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COMPANY NAME: NW Natural

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Key words: Meter Sampling Program Report, 2011

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May 2, 2012

Public Utility Commission of Oregon
550 Capitol Street, NE, Suite 215
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Attn: Filing Center

Re: RG___: Meter Sampling Program Report for 2011

At the request of Commission Staff, Northwest Natural Gas Company, dba NW Natural (NW Natural or Company), files herewith its 2011 Meter Sampling Program Report.

As required by our Meter Testing Standards and Procedures document, the accuracies of all operating families of diaphragm meters with capacities 1000 ft³/hr and below have been statistically analyzed for year 2011. This analysis utilized all relevant meter tests conducted during the five calendar years between January 1, 2007 and December 31, 2011. The results of this analysis are as follows:

- As of December 31, 2011, we had 690,067 operating meters. These meters formed 523 meter families.
- Over the course of 2011, the company tested 5,428 meters. Over the five-year period of 2007 through 2011, the company has a total of 31,867 meter samples from which to base its results.
- 412 meter families either have sufficient meter samples to establish statistical confidence in their accuracy, or are so new that they do not yet require minimum sampling. These meter families amount to 669,154 meters, or 97.0 percent of the total meter population. The performances of these families are exhibited in Appendix A.
- 7 meter families and 3 sub-families, consisting of a total of 246 meters, are not conforming and have been put on the list to be removed by the end of 2013, per the Meter Sampling Program (MSP) guidelines. The performances of these families are exhibited in Appendix B.
- 9 very small meter families, consisting of 33 meters, will be put on the list to be removed by the end of 2013 because of the impracticality of their further operation within the MSP. That is, regardless of their accuracy, it is more efficient to remove all of them because the minimum sampling size consists of the entire family. The performances of these families are exhibited in Appendix C.

- 95 meter families, consisting of 20,634 meters, could not have their accuracy determined statistically because of insufficient meter test samples. We estimate 804 meters will need to be supplementally sampled this year to determine the status of these families of meters. The performances of these families are exhibited in Appendix D.
- Compared to the results above, our analysis at the beginning of last year resulted in 204 meters being put on the list for removal by the end of 2012 and 1,411 meters needing to be supplementally sampled in 2011 (all of which were sampled, and families determined).

If you have any questions or comments about the 2011 Meter Sampling Program Report, please contact me at (503) 226-4211 ext. 4603.

Sincerely,

/s/ Gary L. Dye

Gary L. Dye
Gas Measurement and
Facility Support Engineer

cc: S.E. Nelson
J.G. Huddleston
G.M. Yoshihara
L.L. Russell
L.M. Dunlap

Appendix A
Meter Families in Conformance

Perf	Alt. Perf	YrSt	Manufacturer	Size	Age	# Meters in Family	# OK	# Fast	# Slow	# Meter Tests
120	0	1970	Rockwell	175	41	750	87	2	2	91
120	0	1971	Rockwell	175	40	619	59			59
120	0	1972	Rockwell	175	39	957	90	6	2	98
120	0	1973	Rockwell	175	38	747	86	3		89
120	0	1974	Rockwell	175	37	2848	369	21	6	396
120	0	1975	Rockwell	175	36	1973	287	29	4	320
120	0	1976	Rockwell	175	35	1220	164	5	4	173
120	0	1977	Rockwell	175	34	1477	157	3		160
120	0	1978	Rockwell	175	33	1622	129	2	1	132
120	0	1979	Rockwell	175	32	1767	127	4	3	134
120	0	1982	Rockwell	175	29	1304	106	3	4	113
120	0	1983	Rockwell	175	28	1501	80			80
120	0	1984	Rockwell	175	27	1590	84	2	3	89
120	0	1985	Rockwell	175	26	2099	127	6	1	134
120	0	1986	Rockwell	175	25	1404	68	1	2	71
120	0	1987	Rockwell	175	24	2415	141		3	144
120	0	1988	Rockwell	175	23	2343	132	2	2	136
120	0	1989	Rockwell	175	22	3738	208	4	3	215
120	0	1990	Rockwell	175	21	3836	211	5	2	218
120	0	1991	Rockwell	175	20	4148	246	2	4	252
120	0	1992	Rockwell	175	19	7186	461	3	3	467
120	0	1993	Rockwell	175	18	2862	122		3	125
120	0	1994	Rockwell	175	17	1496	98		1	99
120	0	1996	Rockwell	175	15	914	71	2		73
120	0	1997	Rockwell	175	14	226	23			23
120	0	1998	Rockwell	175	13	97	21			21
120	0	1999	Rockwell	175	12	5	8			8
120	0	2001	Rockwell	175	10	1				0
120	0	2002	Rockwell	175	9	3				0
120	0	2004	Rockwell	175	7	2				0
120	0	2005	Rockwell	175	6	2				0
120	0	2006	Rockwell	175	5	1				0
120	0	2008	Rockwell	175	3	3	1			1
120	0	2009	Rockwell	175	2	14	5			5
120	0	2010	Rockwell	175	1	2	5			5
125	0	1978	Rockwell	200	33	1698	107	3	2	112
125	0	1979	Rockwell	200	32	211	41	1		42
125	0	1980	Rockwell	200	31	1966	80	1		81
125	0	1981	Rockwell	200	30	2613	116		2	118
125	0	1982	Rockwell	200	29	3276	165			165
125	0	1983	Rockwell	200	28	1889	89			89
125	0	1984	Rockwell	200	27	2242	115	1	1	117

