

# 2015 LNNRD IMP Annual Report

August 4, 2016

Each year the Lower Niobrara Natural Resource District (LNNRD), the Nebraska Department of Natural Resources (NDNR) and the IMP Stakeholder Committee met to review the data collected and tasks completed to accomplish the goals of the IMP.

The following is an overview of the LNNRD activities to accomplish the goals of the IMP:

Goal 1 is to develop and implement processes for the adequate collection of hydrologic and other related data to assess water resources within the District.

The staff has researched the data available through the United State Geological Survey, Nebraska Conservation and Survey and other sources to determine the information available. The research shows there are five hydrologic areas within the District. These five areas were divided into twelve hydrologic sub-areas within the District based on the static water level data. The static water levels were then overlaid onto each of the twelve hydrologic areas. Even though we are seeing gradual rise in statics sense the drought of 2012, the statics have not returned to the pre-2012 levels. Appendix 1 and 2 maps show the change from the 2015 spring reading to the 2016 spring readings. Appendix 3 shows the static level changes of the District monitoring wells along with the nitrate levels.

The next two goals work hand in hand, because if you maintain sustainability you will minimize conflicts between all users. Goal 2 requires the District to develop systematic approaches for the development and sustainability of water resources within the District, and Goal 3 is to prevent, resolve, and minimize water related conflicts among and between surface water and groundwater users.

The first step to accomplish these goals was to revised rules and regulation of the LNNRD to address development, sustainability and minimization water related conflicts. The first of these rules and regulations enacted gave the Directors the ability to evaluate the District's groundwater supply along with other factors in June of each year to determine if new irrigated acres should or should not be added within the District boundaries. At the June 6, 2016 the Board decided no new irrigated acres will be added to the LNNRD in 2016 and no transfers of irrigated acres.

Secondly, the District is certifying all the irrigated acres within its boundary. To date 92% of Boyd County, 13% of Holt County, 95% of Keya Paha County, 63% of Knox County and 81% of Rock County are completed. The goal is to have all the acres certified by the end of 2016.

The District does allow for the replacement of high capacity wells with the condition they can only be constructed to pump the same GPM as the well being replaced. In 2015, the District received and approved nine well permit applications; five were for replacement irrigation wells, one for a small industrial well, which was not completed, one temporary dewatering well and one new public water supply well. The District also developed rules and regulation for helper/supplemental wells. This year

there was one application for a helper/supplemental well, but it did not meet the ranking criteria, so the permit was denied.

Flowmeters are required on all new or modified wells in the District. The District also requires a flowmeter on systems which are applying for a supplemental/helper wells. The District had applied for and received an NET Grant in 2009-2011 for flowmeter purchases. Many producers took advantage of the cost-share and installed meters on their system. As a condition of receiving the cost-share the producer was to submit their meter reading annually. At this time flowmeter readings are on a voluntary base, so, not all submit their readings in a timely manner. For the date that was submitted the District average 10.43 inches (note-this calculation assumes all field are 130 Acres in size). Appendix 4 is a spreadsheet showing the flowmeter usage for those which reported.

