

Alberta Irrigation Information 2016



AID	– Aetna Irrigation District
BRID	– Bow River Irrigation District
EID	– Eastern Irrigation District
LID	– Leavitt Irrigation District
LNID	– Lethbridge Northern Irrigation District
MID	– Magrath Irrigation District
MVID	– Mountain View Irrigation District
RID	– Raymond Irrigation District
RCID	– Ross Creek Irrigation District
SMRID	– St.Mary River Irrigation District
TID	– Taber Irrigation District
UID	– United Irrigation District
WID	– Western Irrigation District

Unit Conversion Factors

Imperial to Metric

1 acre	= 0.405 ha
1 ac-ft	= 1233.480 m ³
1 ac-ft	= 1.233 dam ³
1 inch	= 25.4 mm
1 mile	= 1.609 km
1 lbs	= 0.454 kg

Metric to Imperial

1 ha	= 2.471 acres
1 m ³	= 0.00081 ac-ft
1 dam ³	= 0.8107 ac-ft
1 mm	= 0.0394 inches
1 km	= 0.6214 miles
1 kg	= 2.205 lbs

Other

1 m ³	= 1000 L
1 dam ³	= 1000 m ³
1 dam ³	= 1 megalitre
1 km	= 1000 m

ALBERTA IRRIGATION INFORMATION

2016

BASIN WATER MANAGEMENT SECTION
IRRIGATION AND FARM WATER BRANCH

JULY 2017

The purpose of this booklet is to provide a statistical overview of irrigation information and data relating primarily to the thirteen irrigation districts situated in Alberta, but also includes information about irrigation across the whole province. The majority of the annual data is provided by the irrigation districts. This report is prepared by Alberta Agriculture and Forestry.

For more information, please contact:
Colin Langhorn, Alberta Agriculture and Forestry
Agriculture Centre
Lethbridge, Alberta T1J 4V6
Telephone (403) 381-5906
colin.langhorn@gov.ab.ca

For an electronic version of this report and additional information visit:

Website: www.agric.gov.ab.ca

Select: Agriculture ⇒ Soil/Water/Air ⇒ Irrigation

LIST OF FIGURES

Figure 1. Irrigated Crops within the 13 Irrigation Districts	5
Figure 2. Acres of Five Major Irrigated Specialty Crops – Canola Seed, Alfalfa Seed, Dry Beans, Potatoes, and Sugar Beets within the 13 Irrigation Districts	5
Figure 3. Crops Grown within the 13 Irrigation Districts in 2016	6
Figure 4. On-farm Irrigation Methods within the 13 Irrigation Districts in 2016	6
Figure 5. Irrigation Methods Used within the 13 Irrigation Districts	8
Figure 6. Growth in Irrigation Area	13
Figure 7. Irrigation Districts Gross Annual Diversions	13
Figure 8. Irrigation Districts Gross Diversion Equivalent Depth	14
Figure 9. Irrigation Districts Water Use Productivity	14
Figure 10. Location of Private Irrigation	22
Figure 11. Lethbridge Optimum Crop Water and Net Irrigation Requirements	23
Figure 12. Lethbridge Corn Heat Units	23
Figure 13. Bow Island Optimum Crop Water and Net Irrigation Requirements	24
Figure 14. Bow Island Corn Heat Units	24
Figure 15. Brooks Optimum Crop Water and Net Irrigation Requirements	25
Figure 16. Brooks Corn Heat Units	25
Figure 17. Historical Energy Prices for Irrigation Systems	27
Figure 18. Alberta’s Irrigation Districts	28

LIST OF TABLES

Table 1. Details of Crops Grown within the 13 Irrigation Districts in 2016	1,2, and 3
Table 2. Crops Grown within the 13 Irrigation Districts in 2016	4
Table 3. On-farm Irrigation Method Summary within the 13 Irrigation Districts in 2016	7
Table 4. Assessment Roll Acres within the 13 Irrigation Districts	9
Table 5. Acres Actually Irrigated within the 13 Irrigation Districts	10
Table 6. Irrigation Districts Irrigation Rates	11
Table 7. Gross Annual Diversions, Expansion Limits, and Licence Allocations to Irrigation Districts	12
Table 8. Irrigation Districts Water Balance in 2016	15
Table 9. Conveyance Infrastructure by Type of Works Within the 13 Irrigation Districts	16
Table 10. Irrigation District Infrastructure by Length and Replacement Cost in 2016	17
Table 11. Irrigation District Water Licence Allocations	18
Table 12. Irrigation District Infrastructure Value Condition Assessments	18
Table 13. Irrigation District Reservoirs	19
Table 14. Provincially Owned and Operated Reservoirs Used by Irrigation	20
Table 15. Hydroelectric Plants Associated with Water Distribution Works	20
Table 16. Private Water Licences for Irrigation in 2016	21
Table 17. Historical Rainfall in Southern Alberta	26
Table 18. Historical Corn Heat Units in Southern Alberta	26
Table 19. Frost Free Period (0° C) in Southern Alberta	26
Table 20. Frost Free Period (-2° C) in Southern Alberta	26
Table 21. Energy Type Used in the Irrigation Districts’ Irrigated Areas	27
Glossary	29

Table 1. Details of Crops Grown within the 13 Irrigation Districts in 2016

CROP TYPE	AID			BRID			EID			LID			LNID			
	acres covered by an irrigation system		acres with no irrigation system	acres covered by an irrigation system		acres with no irrigation system	acres covered by an irrigation system		acres with no irrigation system	acres covered by an irrigation system		acres with no irrigation system	acres covered by an irrigation system		acres with no irrigation system	
	Irrigated this year	Not irrigated this year		Irrigated this year	Not irrigated this year		Irrigated this year	Not irrigated this year		Irrigated this year	Not irrigated this year		Irrigated this year	Not irrigated this year		
CEREALS	Barley	475	991		10,918	1,011		17,618			150	16		15,330		
	CPS Wheat				10,544	74		1,925						781		
	Durum Wheat				13,768	1,584		5,149						8,535		
	Grain Corn				4,512	9		12,311						1,024		
	Hard Spring Wheat				39,106	1,745		41,430						5,862		
	Malt Barley					447								149		
	Oats				988	208		2,679			30			303		
	Rye				603	21		413								
	Soft Wheat				1,587			128						4,140		
	Triticale				520	36		5,513			60			2,549		
	Winter Wheat				3,576			1,333						1,198		
FORAGES	Alfalfa - Two cuts				218			26,377						10,554		
	Alfalfa - Three cuts							7,321						3,914		
	Alfalfa Hay	1,345	550		14,829	1,342		7,044			663	75		10,214		
	Alfalfa Silage				493	6		1,245						4,548		
	Barley Silage				2,436	781		3,698						34,010		
	Barley Silage (underseeded)				95			554						1,253		
	Brome Hay				4,200									689		
	Corn Silage				4,726	13		16,657						26,352		
	Custom Variety Forage/Misc							35								
	Grass Hay		6		204	76		10,570			466	330		5,359		
	Green Feed	202	89		1,214	127		6,510			69			61		
	Milk Vetch				132			120								
	Millet							666								
	Native Pasture	14						1,430			100			287		
	Oats Silage				242											
Sorghum/Sudan Grass																
Tame Pasture	388	428		8,776	1,055		38,796			1,393	30		4,080			
Timothy Hay				273	37		2,139			705			3,273			
Triticale Silage																
OIL SEEDS	Canola		107		11,904	3,812		24,327						25,707		
	Flax				2,171	132		5,124						1,873		
	Mustard				286	13		132						80		
	Safflower				135									158		
SPECIALTY CROPS	Alfalfa Seed				17,660	153		25,566						147		
	Canary Seed							66								
	Canola Seed				14,906	61		8,189								
	Carrots							201								
	Catnip															
	Chick Peas															
	Dill							125						147		
	Dry Beans				12,602	187		3,574						68		
	Dry Peas				13,017	1,655		6,386						731		
	Faba Beans				1,378			2,585								
	Fresh Corn (sweet)															
	Fresh Peas				923	135								314		
	Grass Seed				73									146		
	Hemp				2,984	56		931						736		
	Lawn Turf					66								899		
	Lentils				766	156		573								
	Market Gardens				8	20		120						48		
	Mint				348	58										
	Nursery							429						7		
	Onions															
Potatoes				10,090	14		4,944						717			
Pumpkins																
Radishes																
Safflower				135									158			
Seed Potatoes							250									
Small Fruit																
Soy Beans							1,255									
Sugar Beets				11,916	55		497						2,321			
Sunflower				1,013	40		2,401						181			
OTHER	Miscellaneous	44	65		98	131				228	717		535			
	Non Crop				121	416			146				174			
	Summer Fallow					39		527								
	Unknown (not reported)												2,548			
Total acres		2,467	2,236	0	226,492	16,079	0	299,336	673	0	3,863	1,168	0	182,160	0	0
		4,703			242,572			300,009			5,030			182,160		

Table 1. Details of Crops Grown within the 13 Irrigation Districts in 2016 (cont'd)

CROP TYPE	MID			MVID			RCID			RID		
	acres covered by an irrigation system		acres with no irrigation system	acres covered by an irrigation system		acres with no irrigation system	acres covered by an irrigation system		acres with no irrigation system	acres covered by an irrigation system		acres with no irrigation system
	Irrigated this year	Not irrigated this year		Irrigated this year	Not irrigated this year		Irrigated this year	Not irrigated this year		Irrigated this year	Not irrigated this year	
CEREALS	Barley	1,996	375							6,201	257	
	CPS Wheat									1,317		
	Durum Wheat									2,760		
	Grain Corn									66		
	Hard Spring Wheat	2,259	27		141					1,196	80	
	Malt Barley	125								878	70	
	Oats	45			16	307				207		
	Rye											
	Soft Wheat											
	Triticale	80								316	40	
	Winter Wheat	983	251							1,647	190	
FORAGES	Alfalfa - Two cuts									2,399		
	Alfalfa - Three cuts									7,817		
	Alfalfa Hay	5,528	496		596	686	781			95		
	Alfalfa Silage									1,879	249	
	Barley Silage											
	Barley Silage (underseeded)											
	Brome Hay											
	Corn Silage									2,508		
	Custom Variety Forage/Misc											
	Grass Hay	384			243	255			94	458	182	
	Green Feed	104	110		107	241				296	72	
	Milk Vetch											
	Millet											
	Native Pasture				532	428						
	Oats Silage									560	25	
Sorghum/Sudan Grass												
Tame Pasture	1,168	197							3,640	958		
Timothy Hay									585			
Triticale Silage												
OIL SEEDS	Canola	3,145	312		112			116		6,181	430	
	Flax	180								280		
	Mustard									141		
	Safflower											
SPECIALTY CROPS	Alfalfa Seed											
	Canary Seed											
	Canola Seed											
	Carrots											
	Catnip											
	Chick Peas											
	Dill											
	Dry Beans	30										
	Dry Peas		76							1,599	140	
	Faba Beans											
	Fresh Corn (sweet)											
	Fresh Peas											
	Grass Seed	260										
	Hemp	80										
	Lawn Turf									12		
	Lentils									402	64	
	Market Gardens									50		
	Mint											
	Nursery									43		
	Onions											
Potatoes												
Pumpkins												
Radishes												
Safflower												
Seed Potatoes												
Small Fruit	20											
Soy Beans									180			
Sugar Beets												
Sunflower												
OTHER	Miscellaneous								71	42		
	Non Crop											
	Summer Fallow											
	Unknown (not reported)											
Total acres	16,387	1,844	0	1,746	1,917	0	897	0	177	43,743	2,757	0

Table 1. Details of Crops Grown within the 13 Irrigation Districts in 2016 (cont'd)

CROP TYPE	SMRID			TID			UID			WID			TOTAL ACRES (for all districts)	
	acres covered by an irrigation system		acres with no irrigation system	acres covered by an irrigation system		acres with no irrigation system	acres covered by an irrigation system		acres with no irrigation system	acres covered by an irrigation system		acres with no irrigation system		
	Irrigated this year	Not irrigated this year		Irrigated this year	Not irrigated this year		Irrigated this year	Not irrigated this year		Irrigated this year	Not irrigated this year			
CEREALS	Barley	16,670	84	1,016	4,557	23		2,913	2,018		10,405	2,661	95,684	
	CPS Wheat	580			67				127		4,870	927	21,213	
	Durum Wheat	38,191	236	917	2,465	138					175	145	74,064	
	Grain Corn	7,830		136	1,774	75					130		27,867	
	Hard Spring Wheat	44,299	377	2,426	13,968	67		3,318	3,337		3,801	529	163,967	
	Malt Barley	126		7	12								1,814	
	Oats	455	15		301						811	348	6,713	
	Rye	1,137		98							20		2,292	
	Soft Wheat	12,013		483							1,205	215	19,772	
	Triticale	1,204		109	90			280	80				10,877	
Winter Wheat	12,463	147	472	1,124	25		1,261			580		25,250		
FORAGES	Alfalfa - Two cuts	11,618	82	534	15			3,362	1,139		9,876	2,323	66,097	
	Alfalfa - Three cuts	4,821		3	407			399					19,264	
	Alfalfa Hay	10,289	90	692	7,835	196		126	79		3,318	839	75,429	
	Alfalfa Silage	1,758		283	56						111		8,595	
	Barley Silage	5,425		443	707			798	14		3,086	626	54,153	
	Barley Silage (underseeded)	649											2,550	
	Brome Hay	287	6								275	30	5,487	
	Corn Silage	19,549	14	851	3,303			50			524		74,547	
	Custom Variety Forage/Misc												35	
	Grass Hay	5,984	354	922	282			543	301		2,890	1,077	30,979	
	Green Feed	3,044		81	154				73				12,553	
	Milk Vetch												252	
	Millet												666	
	Native Pasture	4,360	207	492	18	249		2,645	897		566	701	12,925	
	Oats Silage	424		50	30								1,331	
	Sorghum/Sudan Grass	317			132			98					547	
	Tame Pasture	9,012	571	959	3,668	1,017		963	751		4,365	2,965	85,180	
Timothy Hay	4,974	74	218	2,154			1,272			665		16,678		
Triticale Silage	528		50									578		
OIL SEEDS	Canola	36,516	17	1,350	2,592	40		3,159	775		10,889	2,862	134,351	
	Flax	5,513	50	198	1,001						130		16,652	
	Mustard	395		27					282				1,356	
	Safflower												293	
SPECIALTY CROPS	Alfalfa Seed	1,764		24									45,314	
	Canary Seed	4											70	
	Canola Seed	15,148	30	18	3,504	130							41,986	
	Carrots	153											354	
	Catnip	253											253	
	Chick Peas	1,133											1,133	
	Dill	299		31									602	
	Dry Beans	26,316	7	75	3,302								46,160	
	Dry Peas	14,217	332	931	634			989	870		1,430	719	43,726	
	Faba Beans	868		8	266						15		5,119	
	Fresh Corn (sweet)	251			1,453								1,704	
	Fresh Peas	800	28		2,721						1,197		6,118	
	Grass Seed	59						448			5		991	
	Hemp	8,043		97	290								13,216	
	Lawn Turf	165	6		94						2,476		3,718	
	Lentils	9,043	195	172	286				598				12,254	
	Market Gardens	365		23	3	10		11			229	87	975	
	Mint	5,971		4									6,381	
	Nursery	245	39		22						1,030	585	2,400	
	Onions	3			760								763	
	Potatoes	14,623			10,558			3			115	30	41,094	
Pumpkins				112								112		
Radishes				64								64		
Safflower												293		
Seed Potatoes				444						516		1,210		
Small Fruit	56				10						3	86		
Soy Beans	2,035			194								3,664		
Sugar Beets	9,621	18	32	5,183								29,643		
Sunflower	817			852								5,304		
OTHER	Miscellaneous	1,538	386	243	225	39		89	37		30	80	4,597	
	Non Crop	174	270	143	83	31						260	1,818	
	Summer Fallow	162	33	748	39	159							1,707	
	Unknown (not reported)						4,035						8,435	
Total acres	374,554	3,666	15,367	77,801	2,209	4,035	22,725	11,376	0	65,735	18,009	8,435	1,407,854	
		393,586			84,045			34,101			92,179			1,407,854

