18/2006	
577021		SE01414	CITY OF SPOKANE STRATA	25	43	E	15	NW	NW	Spokane	R	8/18/2006	
577022		SE01414	CITY OF SPOKANE STRATA	25	43	E	15	NW	NW	Spokane	R	8/18/2006	
577024		SE01414	CITY OF SPOKANE STRATA	25	43	E	15	NW	NW	Spokane	R	8/18/2006	
577026		SE01414	CITY OF SPOKANE STRATA	25	43	E	15	NW	NW	Spokane	R	8/18/2006	
		null Spokane County GeoEngineers											
543693		SE02383	null Spokane County GeoEngineers	25	43	E	15	SE	NW	Spokane	R	5/20/2008	ROW
543694		SE02383	null Spokane County GeoEngineers	25	43	E	15	SE	NW	Spokane	R	5/20/2008	ROW
543685		SE02385	null Spokane County GeoEngineers	25	43	E	15	NE	NW	Spokane	R	5/20/2008	ROW
543687		SE02385	null Spokane County GeoEngineers	25	43	E	15	NE	NW	Spokane	R	5/20/2008	ROW
543673		SE02388	null Spokane County GeoEngineers	25	43	E	15	SE	SW	Spokane	R	5/20/2008	ROW
543674		SE02388	null Spokane County GeoEngineers	25	43	E	15	SE	SW	Spokane	R	5/20/2008	ROW
543676		SE02388	null Spokane County GeoEngineers	25	43	E	15	SE	SW	Spokane	R	5/20/2008	ROW
662522		SE06828	Wayne Gibson SWR Partnership Millenium Science & Engineering	25	43	E	15	NE	NE	Spokane	R	3/25/2010	35151.1103
662524		SE06828	Wayne Gibson SWR Partnership Millenium Science & Engineering	25	43	E	15	NE	NE	Spokane	R	3/25/2010	35151.1103

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662526		SE06828	Wayne Gibson SWR Partnership Millenium Science & Engineering	25	43	E	15	NE	NE	Spokane	R	3/25/2010	35151.1103
662528		SE06828	Wayne Gibson SWR Partnership Millenium Science & Engineering	25	43	E	15	NE	NE	Spokane	R	3/25/2010	35151.1103
662530		SE06828	Wayne Gibson SWR Partnership Millenium Science & Engineering	25	43	E	15	NE	NE	Spokane	R	3/25/2010	35151.1103
723600		SE09376	Kawaljit	25	43	E	15	SE	NW	Spokane	R	3/25/2011	
723598		SE09376	Kawaljit Allwest	25	43	E	15	SE	NW	Spokane	R	3/28/2011	
723604		SE09376	Kawaljit Allwest	25	43	E	15	SE	NW	Spokane	R	3/25/2011	
723606		SE09376	Kawaljit Allwest	25	43	E	15	SE	NW	Spokane	R	3/25/2011	
723608		SE09376	Kawaljit Allwest	25	43	E	15	SE	NW	Spokane	R	3/25/2011	
723610		SE09376	Kawaljit Allwest	25	43	E	15	SE	NW	Spokane	R	3/25/2011	
723612		SE09376	Kawaljit Allwest	25	43	E	15	SE	NW	Spokane	R	3/25/2011	
838251		SE45908	Trumark Industries Landau Associates	25	43	E	15	SE	SE	Spokane	R	8/2/2012	351543904
832911		SE46773	Kawaljit Khahera TetraTech	25	43	E	15	SE	NW	Spokane	R	11/15/2012	35154.1504
832913		SE46773	Kawaljit Khahera TetraTech	25	43	E	15	SE	NW	Spokane	R	11/15/2012	35154.1504
832915		SE46773	Kawaljit Khahera TetraTech	25	43	E	15	SE	NW	Spokane	R	11/15/2012	35154.1504
832917		SE46773	Kawaljit Khahera TetraTech	25	43	E	15	SE	NW	Spokane	R	11/15/2012	35154.1504
836418		SE46774	Jack Brace	25	43	E	15	SE	SE	Spokane	R	11/27/2012	35154.3903
836403		SE46774	Jack Brace Landau Associates	25	43	E	15	SE	SE	Spokane	R	11/26/2012	35154.3903
836405		SE46774	Jack Brace Landau Associates	25	43	E	15	SE	SE	Spokane	R	11/26/2012	35154.3903
836407		SE46774	Jack Brace Landau Associates	25	43	E	15	SE	SE	Spokane	R	11/26/2012	35154.3903
836409		SE46774	Jack Brace Landau Associates	25	43	E	15	SE	SE	Spokane	R	11/26/2012	35154.3903
836411		SE46774	Jack Brace Landau Associates	25	43	E	15	SE	SE	Spokane	R	11/26/2012	35154.3903
836413		SE46774	Jack Brace Landau Associates	25	43	E	15	SE	SE	Spokane	R	11/27/2012	35154.3903
836415		SE46774	Jack Brace Landau Associates	25	43	E	15	SE	SE	Spokane	R	11/27/2012	35154.3903
836417		SE46774	Jack Brace Landau Associates	25	43	E	15	SE	SE	Spokane	R	11/27/2012	35154.3903
836420		SE46774	Jack Brace Landau Associates	25	43	E	15	SE	SE	Spokane	R	11/27/2012	35154.3903
858797		SE46983	The Haskins Company	25	43	E	15	SE	SW	Spokane	R	12/18/2013	351544201
858799		SE46983	The Haskins Company	25	43	E	15	SE	SW	Spokane	R	12/18/2013	351544201
858801		SE46983	The Haskins Company	25	43	E	15	SE	SW	Spokane	R	12/18/2013	351544201

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858803		SE46983	The Haskins Company	25	43	E	15	SE	SW	Spokane	R	12/18/2013	351544201
858805		SE46983	The Haskins Company	25	43	E	15	SE	SW	Spokane	R	12/18/2013	351544201
896635		SE49959	PetroCard Systems~ Inc. 3 Kings Environmental~ Inc.	25	43	E	15	SW	SW	Spokane	R	11/26/2013	351532701
896637		SE49959	PetroCard Systems~ Inc. 3 Kings Environmental~ Inc.	25	43	E	15	SW	SW	Spokane	R	11/26/2013	351532701
983483		SE53962	Bottling Group LLC	25	43	E	15	SE	SW	Spokane	R	2/20/2015	351544702
983484		SE53962	Bottling Group LLC	25	43	E	15	SE	SW	Spokane	R	2/20/2015	351544702
983485		SE53962	Bottling Group LLC	25	43	E	15	SE	SW	Spokane	R	2/20/2015	351544702
983486		SE53962	Bottling Group LLC	25	43	E	15	SE	SW	Spokane	R	2/20/2015	351544702
983487		SE53962	Bottling Group LLC	25	43	E	15	SE	SW	Spokane	R	2/20/2015	351544702
983488		SE53962	Bottling Group LLC	25	43	E	15	SE	SW	Spokane	R	2/20/2015	351544702
983489		SE53962	Bottling Group LLC	25	43	E	15	SE	SW	Spokane	R	2/20/2015	351544702
983490		SE53962	Bottling Group LLC	25	43	E	15	SE	SW	Spokane	R	2/20/2015	351544702
1032337		SE54983	Pacific Steel	25	43	E	15	NW	NE	Spokane	R	6/3/2015	
1032338		SE54983	Pacific Steel	25	43	E	15	NW	NE	Spokane	R	6/3/2015	
1032339		SE54983	Pacific Steel	25	43	E	15	NW	NE	Spokane	R	6/3/2015	
1032340		SE54983	Pacific Steel	25	43	E	15	NW	NE	Spokane	R	6/3/2015	
1032341		SE54983	Pacific Steel	25	43	E	15	NW	NE	Spokane	R	6/3/2015	
1538068		SE57597	Miller	25	43	E	15	SE	SW	Spokane	R	3/2/2016	352210503
1538069		SE57597	Miller	25	43	E	15	SE	SW	Spokane	R	3/2/2016	352210503
1538072		SE57597	Miller	25	43	E	15	SE	SW	Spokane	R	3/2/2016	352210503
1538073		SE57597	Miller	25	43	E	15	SE	SW	Spokane	R	3/2/2016	352210503
1538076		SE57597	Miller	25	43	E	15	SE	SW	Spokane	R	3/2/2016	352210503
1538077		SE57597	Miller	25	43	E	15	SE	SW	Spokane	R	3/2/2016	352210503
1565275		SE58208	Chicks - BNSF	25	43	E	15	NE	SW	Spokane	R	5/5/2016	
1565276		SE58208	Chicks - BNSF	25	43	E	15	NE	SW	Spokane	R	5/5/2016	
1565277		SE58208	Chicks - BNSF	25	43	E	15	NE	SW	Spokane	R	5/5/2016	
1565281		SE58209	Chicks - BNSF	25	43	E	15	NE	SE	Spokane	R	5/6/2016	
1565282		SE58209	Chicks - BNSF	25	43	E	15	NE	SE	Spokane	R	5/6/2016	
1565283		SE58209	Chicks - BNSF	25	43	E	15	NE	SE	Spokane	R	5/6/2016	
1565284		SE58209	Chicks - BNSF	25	43	E	15	NE	SE	Spokane	R	5/6/2016	
1588465		SE58811	Jeff - BNSF	25	43	E	15	NE	SE	Spokane	R	7/8/2016	
1588466		SE58811	Jeff - BNSF	25	43	E	15	NE	SE	Spokane	R	7/8/2016	

Well Report ID	Well Tag	NOI Number	Well Owner	T	R	S	1/4	1/4-1/4	County	Well Type	Date Completed	Parcel	
1588467		SE58811	Jeff - BNSF	25	43	E	15	NE	SE	Spokane	R	7/8/2016	
1588468		SE58811	Jeff - BNSF	25	43	E	15	NE	SE	Spokane	R	7/8/2016	
1588469		SE58811	Jeff - BNSF	25	43	E	15	NE	SE	Spokane	R	7/8/2016	
1588470		SE58811	Jeff - BNSF	25	43	E	15	NE	SE	Spokane	R	7/8/2016	
1588471		SE58811	Jeff - BNSF	25	43	E	15	NE	SE	Spokane	R	7/8/2016	
1588472		SE58811	Jeff - BNSF	25	43	E	15	NE	SE	Spokane	R	7/8/2016	
1588473		SE58811	Jeff - BNSF	25	43	E	15	NE	SE	Spokane	R	7/8/2016	
1588474		SE58811	Jeff - BNSF	25	43	E	15	NE	SE	Spokane	R	7/8/2016	
1656072		SE64208	Wheatley Living Trust	25	43	E	15	SW	NE	Spokane	R	11/16/2017	351530703
1656073		SE64208	Wheatley Living Trust	25	43	E	15	SW	NE	Spokane	R	11/16/2017	351530703
1656074		SE64208	Wheatley Living Trust	25	43	E	15	SW	NE	Spokane	R	11/16/2017	351530703
1656075		SE64208	Wheatley Living Trust	25	43	E	15	SW	NE	Spokane	R	11/16/2017	351530703
1656076		SE64208	Wheatley Living Trust	25	43	E	15	SW	NE	Spokane	R	11/16/2017	351530703
154360		W014493	JELD - WEN ATTN: KAREN OLSEN	25	43	E	15	SE	NW	Spokane	W	6/24/1997	
296036	ABJ967	R14398	CUMMINS QIEND	25	43	E	15	NE	NE	Spokane	R	10/18/1994	
565975		8393	DAMES & MOORE	25	43	E	14	NW	SW	Spokane	R	10/3/1989	
153853			INDUSTRIAL AIR PRODUCTS CO.	25	43	E	15	NE	NE	Spokane	W	11/11/1949	
906167			Old Union Stockyards Co.	25	43	E	15	NE	SW	Spokane	W	1/18/1947	
565973		33109	THUNDERBIRD LUBRICATIONS	25	43	E	15	SW	SW	Spokane	R	9/28/1989	
159777			TRUMARK INDUSTRIES	25	43	E	15	SE	SE	Spokane	W	9/21/1976	
565977		33115	UNOCAL	25	43	E	15	SW	NW	Spokane	R	5/19/1989	
906131			White Pine Sash Co	25	43	E	15	SE	NW	Spokane	W	12/15/1947	

