

STATE OF NEVADA
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF WATER RESOURCES

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PUMPERNICKEL VALLEY
HYDROGRAPHIC BASIN 4-065

CROP INVENTORY

CALENDAR YEAR 2015

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ABSTRACT

This inventory represents the status and usage of all permitted, certificated, and claims of vested right groundwater rights for irrigation purposes located within Pumpernickel Valley, Hydrographic Basin 4-065, for the year 2015. **Only those groundwater rights associated with irrigation purposes are represented in this report.** For a listing and summary of all other manners of use within the basin please refer to the [Nevada Division of Water Resources Hydrographic Basin Summary](#).

The data presented are valid for the time period of this report and may vary from previously published figures as water rights within the basin are subject to administrative action, such as certification, cancellation, forfeiture or withdrawal on a continuing basis.

For the year 2015, the permitted and certificated groundwater rights for irrigation purposes totaled **1,313 acres** with a total duty of 5,252 acre-feet within Pumpernickel Valley. An estimated **616 acres** were irrigated and 2,097 acre-feet were pumped during 2015.

HYDROGRAPHIC BASIN SUMMARY

HYDROGRAPHIC BASIN NUMBER	065, REGION 4
HYDROGRAPHIC BASIN NAME	PUMPERNICKEL VALLEY
COUNTIES	HUMBOLDT & PERSHING
MAJOR COMMUNITIES	GOLCONDA & VALMY
DESIGNATED BASIN	DESIGNATED
DENIALS BASED UPON WATER AVAILABILITY	N/A
ESTIMATED IRRIGATION PUMPAGE 2015 (ACRE-FEET)	2,097*

STATE ENGINEER'S ORDERS

[NO. 1086 - WELL SPACING](#)
[NO. 1241 – DESIGNATION](#)
[NO. 1251 – METER](#)

JANUARY 21, 1994
OCTOBER 3, 2014
FEBRUARY 5, 2015

COMMITTED GROUNDWATER RESOURCE FOR IRRIGATION PURPOSES: 5,252 ACRE-FEET
DATE: DECEMBER 2015

NOTE: Committed groundwater resource data are accurate for December 2015. Rights may be subject to change applications, certification, withdrawals, forfeiture and cancellations; each of these circumstances could impact the duty, diversion rate and acreage associated with a given right. Be advised this report acknowledges that other manner of uses may be present in the basin; however, only those groundwater rights associated with irrigation purposes are represented in this report.

* Acreage represented in this report may have surface water rights appurtenant. This report acknowledges those acres with surface water rights but is not intended to quantify, nor present any definitive use of those surface water rights. The data represent only the pumping of groundwater and the acreage to which it is applied.

PURPOSE AND SCOPE

The purpose of this report is to inventory all of the groundwater resources allocated to irrigation and described by the Office of the State Engineer, Nevada Division of Water Resources (NDWR), and to estimate the amount of groundwater pumped for irrigation purposes within the Pumpnickel Valley Hydrographic Basin (4-065), for the year 2015.

DESCRIPTION OF THE STUDY AREA

The Pumpnickel Valley Hydrographic Basin is located in north central Nevada (Figure 1), occupying approximately 299 square miles in Humboldt and Pershing Counties. The adjacent hydrographic basins are Kelly Creek Area (4-066) to the north, Clovers Area (4-064) to the east, Buffalo Valley (10-131) to the southeast, Grass Valley (4-071) to the southwest, and Winnemucca Segment (4-070) to the northwest.

Pumpnickel Valley is bounded on the west by the Sonoma Range and Edna Mountains, to the north by the Humboldt River, the east by Buffalo Mountain and Lone Tree Hill and to the south and southeast by the Tobin Range. The valley is approximately 13 miles wide by 29 miles long with basin elevations ranging from approximately 4,400 feet above mean sea level on the valley floor to approximately 9,500 feet in the surrounding mountains. Irrigation occurs primarily in the southern part of the basin (Figure 2).

There is one U.S. Geological Survey (USGS) stream gage present in the basin (Site 10327500), located on the Humboldt River near Iron Point. Data for the site may be accessed on the USGS website at <http://nevada.usgs.gov>.

