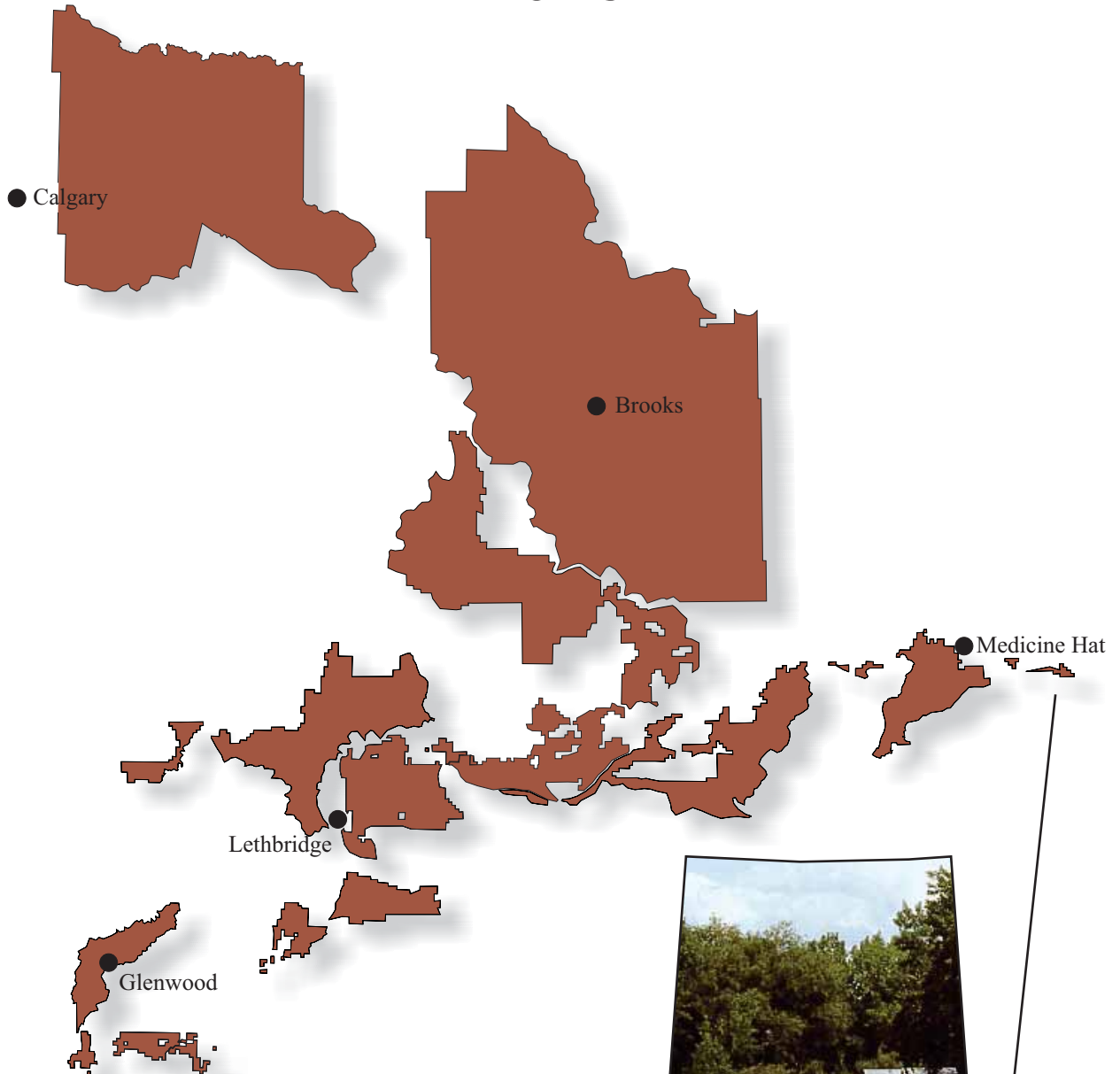


Alberta Irrigation Information 2015



ALBERTA IRRIGATION INFORMATION

FACTS AND FIGURES FOR THE YEAR 2015

BASIN WATER MANAGEMENT SECTION
IRRIGATION AND FARM WATER BRANCH

SEPTEMBER 2016

This report is prepared by Alberta Agriculture and Forestry. 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.

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Table 1. Details of Crops Grown within the 13 Irrigation Districts in 2015 (cont'd)

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		418	1,029	15,912	1,422		17,607			366	273		15,934	
	CPS Wheat				569			2,192						656	
	Durum Wheat				12,388	45		4,150						6,696	
	Grain Corn				7,195	91		11,299						1,110	
	Hard Spring Wheat	255			51,640	2,188		44,961						4,808	
	Malt Barley							172						148	
	Oats				1,197	105		2,236						303	
	Rye				80	15		109							
	Soft Wheat				443	68		142						4,273	
	Triticale	77			318	36		3,115			54			2,254	
Winter Wheat				1,372			736						1,036		
FORAGES	Alfalfa - Two cuts	542			1,850	8		28,345						13,534	
	Alfalfa - Three cuts				920			7,787						1,472	
	Alfalfa Hay	320	321	340	13,070	104		3,628		500	621	200		10,466	
	Alfalfa Silage							695						3,495	
	Barley Silage				2,066			4,669						35,990	
	Barley Silage (underseeded)							433						1,098	
	Brome Hay				934	978								711	
	Corn Silage				4,682	78		13,549						22,931	
	Grass Hay			48	732	125		10,963		195	605	80		4,135	
	Green Feed		89	51	1,674	294		9,615						61	
	Milk Vetch							120							
	Millet							25							
	Native Pasture				340	56		1,100				25		279	
	Oats Silage														
	Sorghum/Sudan Grass					65									
	Tame Pasture	284	19	555	9,933	884		39,261		389	375	818		4,226	
Timothy Hay				1,989	313		1,498			135			3,553		
Triticale Silage															
OIL SEEDS	Canola				19,170	2,389		31,040						30,225	
	Flax				8,025	481		12,245						3,100	
	Mustard				244									80	
SPECIALTY CROPS	Alfalfa Seed				14,581	184		20,829						146	
	Canola Seed				9,299	82		5,637							
	Carrots							65							
	Chick Peas														
	Dill				264			125						147	
	Dry Beans				12,001	96		4,208							
	Dry Peas				5,228	227		3,170						666	
	Faba Beans				2,091			2,722							
	Fresh Corn (sweet)							45							
	Fresh Peas				1,294			163						314	
	Grass Seed				142									146	
	Hemp				6,098	42		681						216	
	Lawn Turf													908	
	Lentils				865										
	Market Gardens				6			52						48	
	Mint				431	66		125							
	Nursery					8		424						7	
	Onions														
	Potatoes				8,654	50		4,349						596	
	Pumpkins														
Safflower													158		
Seed Potatoes							271						302		
Small Fruit															
Soy Beans				203			816								
Sugar Beets				9,045	179		462						2,300		
Sunflower				849			1,824						181		
OTHER	Miscellaneous	11			37	420		270						916	
	Non Crop	122	4	39					146		97	45	70		
	Summer Fallow				649	378		879							
	Unknown (not reported)														
Total acres	1,611	851	2,062	228,480	11,477	0	297,930	1,025	0	1,736	1,919	1,193	179,625	0	0

Table 1. Details of Crops Grown within the 13 Irrigation Districts in 2015 (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	2,116	722							7,168	1,092	
	CPS Wheat									343		
	Durum Wheat									4,271		
	Grain Corn											
	Hard Spring Wheat	3,180	185		141					1,529		
	Malt Barley	125										
	Oats				16	307				160		
	Rye											
	Soft Wheat									261		
	Triticale									260		
Winter Wheat	213	40							1,872			
FORAGES	Alfalfa - Two cuts									5,800		
	Alfalfa - Three cuts									5,300	230	
	Alfalfa Hay	5,028	217		596	686		781		90		
	Alfalfa Silage									1,844	190	
	Barley Silage	206										
	Barley Silage (underseeded)											
	Brome Hay											
	Corn Silage									1,777		
	Grass Hay	254			243	255			94	497	100	
	Green Feed	388	167		107	241				1,201		
	Milk Vetch											
	Millet											
	Native Pasture				532	428						
	Oats Silage									146		
	Sorghum/Sudan Grass											
Tame Pasture	1,386	187							3,640	990		
Timothy Hay									585			
Triticale Silage												
OIL SEEDS	Canola	2,159	550		112			116		5,192	430	
	Flax	547	50							245	90	
	Mustard									141		
SPECIALTY CROPS	Alfalfa Seed											
	Canola Seed											
	Carrots											
	Chick Peas											
	Dill											
	Dry Beans	120										
	Dry Peas	130								756		
	Faba Beans											
	Fresh Corn (sweet)											
	Fresh Peas											
	Grass Seed	180										
	Hemp	130								165		
	Lawn Turf								12			
	Lentils											
	Market Gardens									50		
	Mint											
	Nursery									43		
	Onions											
	Potatoes											
	Pumpkins											
Safflower												
Seed Potatoes												
Small Fruit	20											
Soy Beans												
Sugar Beets												
Sunflower												
OTHER	Miscellaneous								71	42		
	Non Crop											
	Summer Fallow											
	Unknown (not reported)											
Total acres	16,182	2,118	0	1,746	1,917	0	897	0	177	43,378	3,122	0

Table 1. Details of Crops Grown within the 13 Irrigation Districts in 2015 (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	15,862	240	966	5,754			3,616			5,034	1,660	97,191	
	CPS Wheat				479			668			4,897	690	10,494	
	Durum Wheat	28,089	169	622	1,748			137			516	145	58,976	
	Grain Corn	7,187	72	25	2,900						130		30,009	
	Hard Spring Wheat	63,795	676	2,817	16,796	104		5,165			6,535	1,611	206,386	
	Malt Barley	124		16							50		635	
	Oats	116			410			11			907	100	5,868	
	Rye	75			125						100		504	
	Soft Wheat	10,926		211	797						981		18,102	
	Triticale	299			315			280					7,008	
	Winter Wheat	13,299	57	574	751			1,862			1,157		22,969	
FORAGES	Alfalfa - Two cuts	13,333	260	457	2,441	28					10,539	2,448	73,785	
	Alfalfa - Three cuts	2,879		81	3,040								21,979	
	Alfalfa Hay	8,618	212	770	1,147	35		4,947			2,839	643	61,619	
	Alfalfa Silage	1,677		246	175								6,378	
	Barley Silage	7,823		297	776			819			3,349	277	58,306	
	Barley Silage (underseeded)	95									298	30	1,954	
	Brome Hay	561	16	25							150	11	3,386	
	Corn Silage	18,181	23	697	3,739						1,099		66,756	
	Grass Hay	5,567	462	816	170			1,051			3,074	821	30,287	
	Green Feed	5,771	377	123	593			181			300		21,233	
	Milk Vetch												120	
	Millet												25	
	Native Pasture	4,118	114	520	18	247		3,325			175	850	12,127	
	Oats Silage	140		10									296	
	Sorghum/Sudan Grass	213			55			98					431	
	Tame Pasture	7,958	895	1,119	3,234	1,306		1,720			4,405	2,329	85,913	
Timothy Hay	5,190	82	186	1,895			1,599			1,122		18,147		
Triticale Silage	376		75									451		
OIL SEEDS	Canola	40,436	315	1,384	2,371	25		7,499			13,188	2,144	158,745	
	Flax	11,667	19	376	585						128		37,558	
	Mustard				60								525	
SPECIALTY CROPS	Alfalfa Seed	209		3									35,952	
	Canola Seed	13,251		6	3,274								31,549	
	Carrots	104	10										179	
	Chick Peas	482											482	
	Dill	130											666	
	Dry Beans	27,746	68	250	3,066	38					80		47,673	
	Dry Peas	6,577	75	354	298			1,274			1,538		20,293	
	Faba Beans	1,285		89	280								6,467	
	Fresh Corn (sweet)	1,304			1,445								2,794	
	Fresh Peas	1,695			1,754						650		5,870	
	Grass Seed	47			67						5		587	
	Hemp	7,665		186	130								15,313	
	Lawn Turf	223			109			10			2,736	70	4,068	
	Lentils	2,275	4	140	60						180	186	3,344	
	Market Gardens	243			21			15					801	
	Mint	5,965											6,587	
	Nursery	240		7	22						775	860	2,386	
	Onions	5			749								754	
	Potatoes	15,800	65	6	10,429	130		5			200		40,284	
	Pumpkins				145								145	
Safflower												158		
Seed Potatoes				260						503		1,336		
Small Fruit	45	5		10							30	110		
Soy Beans	1,126			260								2,405		
Sugar Beets	7,558	63	114	3,758	9							23,488		
Sunflower	528			366								3,748		
OTHER	Miscellaneous	1,507	139	555	238	58		102			160	125	4,651	
	Non Crop	67	210	202	8	80		7				190	1,287	
	Summer Fallow	138	196	757		104							3,101	
	Unknown (not reported)						4,297						11,535	
Total acres		370,590	4,824	15,082	77,123	2,164	4,297	34,391	0	0	67,800	15,220	11,535	1,400,472
Total acres		390,496			83,584			34,391			94,555			1,400,472