Table 2. Crops Grown within the 13 Irrigation Districts in 2016

CROPS	IRRIGATION DISTRICTS													TOTAL ACRES
	AID	BRID	EID	LID	LNID	MID	MVID	RCID	RID	SMRID	TID	UID	WID	
Cereals	1,466	91,258	88,499	255	39,871	6,141	464	0	15,225	141,491	24,686	13,333	26,822	449,512
	31.2%	37.6%	29.5%	5.1%	21.9%	33.7%	12.7%	0.0%	32.7%	35.9%	29.4%	39.1%	29.1%	31.9%
Forages	3,021	41,583	123,162	3,830	104,594	7,987	3,088	875	21,723	90,013	20,223	13,508	34,237	467,845
	64.2%	17.1%	41.1%	76.1%	57.4%	43.8%	84.3%	81.5%	46.7%	22.9%	24.1%	39.6%	37.1%	33.2%
Oil Seeds	107	18,453	29,583	0	27,818	3,637	112	116	7,032	44,065	3,633	4,216	13,881	152,652
	2.3%	7.6%	9.9%	0.0%	15.3%	19.9%	3.1%	10.8%	15.1%	11.2%	4.3%	12.4%	15.1%	10.8%
Specialty Crops	0	90,472	58,092	0	6,620	466	0	12	2,478	114,321	30,892	2,919	8,434	314,706
	0.0%	37.3%	19.4%	0.0%	3.6%	2.6%	0.0%	1.1%	5.3%	29.0%	36.8%	8.6%	9.1%	22.4%
Other*	109	805	673	945	3,257	0	0	71	42	3,696	4,611	125	8,805	23,139
	2.3%	0.3%	0.2%	18.8%	1.8%	0.0%	0.0%	6.6%	0.1%	0.9%	5.5%	0.4%	9.6%	1.6%
TOTAL ACRES	4,703	242,572	300,009	5,030	182,160	18,231	3,664	1,074	46,500	393,586	84,045	34,101	92,179	1,407,854

Note: *Other includes unknown or not reported crops

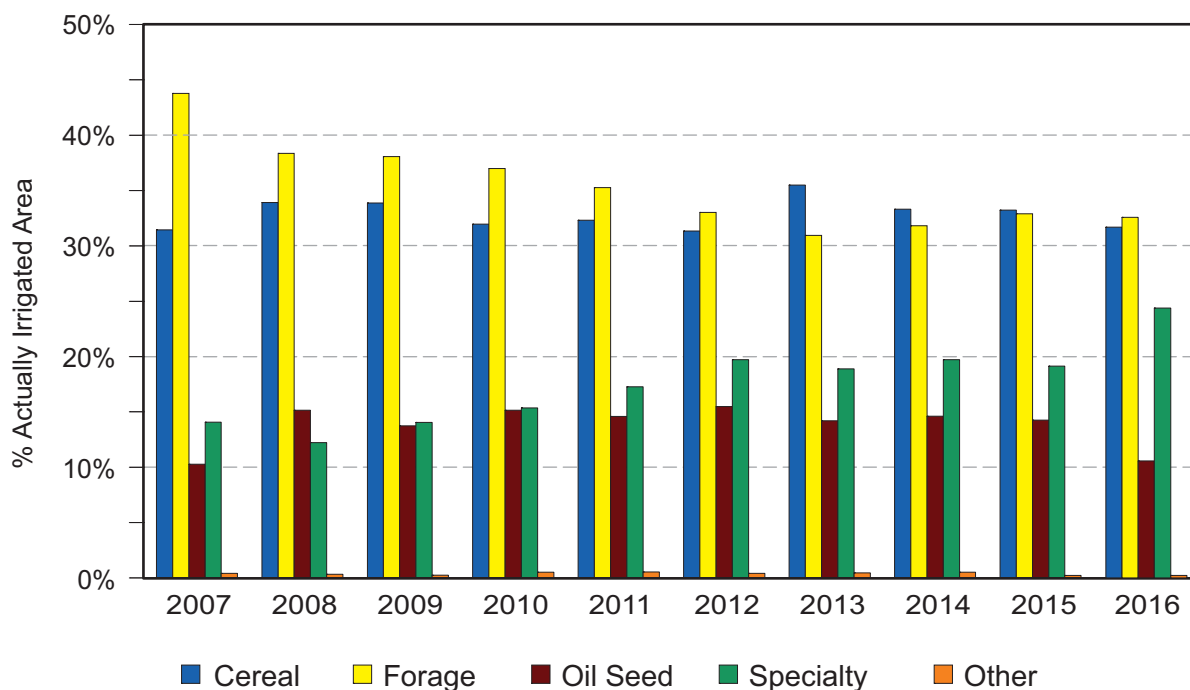


Figure 1. Irrigated Crops within the 13 Irrigation Districts

Note: Starting in 2011, acreage data for canola seed (canola grown for seed production) was moved from the oilseed category to the specialty crop category.

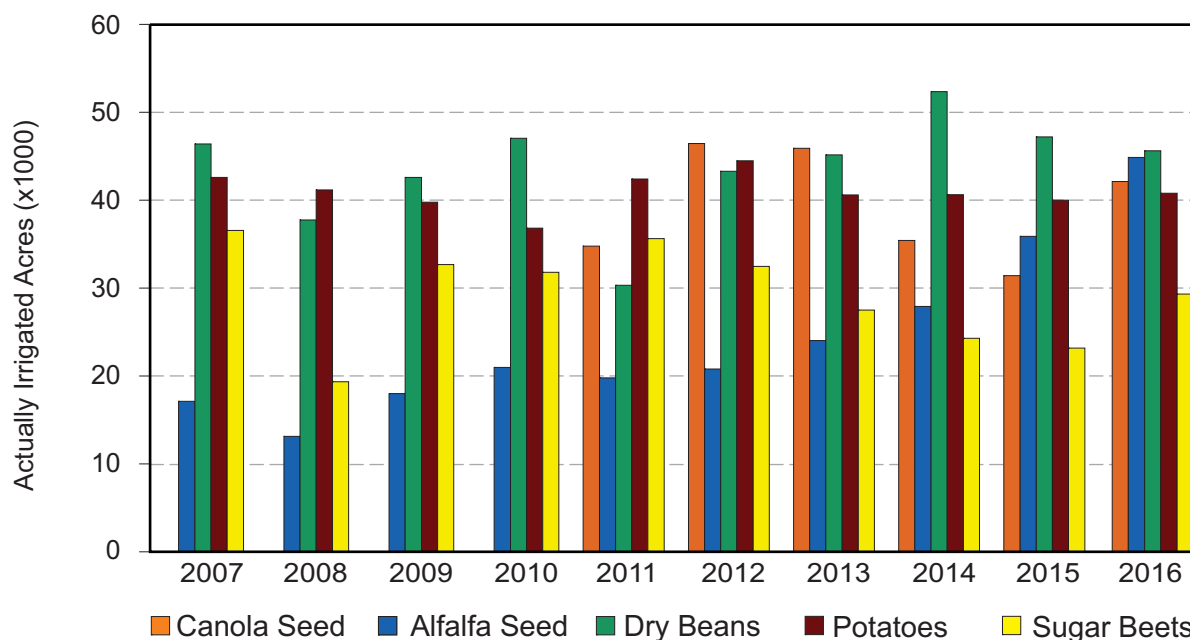


Figure 2. Acres of Five Major Irrigated Specialty Crops – Canola Seed, Alfalfa Seed, Dry Beans, Potatoes and Sugar Beets within the 13 Irrigation Districts

Note: Starting in 2011, acreage data for canola seed (canola grown for seed production) was moved from the oilseed category to the specialty crop category.

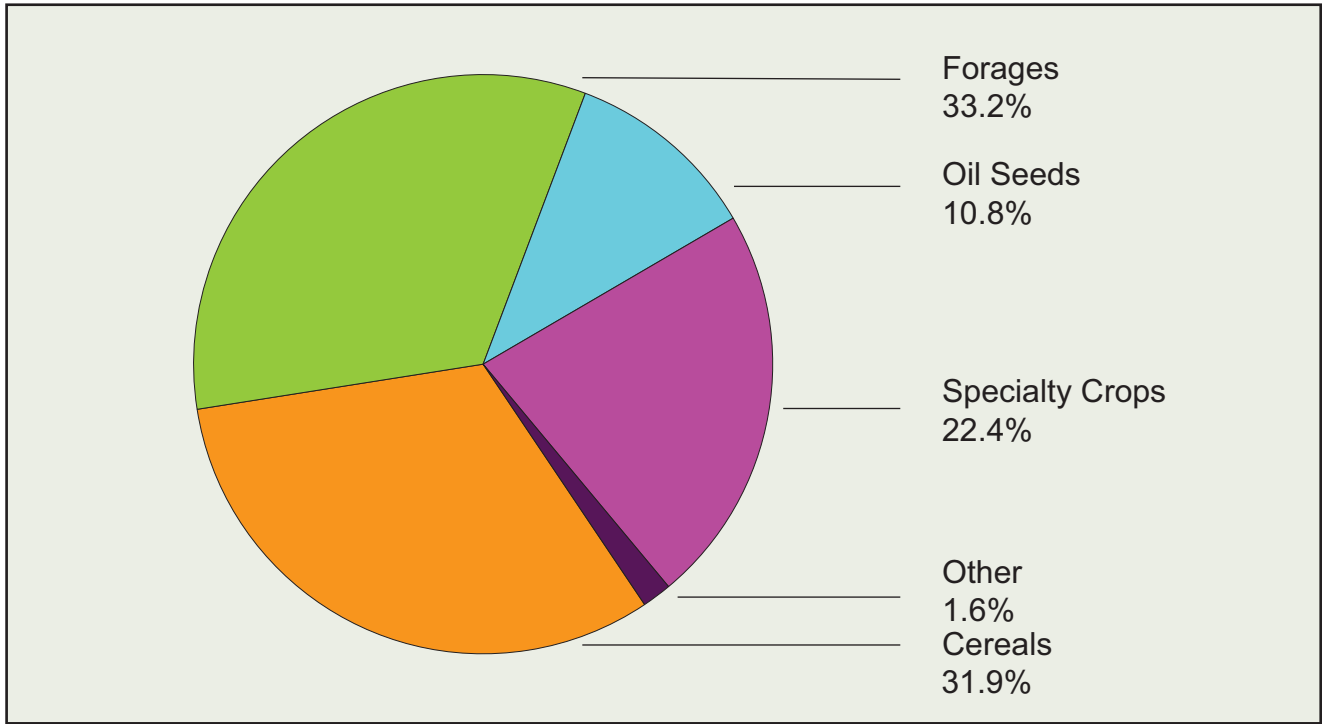


Figure 3. Crops Grown within the 13 Irrigation Districts in 2016

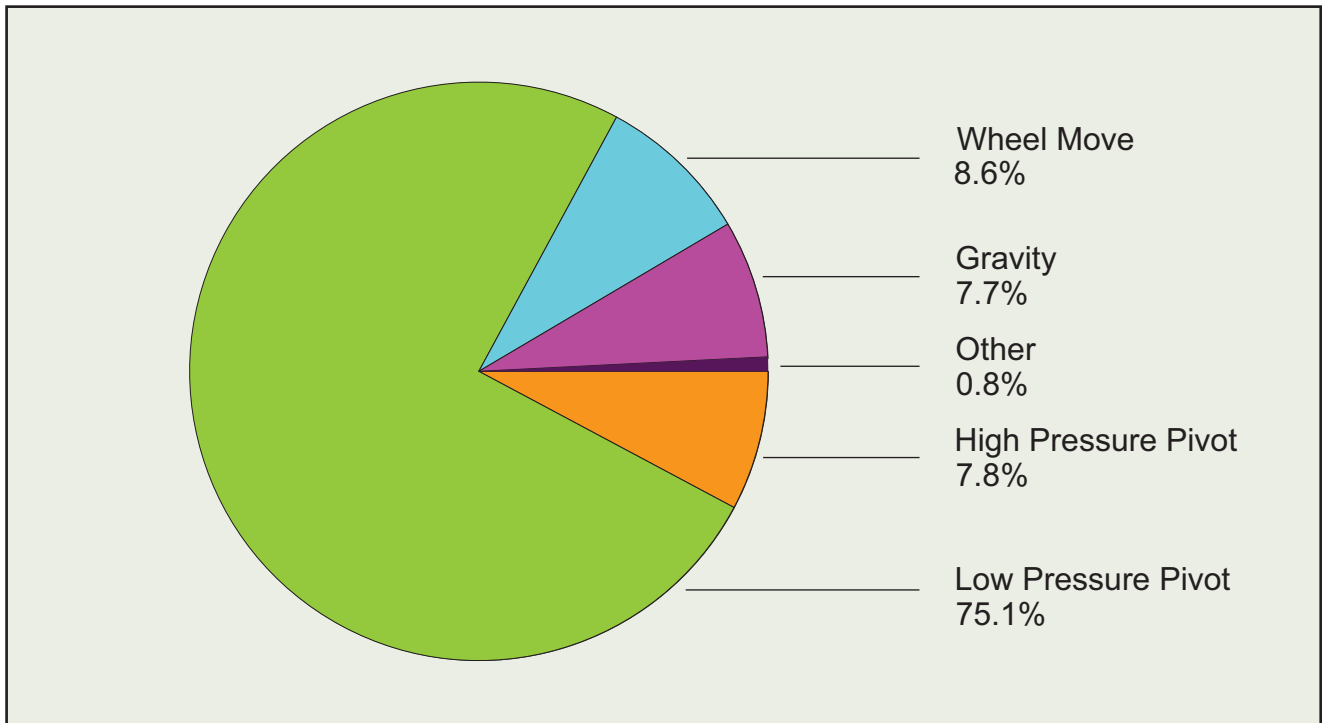
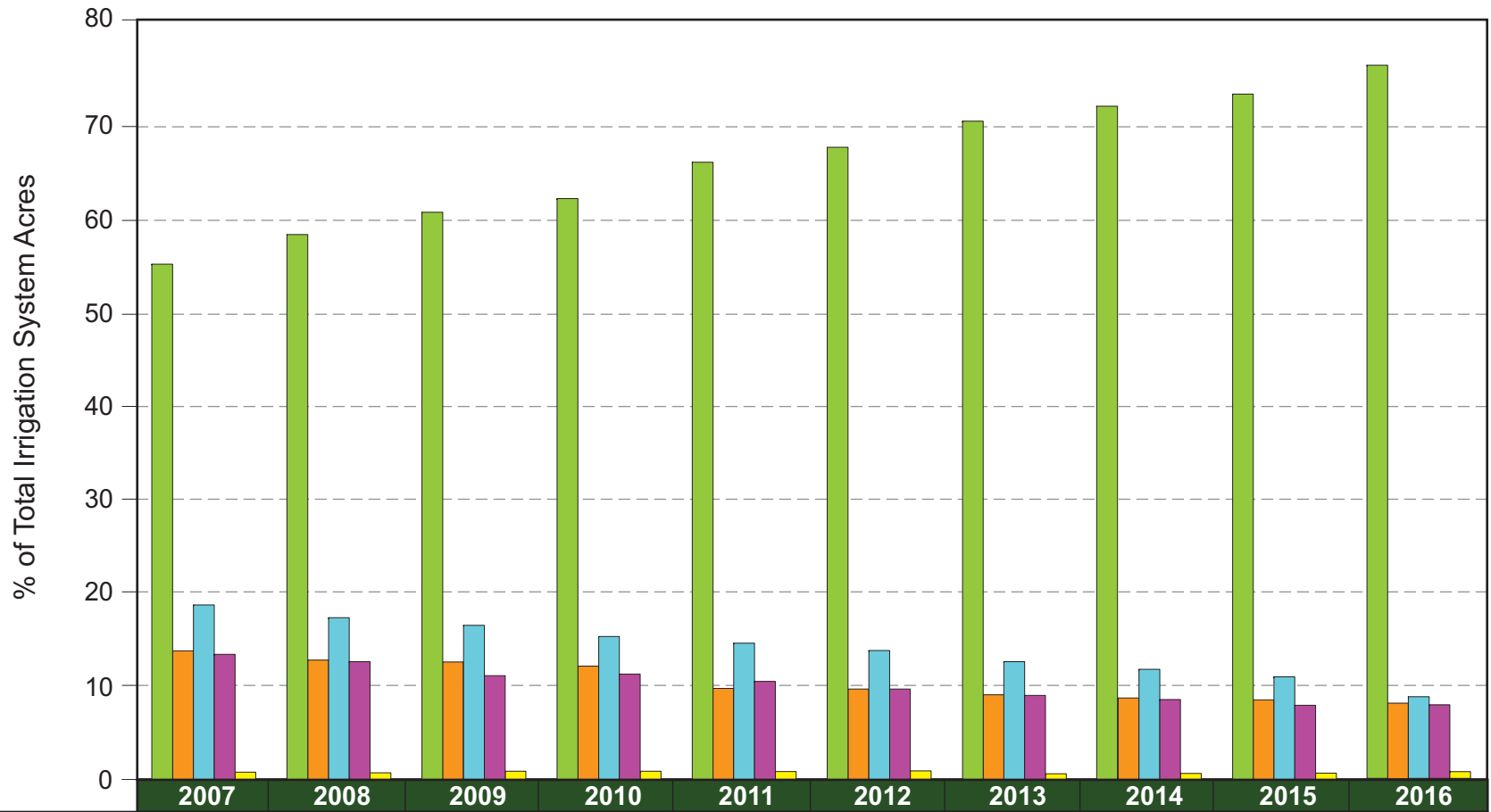


