APPENDIX D: SEDIMENT INVESTIGATIONS

Wolman Pebble Counts and Grain Size Distribution Plots

PEBBLE COUNT SUMMARY INFORMATION

2002			% finer											
Sediment Size Description		Sieve Size (in)	Pipeline Pool Tailout	KP 1.0 Run	KP 2.0 Run	KP 3.0 Run / Glide	KP 4.0 Run	KP 4.6 Glide	KP 5.2 Pool Tailout	KP 6.0 Glide	KP 7.0 Glide	KP 8.0 Run	KP 9.0 Riffle	KP 10.0 Pool Tailout
Cobble	Small	3.94	94.05	67.68	54.33	52.57	62.32	63.92	87.20	66.02	72.00	66.54	41.74	59.71
Gravel	Coarse	1.97	73.02	50.57	31.50	28.85	47.54	48.24	62.80	39.45	40.00	44.88	26.03	32.37
	Medium	0.98	48.02	31.56	15.75	13.04	35.56	32.16	32.80	19.14	20.00	23.23	17.36	17.99
	Fine	0.49	33.33	18.25	10.63	5.53	19.72	17.25	13.20	12.89	12.00	9.84	11.16	12.23
Sand	Coarse	0.25	8.33	7.98	3.94	1.58	5.99	3.92	1.60	2.73	6.00	3.94	2.48	7.91
	Medium	0.05	0.79	2.66	0.00	1.19	1.41	1.96	0.00	0.00	0.00	0.00	0.00	0.00
	Fine	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fines		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Particle Size (in)											
d_{50}			1.04	1.93	3.45	3.65	2.21	2.13	1.46	2.59	2.44	2.32	4+	3.08

2004			% finer		
Sediment Size Description		Sieve Size (in)	KP 1.7 PC#1	KP 1.9 PC#2	KP 3.0 PC#3
Boulder		102.4	100.00	100.00	100.00
		51.2	100.00	100.00	100.00
		25.6	100.00	100.00	96.25
Cobble	Large	12.8	97.12	100.00	95.00
	Small	6.4	97.12	100.00	88.75
Gravel	Very Coarse	3.2	85.58	94.00	75.00
	Coarse	1.6	47.12	66.00	41.25
	Medium	0.8	16.35	23.00	13.75
	Fine	0.4	3.85	1.00	5.00
Sand	Coarse	0.2	1.92	0.00	1.25
	Medium	0.1	0.96	0.00	0.00
Fines		0	0.00	0.00	0.00
			Particle Size (in)		
d_{50}			1.69	1.24	1.91

2005			% finer											
Sediment Size Description		Sieve Size (in)	KP 1.0 Run	KP 1.9 Run	KP 3.0 Run / Glide	KP 4.0 Run	KP 4.6 Glide	KP 5.2 Pool Tailout	KP 6.0 Glide	KP 7.0 Glide	KP 7.0 Side	KP 8.0 Run	KP 9.0 Riffle	KP 10.0 Pool Tailout
Boulder		102.4	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
		51.2	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
		25.6	97.17	99.07	98.68	99.03	99.04	100.00	98.32	98.85	100.00	100.00	94.34	100.00
Cobble	Large	12.8	85.85	95.37	97.37	90.29	91.35	99.18	94.96	94.25	100.00	95.28	84.91	97.10
	Small	6.4	72.64	92.59	93.42	74.76	74.04	94.26	79.83	86.21	96.77	83.02	70.75	86.96
Gravel	Very Coarse	3.2	51.89	79.63	83.55	64.08	69.23	81.15	58.82	65.52	70.97	57.55	58.49	66.67
	Coarse	1.6	36.79	40.74	32.24	33.01	37.50	40.16	30.25	35.63	41.94	30.19	37.74	42.03
	Medium	0.8	24.53	13.89	9.21	12.62	10.58	9.02	13.45	10.34	22.58	20.75	21.70	11.59
	Fine	0.4	15.09	3.70	5.26	4.85	6.73	0.82	9.24	4.60	19.35	10.38	16.04	4.35
Sand	Coarse	0.2	8.49	3.70	2.63	3.88	3.85	0.00	5.04	1.15	16.13	0.94	9.43	2.90
	Medium	0.1	7.55	2.78	1.32	3.88	3.85	0.00	5.04	1.15	12.90	0.94	6.60	1.45
Fines		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Particle Size (in)											
d_{50}			2.93	1.89	2.03	2.34	2.10	1.89	2.58	2.23	1.94	2.64	2.41	2.00

WOLMAN PEBBLE COUNT DATA

Project: Green River
Date: 7/29/2005
Sample Number: WPC1
Assumed Specific Weight: 2.65
Location: KP 1.0
Notes:
Approx. 10' upstream of USGS Palmer Gage Cableway

< diam. 1/10 in	< diam. mm	Avg diam. mm	Rocks #	Incr. # %	Finer %
1	2.54	1.27	8	7.55	7.55
2	5.08	3.81	1	0.94	8.49
4	10.16	7.62	7	6.60	15.09
8	20.32	15.24	10	9.43	24.53
16	40.64	30.48	13	12.26	36.79
32	81.28	60.96	16	15.09	51.89
64	162.56	121.92	22	20.75	72.64
128	325.12	243.84	14	13.21	85.85
256	650.24	487.68	12	11.32	97.17
512	1300.48	975.36	3	2.83	100.00
1024	2600.96	1950.72	0	0.00	100.00
sum			106	100	

Project: Green River
Date: 7/29/2005
Sample Number: WPC2
Assumed Specific Weight: 2.65
Location: KP 1.9
Notes:
Depth too deep near RT bank, measured boulders by sight