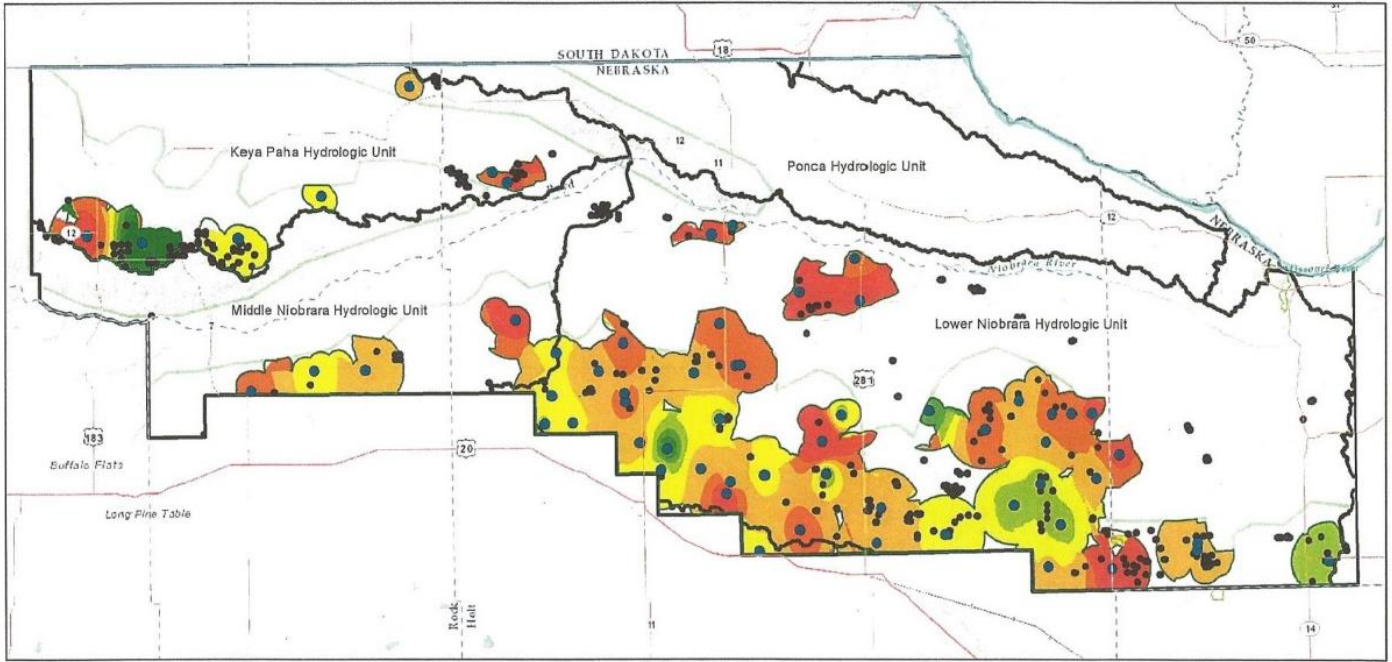
There have been several variance requests to add a small number of new acres to allow a pivot to make a complete circle once an old building site was removed, to date all have been denied. The District also receive one variance request to certify surface water irrigated acre on a field which has been irrigated for years without a permit—this request was also denied.

In addition to the rules and regulations the District is working with four other Districts and Nebraska Game and Parks Commission to purchase the water appropriation held by Nebraska Public Power District at the Spencer Hydro Facility. There are many reasons this is a win-win but the three main ones are: brings the control of the river back to local control, provides a way to satisfy the National Parks Service desire for a Federal Reserve water right and maintains the river for fish, wildlife, recreation, agriculture and industry. A MOU was signed in September of 2015 and the parties have been working on the details to complete the transfer.

Goal 4 requires the District the Department to develop and provide educational opportunities and outreach materials about hydrologically connected surface water and groundwater, water conservation, and to keep the constituents of the District informed about the IMP as it is implemented. In February of 2015 the Upper Elkhorn NRD and the Lower Niobrara NRD hosted a joint Water Issues meeting in O'Neill along with Web Page and Facebook post to highlight important water related issues.

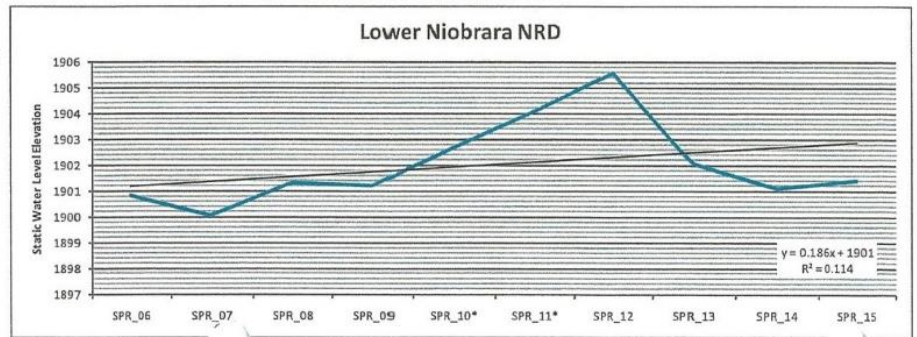
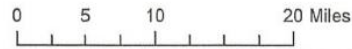
Appendix 1 – 2013-2015 Static Water Level Map