Table 2. Summary of Crops Grown within the 13 Irrigation Districts in 2015

CROPS	IRRIGATION DISTRICTS													TOTAL ACRES
	AID	BRID	EID	LID	LNID	MID	MVID	RCID	RID	SMRID	TID	UID	WID	
Cereals	1,779	95,084	86,719	693	37,218	6,581	464	0	16,956	146,217	30,179	11,739	24,513	458,142
	39.3%	39.6%	29.0%	14.3%	20.7%	36.0%	12.7%	0.0%	36.5%	37.4%	36.1%	34.1%	25.9%	32.7%
Forages	2,569	41,095	121,688	3,943	101,951	7,833	3,088	875	22,390	90,363	18,899	13,740	34,759	463,193
	56.8%	17.1%	40.7%	81.3%	56.8%	42.8%	84.3%	81.5%	48.2%	23.1%	22.6%	40.0%	36.8%	33.1%
Oil Seeds	0	30,309	43,285	0	33,405	3,306	112	116	6,098	54,197	3,041	7,499	15,460	196,828
	0%	12.6%	14.5%	0.0%	18.6%	18.1%	3.0%	10.8%	13.1%	13.9%	3.6%	21.8%	16.4%	14.1%
Specialty Crops	0	71,985	45,968	0	6,135	580	0	12	1,014	95,948	26,680	1,304	7,813	257,439
	0.0%	30.0%	15.4%	0.0%	3.4%	3.2%	0.0%	1.1%	2.2%	24.6%	31.9%	3.6%	8.3%	18.4%
Other*	176	1,484	1,295	212	916	0	0	71	42	3,771	4,785	109	12,010	24,871
	3.9%	0.6%	0.4%	4.4%	0.5%	0.0%	0.0%	6.6%	0.1%	1.0%	5.7%	0.3%	12.7%	1.8%
TOTAL ACRES	4,524	239,957	298,955	4,848	179,625	18,300	3,663	1,074	46,500	390,496	83,584	34,391	94,555	1,400,472

Note: *Other includes unknown or not reported crops

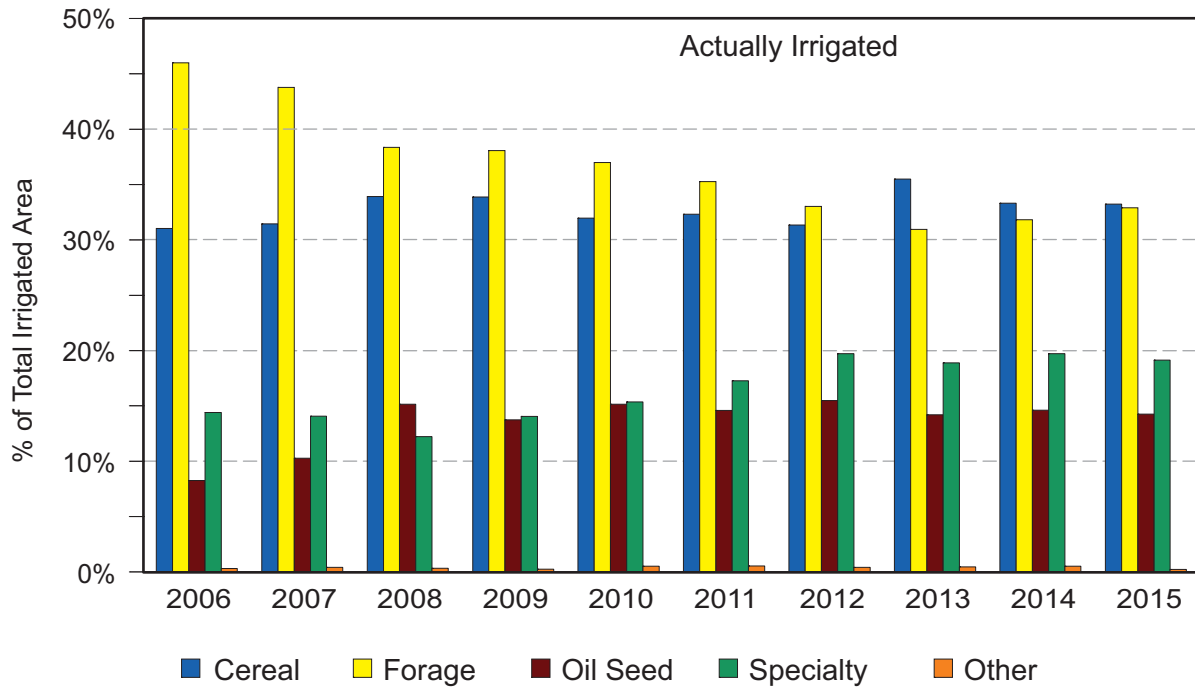


Figure 1. Irrigated Crops within the 13 Irrigation Districts in Southern Alberta (2006 - 2015)

Note: Starting in 2011, acreage data for canola seed (canola grown for seed production) was collected. It is included in the specialty crop category.

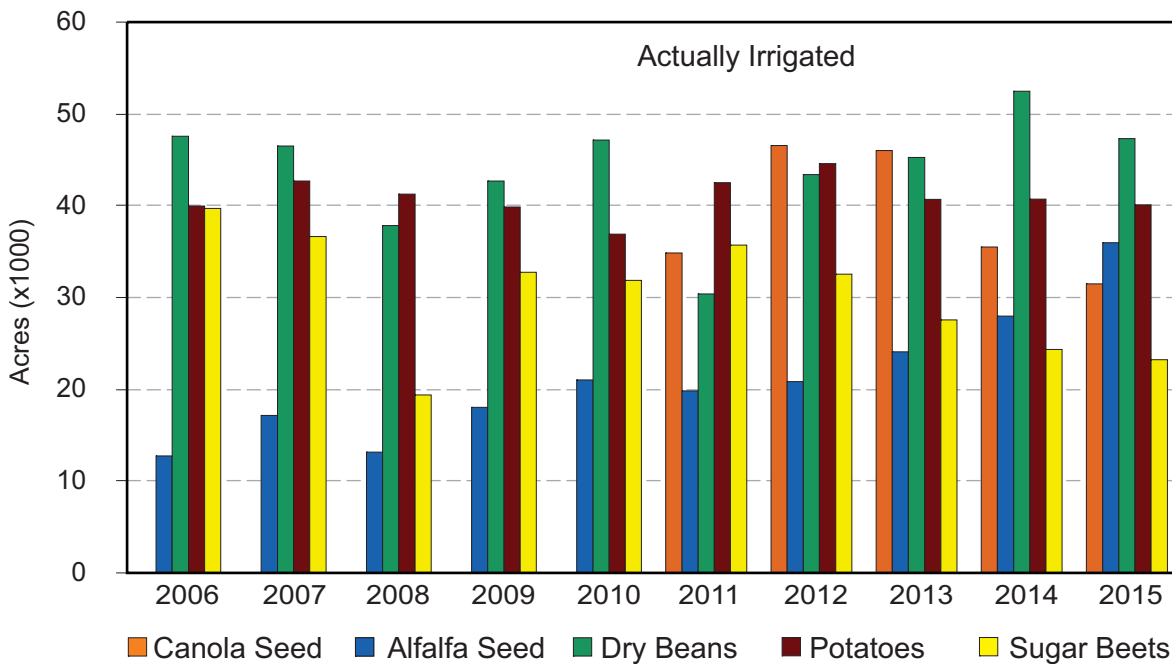


Figure 2. Acres of Five Major Irrigated Specialty Crops – Canola Seed, Alfalfa Seed, Dry Beans, Potatoes and Sugar Beets within the 13 Irrigation Districts in Southern Alberta (2006 - 2015)

Note: Starting in 2011, acreage data for canola seed (canola grown for seed production) was collected. It is included in the specialty crop category.

