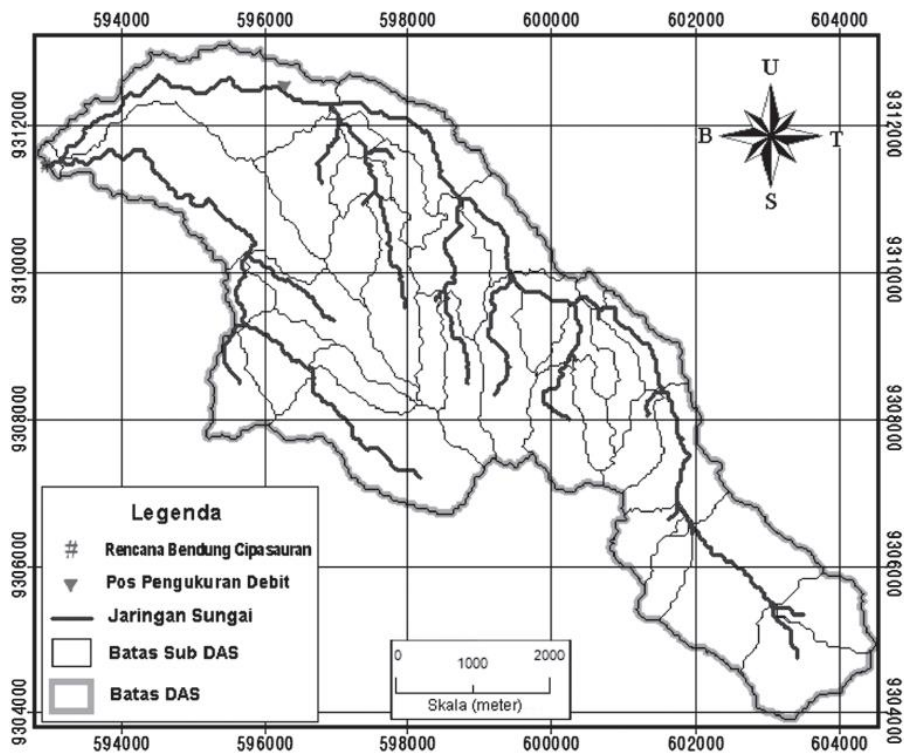
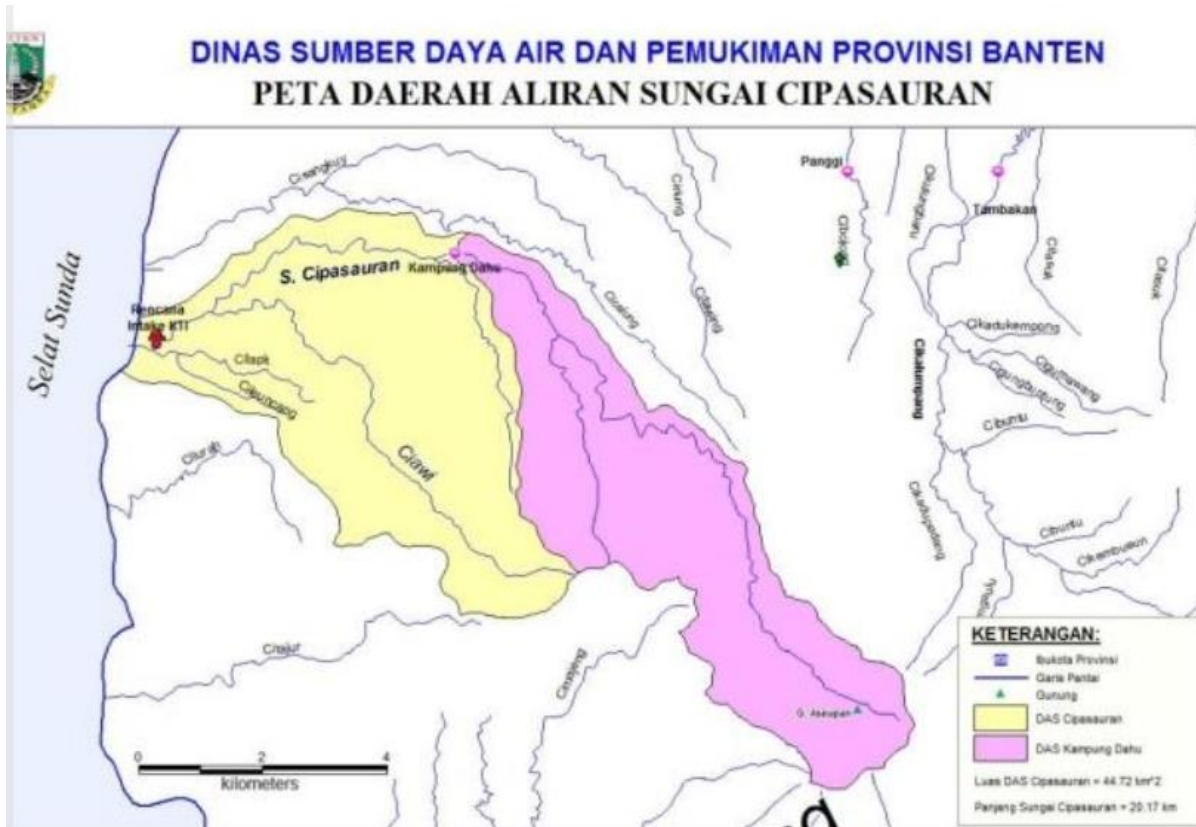