Washington State Department of Ecology
Water Resources Program

Mason County Well Location Accuracy Study
Completed by Andrea Lauden on July 15, 2019

Introduction

The purpose of this study is to quantify the accuracy of Public Land Survey System (PLS; reported as township, range, section, $\frac{1}{4}$ and $\frac{1}{4}\text{-}\frac{1}{4}$) locations, within Mason County, as reported on well reports in Department of Ecology's (Ecology) Well Report Database. Property owners, well drillers, and environmental planners frequently use Ecology's Well Report Viewer, which typically displays well locations at the $\frac{1}{4}\text{-}\frac{1}{4}$ centroid of their PLS location. This study stems from discussions between Ecology, the Squaxin Island Tribe, and Mason County regarding the importance of well report location accuracy for these users. This study began in March of 2019, and is based on the data available at that time. It is a continuation of a state-wide well report PLS location accuracy study completed in November of 2018 by Andrea Lauden.

Summary

Ecology examined well report locations in Mason County to derive well location accuracy statistics. The accuracy of PLS locations on a random sample of 187 water well reports from Mason County was analyzed, and this data was then broken down by decade, WRIA, and drilling company. Only 79% of the locations could be verified. Of those, 70% were reported correctly and 30% were reported incorrectly. The majority of errors are in the reported $\frac{1}{4}$ and/or $\frac{1}{4}\text{-}\frac{1}{4}$, not the township, range or section. PLS location errors peaked in the 1990s, when the highest number of reports were received, and have declined since then. Miskeyed errors have increased over the past few decades but the miskeyed error rate is lower than that of reported errors. The majority of well reports were located within WRIA 14, which had the highest reporting error rate. The drilling company with the highest reported location error rate was Arcadia Drilling Inc. A likely cause of PLS location errors is confusion with the PLS system, especially in recent decades as other location information such as parcel number, street address, and possibly latitude/longitude are more widely used by well drillers.

Method

Ecology's database contains 8,910 water well reports in Mason County, excluding dewatering well reports. Two hundred well reports were randomly selected for this study using the RAND function in Microsoft Excel, then group water systems and one well report with an incorrectly reported county were excluded, for a total of 187 reports (2.1% of the all the water well reports in Mason County, excluding dewatering wells).

The PLS locations reported on each of the 187 well reports were analyzed for accuracy by comparing the PLS location to other location information on the well report, including but not limited to: parcel number, well street address, property owner address, property owner name, and project name. This information was verified using Ecology's Well Report Database and Mason

County Assessor's public property records, which include previous property owners but no well information. The well reports were categorized as follows:

Cannot Verify: the PLS location could not be verified using the County Assessor's public property records and NOI and well report location information.

Reported Correctly: the reported PLS location was verified as correct.

Reported Correctly but Missing ¼ or ¼-¼: the township, range and section were reported correctly, the ¼-¼ or ¼ were not reported at all, and the reported PLS location was verified as correct. If the ¼ and ¼-¼ could be verified, they were added to the database record (highlighted light green in Appendix A).

Miskeyed: the PLS location in the database record (as transcribed from the well report by Ecology) does not match the PLS location written on the well report, and the PLS location on the well report was verified and found to be correct. The database record was then corrected (as highlighted orange in Appendix A).

Reported Incorrectly: the verified PLS location was a different PLS location than was reported on the well report. The correct PLS location was noted for later correction in the database (highlighted yellow in Appendix A). The scale of the location errors, i.e. the distances of the reported PLS locations from the correct PLS locations, were then further analyzed:

¼ or ¼-¼ Reported Incorrectly: the correct PLS location was within the same section as the reported PLS location i.e. the error was in the reporting of the ¼ or ¼-¼.

TRS Reported Incorrectly: the PLS location error was in the reporting of the township, range, or section.

Parcel data on the well reports were analyzed to better understand the rate of reporting this data, and the accuracy of the reported parcels. The reports were categorized as follows:

Reported Correctly: Parcel included on the well report was verified as correct with the County Assessor's public property records.

Reported Incorrectly: Parcel included on the well report was verified as incorrect with the County Assessor's public property records (as highlighted yellow in Appendix A).

Miskeyed: Parcel in the database record (as transcribed from the well report by Ecology) does not match the parcel written on the well report, and the parcel on the well report was verified as correct. The database record was then corrected (as highlighted orange in Appendix A).

Unreported; Found in County Records: Parcel not included on well report, but verified with the County Assessor's public property records (as highlighted light green in Appendix A).

Parcel Not Verified: Parcel not included on well report, and could not be located. Some of these parcels could not be verified even though the PLS location was verified, because

several possible parcel matches were located within the verified PLS location, so one parcel could not be definitively identified.

Other information on the well report used for analysis in this study was not always available in the database record and was found by viewing the well report itself. A total of 24 well reports in this study were initially missing a date of well construction in their database record, of which all but 2 ('Completed Date' field highlighted light green in Appendix A) could be added from the date reported on the well report. The drilling company that submits a well report is not a field in the well report database and therefore required manually populating in this study by adding this information from the well report.

Findings and Analysis

The result of the accuracy analysis of all well reports is represented in Figure 1, and the result of the accuracy analysis of verified well locations (excluding the Cannot Verify category) is represented in Figure 2. Overall, 40 reported PLS locations could not be verified ('Cannot Verify'), of which all 40 had no reported parcel number and 33 had no reported street name or address to use for PLS location verification.

The Reported Correctly, Reported Correctly but Missing $\frac{1}{4}$ and $\frac{1}{4}-\frac{1}{4}$, and Miskeyed categories are shades of blue to group the well reports that were verified as correct. The $\frac{1}{4}-\frac{1}{4}$ Reported Incorrectly and TRS Reported Incorrectly categories are shades of green to group the well reports that were verified as incorrect.

Table 1

	Total	% of Total Well Reports	% of Verified Well Reports
Reported Correctly	80	43%	56%
Reported Correctly but Missing $\frac{1}{4}$ or $\frac{1}{4}-\frac{1}{4}$	11	6%	8%
Miskeyed	8	4%	6%
Total Reported Correctly	99	53%	70%
$\frac{1}{4}$ or $\frac{1}{4}-\frac{1}{4}$ Reported Incorrectly	35	19%	25%
TRS Reported Incorrectly	13	7%	9%
Total Incorrectly Reported	48	26%	30%
Cannot Verify	40	21%	N/A

Figure 1

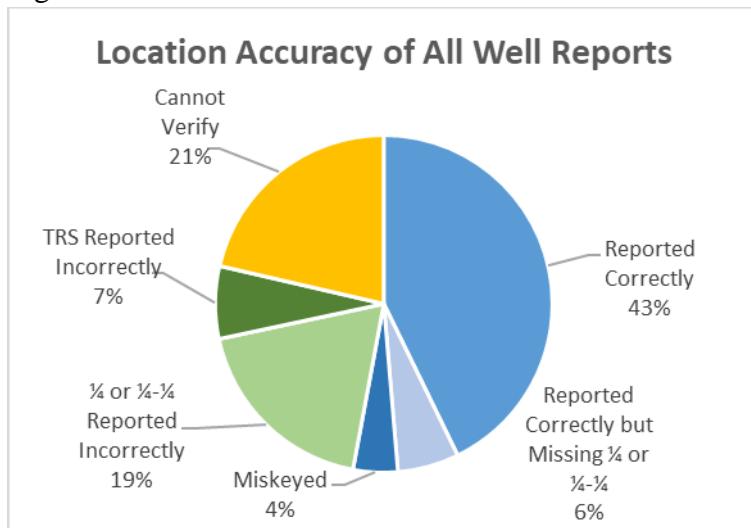
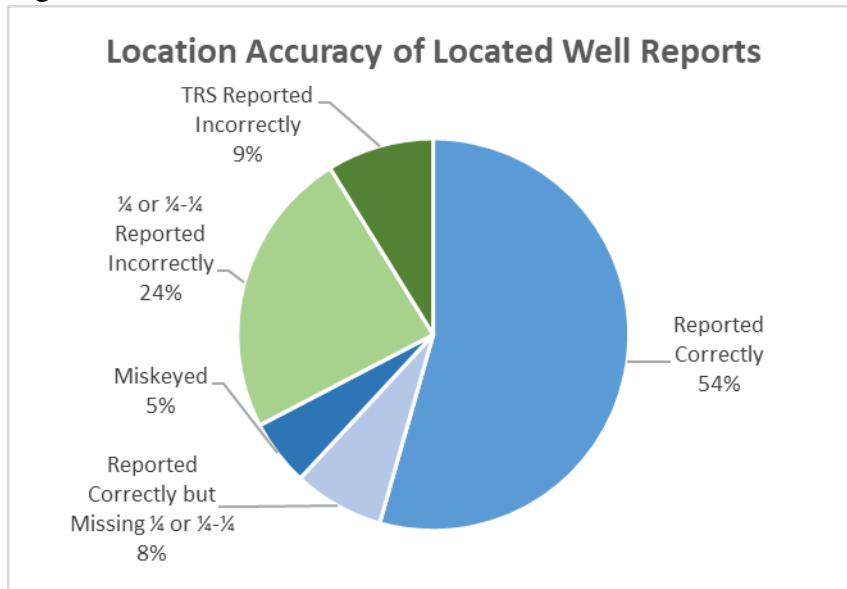