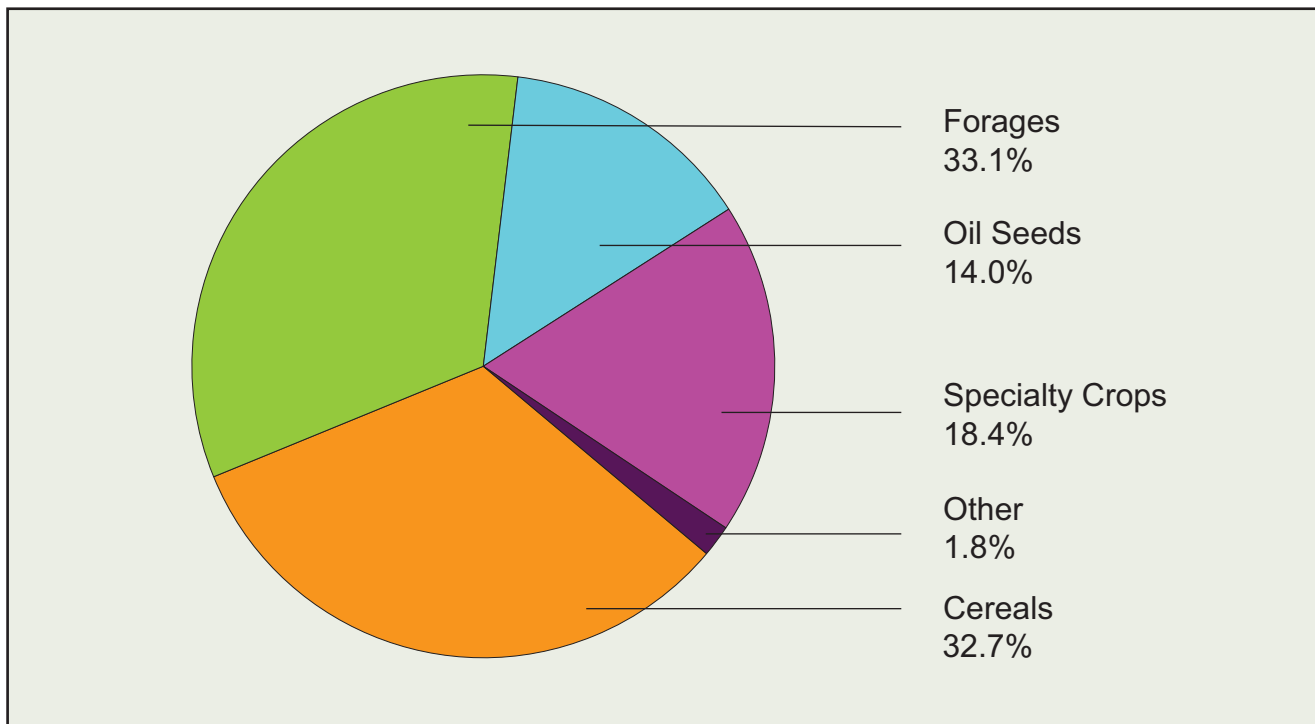


Figure 3. Crops Grown within the 13 Irrigation Districts in Southern Alberta in 2015

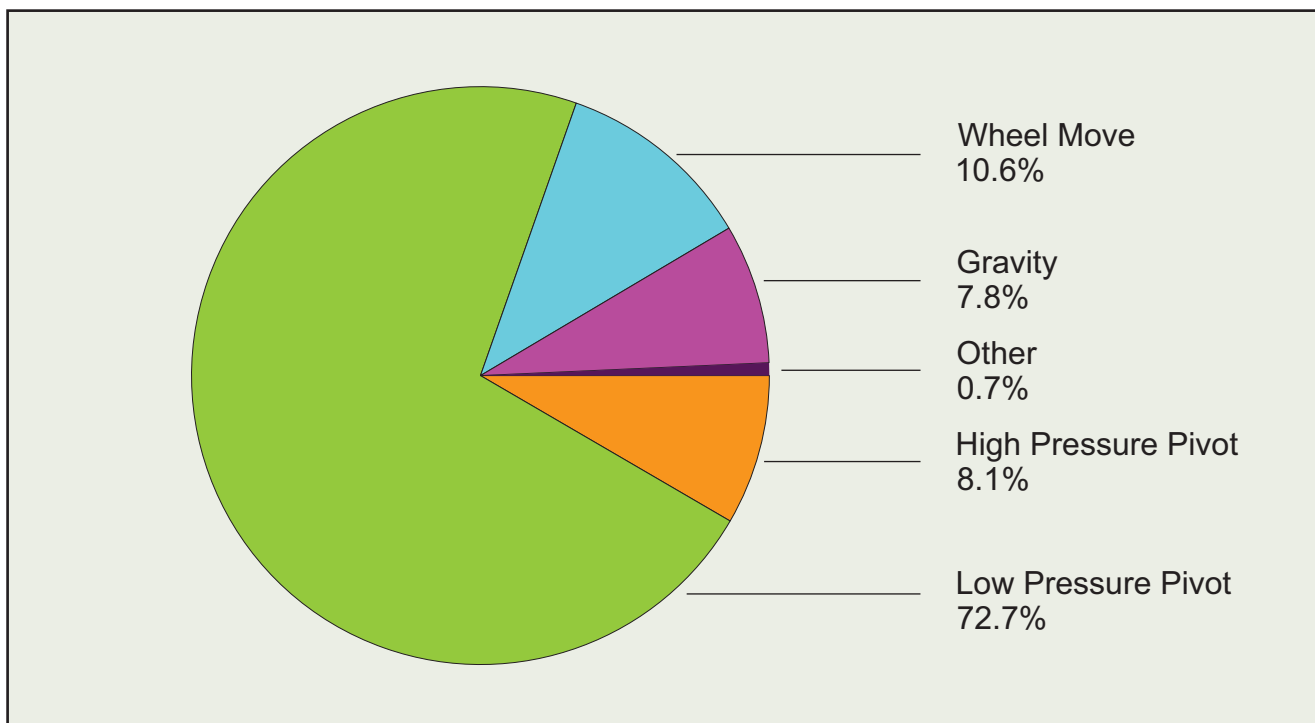
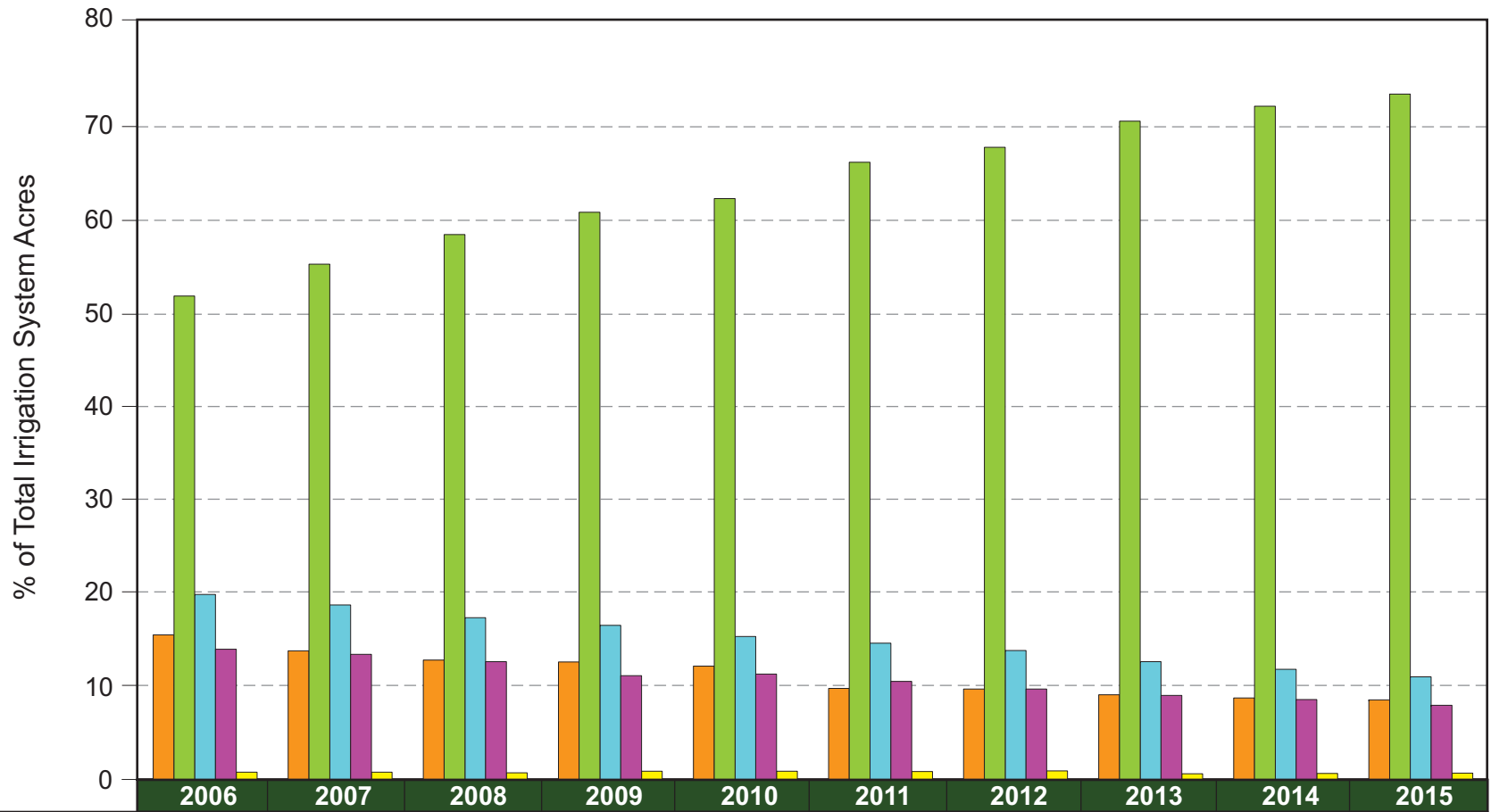


Figure 4. On-farm Irrigation Methods within the 13 Irrigation Districts in Southern Alberta in 2015

Table 3. On-farm Irrigation Method Summary within the 13 Irrigation Districts in Southern Alberta in 2015

IRRIGATION METHOD		*AID	BRID	EID	*LID	LNID	MID	MVID	*RCID	RID	SMRID	TID	UID	WID	Individual Method Total	Total Acres Covered
HIGH PRESSURE PIVOT SPRINKLER	Pivot High Pressure		19,895	25,998	459	8,110	2,186		67	997	8,986	9,006	1,831	20,170	97,705	110,733
	Pivot High Pressure - Corner arm		2,088	2,820		4,435					1,491	793		639	12,265	
	Linear - High Pressure			217								84		462	763	
	percent of district ----	0.0%	9.2%	9.7%	12.8%	7.0%	11.9%	0.0%	7.5%	2.2%	2.8%	12.5%	5.4%	25.7%	8.1%	
LOW PRESSURE PIVOT SPRINKLER	Pivot Medium Pressure		2,078	4,275		1,784		253		824	3,390				12,603	991,859
	Pivot Medium Pressure - Corner Arm		296	248		301					547				1,392	
	Pivot Low Pressure	675	148,374	175,117	576	54,227	7,700		604	26,923	272,084	41,976	15,792	35,140	779,187	
	Pivot Low Pressure - Corner Arm		43,076	15,177		64,221				2,226	47,980	16,474	1,181	4,506	194,841	
	Linear - Low Pressure			1,615		226				310	1,159	220	37	268	3,835	
percent of district ----	20.9%	81.0%	65.7%	16.1%	67.3%	42.1%	6.9%	67.3%	67.1%	86.6%	74.0%	49.9%	48.1%	72.7%		
WHEEL MOVE	Wheel Move -Two Laterals	1,763	6,387	15,245	1,694	19,551	4,961	417	226	8,040	27,903	8,090	1,603	9,686	105,566	145,123
	Wheel Move - Four Laterals		3,753	4,368		23,114	140			1,454	3,361	473	103	2,792	39,558	
	percent of district ----	54.5%	4.2%	6.6%	47.3%	23.8%	27.9%	11.4%	25.2%	21.0%	8.3%	10.8%	5.0%	15.1%	10.6%	
GRAVITY	Gravity - Developed		10,580	42,295		739	3,119			2,471	1,195	946	1,334	245	62,924	106,764
	Gravity - Undeveloped	208	2,372	10,821	748	792		2,993		1,436	5,719	1,075	12,043	5,634	43,840	
	percent of district ----	6.4%	5.4%	17.8%	20.9%	0.9%	17.0%	81.7%	0.0%	8.7%	1.8%	2.5%	39.2%	7.1%	7.8%	
OTHER	Volume Gun - Stationary										130	10		74	214	9,698
	Volume Gun - Traveller		70	285		150					68	22		565	1,160	
	Solid Set (underground sprinkler)	47		8	92	697				95	254			353	1,546	
	Hand Move (sprinkler above ground)	528	116	466	5	1,118	174			207	989	103	147	415	4,268	
	Micro - Spray - Sprinkler					41				51	39	15	15	96	257	
	Micro - Drip - Trickle						20			7	119			1,363	1,509	
	Other Application Use	11	139		5					80			15	495	745	
percent of district ----	18.1%	0.1%	0.3%	2.8%	1.1%	1.1%	0.0%	0.0%	1.0%	0.4%	0.2%	0.5%	4.1%	0.7%		
Total Acres Covered		3,232	239,223	298,955	3,579	179,505	18,300	3,663	897	45,119	375,414	79,287	34,101	82,903	1,364,178	1,364,178