< diam. 1/10 in	< diam. mm	Avg diam. mm	Rocks #	Incr. # %	Finer %
1	2.54	1.27	3	2.78	2.78
2	5.08	3.81	1	0.93	3.70
4	10.16	7.62	0	0.00	3.70
8	20.32	15.24	11	10.19	13.89
16	40.64	30.48	29	26.85	40.74
32	81.28	60.96	42	38.89	79.63
64	162.56	121.92	14	12.96	92.59
128	325.12	243.84	3	2.78	95.37
256	650.24	487.68	4	3.70	99.07
512	1300.48	975.36	1	0.93	100.00
1024	2600.96	1950.72	0	0.00	100.00
sum			108	100	

Project: Green River
Date: 7/29/2005
Sample Number: WPC3
Assumed Specific Weight: 2.65
Location: KP 3.0
Notes:

< diam. 1/10 in	< diam. mm	Avg diam. mm	Rocks #	Incr. # %	Finer %
1	2.54	1.27	2	1.32	1.32
2	5.08	3.81	2	1.32	2.63
4	10.16	7.62	4	2.63	5.26
8	20.32	15.24	6	3.95	9.21
16	40.64	30.48	35	23.03	32.24
32	81.28	60.96	78	51.32	83.55
64	162.56	121.92	15	9.87	93.42
128	325.12	243.84	6	3.95	97.37
256	650.24	487.68	2	1.32	98.68
512	1300.48	975.36	2	1.32	100.00
1024	2600.96	1950.72	0	0.00	100.00
sum			152	100	

Project: Green River
Date: 7/29/2005
Sample Number: WPC4
Assumed Specific Weight: 2.65
Location: KP 4.0
Notes:
d/s of main and side channel convergence
Just u/s of private property stairway

< diam. 1/10 in	< diam. mm	Avg diam. mm	Rocks #	Incr. # %	Finer %
1	2.54	1.27	4	3.88	3.88
2	5.08	3.81	0	0.00	3.88
4	10.16	7.62	1	0.97	4.85
8	20.32	15.24	8	7.77	12.62
16	40.64	30.48	21	20.39	33.01
32	81.28	60.96	32	31.07	64.08
64	162.56	121.92	11	10.68	74.76
128	325.12	243.84	16	15.53	90.29
256	650.24	487.68	9	8.74	99.03
512	1300.48	975.36	1	0.97	100.00
1024	2600.96	1950.72	0	0.00	100.00
sum			103	100	

Project: Green River
Date: 7/29/2005
Sample Number: WPC5
Assumed Specific Weight: 2.65
Location: KP 4.6
Notes:
Sampled rocks and classified as Nourishment (round), Native (angular), and Undetermined
Sample 1 (ZAC): 20/4/10
Sample 2 (DDK): 25/7/8
Sample 3 (ZAC): 14/9/9
Sample 4 (ZAC): 16/6/6
Sample 5 (DDK): 10/6/8

< diam. 1/10 in	< diam. mm	Avg diam. mm	Rocks #	Incr. # %	Finer %
1	2.54	1.27	4	3.85	3.85
2	5.08	3.81	0	0.00	3.85
4	10.16	7.62	3	2.88	6.73
8	20.32	15.24	4	3.85	10.58
16	40.64	30.48	28	26.92	37.50
32	81.28	60.96	33	31.73	69.23
64	162.56	121.92	5	4.81	74.04
128	325.12	243.84	18	17.31	91.35
256	650.24	487.68	8	7.69	99.04
512	1300.48	975.36	1	0.96	100.00
1024	2600.96	1950.72	0	0.00	100.00
sum			104	100	

Project: Green River
Date: 7/29/2005
Sample Number: WPC6
Assumed Specific Weight: 2.65
Location: KP 5.2
Notes:
Native (angular) to Nourishment (rounded) = 44:66

< diam. 1/10 in	< diam. mm	Avg diam. mm	Rocks #	Incr. # %	Finer %
1	2.54	1.27	0	0.00	0.00
2	5.08	3.81	0	0.00	0.00
4	10.16	7.62	1	0.82	0.82
8	20.32	15.24	10	8.20	9.02
16	40.64	30.48	38	31.15	40.16
32	81.28	60.96	50	40.98	81.15
64	162.56	121.92	16	13.11	94.26
128	325.12	243.84	6	4.92	99.18
256	650.24	487.68	1	0.82	100.00
512	1300.48	975.36	0	0.00	100.00
1024	2600.96	1950.72	0	0.00	100.00
sum			122	100	

Project: Green River
Date: 7/29/2005
Sample Number: WPC7
Assumed Specific Weight: 2.65
Location: KP 6.0
Notes:
Native (angular) to Nourishment (rounded) = 41:50

< diam. 1/10 in	< diam. mm	Avg diam. mm	Rocks #	Incr. # %	Finer %
1	2.54	1.27	6	5.04	5.04
2	5.08	3.81	0	0.00	5.04
4	10.16	7.62	5	4.20	9.24
8	20.32	15.24	5	4.20	13.45
16	40.64	30.48	20	16.81	30.25
32	81.28	60.96	34	28.57	58.82
64	162.56	121.92	25	21.01	79.83
128	325.12	243.84	18	15.13	94.96
256	650.24	487.68	4	3.36	98.32
512	1300.48	975.36	2	1.68	100.00
1024	2600.96	1950.72	0	0.00	100.00
sum			119	100	

Project: Green River
Date: 7/29/2005
Sample Number: WPC8
Assumed Specific Weight: 2.65
Location: KP 7.0
Notes:
Native (angular) to Nourishment (rounded) = 18:9 (SC), 41:31 (MC)
Side channel located on RT bank