Figure 4. On-farm Irrigation Methods within the 13 Irrigation Districts in 2016

Table 3. On-farm Irrigation Method within the 13 Irrigation Districts in 2016

IRRIGATION METHOD		AID	BRID	EID	LID	LNID	MID	MVID	RCID	RID	SMRID	TID	UID	WID	Individual Method Total	Total Acres Covered
LOW PRESSURE PIVOT	Pivot Medium Pressure			4,275		212		253			3,390				8,029.2	1,038,024
	Pivot Medium Pressure - Corner Arm			248						547					795	
	Pivot Low Pressure	675	149,786	180,286	411	58,827	8,343		604	27,747	276,500	41,973	16,233	37,320	798,703.9	
	Pivot Low Pressure - Corner Arm		51,291	16,179		85,101	140			2,226	48,026	17,463	1,181	4,442	226,049.6	
	Linear - Low Pressure			1,615		226				310	1,271	220	80	724	4,446.2	
	percent of total -----	20.9%	82.9%	67.5%	8.4%	79.3%	46.5%	6.9%	67.3%	67.1%	87.2%	74.6%	51.3%	47.6%	75.1%	
HIGH PRESSURE PIVOT	Pivot High Pressure		20,466	25,749	761	6,576	2,186		67	997	8,986	8,767	1,674	19,583	95,791.1	107,760
	Pivot High Pressure - Corner arm		2,482	2,827		2,844					1,491	923		639	11,205.6	
	Linear - High Pressure			217								84		462	763.0	
	percent of total -----	0.0%	9.5%	9.6%	15.5%	5.2%	12.0%	0.0%	7.5%	2.2%	2.8%	12.2%	4.9%	23.2%	7.8%	
WHEEL MOVE	Wheel Move - One-Two Laterals	1,763	4,324	13,317	1,323	11,998	4,537	417	226	8,120	26,503	7,955	1,615	9,497	91,593.5	118,962
	Wheel Move - Three-Four Laterals		2,427	3,921	198	12,751				1,454	3,350	546	103	2,619	27,368.8	
	percent of total -----	54.5%	2.8%	5.7%	31.0%	13.6%	24.9%	11.4%	25.2%	21.2%	7.9%	10.6%	5.0%	13.6%	8.6%	
GRAVITY	Gravity - Developed		9,442	40,430		755	2,805			2,472	991	768	1,452	245	59,360.0	107,129
	Gravity - Undeveloped	208	1,561	10,166	1,618	711		2,993		1,436	5,575	1,075	11,576	10,852	47,769.2	
	percent of total -----	6.4%	4.5%	16.9%	33.0%	0.8%	15.4%	81.7%	0.0%	8.7%	1.7%	2.3%	38.2%	12.4%	7.7%	
OTHER	Volume Gun - Stationary										130	30		74	234.2	10,459
	Volume Gun - Traveller		70	305		150					69	22		565	1,179.9	
	Solid Set (underground sprinkler)	47		8		691	25			95	254			281	1,401.3	
	Hand Move (sprinkler above ground)	528	88	466	591	1,094	174			207	989	103	172	415	4,826.7	
	Micro - Spray - Sprinkler					135				51	39	81	15	96	417.0	
	Micro - Drip - Trickle							20			7	228	2	1,415	1,671.8	
	Other Application Use	11	631			86									727.9	
percent of total -----	18.1%	0.3%	0.3%	12.1%	1.2%	1.1%	0.0%	0.0%	0.8%	0.5%	0.3%	0.6%	3.2%	0.8%		
Total Acres Covered		3,232	242,569	300,009	4,901	182,156	18,320	3,663	897	45,120	378,219	80,010	34,102	89,228	1,382,334	1,382,334

Note: -Information for AID and RCID is for 2014 irrigation season
 -Information for MVID and RID is for 2015 irrigation season



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Low Pressure Pivot	705,260	747,187	773,538	802,173	856,707	879,651	923,391	957,117	991,859	1,038,024
High Pressure Pivot	176,421	164,072	160,665	156,784	126,864	126,430	119,449	116,436	110,733	107,761
Wheelmove	239,140	222,247	210,606	198,043	189,410	179,837	165,561	157,056	145,124	118,962
Gravity	171,487	162,063	141,885	145,879	136,709	126,217	118,307	114,122	106,764	107,129
Other	10,380	9,870	11,935	11,826	11,626	12,444	8,785	8,941	9,698	9,731

Figure 5. Irrigation Methods Used within the 13 Irrigation Districts

Table 4. Assessment Roll Acres within the 13 Irrigation Districts

YEAR	AID	BRID	EID	LID	LNID	MID	MVID	RCID	RID	SMRID	TID	UID	WID	TOTAL
78	3,104	153,120	227,202	4,431	111,947	10,737	3,717	1,776	31,570	284,151	68,815	33,651	71,603	1,005,824
79	3,104	150,160	227,254	4,477	111,924	10,797	3,710	1,776	31,524	287,329	69,828	33,546	74,525	1,009,954
1980	3,104	164,889	229,110	4,477	112,562	10,797	3,710	1,776	33,681	293,126	70,368	33,544	76,029	1,037,173
81	3,096	174,641	230,553	4,457	113,845	10,963	3,710	1,776	35,385	299,548	70,819	33,417	79,633	1,061,843
82	3,127	179,613	239,651	4,423	114,919	11,647	3,710	1,716	39,130	301,446	71,529	33,383	81,864	1,086,158
83	2,916	181,174	244,099	4,440	116,745	12,357	3,710	1,776	39,148	313,728	72,623	33,448	81,480	1,107,644
84	3,051	183,529	244,243	4,440	117,869	13,047	3,710	1,776	41,729	319,712	72,971	33,534	82,974	1,122,585
1985	3,399	185,034	246,658	4,460	118,883	14,218	3,710	1,319	44,990	328,063	73,063	33,854	84,245	1,141,896
86	3,444	189,202	247,804	4,460	126,307	14,579	3,690	1,210	44,950	331,493	73,314	34,336	83,924	1,158,713
87	3,444	190,263	249,372	4,479	128,867	14,885	3,690	1,210	44,407	334,285	73,654	34,450	85,405	1,168,411
88	3,435	192,424	252,432	4,709	131,565	15,030	3,690	1,210	44,196	339,091	73,602	34,615	86,198	1,182,197
89	3,500	194,977	256,353	4,729	133,620	15,569	3,700	1,210	44,144	342,451	74,898	34,818	87,242	1,197,211
1990	3,500	199,980	260,523	4,742	135,632	15,099	3,728	1,210	44,044	349,849	74,568	34,769	88,480	1,216,124
91	3,527	201,070	263,889	4,762	137,719	16,665	3,728	1,210	44,305	350,108	77,740	34,687	88,112	1,227,522
92	3,519	202,499	269,462	4,800	139,688	16,391	3,734	1,210	44,279	351,393	78,177	34,868	87,949	1,237,969
93	3,519	204,466	270,008	4,780	138,095	16,775	3,737	1,210	44,229	353,039	78,412	34,772	87,453	1,240,495
94	3,519	205,983	272,024	4,780	141,517	16,785	3,727	1,210	44,219	353,466	78,629	34,438	86,725	1,247,022
1995	3,519	207,652	273,848	4,780	143,608	17,908	3,727	1,210	43,678	356,618	78,676	34,428	86,942	1,256,594
96	3,519	209,560	276,405	4,760	147,241	18,169	3,727	1,210	44,315	358,399	79,069	34,506	87,258	1,268,138
97	3,519	209,686	279,966	4,760	150,843	18,300	3,713	1,210	44,810	360,659	79,788	34,353	86,284	1,277,891
98	3,519	210,690	280,573	4,769	153,365	18,300	3,722	1,210	45,533	360,780	80,455	34,352	86,771	1,284,039
99	3,609	211,152	281,107	4,769	154,886	18,300	3,722	1,210	45,751	367,161	81,984	34,352	88,131	1,296,134
2000	3,609	210,352	281,720	4,763	157,825	18,300	3,722	1,210	45,888	369,771	82,257	34,329	87,236	1,300,982
01	3,611	209,927	281,710	4,763	163,878	18,300	3,712	1,210	46,235	370,925	82,261	34,329	87,924	1,308,785
02	3,611	214,279	282,516	4,763	163,870	18,300	3,712	1,210	46,304	371,319	82,284	34,423	96,512	1,323,103
03	3,611	214,585	282,961	4,763	164,288	18,320	3,712	1,210	46,304	372,114	82,562	34,423	96,646	1,325,499
04	3,611	216,533	283,625	4,763	175,568	18,320	3,712	1,210	46,296	372,979	82,515	34,093	96,535	1,339,760
2005	3,608	219,733	283,706	4,763	175,628	18,320	3,561	1,210	46,296	372,619	82,533	34,081	96,415	1,342,473
06	3,608	221,677	284,074	4,763	175,636	18,320	3,561	1,101	46,306	372,618	82,527	34,025	96,100	1,344,316
07	3,699	231,713	284,419	5,205	175,913	18,300	3,654	1,101	46,306	372,996	82,804	34,044	96,091	1,356,245
08	3,699	233,869	285,086	5,126	176,069	18,300	3,700	1,101	46,293	373,162	82,600	34,069	96,079	1,359,153
09	3,699	233,438	294,612	4,706	176,201	18,300	3,700	1,101	46,303	373,092	82,569	34,325	96,045	1,368,091
2010	4,389	233,925	290,429	4,793	176,282	18,300	3,700	1,101	46,302	373,018	82,728	34,370	95,628	1,364,965
11	4,390	234,014	294,373	4,848	176,187	18,300	3,617	1,101	46,302	374,408	82,773	34,382	95,754	1,370,449
12	4,376	234,327	294,620	4,840	177,593	18,300	3,616	1,101	46,402	373,835	82,750	34,382	95,788	1,371,930
13	4,376	241,604	296,619	4,853	179,014	18,300	3,698	1,101	46,500	380,371	82,822	34,393	95,776	1,389,427
14	4,511	254,909	297,884	4,876	179,719	18,300	3,698	1,101	46,500	388,039	83,263	34,395	95,641	1,412,836
2015	4,607	258,114	298,763	4,898	180,007	18,300	3,711	1,101	46,500	390,497	83,584	34,391	95,516	1,419,989
16	4,705	259,792	299,762	5,031	182,716	18,300	3,733	1,101	46,500	393,034	84,045	34,383	95,475	1,428,577

Notes: Assessment roll acres include "irrigation", "terminable" and "annual" acres. Only "irrigation" and "terminable" acres are considered in district expansion limits. In 2016, irrigation districts reported 7,338 annual acres.

Table 6. Irrigation Districts Irrigation Rates (\$ per assessed acre per year)

YEAR	AID	BRID	EID	LID	LNID	MID	MVID	RCID	RID	SMRID	TID	UID	WID
87	\$6.00	\$10.00	\$7.50	\$7.50	\$12.50	\$6.00	\$5.20	\$6.00	\$6.50	\$13.00	\$11.00	\$3.25	\$7.47
88	\$7.00	\$10.00	\$7.50	\$8.00	\$12.50	\$6.00	\$5.20	\$6.00	\$6.50	\$13.00	\$12.00	\$3.25	\$7.70
89	\$7.00	\$10.00	\$8.00	\$8.00	\$13.50	\$6.00	\$6.20	\$6.00	\$6.50	\$13.25	\$12.00	\$3.50	\$8.00
1990	\$8.00	\$10.00	\$8.50	\$8.00	\$13.50	\$6.00	\$6.20	\$6.00	\$6.50	\$14.00	\$12.00	\$3.75	\$11.00
91	\$8.00	\$10.00	\$8.50	\$7.00	\$13.50	\$6.00	\$6.20	\$6.00	\$6.50	\$14.00	\$12.00	\$4.00	\$13.00
92	\$8.00	\$11.00	\$8.50	\$7.00	\$14.00	\$6.00	\$6.20	\$6.00	\$6.50	\$14.00	\$12.00	\$4.25	\$13.50
93	\$8.00	\$11.00	\$8.50	\$7.00	\$14.00	\$6.00	\$6.20	\$6.00	\$6.50	\$14.25	\$12.00	\$4.50	\$13.50
94	\$8.00	\$12.00	\$8.50	\$7.00	\$14.00	\$6.50	\$6.20	\$6.00	\$7.00	\$15.25	\$12.00	\$4.50	\$14.75
1995	\$8.00	\$13.00	\$8.50	\$8.00	\$14.00	\$7.00	\$8.00	\$8.50	\$7.00	\$16.15	\$12.00	\$4.50	\$14.75
96	\$8.00	\$13.00	\$8.50	\$8.00	\$14.00	\$7.00	\$8.00	\$8.50	\$7.50	\$16.15	\$12.00	\$6.50	\$15.25
97	\$8.00	\$13.00	\$7.50	\$8.00	\$14.00	\$7.00	\$8.00	\$8.50	\$7.50	\$16.15	\$12.00	\$6.75	\$15.25
98	\$8.00	\$13.50	\$7.50	\$8.00	\$14.00	\$7.50	\$8.00	\$8.50	\$8.50	\$16.65	\$12.00	\$7.00	\$16.25
99	\$8.00	\$14.50	\$7.50	\$8.00	\$14.00	\$7.50	\$8.00	\$8.50	\$8.50	\$17.00	\$12.00	\$7.25	\$16.25
2000	\$8.00	\$14.50	\$7.50	\$8.00	\$14.00	\$7.50	\$8.00	\$8.50	\$8.50	\$17.50	\$12.00	\$7.50	\$16.25
01	\$8.00	\$14.50	\$7.50	\$8.00	\$14.00	\$7.50	\$8.00	\$8.50	\$8.50	\$17.90	\$11.00	\$7.50	\$16.25
02	\$8.00	\$14.50	\$7.50	\$8.00	\$14.00	\$7.50	\$8.00	\$6.00	\$8.50	\$16.90	\$11.00	\$7.75	\$16.25
03	\$9.00	\$15.00	\$0.00	\$10.00	\$14.00	\$8.00	\$8.00	\$13.58	\$8.50	\$17.90	\$11.00	\$8.25	\$16.25
04	\$9.00	\$14.50	\$0.00	\$11.00	\$14.00	\$8.00	\$8.00	\$13.58	\$9.50	\$17.90	\$11.00	\$8.25	\$16.25
2005	\$9.00	\$14.50	\$0.00	\$11.00	\$14.00	\$8.50	\$10.00	\$13.58	\$9.50	\$17.90	\$11.00	\$8.25	\$16.25
06	\$9.00	\$14.50	\$0.00	\$11.00	\$14.00	\$8.50	\$10.00	\$15.00	\$9.50	\$18.50	\$11.00	\$8.25	\$16.25
07	\$9.00	\$14.50	\$0.00	\$11.00	\$14.00	\$9.00	\$10.00	\$18.00	\$9.50	\$18.75	\$8.00	\$8.25	\$16.25
08	\$10.00	\$14.50	\$0.00	\$11.50	\$14.00	\$9.00	\$12.00	\$21.00	\$9.50	\$18.75	\$8.00	\$8.50	\$16.25
09	\$10.00	\$15.00	\$0.00	\$11.50	\$14.00	\$9.00	\$12.00	\$22.50	\$9.50	\$19.00	\$8.00	\$8.50	\$16.25
2010	\$10.00	\$15.00	\$0.00	\$11.50	\$14.00	\$9.50	\$12.00	\$21.50	\$9.50	\$20.00	\$8.00	\$8.50	\$16.25
11	\$10.00	\$15.00	\$0.00	\$11.50	\$14.00	\$9.50	\$12.00	\$20.50	\$9.50	\$20.00	\$8.00	\$8.50	\$16.25
12	\$11.00	\$16.00*	\$0.00*	\$11.50*	\$14.00*	\$11.00*	\$12.00	\$20.50	\$10.00*	\$20.00*	\$8.00*	\$9.00	\$16.25*
13	\$11.00	\$16.00*	\$0.00*	\$11.50*	\$14.00*	\$11.00*	\$12.00	\$20.50	\$10.00*	\$20.00*	\$8.00*	\$11.00	\$18.00*
14	\$12.00	\$16.00*	\$0.00*	\$12.00*	\$16.00*	\$11.00*	\$12.00	\$23.00	\$10.00*	\$20.00*	\$8.00*	\$11.00	\$18.00*
2015	\$12.00	\$16.00*	\$0.00*	\$12.00*	\$16.00*	\$11.00*	\$12.00	\$25.00	\$10.00*	\$20.00*	\$10.00*	\$11.00	\$18.00*
16	\$12.00*	\$16.00*	\$0.00*	\$12.00*	\$16.00*	\$11.00*	\$12.00	\$25.00	\$12.00*	\$20.00*	\$14.00*	\$11.00	\$18.00*

Note: * The districts levy the following additional surcharges.

