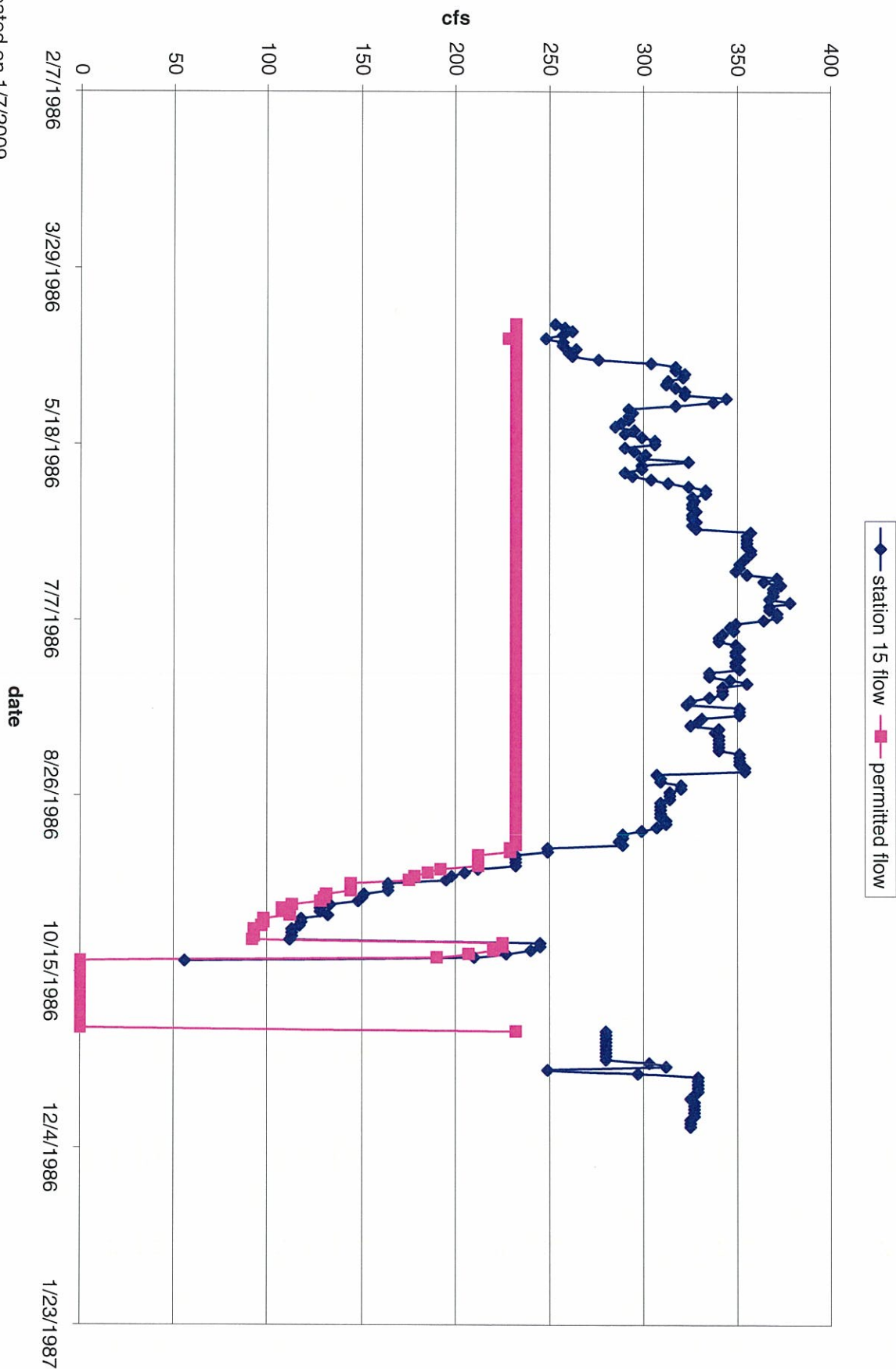


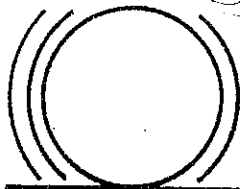
**Station 15 Daily Readings
compared to Sagebrush Plant Limits**