Note: *Information for AID, LID, and RCID is for 2014 irrigation season



	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
High Pressure Pivot	198,011	176,421	164,072	160,665	156,784	126,864	126,430	119,449	116,436	110,733
Low Pressure Pivot	660,168	705,260	747,187	773,538	802,173	856,707	879,651	923,391	957,117	991,859
Wheelmove	252,831	239,140	222,247	210,606	198,043	189,410	179,837	165,561	157,056	145,124
Gravity	178,411	171,487	162,063	141,885	145,879	136,709	126,217	118,307	114,122	106,764
Other	10,579	10,380	9,870	11,935	11,826	11,626	12,444	8,785	8,941	9,698

Figure 5. Irrigation Method Summary within the 13 Irrigation Districts in Southern Alberta (2006 - 2015)

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
77	3,081	147,795	224,967	4,430	111,735	9,480	3,720	1,319	31,626	274,301	68,178	33,617	68,549	982,798
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
15	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

Notes: Assessment roll acres include "irrigation", "terminable" and "annual" acres. Only "irrigation" and "terminable" acres are considered in district expansion limits. In 2015, irrigation districts reported 7,074 annual acres.

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

YEAR	AID	BRID	EID	LID	LNID	MID	MVID	RCID	RID	SMRID	TID	UID	WID
86	\$6.00	\$10.00	\$7.25	\$7.50	\$12.50	\$6.00	\$5.20	\$6.00	\$6.50	\$13.00	\$11.00	\$3.25	\$7.47
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*
15	\$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*

Note: * The districts levy the following additional surcharges.

- | | | | |
|------|--|-------|---|
| AID | – charges vary for pipeline delivery | MID | – \$4.00 per acre for pipeline delivery; \$1.00 per 10 psi |
| 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) | RID | – charges vary for pipeline and pressure delivery; \$100 per acre inch for volumes over the annual allocation |
| EID | – \$6.00 per acre if served from H Cowoki, 03 East Branch, Springhill, or Rolling Hills Reservoir pressure systems | SMRID | – \$100 per acre inch for volumes over the annual allocation |
| LID | – \$3.00 per acre for pressure pipeline | TID | – \$50 per acre inch for volumes over the annual allocation |
| LNID | – \$0.30 per psi for pressure pipeline; \$5.00 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 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	450,000	761,000	158,400	2,797,060
YEAR	VOLUME OF WATER DIVERTED (acre-feet)													
82			142,683	13,068		3,551	27,697	332,337	91,998	19,133	303,000	481,258	129,712	1,544,437
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
15	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
Percent of Licence (2015)	36.7%	37.8%	58.9%	63.1%	30.3%	23.3%	62.6%	62.8%	63.6%	39.0%	73.8%	62.0%	86.2%	64.4%
***Average Volume	3,759	6,134	166,362	14,529	3,087	1,030	33,240	380,684	92,121	20,073	299,527	517,550	123,702	1,661,797

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 - 2015

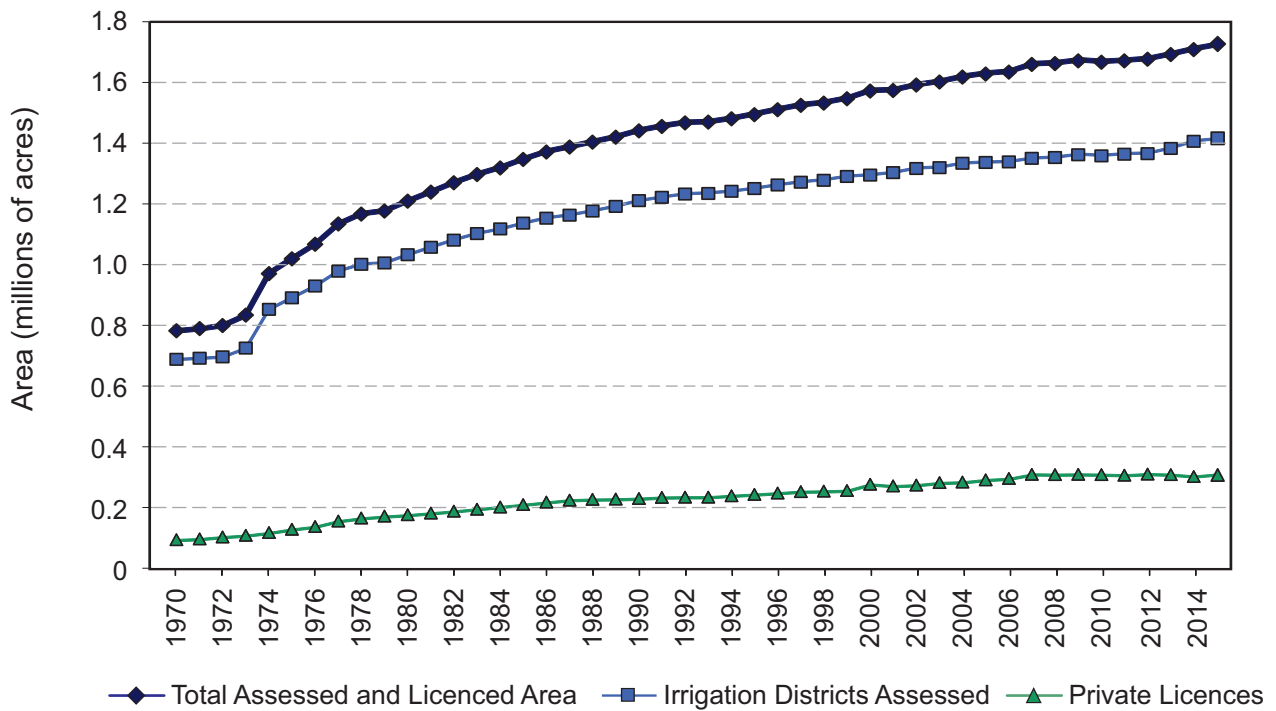


Figure 6. Growth in Irrigation in Alberta (1970 - 2015)

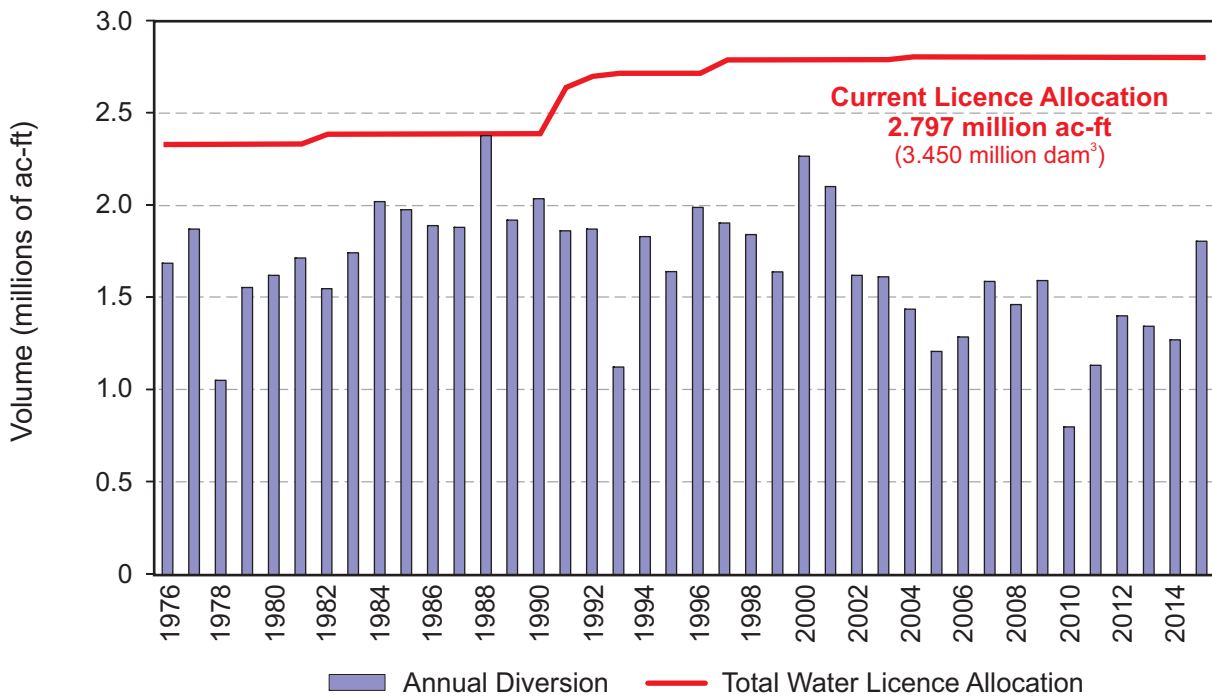


Figure 7. Irrigation Districts Gross Annual Diversions (1976 - 2015)

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.

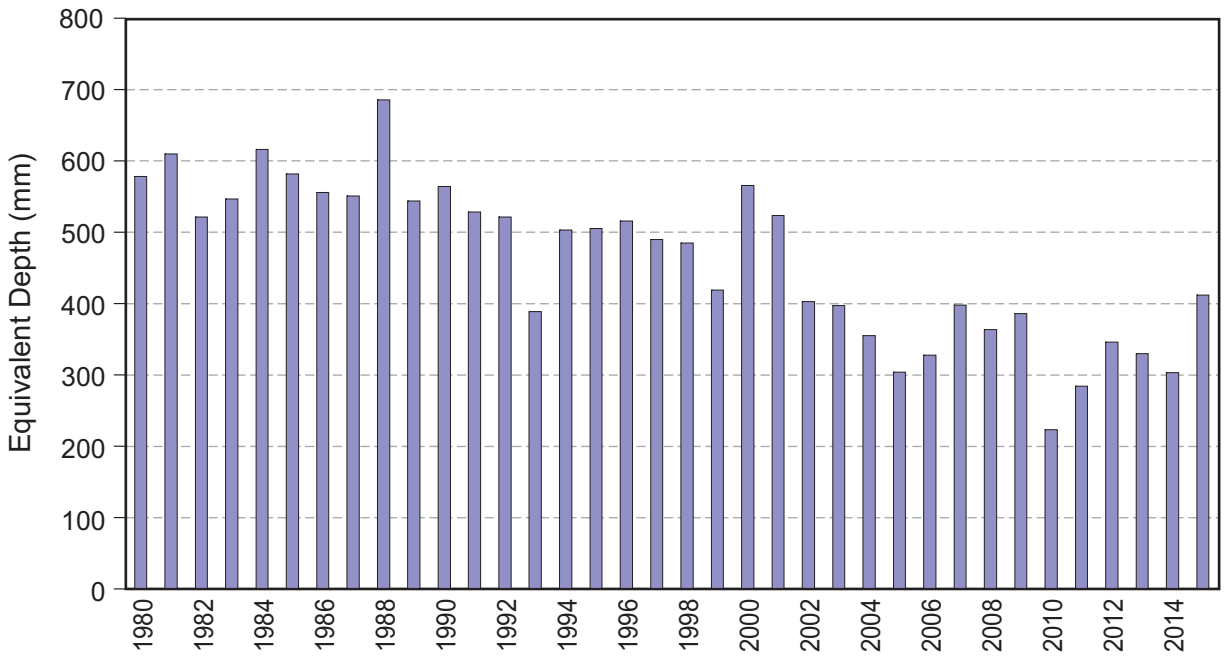


Figure 8. Irrigation Districts Gross Diversion Equivalent Depth (1980 - 2015)

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 which may have accounted as net gains in reservoir storage, water diverted for other uses such as domestic, municipal, other agricultural, industrial, recreational and habitat enhancement purposes.