Figure 2



Accuracy by Decade

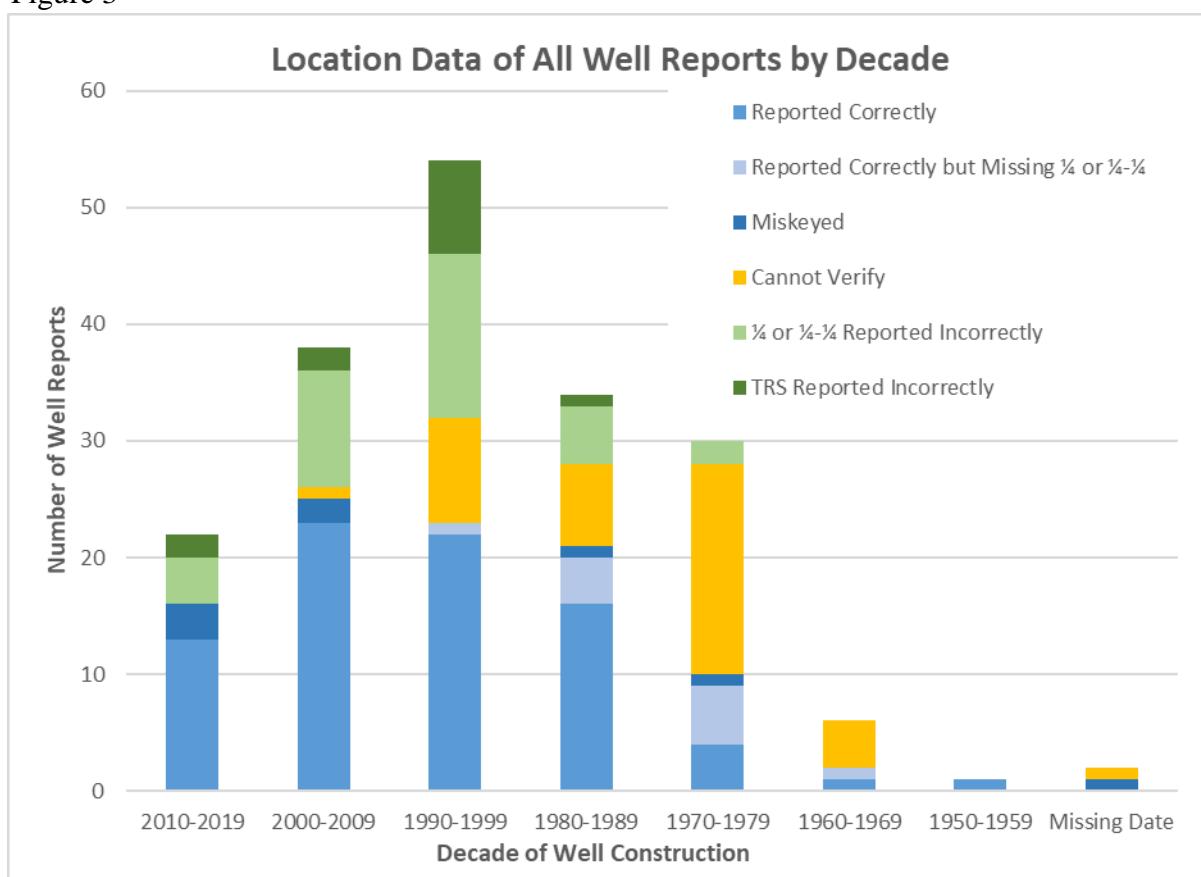
Several trends in location reporting are visible when looking at all the well reports by category over the decade in which the well was constructed (Table 2 and Figure 3). Rates of reported location errors (Reported Incorrectly) and unverifiable reported locations (Cannot Verify) have decreased over time, and the rate of miskeyed locations has generally increased over time. The decade with the highest rate of miskeyed errors (14%) is the 2010s, which is significantly higher than the rate of miskeyed locations for all well reports (4%).

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Table 2

	2010s	2000s	1990s	1980s	1970s	1960s	1950s	Missing Date
Total Well Reports	22	38	54	34	30	6	1	2
% of All Well Reports	12%	20%	29%	18%	16%	3%	1%	1%
Reported Correctly	59%	61%	41%	47%	13%	17%	100%	0%
Reported Correctly but Missing ¼ or ¼-½	0%	0%	2%	12%	17%	17%	0%	0%
Miskeyed	14%	5%	0%	3%	3%	0%	0%	50%
Total Reported Correctly	73%	66%	43%	62%	33%	33%	100%	50%
¼ and ¼-½ Error Rate	18%	26%	26%	15%	7%	0%	0%	0%
TRS Error Rate	9%	5%	15%	3%	0%	0%	0%	0%
Total Reported Incorrectly	27%	32%	41%	18%	7%	0%	0%	0%
Cannot Verify	0%	3%	17%	21%	60%	67%	0%	50%

Figure 3



Of all the 8,910 water well reports in Ecology's Well Report Database constructed in Mason County, 29% were drilled in the 1990s. However, 14% of total reports do not include a date of construction in their database record. Likewise, 29% of the reports in this study were also constructed in the 1990s, and 13% of well reports in this study do not include a date of construction in their database record. The majority of these dates were reported on the actual well report, but not keyed into the database record.

Several changes in well location reporting occurred in this decade due to the filing of Washington Administration Code (WAC) 173-160-141, “What are the requirements regarding water well reports?” in 1998. This WAC required additional information to be included on water well reports, including parcel number. Well reports from earlier decades appear to have more accurate PLS locations but less supporting location information such as a parcel number with which to verify the location due to there being no reporting requirement of this supporting location information. The 0% PLS location error rate in the 1950s and 1960s are likely due to several factors. Due to the limited sample size from those decades, further analysis could be beneficial.

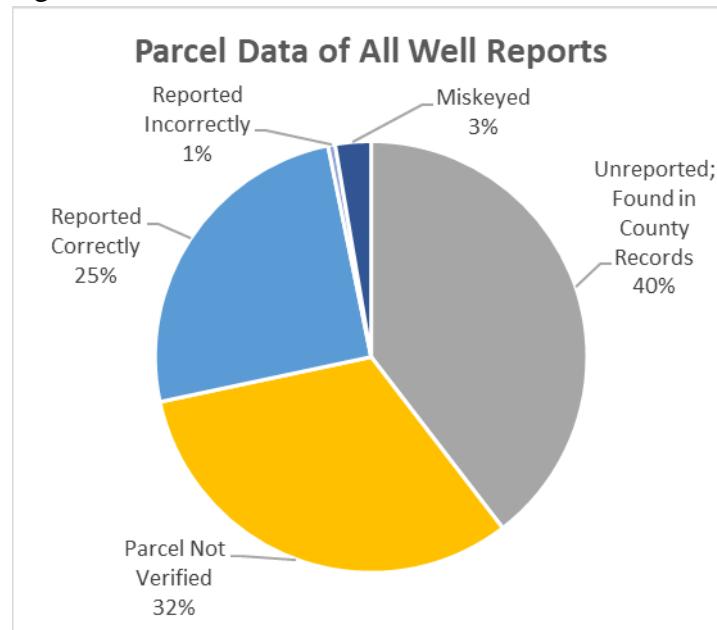
Parcel Data Analysis

72% of well reports had no parcel number reported, but 40% could be found using the County Assessor’s public property records (Table 3 and Figure 4).

Table 3

	Number of Well Reports	% of Total Well Reports
Reported Correctly	47	25%
Miskeyed	5	3%
Reported Incorrectly	1	<1%
Parcel Not Verified	60	32%
Unreported; Found in County Records	74	40%

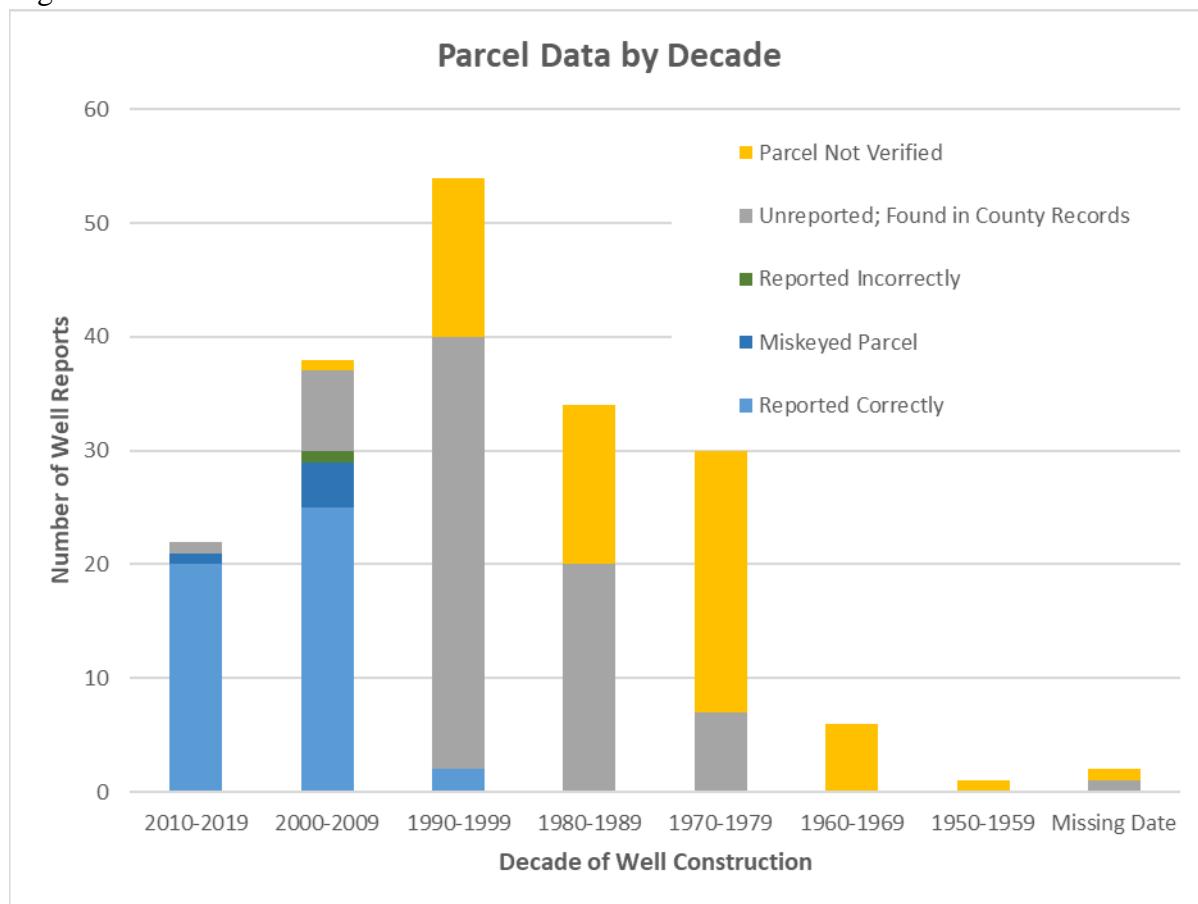
Figure 4



The results of this parcel data study are further studied in Figure 5 by the decade in which they were received. As mentioned previously, the regulation requiring drillers to include parcel numbers on water well reports, WAC 173-160-141, was adopted in 1998. According to this

Mason County study, this regulation was not consistently enforced for many years, though every well report within the last decade except one was reported correctly. A total of 48% of the parcels of wells constructed in or before 1998 (58 well reports), including all wells drilled before 1974 (12 well reports), could not be verified due to the lack of other location information reported, or due to the changes in property ownership since the date of construction.

