STATE OF NEVADA

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

DIVISION OF WATER RESOURCES

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STATE ENGINEER

DIXIE CREEK-TENMILE CREEK AREA
HYDROGRAPHIC BASIN 4-048

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 Dixie Creek-Tenmile Creek Area, Hydrographic Basin 4-048, 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 **422 acres** with a total duty of 1,250 acre-feet within Dixie Creek-Tenmile Creek Area. An estimated **156 acres** were irrigated and 435 acre-feet were pumped during 2015.

HYDROGRAPHIC BASIN SUMMARY

HYDROGRAPHIC BASIN NUMBER	048, REGION 4
HYDROGRAPHIC BASIN NAME	DIXIE CREEK-TENMILE CREEK AREA
COUNTIES	ELKO
MAJOR COMMUNITIES	SPRING CREEK
DESIGNATED BASIN	DESIGNATED
DENIALS BASED UPON WATER AVAILABILITY	2964, IRD DEN, 5/21/1984 3187, IRD DEN, 5/15/1985 4121, IRR DEN, 6/7/1994
ESTIMATED IRRIGATION PUMPAGE 2015 (ACRE-FEET)	435*

STATE ENGINEER'S ORDERS

NO. 848 –DESIGNATION OF BASIN	SEPTEMBER 6, 1984
NO. 1120 – NOTICE OF CURTAILMENT (PORTION)	APRIL 4, 1996
NO. 1251 – METER	FEBRUARY 5, 2015

COMMITTED GROUNDWATER RESOURCE FOR IRRIGATION PURPOSES: 1,250 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 Dixie Creek-Tenmile Creek Area Hydrographic Basin (4-048), for the year 2015.

DESCRIPTION OF THE STUDY AREA

The Dixie Creek-Tenmile Creek Area Hydrographic Basin is located in central Nevada (Figure 1), occupying approximately 392 square miles in west central Elko County. The adjacent hydrographic basins are Pine Valley (4-053) to the west, Elko Segment (4-049) to the northwest, Lamoille Valley (4-045) to the east, and South Fork Area (4-046) and Huntington Valley (4-047) to the south.

Dixie Creek-Tenmile Creek Area is bounded on the north by the Elko Hills, to the east by the Ruby Mountains, to the south by Cedar Ridge, and to the west by the Pinon Range and Grindstone Mountain. This Hydrographic Basin includes the South Fork Reservoir. The valley is approximately 11 miles wide by 30 miles long, trending southwest to northeast, with elevations ranging from approximately 5,200 feet above mean sea level on the valley floor to approximately 10,000 feet in the surrounding Ruby Mountains. Irrigation occurs primarily in the central part of the basin (Figure 2).

There is one U.S. Geological Survey (USGS) stream gaging station (site number 10320000) within the basin, located on the South Fork of the Humboldt River (Figure 1). Data for this gage can be accessed through the USGS website at http://nevada.usgs.gov.

GROUNDWATER LEVELS

Depths to groundwater in Dixie Creek-Tenmile Creek Area are measured by multiple agencies on a semi-annual basis. Sites at which water level measurements are made by or reported to NDWR include:

048 N31 E53 03DADD1	048 N31 E54 10BDCD1	048 N32 E55 21DB 1
048 N31 E54 03ABCD1	048 N31 E54 15BACB1	048 N32 E55 23AB 1
048 N31 E54 08ABCC1	048 N31 E54 21AACC1	048 N32 E56 05C 1
048 N31 E54 09ADDB1	048 N31 E54 21CDAA1	048 N33 E55 25DD 1
048 N31 E54 09ADDB3	048 N32 E53 34BCDD1	048 N33 E55 35AA 1
048 N31 E54 09ADDB4	048 N32 E53 34BDCD1	048 N33 E55 35BC 1
048 N31 E54 10 BDCD1	048 N32 E53 34BDDD1	048 N33 E56 09ABA 01
048 N31 E54 10BABC1	048 N32 E53 35DBCD1	048 N33 E56 31BB 1
048 N31 E54 10BACB1	048 N32 E53 35DBCD2	048 N33 E57 05CB 1
048 N31 E54 10BACB2	048 N32 E55 01CC 1	048 N33 E57 30BB 1
048 N31 E54 10BCDC1	048 N32 E55 11CB 1	048 N34 E56 26DA 1

Groundwater level data have also been collected by the U.S. Geological Survey (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 Dixie Creek-Tenmile Creek Area 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 not used in previous inventories, and pumpage estimates for 2014 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. Dixie Creek-Tenmile Creek Area historical irrigated acreage and pumpage data.