- AID – charges vary for pipeline delivery
- BRID – \$0.70 per acre inch for volumes used on flood parcels over the annual water allocation (sprinkler parcels may not use more than the allocation)
- EID – \$6.00 per acre if served from H Cowoki, 03 East Branch, Springhill, or Rolling Hills Reservoir pressure systems
- LID – \$3.00 per acre for pressure pipeline
- LNID – \$0.30 per psi for pressure pipeline; \$5.00 per acre inch for volumes over the annual allocation

- MID – \$4.00 per acre for pipeline delivery; \$1.00 per 10 psi
- RID – charges vary for pipeline and pressure delivery; \$100 per acre inch for volumes over the annual allocation
- SMRID – \$100 per acre inch for volumes over the annual allocation
- TID – \$70 per acre inch for volumes over the annual allocation
- WID – \$0.31 per psi; \$0.50 per acre for automated screen cleaning

Some districts have centralized pump stations delivering pressurized water to individual farm turnouts. In these cases, the irrigators served by that pump station are charged for the energy used and often an additional maintenance charge.

Table 7. Gross Annual Diversions, Expansion Limits, and Licence Allocations to Irrigation Districts

DISTRICT	OLDMAN RIVER BASIN										BOW RIVER BASIN			TOTALS
	AID	LID	LNID	MID	MVID	RCID	RID	SMRID	TID	UID	BRID	EID	WID	
WATER SOURCE	diversion from Belly River	diversion from Belly River	diversion from Oldman River	diversion from Belly, Waterton, St. Mary Rivers	diversion from Belly River	diversion from Gros Ventre Ck.	diversion from Belly, Waterton, St. Mary Rivers	diversion from Belly, Waterton, St. Mary Rivers	diversion from Belly, Waterton, St. Mary Rivers	diversion from Belly, Waterton, St. Mary Rivers	diversion from Belly, Waterton Rivers	diversion from Bow River	diversion from Bow River	diversion from Bow River
EXPANSION LIMITS (acres)	7,500	6,000	227,000	18,300	4,240	1,210	46,500	412,000	92,200	34,400	260,000	311,000	95,000	1,515,350
WATER LICENCE ALLOCATION (acre-feet)	9,000	12,000	334,450	34,000	8,000	3,000	81,000	722,000	158,000	66,210	490,000	761,000	190,500	2,869,160
YEAR	VOLUME OF WATER DIVERTED (acre-feet)													
83			150,790	14,363		1,354	14,955	361,537	97,674	24,078	347,000	580,299	146,737	1,738,787
84			177,543	18,857		67	17,544	492,674	101,643	25,093	361,000	657,640	162,140	2,014,201
1985	5,020	8,500	184,029	18,533	4,250	3,827	27,302	425,500	95,751	24,193	358,722	655,188	158,897	1,969,712
86	4,074	6,858	182,159	14,114	3,212	1,832	22,045	406,536	101,597	20,106	311,000	680,592	131,333	1,885,458
87	4,392	5,644	181,934	14,649	3,180	1,321	40,559	426,434	98,621	19,958	309,000	639,928	129,712	1,875,332
88	6,910	9,398	222,936	22,918	6,066	256	60,531	563,621	121,668	30,462	423,000	730,274	171,868	2,369,908
89	4,613	3,517	198,789	12,338	2,750	122	30,728	504,255	78,396	18,372	333,000	605,148	122,416	1,914,444
1990	3,754	5,328	191,899	13,555	3,290	298	32,000	467,244	98,572	16,133	380,907	689,178	128,091	2,030,249
91	3,556	4,468	184,737	12,712	2,662	1,775	30,702	391,634	94,956	17,003	334,792	629,872	147,547	1,856,416
92	2,170	11,216	136,925	15,695	4,118	0	36,210	441,745	101,122	18,628	336,878	625,650	135,387	1,865,744
93	2,126	1,824	61,753	4,848	988	3,300	13,574	218,375	59,278	8,107	210,340	423,551	114,309	1,122,373
94	4,110	4,319	179,663	13,895	3,325	758	28,328	415,162	103,028	16,827	364,126	559,476	132,104	1,825,121
1995	1,802	1,548	110,114	4,248	861	208	19,953	390,285	79,818	7,710	302,305	602,098	116,254	1,637,204
96	4,035	4,892	206,206	12,506	2,660	1,085	45,527	498,483	127,436	19,832	328,182	615,478	117,065	1,983,387
97	6,051	5,193	188,378	12,564	1,529	1,760	38,043	455,300	115,582	20,364	343,380	593,782	116,740	1,898,666
98	4,874	5,331	157,758	9,671	2,323	1,726	33,834	405,000	116,300	14,895	303,565	638,500	142,367	1,836,144
99	3,485	11,415	196,906	25,178	2,499	1,700	42,960	411,532	105,208	20,900	298,524	426,788	88,410	1,635,505
2000	6,000	11,240	263,413	35,375	6,700	0	58,202	451,700	140,046	37,200	417,897	675,238	156,400	2,259,411
01*	3,952	7,593	308,236	21,173	6,814	0	40,207	325,700	94,770	27,526	413,780	685,000	160,000	2,094,751
02	2,938	9,835	112,143	10,788	3,033	N/A	23,552	466,700	53,324	21,283	333,541	430,000	149,577	1,616,714
03	4,598	7,964	201,812	20,711	5,889	N/A	49,723	330,600	86,500	32,500	279,798	459,700	128,700	1,608,495
04	3,440	5,425	166,276	12,391	2,660	N/A	28,224	367,500	64,399	21,600	230,817	417,370	114,000	1,434,102
2005	4,000	6,243	134,088	8,859	2,067	1,190	27,046	316,200	72,487	13,717	182,819	318,000	120,400	1,207,116
06	3,681	5,341	165,752	14,114	3,987	0	37,049	334,100	82,448	20,390	210,741	335,210	72,000	1,284,813
07	3,235	6,330	235,330	18,238	3,600	N/A	47,322	394,700	100,907	31,801	256,518	417,830	68,000	1,583,811
08	3,584	6,389	178,750	12,659	2,609	200	34,348	381,200	85,829	21,054	238,000	409,400	85,000	1,459,022
09	2,651	5,378	179,945	14,885	2,138	200	45,705	370,100	97,532	17,506	295,557	435,650	120,829	1,588,076
2010	1,938	2,383	71,950	5,351	1,013	116	21,900	201,700	53,135	7,264	156,116	210,500	65,850	799,219
11	2,902	8,028	132,388	15,233	2,393	530	32,534	286,000	84,909	19,073	151,700	310,100	85,985	1,131,775
12	2,761	3,973	176,683	20,720	2,558	0**	35,200	340,800	88,309	19,039	260,000	343,200	103,862	1,397,105
13	3,446	4,101	139,035	17,210	2,297	2,319	39,723	314,600	77,371	18,598	240,000	383,400	99,473	1,341,573
14	3,113	5,928	120,097	13,552	1,801	700	31,448	297,600	71,847	16,565	222,191	371,000	113,666	1,269,535
2015	3,306	4,540	197,000	21,459	2,420	700	50,711	453,300	100,481	25,839	331,900	471,900	136,600	1,800,156
16	3,848	4,564	206,730	20,325	2,233	367	39,704	402,600	84,313	21,864	328,085	371,100	109,865	1,595,598
Percent of Licence (2016)	42.8%	38.0%	61.8%	59.9%	27.9%	12.2%	49.0%	55.8%	53.4%	33.0%	67.0%	48.8%	57.7%	55.6%
***Average Volume	3,761	6,085	167,346	14,671	3,060	1,014	33,398	381,218	91,930	20,117	300,224	513,978	123,364	1,657,333

Notes: – Data obtained from Alberta Environment and Parks for AID, LID, MVID, RCID, and UID, and from Irrigation Districts for BRID, EID, LNID, MID, RID, SMRID, TID, and WID.
 – RCID has a second supply from Ross Creek, but data has not been consistently recorded at that location.
 – Diversion data represent the gross diversion into and through the works of the districts and include volumes used directly for irrigation purposes, reservoir filling and the water supplied or licensed to municipal, domestic, other agricultural, industrial and environmental uses.
 – *Water rationing in effect for MID, RID, SMRID, TID, UID, AID, LID, MVID and Blood Tribe Agricultural Project (BTAP) in 2001.
 – **RCID had zero diversion in 2012 since the diversion structure was under construction; 562 ac-ft was delivered for irrigation from Cavan Lake.
 – ***Average Volume 1976 - 2016

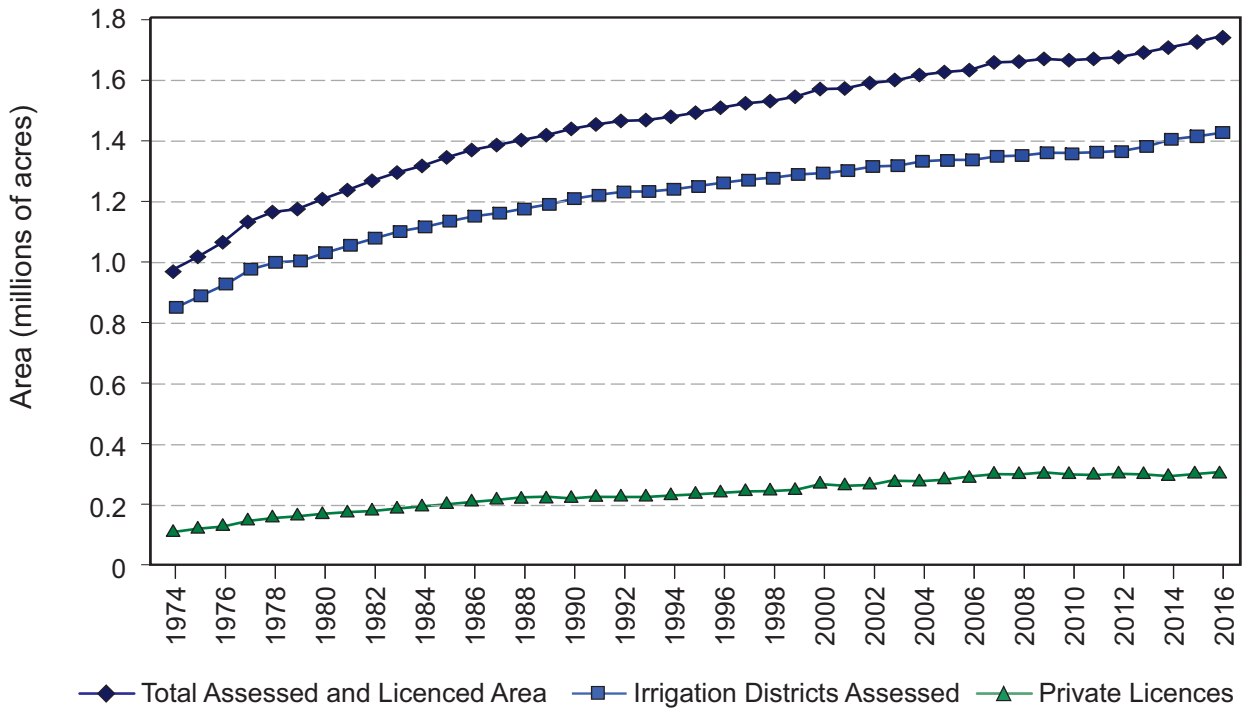


Figure 6. Growth in Irrigation Area

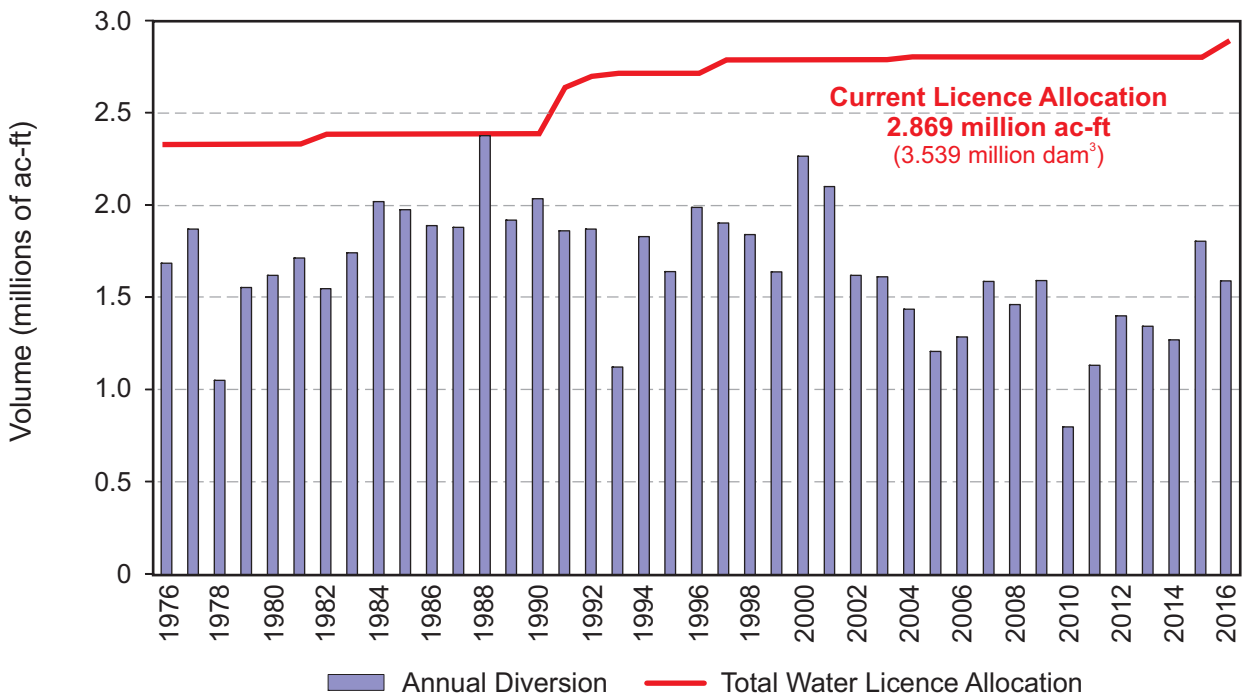


Figure 7. Irrigation Districts Gross Annual Diversion and Licence Allocation

Note: Diversion data represent the gross diversion into and through the works of the irrigation districts and include volumes used directly for irrigation purposes, reservoir filling and the water supplied or licensed to municipal, domestic, other agricultural, industrial, environmental uses and water delivered to private licence holders through a conveyance agreement with the private licence holder.