SIDE CHANNEL

< diam. 1/10 in	< diam. mm	Avg diam. mm	Rocks #	Incr. # %	Finer %
1	2.54	1.27	4	12.90	12.90
2	5.08	3.81	1	3.23	16.13
4	10.16	7.62	1	3.23	19.35
8	20.32	15.24	1	3.23	22.58
16	40.64	30.48	6	19.35	41.94
32	81.28	60.96	9	29.03	70.97
64	162.56	121.92	8	25.81	96.77
128	325.12	243.84	1	3.23	100.00
256	650.24	487.68	0	0.00	100.00
512	1300.48	975.36	0	0.00	100.00
1024	2600.96	1950.72	0	0.00	100.00
sum			31	100	

MAIN CHANNEL

< diam. 1/10 in	< diam. mm	Avg diam. mm	Rocks #	Incr. # %	Finer %
1	2.54	1.27	1	1.15	1.15
2	5.08	3.81	0	0.00	1.15
4	10.16	7.62	3	3.45	4.60
8	20.32	15.24	5	5.75	10.34
16	40.64	30.48	22	25.29	35.63
32	81.28	60.96	26	29.89	65.52
64	162.56	121.92	18	20.69	86.21
128	325.12	243.84	7	8.05	94.25
256	650.24	487.68	4	4.60	98.85
512	1300.48	975.36	1	1.15	100.00
1024	2600.96	1950.72	0	0.00	100.00
sum			87	100	

Project: Green River
Date: 7/29/2005
Sample Number: WPC11
Assumed Specific Weight: 2.65
Location: KP 8.0
Notes:

< diam. 1/10 in	< diam. mm	Avg diam. mm	Rocks #	Incr. # %	Finer %
1	2.54	1.27	1	0.94	0.94
2	5.08	3.81	0	0.00	0.94
4	10.16	7.62	10	9.43	10.38
8	20.32	15.24	11	10.38	20.75
16	40.64	30.48	10	9.43	30.19
32	81.28	60.96	29	27.36	57.55
64	162.56	121.92	27	25.47	83.02
128	325.12	243.84	13	12.26	95.28
256	650.24	487.68	5	4.72	100.00
512	1300.48	975.36	0	0.00	100.00
1024	2600.96	1950.72	0	0.00	100.00
sum			106	100	

Project: Green River
Date: 7/29/2005
Sample Number: WPC9
Assumed Specific Weight: 2.65
Location: KP 9.0
Notes:
Approx. 100' d/s of pipeline
Skipped pipeline Wolman Survey due to deep scour holes
Large bedrock formation near LT bank
6 Wolman samples resulted in bedrock and were counted as 512+

< diam. 1/10 in	< diam. mm	Avg diam. mm	Rocks #	Incr. # %	Finer %
1	2.54	1.27	7	6.60	6.60
2	5.08	3.81	3	2.83	9.43
4	10.16	7.62	7	6.60	16.04
8	20.32	15.24	6	5.66	21.70
16	40.64	30.48	17	16.04	37.74
32	81.28	60.96	22	20.75	58.49
64	162.56	121.92	13	12.26	70.75
128	325.12	243.84	15	14.15	84.91
256	650.24	487.68	10	9.43	94.34
512	1300.48	975.36	6	5.66	100.00
1024	2600.96	1950.72	0	0.00	100.00
sum			106	100	

Project: Green River
Date: 7/29/2005
Sample Number: WPC10
Assumed Specific Weight: 2.65
Location: KP 10.0
Notes:
100' d/s of 10.0 on tailout
1/2 to 3/4 of stream is bedrock
46 Wolman samples resulted in bedrock and were counted as 512+

< diam. 1/10 in	< diam. mm	Avg diam. mm	Rocks #	Incr. # %	Finer %
1	2.54	1.27	1	0.87	0.87
2	5.08	3.81	1	0.87	1.74
4	10.16	7.62	1	0.87	2.61
8	20.32	15.24	5	4.35	6.96
16	40.64	30.48	21	18.26	25.22
32	81.28	60.96	17	14.78	40.00
64	162.56	121.92	14	12.17	52.17
128	325.12	243.84	7	6.09	58.26
256	650.24	487.68	2	1.74	60.00
512	1300.48	975.36	46	40.00	100.00
1024	2600.96	1950.72	0	0.00	100.00
sum			115	100	