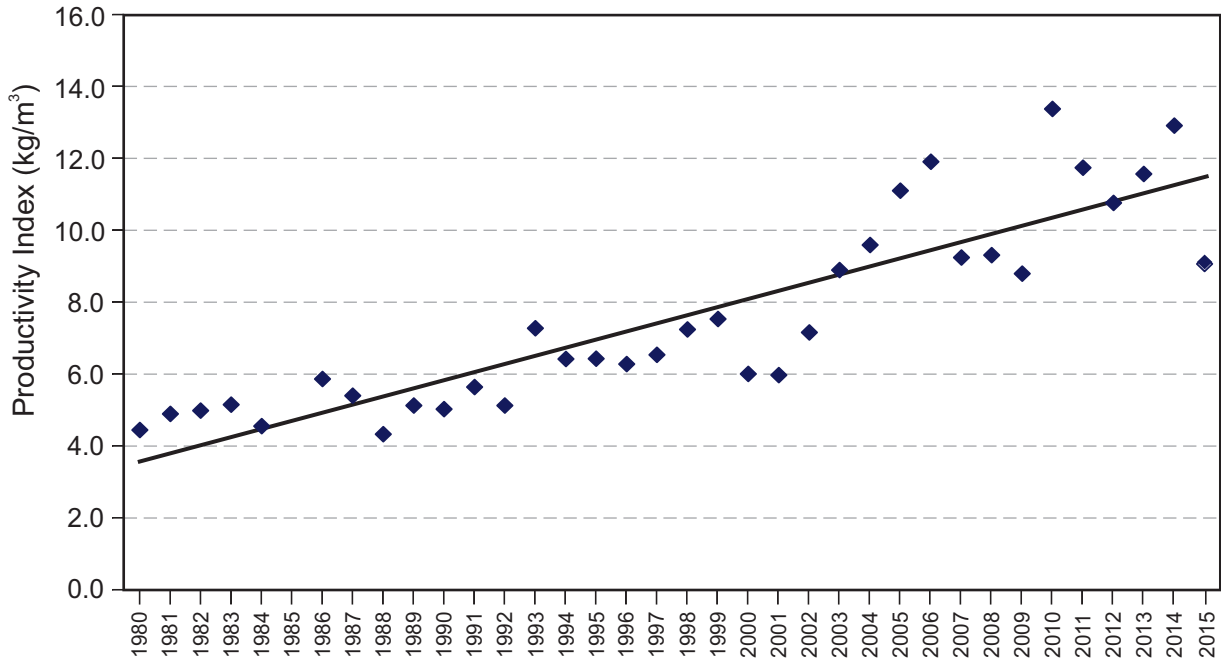
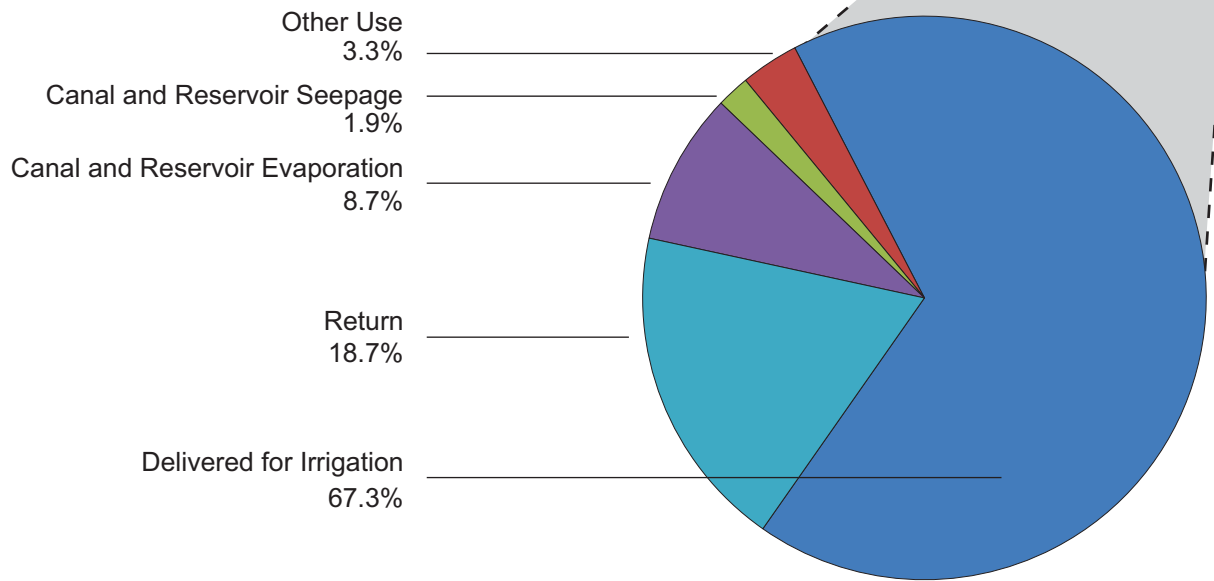


Figure 9. Irrigation Districts Water Use Productivity (1980 - 2015)

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) and the historical yields of soft white spring wheat (as provided by Cansim data) 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

Water Balance Category	OLDMAN RIVER BASIN (acre - feet)	BOW RIVER BASIN (acre - feet)	IRRIGATION DISTRICTS (acre - feet)
Gross Diversion	859,700	940,400	1,800,100
Net District Storage Change	6,300	8,000	14,300
TOTAL DISTRICT USE	866,000	948,400	1,814,400
Delivered for Irrigation	592,500	629,200	1,221,700
Other Use	27,300	33,300	60,600
Canal & Reservoir Seepage	13,600	20,800	34,400
Canal & Reservoir Evaporation	67,200	91,500	158,700
Return	165,400	173,600	339,000
TOTAL DISTRICT OPERATIONS	866,000	948,400	1,814,400



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 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 in 2015

Irrigation District	REHABILITATED										UN-REHABILITATED		Total Conveyance Works (km)
	Membrane-Lined Canals		Pipelines - Closed		Pipelines - Open		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	4.5	11.9%	22.7	60.0%	0.2	0.6%	0.0	0.0%	1.0	2.6%	9.4	24.9%	38
BRID	139.5	14.0%	523.0	52.4%	5.6	0.6%	15.4	1.5%	185.8	18.6%	129.4	13.0%	999
EID	286.2	14.9%	1141.2	59.4%	36.2	1.9%	0.0	0.0%	201.2	10.5%	255.9	13.3%	1,921
LID	2.0	3.6%	29.5	53.9%	0.3	0.5%	0.0	0.0%	11.8	21.5%	11.2	20.5%	55
LNID	56.4	7.5%	486.6	64.9%	11.1	1.5%	33.3	4.4%	65.7	8.8%	97.0	12.9%	750
MID	1.2	1.2%	59.5	58.8%	1.5	1.5%	0.3	0.3%	33.7	33.4%	4.9	4.8%	101
MVID	0.0	0.0%	17.6	41.7%	1.8	4.3%	0.0	0.0%	17.0	40.3%	5.7	13.5%	42
RCID	0.0	0.0%	12.2	83.1%	0.0	0.0%	0.0	0.0%	2.5	16.9%	0.0	0.0%	15
RID	0.0	0.0%	135.4	56.4%	6.2	2.6%	0.0	0.0%	78.9	32.9%	19.5	8.1%	240
SMRID	68.2	3.8%	933.7	51.6%	21.8	1.2%	63.0	3.5%	460.6	25.5%	262.0	14.5%	1,809
TID	56.6	16.4%	184.0	53.3%	15.0	4.4%	6.4	1.9%	63.2	18.3%	19.7	5.7%	345
UID	13.9	6.0%	95.9	41.6%	22.9	9.9%	0.2	0.1%	44.1	19.1%	53.5	23.2%	230
WID	90.9	8.7%	218.5	20.8%	35.0	3.3%	5.3	0.5%	162.8	15.5%	536.5	51.1%	1,049
Total	719	9.5%	3,860	50.8%	158	2.1%	124	1.6%	1,328	17.5%	1,405	18.5%	7,593
Headworks Owned by Alberta Environment and Parks												339	
Total Length of Conveyance System in Southern Alberta (km)												7,932	

NOTE: Rehabilitated infrastructure includes new works and those works re-constructed through:
 – the Irrigation Rehabilitation Program (IRP) 1969 - 2015
 – Alberta Environment and Parks headworks improvement program
 Totals only include irrigation conveyance works, ie. does not include domestic water supply

Table 10. Irrigation District Infrastructure by Length and Replacement Cost in 2015

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	\$10,909	0	\$0	19	\$521	57	0	\$11,430
BRID	999	\$371,203	22	\$97,753	736	\$15,782	1,735	22	\$484,738
EID	1,921	\$714,254	61	\$349,421	1,923	\$33,249	3,844	61	\$1,096,924
LID	55	\$12,775	0	\$0	5	\$116	60	0	\$12,891
LNID	750	\$265,518	2	\$2,880	247	\$7,266	997	2	\$275,664
MID	101	\$26,901	0	\$0	162	\$4,991	263	0	\$31,892
MVID	42	\$14,543	0	\$0	1	\$59	43	0	\$14,602
RCID	15	\$2,844	1	\$135	20	\$980	35	1	\$3,959
RID	240	\$62,918	0	\$0	208	\$8,419	448	0	\$71,337
SMRID	1,809	\$671,480	48	\$335,617	414	\$11,253	2,223	48	\$1,018,351
TID	345	\$133,358	12	\$14,168	77	\$4,599	422	12	\$152,125
UID	230	\$74,690	11	\$16,206	58	\$1,285	288	11	\$92,181
WID	1,049	\$359,979	13	\$18,180	923	\$22,381	1,972	13	\$400,539
DISTRICT TOTALS	7,593	\$2,721,373	170	\$834,361	4,793	\$110,900	12,387	1170	\$3,666,634

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. Summary of Irrigation District Water Licence Allocations

Irrigation District	Other Purposes* (ac-ft)	Total Licensed Volume (ac-ft)
AID	700	9,000
BRID	2,380	450,000
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	158,400
Total	78,228	2,797,060

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. Summary of Condition Assessments (All Works by Replacement Cost)