Year	2011	2012	2013	2014	2015
Acres Irrigated	172	101	112	179	156
Acre-Feet Pumped*	319	301	288	509	435

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

FIGURES

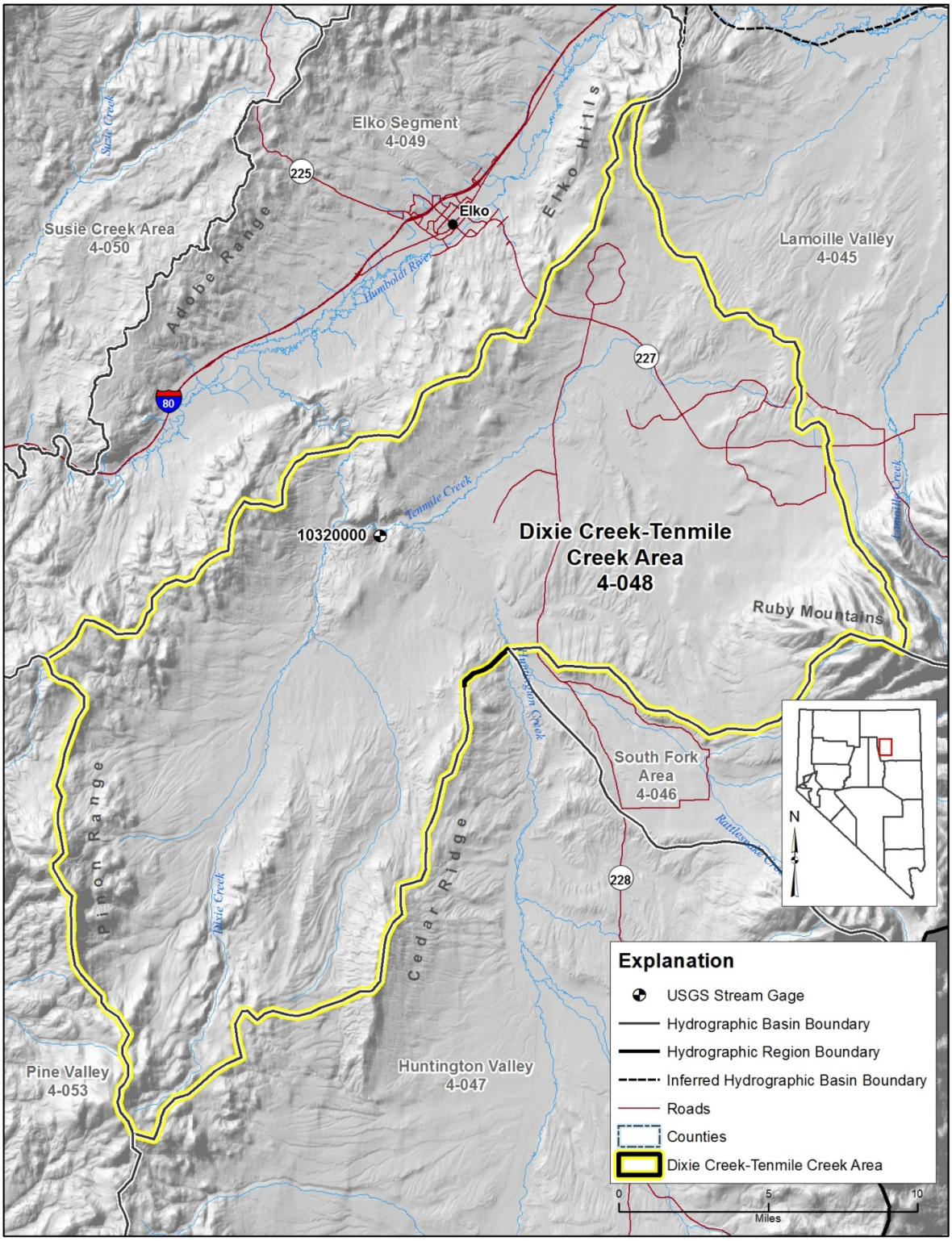

Figure 1. Physiographic map of Dixie Creek-Tenmile Creek Area (Hydrographic Basin 4-048).