Lower Niobrara NRD Static Water Levels 2013 - 2015



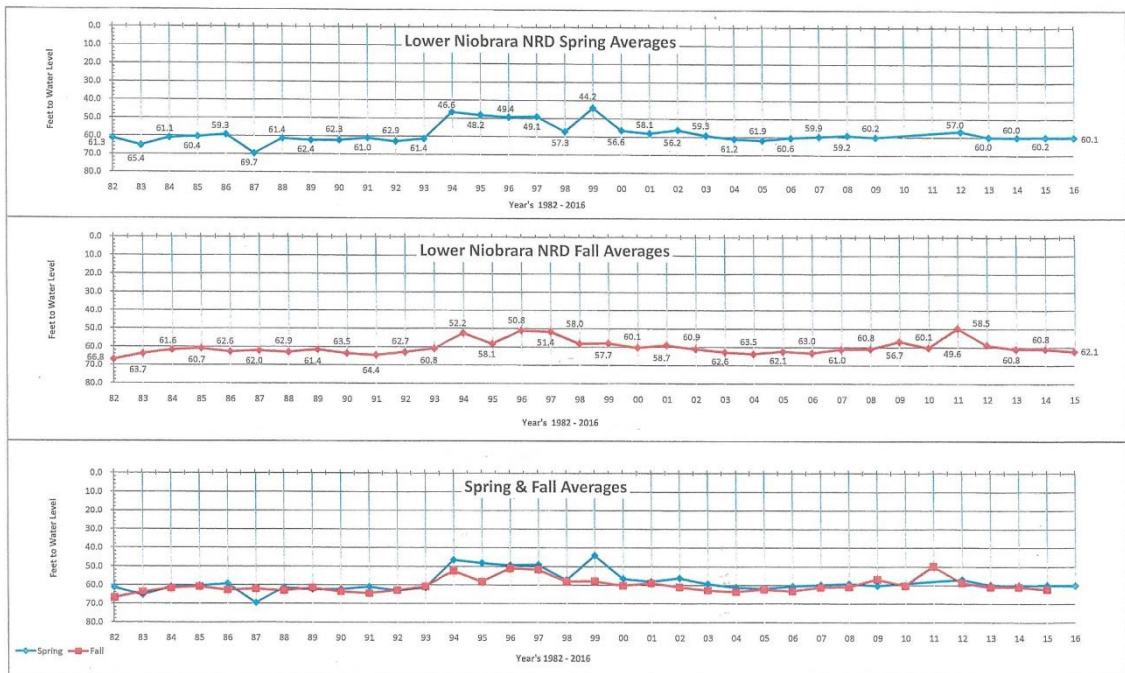
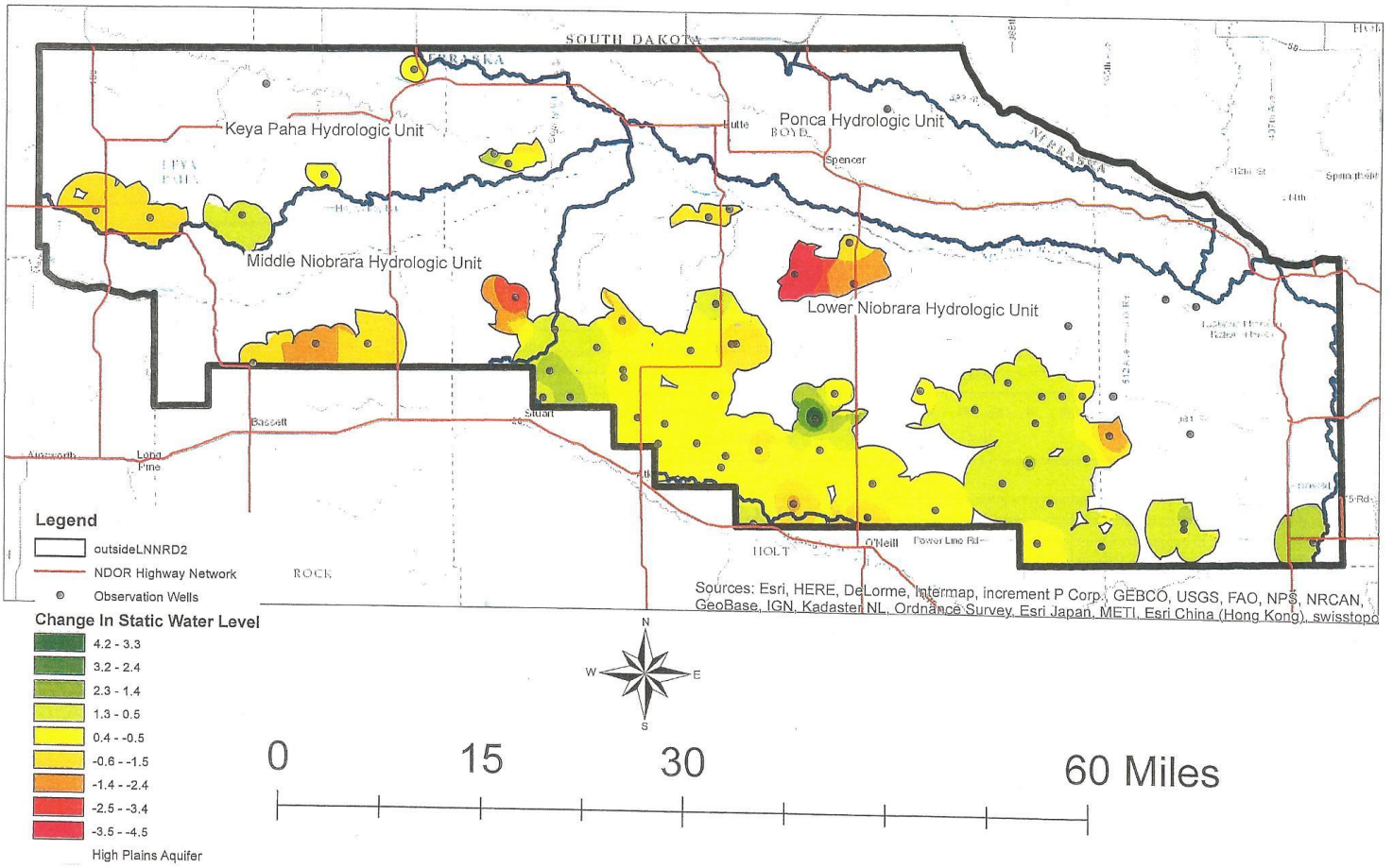
Legend