GROUNDWATER LEVELS

Depths to groundwater in Pumpnickel Valley are measured by NDWR on a semi-annual basis. Sites at which water level measurements are made include:

065 N33 E40 02BBBB1	065 N33 E40 03ABBB1	065 N33 E40 03CAAB1
065 N33 E40 03DB 1	065 N33 E40 04CB 1	065 N33 E40 04DBCC1
065 N33 E40 04DDAA1	065 N33 E40 20CDBB1	065 N33 E40 20DDCD1
065 N34 E40 08DDA 2	065 N34 E40 35ABCC1	065 N34 E41 05AB 1
065 N34 E41 12DDCA1	065 N34 E42 01CBBB1	065 N34 E42 03BBCA1
065 N34 E42 03BBCA2	065 N34 E42 07CAAC1	065 N34 E42 11BCCB1
065 N34 E42 14ADAD1	065 N34 E42 17DACA1	065 N35 E41 34DBBA1
065 N35 E42 15DBAC1	065 N35 E42 15DBAC2	065 N35 E42 18AAAA1
065 N35 E42 19ACAD1	065 N34 E42 13ABBA1	

Groundwater level data have also been collected by the USGS and can be accessed through their website (<http://nevada.usgs.gov>).

METHODS TO ESTIMATE IRRIGATED ACREAGE

This report estimates the number of acres irrigated by the groundwater pumped under permits, certificates, and claims of vested right issued by the State Engineer. Table 1 and Figure 3 present the current and historic irrigated acreage and pumpage; Appendix A presents estimates detailed by certificate, permit, or vested claim number. The following methods were used to arrive at the estimated acreage:

- Field inspection of the place of use was conducted to estimate the number of acres under cultivation.
- In cases where field inspection of the place of use was not practical, aerial and/or satellite imagery were analyzed to determine acreages.

METHODS TO ESTIMATE PUMPAGE

This report estimates the amount of groundwater pumped under the permits and certificates issued by the Nevada State Engineer as well as claims of vested right in the Pumpnickel Valley Hydrographic Basin. The following methods were used to arrive at the estimated use:

- Where totalizing meters were in place, meter readings were taken and compared with previous data (if available).
- Where meters were not in place and the use was irrigation, pumpage was estimated by multiplying the number of hours the well was operated during the past year (determined from an hour meter reading or asking the water user) by the certificated diversion rate.
- Where there were no flow meters or other reliable options for estimating pumpage and the use was irrigation, pumpage was estimated by dividing the Net Irrigation Water Requirement (NIWR) for the crop grown by the efficiency of the irrigation method used, then multiplying by the number of acres irrigated. Irrigation efficiencies associated with three types of irrigation methods are: pivot at 85%; wheel line or other hand moved sprinklers at 75%; and flood at 60%. The pumpage amount estimated by this method was limited by the duty of the permit. For places where the groundwater rights were supplemental to surface water, groundwater use was estimated using the NIWR method above, but adjusted based on available surface water for the year. Evapotranspiration and NIWR data by basin can be found on the NDWR website at: http://water.nv.gov/mapping/et/et_general.cfm. This approach using the NIWR to estimate pumpage was used starting in 2014, and pumpage estimates for this and subsequent years may differ significantly from estimates of previous years.
- Where lands were irrigated by both surface water and groundwater, the surface water supply for the irrigation season was considered in estimating groundwater pumpage.

TABLES

Table 1. Pumpnickel Valley historical irrigated acreage and pumpage data.

Year	2013	2014	2015
Acres Irrigated	616	616	616
Acre-Foot Pumped	2,464	2,111	2,097

* The NIWR method to estimate pumpage was used starting in 2014; estimates may differ significantly from previous years.