Figure 5



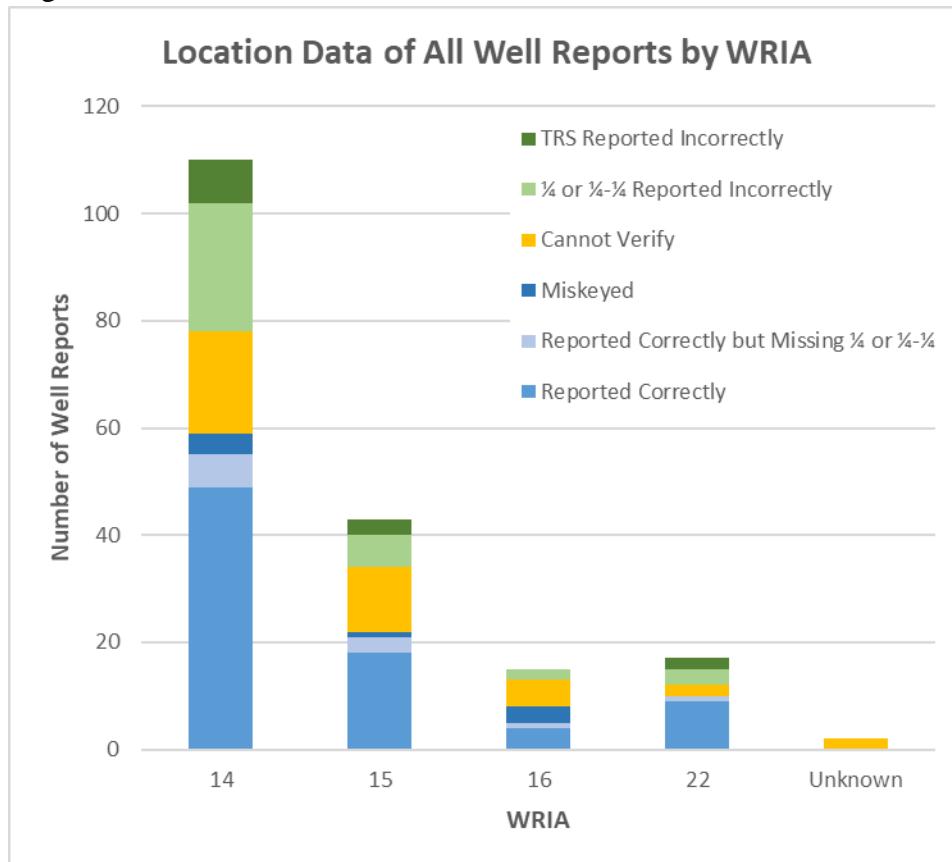
WRIA Data Analysis

Mason County includes parts of WRIs 14, 15, 16, and 22. Table 4 and Figure 7 display the results of this study by WRIA. Only five of the well reports were not assigned to a WRIA in their database record, and three of those could be verified and added. Two well reports that could not be verified did not include a WRIA ('Unknown' field). Shelton, the largest city in Mason County, is in WRIA 14. The majority of water well reports in this study are located in WRIA 14 due to the large population in and around Shelton. WRIA 14 also has the highest rate of location errors. WRIA 16 has both the lowest rate of location errors and the highest rate of well reports that could not be located. The sample size for WRIs 16 and 22 are small, so these results could benefit from further analysis.

Table 4

	WRIA	14	15	16	22	Unknown
Number of Well Reports	110	43	15	17	2	
% of Total Well Reports	59%	23%	8%	9%	1%	
Reported Correctly	45%	43%	27%	53%	0%	
Reported Correctly but Missing ¼ or ¼-½	6%	7%	7%	6%	0%	
Miskeyed	4%	2%	20%	0%	0%	
Total Reported Correctly	55%	52%	53%	59%	0%	
¼ or ¼-½ Reported Incorrectly	22%	14%	13%	18%	0%	
TRS Reported Incorrectly	7%	7%	0%	12%	0%	
Total Incorrectly Reported	30%	21%	13%	29%	0%	
Cannot Verify	18%	29%	33%	12%	100%	

Figure 7



Drilling Company Data Analysis

Arcadia Drilling Inc. submitted 14% of well reports in this study, and likely a much higher percent of all water well reports in Mason County, because there are 1,782 well reports (20% of the 8910 total) that were submitted by Arcadia in Ecology's NOI database, which does not

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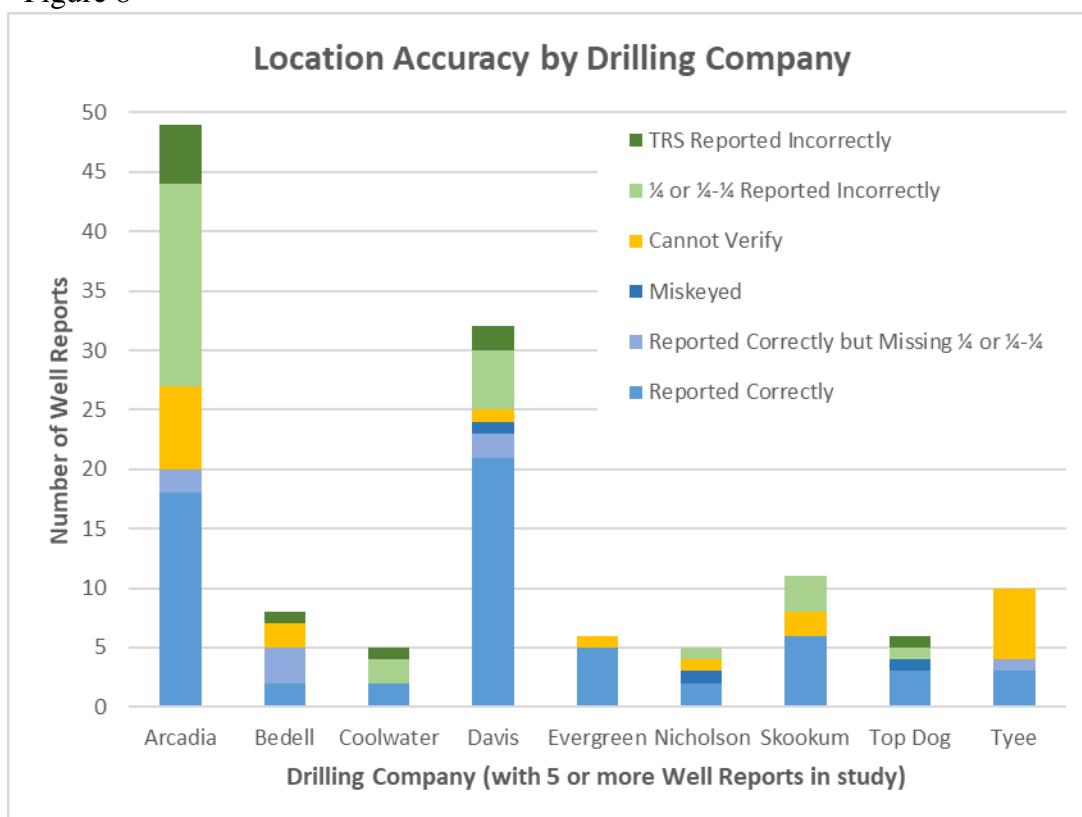
include well reports submitted before NOIs were required by RCW 18.104.048 in 1987. The earliest well reports in the NOI database from Arcadia were submitted in 1993, however, and several well reports in the study from Arcadia were submitted in the 1970s, indicating that Arcadia likely submitted more than 20% of water well reports in Mason County.

Bedell Pump and Drilling Co. and Tyee Well Drilling Co. Inc., companies that operated pre-1990, have the highest rate of well reports that could not be verified. However, this reflects the accuracy rates of all well reports in the pre-1990 decades, and can therefore likely be attributed to common issues and not a unique problem within the companies.

Table 5

	Arcadia	Bedell	Coolwater	Davis	Evergreen	Nicholson	Skookum	Top Dog	Tyee
% of All Well Reports	14%	4%	1%	13%	3%	2%	4%	2%	5%
Total Incorrectly Reported	45%	13%	60%	22%	0%	20%	27%	33%	0%
Total Correctly Reported	41%	63%	40%	75%	83%	60%	55%	67%	40%
Cannot Verify	14%	25%	0%	3%	17%	20%	18%	0%	60%

Figure 8



Conclusion

Only 79% of the well report PLS locations could be verified. Of those, 70% were reported correctly and 30% were reported incorrectly. Because many locations could not be verified, it is not possible to quantify the actual error rate of all water well reports in Mason County based on this study. Depending on the number of the ‘Cannot Verify’ reports that are located correctly, the error rate could be as low as 26%, if the ‘Cannot Verify’ reports are all located correctly, and as high as 47% (26%+21%), if they are all located incorrectly.

Because all the PLS locations of well reports from the 2010s could be verified, this decade has an actual error rate of 27%. This increase in ability to verify locations is largely due to (the enforcement of) the requirement to include parcel data and street address on well reports.

PLS location errors are higher in the 1990s-2010s than in previous decades. This could be explained by the decline in well drillers’ reliance on PLS locations in their work. Instead, drillers increasingly depend on parcel or street address location data, and more recently, latitude and longitude. However, the number of well reports that could not be verified decreased as the number of errors increased, and these trends could be related. If a greater number of locations that could not be verified are also incorrect, then the error rate in earlier decades could be much higher. It is not possible to explain this difference in error rate over time without further analysis.

Potential Follow-Up Actions

Recommended further studies, for a deeper analysis of location reporting accuracy, include:

- Reduce the ‘Cannot Verify’ rate by verifying locations with additional resources, such as field checking or accessing the County Assessor’s older records (not publicly available), for a more conclusive error rate.
- Study the relationship between PLS locations and reported latitude and longitude on well reports.
- Analyze the location accuracy of electronically submitted well reports through Ecology’s Well Report Gateway, which are uploaded directly to the Well Report Database.

Steps that Ecology could take to improve location accuracy on well reports include:

- Require latitude and longitude on well reports in order to provide verifiable location information that does not change in the way that addresses, parcels, and property owners do, and is likely now more familiar to drillers than PLS location.
- Provide an interactive mapping tool on the online NOI form for drillers to locate their drilling site, to auto-populate a PLS location and add latitude and longitude coordinates from this mapped location. This tool could also be used for well reporting.
- Target technical assistance and compliance efforts towards drilling companies with higher error rates, where possible.
- Create a process for Ecology staff processing well reports to clearly document drilling companies’ location reporting errors for identify opportunities for further training on location reporting.

Well Location Accuracy Study of Water Wells in Mason County Appendix A

Raw data was queried from Ecology's Well Report Database on March 7, 2019.