- |                  |                        |
|------------------|------------------------|
| <b>SWL_15_13</b> | • Irr_wells_12_14      |
| Red              | • SWL_Monitoring_Wells |
| Orange           | □ High_Plains_Aquifer  |
| Yellow           |                        |
| Light Green      |                        |
| Green            |                        |
| Dark Green       |                        |
| Black            |                        |



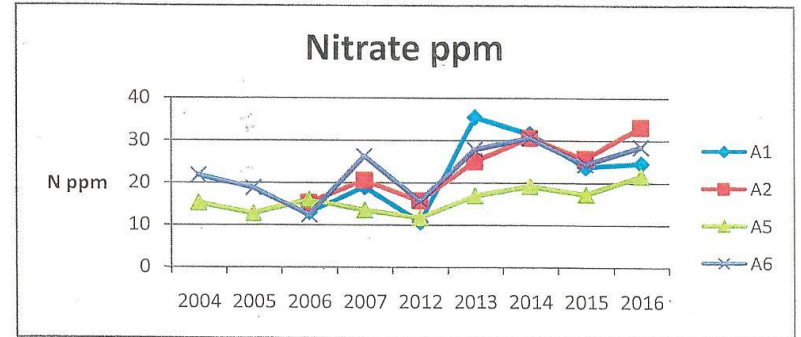
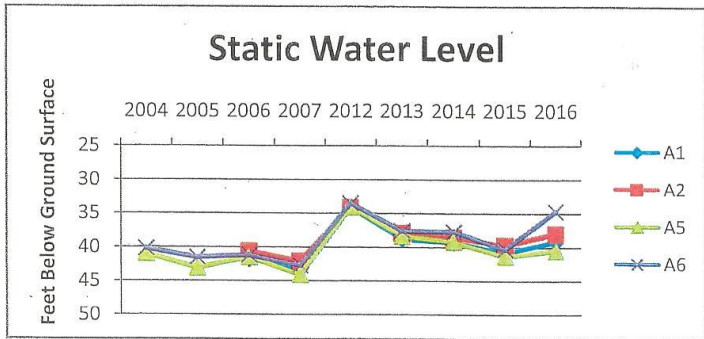
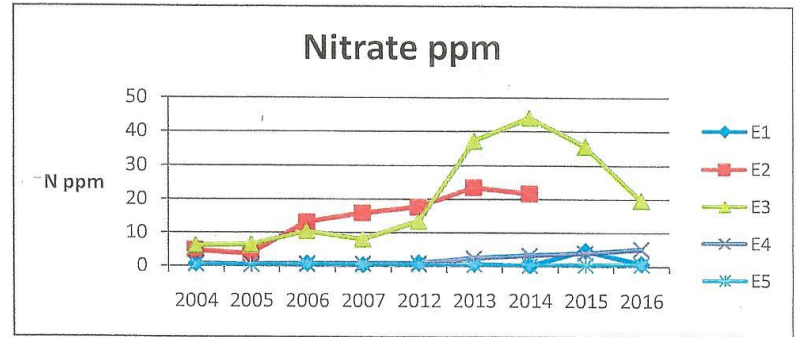
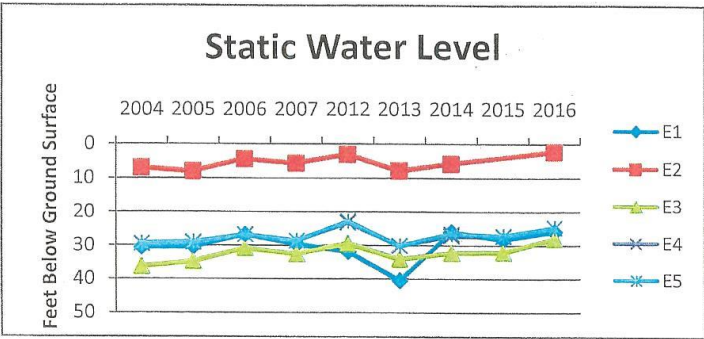
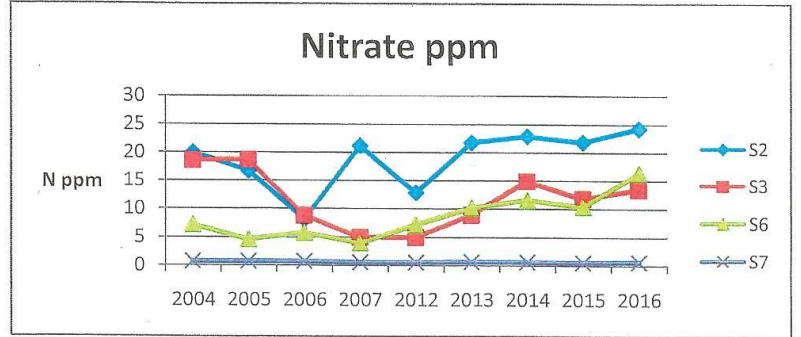
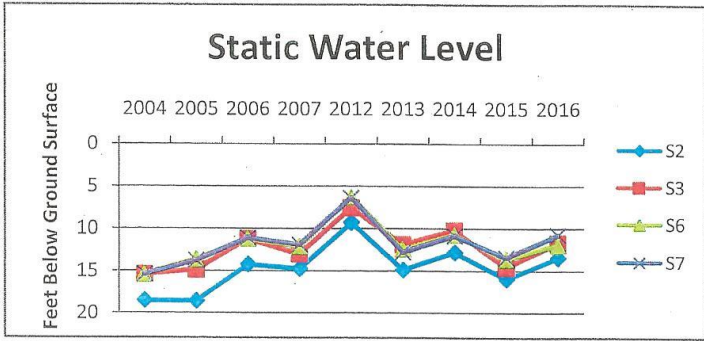
# Appendix 2 – 2015-2016 Static Water Level Map