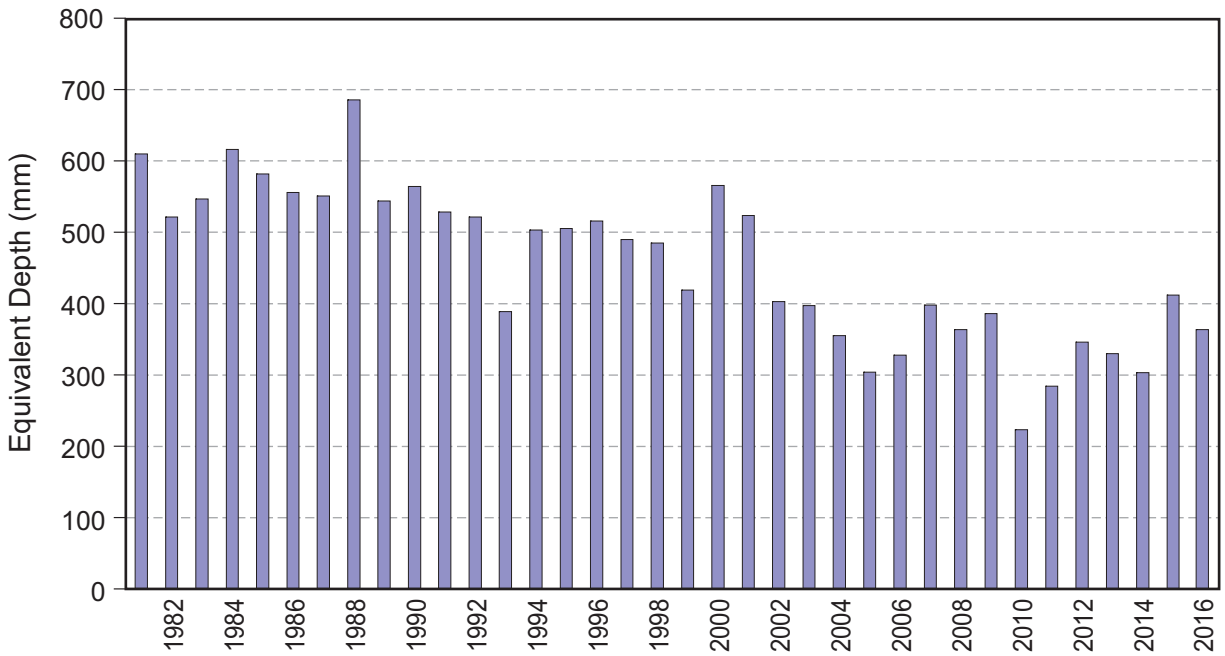


Figure 8. Irrigation Districts Gross Diversion Equivalent Depth

Note: Irrigation district equivalent depth is the annual gross diversion of water (into the works of all 13 irrigation districts), divided by the area actually irrigated. However, this “depth” also includes water used for net gains in reservoir storage, water diverted for other uses such as domestic, municipal, other agricultural, industrial, recreational and habitat enhancement purposes.

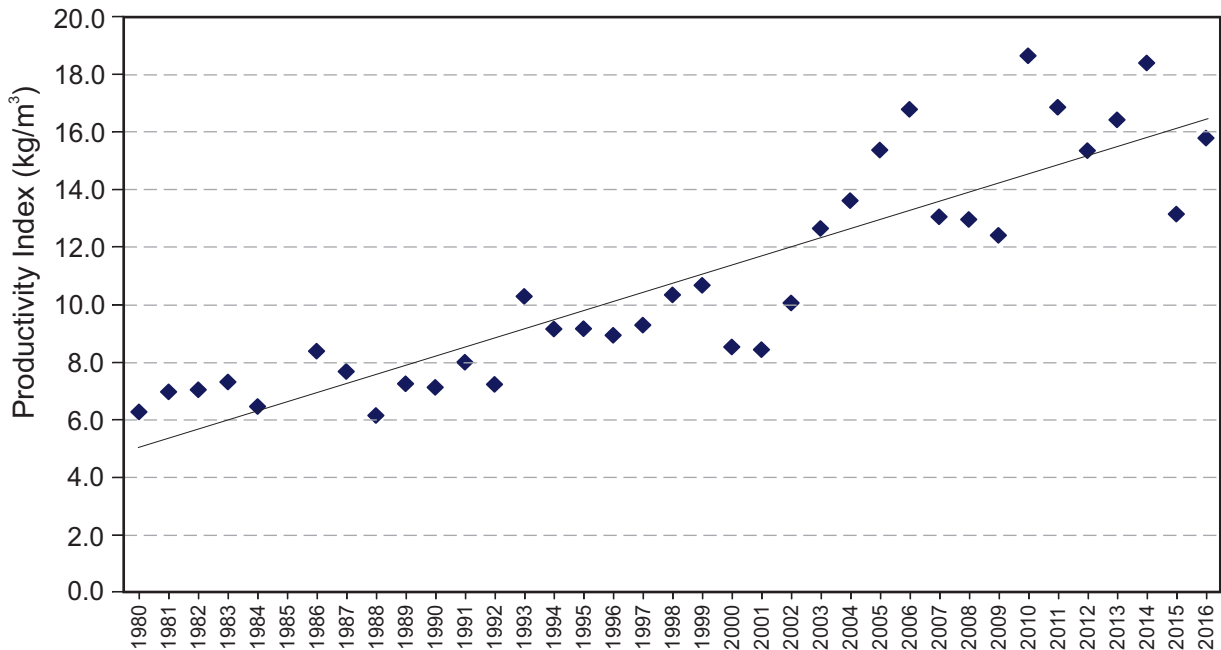
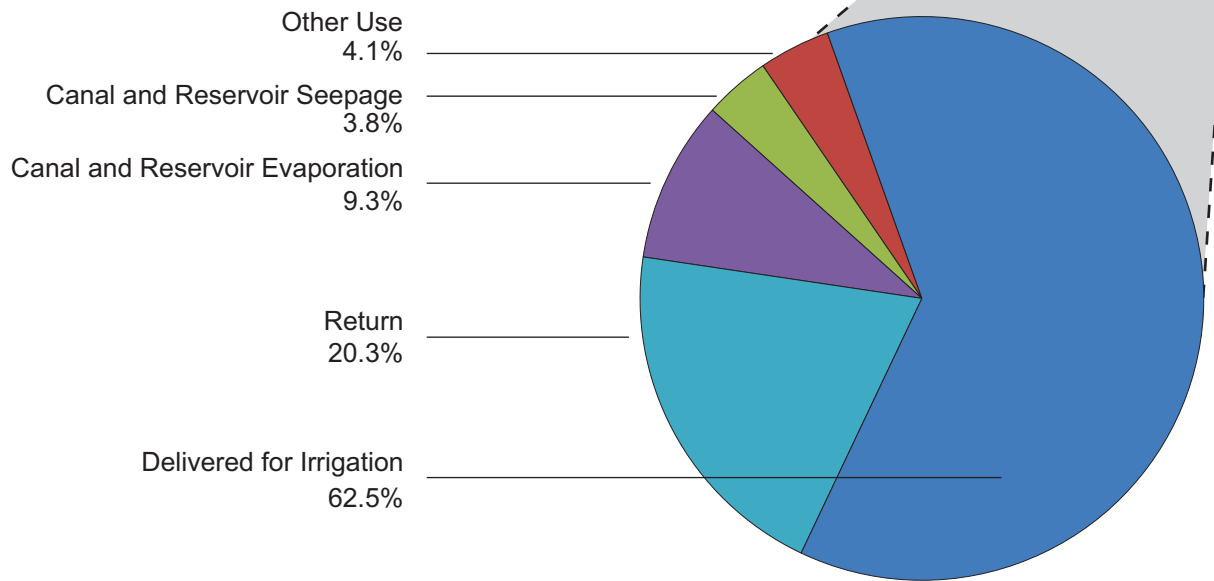


Figure 9. Irrigation Districts Water Use Productivity

Note: Commodity yield per unit area divided by the volume of irrigation water diverted per unit area provides a measure of productive output per unit of irrigation water used. The historical yields of sugar beets (as reported by the Alberta Sugar Beet Growers), the historical yields of potatoes (as estimated by the Potato Growers of Alberta) are tallied and then divided by the respective reported annual gross water diversions to the 13 irrigation districts to derive a “Productivity Index”.

Table 8. Irrigation Districts Water Balance in 2016

Water Balance Category	OLDMAN RIVER BASIN (acre - feet)	BOW RIVER BASIN (acre - feet)	IRRIGATION DISTRICTS (acre - feet)
Gross Diversion	786,400	809,100	1,595,500
Net District Storage Change	(9,600)	(25,400)	(35,000)
TOTAL DISTRICT USE	776,800	783,700	1,560,500
Delivered for Irrigation	493,400	482,100	975,500
Other Use	25,600	37,800	63,400
Canal & Reservoir Seepage	31,500	27,700	59,200
Canal & Reservoir Evaporation	68,100	77,400	145,500
Return	158,300	158,600	316,900
TOTAL DISTRICT OPERATIONS	776,900	783,600	1,560,500



Note: Irrigation district reported values were used to estimate the water balance. Where district reporting was incomplete, Alberta Agriculture and Forestry calculated estimates.

Glossary

Gross Diversion - Volume of water diverted from a lake, reservoir or the river system by irrigation districts.

Net District Storage Change - Net volume of water removed from internal irrigation district reservoirs for use. A negative value within brackets, indicates an increase in net reservoir storage volume over the irrigation season.

Total District Use - Total volume of water from diversion and storage used.

Delivered for Irrigation - Net volume of water supplied for irrigation purposes.

Other Use - Volume of water supplied for other uses including municipal and industrial.

Canal & Reservoir Seepage - Water lost from reservoirs and through delivery system from seepage.

Canal & Reservoir Evaporation - Water lost from evaporation from the surface of irrigation district canals and reservoirs.

Return - Volume of water returned to the river system.

Total District Operations - Total volume of water used for irrigation districts operations comprised of water delivered for irrigation, other use, seepage and evaporation, and water returned.

Table 9. Conveyance Infrastructure by Type of Works within the 13 Irrigation Districts

Irrigation District	REHABILITATED										UN-REHABILITATED		Total Conveyance Works (km)
	Pipelines - Closed		Pipelines - Open		Membrane-Lined Canals		Concrete - Lined Canals		Earth Canals		Un-Rehabilitated Canals		
	Length (km)	% of District Works	Length (km)	% of District Works	Length (km)	% of District Works	Length (km)	% of District Works	Length (km)	% of District Works	Length (km)	% of District Works	
AID	22.7	60.0%	0.2	0.6%	4.5	11.9%	0.0	0.0%	1.0	2.6%	9.4	24.9%	38
BRID	542.4	54.4%	5.6	0.6%	134.7	13.5%	11.1	1.1%	181.4	18.6%	121.4	12.2%	997
EID	1167.2	60.8%	33.1	1.7%	270.2	14.1%	0.0	0.0%	199.7	10.4%	248.0	12.9%	1,918
LID	29.5	53.9%	0.3	0.5%	2.0	3.6%	0.0	0.0%	11.7	21.5%	11.2	20.4%	55
LNID	500.7	65.5%	11.1	1.4%	56.4	7.4%	33.3	4.4%	65.7	8.6%	97.0	12.7%	764
MID	59.5	58.8%	1.5	1.5%	1.2	1.2%	0.3	0.3%	33.7	33.4%	4.9	4.8%	101
MVID	17.0	41.0%	1.8	4.4%	0.0	0.0%	0.0	0.0%	17.0	40.8%	5.7	13.8%	42
RCID	12.2	83.1%	0.0	0.0%	0.0	0.0%	0.0	0.0%	2.5	16.9%	0.0	0.0%	15
RID	138.0	56.9%	6.2	2.6%	0.0	0.0%	0.0	0.0%	79.0	32.5%	19.5	8.0%	243
SMRID	939.0	52.0%	22.0	1.2%	68.2	3.8%	58.3	3.2%	462.3	25.6%	256.3	14.2%	1,806
TID	195.3	56.5%	10.9	3.1%	56.6	16.4%	6.4	1.9%	57.2	16.5%	19.4	5.6%	346
UID	96.5	41.8%	22.8	9.9%	13.9	6.0%	0.2	0.1%	44.1	19.1%	53.5	23.1%	231
WID	232.1	22.4%	34.6	3.3%	90.9	9.1%	5.3	0.5%	162.8	15.7%	509.6	49+.1%	1,038
Total	3,952	52.1%	150	2.0%	702	9.2%	115	1.5%	1,318	17.4%	1,356	17.9%	7,593
Headworks Owned by Alberta Environment and Parks												339	
Total Length of Conveyance System in Southern Alberta (km)												7,932	

Table 10. Irrigation District Infrastructure Length and Replacement Cost in 2016

IRRIGATION DISTRICTS	CONVEYANCE WORKS		MAJOR STRUCTURES		DRAINAGE WORKS		TOTAL of ALL WORKS		
	length (km)	replacement cost (\$'000)	number of units	replacement cost (\$'000)	length (km)	replacement cost (\$'000)	length (km)	structures	replacement cost (\$'000)
AID	38	\$10,912	0	\$0	19	\$314	57	0	\$11,226
BRID	996	\$369,059	22	\$97,753	748	\$15,143	1,744	22	\$481,955
EID	1,920	\$716,815	61	\$349,421	1,940	\$34,367	3,860	61	\$1,100,603
LID	55	\$12,776	0	\$0	5	\$160	60	0	\$12,936
LNID	764	\$268,873	2	\$2,880	247	\$7,492	1011	2	\$279,245
MID	101	\$26,902	0	\$0	162	\$5,616	263	0	\$32,519
MVID	42	\$14,450	0	\$0	1	\$59	43	0	\$14,509
RCID	15	\$2,844	1	\$135	20	\$986	35	1	\$3,965
RID	243	\$64,053	0	\$0	207	\$10,463	450	0	\$74,516
SMRID	1,806	\$668,190	48	\$335,617	414	\$11,363	2,220	48	\$1,015,170
TID	346	\$131,196	12	\$14,168	77	\$4,547	423	12	\$149,911
UID	231	\$74,751	11	\$16,206	58	\$1,142	289	11	\$92,099
WID	1,038	\$359,437	13	\$18,180	923	\$24,276	1,961	13	\$401,893
Total	7,594	\$2,720,259	170	\$834,361	4,822	\$115,926	12,416	170	\$3,670,546

NOTE: Drainage works include both open channels and pipelines.

Total of All Works length values include the summation of conveyance and drainage works.

Table 11. Irrigation District Water Licence Allocations

Irrigation District	Other Purposes* (ac-ft)	Total Licensed Volume (ac-ft)
AID	700	9,000
BRID	2,380	490,000
EID	5,000	761,000
LID	1,000	12,000
LNID	39,068	334,450
MID	740	34,000
MVID	340	8,000
RCID	n/a	3,000
RID	4,500	81,000
SMRID	12,000	722,000
TID	8,000	158,000
UID	1,000	66,210
WID	3,500	190,500
Total	78,228	2,869,160

Note: The other purposes volumes may be used for purposes other than irrigation, as set out in the districts water licences. Other purpose uses of water volumes licensed to irrigation districts include non-irrigation uses such as municipal, rural water supply, agricultural, commercial, industrial, rural residential, management of fish/wildlife, habitat enhancement and recreation.

* Water volumes allocated to other purposes are included in the total licensed volumes.

Table 12. Irrigation District Infrastructure Value Condition Assessments

Works Category	Good (\$'000)	Fair (\$'000)	Poor (\$'000)	TOTAL (\$'000)
Conveyance	\$1,914,791	\$707,342	\$98,125	\$2,720,258
Drainage	\$27,741	\$66,496	\$21,688	\$115,925
Major Structures	\$535,333	\$291,816	\$7,212	\$834,361
Total	\$2,477,865	\$1,065,654	\$127,025	\$3,670,544
Proportion	67.5%	29.0%	3.5%	100%

Note: Condition assessments ratings are determined based on criteria in the Irrigation Works Condition Evaluation Guidelines. Construction and material costs are updated approximately every five years. The last valuation was completed in 2012.

