



FISH PASSAGE CENTER

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MEMORANDUM

TO: Jim Morrow, NOAA Fisheries

FROM: Jerry McCann

DATE: November 5, 2009

RE: Steelhead daily passage estimates at Lower Granite Dam 2005 to 2009

Based on your request attached is a spreadsheet with daily estimated steelhead populations for the dates March 26 to August 31 for the years 2005 to 2009. Daily collection estimates were estimated from the Smolt Monitoring Program data collected at the site. These collection estimates were the daily number of fish in the sample expanded by the sample rate for that date. For more information on sample rates and collection information see the FPC website smolt monitoring metadata at [fpc.org](http://www.fpc.org). The daily detection probabilities were calculated using methods described by Sanford and Smith 2002 except that bootstrap confidence intervals were not included as part of the daily estimated PIT-tag detection probabilities. Nor was variability in SMP collection estimates included. Detailed methods can be found in Chapter 8 of the CSS 2009 Annual Report draft which is available on the FPC website at the link (<http://www.fpc.org/documents/CSS/2009%20CSS%20Annual%20Report%20-DRAFT.pdf>).

You requested information on steelhead daily passage broken down by hatchery and wild origin as much as possible. A large portion of hatchery steelhead smolts were unmarked so that SMP personnel could not identify wild fish with certainty. We were able to identify hatchery origin fish based on fin clips and to some extent fin erosion. Based on these identifying characteristics, daily smolt monitoring collections of steelhead at Lower Granite Dam were divided into three groups based on a combination of fin clips and eroded fins. The first category was fin clipped steelhead smolts. These were the most common steelhead in the samples and were known hatchery origin fish. The second group, also known hatchery origin, was unclipped but with

eroded fins. The third category was unclipped smolts without eroded fins. This last group included both unmarked hatchery steelhead and wild origin steelhead smolts.

PIT-tag detection probabilities were estimated separately for hatchery and wild steelhead PIT-tagged and released above Lower Granite Dam. Daily populations were calculated by dividing daily collection estimate by the daily estimated detection probabilities. For the two known hatchery origin categories described above (clipped and unclipped with eroded fin), collections were divided by the daily hatchery PIT-tag detection probabilities to derive daily populations. For the unmarked hatchery and wild smolts (unclipped and without eroded fins) daily collections were divided by the wild PIT-tag steelhead detection probabilities.

The results are presented in the attached spreadsheet entitled “LGR_ST_Passage_Data_2005_to_2009.xls” for convenience.

Steelhead Daily Population at Lower Granite Dam based daily collection and daily PIT-tag detection data.

2005

eroded fin? fin clip? grj_date	SMP Collection				Population Estimates			
	hatchery		unmarked/wild		hatchery		unmarked/wild	
	y	n	n	na	y	n	n	
				PIT-tag CE				
				hatchery	wild			
3/26/05	10			0.83	0.80	12	0	0
3/27/05	60		10	0.83	0.80	73	0	12
3/28/05	40		10	0.81	0.80	50	0	12
3/29/05	120		30	0.77	0.80	155	0	37
3/30/05	360		40	0.79	0.80	459	0	50
3/31/05	970		50	0.79	0.80	1,228	0	62
4/1/05	520		30	0.80	0.90	653	0	33
4/2/05	6,392	44	1,267	0.80	0.86	8,013	55	1,476
4/3/05	3,680	40	1,280	0.87	0.85	4,210	46	1,514
4/4/05	4,880	20	1,300	0.86	0.88	5,675	23	1,470
4/5/05	8,640		2,380	0.87	0.92	9,891	0	2,593
4/6/05	10,360	20	2,820	0.83	0.82	12,551	24	3,455
4/7/05	5,525		1,550	0.80	0.88	6,869	0	1,770
4/8/05	6,900	25	1,750	0.76	0.83	9,020	33	2,098
4/9/05	3,750		1,000	0.81	0.76	4,658	0	1,322
4/10/05	9,575	250	1,825	0.80	0.87	11,987	313	2,098
4/11/05	5,740	760	1,940	0.82	0.83	6,966	922	2,341
4/12/05	8,550	950	2,300	0.83	0.84	10,285	1,143	2,740
4/13/05	4,850	1,100	2,500	0.88	0.86	5,497	1,247	2,898
4/14/05	3,100	1,850	1,850	0.77	0.85	4,041	2,412	2,187
4/15/05	3,400	1,950	1,750	0.82	0.87	4,170	2,392	2,005
4/16/05	3,100	1,550	1,650	0.81	0.86	3,844	1,922	1,915
4/17/05	1,950	1,500	1,900	0.79	0.86	2,482	1,909	2,218
4/18/05	3,750	1,150	2,400	0.82	0.87	4,567	1,400	2,775
4/19/05	13,625	4,475	4,375	0.85	0.83	15,958	5,241	5,258
4/20/05	19,350	3,850	3,400	0.83	0.84	23,398	4,655	4,058
4/21/05	24,550	4,050	5,600	0.83	0.83	29,608	4,884	6,772
4/22/05	42,200	6,100	5,300	0.79	0.88	53,511	7,735	6,000
4/23/05	36,567	6,269	7,015	0.79	0.86	46,246	7,928	8,177
4/24/05	49,552	4,925	6,418	0.81	0.82	61,149	6,078	7,854
4/25/05	67,400	3,300	3,600	0.81	0.88	83,631	4,095	4,072
4/26/05	96,500	6,200	5,300	0.78	0.87	123,894	7,960	6,058
4/27/05	104,925	6,716	5,970	0.74	0.82	141,885	9,082	7,321
4/28/05	129,851	9,851	11,940	0.71	0.80	183,956	13,956	14,966
4/29/05	116,400	9,600	17,400	0.64	0.80	180,507	14,887	21,883
4/30/05	224,800	18,800	34,400	0.61	0.69	370,601	30,993	49,656
5/1/05	238,800	38,200	29,800	0.62	0.67	384,411	61,493	44,771
5/2/05	175,400	23,000	29,400	0.61	0.67	288,460	37,825	43,579
5/3/05	59,200	10,000	9,600	0.62	0.76	94,856	16,023	12,570
5/4/05	39,800	6,600	13,000	0.63	0.80	63,413	10,516	16,326
5/5/05	77,000	9,200	31,400	0.65	0.81	118,286	14,133	38,891
5/6/05	146,200	19,400	32,800	0.67	0.79	219,752	29,160	41,733
5/7/05	290,600	21,800	31,800	0.67	0.76	432,649	32,456	42,051
5/8/05	209,600	27,400	22,800	0.72	0.76	293,052	38,309	29,965
5/9/05	362,600	33,800	42,600	0.72	0.75	503,785	46,961	57,014
5/10/05	521,400	55,200	83,000	0.76	0.78	681,689	72,170	106,688
5/11/05	247,400	27,000	64,200	0.76	0.76	327,323	35,722	84,438
5/12/05	137,800	18,200	32,000	0.76	0.75	181,755	24,005	42,868
5/13/05	127,200	12,800	24,800	0.75	0.78	170,205	17,128	31,615
5/14/05	116,000	25,800	21,600	0.72	0.73	161,490	35,918	29,534
5/15/05	43,000	9,800	9,200	0.62	0.70	69,042	15,735	13,207
5/16/05	46,600	15,000	12,000	0.60	0.60	77,784	25,038	19,883
5/17/05	49,700	14,400	7,700	0.50	0.49	100,232	29,041	15,618
5/18/05	37,700	11,000	10,000	0.47	0.44	80,140	23,383	22,823
5/19/05	44,450	11,750	13,250	0.50	0.48	88,953	23,514	27,755
5/20/05	45,617	14,973	11,824	0.49	0.46	92,538	30,374	25,432
5/21/05	21,300	5,400	5,400	0.47	0.45	44,974	11,402	12,012