GRAIN SIZE PLOTS

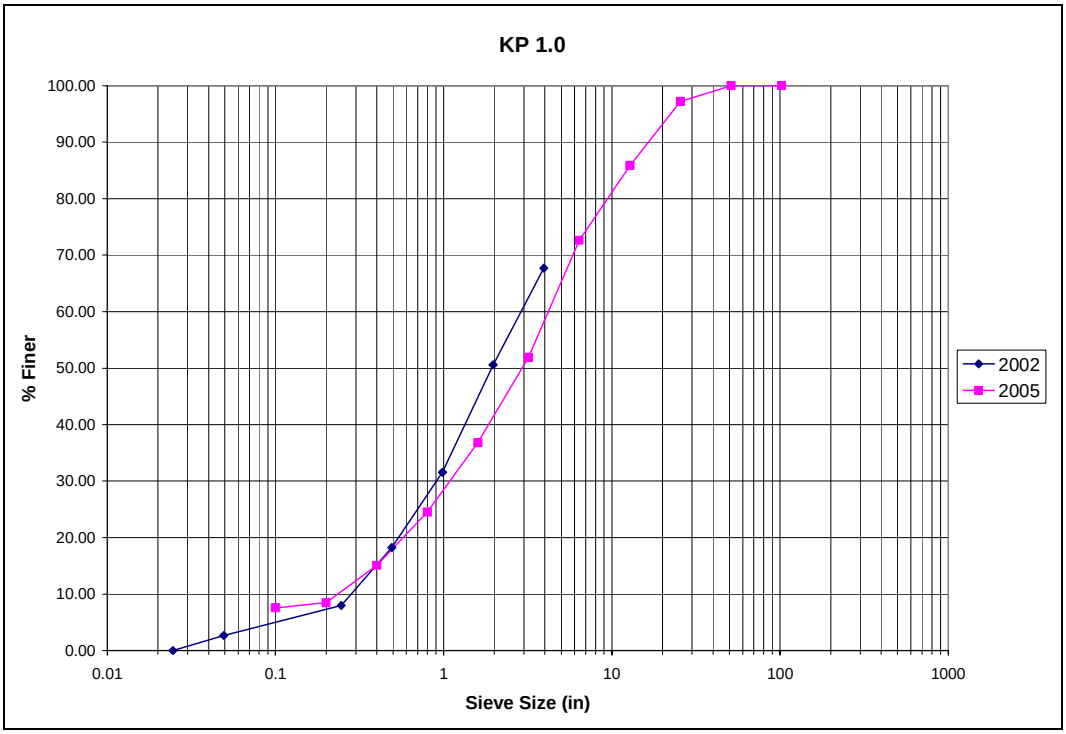

FIGURE 1: KP 1.0 BED MATERIAL SIZE DISTRIBUTION

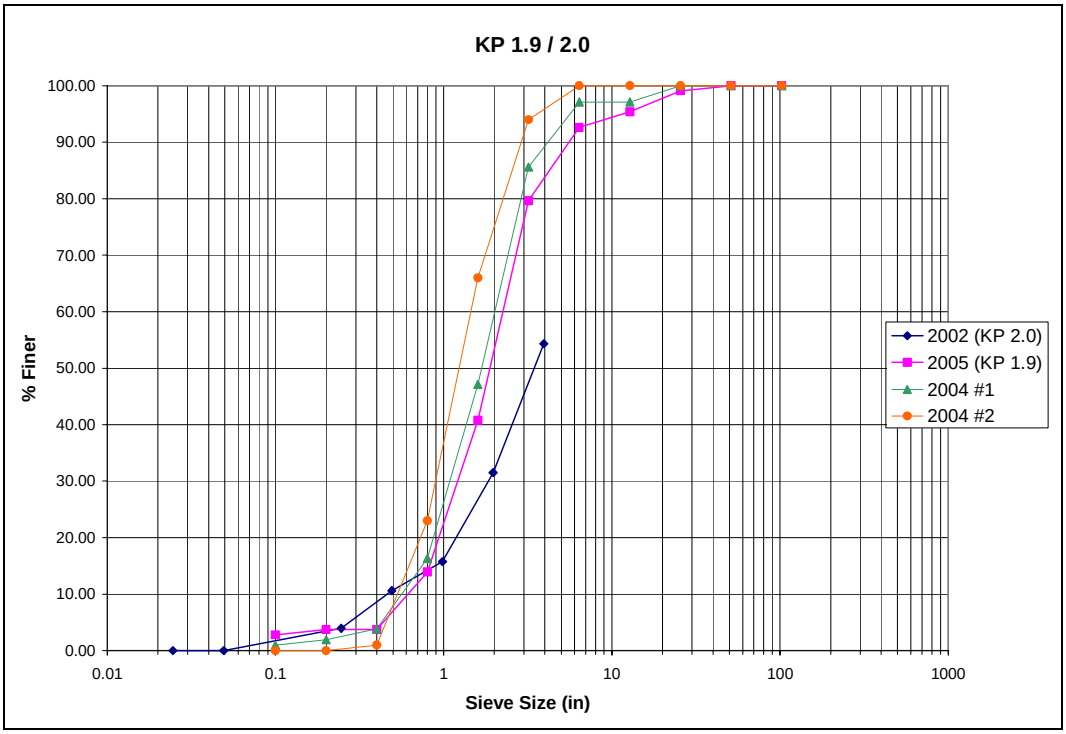

FIGURE 2: KP 1.9 / 2.0 BED MATERIAL SIZE DISTRIBUTION