Yellow = Misreported (fixed)			Orange = Error in Ecology Database - Miskeyed (fixed)			Green = Not in Database Record (added)					
WELL LOG ID	WELL TAG	COMPLETED DATE	WELL OWNER	WELL ADDRESS	T	R	S	Q	QQ	TAX PARCEL	WRIA
				Reported Correctly							
1601952	NULL	10/17/1995	STEVEN SIMS	1141 AGATE LOOP ROAD	20 N	3 W	14 NW	SE		NULL	14
277442 ABQ754	NULL	11/13/1996	BRUCE MCLENDON	NULL	21 N	2 W	25 NE	NW		221257600030	14
1660831 AFN991	WE30098	1/1/2018	TIMOTHY GARRETT	4060 E Grapeview Loop Rd	21 N	1 W	8 NW	NW		121082200050	14
1644007 BTJ918	W359629	8/8/2017	Evan and Tinaya Smith	611 SE Ellis Rd	19 N	3 W	3 NW	NE		319032150010	14
1596331 BJM368	WE25368	9/28/2016	Oliver Lyon	3710 W Cloquallum Rd	19 N	4 W	1 NW	NW		419017500050	14
936470 BIH082	W354030	6/13/2014	JAMES NICHOLS	1260 E Razor RD	22 N	1 W	7 NW	SE		122077500260	14
810641 BHH135	WE14611	7/20/2012	Damon Ernst	Hwy 106, Union 98592	22 N	3 W	36 NW	SW		322365100032	14
676509 ABF994	W236894	7/29/2010	NATHAN WARD	GRAPEVIEW LOOP RD, ALLYN 98524	21 N	1 W	5 NW	NE		121055116001	14
643620 BAR104	W240290	3/5/2010	MIKE OBLIZALO	8830 E SR 106	22 N	3 W	35 SW	NE		322353200070	14
643624 BBE139	WE11094	2/26/2010	JEANNINE EDWARDS	HARTSTINE ISLAND RD S, SHELTON							
869252 APN994	W249618	3/25/2008	WALTER SCOTT	98584	20 N	1 W	30 SW	NW		120303290013	14
434176 ALG457	W214773	2/10/2006	JUSTIN RUGGLES	ORCHID LN E, GRAPEVIEW 98546	21 N	2 W	23 NE	NE		221231000010	14
				170 E FOX RUN, GRAPEVIEW 98546	21 N	2 W	13 NW	NW		22113-76-00060	14
411919 AKK556	W189038	7/11/2005	JOHN AND PAMELA KRUEGER	530 SE BREWER RD, SHELTON	19 N	3 W	8 SW	NE		319083190042	14
401839 ALB224	W186121	1/19/2005	TOM BALL	STRONG RD, SHELTON 98584	21 N	2 W	33 NE	NW		22133-12-90002	14
				WINTERWOOD RD, GRAPEVIEW							
398770 AHR458	W178539	9/30/2004	HERMANN SOMMER	98546	21 N	1 W	18 NE	SE		12118-11-90130	14
389151 AKA697	W181521	7/1/2004	ROBERT AND FAITH DAMON	KAMILCHE POINT RD, SHELTON	19 N	3 W	10 NE	SE		319101400023	14
387432 AKA694	W181512	6/28/2004	BOB AND JEANNE SUNDER	KAMILCHE POINT RD, SHELTON	19 N	3 W	10 NE	SE		319101400021	14
347884 AGE701	W159438	10/23/2002	STEPHEN JOHNSON INC	CRONQUIST RD, ALLYN	22 N	1 W	32 SE	NW		12232-40-90102	14
322160 AFT765	W157889	11/23/2001	PAUL HUNTER	CALIFORNIA DR, SHELTON	21 N	4 W	20 NW	SW		421202000000	14
318690 AGH189	W157867	10/18/2001	DOUG JOHNSON	6744 LYNCH RD, SHELTON	20 N	2 W	31 SE	SE		220315200013	14
312919 AFR367	W125238	9/15/2001	CYRIL ORME	SE 130 SELLS DR, SHELTON, 98584	19 N	3 W	2 SE	SW		31902-43-90030	14
				1380 W HIGHLAND RD, SHELTON,							
301648 AEG633	W129427	1/23/2000	THOM YORK	98584	20 N	5 W	24 NE	NE		520241200000	14
250090 AFB162	W124751	1/10/2000	SALAPKA, JOHN	OFF LYNCH ROAD, SHELTON	19 N	3 W	9 NE	NW		319097600060	14
250913 ACY832	W093187	10/8/1999	STEWART SAWYER	STRETCH IS RD SOUTH	21 N	1 W	8 SE	SW		12108-43-00110	14
43378 ACY593	W089431	11/18/1998	PAT CRADDICK	SE 321 CRADDICK RD, SHELTON	19 N	3 W	29 NE	SW		319291300040	14
				E 2860 PHILLIPS LAKE LP, SHELTON,							
42348 ABQ843	W075669	11/10/1997	JEFFREY DIETZ	98584	20 N	2 W	5 NE	NW		22005-52-00060	14
42912 ACI829	W075726	3/18/1997	BRUCE MARTIN	E 4251 HWY 3, SHELTON, 98584	20 N	3 W	3 NE	SE		32003-14-00040	14
				E 111 CAPITOL PEAK DR, SHELTON,							
55652 ACD888	W071707	10/12/1996	BARRY GESCHE	98584	21 N	3 W	30 SE	NE		32130-75-90091	14
55174 ABQ716	W066415	9/20/1996	KAREN M BEATTY	W. 3061 HIGHLAND RD, SHELTON	20 N	5 W	26 SE	NE		52026-41-00030	14
				TIMBER TIDES DR, LOT 14, UNION							
580469 ABZ697	W060273	8/30/1996	LARRY SIMA	98592	22 N	3 W	35 SE	SW		32235-75-90141	14
				HARSTENE ISLAND RD N, SHELTON,							
51105 NULL	W073462	12/1/1995	PATRICK BERRY	98584	21 N	2 W	35 NE	SE		22135-14-01010	14
54862 ABG066	W054526	9/8/1994	JEFF RODGERS	NULL	21 N	2 W	12 NE	SW		22112-78-00130	14
34753 NULL	NULL	6/25/1993	DICK YOHN	W 252 CLARK RD, SHELTON	20 N	3 W	31 NW	NE		32031-22-00010	14
53017 NULL	58529	9/9/1992	SUE CHAMBERLAIN	E 1440 MASON LAKE DR	21 N	2 W	7 SE	SE		22107-50-00035	14
35989 NULL	64603	6/1/1991	GORDON REED	161 Tottlyn Rd	20 N	2 W	32 NW	SW		NULL	14
35107 NULL	26155	6/16/1989	ED MORTIMER	TOTEN SHORES	20 N	2 W	31 SE	SW		NULL	14
38393 NULL	NULL	3/12/1989	MIKE GARRETT	SE Totten Shores Rd	20 N	2 W	31 SE	SW		NULL	14
33365 NULL	NULL	2/28/1988	BILL WHITE	NULL	19 N	4 W	1 NE	NW		419011200012	14
32935 NULL	NULL	1/10/1988	ALICE KOCK	NULL	20 N	3 W	25 NW	SE		320255000044	14
44016 NULL	NULL	3/18/1987	ANN OLLI	2230 W Shelton Valley Rd	20 N	4 W	34 NE	NW		420341200000	14
34973 NULL	NULL	9/1/1983	DOUG VAZQUEZ	2102-2211 W Cloquallum Rd	20 N	3 W	31 NW	SW		NULL	14
40447 NULL	NULL	9/4/1981	STEVE MORK	NULL	20 N	3 W	23 NE	NW		32023-12-90032	14
34853 NULL	35040	1/19/1980	DON SAEGER	W 4331 CLOQUALLUM RD	19 N	4 W	2 NW	SE		NULL	14
44884 NULL	NULL	3/29/1979	C. R. FOLK	NULL	21 N	2 W	16 SE	NE		NULL	14
36187	NULL	6/7/1978	HARVEY REEM	NULL	20 N	3 W	26 NW	NW		NULL	14
49261 NULL	NULL	7/26/1968	JT CHAPMAN	NULL	21 N	2 W	4 NW	NE		NULL	14
46094 NULL	NULL	11/10/1956	DO. MC DOUGALL	NULL	20 N	4 W	2 SE	SE		NULL	14
54083 NULL	NULL	10/1/1982	WM BRUNS	NULL	22 N	2 W	5 NE	SW		22205-13-90200	15
1867943	WE30365	8/24/2018	Jonathan Sutter	16821 NE Northshore Rd	22 N	3 W	20 SW	SE		322205003018	15
578707 ALG487	W236853	3/24/2009	TOM MARTIN	191 NE MOUNTAIN VIEW, TAUYUA	23 N	2 W	19 SW	SE		22319-50-00960	15
529867 APS696	W228541	5/18/2008	RON HERR	NULL	23 N	2 W	4 NE	NW		223047500130	15
496848 APS656	W236150	9/26/2007	JIM GRAVES	1921 NE HAVEN WY, TAUYUA 98588	23 N	2 W	30 NE	NW		22330-50-00040	15
688428 APQ508	WE05208	6/28/2006	THOMAS QUANN	3401 NE MANKE RD	23 N	3 W	28 NE	NW		323287500020	15
377373 AGE724	W173301	6/14/2003	MARTY REYNOLDS	MARVIN RD, BELFAIR 98528	22 N	1 W	9 NW	SE		12209-24-00040	15
				1020 TAUYUA RIVER RD, TAUYUA							
361965 AGS472	W166405	3/20/2003	PAVEL VINICKY	98588	22 N	3 W	11 NE	NE		32212-76-00070	15
				790 NE TAUYUA RIVER DR, TAUYUA							
341220 AGE763	W135687	9/20/2001	RON KLEMM	98528	22 N	2 W	5 NW	SE		222052400251	15
312777 AFT293	W093242	5/31/2001	ANTOINETTE GENZALE	251 MOUNTAIN VIEW DR	23 N	2 W	19 SE	NW		22319-50-00005	15

252172	AEN582	W111869	11/26/1999 KEN WYMAN	NE 841 MISSION CREEK RD BELFAIR	WA 98528	23 N	2 W	36 NE	SW	223361390160	15
1622820	AEC810	NULL	6/25/1999 JERRY MCCANNON	2860 E STATE ROUTE 302	22 N	1 W	16 SW	NE	12216-31-00010	15	
49177	NULL	W099058	1/3/1998 JOHN THARP	NE 15851 N SHORE RD, TAHUYA,	98588	22 N	3 W	28 NW	NE	32228-21-00010	15
46073	NULL	NULL	9/23/1992 DICK STROM	2201 TEE LAKE RD, BELFAIR, 98528	2201 TEE LAKE RD, BELFAIR, 98528	23 N	3 W	35 SW	SE	32335-50-00052	15
45397	NULL	16910	10/27/1987 CLYDE FRASER	4335 HWY 302, BELFAIR	4335 HWY 302, BELFAIR	22 N	1 W	21 SE	SW	122214390062	15
53300	NULL	NULL	2/28/1986 TIM LAWHEAD	NULL	NULL	23 N	2 W	10 NW	NE	22310-79-00770	15
45453	NULL	NULL	2/4/1983 CRAIG BYERLY	NULL	NULL	23 N	2 W	3 SE	SE	223107500160	15
46254	NULL	NULL	9/28/1977 DON WOODS	NULL	NULL	22 N	2 W	5 NE	NE	22205-11-00040	15
276285	AHB685	NULL	8/23/1981 HUNGRY BEAR CAFE	40060 N HWY 101, HOODSPORT	NULL	24 N	3 W	23 SW	SE	NULL	16
686377	BBB316	WE11557	10/19/2010 LEO MORAND	W 5500 620 SKOKOMISH VALLEY RD,	98548	24 N	3 W	12 NE	NE	324121100050	16
44752	NULL	86275	2/11/1992 BRUCE ALBERT	SHELTON, 98584	21 N	5 W	1 SW	SW	52101-75-00021	16	
51613	NULL	13840	6/6/1988 R. SUND	26470 N HWY 101	23 N	3 W	31 SW	SW	32331-33-00680	16	
277321	AAD100	NULL	9/16/1993 ALFRED HAGUE	NULL	20 N	5 W	4 SW	SE	52004-50-00045	22	
1710081	BJT852	WE28879	5/8/2018 Val Neilsen	71 W Satsop Bridge Rd	71 W Satsop Bridge Rd	19 N	6 W	5 SW	SW	619057500010	22
1682077	BJT812	WE23548	6/10/2016 Douglas Markham	Lot 2 Matlock Brady Rd, Shelton	20 N	6 W	8 SE	NE	620081400020	22	
743538	APJ059	WE13419	8/24/2011 Roberta Smith	98584	19 N	6 W	18 SE	NW	619184290002	22	
428890	ALP612	W207902	12/8/2005 TY MCLAUGHLIN	1261 W SATSOP MAPLE GLEN RD,	MATLOCK	19 N	6 W	30 SW	NE	619307600080	22
56155	ACR362	W099538	5/6/1998 RANDY BARCOM	W FOREST GREEN LN, ELMA	W D F W SIMPSON SALMON	20 N	6 W	28 NW	NE	62028-21-00020	22
41141	NULL	W011799	7/20/1994 HATCH.	NULL	19 N	6 W	11 SW	SW	NULL	22	
49452	NULL	NULL	6/2/1981 KEN WOLDEN	Outlet Creek Rd	20 N	5 W	8 NW	NW	52008-22-00212	22	
48080	NULL	NULL	7/17/1979 IRA BREHMAYER	NULL	20 N	6 W	17 NW	NW	62017-22-00000	22	
1619615	NULL	NULL	7/11/1988 JEFF CONKLIN	E 1940 ISLAND LAKE DRIVE	20 N	3 W	6 SW	NE	32006-50-02075	14	
1620638	ALP663	NULL	10/23/2009 ISLAND WEST ASSOCIATES	MASON LAKE ROAD	MASON LAKE ROAD	20 N	3 W	3 NW	NE	320032000000	14