FIGURES

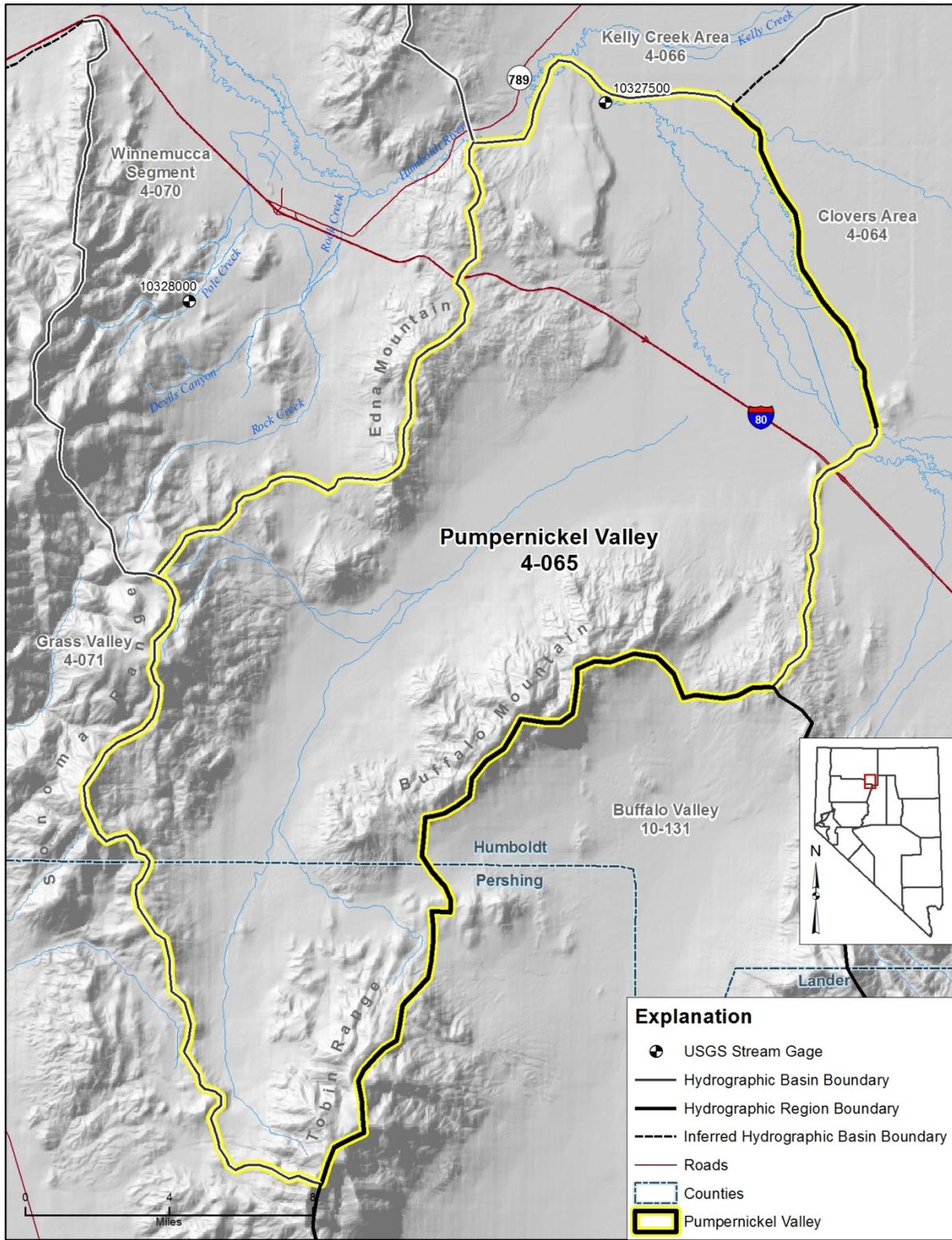


Figure 1. Physiographic map of Pumpernickel Valley (Hydrographic Basin 4-065).