## Lower Niobrara NRD Static Water Level Changes from 2015 - 2016





Appendix 3 – LNNRD Monitoring Well Static Water Levels and NO3



Appendix – 4 Flowmeter Data for 2015

1/4	Sec	Twp	Rng	Serial #	Units	Fall 2013	Fall 2014	Fall 2015	In/ac
NW	26	33	20	GP 12-2156-8	gal x 1000		215676		
NW	21	32	12	GP 11-5039-8	gal x 100	504011		640587	1.95*
SW	26	33	20	GP 12-2149-8	gal x 1000		156555		
E 1/2	32	33	19				62645		
SW	25	33	20		galx 1000	21163	44360		
SE	15	32	12	GP 11-3547	gal x 100	1245055	698393		
SW	11	29	11	GP 11-2478	gal x 100	847507	78617	491388	11.70
SE	8	33	21	GP 12-1727-8	ac in x .01	413317		763987	4.95*
NW	34	33	20						
NE	7	29	10	GP 10-3573	Gal x 100	592268			
SE	11	29	11	GP 11-3539	Gal x 100	1525238			
NE	5	33	16						
NE	10	29	11	GP 10-3572	Gal x 100	1305936		967546	6.20*
SE	10	30	10	GP 11-3542	Gal x 100	1412248		80920	12.31*
NE	17	29	11	GP 10-3568	Gal x 100	654515		426196	14.21*
SE	8	29	11	GP 10-3575	Gal x 100	665796		449615	14.33*
NW	29	31	14				No Use Yet		
SE	7	31	14	GP12-2373	gal x 100	913796	Not working	303276	
NW	5	31	13	GP 12-2378-6	gal x 100	488361	674873	921320	7.00
NE	15	31	13	GP 12-2375-6	gal x 100	530370	701537	854122	4.30
SE	1	31	14		gal x 100	669581			

1/4	Sec	Twp	Rng	Serial #	Units	Fall 2013	Fall 2014	Fall 2015	In/ac
NE	31	31	13		ac ft x .001	15881 7	279534		11.10
SE	30	31	14	GP08-8-3650	Gal x 100	10869 81		65139 6	8.00*
SE	34	31	14	GP04-8-2240	Gal x 100	11383 10		53219 0	5.60*
NW	31	31	14	GP 07-8-3933	Gal x 100	15044 47		53338 9	18.95*
NW	34	31	14	GP 08-8-3649	Gal x 100	93845 9		50981 7	10.52*
SE	28	31	14	GP 08-8-3651	Gal x 100	99561 3		51050 8	9.48*
SW	30	31	14	GP 07-8-3936	Gal x 100	12724 31		45584 1	5.20*
SWSW	30	31	14	GP 12-3543-8	gal x 100				
SE	12	33	15		ac ft x .001	23197 0			
SW	12	33	15		ac ft x .001	28186 2			
NE	18	33	14		ac ft x .001	27890 1			
SE	18	33	14		ac ft x .001	25919 3			
SE	8	29	8	GP10-1296-8	ac ft x .001				
SW	8	29	8	GP10-1260-8	ac ft x .001				
SE	4	33	21		ac ft x .001	10133 10		12	7.69*
NE	28	33	19	no #	gal x 1000	13308 0	182355		
NW	25	33	20	GP 12-2147-8	gal x 1000		156735		
NE	25	33	20	no #	gal x 1000		195584		
NE	28	33	19						
SW	24	33	21	GP 10-1965-8	Gal x 100	12251 24	547901		
NE	19	33	19	GP 12-2158-8	gal x 1000	13688 4	176839		

1/4	Sec	Twp	Rng	Serial #	Units	Fall 2013	Fall 2014	Fall 2015	In/ac
SW	19	33	19	GP 06-8-2651	gal x 1000	100878	136746		
NE	20	33	21	GP 10-1968-8	Gal x 100	966790	418187		
NE	21	33	21	GP 10-1962-8	Gal x 100	916690	445589		
NW	20	33	21	GP 10-1963-8	Gal x 100	1316536	871166		
NW	21	33	21	GP 10-1966-8	Gal x 100	1159180	661037		
SE	20	33	21	GP 10-1020-8	Gal x 100	737849	165031		
SE	21	33	21	GP 10-1967-8	Gal x 100	1112537	654994		
NW	19	33	19	GP 07-8-3386	gal x 1000	144799	198923		
NW	32	33	19		galx 1000	134289	98404		
NE	30	31	14				935212	331626	14.60
NE	32	32	12		gal x 100	201692			
NE	30	32	14						
NE	31	31	13	GP 08-8-4210	ac ft x .001	657697	780679	912576	12.20
NE	10	31	13	GP 08-8-4893	ac ft x .001	607517	719718	849300	12.00
SE	31	31	13	GP 09-1261-8	Gal x 100	152822	186391	227812	1.20
NW	17	29	11	GP 10-3566	gal x 100	705468	196672	713658	14.60
NW	30	29	9	GP09-2404-8	ac ft x .001	504404	592508	692940	9.30
NESE	31	34	16	GP 11-4213-8	gal x 100				
NW	22	30	14		gal x 100		427909	168709	7.30
SW	12	31	14	GP 09-1264-8	Gal x 100	491561		470213	18.02*
NE	29	32	13	GP 10-0423	ac ft x .001				