Readings at Station 15									
day of month	April 1986	May 1986	June 1986	July 1986	August 1986	September 1986	October 1986	November 1986	
stage	flow(cts)	stage	flow(cts)	stage	flow(cts)	stage	flow(cts)	stage	flow(cts)
1		3.12	312						
2		3.15	317						280
3		3.18	322	3.25	326	3.29	351	2.19	118
4				3.31	327	3.29	351	2.18	117
5			322	3.25	326		351	2.15	113
6		3.3	344	3.25	326	3.2	331	2.15	113
7		3.41	337	3.26	328	3.19	329		
8		3.3	317	3.25	326	3.17	325	2.14	112
9		3.16	292		326	3.24	340	2.99	245
10		3.17	294	3.26	328	3.23	338	2.99	245
11		3.16	292	3.25	326	3.24	340	2.96	240
12			292	3.26	328		340	2.89	227
13		3.14	288	3.23	328	3.24	340	2.89	227
14		3.12	285	3.22	328	3.24	340	2.79	210
15	2.79	253		3.22	355	3.29	351	2.79	210
16	2.82	258	3.18		355	3.29	351	2.79	210
17	2.84	262	3.15	3.22	355	3.29	351	2.79	210
18	2.81	257	3.2	3.22	355	3.29	351	2.79	210
19	2.76	248	3.24	3.22	355	3.29	351	2.79	210
20	2.81	257	3.15	3.22	355	3.29	351	2.79	210
21	2.85	264	3.18	3.21	353	3.29	351	2.79	210
22	2.83	260	3.21	3.2	351	3.3	309	2.79	210
23	2.84	262	3.2	3.3	351	3.3	309	2.79	210
24	2.92	276	3.34	3.19	349	3.35	320	2.79	210
25	3.08	304	3.22	3.3	335	3.35	320	2.79	210
26	3.15	317	3.31	3.36	346	3.32	314	2.79	210
27		317	3.27	3.41	355	3.32	314	2.79	210
28	3.18	322	3.32	3.34	342	3.32	314	2.79	210
29	3.17	321	3.3	3.42	351	3.32	314	2.79	210
30	3.13	313	3.32	3.34	342	3.32	314	2.79	210
31		329	3.3	3.35	349	3.3	309	2.79	210
total	4748	9475	10420	10828	10271	6509	1909	8588	

Spot readings are recorded every day (except Sundays) at approximately 7 am. Estimates for Sunday are the previous days reading.
The control is automatic. Flow will not vary much more than +/- 15cfs. This is a 'rated' section with stage corrections made periodically during the season.

A# A



Greenwood Engineering

P.O. BOX 1571 CAVE JUNCTION, OREGON 97523
(503) 592-4100



RECEIVED

31 July, 1986

Gary Funderburg
Idaho Department of Water Resources
1041 Blue Lakes Blvd North
Twin Falls, Idaho 83301

AUG 4 1986

Department of Water Resources
Southern District Office

Dear Gary:

Enclosed are section and elevation drawings of the powerhouses at the Jim Knight and Sagebrush Hydroelectric Plants located east of Gooding on the South Gooding Canal. Also enclosed are rating curves (total plant flow vs. head) for both plants.

Both plants utilize Flygt axial flow turbines direct coupled to induction generators and thus act very predictably as flow regulators. The Jim Knight plant uses two model 7570 turbines operating at 605 RPM with 24 degree blade angles and one model 7555 turbine operating at 740 RPM with 24 degree blade angles. The Sagebrush plant uses two 7570's with 26 degree blade angles and one 7555 with 25 degree blade angles. Individual performance curves for the conditions specified have been summed to produce the rating curves, and 3% leakage past the gasket faces at the base of the turbines has been assumed. In addition, tests at the Knight plant were performed to calibrate the indicated flow meter head reading to the actual head loss through the trash racks.