125	0	1987	Rockwell	200	24	653	36			36
125	0	1990	Rockwell	200	21	391	25		1	26
125	0	1991	Rockwell	200	20	765	41			41
125	0	1992	Rockwell	200	19	672	38			38
125	0	1993	Rockwell	200	18	596	34			34
125	0	1994	Rockwell	200	17	489	27		1	28
125	0	1996	Rockwell	200	15	306	37			37
125	0	1997	Rockwell	200	14	146	66	1		67
125	0	1998	Rockwell	200	13	114	39		2	41
125	0	2003	Rockwell	200	8	2				0
125	0	2004	Rockwell	200	7	1				0
125	0	2008	Rockwell	200	3	5	4			4
125	0	2009	Rockwell	200	2	4	1			1
130	0	1971	American	175	40	1204	78	2	2	82
130	0	1972	American	175	39	2856	172	9	4	185
130	0	1974	American	175	37	5146	267	20	2	289
130	0	1977	American	175	34	3497	224	15	4	243
130	0	1979	American	175	32	6753	342	20	8	370
130	0	1980	American	175	31	6604	348	11	3	362
130	0	1981	American	175	30	4882	248	29	5	282
130	0	1982	American	175	29	3916	250	25	5	280
130	0	1983	American	175	28	3590	189	28	5	222
130	0	1984	American	175	27	5127	262	11	7	280
130	0	1985	American	175	26	2254	126	4	4	134
130	0	1986	American	175	25	4275	210	4	7	221
130	0	1987	American	175	24	6309	306	13	5	324
130	0	1988	American	175	23	3357	204	13	3	220
130	0	1989	American	175	22	3535	197	9	4	210
130	0	1990	American	175	21	3352	166	11		177
130	0	1991	American	175	20	5177	261	12	3	276
130	0	1992	American	175	19	1573	131	9	3	143
130	0	1993	American	175	18	3410	168	5	2	175
130	0	1994	American	175	17	2831	98	8	2	108
130	0	1995	American	175	16	647	32			32
130	0	1996	American	175	15	1121	63			63
130	0	2002	American	175	9	3	2			2
130	0	2004	American	175	7	5				0
130	0	2006	American	175	5	4	1			1
130	0	2007	American	175	4	2	5			5
130	0	2008	American	175	3	2	2			2
130	0	2009	American	175	2	20	6			6
140	0	1968	Sprague	175	43	1136	137	1	25	163
140	0	1969	Sprague	175	42	6	11			11
140	0	1971	Sprague	175	40	1072	82	1	9	92
140	0	1972	Sprague	175	39	196	44	1	1	46
140	0	1973	Sprague	175	38	3126	197	2	8	207
140	0	1974	Sprague	175	37	670	60		7	67
140	0	1975	Sprague	175	36	847	78		10	88
140	0	1976	Sprague	175	35	1193	97	3	1	101