Works Category	Good (\$'000)	Fair (\$'000)	Poor (\$'000)	TOTAL (\$'000)
Conveyance	\$1,886,380	\$732,842	\$102,151	\$2,721,373
Drainage	\$27,603	\$63,214	\$20,083	\$110,900
Major Structures	\$535,333	\$291,816	\$7,212	\$834,361
TOTAL	\$2,449,316	\$1,087,872	\$129,446	\$3,666,634
Proportion	66.8%	29.7%	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

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
Mountain View, Leavitt, Aetna	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 Alberta

There are 2,902 individual irrigation projects, outside of the 13 irrigation districts, irrigating approximately 310,672 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	19,030	97	45	14	156
NORTH SASKATCHEWAN RIVER	27,009	312	55	15	382
PEACE RIVER	3,364	67	9	0	76
SOUTH SASKATCHEWAN RIVER					
- Bow River	25,839	149	60	18	227
- Little Bow River	32,944	125	70	26	221
- Lower Oldman River	17,421	24	28	14	66
- Red Deer River	45,196	418	90	18	526
- South Saskatchewan River	46,944	529	81	23	633
- Upper Oldman River	7,668	65	20	4	89
- Waterton / Belly / St. Mary Rivers	50,948	136	68	18	222
- Willow Creek	32,324	159	80	16	255
South Saskatchewan River Total	259,284	1,605	497	137	2,239
Total	310,672	2,124	612	166	2,902

Notes: – upper Oldman reach is defined as upstream of the Belly River confluence
– lower Oldman 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 2015

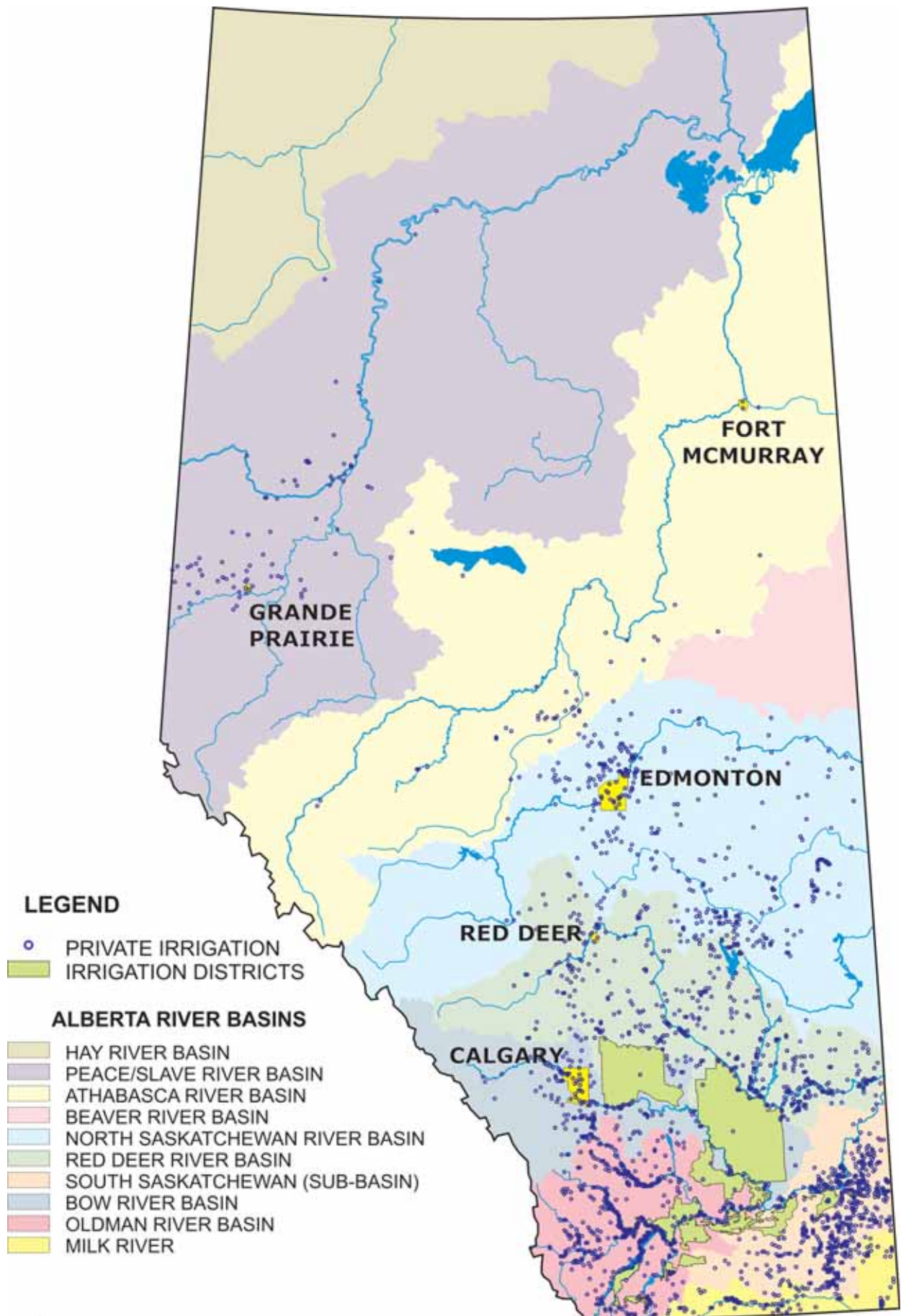


Figure 10. Private Irrigation in Alberta

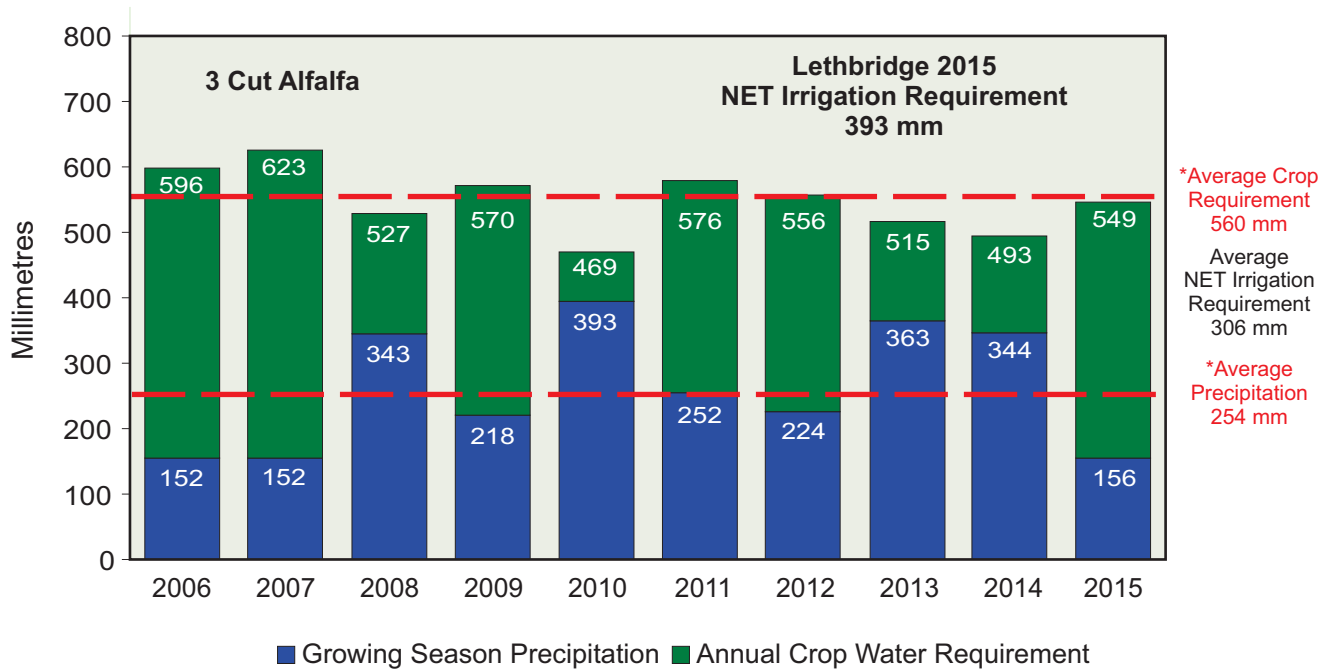
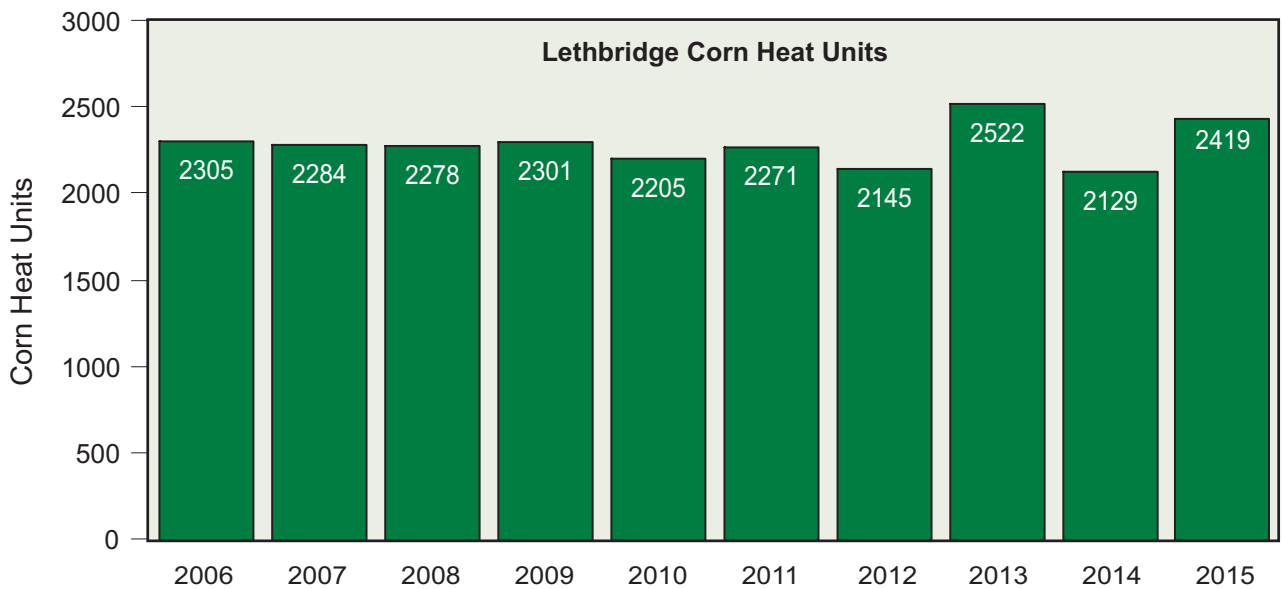


Figure 11. Lethbridge Optimum Crop Water and Net Irrigation Requirements (2006 - 2015)

Note: The high water use crop, 3 cut alfalfa is used in these examples because this crop's annual growing season closely coincides with the annual irrigation season.

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 2015. Seasonal precipitation from May 1 to September 30.