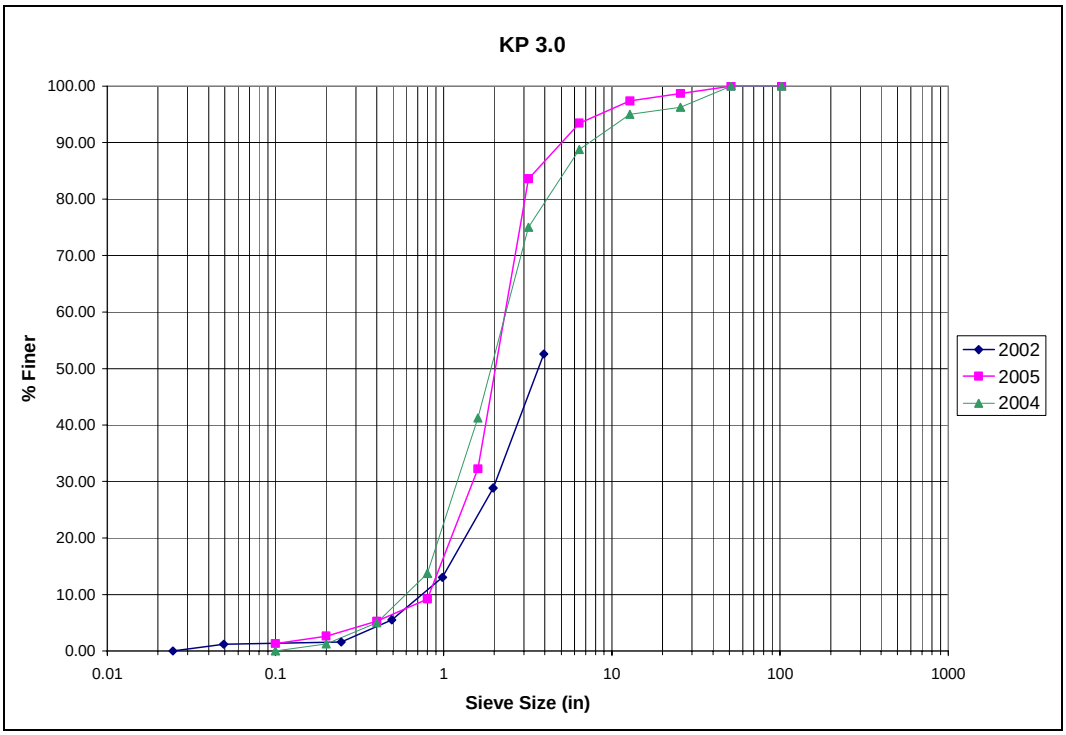

FIGURE 3: KP 3.0 BED MATERIAL SIZE DISTRIBUTION

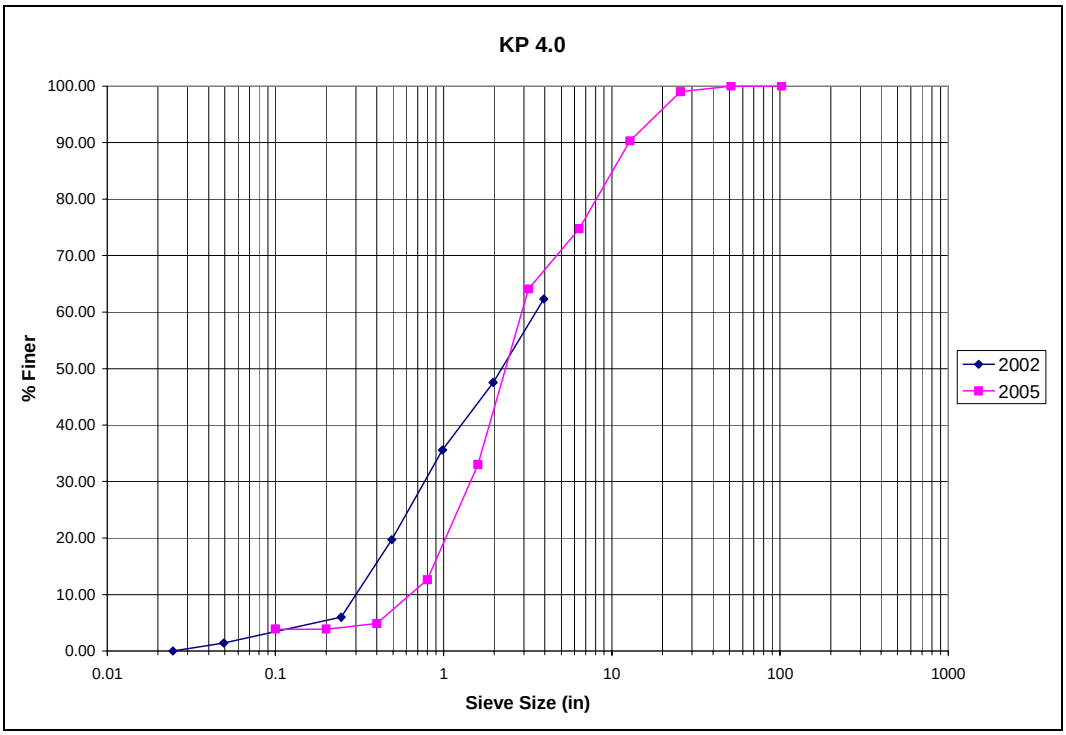

FIGURE 4: KP 4.0 BED MATERIAL SIZE DISTRIBUTION

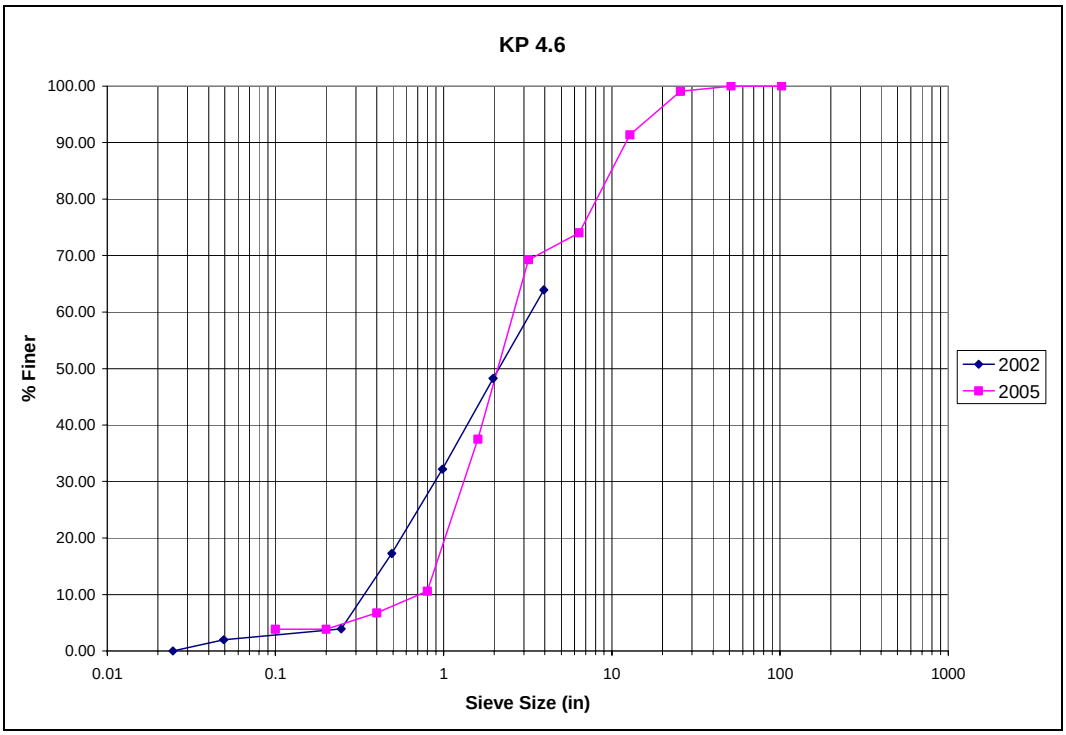