5/22/05	29,250	8,000	5,700	0.52	0.48	56,633	15,489	11,958
5/23/05	17,350	3,450	4,350	0.55	0.56	31,832	6,330	7,750
5/24/05	11,800	3,150	3,400	0.56	0.52	21,152	5,647	6,586
5/25/05	13,500	3,900	3,850	0.56	0.52	24,004	6,934	7,424
5/26/05	8,100	1,750	2,650	0.64	0.55	12,647	2,732	4,817
5/27/05	7,450	1,800	1,750	0.67	0.69	11,187	2,703	2,532
5/28/05	11,750	2,200	3,450	0.74	0.79	15,971	2,990	4,389
5/29/05	15,800	2,700	4,200	0.67	0.83	23,655	4,042	5,080
5/30/05	15,750	1,600	4,150	0.71	0.78	22,137	2,249	5,331
5/31/05	29,900	6,200	8,700	0.64	0.66	46,488	9,640	13,188
6/1/05	13,200	4,000	2,800	0.54	0.62	24,480	7,418	4,545
6/2/05	11,600	2,000	2,000	0.57	0.55	20,352	3,509	3,643
6/3/05	5,800	1,600	1,000	0.57	0.61	10,119	2,791	1,640
6/4/05	5,200	1,400	1,600	0.60	0.68	8,667	2,333	2,339
6/5/05	4,000	1,600	2,200	0.61	0.74	6,560	2,624	2,976
6/6/05	3,800	1,000	1,400	0.72	0.71	5,249	1,381	1,984
6/7/05	3,100	900	1,800	0.69	0.67	4,503	1,307	2,699
6/8/05	3,200	1,300	500	0.73	0.68	4,358	1,770	735
6/9/05	2,100		800	0.74	0.82	2,839	0	979
6/10/05	1,400	300		0.76	0.84	1,847	396	0
6/11/05	1,100	300	300	0.76	0.80	1,439	392	373
6/12/05	550	50	450	0.77	0.77	716	65	586
6/13/05	1,400	100	450	0.77	0.82	1,825	130	546
6/14/05	2,150	600	50	0.77	0.74	2,801	782	68
6/15/05	1,450	150	500	0.77	0.71	1,876	194	699
6/16/05	1,900	325	400	0.78	0.82	2,430	416	488
6/17/05	1,125	125	450	0.78	0.76	1,446	161	595
6/18/05	2,375	275	575	0.77	0.75	3,097	359	763
6/19/05	2,950	400	1,100	0.76	0.80	3,873	525	1,369
6/20/05	1,600	300	400	0.72	0.49	2,224	417	811
6/21/05	425	75	150	0.74	0.63	571	101	237
6/22/05	190	30	60	0.75	0.68	253	40	88
6/23/05	95	10	35	0.73	0.53	129	14	66
6/24/05	36	8	8	0.73	0.49	49	11	16
6/25/05	64	8	12	0.75	0.63	85	11	19
6/26/05	52		4	0.76	0.56	69	0	7
6/27/05	28	8	8	0.77	0.64	37	10	12
6/28/05	68	8	24	0.76	0.67	90	11	36
6/29/05	88	28	8	0.71	0.55	123	39	15
6/30/05	40	20	10	0.72	0.48	56	28	21
7/1/05	10	15	5	0.74	0.63	13	20	8
7/2/05	39	10		0.75	0.55	52	13	0
7/3/05	5			0.77	0.63	7	0	0
7/4/05	8		8	0.77	0.67	10	0	12
7/5/05	5			0.76	0.53	7	0	0
7/6/05	4			0.76	0.64	5	0	0
7/7/05	16			0.74	0.53	22	0	0
7/8/05	10			0.75	0.52	13	0	0
7/9/05	5			0.77	0.63	7	0	0
7/10/05	5	5	3	0.79	0.64	6	6	5
7/11/05	3			0.77	0.58	4	0	0
7/12/05				0.76	0.54	0	0	0
7/13/05				0.78	0.65	0	0	0
7/14/05	2	2		0.76	0.56	3	3	0
7/15/05				0.79	0.65	0	0	0
7/16/05	2			0.78	0.65	3	0	0
7/17/05	2	1		0.77	0.58	3	1	0
7/18/05				0.79	0.65	0	0	0
7/19/05	1			0.77	0.56	1	0	0
7/20/05	1			0.78	0.64	1	0	0
7/21/05				0.77	0.57	0	0	0
7/22/05				0.78	0.60	0	0	0
7/23/05	1		1	0.78	0.59	1	0	2
7/24/05				0.79	0.63	0	0	0
7/25/05	2			0.80	0.65	3	0	0
7/26/05				0.78	0.60	0	0	0

7/27/05	1	1	0.80	0.66	1	0	2
7/28/05		1	0.79	0.61	0	0	2
7/29/05			0.78	0.60	0	0	0
7/30/05		1	0.78	0.58	0	0	2
7/31/05			0.80	0.64	0	0	0
8/1/05	1	1	0.79	0.61	1	0	2
8/2/05			0.79	0.61	0	0	0
8/3/05			0.80	0.64	0	0	0
8/4/05			0.80	0.66	0	0	0
8/5/05			0.79	0.63	0	0	0
8/6/05			0.78	0.60	0	0	0
8/7/05	1		0.79	0.61	1	0	0
8/8/05			0.80	0.64	0	0	0
8/9/05			0.79	0.63	0	0	0
8/10/05			0.80	0.65	0	0	0
8/11/05			0.80	0.67	0	0	0
8/12/05			0.81	0.70	0	0	0
8/13/05			0.81	0.70	0	0	0
8/14/05			0.81	0.70	0	0	0
8/15/05			0.81	0.70	0	0	0
8/16/05		1	0.82	0.71	0	0	1
8/17/05			0.81	0.65	0	0	0
8/18/05			0.81	0.70	0	0	0
8/19/05			0.83	0.74	0	0	0
8/20/05		1	0.82	0.72	0	0	1
8/21/05			0.82	0.75	0	0	0
8/22/05			0.82	0.70	0	0	0
8/23/05			0.82	0.74	0	0	0
8/24/05			0.83	0.76	0	0	0
8/25/05			0.82	0.74	0	0	0
8/26/05			0.82	0.74	0	0	0
8/27/05			0.82	0.74	0	0	0
8/28/05			0.82	0.74	0	0	0
8/29/05			0.81	0.61	0	0	0
8/30/05			0.81	0.62	0	0	0
8/31/05			0.82	0.67	0	0	0

Steelhead Daily Population at Lower Granite Dam based daily collection and daily PIT-tag detection data.