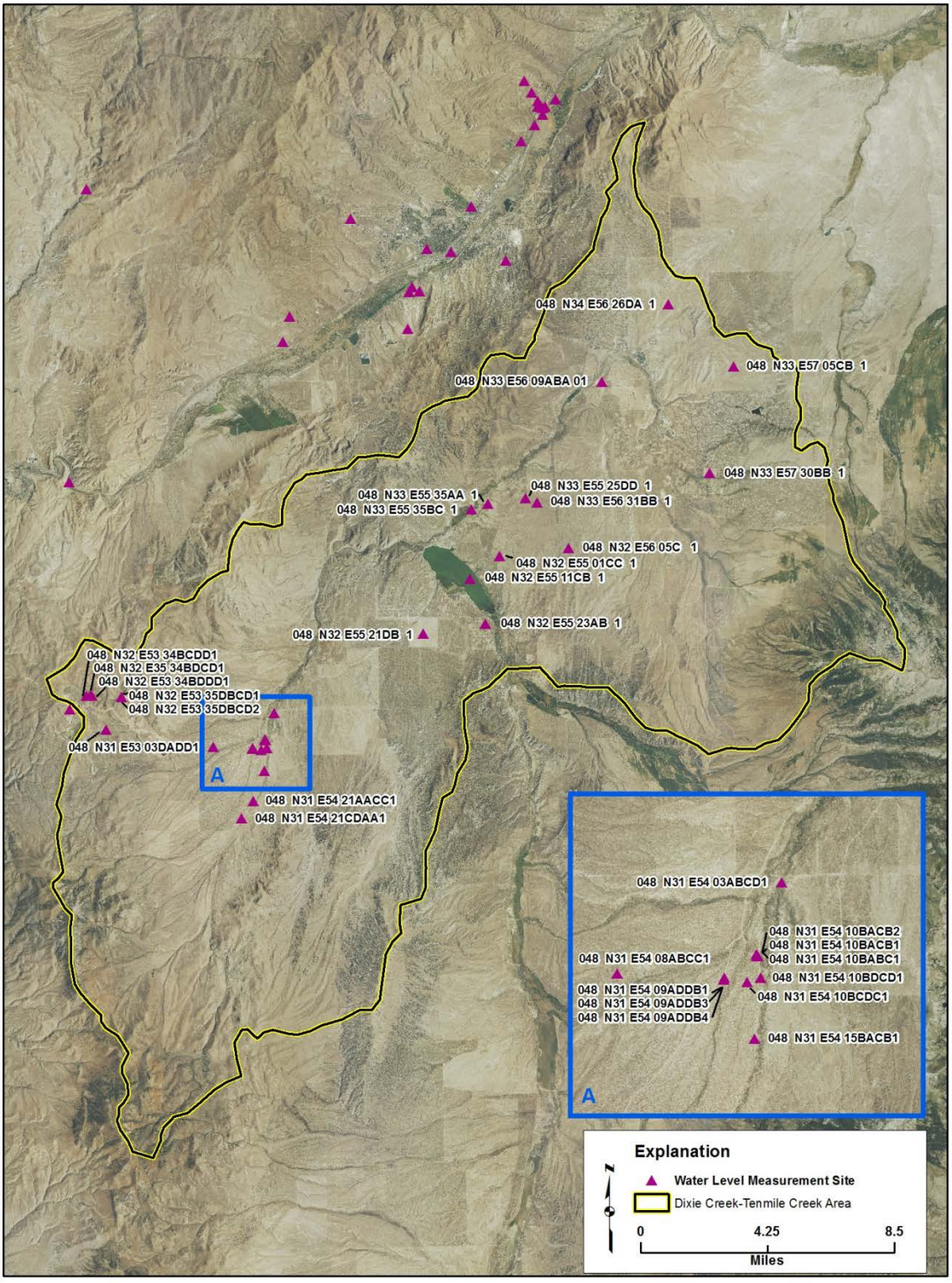

Figure 2. Map showing Dixie Creek-Tenmile Creek Area irrigated acreage and water level monitoring sites.