Reported Correctly but Missing 1/4 and 1/4 1/4											
35046	NULL	21125	8/1/1988 E. D. HARVEY	NULL	HAVEN LAKE	20 N	2 W	4 SW	SE	220045000019	14
49195	NULL	13090	5/1/1988 JOHN WELSH	W 101 LOGANBERRY CT, ELMA,	W 101 LOGANBERRY CT, ELMA,	23 N	2 W	30 SW	NE	22330-50-00109	15
42282	ABQ568	W057073	7/13/1995 EVERETT NANCE	98541	98541	19 N	6 W	2 SE	NE	61902-51-00035	22
35856	NULL	NULL	9/30/1983 GEORGE FULLER	151 SE Stroud Rd, Shelton	151 SE Stroud Rd, Shelton	20 N	3 W	27 NW	SW	32027-50-05007	14
49098	NULL	NULL	3/14/1983 JOHN MROCZEK	E PICKERING RD	E PICKERING RD	21 N	2 W	32 NE	NE	NULL	14
41157	NULL	NULL	1/29/1979 W. G. CLARK	NULL	NULL	19 N	3 W	22 NE	SW	31922-13-00030	14
39955	NULL	NULL	12/15/1978 RON WAGERS	NULL	NULL	19 N	4 W	24 SW	NW	NULL	14
46453	NULL	NULL	8/20/1978 E / WEST	NULL	NULL	22 N	3 W	28 NW	NE	322282100041	15
50185	NULL	NULL	7/15/1977 MARU FAUGHENDER	NULL	NULL	21 N	3 W	6 SW	SE	32006-50-02102	16
50252	NULL	NULL	5/8/1971 MAURINE MARSHALL	NULL	NULL	23 N	2 W	30 SW	NE	NULL	15
37234	NULL	NULL	10/24/1968 KATHRYN LOUGHEAD	NULL	NULL	20 N	3 W	23 SE	SW	NULL	14

1/4 1/4 Reported Incorrectly											
47140	NULL	13086	3/1/1988 GARY HOYT	NULL	NULL	23 N	2 W	19 SW	NE	22319-50-00085	15
47312	NULL	26996	5/1/1989 GEORGE HOLMGREN	NULL	NULL	21 N	1 W	8 NW	NW	121082290110	14
275376	AAD079	NULL	8/22/1993 CECIL RITTER	NULL	NULL	20 N	1 W	19 NW	SE	12019-31-04020	14
277432	ABH476	NULL	9/17/1993 REID MITCHELL	40 E Wilson Rd	40 E Wilson Rd	21 N	2 W	26 NE	NE	22126-11-90021	14
1862820	BJM901	WE31159	7/26/2018 CHAD NORMAN	Clayton Ln	Clayton Ln	21 N	2 W	22 SW	NE	221223190090	14
810392	BCR950	WE14936	8/15/2012 Sylwayne LLC	Grapeview	Grapeview	21 N	1 W	7 SW	SW	121073350030	14
528177	APJ069	WE07983	5/21/2008 MERRIL PICCINI	3001 SE LYNCH RD, SHELTON 98584	3001 SE LYNCH RD, SHELTON 98584	19 N	3 W	3 SE	NW	319034100020	14
528197	BAH834	WE07932	4/8/2008 PATIENCE COLKITT	7300 GRAPEVIEW LOOP RD, ALLYN	7300 GRAPEVIEW LOOP RD, ALLYN	22 N	1 W	29 NE	SW	122291300000	14
486027	BAC315	WE06656	6/7/2007 GERALD RING ERICKSON	100 E WINERY RD, SHELTON 98584	100 E WINERY RD, SHELTON 98584	20 N	2 W	9 NE	NW	220091290190	14
479093	ALK958	WE05982	4/3/2007 JACK AND MARY HILLIGOS	140 SE CANNERY POINT DR, SHELTON	140 SE CANNERY POINT DR, SHELTON	20 N	2 W	20 SW	SE	220203490030	14
463434	APL150	W209799	8/29/2006 NICK PATTERSON	98584	98584	20 N	3 W	26 NW	NE	32026-21-90042	14
452190	ALJ478	WE05094	7/18/2006 BOB WIBBELS	5015 PICKERING RD, SHELTON 98584	5015 PICKERING RD, SHELTON 98584	20 N	2 W	9 SE	SW	220095000002	14
388203	AKP346	W174984	8/16/2004 BAXTER	1320 E MASONLAKE DR W,	GRAPEVIEW 98546	21 N	2 W	7 SE	NW	22107-51-00007	14
60916	AES866	W106176	4/14/1999 STEVE WALKER	COLE RD, SHELTON	COLE RD, SHELTON	19 N	3 W	4 NW	NW	31904-22-00010	14
43652	AEJ724	W105933	2/5/1999 STAN GOODBURN	HARMONY LN, SHELTON	HARMONY LN, SHELTON	20 N	3 W	27 SE	NE	32027-76-90018	14
56244	ACY531	W097478	8/24/1998 DAVID DEREMER	E 560 CATFISH LAKE, SHELTON	E 560 CATFISH LAKE, SHELTON	21 N	3 W	34 SE	SE	32134-75-90171	14
43102	ACQ355	W092222	9/13/1997 DAVE ROUNDTREE	SE 271 ROUNDTREE WAY	SE 271 ROUNDTREE WAY	19 N	3 W	2 SW	SE	31902-34-00030	14
43358	ACY270	W099006	8/2/1997 KEITH CHYNOWETH	MCMICKEN RD, SHELTON WA	MCMICKEN RD, SHELTON WA	20 N	2 W	1 SW	NW	22001-32-00040	14
55876	ACN310	NULL	9/20/1996 MARIE LAZARIS	HANKS LN, SHELTON	HANKS LN, SHELTON	20 N	5 W	1 SW	SE	52001-77-90100	14
41998	ABH368	W056390	7/26/1995 DONALD DUMONTET	W 61 DELIGHT PARK RD, SHELTON,	98584	19 N	3 W	6 NE	SE	31906-50-00020	14
42071	ABJ799	W045558	6/8/1994 HILDING PEARSON	SE 381 TOTTEN SHORES RD, SHELTON	SE 381 TOTTEN SHORES RD, SHELTON	20 N	2 W	31 SW	SE	NULL	14
33462	NULL	45586	12/22/1992 BOB NAULT	1685 ARCADIA RD, SHELTON	1685 ARCADIA RD, SHELTON	20 N	3 W	28 NE	NE	320281100070	14
33778	NULL	NULL	4/24/1987 CARL ROBERTS	NULL	NULL	20 N	3 W	32 NE	SW	32032-13-90161	14
33880	NULL	NULL	7/23/1979 CHARLES KELTNER	6630 Lynch Rd Shelton	6630 Lynch Rd Shelton	20 N	2 W	31 SE	SE	NULL	14
44952	NULL	NULL	3/29/1979 CARL KRAMP	NULL	NULL	21 N	2 W	5 SW	NE	22105-52-00035	14
53745	NULL	64492	10/1/1990 WALT ALLISON	Maple Wood Ct	Maple Wood Ct	23 N	1 W	29 SW	NW	NULL	15