2006

eroded fin na fin clip? y	SMP Collection			PIT-tag CE			Population Estimates		
	hatchery		unmarked/wild	hatchery		wild	hatchery		unmarked/wild
	y	n	n	hatchery	wild	na	y	n	n
grj_date									
3/26/2006	10		10	0.48	0.66		21	0	15
3/27/2006	190	20		0.44	0.66		429	45	0
3/28/2006	820	20	40	0.44	0.85		1,863	45	47
3/29/2006	2,420	30	130	0.45	0.85		5,387	67	152
3/30/2006	2,700	40	240	0.45	0.86		6,031	89	281
3/31/2006	2,930		400	0.43	0.66		6,801	0	602
4/1/2006	3,770	30	620	0.43	0.36		8,779	70	1746
4/2/2006	4,000	40	520	0.42	0.66		9,625	96	783
4/3/2006	3,480	20	240	0.52	0.47		6,634	38	506
4/4/2006	2,500		380	0.53	0.33		4,676	0	1156
4/5/2006	2,420	20	360	0.49	0.41		4,979	41	883
4/6/2006	1,860		240	0.38	0.38		4,935	0	631
4/7/2006	2,380	80	740	0.36	0.36		6,665	224	2071
4/8/2006	2,940	300	1,480	0.36	0.37		8,128	829	4010
4/9/2006	4,550	250	3,750	0.36	0.37		12,661	696	10138
4/10/2006	3,100	300	2,200	0.37	0.34		8,413	814	6425
4/11/2006	2,500	300	4,600	0.36	0.31		6,886	826	14722
4/12/2006	1,896	150	3,858	0.37	0.33		5,142	407	11768
4/13/2006	1,900	300	2,400	0.20	0.32		9,500	1,500	7470
4/14/2006	4,100	650	3,150	0.24	0.27		17,332	2,748	11496
4/15/2006	14,600	1,350	3,100	0.23	0.27		64,240	5,940	11378
4/16/2006	10,100	1,050	1,500	0.23	0.25		43,015	4,472	5959
4/17/2006	37,200	2,300	4,900	0.26	0.27		145,824	9,016	18115
4/18/2006	43,550	2,850	8,400	0.25	0.26		173,611	11,361	32106
4/19/2006	15,642	1,400	4,604	0.25	0.29		61,786	5,530	16047
4/20/2006	28,800	1,600	5,400	0.33	0.44		86,997	4,833	12321
4/21/2006	40,800	1,400	6,200	0.39	0.56		105,580	3,623	11073
4/22/2006	48,900	1,500	4,500	0.38	0.62		128,770	3,950	7212
4/23/2006	109,200	1,400	10,800	0.33	0.52		331,354	4,248	20886
4/24/2006	32,100	700	4,500	0.31	0.54		105,226	2,295	8364
4/25/2006	40,100	1,300	4,600	0.37	0.45		109,460	3,549	10152
4/26/2006	82,249	2,200	6,612	0.38	0.45		216,345	5,787	14725
4/27/2006	120,600	2,600	13,800	0.38	0.44		320,249	6,904	31648
4/28/2006	50,400	2,400	4,000	0.39	0.42		130,669	6,222	9510
4/29/2006	70,200	3,200	15,000	0.37	0.49		190,622	8,689	30413
4/30/2006	66,200	2,200	8,800	0.30	0.39		224,229	7,452	22643
5/1/2006	56,800	5,600	10,200	0.27	0.35		209,750	20,680	28857
5/2/2006	110,200	9,400	16,800	0.31	0.39		352,215	30,044	43515
5/3/2006	83,646	8,200	19,016	0.37	0.43		226,407	22,195	43878
5/4/2006	95,600	4,000	16,000	0.42	0.48		226,549	9,479	33286
5/5/2006	142,200	7,200	22,200	0.41	0.55		344,979	17,467	40619
5/6/2006	71,800	7,600	8,600	0.42	0.62		172,812	18,292	13905
5/7/2006	75,400	4,200	14,600	0.41	0.50		185,904	10,355	29049
5/8/2006	52,600	6,200	7,400	0.42	0.58		123,842	14,597	12672
5/9/2006	56,200	6,800	6,400	0.44	0.56		127,516	15,429	11389
5/10/2006	47,233	10,600	4,413	0.46	0.43		103,712	23,275	10344
5/11/2006	36,400	7,000	3,800	0.43	0.42		84,387	16,228	8988

5/12/2006	34,400	6,400	4,600	0.42	0.50	81,381	15,141	9224
5/13/2006	37,000	3,000	5,200	0.41	0.50	90,303	7,322	10361
5/14/2006	35,200	7,600	3,600	0.40	0.51	87,382	18,867	7022
5/15/2006	37,000	5,200	5,000	0.35	0.45	105,681	14,852	11122
5/16/2006	36,000	5,800	5,400	0.31	0.43	117,271	18,894	12432
5/17/2006	76,641	6,600	16,008	0.29	0.17	268,066	23,085	91972
5/18/2006	65,400	9,400	7,800	0.34	0.31	194,073	27,894	25092
5/19/2006	73,000	11,800	9,200	0.32	0.43	231,130	37,361	21548
5/20/2006	47,200	7,200	11,000	0.28	0.21	168,691	25,733	52007
5/21/2006	24,600	7,400	3,800	0.25	0.37	97,522	29,336	10206
5/22/2006	16,500	4,400	2,900	0.31	0.84	53,649	14,306	3436
5/23/2006	8,300	1,600	2,700	0.38	0.59	22,045	4,250	4572
5/24/2006	6,416	1,500	1,429	0.32	0.69	19,748	4,617	2069
5/25/2006	7,200	1,600	1,550	0.40	0.75	18,200	4,044	2075
5/26/2006	5,450	1,000	2,050	0.53	0.36	10,246	1,880	5654
5/27/2006	7,800	2,300	1,900	0.47	0.62	16,467	4,856	3043
5/28/2006	6,800	1,900	1,650	0.50	0.38	13,535	3,782	4289
5/29/2006	4,850	1,000	1,750	0.31	0.43	15,763	3,250	4097
5/30/2006	6,250	1,850	1,600	0.46	0.43	13,704	4,056	3732
5/31/2006	4,047	1,350	627	0.43	0.53	9,463	3,157	1176
6/1/2006	3,700	1,050	1,550	0.44	0.55	8,496	2,411	2838
6/2/2006	2,400	700	1,000	0.48	0.66	4,992	1,456	1512
6/3/2006	2,900	800	550	0.41	0.55	7,000	1,931	991
6/4/2006	2,500	300	500	0.40	0.66	6,242	749	762
6/5/2006	1,700	300	200	0.42	0.74	4,060	716	271
6/6/2006	2,700	750	850	0.41	0.48	6,646	1,846	1760
6/7/2006	1,831	450	315	0.42	0.77	4,335	1,065	407
6/8/2006	1,600	250	250	0.40	0.41	4,038	631	615
6/9/2006	1,400	250	250	0.39	0.40	3,630	648	619
6/10/2006	860	240	580	0.42	0.35	2,054	573	1646
6/11/2006	1,660	180	400	0.48	0.28	3,446	374	1421
6/12/2006	380	80	160	0.44	0.80	865	182	201
6/13/2006	600	150	170	0.43	0.80	1,396	349	211
6/14/2006	272	70	103	0.48	0.38	563	145	270
6/15/2006	680	160	230	0.41	0.81	1,674	394	286
6/16/2006	370	120	120	0.42	0.49	873	283	244
6/17/2006	660	180	110	0.43	0.52	1,543	421	211
6/18/2006	460	140	110	0.45	0.51	1,014	309	215
6/19/2006	340	100	160	0.49	0.50	694	204	323
6/20/2006	200	80	30	0.54	0.47	372	149	64
6/21/2006	202	30	11	0.55	0.47	370	55	24
6/22/2006	80	10	30	0.56	0.46	143	18	65
6/23/2006	80	20		0.57	0.46	140	35	0
6/24/2006	20	30	10	0.57	0.47	35	53	21
6/25/2006	110	10	20	0.59	0.45	186	17	44
6/26/2006	30	10	10	0.58	0.46	52	17	22
6/27/2006	70	30	10	0.58	0.46	120	51	22
6/28/2006	60	20	21	0.61	0.44	98	33	48
6/29/2006	50		10	0.60	0.45	84	0	22
6/30/2006	10			0.61	0.43	16	0	0
7/1/2006	10		10	0.64	0.64	16	0	16
7/2/2006	20			0.65	0.64	31	0	0
7/3/2006	10			0.65	0.64	15	0	0
7/4/2006	10			0.66	0.65	15	0	0
7/5/2006	30			0.65	0.64	46	0	0
7/6/2006	40			0.64	0.64	62	0	0