140	0	1977	Sprague	175	34	354	45		1	46
140	0	1978	Sprague	175	33	371	41		4	45
140	0	1979	Sprague	175	32	175	43		4	47
140	0	1980	Sprague	175	31	384	50		6	56
140	0	1981	Sprague	175	30	685	67		6	73
140	0	1982	Sprague	175	29	663	51	1	3	55
140	0	1983	Sprague	175	28	961	73		8	81
140	0	1985	Sprague	175	26	1263	101		7	108
140	0	1986	Sprague	175	25	1047	68	2	5	75
140	0	1987	Sprague	175	24	3177	217		7	224
140	0	1988	Sprague	175	23	851	64		2	66
140	0	1989	Sprague	175	22	822	60		6	66
140	0	1990	Sprague	175	21	1156	106	1	6	113
140	0	1991	Sprague	175	20	525	39		2	41
140	0	1992	Sprague	175	19	619	54		3	57
140	0	1993	Sprague	175	18	715	62		5	67
140	0	1994	Sprague	175	17	646	52		5	57
140	0	1997	Sprague	175	14	541	58		3	61
140	0	1998	Sprague	175	13	19	14			14
140	0	2001	Sprague	175	10	1				0
140	0	2002	Sprague	175	9	1				0
140	0	2004	Sprague	175	7	2				0
140	0	2005	Sprague	175	6	1				0
140	0	2007	Sprague	175	4	1				0
140	0	2008	Sprague	175	3	2	3			3
140	0	2009	Sprague	175	2	2	4			4
260	0	1998	Sprague	1000	13	1	1			1
260	0	2003	Sprague	1000	8	1				0
260	0	2004	Sprague	1000	7	1				0
260	0	2005	Sprague	1000	6	1				0
270	0	1998	Schlumberger	1000	13	46	19			19
270	0	2000	Schlumberger	1000	11	36	14		1	15
270	0	2002	Schlumberger	1000	9	20	3			3
270	0	2003	Schlumberger	1000	8	6				0
270	0	2004	Schlumberger	1000	7	1				0
270	0	2005	Schlumberger	1000	6	1	1			1
270	0	2006	Schlumberger	1000	5	1				0
272	0	2003	Actaris	1000	8	2				0
272	0	2004	Actaris	1000	7	57	3			3
300	540	1993	Rockwell	800	18	6	6			6
300	540	1996	Rockwell	800	15	54	44		2	46
300	540	1999	Rockwell	800	12	24	37		3	40
300	540	2000	Rockwell	800	11	57	33	1	4	38
300	540	2002	Rockwell	800	9	16	2			2
300	540	2003	Rockwell	800	8	8	3			3
300	540	2004	Rockwell	800	7	13	2			2
300	540	2005	Rockwell	800	6	22	2			2
305	545	1999	Rockwell	800	12	7	7			7
305	545	2005	Rockwell	800	6	10	1			1