PREMIER CONTRACTING													
377160 AGE197	WE01320	10/5/2003	KENNEDY	1271 BLACKSMITH RD	23 N	2 W	10 NE	SW			223107900640	15	
56319 AEA954	W099080	4/26/1998	DEBRA DEWBERRY	1480 NE HURD RD, BELFAIR, 98528	22 N	3 W	13 SE	SW			32224-77-90213	15	
44699 NULL	48781	7/27/1992	BOZE MARILYN	E 2500 HWY 302, BELFAIR	22 N	1 W	16 NW	NE			122162100000	15	
48994 NULL	NULL	3/25/1982	JOHN GANTT	NULL	23 N	2 W	3 SE	SW			22310-75-00170	15	
922660 BIG455	WE18345	6/24/2014	Jin Nelson	NF24	23 N	4 W	9 SW	SE			423093400010	16	
52033 NULL	NULL	7/6/1988	RITA PETERSON	50 N Carroll Point Rd	23 N	3 W	20 NE	SW			32320-13-00042	16	
1560011 BIQ934	W359609	3/10/2016	Randall Reeve	12680 W Shelton Matlock RD	20 N	5 W	9 NW	NW			52009500001	22	
498782 BAC014	W254008	9/26/2007	ANGELA HIX	FOREST GREEN LN, MATLOCK	20 N	6 W	28 NW	NE			620282190030	22	
417676 AHT373	W182110	9/20/2005	KATHY FLOWERS	CLOQUALLUM RD, SHELTON 98584	19 N	5 W	16 SE	NW			519164200020	22	
TRS Reported Incorrectly													
1620519 BBP848	NULL	5/24/2013	ERNIE AND KIM LARGE	16891 NE NORTH SHORE ROAD	22 N	3 W	29 NW	NE			32220-50-03022	15	
277401 AFB894	NULL	12/16/1993	JIM MACE	E 11361 Hwy 106	22 N	2 W	30 NW	NW			222302300050	14	
1721624 BK5572	WE30751	3/22/2018	RP DEVELOPMENT LLC	2770 BEEVILLE LOOP RD	21 N	6 W	29 SE	SE			621294400050	22	
484981 APR657	W245496	5/30/2007	PAT SULLIVAN	TOONERVILLE RD,BELFAIR	23 N	2 W	2 SE	NW			223024200130	15	
340784 AGS493	W150224	5/28/2002	RUDY LARSON	142 E HARSTINE ISLAND RD S, SHELTON	20 N	2 W	14 NE	NE			22014-11-90020	14	
43509 AEC857	W101364	5/8/1998	MASON COUNTY FIRE DIST #4	SE 2970 ARCADIA RD, SHELTON 2 4081 BEEVILLE RD W, SHELTON,	20 N	3 W	26 NW	NW			32026-76-90010	14	
55864 ACM953	W076007	11/21/1996	VICTOR & LINDA AUSTIN	98584	21 N	6 W	27 NE	NW			62127-12-00000	22	
55078 ABP286	W052447	8/17/1994	PHILIP SHELDON	PASSAGE VIEW RD, SHELTON	21 N	2 W	26 NW	SW			22127-75-00050	14	
49047 NULL	87691	6/26/1992	JOHN KIMBALL	1150 ISLAND VIEW RD E	21 N	2 W	22 SE	NE			22122-50-00008	14	
44675 NULL	84815	5/13/1992	BOB WINKLER	E 3140 N ISLAND DR	21 N	2 W	26 SE	SE			22126-44-90070	14	
36043 NULL	84735	3/25/1992	GREG SMITH	691 ELK RIDGE RD	19 N	4 W	25 SW	NE			41925-75-00220	14	
46163 NULL	82510	12/5/1991	DON HARTZ	1801 NE Haven Way, Tahuya	23 N	2 W	30 NE	NW			22330-50-00052	15	
34442 NULL	NULL	10/2/1985	DARRELL HAMAR	NULL	20 N	3 W	24 NW	SW			NULL	14	
Miskeyed													
TIM RICHEL - MIBHEL KELLY -													
53305 NULL	NULL	7/15/1975	HALDEN JOHNSON	NULL	24 N	3 W	23 SW	SW			32426-22-00010	16	
1874482 BKP140	WE32241	7/24/2018	Eric Matthews		19 N	3 W	10 NE	SE			319101400050	14	
967777 BIH053	W354043	12/6/2014	Chris Coman	70 Shore Brook DR	22 N	3 W	27 NW	SW			322275303003	14	
DAVID E AND DOROTHY													
841606 BAJ557	NULL	10/15/2012	BONNETT	174 RETREAT LANE	20 N	2 W	9 NE	NW			220091290020	14	
514194 APQ543	WE06674	7/9/2007	BEAR CREEK III	550 NE DEWATT RD	22 N	3 W	2 NW	NE			323355000024	14	
468133 AOK896	WE05757	2/9/2007	DAVID SHOLTIS	321 E JENNIFER LN, SHELTON 98584	21 N	4 W	23 NW	SE			421237700040	16	
1141128 NULL	NULL	9/9/1986	PAT JACOBSON		23 N	2 W	1 NW	SE			22301-13-90020	15	
276451 NULL	NULL	N/A	LLEWELLYN EVANS	NULL	22 N	4 W	11 SE	E			42211-50-00002	16	
Can't Locate													
275993 NULL	NULL	7/28/1964	DAYLE ORR 253-4TH ST.	NULL	22 N	2 W	32 NULL	NULL			NULL	14	
40555 NULL	NULL	7/1/1978	SWEELONS SHELTON	NULL	20 N	3 W	29 NULL	NULL			NULL	14	
49751 NULL	NULL	10/4/1971	LEE MARTIN	NULL	22 N	1 W	32 SW	SE			NULL	14	
248706 AFB177	W130315	8/8/2000	RIVERO MANNY & KELLY	GRAPEVIEW LOOP ROAD	22 N	1 W	29 SE	NW			NULL	14	
RAY MILLS-MILLS													
1601944	NULL	1/13/1997	CONSTRUCTION	E 41 ANN ARBOR DRIVE	20 N	3 W	25 SE	NW			14		
55363 ABY167	W062313	7/17/1995	ARTHUR BUSHEY	SUNDOWNER, SHELTON	21 N	3 W	28 SE	NE			14		
47372 NULL	35868	1/10/1992	GEORGE WILSON	STADIUM BEACH RD	21 N	2 W	23 NE	SE			14		
53781 NULL	NULL	1/23/1989	WALTER FORSLUND	NULL	21 N	2 W	27 SE	SE			14		
48115 NULL	NULL	1/18/1980	J TANCRELL	NULL	20 N	4 W	13 NE	SE			14		
41107 NULL	NULL	3/2/1979	VICTOR DRUZIANICH	NULL	19 N	3 W	31 SW	SW			14		
49820 NULL	NULL	12/2/1978	LEROY VISSOR	NULL	22 N	1 W	32 NW	SE			14		
53631 NULL	NULL	4/20/1978	VI STICKLEY	NULL	21 N	3 W	36 NE	SE			14		
44306 NULL	NULL	2/2/1978	BENNIE GOFF	NULL	22 N	1 W	29 NW	NW			14		
47007 NULL	NULL	10/10/1977	FRED HANSON	NULL	20 N	4 W	27 SE	NE			14		
41247 NULL	NULL	7/22/1975	WAYNE CANDILL	NULL	20 N	3 W	22 NW	NW			14		
38574 NULL	NULL	1/10/1974	MUD BAY CONST.	NULL	20 N	3 W	27 SW	SW			14		
PLEASURE PROPERTIES, INC.													
51354 NULL	NULL	8/7/1967	% KEN PLATZER	NULL	22 N	1 W	30 NE	SE			14		
38786 NULL	NULL	7/1/1965	OSCAR BERNSTEN	NULL	20 N	3 W	15 NE	SW			14		
56242 ACY520	W097503	8/29/1998	RAYMOND NUNEZ	SHELTON MATLOCK RD, SHELTON	20 N	5 W	12 NW	SE			14		
51062 NULL	64454	4/1/1993	PAT DRAKE	NULL	22 N	2 W	5 SW	NE			15		
276380 NULL	NULL	8/22/1976	JUAN GARRIDA	NULL	22 N	2 W	4 NW	NE			15		
50194 NULL	21387	9/6/1988	MARVIN PETITE	NULL	22 N	3 W	13 SW	SE			15		
48409 NULL	NULL	7/1/1986	JANE KELSEY	NE North Shore Rd, Belfair	22 N	3 W	29 NE	NW			15		
44614 NULL	NULL	5/25/1977	BOB OKONEK	NULL	23 N	2 W	36 NE	SW			15		
51600 NULL	NULL	5/27/1975	R. LAMOTT	NULL	23 N	2 W	19 SW	NE			15		
50592 NULL	NULL	3/13/1975	MR. E. VANDERMER	NULL	22 N	1 W	21 NW	SW			15		
51589 NULL	NULL	4/20/1973	R. J. MORGAN	NULL	22 N	1 W	21 NULL	NULL			15		
MT. RAINIER COUNCIL, BOY													
50713 NULL	NULL	6/25/1967	SCOUTS OF AM	NULL	22 N	3 W	5 NE	SE			15		
45785 NULL	15074	9/23/1991	DAVID ALLISON	NULL	23 N	2 W	23 SE	SE			15		
48785 NULL	7042	8/23/1988	JIM TAYLOR	NULL	23 N	3 W	22 NE	NE			15		
44767 NULL	NULL	3/27/1980	BRUCE GOTOWSKI	NULL	23 N	2 W	32 SW	SE			15		

51765	NULL	N/A	RAYMOND MORRIS	NULL	24 N	2 W	6 NULL	NULL	NULL	16
55626 ACD502	W051656	6/27/1996	REX SORENSEN	2020 DON MTN RD, HOODSPORT	23 N	4 W	29 NE	NE	NULL	16
48059 NULL	73582	3/17/1992	INDIAN HEALTH SERVICE	NULL	21 N	4 W	2 NULL	NULL	NULL	16
51264 NULL	NULL	11/23/1979	PETE QUAADA	NULL	21 N	5 W	12 SE	SW	NULL	16
52733 NULL	NULL	10/25/1979	SHELTON ENTERPRISES #2	NULL	21 N	4 W	14 SW	SW	NULL	16
43099 ACQ353	W092236	9/11/1997	MIKE STREHLOW	1764 17 CLOQUALLUM RD, ELMA	19 N	5 W	16 SE	NW	NULL	22
33387 NULL	NULL	7/15/1974	BLAIR CARL	NULL	19 N	7 W	18 NE	SE	NULL	22
59940 NULL	NULL	6/29/1984	THERON PHILLIPS	NULL	NULL N	NUL W	NULI NULL	NULL	NULL	NULL
1604474	NULL	9/12/1978	ROBERT CAMERON		20 N	2 W	4 NULL	NULL	NULL	

Group Water Systems

WASHINGTON CORRECTION CENTER											
277234	NULL	N/A	NULL	20 N	4 W	9 NW	SE	NULL	14		
276912 AHA982	NULL	N/A	ROBT. LORENTZ	NULL	21 N	1 W	8 NULL	NULL	NULL	14	
1119030	NULL	1/6/1972	BEACON POINT COMM CLUB	24 N	2 W	6 SW	SW	NULL			
936378 BCS279	W354242	10/9/2014	Brian Sund	NX2 25991 N HWY 101 260 NE RIVER HILL DR, BELFAIR	22 N	4 W	1 SE	NW	422017500050	16	
527190 ALH628	W236103	3/13/2008	ROY BOAD	98528 200D E OAKDALE ST, GRAPEVIEW,	23 N	1 W	21 NW	NW	12321-20-94500	15	
191125 AEH920	W111821	6/28/1999	OAKDALE W. S. #4	98546	21 N	1 W	5 NW	NE	12105-51-15001	14	
496387 ABH342	W038526	5/15/1998	ASSOCIATION	AGATE BEACH DRIVE	20 N	3 W	24 NW	SW	NULL	14	
42811 ACD863	W088701	11/4/1996	DAVE WALTERICK	HIAWATHA BLVD, SHELTON, 98584	20 N	3 W	8 NW	NW	NULL	14	
37442 NULL	62812	7/2/1990	CLUB	LAKE ARROWHEAD COMM CLUB	19 N	5 W	17 NE	SW	NULL	22	
50061 NULL	14208	9/26/1988	MAGGIE LAKE WATER DIST.	NULL	22 N	3 W	14 NE	NW	NULL	15	
35452 NULL	NULL	10/1/1968	FRANK LOPEMAN	NULL	20 N	3 W	24 NULL	NULL	NULL	14	
			THEO VAJEAN & ELMA WHITE								
53244 NULL	NULL	6/23/1958	FUISE	NULL	23 N	3 W	30 SE	SW	NULL	16	

Incorrectly Reported County

31547 ABQ839	W071257	10/2/1997	CLARENCE & BRENDA HEPPE	16832 CHRISTIAN LN SW, ROCHESTER, 98579	16 N	3 W	28 SE	NE	NULL	23
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Encourage Conservation Through Connections to Public Water: Supplemental Materials

Water Use Data Acquired for WREC Use

Water System	Rate Structure	Average Annual Water Use per Household (gpd)	Average Indoor Use per Household (gpd)¹	Average Summer Use (indoor + outdoor) (gpd)	Notes
Covington Water District	Usage - seasonal, tiered	200	150	350	Based on metered data from 2015 and 2017
Snohomish PUD	Usage - seasonal, flat	237	170	370	Based on metered winter/summer data from 2015 and 2017
Kitsap PUD	Usage - tiered	186	122	NA	Based on metered data from 2017-2018
Cherry Park (Mason PUD)	Usage - tiered	195	156	NA	Based on metered data from 2017-2018
Union (Mason PUD)	Usage - tiered	134	86	NA	Based on metered data from 2017-2018
Harstene Island (Mason PUD)	Usage - tiered	119	87	NA	Based on metered data from 2017-2018
Fir Tree #4 (Thurston PUD)	Usage - tiered	279	151	NA	Based on monthly metered data from 2016 - 2018

¹Estimated based on winter use

NA – Not available

Data Provided by Snohomish County

Water Provider	ERU Avg gpd for forecasting future demand*
Alderwood	169
Cross Valley	234
Edmonds	201
Gold Bar	171
Highland	200
Marysville	168
Monroe	170
Mukilteo	179
Olympic View	189
Snohomish County PUD	190
Roosevelt	383
Silver Lake	177
Snohomish	190
Stanwood	282
Startup	250
Sultan	190
Three Lakes	191
Avg. Overall	208
Avg. Outside SW UGA	218
Avg. Rural Non-City	241

*As reported in water system comprehensive plans

ERU = equivalent residential units

Implement a Process and Program for Tracking PE Wells and Project Implementation: Supplemental Materials

A Framework for Tracking Projects and New Permit-Exempt Wells using
Salmon Recovery Portal

This document describes the elements required to track projects from a conceptual stage through completion and monitor new permit-exempt domestic well construction. Project and well tracking are an essential component of implementation monitoring and adaptive management procedures. Therefore, it is recommended that projects be tracked through planning and implementation phases to enhance the Committee's ability to conduct implementation monitoring at the sub-basin and WRIA scale, monitor grant funding, identify plan successes and deficiencies, and streamline project development.