7/7/2006			0.64	0.63	0	0	0	
7/8/2006			0.63	0.62	0	0	0	
7/9/2006	5		5	0.65	0.64	8	0	8
7/10/2006	10	5		0.65	0.64	15	8	0
7/11/2006	15		5	0.63	0.63	24	0	8
7/12/2006				0.64	0.63	0	0	0
7/13/2006				0.65	0.64	0	0	0
7/14/2006				0.68	0.66	0	0	0
7/15/2006	4			0.67	0.66	6	0	0
7/16/2006				0.69	0.67	0	0	0
7/17/2006				0.69	0.68	0	0	0
7/18/2006		4		0.67	0.66	0	6	0
7/19/2006				0.69	0.67	0	0	0
7/20/2006	2	2		0.70	0.68	3	3	0
7/21/2006	2			0.66	0.65	3	0	0
7/22/2006				0.68	0.67	0	0	0
7/23/2006				0.67	0.66	0	0	0
7/24/2006				0.68	0.66	0	0	0
7/25/2006				0.69	0.67	0	0	0
7/26/2006				0.71	0.69	0	0	0
7/27/2006				0.72	0.70	0	0	0
7/28/2006			2	0.74	0.71	0	0	3
7/29/2006				0.73	0.70	0	0	0
7/30/2006				0.74	0.71	0	0	0
7/31/2006				0.75	0.72	0	0	0
8/1/2006				0.74	0.72	0	0	0
8/2/2006				0.74	0.72	0	0	0
8/3/2006				0.75	0.72	0	0	0
8/4/2006				0.74	0.71	0	0	0
8/5/2006				0.74	0.71	0	0	0
8/6/2006				0.75	0.72	0	0	0
8/7/2006				0.74	0.71	0	0	0
8/8/2006				0.74	0.72	0	0	0
8/9/2006				0.75	0.72	0	0	0
8/10/2006				0.76	0.72	0	0	0
8/11/2006	1			0.76	0.73	1	0	0
8/12/2006				0.75	0.72	0	0	0
8/13/2006				0.75	0.72	0	0	0
8/14/2006		1		0.75	0.72	0	1	0
8/15/2006				0.75	0.72	0	0	0
8/16/2006	1			0.76	0.73	1	0	0
8/17/2006				0.75	0.72	0	0	0
8/18/2006				0.75	0.72	0	0	0
8/19/2006				0.75	0.72	0	0	0
8/20/2006				0.76	0.73	0	0	0
8/21/2006				0.76	0.72	0	0	0
8/22/2006				0.75	0.72	0	0	0
8/23/2006				0.76	0.73	0	0	0
8/24/2006				0.75	0.72	0	0	0
8/25/2006				0.74	0.72	0	0	0
8/26/2006		1		0.73	0.71	0	1	0
8/27/2006				0.73	0.71	0	0	0
8/28/2006				0.80	0.76	0	0	0
8/29/2006				0.81	0.77	0	0	0
8/30/2006				0.81	0.77	0	0	0
8/31/2006				0.80	0.76	0	0	0

Steelhead Daily Population at Lower Granite Dam based daily collection and daily PIT-tag detection data.

2007

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	hatchery	unmarked/wild	PIT-tag CE		hatchery	unmarked/wild		
	y n	n n	hatchery	wild	y n	n n		
3/26/07	80		150	0.81	0.80	99	0	188
3/27/07	240		210	0.19	0.24	1,263	0	864
3/28/07	230	10	180	0.27	0.22	847	37	806
3/29/07	320		170	0.19	0.20	1,655	0	830
3/30/07	190	10	190	0.48	0.23	398	21	832
3/31/07	330		260	0.71	0.23	463	0	1,150
4/1/07	350		290	0.84	0.20	418	0	1,446
4/2/07	250		270	0.82	0.24	306	0	1,116
4/3/07	420	10	400	0.07	0.15	6,312	150	2,689
4/4/07	80	10	200	0.05	0.13	1,716	215	1,488
4/5/07	230		190	0.04	0.13	6,120	0	1,483
4/6/07	60		90	0.03	0.12	2,172	0	751
4/7/07	110		110	0.03	0.12	3,416	0	887
4/8/07	70		140	0.05	0.14	1,453	0	1,024
4/9/07	100	50	90	0.09	0.17	1,130	565	545
4/10/07	110	50	120	0.11	0.18	961	437	658
4/11/07	212	315	321	0.11	0.17	1,961	2,914	1,844
4/12/07	440	650	480	0.10	0.25	4,290	6,338	1,920
4/13/07	520	1020	500	0.09	0.24	5,980	11,730	2,083
4/14/07	1280	880	680	0.09	0.15	13,568	9,328	4,513
4/15/07	1600	750	1200	0.11	0.11	14,400	6,750	11,100
4/16/07	2600	950	900	0.11	0.13	24,700	9,025	6,750
4/17/07	2700	900	1000	0.10	0.13	25,988	8,663	7,500
4/18/07	2668	353	1256	0.10	0.15	27,747	3,671	8,164
4/19/07	2150	700	1200	0.09	0.17	22,933	7,467	7,000
4/20/07	2500	350	700	0.08	0.18	31,250	4,375	3,850
4/21/07	8700	550	950	0.10	0.23	91,350	5,775	4,180
4/22/07	14900	1300	1000	0.09	0.21	157,278	13,722	4,750
4/23/07	8400	1000	400	0.11	0.14	76,745	9,136	2,800
4/24/07	18300	500	1000	0.11	0.14	164,700	4,500	7,333
4/25/07	7333	402	701	0.11	0.24	69,663	3,819	2,979
4/26/07	7000	200	700	0.11	0.25	66,231	1,892	2,800
4/27/07	11700	400	900	0.11	0.25	108,643	3,714	3,600
4/28/07	7900	300	900	0.10	0.13	75,840	2,880	6,750
4/29/07	7400	700	1200	0.12	0.10	63,429	6,000	12,360
4/30/07	18400	1200	1900	0.13	0.12	144,747	9,440	15,580
5/1/07	40200	2900	4400	0.13	0.20	298,476	21,532	22,105
5/2/07	50848	5307	8700	0.16	0.28	308,519	32,200	31,464
5/3/07	88800	7800	17600	0.20	0.34	454,304	39,905	51,994
5/4/07	79200	7600	24400	0.24	0.37	332,971	31,952	66,833
5/5/07	67400	8000	15000	0.25	0.33	269,104	31,941	45,153
5/6/07	39400	5800	8400	0.25	0.32	158,069	23,269	26,056
5/7/07	24600	3800	7200	0.23	0.29	106,322	16,424	24,444
5/8/07	28000	3000	6200	0.23	0.28	120,203	12,879	22,441
5/9/07	29039	4204	4803	0.23	0.29	127,445	18,450	16,586
5/10/07	30800	3800	7000	0.29	0.29	104,436	12,885	23,851
5/11/07	16400	2200	3400	0.29	0.38	56,666	7,602	8,890
5/12/07	27200	4000	6200	0.21	0.32	130,414	19,179	19,258
5/13/07	53400	8200	11200	0.25	0.38	217,164	33,347	29,780
5/14/07	47800	16400	9800	0.37	0.42	127,883	43,876	23,351
5/15/07	38800	11000	5800	0.38	0.47	102,368	29,022	12,304
5/16/07	28855	9020	3804	0.35	0.30	82,282	25,721	12,794
5/17/07	25600	7400	3400	0.36	0.33	71,929	20,792	10,411
5/18/07	21900	6900	5200	0.38	0.45	57,994	18,272	11,533
5/19/07	18950	5450	2750	0.36	0.43	53,127	15,279	6,335
5/20/07	20850	5150	3700	0.35	0.41	59,016	14,577	8,972
5/21/07	16350	4750	1950	0.36	0.36	44,820	13,021	5,426
5/22/07	14800	2500	3550	0.29	0.51	50,702	8,564	6,894
5/23/07	9718	3522	1457	0.29	0.31	34,013	12,327	4,683
5/24/07	7250	2400	800	0.29	0.39	24,771	8,200	2,046