450	0	1993	Schlumberger	400	18	237	41		1	42
450	0	1996	Schlumberger	400	15	334	36		2	38
450	0	1997	Schlumberger	400	14	87	19		1	20
450	0	1998	Schlumberger	400	13	525	53			53
450	0	2000	Schlumberger	400	11	6	6			6
450	0	2002	Schlumberger	400	9	2				0
450	0	2003	Schlumberger	400	8	50	7			7
450	0	2004	Schlumberger	400	7	20	1			1
450	0	2005	Schlumberger	400	6	15	1			1
450	0	2006	Schlumberger	400	5	1				0
450	0	2009	Schlumberger	400	2	1				0
452	0	2003	Actaris	400	8	141	15			15
452	0	2004	Actaris	400	7	516	62		1	63
452	0	2005	Actaris	400	6	32	3			3
452	0	2006	Actaris	400	5	4				0
452	0	2008	Actaris	400	3	1				0
470	472	1982	American	425	29	34	31	2		33
470	472	1983	American	425	28	44	29	1	1	31
470	472	1984	American	425	27	143	30			30
470	472	1985	American	425	26	61	18			18
470	472	1992	American	425	19	188	60	2		62
470	472	1994	American	425	17	311	39			39
470	472	1996	American	425	15	37	38		1	39
470	472	1997	American	425	14	385	59	2		61
470	472	1999	American	425	12	311	38			38
470	472	2000	American	425	11	510	33		1	34
470	472	2002	American	425	9	500	54			54
470	472	2003	American	425	8	290	21			21
470	472	2004	American	425	7	113	11			11
470	472	2005	American	425	6	39	3			3
470	472	2006	American	425	5	77	5			5
470	472	2007	American	425	4	276	18			18
470	472	2008	American	425	3	23				0
470	472	2009	American	425	2	5				0
470	472	2010	American	425	1	2				0
470	472	2011	American	425	0	1	1			1
471	0	2005	American	425	6	1110	71	2		73
471	0	2006	American	425	5	799	44	1	1	46
471	0	2007	American	425	4	590	50		1	51
471	0	2008	American	425	3	79	8			8
471	0	2009	American	425	2	4				0
471	0	2010	American	425	1	110	8	1		9
475	0	2005	American	630	6	335	14			14
475	0	2006	American	630	5	681	43	1		44
475	0	2007	American	630	4	696	19			19
475	0	2008	American	630	3	1179	43	1		44
475	0	2009	American	630	2	1023	42	2		44
475	0	2010	American	630	1	717	17			17
475	0	2011	American	630	0	1127	12			12

480	486	1977	American	800	34	9	9			9
480	486	1989	American	800	22	47	31	2	2	35
480	486	1991	American	800	20	94	45	2	1	48
480	486	1996	American	800	15	21	33	2	1	36
480	486	1997	American	800	14	26	31	1	2	34
480	486	1998	American	800	13	15	21	1		22
480	486	1999	American	800	12	73	18		1	19
480	486	2000	American	800	11	62	35	2	3	40
480	486	2002	American	800	9	49	7			7
480	486	2003	American	800	8	20	6			6
480	486	2004	American	800	7	25	7			7
480	486	2005	American	800	6	18	5			5
480	486	2006	American	800	5	3				0
480	486	2007	American	800	4	1	3			3
485	0	1980	American	800	31	40	15		1	16
485	0	1982	American	800	29	115	62	5	4	71
485	0	1984	American	800	27	113	52	3	4	59
485	0	1996	American	800	15	21	24		2	26
485	0	1997	American	800	14	18	28	1		29
485	0	2005	American	800	6	47	4	1		5
485	0	2011	American	800	0	1				0
490	0	2007	Sprague	305	4	1				0
500	502	1990	American	1000	21	10	9			9
500	502	1992	American	1000	19	10	9			9
500	502	1994	American	1000	17	7	6			6
500	502	1995	American	1000	16	2	3			3
500	502	1996	American	1000	15	23	13			13
500	502	1997	American	1000	14	28	25	1	1	27
500	502	1998	American	1000	13	148	66	4		70
500	502	1999	American	1000	12	44	32	1		33
500	502	2002	American	1000	9	74	14			14
500	502	2003	American	1000	8	47	8		1	9
500	502	2005	American	1000	6	14	6			6
500	502	2006	American	1000	5	4				0
505	507	1994	American	1000	17	5	5			5
505	507	1996	American	1000	15	4	9		1	10
505	507	2002	American	1000	9	8	2			2
505	507	2003	American	1000	8	11	2			2
505	507	2004	American	1000	7	9				0
505	507	2005	American	1000	6	419	47	5	1	53
505	507	2006	American	1000	5	679	126	7	1	134
505	507	2007	American	1000	4	484	61	1		62
505	507	2008	American	1000	3	412	17			17
505	507	2009	American	1000	2	337	17			17
505	507	2010	American	1000	1	228	3			3
505	507	2011	American	1000	0	443	6			6
510	515	1976	Rockwell	310	35	351	76	3	1	80
510	515	1977	Rockwell	310	34	210	46		2	48
510	515	1980	Rockwell	310	31	187	25		1	26