1/4	Se c	Tw p	Rn g	Serial #	Units	Fall 2013	Fall 2014	Fall 2015	In/ac
NE	2 4	32	7	GP 08-8- 3671	Gal x 100	40172 2	514162	60904 2	2.70
SE	2 4	32	7	GP 08-8- 3668	Gal x 100	53755 6	674536	79176 3	3.30
NW	2 6	31	15	GP 11- 4751-8	ac ft x .001	36231 9	279210	41317 8	12.40
SW	2 7	31	15	GP 11- 6026-8	ac ft x .001	46737 8	607350	76730 0	14.80
SW	3 4	31	15	GP 12- 0681-8	ac ft x .001	49340 8	642456	80179 8	14.70
SW	2 6	31	15	GP 12- 1179-8	ac ft x .001	41668 9	550401	70609 2	14.40
NE	3 4	31	15	GP 12- 1182-8	ac ft x .001	40928 3	555361	71905 6	15.10
SE	3 4	31	15	GP 12- 1180-8	ac ft x .001	43979 5	566818	73475 7	15.50
NE	3 6	34	16	872353	gal x 100				
NW	3 1	34	15	872187	gal x 100				
SE	3 6	34	16	GP 11- 4208-8	gal x 100				
NE	1	31	14		gal x 100	77449 5			
NW	3 1	31	15	GP 09- 1262-8	Gal x 100	88046 3	215853	88376 2	12.20
SE	2 1	30	13	GP 09- 1263-8	Gal x 100		37855		
SW	1 4	31	14	GP 10- 3268	ac ft x .001	56807 7	700752	84951 1	13.70
NE	7	31	14	GP 10- 3638	ac ft x .001	61097 1	736433	86271 5	11.70
SW	8	31	14	GP 10- 3911	ac ft x .001	57745 7	704713	87390 4	15.60
SW	2 5	35	16	GP 11- 2769-8	gal x 100			43253 9	
N1/2 NW	4	31	17				41201	14380 4	9.50
N 1/2 NW 1/4	4	31	17		gal x 100	14358	104112	62798 0	14.80
S1/2 NW	4	31	17		gal x 100	6715	121533	22589 9	3.00

1/4	Sec	Twp	Rng	Serial #	Units	Fall 2013	Fall 2014	Fall 2015	In/ac
SW	21	30	13	GP 09-2406-8	ac ft x .001	747841	840517	968252	11.80
SE	28	33	20	GP 12-2072-8	ac ft x .001	298981	399310		
NW	6	31	14	GP 11-2411	ac ft x .001	435822	590054	753805	15.10
NE	6	31	14	GP 11-2413	ac ft x .001	401388	538620	680078	13.10
SW	6	31	14	GP 11-2412	ac ft x .001	420970	563273	727102	15.10
E 1/2	13	33	14	GP 11-4207-8	galx10,000				
SE	20	32	12	GP 11-5039-8	gal x 100	155802	348621	479070	3.70
E1/2 NE	21	32	12	GP 12-1876-8	gal x 100	114700	224837		
SW	31	31	14	GP 12-1183-8	ac ft x .001	492881	630115	820042	17.50
NW	7	29	10	GP 10-3574	Gal x 100	723777		327245	11.11*
NE	11	29	11	GP 11-3540	Gal x 100	1481350		247874	14.11*
NW	9	30	10	GP09-1260-8	Gal x 100	500907	811770	992118	5.10
NW	3	30	10	GP 10-3571-8	gal x 100	334293	574048	708019	3.80
NW	14	30	10	GP 10-0892	gal x 100	498988	632664	801966	4.80
NW	11	30	10	GP08-4942-8	Gal x 100	428523	52578	267693	6.10
SW	11	30	10	GP08-4941-8	Gal x 100	380248	225308	426574	5.70
NE	25	35	17			1842	47391		
SE	25	35	17			2126	42351		
SE	32	34	16	872295	gal x 1000				
NE	32	34	16	872270	gal X 1000		880384		
NE	23	31	15	GP 11-4210	gal x 100	31180	71634	89484	0.50