FIGURE 5: KP 4.6 BED MATERIAL SIZE DISTRIBUTION

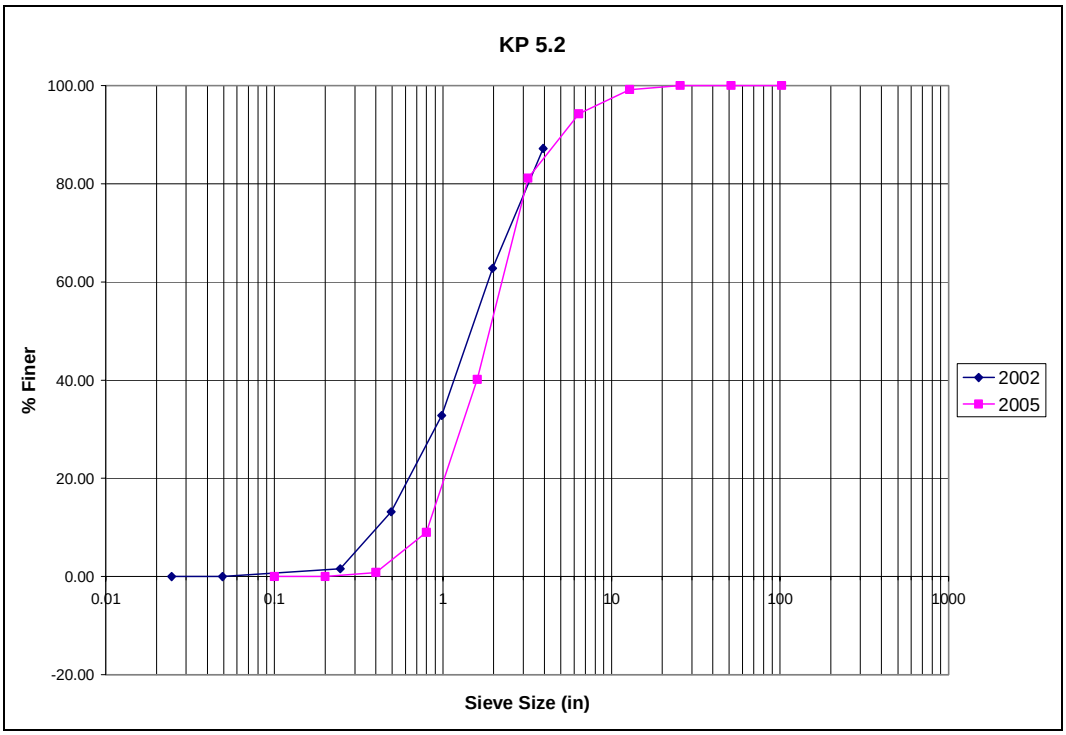

FIGURE 6: KP 5.2 BED MATERIAL SIZE DISTRIBUTION

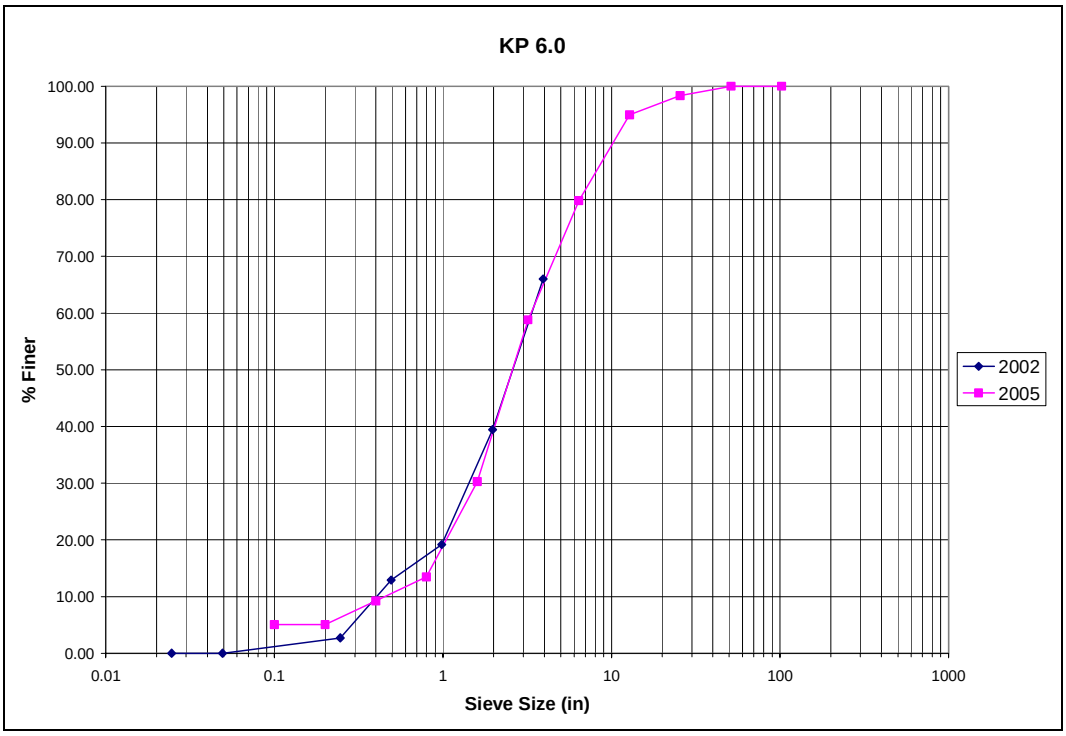