Table 13. Irrigation District Reservoirs

Location	Reservoir	Approximate Date of Impoundment	Live Storage (dam ³)	Live Storage (acre-feet)
Bow River Irrigation District	Badger	1985	57,120	46,300
	'D' Reservoir	2005	350	280
	'H' Reservoir	1953	2,790	2,260
	Lost Lake	1973/1987*	5,060	4,100
	'PFRID' Reservoir	2005	570	480
	Scope	1953	12,930	10,480
	Total storage			78,820
Eastern Irrigation District	Bantry # 1	1968	1,090	880
	Bantry # 2	1967	4,150	3,360
	Cowoki Lake	1937	8,370	6,780
	Crawling Valley	1984	94,300	76,450
	'J' Reservoir	1949/1966*	1,460	1,180
	Kitsim	1980	19,470	15,790
	Lake Newell	1914	315,300	255,610
	One Tree	1935	5,660	4,590
	Rock Lake	1956	3,990	3,240
	Rolling Hills	1940/2003*	40,640	32,950
	Snake Lake	1997	18,620	15,100
	Tilley "B"	1972	21,070	17,080
Total storage			534,120	433,010
Lethbridge Northern Irrigation District	Park Lake	1928	1,440	1,170
	Picture Butte	1936	1,490	1,210
	Vandenburg	1992	120	90
	Total storage		3,050	2,470
Raymond Irrigation District	Corner Lake	1925	500	400
	Craddock	1925	620	500
	Factory Lake	1925	370	300
	Total storage		1,490	1,200
St. Mary River Irrigation District	Bullshead	1954	130	100
	Chin	1954	207,370	168,120
	Cross Coulee	1954	2,090	1,700
	Forty Mile	1987	100,430	81,420
	Murray	1954	30,630	24,830
	North East	1954	2,820	2,290
	Raymond	1954	1,810	1,470
	Sauder	1953/1982*	45,240	36,680
	Seven Persons	1953	900	730
	Sherburne	1952	12,190	9,880
	Stafford	1954/1982*	21,790	17,670
	Yellow Lake	1952	18,130	14,700
Total storage			443,530	359,590
Taber Irrigation District	Fincastle	1952	3,770	3,060
	Horsefly	1950	6,370	5,170
	Taber Lake	1955	6,410	5,190
	Total storage		16,550	13,420
United Irrigation District	Cochrane Lake	1923	3,130	2,540
Western Irrigation District	Chestermere	1944	5,090	4,130
	Langdon	1979/2014*	15,750	12,770
	Total storage		20,840	16,900
Grand Total			1,101,530	893,010

Note: all reservoirs are off-stream storage sites

* denotes year of reservoir enlargement

Table 14. Provincially Owned and Operated Reservoirs Used by Irrigation

Source Supply for:	Reservoir	Approximate Date of Impoundment	Live storage (dam ³)	Live storage (acre-feet)
Bow River Irrigation District	Little Bow	1920	21,080	17,090
	McGregor	1914	351,060	284,600
	Travers *	1954	104,640	84,830
	Total Storage		476,780	386,520
Lethbridge Northern Irrigation District	Keho	1920	95,640	77,530
	Oldman River *	1991	490,180	397,390
	Total Storage		585,820	474,920
Ross Creek Irrigation District	Cavan	1950	4,630	3,750
MVID, LID, AID	Payne	1942	8,690	7,040
St. Mary Project (SMRID, MID, TID, RID)	Jensen	1948	19,000	15,400
	Milk River Ridge	1957	127,300	103,200
	St. Mary *	1951	369,310	299,400
	Waterton *	1965	111,200	90,150
	Total Storage		626,810	508,150
Other (Multi-purpose)	Chain Lakes *	1966	14,680	11,900
	Twin Valley Dam *	2003	60,700	49,210
	Pine Coulee	1998	51,000	41,350
	Women's Coulee	1949	360	290
	Total Storage		126,740	102,750
Grand Total			1,829,470	1,483,130

Note: * denotes on-stream storage reservoir

Table 15. Hydroelectric Plants Associated with Water Distribution Works

Location	Commission Date	Owner	Capacity (megawatts)
Oldman Reservoir	2003	ATCO Power	32
Waterton Reservoir	1992	TransAlta	3
Belly River Chute	1991	TransAlta	3
St. Mary Reservoir	1992	TransAlta	2
Taylor Coulee Chute (Jensen Reservoir)	2000	TransAlta	13
Raymond Reservoir	1994	Irrican Power	18
Chin Chute (Chin Reservoir)	1994	Irrican Power	11
SMRID - Main Canal Drops #4, #5 and #6	2004	Irrican Power	7
Total			89

Table 16. Private Water Licences for Irrigation in 2016

There are 2,908 individual irrigation projects, outside of the 13 irrigation districts, irrigating approximately 311,258 acres in Alberta. These projects vary in size from 1 acre to over several thousand acres of agricultural or horticultural production. Each of these projects is licensed to an individual, a group of producers or to private or public lands (ie. golf courses or parks). The agricultural feasibility of these projects is reviewed by Alberta Agriculture and Forestry and the licencing is regulated by Alberta Environment and Parks.

RIVER BASIN	Total Acres Irrigated	No. of Licences 1 to 100 ac.	No. of Licences 101 to 300 ac.	No. of Licences over 300 ac.	Total No. of Licences
ATHABASCA RIVER	1,985	43	6	0	49
MILK RIVER	18,875	99	43	14	156
NORTH SASKATCHEWAN RIVER	27,133	312	56	15	383
PEACE RIVER	3,364	65	9	0	74
SOUTH SASKATCHEWAN RIVER					
- Bow River	25,839	149	60	18	227
- Little Bow River	32,914	125	70	26	221
- Oldman River (Lower)	17,663	27	28	14	69
- Oldman River (Upper)	7,568	63	20	4	87
- Red Deer River	46,289	421	94	18	533
- South Saskatchewan River	46,857	528	81	23	632
- Waterton / Belly / St. Mary Rivers	50,324	136	71	17	224
- Willow Creek	32,465	158	78	17	253
South Saskatchewan River Total	259,919	1,607	502	137	2,246
Total	311,258	2,126	616	166	2,908

Notes: – Oldman (upper) reach is defined as upstream of the Belly River confluence
– Oldman (lower) reach is defined as downstream of the Belly River confluence
– 25,000 acres from the Waterton / Belly / St. Mary Rivers category is for the Blood Tribe Agricultural Project
– does not include irrigation licences issued to irrigation districts in southern Alberta
– data are obtained from Alberta Environment and Parks
– licence authorization as of January 2016

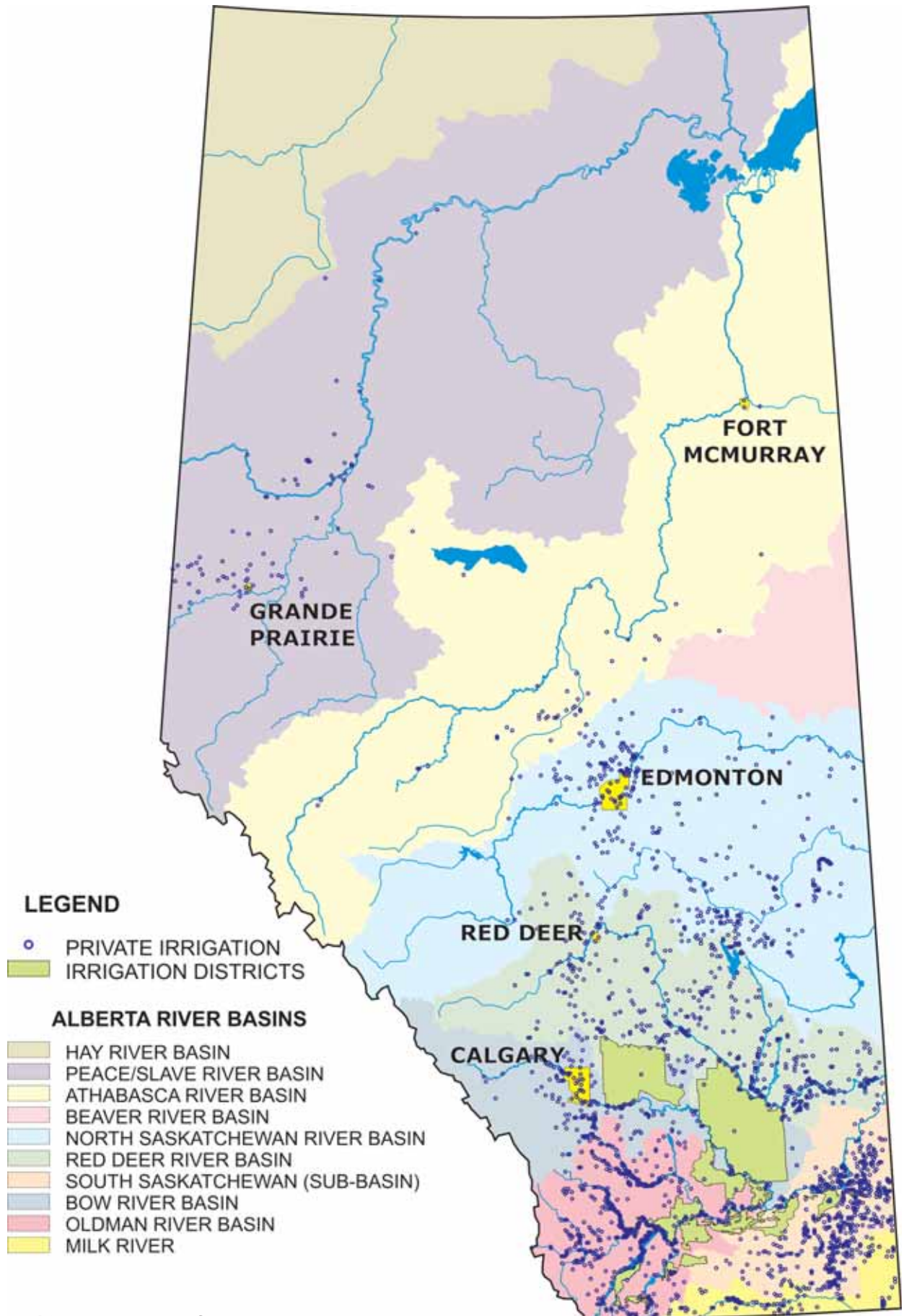


Figure 10. Location of Private Irrigation

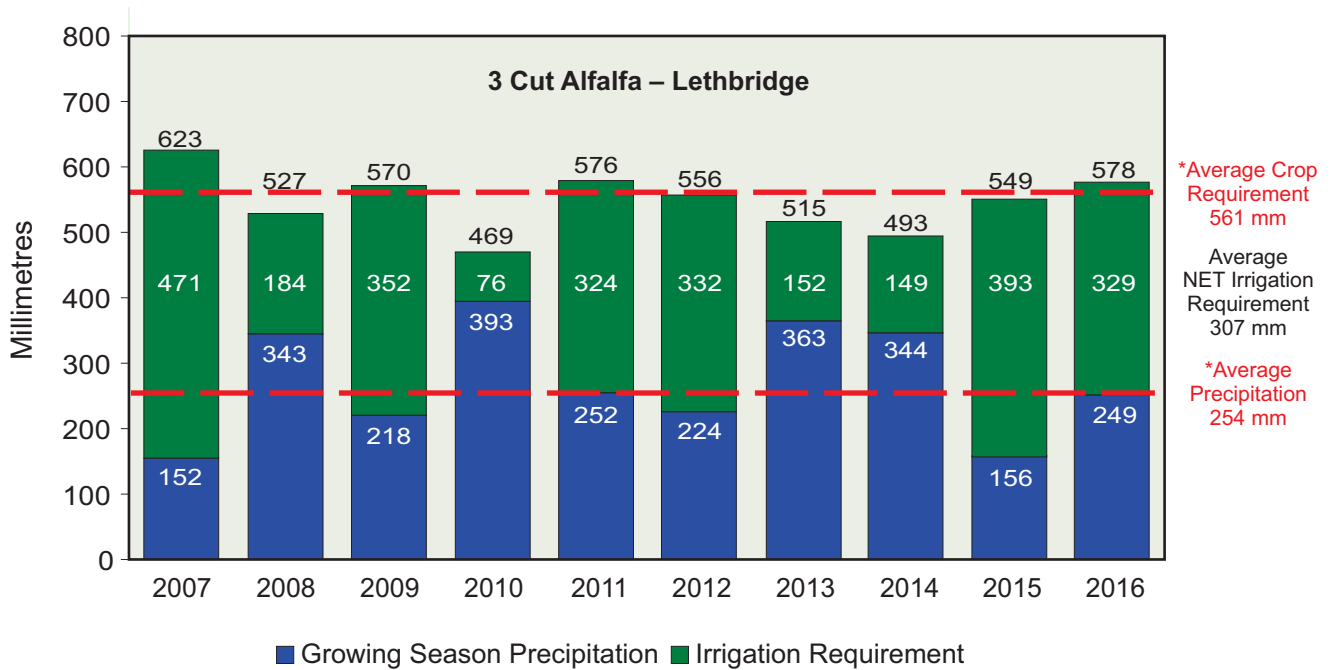


Figure 11. Lethbridge Optimum Crop Water and Net Irrigation Requirements

Note: Three cut alfalfa is used as an indicator crop because of its high water demand. The difference between the total crop water requirement and total precipitation is the NET irrigation requirement.
 *The average crop requirement and average precipitation are from the period 1997 to 2016. Seasonal precipitation from May 1 to September 30.