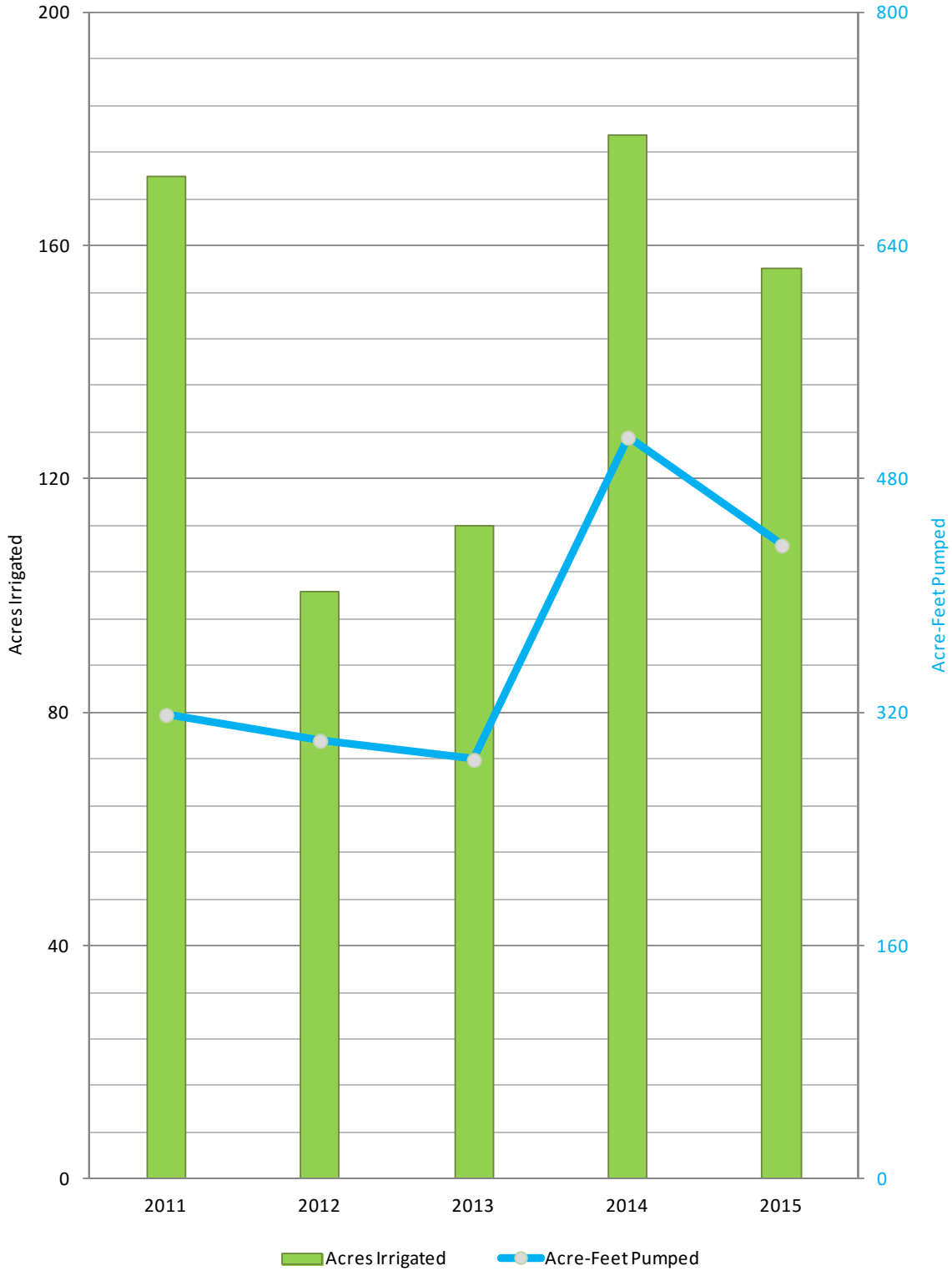

Figure 3. Graph showing Dixie Creek-Tenmile Creek Area historical irrigated acreage and pumpage. The NIWR method to estimate pumpage was used starting in 2014; estimates may differ significantly from previous years.

APPENDIX A. 2015 DIXIE CREEK-TENMILE CREEK AREA 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. A "-" in this field indicates that pumpage was attributed to a senior supplemental permit or certificated 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. A "-" in this field indicates that pumpage was attributed to a senior supplemental permit or certificated water right.
Pumpage Estimation	The method used to estimate the amount of water pumped. M – Totalizing meter readings. N – NIWR Method.
Remarks	Additional information. Numbers in this column correspond to footnotes at the end of the table.