The Committee recommends a pilot program using the Salmon Recovery Portal (SRP; <https://srp.rco.wa.gov/about>) to conduct project tracking for the streamflow restoration effort under 90.94.030 RCW. As a statewide salmon recovery tracking tool, the capacity for the SRP to allow for goal setting, hierarchical project tiers, supplemental information, and printing of automated reports makes it well-suited for tracking projects associated with streamflow restoration and salmon recovery efforts. As a statewide tool administered by the Recreation and Conservation Office (RCO) and in partnership with salmon recovery Lead Entities (LE), the SRP provides a dynamic platform to track project development, funding, and offsets.

Tracking of projects will consist of two primary phases: (1) uploading required project information from all projects included in this plan into the SRP, and (2) uploading and updating all funded projects, project reports, and completed projects into the SRP database on an annual basis. Phase 1 will be coordinated and funded by the Washington Department of Fish and Wildlife (WDFW) and implemented by trained University of Washington (UW) data stewards in collaboration with RCO staff and Washington Department of Ecology (Ecology) staff. Phase 2 project uploads will be implemented by UW data stewards in consultation with Ecology grant management, RCO, and WDFW staff. To improve harmonization of streamflow restoration efforts with ongoing salmon recovery activities, local salmon recovery LE Coordinators shall be consulted prior to initial data uploads. While input and oversight is welcomed, no commitment of additional work is required from LE Coordinators. Streamflow restoration projects not funded through the streamflow restoration grant program, will be updated by data stewards during any grant reporting to Ecology or RCO. Primary quality control measures will be performed by data stewards. Funds to support initial and ongoing costs of data steward data entry (Phases 1 and 2) will be provided by WDFW.

The Committee recommends, at minimum, the following data fields for streamflow tracking: WRIA, sub-basin, project description, funding source, estimated cost, project spatial boundaries or coordinates, project sponsor (if applicable), estimated water offset or habitat benefits (using Pacific Salmon Recovery Fund (PCSRF) metrics or reference to the PCSRF list), and target project start date. Projects with sensitive locations can be made private or those with

Supplemental Document: Project Tracking

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undetermined locations can be entered as a project boundary or defined at the sub-basin scale. New domestic permit-exempt well location data will be drawn from the Ecology Washington State Well Report database¹. Well location data will be incorporated into the SRP using point coordinates, or at the section or sub-basin scale to support implementation monitoring and adaptive management goals.

To support the implementation of the above program for tracking projects under 90.94.030 RCW, WDFW has initiated pilot projects in two 90.94.020 RCW basins: the Nisqually River Basin (WRIA 11) and the Chehalis River Basin (WRIs 22/23). These pilots are coordinated by WDFW in conjunction with RCO, Ecology, local LE Coordinators, and the Planning Units. Intended as a proof of concept, these pilots are examining the capacity and effectiveness of the SRP to track streamflow restoration projects.

¹<https://appswr.ecology.wa.gov/wellconstruction/map/WCLSWebMap/default.aspx>

Continue Monitoring of Streamflow and Groundwater Levels: Supplemental Materials

WRIA 7 Ongoing Streamflow and Groundwater Monitoring

Groundwater Monitoring

King County

- King County Groundwater Protection Program
 - In 2001, the King County Council created the [Groundwater Protection Program](#) by King County Code Chapter 9.14. The Groundwater Protection Program provides management, policy, and technical expertise to help protect the quality and quantity of the groundwater resources in King County. The Program seeks to: protect the health and viability of its residents who use groundwater for drinking; and to preserve fish and wildlife habitat by ensuring the replenishment (by way of groundwater contributions) of streams, lakes and wetlands for future generations.
 - For more information please visit: [Groundwater Data](#) and [Well Data](#)
- King County (East) Water Level Data Report
 - The [East King County \(EKC\) Groundwater Level Survey 2005 Report](#) provides water quantity data from sites monitored in 2005. King County performed this monitoring effort to describe groundwater conditions for evaluation by various public programs such as public health, water supply planning, and salmon recovery programs. The report covers the Snoqualmie River Valley area.

Snohomish County

- Snohomish County Ground Water Program
 - The [Snohomish County Ground Water Program](#) is the direct result of the Ground Water Management Plan (GWMP) developed in accordance with Washington Administrative Code Chapter 173-100. This regulation establishes a process for the identification and designation of ground water management areas and for the development of comprehensive ground water programs. The GWMP provides the framework for the protection of ground water resources within Snohomish County.

USGS

- USGS Groundwater Watch
 - The [Washington Active Water Level Network](#) contains water levels and well information from wells that have been measured by the USGS or USGS cooperators at least once within the past 13 months. This network includes all of these wells, regardless of measurement frequency, aquifer monitored, or the monitoring objective. [Snohomish County](#) has two monitored sites within WRIA 7. King County has four sites, but none are within WRIA 7.
- USGS Groundwater Data for Washington

- As of June 2004, the ground-water database for Washington contained descriptive site information for about 86,000 ground-water sites in Washington. The database contains [water-level measurements](#) for about 72,400 ground-water sites and water-level measurements for one real-time site in Washington. The water-quality database for Washington contains data and information on chemical, physical, and biological properties of ground water from about 9,336 ground-water sites in Washington.
- These data represent a combination of measured (by USGS personnel) and reported information collected by many other federal, state, and local agencies; Tribal Nations; and numerous private and public organizations. The data has been collected and entered for a wide variety of projects and purposes over a long period of time and the resulting database varies in quality and detail.
- Although many ground-water wells have accurate information (especially those field visited for use in recent projects), some problems are known to exist for older entries. Examples of known problems include, but are not limited to, inaccurate well locations, old information regarding the use of the water from the well, and incorrect installation dates. Many wells in the database have not been field visited, but were entered into the database from the well drillers' reports, using general location information supplied by the drillers.

[Department of Ecology](#)

- Washington Groundwater Level Status and Trends: 2016
 - As part of these activities, Ecology maintains a network of groundwater monitoring stations in each of the agency's four regions. Information from these networks is compiled annually to assess both the status (i.e. current year conditions) and longer-term groundwater level/storage trends in state aquifers. [This story map](#) summarizes the results of the most recent evaluation, which was conducted in spring 2016.
- Statewide Groundwater Assessment: 2017
 - Measuring water levels at groundwater wells is necessary to assess current conditions, identify emerging problems with water supply, and assist water managers when making decisions about water supply needs and resource protection. [This document](#) evaluates the status of groundwater levels in 250 groundwater wells within six geographic areas of the State. Long-term data provides insights into the past, present, and future changes to groundwater trends and provides the information needed to effectively manage this critical resource.

Surface water Monitoring

King County

- King County Gauge Data
 - The King County Water and Land Resource Division (WLRD) [Hydrologic Monitoring Program](#) has collected data at over 500 sites since 1987. The data collection consists of continuous recording stream gages on rivers and streams, continuous recording rain gages, visually checked staff and crest stage gages in wetlands, lakes and detention facilities, recording and non-recording groundwater wells, and water quality sampling.
 - [This map](#) shows the locations of all hydrologic stations.
 - According to the [King County gage list](#), there are 43 gauges are located within WRIA 7, but only 23 are active.

Snohomish County

- Snohomish County Real-Time Flood Information System
 - [This site](#) is meant to serve as a “one stop” source for real-time river level and rainfall depth data in Snohomish County and the surrounding area. This website provides provisional historical data for gauge sites throughout the area. To access verified historical data, please visit [Snohomish County’s Online Historical Hydrologic Database](#).
 - Snohomish River Basin Stage Summary: [Current and Historical Stage](#)

NOAA

- Advanced Hydrologic Prediction Service
 - Snohomish County Gauge Data: [All Real-Time Gauges by Basin](#)
 - Snohomish Basin
 - [Ebey Slough at Drainage District 6](#)
 - [Snohomish R at Snohomish](#)
 - [Snohomish R near Monroe](#)
 - [Skykomish R near Gold Bar](#)
 - [Snoqualmie R near Carnation](#)
 - [Snoqualmie R at Snoqualmie Falls](#)
 - [MAP of additional real-time river gauges](#)

USGS

- USGS [Surface-Water Data for Washington](#)
 - The USGS in Washington State currently collects data for about 300 streamflow, reservoir, water-quality, meteorological, and groundwater sites, of which about 240 have satellite telemetry for real-time data, and another 20 have other communications equipment for near-realtime data.
 - The USGS has operated about 1,000 continuous data collection sites since 1895 when the first streamgage on the Spokane River at Spokane. Additional information about the USGS data collection program is available from the Washington Water Science Center home page, along with links below to an array of other sources of water resources data for Washington.

- USGS Water Watch
 - [Map](#) of real time streamflow compared to historical streamflow
- USGS National Water Information System: Map View
 - [This map](#) shows the location of the USGS Streamflow Gauges in WRIA 7

Department of Ecology

- [River and stream flow monitoring](#)
 - Ecology maintains a network of stream-gaging stations that report streamflow conditions in rivers and streams across the state. The information is used to monitor flow conditions for recreational activities, water supplies for migrating fish, and to develop strategies to respond to climate change. All of the data Ecology collects are available to view and download.
 - [This map](#) displays the most recent summary streamflow values within the state of Washington from gauges maintained by the Washington State Department of Ecology and the United States Geological Survey (USGS).
- Flow Monitoring Network
 - [This map](#) shows the two manual stage height stations in WRIA 7
 - [Skykomish R. @ Monroe*](#)
station ID: **07C070**
period of record: **Oct 1997 – Present**
 - [Snoqualmie R. nr Monroe*](#)
station ID: **07D050**
period of record: **Oct 1997 - Present**