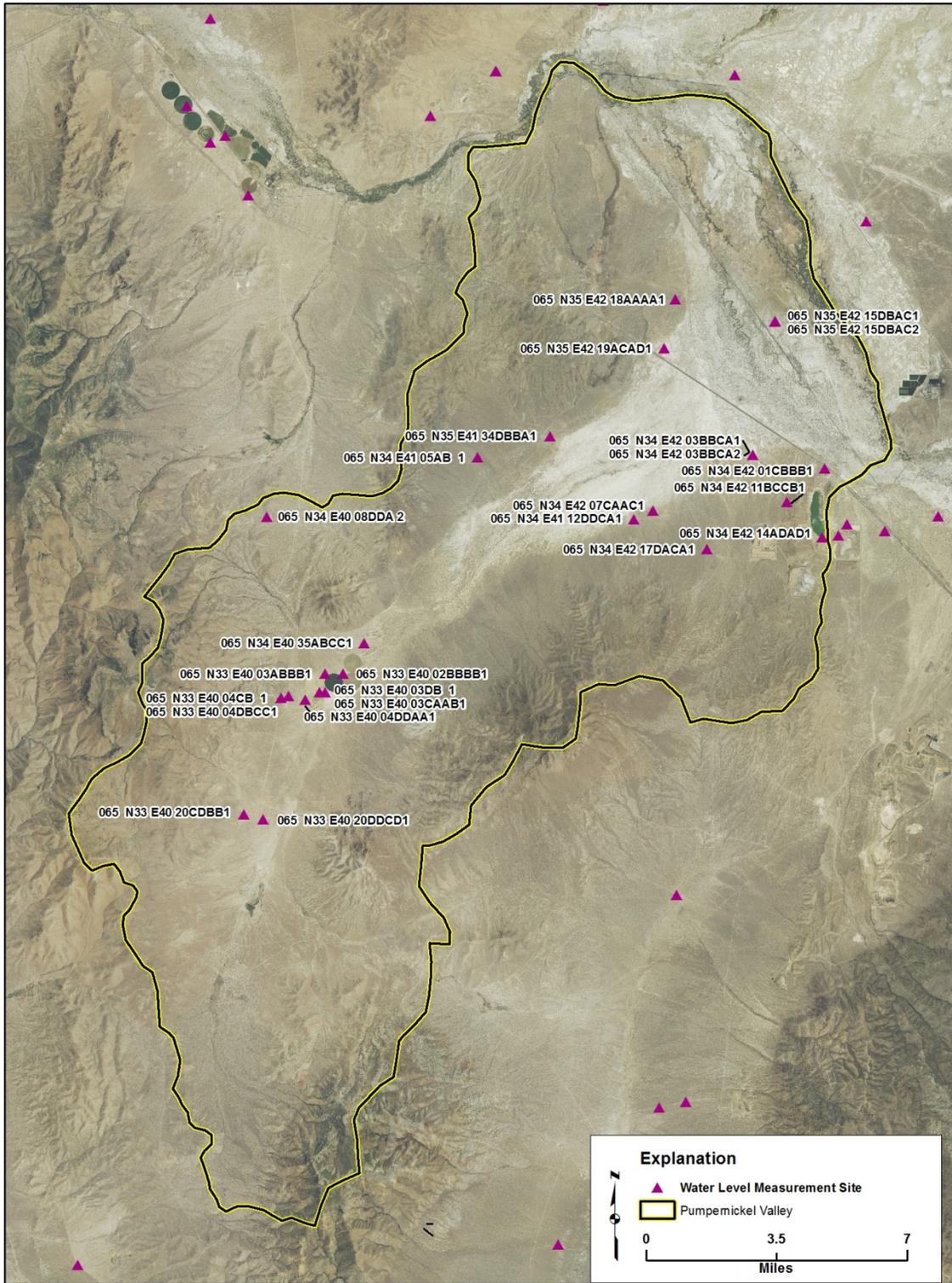


Figure 2. Map showing Pumpemickel Valley irrigated acreage and water level monitoring sites.