510	515	1981	Rockwell	310	30	294	38		4	42
510	515	1982	Rockwell	310	29	133	27		2	29
510	515	1983	Rockwell	310	28	208	50	1	5	56
510	515	1985	Rockwell	310	26	56	29	1	3	33
510	515	1987	Rockwell	310	24	296	42		4	46
510	515	1988	Rockwell	310	23	163	54	2	4	60
510	515	1990	Rockwell	310	21	356	46	1	4	51
510	515	1991	Rockwell	310	20	255	34		1	35
510	515	1992	Rockwell	310	19	193	51	2	3	56
510	515	1993	Rockwell	310	18	166	26		1	27
510	515	1996	Rockwell	310	15	86	22		1	23
510	515	1997	Rockwell	310	14	21	13			13
510	515	2000	Rockwell	310	11	1	1			1
510	515	2002	Rockwell	310	9	3				0
510	515	2008	Rockwell	310	3	1	1			1
510	515	2009	Rockwell	310	2	1	1			1
510	515	2010	Rockwell	310	1	1				0
510	515	2011	Rockwell	310	0	1	2			2
520	0	1976	Rockwell	415	35	91	46			46
520	0	1977	Rockwell	415	34	64	22		1	23
520	0	1978	Rockwell	415	33	59	37			37
520	0	1979	Rockwell	415	32	122	25		1	26
520	0	1980	Rockwell	415	31	127	53	2	1	56
520	0	1981	Rockwell	415	30	284	55	1	4	60
520	0	1982	Rockwell	415	29	66	40	2	3	45
520	0	1983	Rockwell	415	28	43	15		1	16
520	0	1988	Rockwell	415	23	76	29		1	30
520	0	1994	Rockwell	415	17	118	27		1	28
520	0	1995	Rockwell	415	16	389	54	1	5	60
520	0	1996	Rockwell	415	15	195	32			32
520	0	1997	Rockwell	415	14	120	26		2	28
520	0	1998	Rockwell	415	13	50	19			19
520	0	2000	Rockwell	415	11	153	40			40
520	0	2002	Rockwell	415	9	118	10			10
520	0	2003	Rockwell	415	8	246	22	1	1	24
520	0	2004	Rockwell	415	7	134	7			7
520	0	2005	Rockwell	415	6	73	5	1		6
520	0	2006	Rockwell	415	5	2	1			1
520	0	2007	Rockwell	415	4	2				0
520	0	2009	Rockwell	415	2	3				0
520	0	2011	Rockwell	415	0	1	1			1
530	0	1998	Rockwell	1000	13	2	5		1	6
530	0	2002	Rockwell	1000	9	4				0
530	0	2003	Rockwell	1000	8	1				0
530	0	2005	Rockwell	1000	6	1				0
535	0	1985	Rockwell	1000	26	1	1			1
555	0	1981	American	310	30	58	37	2		39
555	0	1983	American	310	28	143	26			26
555	0	1984	American	310	27	248	52	1		53

555	0	1985	American	310	26	166	32			32
555	0	1986	American	310	25	133	45	1		46
555	0	1987	American	310	24	83	36	1		37
555	0	1988	American	310	23	12	11			11
555	0	1989	American	310	22	47	37			37
555	0	1991	American	310	20	30	27	1		28
555	0	1994	American	310	17	21	13			13
555	0	1996	American	310	15	15	16	1	1	18
555	0	1997	American	310	14	50	19			19
555	0	2000	American	310	11	1	1			1
555	0	2002	American	310	9	1				0
555	0	2003	American	310	8	1	1			1
555	0	2004	American	310	7	2	2			2
555	0	2008	American	310	3	1				0
555	0	2009	American	310	2	1				0
560	0	1985	American	250	26	1543	66			66
560	0	1986	American	250	25	6568	318	3	2	323
560	0	1988	American	250	23	3324	128		2	130
560	0	1989	American	250	22	7404	282	6	3	291
560	0	1990	American	250	21	6686	318	1	6	325
560	0	1991	American	250	20	5925	238	6	1	245
560	0	1992	American	250	19	4994	218	1	5	224
560	0	1993	American	250	18	4273	116		4	120
560	0	1994	American	250	17	6389	158	1	4	163
560	0	1995	American	250	16	8545	214	3	2	219
560	0	1996	American	250	15	11545	237	4	2	243
560	0	1997	American	250	14	15631	339	9	2	350
560	0	1998	American	250	13	14939	305	6	3	314
560	0	1999	American	250	12	11565	219	6	2	227
560	0	2000	American	250	11	11611	226			226
560	0	2001	American	250	10	9711	181	1		182
560	0	2002	American	250	9	8708	159			159
560	0	2003	American	250	8	3376	79	4	2	85
560	0	2004	American	250	7	1346	32	3		35
560	0	2005	American	250	6	111				0
560	0	2006	American	250	5	690	27			27
560	0	2007	American	250	4	224	13			13
560	0	2008	American	250	3	6	3			3
560	0	2010	American	250	1	2	1			1
560	0	2011	American	250	0	2	4			4
561	0	2002	American	250	9	1				0
561	0	2003	American	250	8	1				0
561	0	2004	American	250	7	4815	78	12		90
561	0	2005	American	250	6	2389	47	2		49
561	0	2006	American	250	5	22115	435	2	1	438
561	0	2007	American	250	4	22732	412	2	3	417
561	0	2008	American	250	3	23755	602	2		604
561	0	2009	American	250	2	14704	206	4		210
561	0	2010	American	250	1	10430	114			114