5/25/07	9025	2525	1150	0.31	0.32	29,128	8,149	3,560
5/26/07	7225	2575	1050	0.30	0.24	24,033	8,565	4,346
5/27/07	5125	1450	675	0.16	0.21	31,389	8,881	3,164
5/28/07	3675	1125	650	0.16	0.21	23,365	7,153	3,094
5/29/07	3060	850	450	0.19	0.23	16,426	4,563	1,938
5/30/07	2475	613	327	0.17	0.21	14,887	3,687	1,521
5/31/07	1710	490	350	0.16	0.21	10,979	3,146	1,671
6/1/07	1770	420	280	0.15	0.20	12,007	2,849	1,382
6/2/07	1960	550	280	0.14	0.20	13,537	3,799	1,415
6/3/07	1140	160	470	0.13	0.19	8,578	1,204	2,459
6/4/07	1170	350	310	0.15	0.21	7,589	2,270	1,509
6/5/07	1380	420	260	0.16	0.21	8,503	2,588	1,227
6/6/07	1285	276	298	0.14	0.20	8,904	1,913	1,493
6/7/07	860	340	240	0.16	0.21	5,308	2,098	1,131
6/8/07	1220	140	280	0.13	0.19	9,452	1,085	1,468
6/9/07	720	360	200	0.14	0.19	5,270	2,635	1,030
6/10/07	580	160	120	0.13	0.19	4,474	1,234	634
6/11/07	580	160	90	0.14	0.20	4,002	1,104	452
6/12/07	600	180	110	0.19	0.23	3,213	964	473
6/13/07	290	174	84	0.16	0.21	1,819	1,092	399
6/14/07	520	210	50	0.15	0.20	3,577	1,445	249
6/15/07	300	80	30	0.10	0.17	3,020	805	177
6/16/07	105	30	15	0.09	0.16	1,168	334	92
6/17/07	160	40	45	0.09	0.16	1,838	460	277
6/18/07	80	70	5	0.06	0.14	1,330	1,164	35
6/19/07	65	40	15	0.04	0.13	1,506	927	114
6/20/07	55	30	5	0.07	0.15	766	418	33
6/21/07	100	10	5	0.06	0.14	1,584	158	37
6/22/07	40		5	0.09	0.15	451	0	33
6/23/07	40			0.08	0.15	494	0	0
6/24/07	30		15	0.05	0.13	598	0	117
6/25/07	10	10		0.04	0.12	241	241	0
6/26/07	15	5	5	0.03	0.12	434	145	43
6/27/07	20	5	5	0.03	0.11	751	188	45
6/28/07	15			0.04	0.12	393	0	0
6/29/07	4			0.05	0.13	75	0	0
6/30/07	16			0.06	0.13	273	0	0
7/1/07	8	4		0.04	0.12	197	98	0
7/2/07	24	8		0.03	0.11	782	261	0
7/3/07	16	4		0.03	0.11	497	124	0
7/4/07	12			0.04	0.12	309	0	0
7/5/07	16	4		0.04	0.12	391	98	0
7/6/07	28	4		0.05	0.13	512	73	0
7/7/07	12	8		0.05	0.13	257	172	0
7/8/07	20			0.09	0.15	232	0	0
7/9/07	16			0.05	0.13	336	0	0
7/10/07	12	12		0.08	0.15	148	148	0
7/11/07				0.04	0.12	0	0	0
7/12/07				0.05	0.13	0	0	0
7/13/07	4			0.04	0.12	94	0	0
7/14/07	4	8		0.04	0.12	90	180	0
7/15/07	4			0.06	0.13	68	0	0
7/16/07	4			0.04	0.12	106	0	0
7/17/07	4	2		0.03	0.11	122	61	0
7/18/07		2		0.03	0.11	0	61	0
7/19/07	4			0.03	0.11	120	0	0
7/20/07	3			0.03	0.11	103	0	0
7/21/07				0.03	0.11	0	0	0
7/22/07		1		0.05	0.11	0	22	0
7/23/07				0.04	0.11	0	0	0
7/24/07				0.04	0.11	0	0	0
7/25/07				0.05	0.11	0	0	0
7/26/07	1			0.04	0.11	23	0	0
7/27/07	2	1		0.03	0.11	66	33	0
7/28/07	2			0.04	0.11	55	0	0
7/29/07	1			0.05	0.11	21	0	0
7/30/07	1		2	0.03	0.11	29	0	18
7/31/07				0.04	0.11	0	0	0
8/1/07		2		0.03	0.11	0	70	0

8/2/07	2			0.04	0.11	48	0	0
8/3/07	2			0.05	0.11	44	0	0
8/4/07				0.05	0.11	0	0	0
8/5/07	2	1		0.06	0.11	36	18	0
8/6/07				0.04	0.11	0	0	0
8/7/07				0.05	0.11	0	0	0
8/8/07				0.06	0.11	0	0	0
8/9/07			1	0.06	0.11	0	0	9
8/10/07			1	0.06	0.11	0	0	9
8/11/07		1		0.06	0.11	0	17	0
8/12/07		1		0.06	0.11	0	16	0
8/13/07				0.08	0.11	0	0	0
8/14/07	1		1	0.10	0.11	10	0	9
8/15/07				0.08	0.11	0	0	0
8/16/07	1			0.09	0.11	11	0	0
8/17/07			1	0.11	0.11	0	0	9
8/18/07				0.12	0.11	0	0	0
8/19/07				0.15	0.11	0	0	0
8/20/07				0.02	0.09	0	0	0
8/21/07				0.01	0.08	0	0	0
8/22/07	2	1	1	0.01	0.09	333	166	12
8/23/07				0.02	0.09	0	0	0
8/24/07				0.10	0.11	0	0	0
8/25/07		1		0.11	0.11	0	9	0
8/26/07			1	0.10	0.11	0	0	9
8/27/07				0.10	0.11	0	0	0
8/28/07				0.11	0.11	0	0	0
8/29/07				0.12	0.11	0	0	0
8/30/07			1	0.15	0.11	0	0	9
8/31/07				0.16	0.11	0	0	0

Steelhead Daily Population at Lower Granite Dam based daily collection and daily PIT-tag detection data.