As is noted on the drawing, the ISCO flow meter head reading is calibrated to the concrete floor level; for example, a reading of 4.50 on the ISCO unit corresponds to an actual water depth of 4.50 feet above the intake floor surface. At the Sagebrush plant, a reading of 7.40 on the ISCO unit is arbitrarily calibrated to a water level 3.00 feet below the top surface of the adjacent vertical wall (nearest the head level sensor mounting bracket).

With this information one should be able to determine the actual flow through the plants with an accuracy equal to a typical canal gaging station. I hope this is the information is adequate for your purposes.

Sincerely,

Charles S. Greenwood

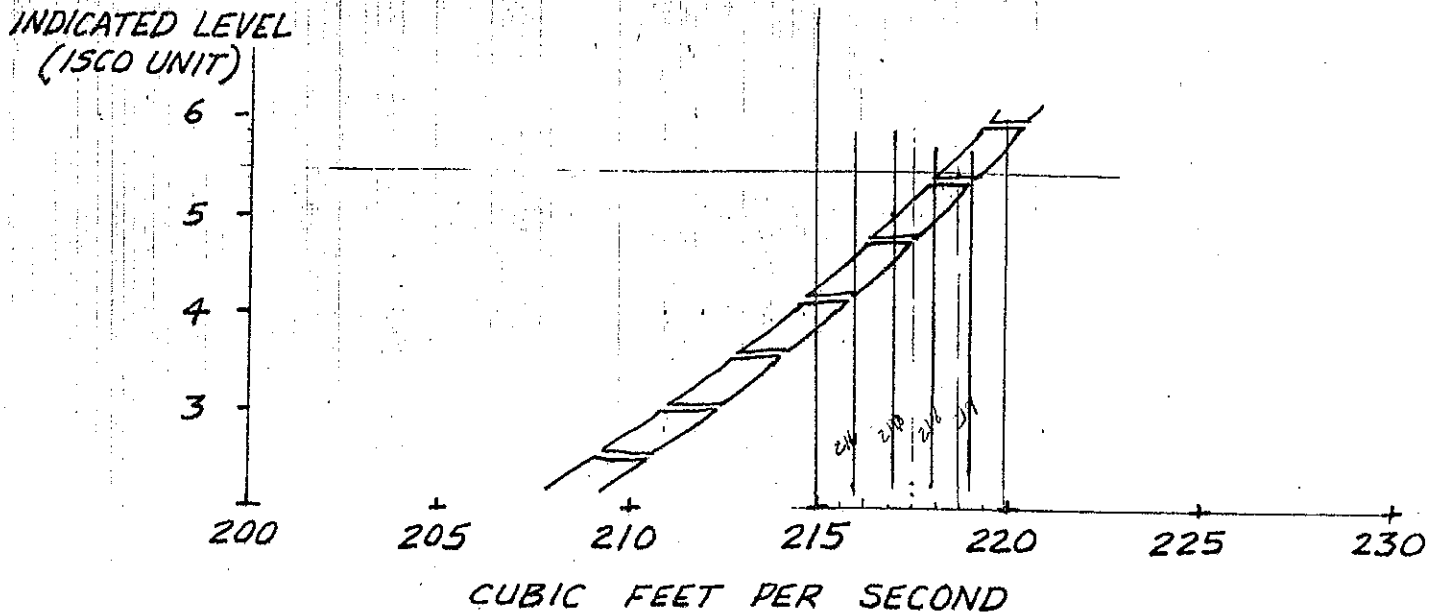
Charley Greenwood

OCT 27 1986

Att. ~~3~~ 2

JIM KNIGHT HYDROELECTRIC PLANT

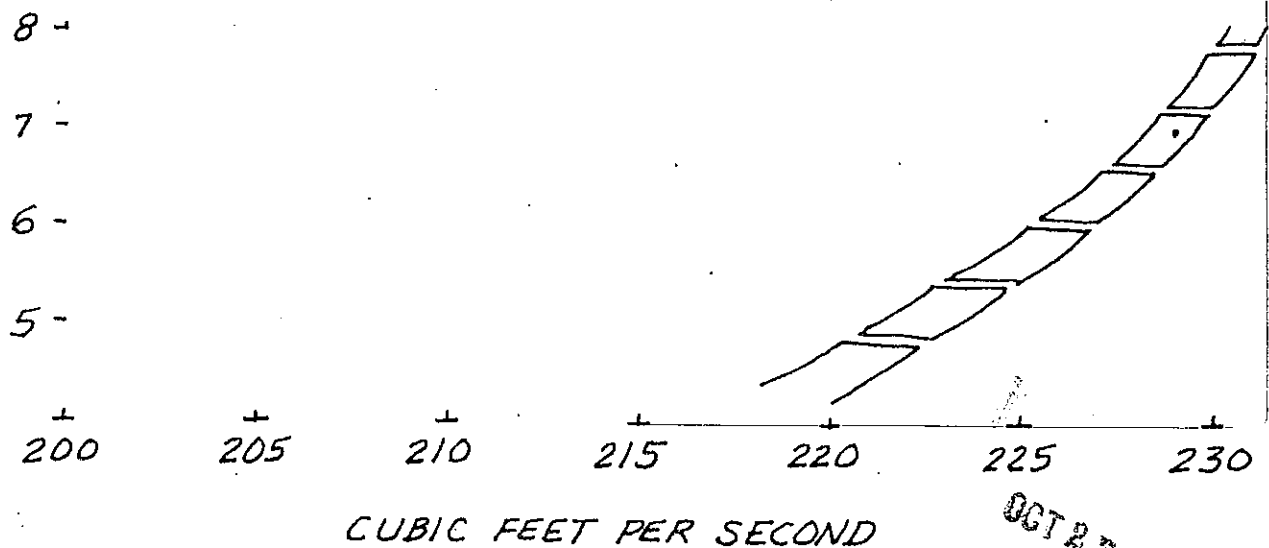
TOTAL PLANT FLOW VS. HEAD CURVE



SAGEBRUSH HYDROELECTRIC PLANT

TOTAL PLANT FLOW VS. HEAD

INDICATED LEVEL
(ISCO UNIT)



OCT 27 1995

IDAHO POWER COMPANY
COGENERATION AND SMALL POWER PRODUCTION
MONTHLY GENERATION BY PLANT (AVERAGE KW)