561	0	2011	American	250	0	10953	69			69
570	0	1989	Rockwell	275	22	807	65	2		67
570	0	1990	Rockwell	275	21	5598	173	1	1	175
570	0	1991	Rockwell	275	20	3038	87	1		88
570	0	1993	Rockwell	275	18	97	24		2	26
570	0	1994	Rockwell	275	17	5248	93	1		94
570	0	1995	Rockwell	275	16	6694	132		2	134
570	0	1996	Rockwell	275	15	7917	156	1	4	161
570	0	1997	Rockwell	275	14	2438	47		1	48
570	0	1998	Rockwell	275	13	5612	97	2	2	101
570	0	1999	Rockwell	275	12	10872	200	1		201
570	0	2000	Rockwell	275	11	8703	133	1		134
570	0	2001	Rockwell	275	10	8908	135	1		136
570	0	2002	Rockwell	275	9	11106	182	1	1	184
570	0	2003	Rockwell	275	8	20314	373	1	1	375
570	0	2004	Rockwell	275	7	3697	77		1	78
570	0	2005	Rockwell	275	6	22	3			3
570	0	2006	Rockwell	275	5	8	2			2
570	0	2007	Rockwell	275	4	7				0
570	0	2008	Rockwell	275	3	6	1			1
570	0	2009	Rockwell	275	2	17				0
570	0	2010	Rockwell	275	1	2	3			3
572	0	2004	Invensys	275	7	14274	236	1	2	239
572	0	2005	Invensys	275	6	25378	504	1	3	508
572	0	2006	Invensys	275	5	8385	155		1	156
572	0	2007	Invensys	275	4	24				0
572	0	2008	Invensys	275	3	79	3			3
572	0	2009	Invensys	275	2	804	78			78
572	0	2010	Invensys	275	1	17	6			6
572	0	2011	Invensys	275	0	90	6			6
580	0	1991	Sprague	175	20	1	16		1	17
580	0	1993	Sprague	175	18	1	10			10
580	0	2007	Sprague	175	4	1				0
585	0	1992	Sprague	250	19	2207	111			111
585	0	1993	Sprague	250	18	4013	150		1	151
585	0	1994	Sprague	250	17	1738	59			59
585	0	1995	Sprague	250	16	1589	87			87
585	0	1996	Sprague	250	15	4597	103		1	104
585	0	1997	Sprague	250	14	6133	122		1	123
585	0	1998	Sprague	250	13	5619	137			137
585	0	1999	Sprague	250	12	273	23			23
585	0	2000	Sprague	250	11	68	22			22
585	0	2002	Sprague	250	9	138	1			1
585	0	2003	Sprague	250	8	33				0
585	0	2004	Sprague	250	7	95	1			1
585	0	2006	Sprague	250	5	2	1			1
585	0	2009	Sprague	250	2	4				0
590	0	1988	Lancaster	250	23	100	20			20
590	0	1989	Lancaster	250	22	1419	97		2	99