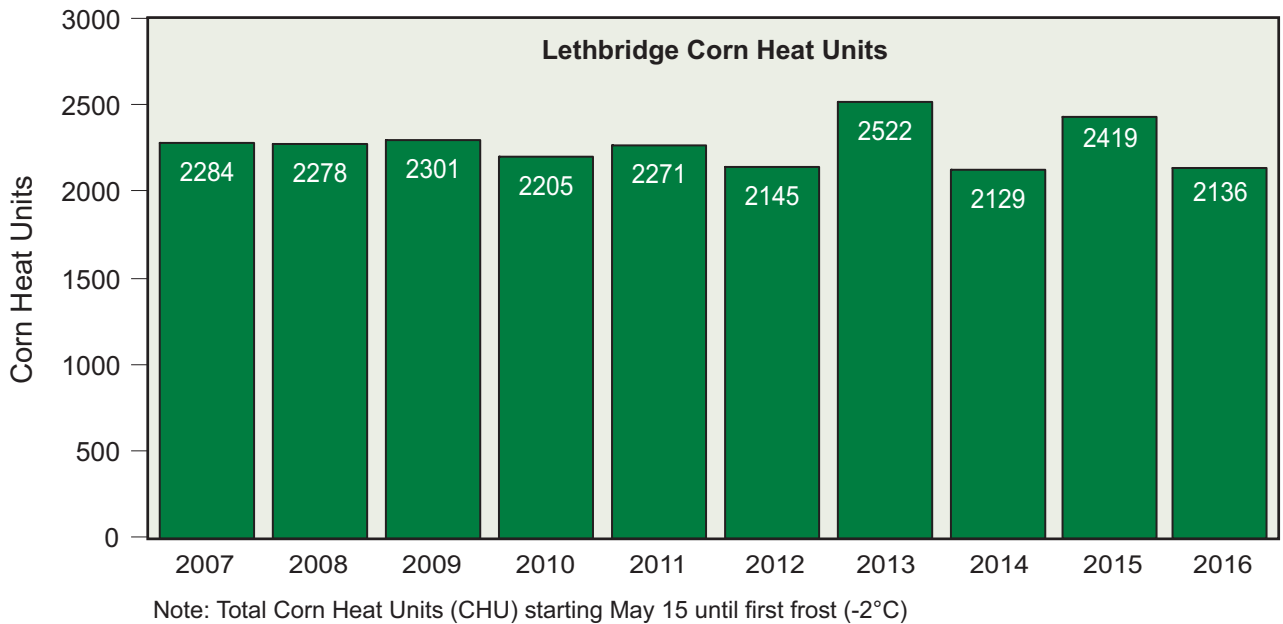


Figure 12. Lethbridge Corn Heat Units

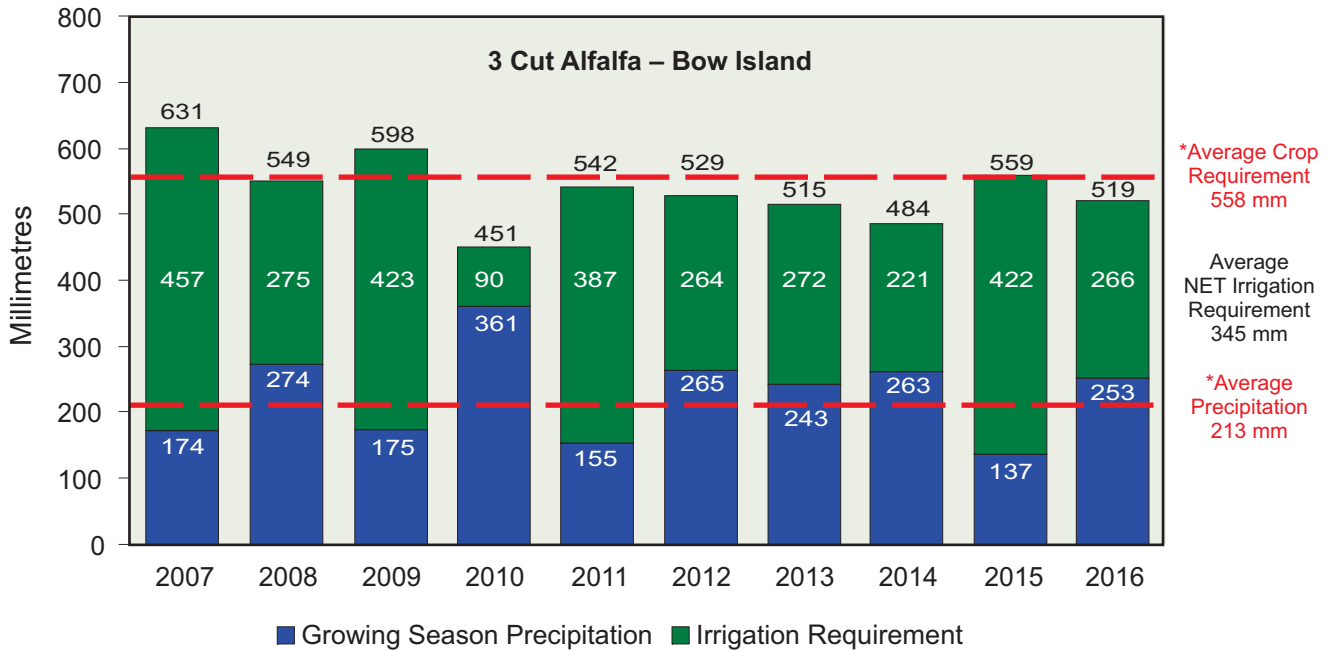
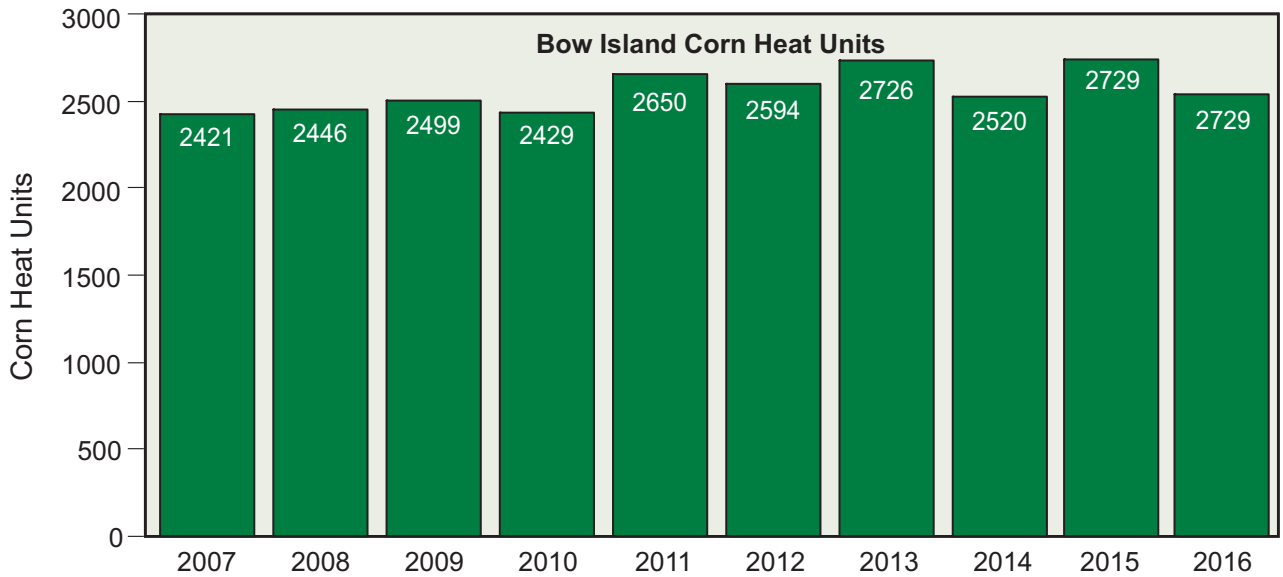


Figure 13. Bow Island Optimum Crop Water and Net Irrigation Requirements

Note: Three cut alfalfa is used as an indicator crop because of its high water demand. The difference between the total crop water requirement and total precipitation is the NET irrigation requirement.
 *The average crop requirement and average precipitation are from the period 1997 to 2016. Seasonal precipitation from May 1 to September 30.



Note: Total Corn Heat Units (CHU) starting May 15 until first frost (-2°C)

Figure 14. Bow Island Corn Heat Units

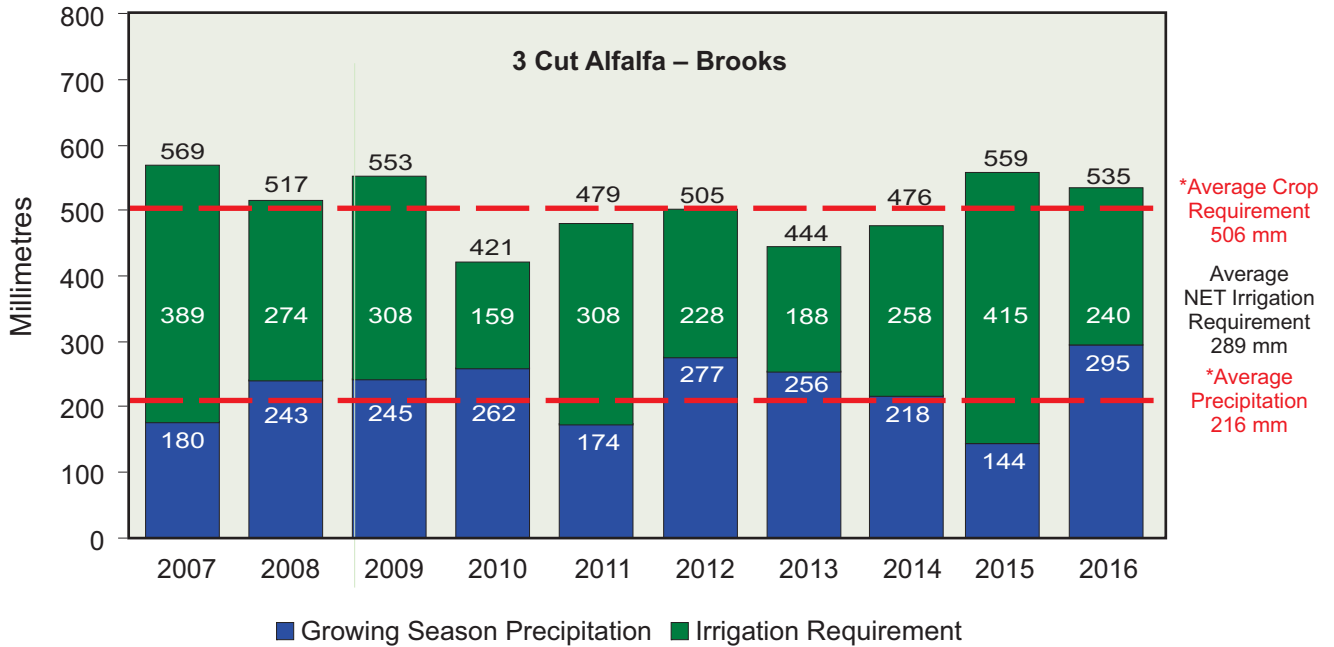


Figure 15. Brooks Optimum Crop Water and Net Irrigation Requirements

Note: Three cut alfalfa is used as an indicator crop because of its high water demand. The difference between the total crop water requirement and total precipitation is the NET irrigation requirement.
 *The average crop requirement and average precipitation are from the period 1997 to 2016. Seasonal precipitation from May 1 to September 30.

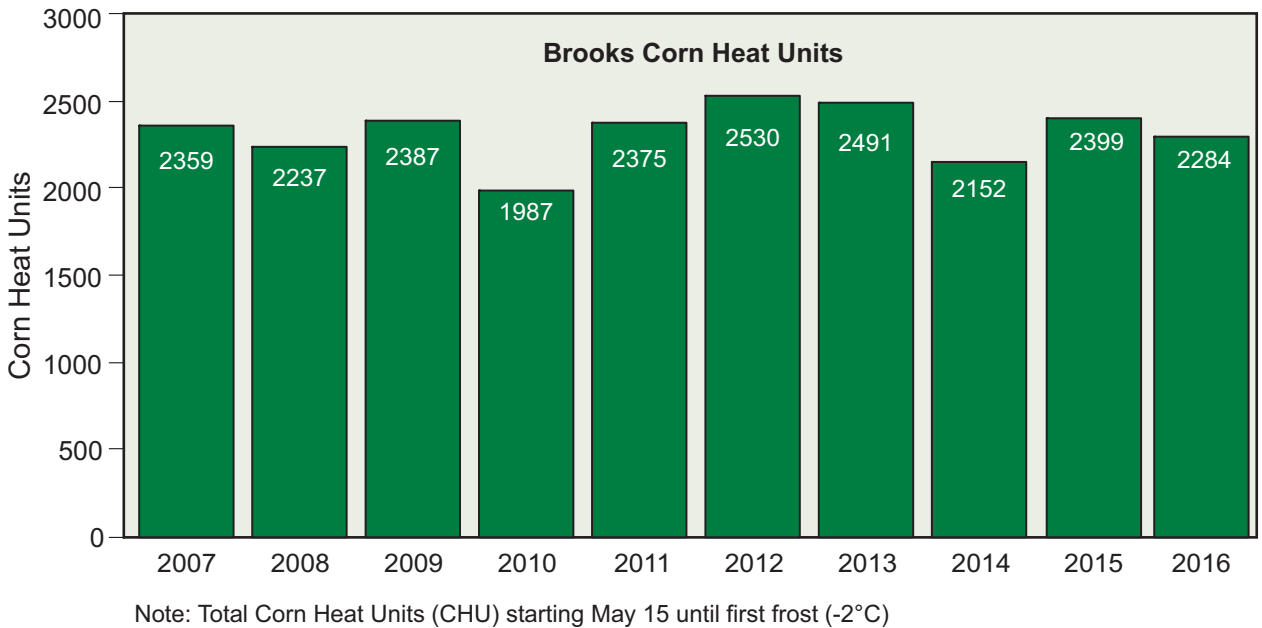


Figure 16. Brooks Corn Heat Units

Table 17. Historical Rainfall in Southern Alberta (April 15 to October 15)

AREA	MAXIMUM RAINFALL (mm)	MINIMUM RAINFALL (mm)	NORMAL RAINFALL* (mm)	2016 RAINFALL (mm)	2016 % OF NORMAL
Lethbridge	534 (1978)	71 (2001)	279	297	106%
Bow Island	439 (1993)	112 (2001)	256	308	120%
Brooks	484 (2005)	87 (2001)	242	321	133%

Note: * Normal rainfall 1970 - 2016

Table 18. Historical Corn Heat Units in Southern Alberta (May 15 to First -2° C Frost)

AREA	MAXIMUM CHU (2006-2016)	MINIMUM CHU (2006-2016)	LAST TEN YEAR AVERAGE*	2016 CHU	2016 % OF LAST TEN YEAR AVERAGE
Lethbridge	2522 (2013)	2129 (2014)	2269	2136	94%
Bow Island	2729 (2015)	2421 (2007)	2554	2530	99%
Brooks	2530 (2012)	1987 (2010)	2320	2284	98%

Note: * Last ten year average 2007 - 2016

Table 19. Frost Free Period (0° C) in Southern Alberta

AREA	AVERAGE LAST FROST	AVERAGE FIRST FROST	AVERAGE FROST FREE DAYS*	2016 LAST FROST	2016 FIRST FROST	2016 FROST FREE DAYS	2016 % OF NORMAL
Lethbridge	May 18	Sept 19	124	May 15	Sept 12	120	96%
Bow Island	May 12	Sept 23	134	May 14	Sept 13	122	91%
Brooks	May 20	Sept 13	116	May 16	Sept 13	120	103%

Note: * Average frost free days 1971 - 2000

Table 20. Frost Free Period (-2° C) in Southern Alberta

AREA	AVERAGE LAST FROST	AVERAGE FIRST FROST	AVERAGE FROST FREE DAYS*	2016 LAST FROST	2016 FIRST FROST	2016 FROST FREE DAYS	2016 % OF NORMAL
Lethbridge	May 2	Sept 29	150	Apr 29	Sept 13	137	91%
Bow Island	Apr 30	Oct 1	154	Apr 11	Oct 6	178	116%
Brooks	May 5	Sept 28	146	May 15	Sept 20	128	88%