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

Figure 12. Lethbridge Corn Heat Units (2006 - 2015)

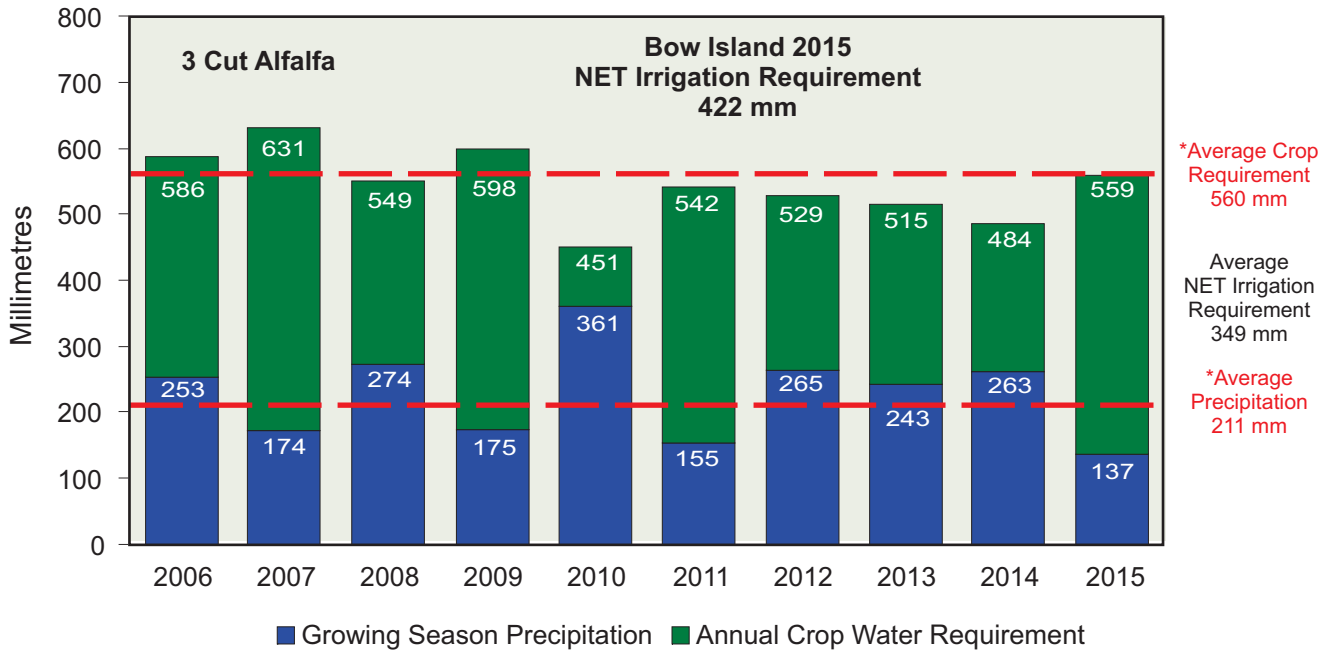
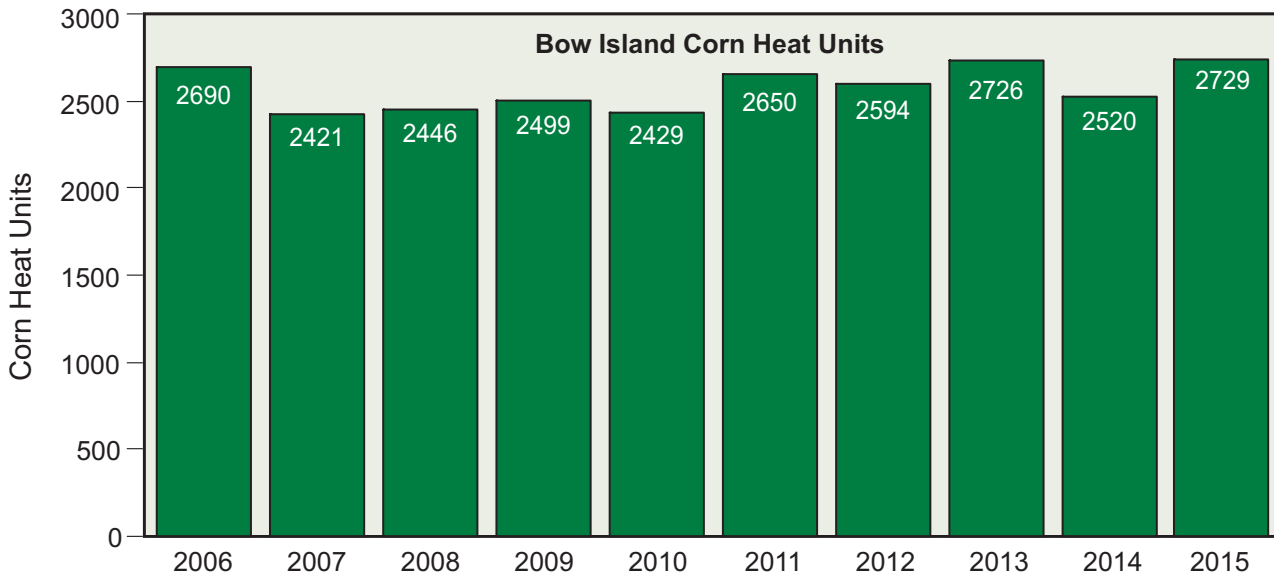


Figure 13. Bow Island Optimum Crop Water and Net Irrigation Requirements (2006 - 2015)

Note: The high water use crop, 3 cut alfalfa is used in these examples because this crop's annual growing season closely coincides with the annual irrigation season.

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 2015. 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 (2006 - 2015)

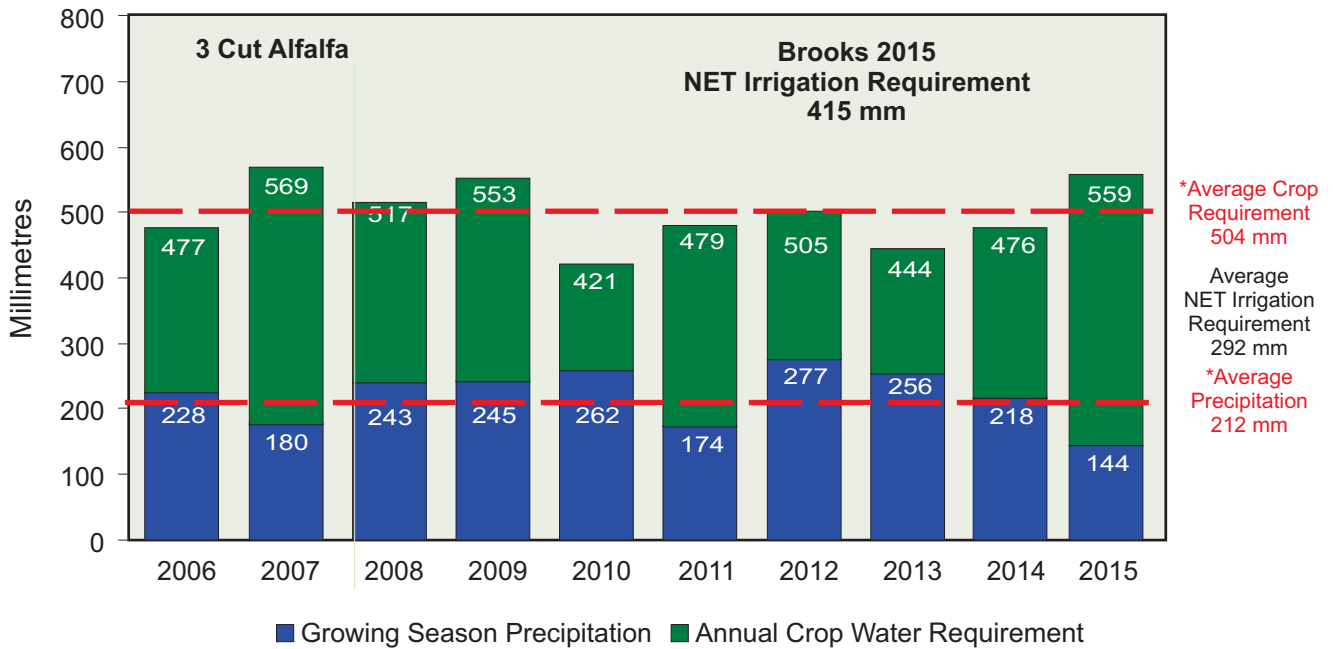
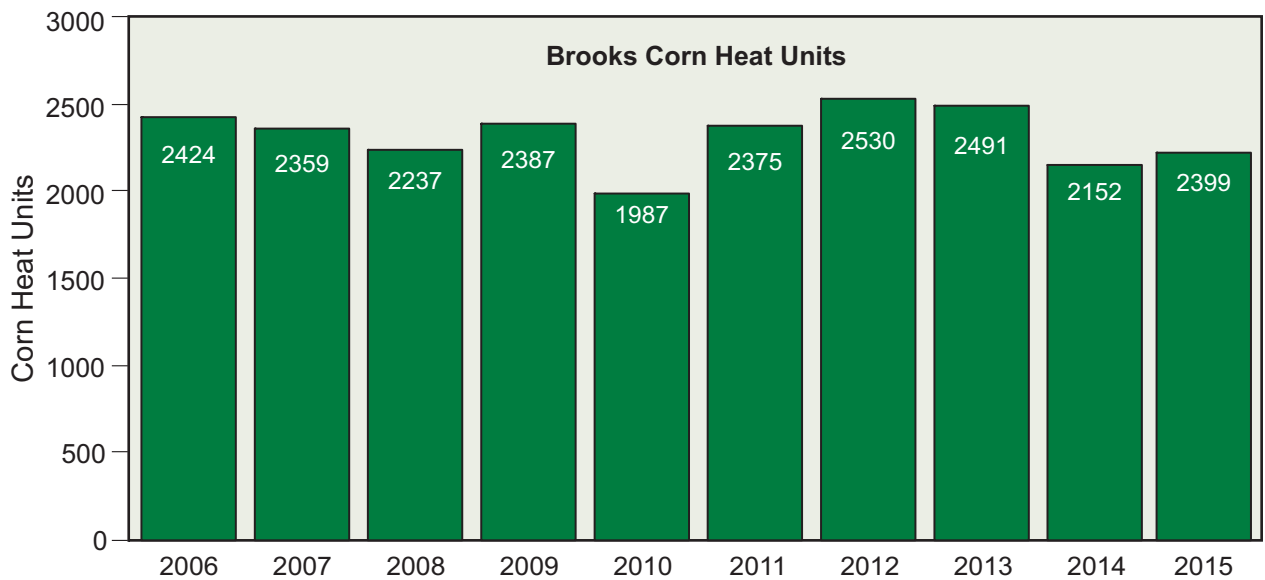


Figure 15. Brooks Optimum Crop Water and Net Irrigation Requirements (2006 - 2015)

Note: The high water use crop, 3 cut alfalfa is used in these examples because this crop's annual growing season closely coincides with the annual irrigation season.

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 2015. Seasonal precipitation from May 1 to September 30.