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	1985	JAN85	FEB85	MAR85	APR85	MAY85	JUN85	JUL85	AUG85	SEP85	OCT85	NOV85	DEC85
31515004	MUD CREEK/S&S	135	75	1	46	66	86	56	50	0	36	159	145
31416001	SHOSHONE	0	0	24	303	275	287	305	310	270	218	149	67
11766002	TAMARACK	4347	4425	4214	4387	4058	4701	4735	4688	4492	3528	4291	4703
31415017	NORTHSIDE CANAL Y-8	0	0	0	25	78	80	72	73	61	39	0	0
31415023	CURRY CATTLE CO.	0	0	0	71	209	244	242	142	137	107	33	0
11415009	SHINGLE CREEK	102	89	93	115	160	191	172	143	124	113	102	94
31615003	ROCK CREEK #1	881	853	967	1397	1965	2001	1994	2042	1580	1709	1763	1291
31515009	MALAD RIVER	83	141	410	273	622	606	365	273	589	348	289	154
31516014	CLEAR SPRINGS TROUT	426	429	425	417	404	417	410	398	415	416	397	413
31416013	BOX CANYON	208	222	237	217	922	252	242	562	833	228	217	235
31615030	KOYLE	0	0	184	758	922	843	629	562	833	459	243	145
31615031	KASEL & WITHERSPOON	31615031	258	191	226	446	641	532	502	850	834	587	0
44767012	AFTON	4090	2345	4954	4947	5203	3799	1594	5637	6281	5553	6119	5352
31214058	BIRCH CREEK	46	45	45	35	29	41	49	56	57	51	46	43
31316010	STEVENSON #1	33	34	34	34	31	34	33	35	33	33	33	33
31415065	BLACK CANYON NO.3	0	0	0	0	79	74	31	55	45	21	0	0
31616081	CEDAR DRAW	319	340	259	701	1130	941	632	980	1224	1451	1024	426
31316011	STEVENSON #2	27	23	22	14	22	24	22	18	17	3	20	24
31415094	JIM KNIGHT	0	0	0	34	110	89	124	195	139	68	28	0
31416020	CANYON SPRINGS	75	100	101	98	94	108	106	105	69	86	91	93
31615067	PIGEON COVE	630	577	502	696	1317	1589	1554	1781	1873	1850	1384	807
31315021	SNAKE RIVER POTTERY	64	64	65	47	38	39	42	42	42	53	68	67
31316015	LEMOYNE	7	23	24	18	23	22	12	21	22	18	24	24
31414075	SNEDIGAR RANCH	144	215	177	189	226	315	316	316	456	408	255	231
31715099	LOWLINE CANAL	0	0	-1	336	4373	7318	7341	6870	5346	3785	1550	-4
31315093	HAILEY CSP	0	6	45	38	43	48	43	41	36	36	15	1
31615105	LITTLE WOOD RIV. RES.	0	45	1023	1990	1556	1588	1170	13	0	0	3	0
31615056	LATERAL #10	0	0	0	0	761	1008	221	330	1805	1904	1960	1552
11865066	B.C. EMMETT	0	0	0	0	0	5880	10235	10972	8139	7774	7391	8904
31515103	SAGEBRUSH	0	0	0	0	0	0	0	65	256	58	13	0
31315029	WHITE WATER RANCH	0	0	0	0	0	0	24	35	48	52	104	99
31615117	MARCOS RANCHES	0	0	0	0	0	0	165	402	646	619	295	0
12616071	OWYHEE DAM	0	0	0	0	0	0	0	3421	0	4540	1	-19
31315008	H.E.E.D. CO.	0	0	0	0	0	0	0	0	24	26	21	6
31515100	BRIGGS CREEK	0	0	0	0	0	0	0	0	2	377	446	433
31615057	CRYSTAL SPRINGS	0	0	0	0	0	0	0	0	0	0	0	0
41455091	POCATELLO WASTE	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL		11896	10310	13997	17411	24465	33267	33466	40823	36139	36803	29121	25317

IDAHO POWER COMPANY
COGENERATION AND SMALL POWER PRODUCTION
MONTHLY GENERATION BY PLANT (AVERAGE KW)