2008

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	hatchery		unmarked/wild	hatchery	wild	na	hatchery		unmarked/wild
	y	n	n	y	y	y	y	n	n
grj_date									
3/26/08			10	0.45	0.51		0	0	20
3/27/08				0.42	0.51		0	0	0
3/28/08				0.47	0.52		0	0	0
3/29/08			50	0.45	0.51		0	0	98
3/30/08			20	0.46	0.52		0	0	39
3/31/08	10		40	0.43	0.51		23	0	79
4/1/08	30			0.45	0.51		66	0	0
4/2/08	210		10	0.44	0.51		480	0	20
4/3/08	210			0.10	0.26		2,045	0	0
4/4/08	270		20	0.09	0.25		2,967	0	81
4/5/08	200	10	10	0.10	0.26		1,934	97	39
4/6/08	300		40	0.11	0.26		2,817	0	152
4/7/08	310			0.10	0.25		3,195	0	0
4/8/08	270			0.12	0.28		2,230	0	0
4/9/08	312		11	0.11	0.27		2,802	0	41
4/10/08	370		10	0.11	0.27		3,322	0	37
4/11/08	540	10	30	0.10	0.26		5,367	99	117
4/12/08	340	20	50	0.13	0.26		2,720	160	189
4/13/08	330	70	10	0.09	0.26		3,740	793	39
4/14/08	340	90	40	0.15	0.31		2,323	615	130
4/15/08	660	180	90	0.10	0.34		6,710	1,830	264
4/16/08	1133	476	153	0.17	0.34		6,643	2,791	452
4/17/08	6120	2940	1520	0.18	0.18		34,397	16,524	8,469
4/18/08	8760	5240	1720	0.19	0.31		46,803	27,997	5,542
4/19/08	12300	19200	5600	0.19	0.36		65,185	101,752	15,500
4/20/08	19900	7800	5800	0.19	0.37		107,023	41,949	15,853
4/21/08	12900	2900	3500	0.19	0.40		69,303	15,580	8,809
4/22/08	19600	1800	4300	0.18	0.41		110,660	10,163	10,535
4/23/08	15636	1200	3012	0.16	0.37		100,517	7,714	8,109
4/24/08	13800	1000	2900	0.16	0.33		84,870	6,150	8,700
4/25/08	11600	600	2000	0.14	0.38		84,167	4,353	5,250
4/26/08	14800	1700	1800	0.15	0.35		100,366	11,529	5,109
4/27/08	22700	1400	2300	0.18	0.30		127,093	7,838	7,667
4/28/08	30600	900	2000	0.20	0.38		155,456	4,572	5,333
4/29/08	42866	1280	2988	0.20	0.38		212,705	6,351	7,843
4/30/08	60876	1300	2201	0.18	0.28		329,095	7,028	7,912
5/1/08	46500	1400	2900	0.23	0.38		198,153	5,966	7,676
5/2/08	55400	1600	2400	0.34	0.27		164,184	4,742	8,850
5/3/08	63000	5600	6000	0.36	0.31		174,738	15,532	19,108
5/4/08	73600	4000	6000	0.32	0.34		229,276	12,461	17,703
5/5/08	88600	6600	9800	0.31	0.38		282,693	21,058	26,101
5/6/08	92200	5600	17400	0.29	0.37		313,406	19,036	47,221
5/7/08	51645	4803	8205	0.29	0.38		175,751	16,345	21,381
5/8/08	72600	6400	9600	0.32	0.38		228,907	20,179	25,344
5/9/08	89200	9600	12800	0.32	0.43		276,940	29,805	29,477
5/10/08	85800	9800	19200	0.36	0.46		239,284	27,331	41,915
5/11/08	68000	6400	20200	0.39	0.48		175,841	16,550	42,359

5/12/08	89000	9800	18600	0.39	0.51	229,863	25,311	36,804
5/13/08	69400	8600	11800	0.37	0.45	189,563	23,491	26,031
5/14/08	30242	2602	3609	0.33	0.43	90,678	7,802	8,485
5/15/08	29000	2000	5200	0.35	0.32	83,545	5,762	16,199
5/16/08	20600	3400	4800	0.35	0.37	59,294	9,786	13,029
5/17/08	26596	2586	4186	0.32	0.33	83,544	8,123	12,839
5/18/08	41600	6600	10500	0.29	0.29	142,511	22,610	35,675
5/19/08	67600	11200	14600	0.28	0.28	245,206	40,626	52,474
5/20/08	42200	8000	6800	0.28	0.32	151,246	28,672	21,113
5/21/08	30251	4208	6216	0.29	0.38	105,679	14,700	16,506
5/22/08	21000	3000	5200	0.26	0.35	79,772	11,396	14,995
5/23/08	11400	2300	4700	0.31	0.32	37,190	7,503	14,757
5/24/08	4700	600	1800	0.33	0.29	14,273	1,822	6,300
5/25/08	9550	1650	2150	0.40	0.35	23,968	4,141	6,181
5/26/08	10200	1600	2500	0.41	0.30	24,804	3,891	8,235
5/27/08	12400	2850	3050	0.36	0.22	34,107	7,839	14,030
5/28/08	7007	2121	2462	0.39	0.15	18,008	5,451	16,179
5/29/08	5500	1950	2450	0.33	0.11	16,569	5,874	21,914
5/30/08	9550	2700	2250	0.31	0.39	30,514	8,627	5,760
5/31/08	6950	1400	2400	0.24	0.31	28,375	5,716	7,650
6/1/08	7700	1900	2200	0.23	0.28	33,402	8,242	7,822
6/2/08	4650	1300	900	0.28	0.24	16,607	4,643	3,741
6/3/08	4750	1100	1650	0.25	0.31	18,959	4,391	5,317
6/4/08	2801	861	515	0.27	0.29	10,238	3,147	1,769
6/5/08	1850	750	500	0.16	0.29	11,819	4,792	1,701
6/6/08	1900	800	1250	0.36	0.30	5,271	2,219	4,115
6/7/08	1575	450	525	0.22	0.31	7,068	2,020	1,719
6/8/08	1950	525	1100	0.29	0.32	6,736	1,814	3,428
6/9/08	1300	475	400	0.50	0.33	2,580	943	1,229
6/10/08	1600	625	450	0.36	0.33	4,436	1,733	1,371
6/11/08	918	480	353	0.24	0.29	3,841	2,008	1,199
6/12/08	1025	300	475	0.28	0.32	3,682	1,078	1,500
6/13/08	850	375	300	0.38	0.37	2,240	988	804
6/14/08	1575	300	425	0.46	0.43	3,432	654	1,000
6/15/08	1325	400	475	0.47	0.43	2,832	855	1,100
6/16/08	1375	275	225	0.38	0.38	3,600	720	588
6/17/08	625	250	250	0.29	0.32	2,156	863	790
6/18/08	675	175	200	0.25	0.29	2,748	712	692
6/19/08	500	150	275	0.27	0.30	1,877	563	915
6/20/08	550	125	250	0.29	0.32	1,908	434	792
6/21/08	475	150	250	0.29	0.32	1,628	514	785
6/22/08	1040	190	200	0.28	0.31	3,723	680	651
6/23/08	580	90	110	0.28	0.30	2,081	323	366
6/24/08	500	110	150	0.27	0.31	1,828	402	491
6/25/08	530	80	70	0.32	0.34	1,668	252	203
6/26/08	610	110	60	0.32	0.35	1,902	343	169
6/27/08	340	50	60	0.31	0.36	1,104	162	167
6/28/08	210	80	40	0.36	0.39	591	225	103
6/29/08	440	70	30	0.48	0.46	909	145	66
6/30/08	420	90	70	0.47	0.45	884	189	157
7/1/08	250	10	40	0.44	0.43	574	23	93
7/2/08	260	80	30	0.48	0.45	545	168	66
7/3/08	150	60	20	0.44	0.44	337	135	45
7/4/08	240	80	40	0.39	0.42	610	203	94
7/5/08	140		40	0.35	0.41	400	0	98
7/6/08	60	60		0.30	0.39	198	198	0