FIGURE 7: KP 6.0 BED MATERIAL SIZE DISTRIBUTION

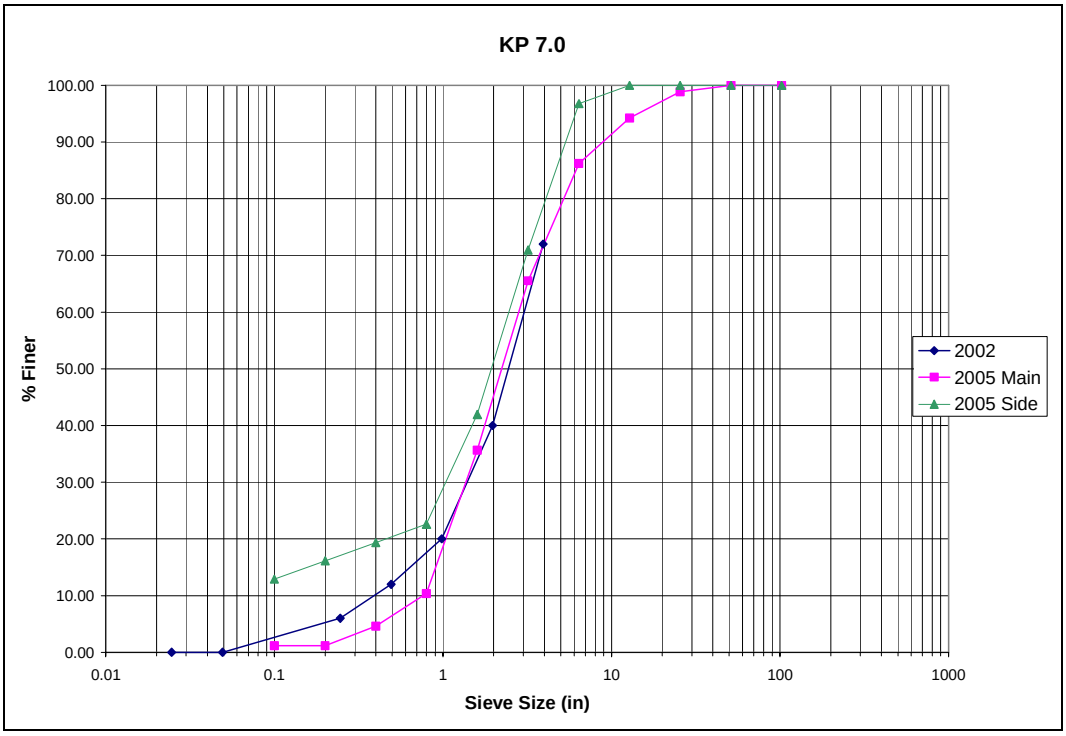

FIGURE 8: KP 7.0 BED MATERIAL SIZE DISTRIBUTION

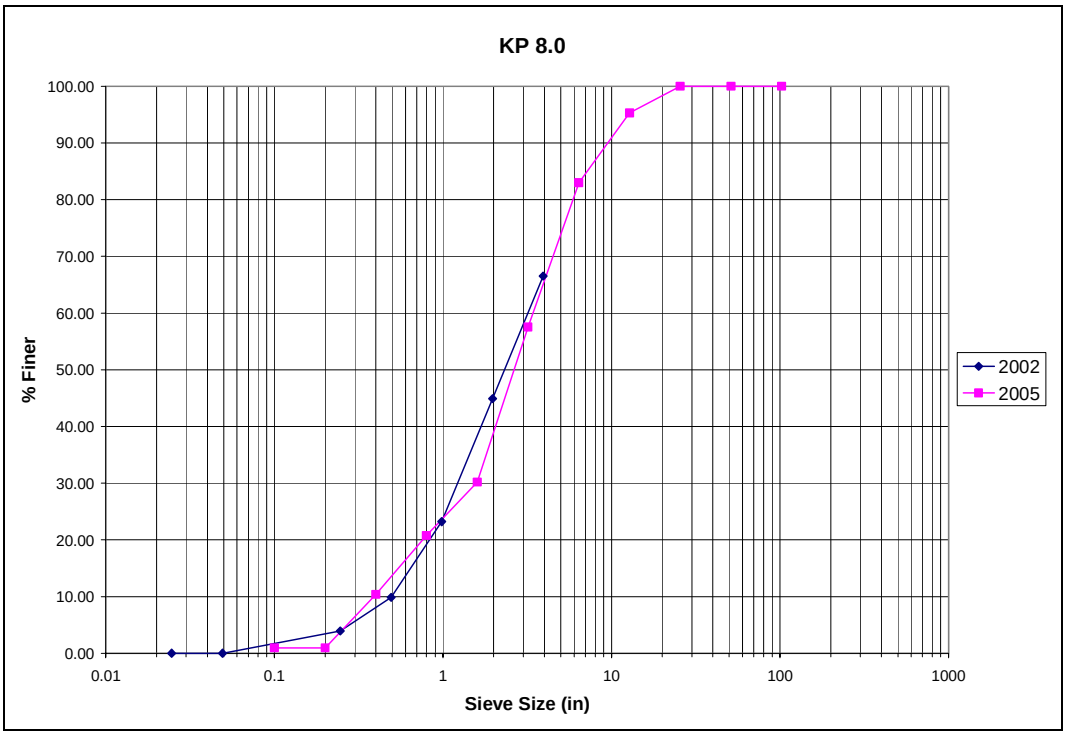

FIGURE 9: KP 8.0 BED MATERIAL SIZE DISTRIBUTION