PAGE 40

1986	JAN86	FEB86	MAR86	APR86	MAY86	JUN86	JUL86	AUG86	SEP86	OCT86	NOV86	DEC86
31515004	MUD CREEK/S&S	95	116	119	77	92	81	77	84	113	69	12
31416001	SHOSHONE	84	95	185	288	308	227	298	292	155	280	126
11766002	TAMARACK	4717	4213	3980	4437	2740	4850	4967	4492	4170	4324	4537
31415017	NORTHSIDE CANAL Y-B	-6	0	0	40	65	53	50	62	43	29	16
31415023	CURRY CATTLE CO.	0	0	0	78	188	190	216	167	67	0	0
11415009	SHINGLE CREEK	89	94	126	169	182	192	187	143	122	109	99
31615003	ROCK CREEK #1	1135	1593	1720	1877	1845	1872	1872	1873	1927	1479	1075
31515009	MALAD RIVER	228	502	572	538	580	564	405	662	494	677	400
31516014	CLEAR SPRINGS TROUT	419	421	422	190	259	425	434	423	418	430	434
31416013	BOX CANYON	242	237	186	169	178	199	243	253	185	207	205
31615030	KOYLE	244	391	701	566	768	690	743	879	528	857	442
31615031	KASEL & WITHERSPOON	309	311	253	412	660	873	805	697	811	531	358
44767012	AFTON	5886	5198	5723	6246	4987	6246	6363	6436	5278	5039	5220
31214058	BIRCH CREEK	42	42	41	34	40	43	47	49	51	52	50
31316010	STEVENSON #1	33	34	31	33	32	33	35	32	33	33	34
31415065	BLACK CANYON NO. 3	0	0	0	28	65	56	53	39	67	96	4
31616081	CEDAR DRAW	389	289	349	1137	1260	1093	872	504	1420	541	409
31316011	STEVENSON #2	20	22	17	4	17	10	12	12	10	6	6
31415094	JIM KNIGHT	0	15	89	125	231	271	218	202	40	146	85
31416020	CANYON SPRINGS	103	82	85	92	82	97	100	99	91	95	101
31615067	PIGEON COVE	719	695	623	926	950	1195	1634	1603	1636	873	799
31315021	SNAKE RIVER POTTERY	64	68	45	8	34	36	42	45	28	63	76
31316015	LEMOYNE	25	24	25	23	21	23	22	17	23	25	25
31414075	SNEDIGAR RANCH	212	224	203	278	301	300	338	342	411	225	189
31715099	LOWLINE CANAL	-4	-2	-1	3001	7408	7463	7584	7843	6707	-6	-6
31315093	HAILEY CSP	19	21	24	26	28	30	32	30	0	25	47
31615105	LITTLE WOOD RIV. RES.	1283	1087	1436	1245	2731	2777	2404	915	1514	16	665
31615056	LATERAL #10	8522	6650	1251	6651	7956	11107	11266	1229	9644	8837	10416
11866066	B.C. EMETT	-8	-2	54	220	244	229	232	159	17	131	115
31515103	SAGEBRUSH	105	107	91	90	61	50	82	84	112	117	132
31315029	WHITE WATER RANCH	0	0	0	199	515	656	636	776	699	799	101
31615117	MARCOS RANCHES	-25	2408	5076	5066	5234	5091	5091	4814	4752	1475	3458
12616071	OWYHEE DAM	7	11	10	7	23	24	24	0	0	0	0
31315008	H.E.D. CO.	429	433	442	448	446	445	455	488	531	549	510
31515100	BRIGGS CREEK	34	0	76	1263	1725	1324	1056	1755	1606	457	282
31615057	CRYSTAL SPRINGS	154	146	148	156	151	147	138	126	132	156	152
41455091	POCATELLO WASTE	67	94	86	19	34	1	0	40	0	134	118
31414111	MUD CREEK/WHITE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
11111111	SIMPLLOT POCATELLO	0	0	0	312	1034	1460	525	63	259	276	59
11615077	ELK CREEK	0	0	0	0	71	170	213	226	235	112	239
21415119	REYNOLDS IRRIGATION	0	0	0	0	0	0	0	595	304	769	428
31515107	LITTLEWOOD/ARKOSH	0	0	0	0	0	0	0	852	115	92	71
41515122	SCHAFNER	0	0	0	0	0	0	0	135	-3	762	463
31615098	GEOBON 2	0	0	0	0	0	0	0	0	0	1	155
31415027	TROUT CO.	0	0	0	0	0	0	0	0	0	0	0
TOTAL	25633	26265	24186	38689	44312	51376	50520	45073	45545	41890	30885	32102