7/7/08	20			0.26	0.37	77	0	0
7/8/08	40			0.26	0.37	153	0	0
7/9/08				0.24	0.36	0	0	0
7/10/08	10			0.23	0.36	43	0	0
7/11/08				0.19	0.33	0	0	0
7/12/08	10	10		0.16	0.31	62	62	0
7/13/08	10			0.14	0.29	73	0	0
7/14/08		5		0.15	0.31	0	33	0
7/15/08				0.14	0.30	0	0	0
7/16/08		5		0.13	0.29	0	38	0
7/17/08				0.15	0.30	0	0	0
7/18/08				0.14	0.29	0	0	0
7/19/08				0.14	0.29	0	0	0
7/20/08				0.14	0.29	0	0	0
7/21/08				0.12	0.28	0	0	0
7/22/08				0.11	0.27	0	0	0
7/23/08				0.11	0.27	0	0	0
7/24/08				0.12	0.28	0	0	0
7/25/08				0.13	0.28	0	0	0
7/26/08	5			0.11	0.27	45	0	0
7/27/08				0.10	0.26	0	0	0
7/28/08				0.11	0.27	0	0	0
7/29/08				0.12	0.28	0	0	0
7/30/08				0.10	0.26	0	0	0
7/31/08	4			0.13	0.28	32	0	0
8/1/08				0.12	0.28	0	0	0
8/2/08			4	0.12	0.28	0	0	14
8/3/08				0.13	0.28	0	0	0
8/4/08				0.10	0.26	0	0	0
8/5/08		2		0.11	0.27	0	18	0
8/6/08	2			0.13	0.29	15	0	0
8/7/08	2			0.11	0.27	18	0	0
8/8/08			2	0.12	0.28	0	0	7
8/9/08				0.07	0.23	0	0	0
8/10/08				0.09	0.25	0	0	0
8/11/08				0.07	0.23	0	0	0
8/12/08				0.07	0.22	0	0	0
8/13/08				0.08	0.24	0	0	0
8/14/08				0.06	0.21	0	0	0
8/15/08				0.07	0.22	0	0	0
8/16/08				0.07	0.22	0	0	0
8/17/08		1		0.05	0.20	0	19	0
8/18/08	1			0.07	0.22	14	0	0
8/19/08				0.08	0.24	0	0	0
8/20/08	1			0.07	0.23	14	0	0
8/21/08				0.06	0.22	0	0	0
8/22/08				0.08	0.24	0	0	0
8/23/08				0.08	0.23	0	0	0
8/24/08				0.06	0.20	0	0	0
8/25/08			2	0.05	0.20	0	0	10
8/26/08	1			0.06	0.20	18	0	0
8/27/08			1	0.05	0.20	0	0	5
8/28/08	1			0.05	0.20	20	0	0
8/29/08				0.06	0.22	0	0	0
8/30/08				0.06	0.22	0	0	0
8/31/08				0.05	0.20	0	0	0

Steelhead Daily Population at Lower Granite Dam based daily collection and daily PIT-tag detection data.

Note: Late May debris event shutdown bypass for 3 days...passage data are interpolated estimates based on preceding and following dates sample data.

2009

eroded fin na fin clip? y	SMP Collection			Population Estimates				
	hatchery		unmarked/wild	PIT-tag CE		hatchery		unmarked/wild
	y	n	n	hatchery	wild	na	y	n
grj_date								
3/26/09	10		10	0.51	0.51		19	0
3/27/09			100	0.52	0.51		0	19
3/28/09			130	0.53	0.52		0	0
3/29/09		10	100	0.52	0.52		0	19
3/30/09	10		120	0.52	0.52		19	0
3/31/09	20	10	120	0.51	0.50		39	20
4/1/09	40		120	0.51	0.50		78	0
4/2/09	190		160	0.50	0.49		378	0
4/3/09	400		340	0.51	0.59		785	0
4/4/09	330		230	0.52	0.61		639	0
4/5/09	330		160	0.51	0.59		648	0
4/6/09	540	10	230	0.51	0.59		1,060	20
4/7/09	120		320	0.51	0.59		236	0
4/8/09	440	20	140	0.51	0.59		869	40
4/9/09	700	20	140	0.49	0.54		1,441	41
4/10/09	640	180	200	0.56	0.53		1,138	320
4/11/09	800	560	800	0.63	0.54		1,278	894
4/12/09	1160	1240	1360	0.56	0.33		2,061	2,203
4/13/09	2250	2250	1300	0.57	0.42		3,933	3,933
4/14/09	3417	4100	1873	0.57	0.48		5,963	7,155
4/15/09	4450	5500	3150	0.59	0.46		7,597	9,389
4/16/09	5900	4800	3450	0.51	0.69		11,595	9,433
4/17/09	9600	3600	5100	0.47	0.64		20,396	7,648
4/18/09	39800	3500	5200	0.46	0.59		87,220	7,670
4/19/09	45000	2700	2600	0.46	0.59		97,069	5,824
4/20/09	68400	2200	4000	0.48	0.58		143,288	4,609
4/21/09	83000	3600	4200	0.47	0.54		175,411	7,608
4/22/09	118067	5800	5004	0.47	0.46		252,432	12,401
4/23/09	164000	19600	7000	0.49	0.52		336,136	40,172
4/24/09	182000	27600	40800	0.55	0.56		330,286	50,087
4/25/09	131200	15800	31600	0.60	0.67		218,195	26,277
4/26/09	164600	23000	35000	0.57	0.68		286,299	40,005
4/27/09	110200	12800	15200	0.53	0.59		209,169	24,296
4/28/09	63237	6200	9815	0.47	0.58		135,348	13,270
4/29/09	60000	4200	9400	0.44	0.51		135,324	9,473
4/30/09	37000	3800	3000	0.40	0.50		92,780	9,529
5/1/09	49000	3200	4600	0.45	0.58		109,509	7,152
5/2/09	30000	2400	3800	0.51	0.58		58,312	4,665
5/3/09	33600	1800	4000	0.46	0.57		72,310	3,874
5/4/09	26200	3600	1600	0.43	0.51		61,505	8,451
5/5/09	38043	3004	4002	0.40	0.39		94,024	7,424
5/6/09	53600	5400	4600	0.41	0.38		129,929	13,090
5/7/09	54600	9400	4400	0.47	0.36		116,677	20,087
5/8/09	99800	12400	14800	0.53	0.48		186,792	23,209
5/9/09	93600	7600	17400	0.58	0.58		161,798	13,137
5/10/09	82200	13600	9400	0.57	0.54		143,280	23,706
5/11/09	70800	12200	4000	0.56	0.48		127,541	21,977
5/12/09	91076	19605	10807	0.53	0.55		173,030	37,246
5/13/09	56400	7800	5200	0.48	0.49		117,325	16,226
5/14/09	31800	2400	6400	0.41	0.43		77,596	5,856
5/15/09	43600	4600	7200	0.36	0.38		120,024	12,663
5/16/09	36600	3600	5000	0.39	0.36		94,977	9,342
5/17/09	21400	800	4400	0.26	0.32		82,915	3,100
5/18/09	34800	4000	5400	0.21	0.33		164,284	18,883
5/19/09	46625	3801	6004	0.18	0.39		263,359	21,470
5/20/09	62000	7400	11400	0.16	0.42		381,942	45,587
5/21/09	52400	6600	11200	0.21	0.32		245,742	30,952
5/22/09	74600	10000	21200	0.18	0.22		421,823	56,545
5/23/09	59704.75	8400.25	17351.5	0.41	0.46		145,165	20,424
5/24/09	44809.5	6800.5	13503	0.40	0.47		110,709	16,802
5/25/09	29914.25	5200.75	9654.5	0.30	0.28		99,530	17,304