Note: Average frost free days 1971 - 2000

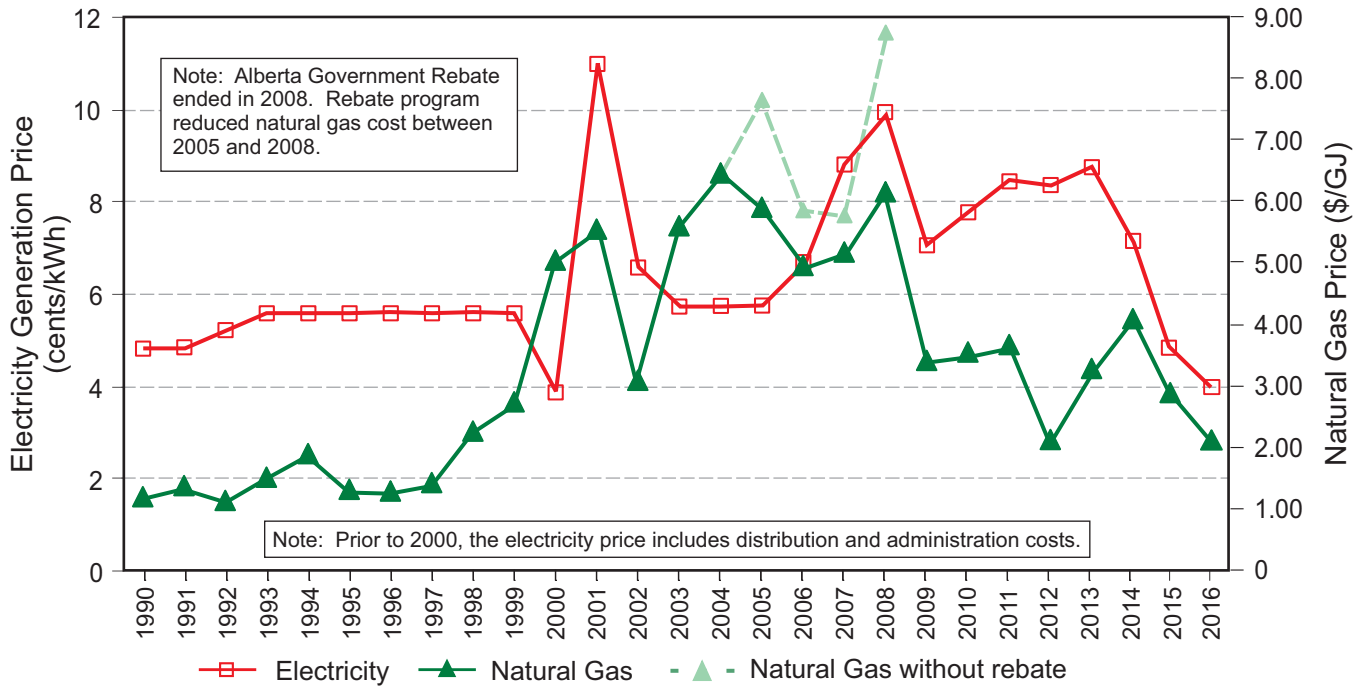
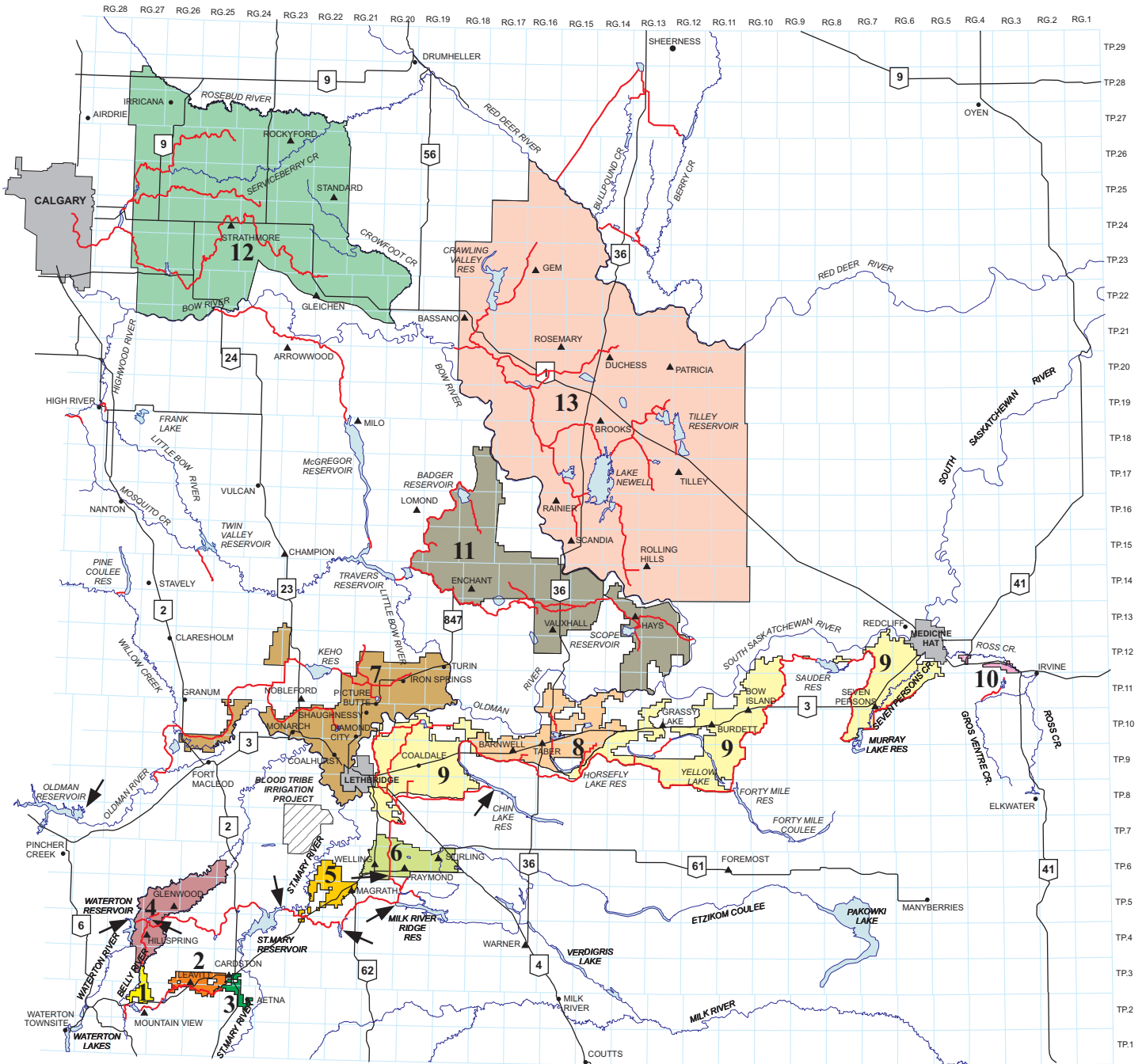


Figure 17. Historical Energy Prices for Irrigation Systems (average prices from May to September)

Table 21. Energy Type Used in the Irrigation Districts’ Irrigated Areas

Energy Type	BRID	EID	LNID	MID	RCID	RID	SMRID	TID	UID	WID	Average Energy Type
Electricity	76.8%	52.3%	39.3%	8.2%	0	52.9%	64.1%	63.2%	55.3%	34.3%	57.1%
	184,823	156,770	71,670	1,499	0	23,889	242,453	50,571	11,638	29,806	
Natural Gas	10.9%	22.4%	30.9%	59.0%	0	34.6%	30.8%	32.3%	2.6%	28.2%	25.4%
	26,336	67,258	56,197	10,761	0	15,628	116,511	25,859	542	24,539	
Diesel	2.8%	3.4%	0.5%	0.0%	0	0.5%	0.7%	0.9%	0.6%	9.9%	2.2%
	6,787	10,145	830	0	0	204	2,582		132	8,595	
Gravity	4.3%	16.6%	1.5%	16.6%	0	7.7%	1.5%	2.8%	18.1%	12.4%	6.8%
	10,243	49,937	2,689	3,019	0	3,493	5,745	2,267	3,801	10,767	
Gravity Pressure Pipeline	3.7%	2.1%	17.4%	16.0%	100.0%	0.9%	2.6%	0.5%	21.0%	8.2%	5.5%
	8,985	6,314	31,628	2,921	1,075	391	10,009	400	4,426	7,155	
Pump Pressure Pipeline	0.4%	2.2%	8.69%	0.0%	0	0.0%	0.0%	0.0%	2.3%	0.3%	1.8%
	868	6,631	16,287	0	0	0	0	0	476	225	
Other*	0.5%	1.0%	0.5%	0.2%	0	1.5%	0.2%	0.2%	0.2%	6.8%	0.9%
	1,232	2,954	841	30	0	657	920	170	37	5,934	
Unknown	0.6%	0.0%	1.1%	0.0%	0	1.9%	0.0%	0.0%	0.0%	0.0%	0.3%
	1,428	0	2,004	0	0	859	0	31	0	0	
Total Acres	240,702	300,009	182,155	18,230	1,705	45,119	378,220	80,010	21,052	87,021	1,354,221

Notes: – * other includes gasoline, propane or butane
 – AID, LID, and MVID did not report any data
 – RID data is for the year 2015



- 1 Mountain View Irrigation District
- 2 Leavitt Irrigation District
- 3 Aetna Irrigation District
- 4 United Irrigation District
- 5 Magrath Irrigation District
- 6 Raymond Irrigation District
- 7 Lethbridge Northern Irrigation District
- 8 Taber Irrigation District
- 9 St.Mary River Irrigation District
- 10 Ross Creek Irrigation District
- 11 Bow River Irrigation District
- 12 Western Irrigation District
- 13 Eastern Irrigation District

Hydroelectric plants associated with water distribution works
 Main canals

There are 13 irrigation districts in southern Alberta providing water to 1,428,577 assessed acres of farmland. The infrastructure within these irrigation districts is comprised of 7,933 kilometres of conveyance system, of which 339 kilometres are owned and operated by Alberta Environment and Parks.

Figure 18. Alberta's Irrigation Districts

Glossary

Actually irrigated: A parcel of assessed land that includes an irrigation system and received water during the current year, as reported by the irrigation districts.

Acres covered by an irrigation system: A parcel of land recorded as having irrigation acres and has some type of irrigation system.

Irrigated this year: A parcel of land that received irrigation water in the current year.

Not irrigated this year: A parcel of land that did not receive irrigation water in the current year.

Acres with no irrigation system: A parcel of land recorded as having irrigation acres without any type of system.

Assessment roll acres: The assessment roll of an irrigation district lists the irrigation, terminable, and annual acres of the district. To learn more about assessments, refer to Alberta's Irrigation Districts Act.

Irrigation acres: Acres in a parcel recorded on the assessment roll as irrigation acres. Subject to an irrigation charge.

Terminable acres: Acres in a parcel recorded on the assessment roll as terminable acres. The agreement is terminable at the option of either party by giving notice before March 1. Subject to a terminable agreement charge.

Annual acres: Acres in a parcel recorded on the assessment roll as annual acres. The agreement expires at the end of the calendar year. Subject to an annual agreement charge.

Canal Evaporation: Water lost through the delivery system by vaporizing from the water surface of an open channel.

Canal Seepage: Water lost through the delivery system through the sides and bottom of an open channel.

Constructed Drain: A man-made open channel or pipeline that provides a means to move unused water away from irrigation works.

Corn Heat Unit: A numerical measure of the growth response of a corn plant to daily minimum and maximum temperatures. Zero corn heat units are calculated when daily minimum temperatures are below 4.4°C and daily maximum temperatures are below 10°C. They are calculated on a daily basis and accumulated annually starting on May 15 and continuing until the first killing frost of -2°C.

Crop Requirement: The amount of water a crop needs to transpire in response to meteorological conditions.

Crop Type: Plants that are grown in the irrigation districts are grouped into five categories: cereals, forages, oil seeds, specialty crops, and other.

Cereals: Annual grasses grown for their grain. Crops reported include barley, CPS wheat, durum wheat, grain corn, hard red spring wheat, malt barley, oats, rye, soft wheat, triticale, and winter wheat.

Forages: Plants that are consumed by livestock. Crops reported include alfalfa (two & three cut, hay, and silage), barley silage, brome hay, corn silage, grass hay, green feed, milk vetch, millet, native pasture, oats silage, sorghum/sudan grass, tame pasture, timothy hay, and triticale silage.

Oil Seeds: Plants that are grown for the oil contained in the seeds. Crops reported include canola, flax, and mustard.

Specialty Crops: Include fruits and vegetables, horticulture, seed production, pulse crops, and nursery crops. Crops reported include alfalfa seed, canola seed, carrots, catnip, chick peas, dill, dry beans, dry peas, faba beans, fresh sweet corn, fresh peas, grass seed, hemp, lawn turf, lentils, market gardens, mint, nursery, onions, potatoes, pumpkins, safflower, seed potatoes, small fruit, soy beans, sugar beets, and sunflower.

Other: Other reported include miscellaneous, non-crop, summer fallow, and unknown.

Expansion Limit: The maximum number of irrigation acres plus acres subject to a terminable agreement in an irrigation district; the total irrigated area of an irrigation district cannot exceed this limit as per the Irrigation Districts Act.

Frost Free Period (0°C): Continuous period of time where the minimum daily temperature does not drop below 0°C.

Frost Free Period (-2°C): Continuous period of time where the minimum daily temperature does not drop below -2°C.

Gross Annual Diversion: All water diverted into the works of an irrigation district from a water source. It includes water used directly for irrigation purposes, reservoir filling, and the water supplied or licenced to municipal, domestic, other agricultural, industrial, and environmental uses.

Irrigation District: A corporation that operates under the authority of the Alberta Irrigation Districts Act whose primary purpose is to convey and deliver water through irrigation works, divert and use quantities of water within the terms of its licence, and to construct, operate and maintain irrigation works. An irrigation district is the geographical area consisting of the parcels of land included in the district.

Irrigation District Irrigation Rate: The annual amount charged by an irrigation district per assessed acre of land for irrigation water delivery. Some districts levy additional surcharges for services including pipeline and/or pressurized delivery, using more water than allocated, and automated screen cleaning.

Irrigation District Works: Any structure, device, contrivance or thing or any artificial body of water or watercourse used or to be used by a district.

Membrane-lined canal: An open channel that has been lined with a membrane material to prevent water seepage.

Concrete-lined canal: An open channel that has been constructed with concrete to prevent water seepage.

Earth canal: An open channel that has been constructed with a natural low porosity material that reduces water seepage.

Closed pipeline: A buried conduit that is closed at the outlet.

Open pipeline: A buried conduit that is open at the outlet.

Irrigation method: Irrigation systems are grouped into five categories: high pressure pivot sprinkler, low pressure pivot sprinkler, wheel move sprinkler, gravity, and other.

High pressure pivot sprinkler includes:

Pivot high pressure: Centre pivot irrigation system with high pressure (greater than 50 pounds per square inch (psi)) impact sprinklers.

Pivot high pressure – corner arm: Centre pivot irrigation system with high pressure (greater than 50 psi) impact sprinklers with the addition of a secondary pivotal arm connected to the end of the centre pivot boom.

Linear – high pressure: Linear move irrigation pivot system with high pressure (greater than 50 psi) impact sprinklers that irrigate a rectangular field.

Low pressure pivot sprinkler includes:

Pivot medium pressure: Centre pivot irrigation system with medium pressure (between 30 and 50 psi) impact sprinklers.

Pivot medium pressure – corner arm: Centre pivot irrigation system with medium pressure (between 30 and 50 psi) impact sprinkler nozzles with the addition of a secondary pivotal arm connected to the end of the centre pivot boom.

Pivot low pressure: Centre pivot irrigation system with low pressure (less than 30 psi) spray nozzles.

Pivot low pressure – corner arm: Centre pivot irrigation system with low pressure (less than 30 psi) spray nozzles with the addition of a secondary pivotal arm connected to the end of the centre pivot boom.

Linear – low pressure: Linear move pivot irrigation system with low pressure (less than 30 psi) spray nozzles that irrigates a rectangular field.

Wheel move includes:

Wheel move – two laterals: Two wheel mounted pipelines with sprinklers along their length per parcel of land.

Wheel move – four laterals: Four wheel mounted pipelines with sprinklers along their length per parcel of land.

Gravity includes:

Gravity – developed: surface irrigation system with some land modification (leveling plus construction of border strips, furrows, basin), where the soil surface is used to distribute and infiltrate the applied water.

Gravity undeveloped: surface irrigation system without any land modification (leveling) or application control (furrows, border strips, dykes).

Other includes:

Volume gun – stationary: Large volume sprinkler stationed at a single point.

Volume gun – traveller: Large volume sprinkler mounted on wheels.

Solid set: Sprinklers mounted on risers connected to a buried pipe.

Hand move: Sprinklers mounted on risers connected to a surface pipe that can be moved.

Micro – spray – sprinkler: Spray emitter connected to a drip irrigation system.

Micro – drip – trickle: Drip emitter connected to a drip irrigation system.

Other application use: Water used for purposes other than irrigation.

Natural Drain: An open channel that exists as a natural watercourse that provides a means to move unused water away from irrigation works.

Net Requirement: The amount of water supplied by irrigation to meet the crop requirement.

Other Use: Any water delivered by an irrigation district for a use other than irrigation; this includes municipal, domestic, other agricultural, industrial, and environmental uses.

Percent of Licence: The percentage of the irrigation district's licence that was diverted in a year.

Replacement Cost: The cost in today's dollars to restore a piece of irrigation district infrastructure.

Reservoir Evaporation: Water lost from the surface of a reservoir by vaporization.

Reservoir Storage: Net change in irrigation district reservoir storage volume. Irrigation districts own and operate reservoirs to store irrigation water for release when there is insufficient diversion capacity to meet the demand for water. They are also used for normal district operations to stabilize flows and capture unused water for further use.

Return: Water returned by an irrigation district to the river system.

Total District Operations: Total volume of water used for irrigation district operations comprised of water delivered for irrigation, other uses, water lost to seepage and evaporation, and water returned.

Water Licence (Irrigation): Includes irrigation district and private licences.

Irrigation District Water Licence: An authorization which permits the irrigation district to divert a certain volume of water, at a specific rate, from a watercourse into district owned conveyance and storage systems.

Private Irrigation Water Licence: An authorization which permits a private irrigator to divert a certain volume of water, at a specific rate, from a watercourse to a private irrigation development project.

Water Licence Allocation (Irrigation District): The total volume of water that an irrigation district is licenced to divert annually.

Water Source: The origin of the watercourse that is diverted by an irrigation district.