1/4	Sec	Twp	Rng	Serial #	Units	Fall 2013	Fall 2014	Fall 2015	In/ac
NE	27	29	6	GP 09-2505-6	Gal x 100	602585	630152	694753	1.80
E1/2 NE	8	31	14	GP 10-3565	gal x 100		None	583319	
E1/2	8	31	14	GP 12-2377	gal x 100	858885	202958		
E1/2	9	31	14	GP 07-8-3936	gal x 100		Replaced		
E1/2	16	31	14	GP 12-2374-6	gal x 100	225180	290239		
E1/2	9	31	14	GP 12-2373-6	gal x 100	186170	238239		
S1/2	16	31	14	GP-12-2376-6	gal x 100	193598	259834		
NE	17	31	14	GP-13-4777-8	gal x 100		325248		
SW	18	31	15	GP-13-2680-8	gal x 100	186170	937077		
SE	14	31	15	GP 12-2098	gal x 1000		29830.5		
SW	14	31	15	no #	gal x 1000		14680.2		
SW	14	31	15	no #	gal x 1000		31804.4		
SW	14	31	15	no #	gal x 1000		294.84		
SW	14	31	15	no #	gal x 1000		42984.3		
NE	22	31	14	GP 12-2152-8	gal x 100	1394378		352902	17.64*
SW	32	34	16	no #	gal x 1000				
NW	32	34	16	09-20846	gal x 1000				
SE	15	31	15	Master Meter	ac ft x .001				
SW	25	34	16						
S 1/2	25	34	16						
NW	18	31	14	GP 12-1745-8	ac ft x .001	274848	416176	526229	10.20

1/4	Sec	Twp	Rng	Serial #	Units	Fall 2013	Fall 2014	Fall 2015	In/ac
NE	1	31	15	GP 12-0943-8	ac ft x .001	441268	596860	808797	19.60
SW	2	31	15	GP 12-1747-8	ac ft x .001	25220	42488	63624	2.00
NE	1	31	15	GP 10-3640-8	ac ft x .001	498147	620496	733674	10.40
SW	1	31	15	GP-10-3515-8	ac ft x .001	581938	704258	845837	13.10
NE	0	30	14	GP 12-0682-8	ac ft x .001	437714	556202	708728	14.10
SE	0	30	14	GP 11-6030-8	ac ft x .001	390551	498884	660007	14.90
NE	3	31	13		ac ft x .001			443840	
NE	3	31	14	GP 12-2376-6	ac ft x .001			110413	
SW	7	31	14	GP 11-4750-8	ac ft x .001	395649	585955	165955	21.40
NE	3	31	14	GP 12-0680-8	ac ft x .001	406036	496487		
SW	3	29	8	GP 08-8-3669	Gal x 100				
SE	8	31	15	GP 11-6230-8	gal x 100	135407		842219	6.9*
NE	8	31	15	GP 11-6231-8	gal x 100	1637584		283284	11.89*
NW	2	30	13	GP 10-1277N	Gal x 1000	263243	306008	373928	19.20
SE	3	31	13	GP 12-2374-6	ac ft x .001				
SE	9	31	13	GP 12-1816-8	ac ft x .001	126517	187140		
NE	9	31	13	GP 12-0680	liters/second	195159	341140	236791	9.60
NE	6	31	16	GP 12-0369	ac ft x .001		Not whole season	503824	
E2 W2	6	30	10	GP 08-8-3667	Gal x 100		269367		
NW	3	31	13	GP 11-5653-8	ac ft x .001	376435	495776	639175	13.20
Ct	3	31	13		gal x 100	364475		980137	8.70*

1/4	Sec	Twp	Rng	Serial #	Units	Fall 2013	Fall 2014	Fall 2015	In/ac
SW	28	31	13		gal x 100	52047		193303	2.0*
NW	35	33	20	GP 09-1820-6	Gal x 100				
SE	26	33	20	GP 12-2162-8	gal x 100				

\* Is in/ac on a two year span