5/26/09	15019	3601	5806	0.47	0.47	31,670	7,593	12,234
5/27/09	11675	3610	3415	0.46	0.47	25,170	7,783	7,282
5/28/09	9600	1800	3800	0.43	0.46	22,422	4,204	8,202
5/29/09	11000	2700	3700	0.47	0.53	23,540	5,778	6,989
5/30/09	9300	3000	2700	0.41	0.54	22,731	7,332	5,014
5/31/09	8400	2000	2700	0.39	0.52	21,351	5,084	5,175
6/1/09	8700	2200	1700	0.31	0.38	27,836	7,039	4,470
6/2/09	7467	3017	1315	0.39	0.38	19,204	7,759	3,463
6/3/09	9300	3100	1700	0.43	0.42	21,660	7,220	4,061
6/4/09	7600	3000	800	0.51	0.54	14,883	5,875	1,492
6/5/09	9250	4100	1250	0.54	0.42	17,100	7,579	2,964
6/6/09	14000	4550	2300	0.43	0.42	32,345	10,512	5,511
6/7/09	13650	5750	1350	0.44	0.41	30,864	13,001	3,297
6/8/09	19550	3800	1600	0.51	0.41	38,410	7,466	3,861
6/9/09	8700	2250	700	0.58	0.42	14,935	3,862	1,678
6/10/09	3350	1250	450	0.47	0.42	7,178	2,678	1,063
6/11/09	3375	1764	361	0.44	0.46	7,618	3,981	782
6/12/09	2900	1400	600	0.45	0.47	6,484	3,130	1,276
6/13/09	1500	850	300	0.46	0.50	3,251	1,842	605
6/14/09	1825	1100	250	0.46	0.49	3,993	2,407	512
6/15/09	1725	1025	175	0.46	0.48	3,790	2,252	362
6/16/09	2425	1000	200	0.44	0.46	5,454	2,249	430
6/17/09	2775	875	325	0.45	0.48	6,159	1,942	684
6/18/09	1716	454	125	0.45	0.48	3,777	999	259
6/19/09	1400	250	50	0.45	0.48	3,093	552	104
6/20/09	1250	300	100	0.47	0.51	2,677	643	197
6/21/09	600	200	100	0.47	0.51	1,271	424	196
6/22/09	750	100	100	0.47	0.51	1,591	212	196
6/23/09	500	450	100	0.44	0.46	1,126	1,013	218
6/24/09	450	350	150	0.46	0.49	981	763	309
6/25/09	1100	150	50	0.48	0.52	2,307	315	96
6/26/09	400	125	75	0.48	0.52	839	262	144
6/27/09	125	100	25	0.48	0.53	259	207	47
6/28/09	100		25	0.48	0.52	209	0	48
6/29/09	150			0.49	0.54	308	0	0
6/30/09	250	50	25	0.49	0.55	509	102	46
7/1/09	100	75		0.50	0.56	201	151	0
7/2/09	150	25		0.50	0.57	300	50	0
7/3/09	175	50	75	0.50	0.57	349	100	131
7/4/09	60	40	20	0.50	0.57	120	80	35
7/5/09	20	80		0.50	0.57	40	159	0
7/6/09	100	60		0.51	0.59	196	117	0
7/7/09	40	100		0.51	0.59	78	196	0
7/8/09	20			0.51	0.59	39	0	0
7/9/09		10		0.52	0.61	0	19	0
7/10/09	30	20		0.52	0.61	58	39	0
7/11/09	30	30		0.52	0.62	57	57	0
7/12/09				0.53	0.64	0	0	0
7/13/09	20			0.53	0.64	38	0	0
7/14/09	10	10		0.53	0.64	19	19	0
7/15/09				0.52	0.62	0	0	0
7/16/09	10			0.53	0.65	19	0	0
7/17/09				0.53	0.65	0	0	0
7/18/09	5			0.53	0.65	9	0	0
7/19/09	10			0.53	0.64	19	0	0
7/20/09		5		0.54	0.66	0	9	0
7/21/09	5	5		0.54	0.66	9	9	0
7/22/09	5		5	0.54	0.67	9	0	7
7/23/09	5			0.55	0.69	9	0	0
7/24/09	5			0.55	0.68	9	0	0
7/25/09				0.55	0.70	0	0	0
7/26/09				0.55	0.68	0	0	0
7/27/09		2		0.55	0.70	0	4	0
7/28/09				0.55	0.68	0	0	0
7/29/09				0.55	0.68	0	0	0
7/30/09		4		0.55	0.69	0	7	0
7/31/09		2		0.55	0.68	0	4	0
8/1/09				0.55	0.69	0	0	0
8/2/09	2			0.55	0.71	4	0	0
8/3/09			2	0.56	0.71	0	0	3

8/4/09		0.55	0.70	0	0	0
8/5/09		0.56	0.73	0	0	0
8/6/09	2	0.56	0.73	4	0	0
8/7/09		0.56	0.74	0	0	0
8/8/09		0.56	0.74	0	0	0
8/9/09		0.56	0.72	0	0	0
8/10/09		0.56	0.76	0	0	0
8/11/09		0.56	0.76	0	0	0
8/12/09		0.57	0.77	0	0	0
8/13/09		0.56	0.76	0	0	0
8/14/09		0.57	0.77	0	0	0
8/15/09		0.57	0.73	0	0	0
8/16/09	1	0.57	0.73	0	2	0
8/17/09		0.56	0.73	0	0	0
8/18/09		0.56	0.72	0	0	0
8/19/09		0.56	0.71	0	0	0
8/20/09		0.55	0.71	0	0	0
8/21/09		0.55	0.69	0	0	0
8/22/09		0.56	0.71	0	0	0
8/23/09		0.56	0.73	0	0	0
8/24/09		0.56	0.74	0	0	0
8/25/09		0.57	0.75	0	0	0
8/26/09	1	0.57	0.73	2	0	0
8/27/09		0.56	0.74	0	0	0
8/28/09		0.56	0.74	0	0	0
8/29/09		0.57	0.72	0	0	0
8/30/09		0.57	0.72	0	0	0
8/31/09		0.57	0.71	0	0	0