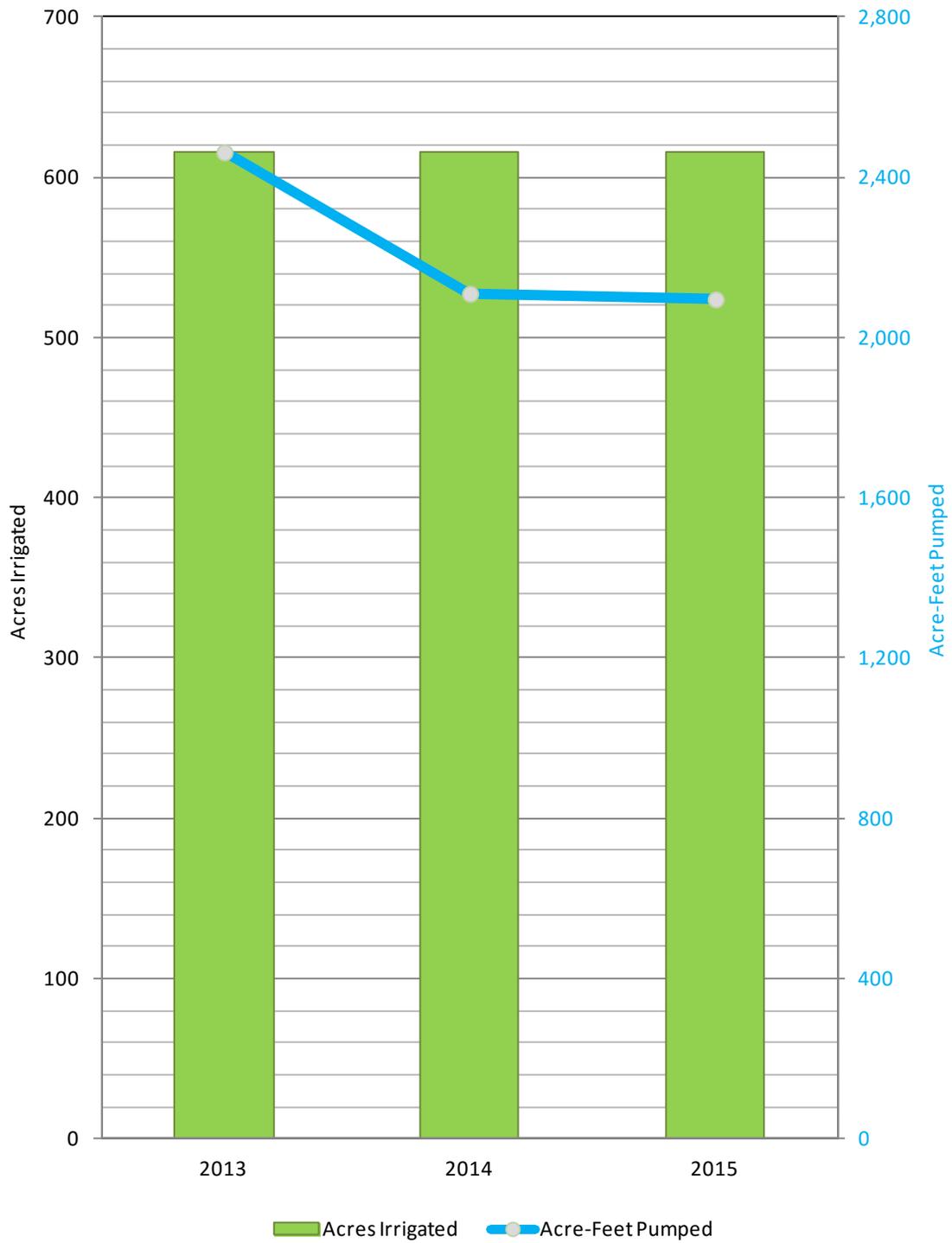


Figure 3. Graph showing Pumpernickel Valley historical irrigated acreage and pumpage. The NIWR method to estimate pumpage was used starting in 2014; estimates may differ significantly from previous years.

APPENDIX A. 2015 PUMPERNICKEL VALLEY CROP INVENTORY.