590	0	1990	Lancaster	250	21	1418	106	1	3	110
590	0	1991	Lancaster	250	20	1848	165	1	1	167
590	0	1992	Lancaster	250	19	2806	177		2	179
590	0	1993	Lancaster	250	18	2971	124	2	3	129
590	0	1994	Lancaster	250	17	4705	210	3	6	219
590	0	1995	Lancaster	250	16	5164	196	1	8	205
590	0	1996	Lancaster	250	15	68	48	2		50
590	0	1997	Lancaster	250	14	2209	70			70
590	0	1998	Lancaster	250	13	42	23			23
590	0	1999	Lancaster	250	12	180	23			23
590	0	2002	Lancaster	250	9	2				0
590	0	2003	Lancaster	250	8	1				0
590	0	2004	Lancaster	250	7	1				0
590	0	2005	Lancaster	250	6	1				0
590	0	2006	Lancaster	250	5	2				0
590	0	2008	Lancaster	250	3	1	2			2
590	0	2009	Lancaster	250	2	3				0
590	0	2010	Lancaster	250	1	1				0
595	600	1998	Schlumberger	250	13	1	406	2	12	420
595	600	1999	Schlumberger	250	12	1902	1109	8	16	1133
595	600	2000	Schlumberger	250	11	3797	447	6	6	459
595	600	2001	Schlumberger	250	10	4188	294	2	13	309
595	600	2002	Schlumberger	250	9	3633	262		15	277
595	600	2003	Schlumberger	250	8	85	20		1	21
595	600	2004	Schlumberger	250	7	50	11			11
595	600	2005	Schlumberger	250	6	2				0
595	600	2008	Schlumberger	250	3	1	2			2
			Total			669154	28354	583	546	29483

**Appendix B
Meter Families not Conforming (to be removed)**

Perf	Alt. Perf	YrSt	Manuf.	Size	Age	# Meters in Family	Subfamily
120	0	2011	Rockwell	175	0	1	
130	0	2011	American	175	0	1	
130	0	2010	American	175	1	1	
485	0	2002	American	800	9	5	
125	0	1985	Rockwell	200	26	2	Meter# 496792 - 496801
272	0	2005	Actaris	1000	6	14	
470	472	1971	American	425	40	33	
485	0	2004	American	800	7	25	
561	0	2004	American	250	7	164	Meter# 877021 - 877181; Meter# 878600 - 878615
	Total					246	

**Appendix C
Meter Families to be Removed due to Sampling Impracticality**

Perf	Alt. Perf	YrSt	Manuf.	Size	Age	# Meters in Family
130	0	2001	American	175	10	5
470	472	1974	American	425	37	4
470	472	1981	American	425	30	4
480	486	1971	American	800	40	5
485	0	1991	American	800	20	1
505	507	1984	American	1000	27	6
505	507	2001	American	1000	10	4
530	0	1989	Rockwell	1000	22	1
561	0	2001	American	250	10	3
	Total					33