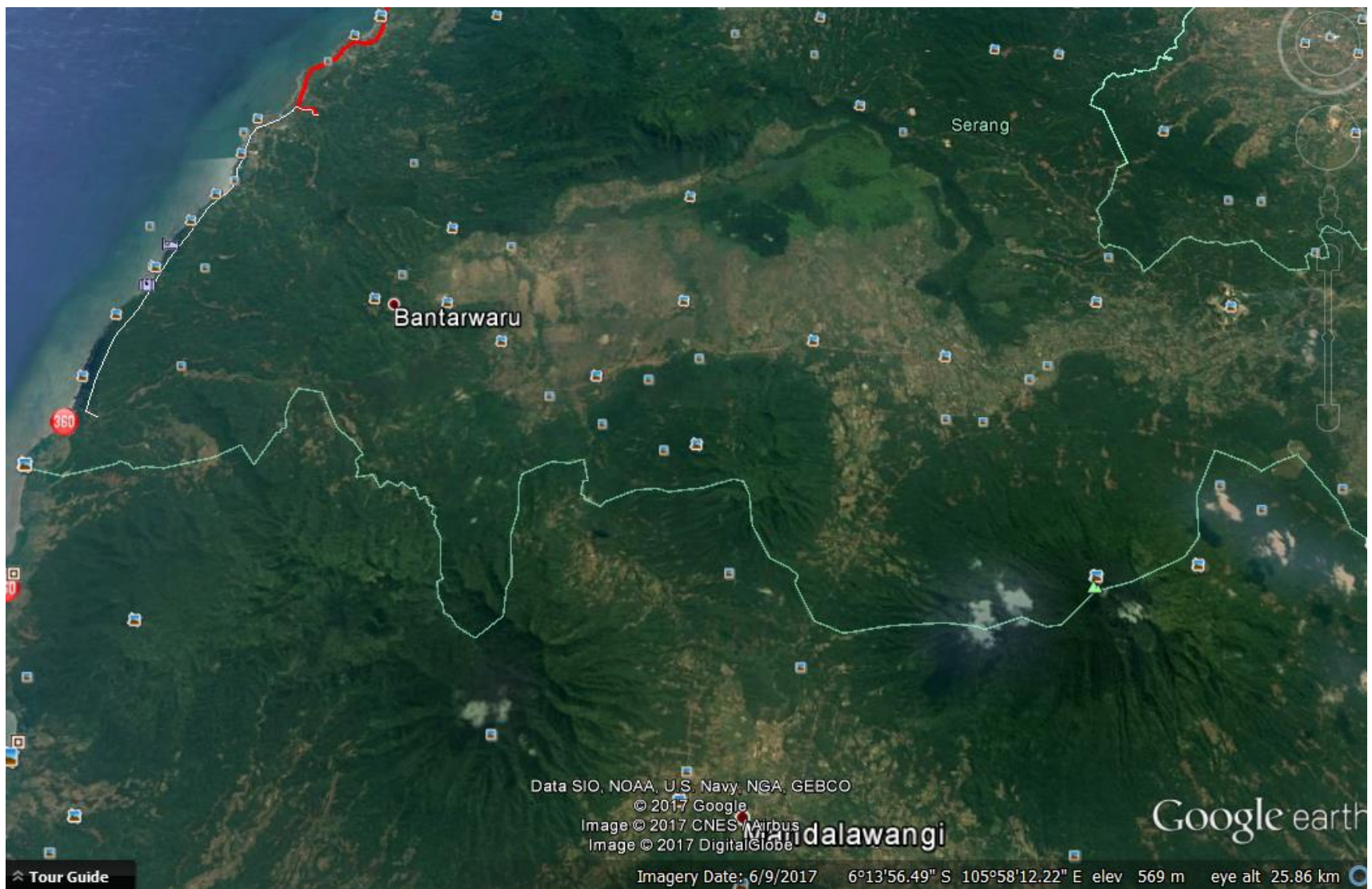
Lampiran 1. Data potensi dan kebutuhan air PT. KTI tahun 2011-2022