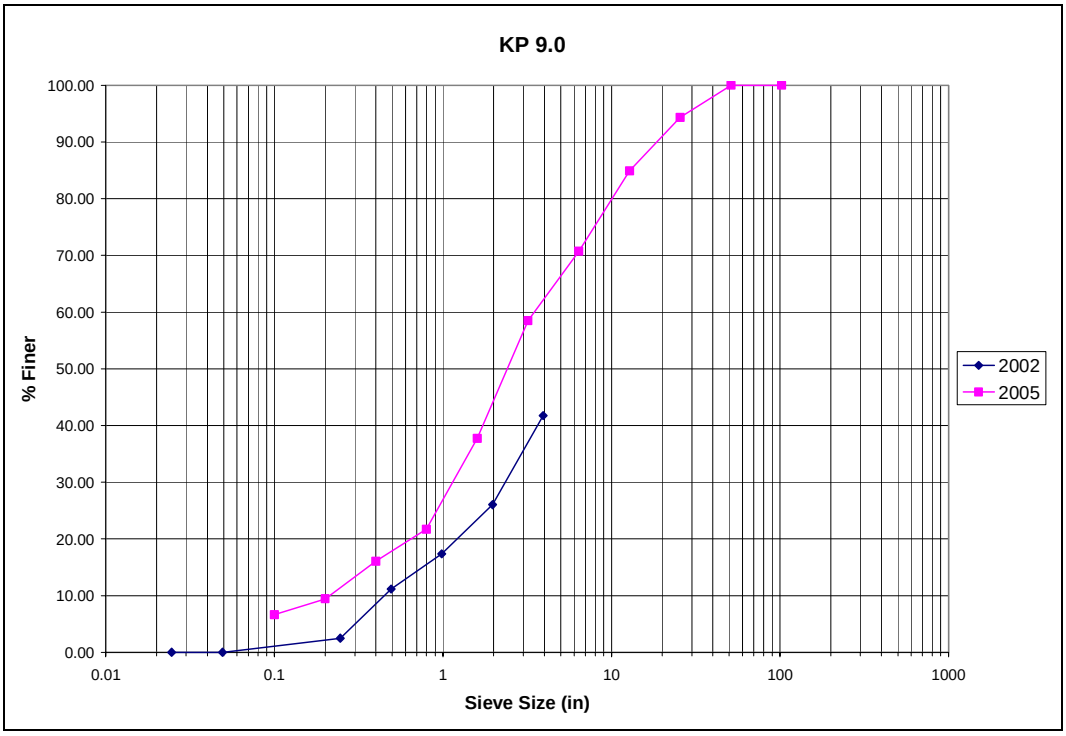

FIGURE 10: KP 9.0 BED MATERIAL SIZE DISTRIBUTION

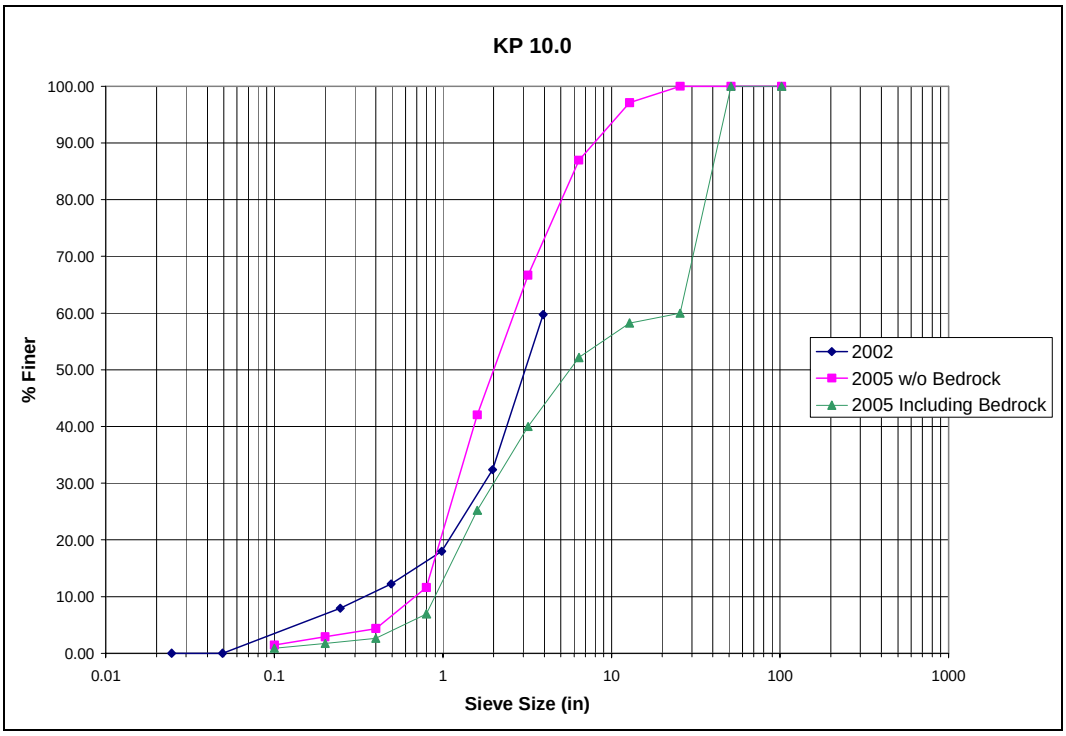

FIGURE 11: KP 10.0 BED MATERIAL SIZE DISTRIBUTION