Appendix D
Meter Families to be Supplementally Sampled

Perf	Alt. Perf	YrSt	Manufacturer	Size	Age	# Meters in Family	# Meter Tests	Meter Test Deficit
120	0	1967	Rockwell	175	44	110	16	5
120	0	1968	Rockwell	175	43	114	34	1
120	0	1969	Rockwell	175	42	285	64	16
120	0	1980	Rockwell	175	31	1169	69	3
120	0	1981	Rockwell	175	30	857	60	30
120	0	1995	Rockwell	175	16	434	19	5
125	0	1985	Rockwell	200	26	1838	95	5
125	0	1986	Rockwell	200	25	541	21	3
125	0	1988	Rockwell	200	23	500	31	18
125	0	1989	Rockwell	200	22	619	23	1
125	0	1995	Rockwell	200	16	147	9	13
125	0	1999	Rockwell	200	12	186	18	4
130	0	1973	American	175	38	854	49	16
130	0	1975	American	175	36	54	5	13
130	0	1976	American	175	35	1526	90	10
130	0	1978	American	175	33	1711	97	3
130	0	1997	American	175	14	275	22	1
130	0	1998	American	175	13	21	12	1
140	0	1970	Sprague	175	41	432	64	2
140	0	1984	Sprague	175	27	817	69	21
270	0	2001	Schlumberger	1000	10	81	15	4
300	540	1997	Rockwell	800	14	41	39	1
300	540	2001	Rockwell	800	10	23	5	18
450	0	1994	Schlumberger	400	17	8	0	1
450	0	1999	Schlumberger	400	12	127	20	1
450	0	2001	Schlumberger	400	10	8	0	1
470	472	1973	American	425	38	25	1	12
470	472	1986	American	425	25	102	24	19
470	472	1987	American	425	24	203	37	1
470	472	1988	American	425	23	95	17	3
470	472	1989	American	425	22	63	9	9
470	472	1990	American	425	21	77	47	3
470	472	1991	American	425	20	62	23	12
470	472	1993	American	425	18	115	19	2
470	472	1995	American	425	16	122	13	8
470	472	1998	American	425	13	262	34	8
470	472	2001	American	425	10	117	12	9
471	0	2011	American	425	0	123	1	6
480	486	1973	American	800	38	10	7	1
480	486	1976	American	800	35	17	8	3
480	486	1978	American	800	33	13	6	7

480	486	1990	American	800	21	52	31	2
480	486	1992	American	800	19	67	15	35
480	486	1993	American	800	18	95	27	11
480	486	1995	American	800	16	51	14	26
480	486	2001	American	800	10	45	8	9
485	0	1978	American	800	33	16	8	8
485	0	1979	American	800	32	32	6	9
485	0	1981	American	800	30	63	28	12
485	0	1983	American	800	28	89	45	5
485	0	1985	American	800	26	59	24	16
485	0	1987	American	800	24	65	28	12
485	0	1993	American	800	18	7	1	5
485	0	1994	American	800	17	9	5	4
485	0	1995	American	800	16	34	21	4
485	0	2001	American	800	10	11	1	7
500	502	1991	American	1000	20	22	14	7
500	502	1993	American	1000	18	21	11	3
500	502	2000	American	1000	11	59	15	3
500	502	2001	American	1000	10	34	7	8
505	507	1980	American	1000	31	19	11	2
505	507	1981	American	1000	30	30	10	4
505	507	1982	American	1000	29	17	9	5
505	507	1985	American	1000	26	13	2	7
510	515	1973	Rockwell	310	38	160	43	2
510	515	1974	Rockwell	310	37	72	33	17
510	515	1975	Rockwell	310	36	70	30	20
510	515	1978	Rockwell	310	33	185	29	9
510	515	1979	Rockwell	310	32	246	36	4
510	515	1984	Rockwell	310	27	37	30	2
510	515	1986	Rockwell	310	25	40	27	10
510	515	1989	Rockwell	310	22	142	59	1
510	515	1994	Rockwell	310	17	88	40	7
510	515	1995	Rockwell	310	16	93	13	7
520	0	1973	Rockwell	415	38	15	2	8
520	0	1984	Rockwell	415	27	36	10	5
520	0	1986	Rockwell	415	25	12	7	2
520	0	1987	Rockwell	415	24	78	29	5
520	0	1989	Rockwell	415	22	139	54	6
520	0	1991	Rockwell	415	20	307	44	36
520	0	1992	Rockwell	415	19	99	37	13
520	0	1993	Rockwell	415	18	55	14	4
520	0	1999	Rockwell	415	12	434	42	38
520	0	2001	Rockwell	415	10	504	37	53
555	0	1980	American	310	31	111	19	2
555	0	1982	American	310	29	164	19	3
555	0	1990	American	310	21	41	15	20
555	0	1993	American	310	18	12	7	5
555	0	1995	American	310	16	17	10	1
560	0	1987	American	250	24	515	39	2

570	0	1988	Rockwell	275	23	575	14	10
570	0	1992	Rockwell	275	19	200	19	3
585	0	1988	Sprague	250	23	210	21	1
585	0	1991	Sprague	250	20	787	21	3
585	0	2001	Sprague	250	10	96	0	1
			Total			20634	2345	804