No.	Keterangan	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
A	Kebutuhan Air Baku												
	Permintaan	1.122	1.215	1.471	1.973	2.059	2.084	2.1	2.603	2.643	2.685	2.73	2.776
	Produksi	1.144	1.24	1.501	2.013	2.101	2.126	2.126	2.126	2.126	2.126	2.126	2.126
	Air Baku	1.153	1.249	1.512	2.028	2.117	2.142	2.142	2.142	2.142	2.142	2.142	2.142
B	Sumber Air Baku Eksisting												
	Waduk Krenceng	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
	Sungai Cidanau	1.375	1.375	1.375	1.375	1.375	1.375	1.375	1.375	1.375	1.375	1.375	1.375
	Total	1.515	1.515	1.515	1.515	1.515	1.515	1.515	1.515	1.515	1.515	1.515	1.515
C	Kekurangan Air Baku				0.513	0.602	0.627	0.627	0.627	0.627	0.627	0.627	0.627
D	Sumber Air Baku Tambahan												
	Reuse Air Buangan PT. KS			0.05	0.1	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
	Perluasan Waduk			0.285	0.285	0.285	0.285	0.285	0.285	0.285	0.285	0.285	0.285
	Sungai Cipasauran				0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	Optimalisasi Bendung Cidanau (gate weir)								0.8	0.8	0.8	0.8	0.8
	Total Penambahan Air Baku			0.335	0.685	0.735	0.735	0.735	1.535	1.535	1.535	1.535	1.535
E	Kelebihan Air Baku Setelah Penambahan			0.335	0.172	0.133	0.108	0.108	0.908	0.908	0.908	0.908	0.908

Sumber: Brief Project PT. KTI (2010) dalam Nashir (2011)

Lampiran 2. Peta DAS Cipasauran





Lampiran 3. Hasil Perhitungan Debit Andalan dengan F.J. Mock.