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

Figure 16. Brooks Corn Heat Units (2006 - 2015)

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

AREA	MAXIMUM RAINFALL (mm)	MINIMUM RAINFALL (mm)	NORMAL RAINFALL* (mm)	2015 RAINFALL (mm)	2015 % OF NORMAL
Lethbridge	534 (1978)	71 (2001)	278	168	60%
Bow Island	439 (1993)	112 (2001)	254	161	63%
Brooks	484 (2005)	87 (2001)	240	148	62%

Note: * Normal rainfall 1970 - 2015

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

AREA	MAXIMUM CHU (2006-2015)	MINIMUM CHU (2006-2015)	LAST TEN YEAR AVERAGE*	2015 CHU	2015 % OF LAST TEN YEAR AVERAGE
Lethbridge	2522 (2013)	2129 (2014)	2286	2419	106%
Bow Island	2729 (2015)	2421 (2007)	2570	2729	106%
Brooks	2530 (2012)	1987 (2010)	2334	2399	103%

Note: * Last ten year average 2006 - 2015

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

AREA	AVERAGE LAST FROST	AVERAGE FIRST FROST	AVERAGE FROST FREE DAYS*	2015 LAST FROST	2015 FIRST FROST	2015 FROST FREE DAYS	2015 % OF NORMAL
Lethbridge	May 18	Sept 19	124	May 19	Sept 17	121	91%
Bow Island	May 12	Sept 23	134	May 18	Sept 27	132	99%
Brooks	May 20	Sept 13	116	May 20	Sept 27	130	102%

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*	2015 LAST FROST	2015 FIRST FROST	2015 FROST FREE DAYS	2015 % OF NORMAL
Lethbridge	May 2	Sept 29	150	May 9	Oct 5	149	102%
Bow Island	Apr30	Oct 1	154	May 7	Oct 14	160	106%
Brooks	May 5	Sept 28	146	May 20	Sept 28	131	95%

Note: Average frost free days 1971 - 2000

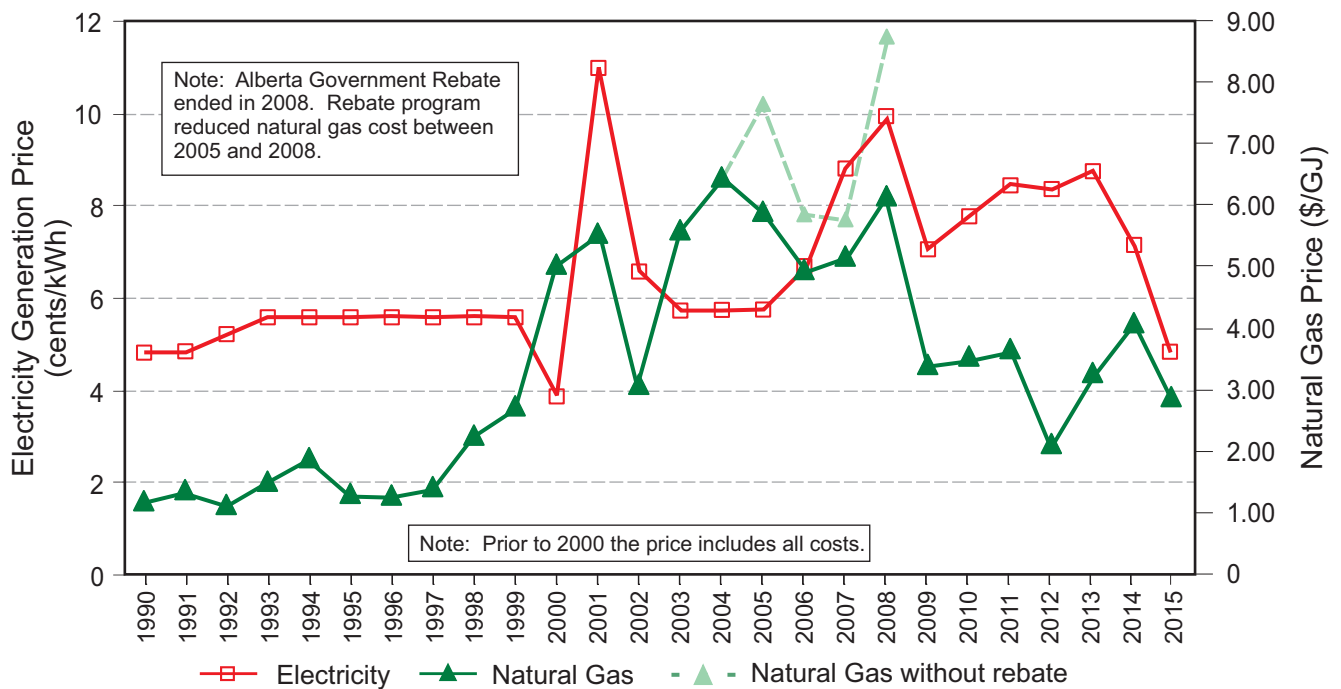
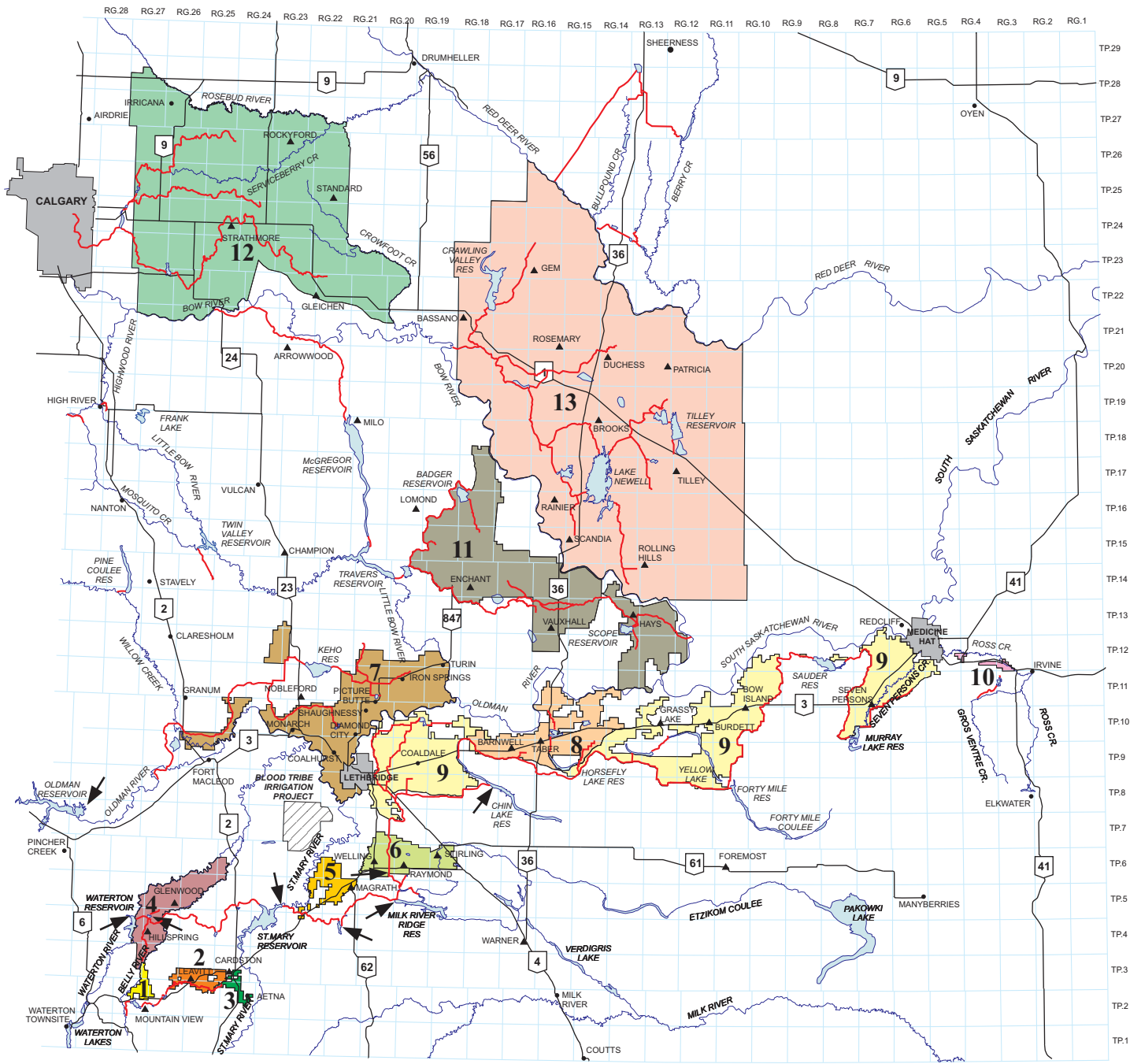


Figure 17. Historical Irrigation Energy Prices (average prices from May to September)

Table 21. Energy Type Used in the Irrigation Districts (acres irrigated by energy type)

Energy Type	BRID	EID	LNID	MID	RCID	RID	SMRID	TID	UID	WID	Average Energy Type
Electricity	75.1%	49.9%	41.4%	8.2%		39.7%	63.8%	62.8%	34.3%	33.2%	55.5%
	179,707	149,167	74,353	1,499		17,762	239,636	49,773	11,686	27,520	
Natural Gas	11.6%	23.3%	31.3%	58.9%		45.9%	31.0%	32.7%	1.8%	30.7%	26.1%
	27,840	69,546	56,177	10,781		20,539	116,224	25,911	621	25,474	
Diesel	2.8%	3.4%	0.4%	0.0%		0.4%	0.6%	0.8%	0.4%	10.1%	2.2%
	6,663	10,199	744	0		186	2,325	635	132	8,335	
Gravity	5.0%	17.4%	1.8%	16.8%		7.5%	1.7%	3.0%	13.2%	7.3%	6.9%
	12,012	51,929	3,305	3,069		3,333	6,272	2,352	4,485	6,081	
Gravity Pressure Pipeline	3.5%	2.1%	15.8%	16.0%	100.0%	0.5%	2.7%	0.5%	10.6%	8.6%	5.1%
	8,468	6,299	28,372	2,921	1,075	228	9,992	415	3,605	7,165	
Pump Pressure Pipeline	0.4%	2.2%	7.6%	0.0%		0.0%	0.0%	0.0%	1.4%	0.2%	1.6%
	877	6,633	13,721	0		0	0	0	476	125	
Other*	0.5%	1.0%	0.5%	0.2%		1.9%	0.3%	0.2%	0.0%	7.1%	1.0%
	1,223	2,934	950	30		839	966	170	9	5,907	
Unknown	1.0%	0.8%	1.0%	0.0%		4.1%	0.0%	0.0%	38.4%	2.8%	1.8%
	2,434	2,248	1,884	0		1,839	0	31	13,088	2,297	
Total Acres	239,224	298,955	179,505	18,300	1,075	44,726	375,414	79,287	34,102	82,904	1,354,122

Notes: – * other includes gasoline, propane or butane
 – AID, LID, and MVID did not report any data
 – RID data is for the year 2014



- 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 1,419,989 assessed acres of farmland. The infrastructure within these irrigation districts is comprised of approximately 7,932 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.

Delivered for Irrigation: All water delivered by an irrigation district through its infrastructure for the purpose of irrigation.

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 Water 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.

Unit Conversion Factors

Imperial to Metric

1 acre = 0.405 ha

1 ac-ft = 1233.480 m³

1 ac-ft = 1.234 dam³

1 inch = 25.4 mm

1 mile = 1.609 km

1 lbs = 0.454 kg

Metric to Imperial

1 ha = 2.471 acres

1 m³ = 0.00081 ac-ft

1 dam³ = 0.8107 ac-ft

1 mm = 0.0394 inches

1 km = 0.6214 miles

1 kg = 2.205 lbs

Other

1 m³ = 1000 L

1 dam³ = 1000 m³

1 dam³ = 1 megalitre

1 km = 1000 m