Crop Inventory and Groundwater Pumpage for Irrigation - Dixie TenMile, Basin 048, 2015

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 Acres	Acreage Estimation Method	Acre-Feet Pumped	Pumpage Estimation Method	Remarks
81046	PER	NE	NW	27	31N	53E			125.00	**125.00**	375.00	**375.00**	TOMERA, KEVIN	NO CROP	n/a	NO IRR EQUIP	n/a	0.00	F	0.00	N	AFA
																TOTAL:		**0.00**		**0.00**		**AFA**
47090	CER	NW	NE	23	32N	55E			8.539	**8.539**	25.62	**25.62**	HARRIS, LANDON G	PASTURE	2.7	FIX-SET	75%	11.20	F	25.62	D	AFA
																TOTAL:		**11.20**		**25.62**		**AFS**
47973	CER	NE	SW	23	32N	55E			2.95	**2.95**	8.85	**8.85**	TESTOLIN, BARBARA	Domestic/YARD	2.6	SPRINKLERS	75%	1.00	F	3.47	N	AFA
																TOTAL:		**1.00**		**3.47**		**AFA**
43563	CER	NE	SW	25	33N	55E			5.00	**5.00**	15.00	**15.00**	RINALDO, DANIEL RAE LYNN	MEADOW GRASS	2.1	HAND LINE	75%	5.00	F	14.00	N	AFA
																TOTAL:		**5.00**		**14.00**		**AFA**
80885	PER	NE	NW	25	33N	55E			15.03	**15.03**	46.51	**46.51**	O'DONNELL, BLAKE & ELEANOR	MEADOW HAY	2.1	FLOOD	60%	15.03	F	46.51	D	AFA
																TOTAL:		**15.03**		**46.51**		**AFA**
48294	CER	NE	NE	35	33N	55E			17.52	**17.52**	52.56	**52.56**	CANADAY, MATTHEW & CYNTHIA	NO CROP	n/a	FIX-SET	75%	0.00	F	0.00	N	AFA
																TOTAL:		**0.00**		**0.00**		**AFA**
48296	CER	NE	SW	35	33N	55E	Y	56322	24.97	**27.97**	65.16	**83.90**	LEWIS, CALTON M	MEADOW HAY	2.1	HAND LINES	75%	24.97	F	49.81	D	AFA
56322	CER	SW	NW	35	33N	55E	Y	48296	13.29		18.74		LEWIS, CALTON M	PASTURE GRASS	2.7	HAND LINES	75%	13.29	F	34.09	D	AFA
																TOTAL:		**38.26**		**83.90**		**AFA**
70525	PER	NW	NE	9	33N	56E			40.14	**40.14**	120.42	**120.42**	CARR, RICHARD BRUNO	POTATOES/ PASTURE	2.7	FIXED & HAND LINES	75%	20.00	F	72.00	N	AFA
																TOTAL:		**20.00**		**72.00**		**AFA**
44482	CER	SW	NE	10	33N	56E			37.14	**37.14**	94.12	**94.12**	BOTTARI, TIMOTHY & PATRICK	NO CROP	2.7	FIX-SET	75%	0.00	F	0.00	N	AFA
																TOTAL:		**0.00**		**0.00**		**AFA**
34821	CER	NW	SE	16	33N	56E	Y	DHR-00653	79.52	**79.52**	238.56	**238.56**	LEGARZA, JOE M	MEADOW HAY	2.1	SURFACE	N/A	0.00	F	0.00	N	AFA
																TOTAL:		**0.00**		**0.00**		**AFA**
41509	PER	NW	NW	30	33N	57E	Y	56696	65.06	**63.06**	192.19	**189.19**	REED, JACOB & LISA	GRASS HAY	2.4	WHEEL LINE	75%	32.53	F	94.60	D	AFA
56696	PER	NE	NW	30	33N	57E	Y	41509	45.92		137.78		REED, JACOB & LISA	GRASS HAY	2.4	WHEEL LINE	75%	32.53	F	94.60	D	AFA
																TOTAL:		**65.06**		**189.19**		**AFA**
									TOTAL:	**421.87**		**1249.73**				**TOTAL:**		**155.55**		**434.69**		