EXPLANATION OF COLUMN HEADINGS

App No	The file number of the Application to Appropriate/Change Water or the Claim of Vested Right.
Status	Indicates the status of an application: Permit (PER), Certificated (CER), or a Claim of Vested Right (VST).
QQ	The quarter-quarter of the Section in which the point of diversion is located.
Q	The quarter of the Section in which the point of diversion is located.
Sec	The Section in which the point of diversion is located.
Twn	The Township in which the point of diversion is located.
Rng	The Range in which the point of diversion is located.
Sup	Indicates whether the groundwater right is part of a group of groundwater rights used to irrigate all or a portion of the same acreage (supplemental). A “Y” in this column signifies the groundwater right is supplemental to other groundwater rights.
Supplemental Application Number	The application number(s) of the water right(s) that are supplemental to one another.
Permitted Acres	The number of acres defined by the permit or certificate that is eligible to be irrigated.
Supplementally Adjusted Permitted Acres	The supplementally adjusted, total number of acres that is eligible to be irrigated under a supplemental group of water rights.
Permitted Duty Acre-Feet	The amount of water that may be pumped in a given year, or season, as defined by the permit, certificate, or claim of vested right. If there is a supplemental group, the total combined duty is listed as a supplementally adjusted duty.
Supplementally Adjusted Duty Acre-Feet	The supplementally adjusted, total combined duty that may be pumped in a given year, or season, for a supplemental group of water rights, expressed in acre-feet. The supplementally adjusted, total combined duty is listed at the end of a supplemental group in bold .
Owner of Record	The owner of the water right as recorded in the records of the State Engineer. A water right may have more than one owner of record. Only the first, alphabetically, is listed in this table.
Crop Type	Indicates whether or not a crop was in production during the water year. If a crop was in production, the common name description of the plants under cultivation if given (e.g. alfalfa).

NIWR (ft)	Net Irrigation Water Requirement, defined to be equal to the annual crop evapotranspiration less the effective precipitation entering the root zone that is available for evaporation or transpiration.
Irrigation Method	The method by which the water is applied to the crop and ground (e.g. pivot).
Irrigation Efficiency	The estimated efficiency of the desired irrigation method used.
Irrigated Acreage	The estimate of the number of acres irrigated associated with a particular water right.
Acreage Estimation Method	The method by which the number of acres irrigated was determined. F – Field inspection. I – Aerial or satellite imagery.
Acre-Feet Pumped	The estimate of the amount of water pumped under a particular water right, expressed in acre-feet. One acre-foot equals 325,851 gallons.
Pumpage Estimation	The method used to estimate the amount of water pumped. M – Totalizing meter readings. N – NIWR Method. D – Duty.
Remarks	Additional information. Numbers in this column correspond to footnotes at the end of the table.

2015 PUMPERNICKEL VALEY CROP INVENTORY

App No	Status	QQ	Q	Sec	Twn	Rng	Sup	Supplemental Application Number	Permitted Acres	Supplementally Adjusted Permitted Acres	Permitted Duty Acre-Feet	Supplementally Adjusted Duty Acre-Feet	Owner of Record	Crop Type	NIWR (ft)	Irrigation Method	Irrigation Efficiency	Irrigated Acreage	Acreage Estimation Method	Acre-Feet Pumped	Pumpage Estimation Method	Remarks
22484	CER	NW	SE	4	33N	40E	Y	2678,61693, 53293,94	82.68	82.68	330.72	330.72	Johnson, Nancy L.					0	I	0	D	
29164	CER	NW	SW	4	33N	40E	Y	2678,61693, 53293,94	195.4	195.4	781.6	781.6	Johnson, Nancy L.					0	I	0	D	
37132	CER	SE	SE	4	33N	40E	Y	2678,61693, 53293,94	125.29	125.29	501.16	501.16	Johnson, Nancy L.					0	I	0	D	
22411	CER	NW	NW	2	33N	40E			305.2	305.2	1,220.80	1,220.80	Brewer, R & Rosasco, S	Alfalfa	3.3	Pivot	85%	252	I	978.35	N	
27994	CER	NW	SE	3	33N	40E	Y	24893	297	297	1,188.00	1,188.00	Brewer, R & Rosasco, S	Alfalfa	3.3	Pivot	85%	125	I	333.15	M	
24893	CER	NW	NE	3	33N	40E	Y	27994	297	--	1,188.00	--	Brewer, R & Rosasco, S					0	I	0	D	
Total Combined Duty									297		Acres	1,188.00	Acre-Feet									
62193	PER	NE	SW	3	33N	40E			307.48		1,229.92		Brewer, R & Rosasco, S	Grass	3.1	Pivot	85%	129	I	500.82	M	
														Alfalfa	3.3	Pivot	85%	110	I	284.71		
Total									1,313.05 Acres		5,252.20 Acre-Feet			Total				616 Acres		2,097.03 Acre-Feet		