No	Uraian	Hitungan	Satuan	Jan			Feb		
				Anyer	Cinangka	Padarincang	Anyer	Cinangka	Padarincang
I	DATA HUJAN								
1	Curah Hujan Rata-rata (p)	Data	mm/10hr	121.5	93	195	103.5	147	222
2	Hari Hujan Rata-rata (h)	Data	hari	17	17	27	17	15	19
II	EVAPOTRANSPIRASI TERBATAS (Et)								
3	Evapotranspirasi Potensial (ET ₀)	Et ₀	mm/10hr	35.86	35.86	39.45	36.7	36.7	29.36
4	Permukaan Lahan Terbuka (m)	Tentukan	%	30	30	30	30	30	30
5	(m/20)*(18-h)	Hitungan		0.015	0.015	-0.135	0.015	0.045	-0.015
6	E=(ET ₀)*(m/20)*(18-h)	(3) *(5)	mm/10hr	0.5379	0.5379	-5.32575	0.5505	1.6515	-0.4404
7	Et = (ET ₀) -(E)	(3) - (6)	mm/10hr	35.3221	35.3221	44.77575	36.1495	35.0485	29.8004
III	KESEIMBANGAN AIR								
8	Ds = P-Et	(1) -(7)	mm/10hr	86.1779	57.6779	150.22425	67.3505	111.9515	192.1996
9	Kandungan Air Tanah		mm/10hr	0	0	0	0	0	0
10	Kapasitas Kelembaman Tanah (SMC)	SMC	mm/10hr	142.99	142.99	142.99	142.99	142.99	142.99
11	Kelebihan Air (WS)	(8) -(9)	mm/10hr	86.1779	57.6779	150.22425	67.3505	111.9515	192.1996
IV	ALIRAN DAN PENYIMPANAN AIR TANAH								
12	Infiltrasi (I)	(11)*i	mm/10hr	60.2643	40.3342	105.0519	47.0983	78.2878	134.4053
13	0.5 (1+k)In	Hitungan		48.2114	32.2674	84.0415	37.6786	62.6302	107.5243
14	k* V (n-1)	hitungan		31.2720	47.6900	47.9744	79.2096	70.1329	79.6579
15	Volume Penyimpanan (Vn)	(13)+(14)	mm/10hr	79.4834	79.9574	132.0160	116.8882	132.7631	187.1821
16	Perubahan Volume Air (DVn)	Vn-V(n-1)	mm/10hr	27.3634	0.4740	52.0586	-15.1278	15.8749	54.4190
17	Aliran Dasar (BF)	(12)-(16)	mm/10hr	32.9009	39.8602	52.9933	62.2260	62.4128	79.9863
18	Aliran Langsung (DR)	(11)-(12)	mm/10hr	25.9136	17.3437	45.1723	20.2522	33.6637	57.7943
19	Aliran (R)	(17)+(18)	mm/10hr	58.8145	57.2039	98.1657	82.4783	96.0766	137.7806
V	DEBIT ALIRAN SUNGAI								
20	Debit Aliran Sungai	A*(19)	m ³ /det	3.044	2.961	5.081	4.269	4.973	7.131
21	Debit Aliran Sungai		lt/det	3044.194	2960.832	5080.983	4269.015	4972.852	7131.422
22	Jumlah Hari		hari	10	10	11	10	10	8
23	Debit Aliran (dibaca : 10E ⁶)		m ³ /10hr	2.6302	2.5582	4.3900	3.6884	4.2965	6.1615

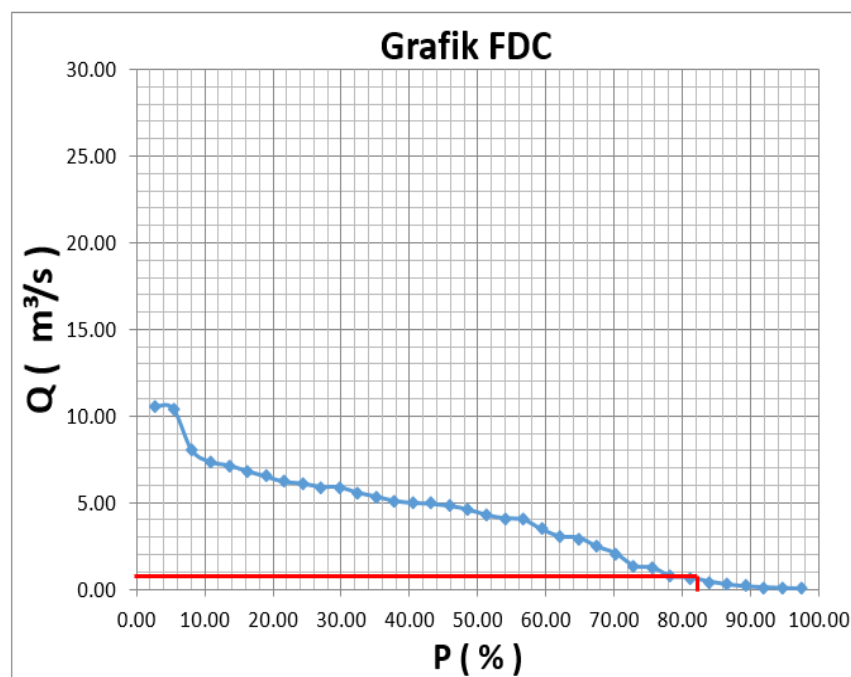
Mar			Apr			Mei			Jun		
Anyer	Cinangka	Padarincang	Anyer	Cinangka	Padarincang	Anyer	Cinangka	Padarincang	Anyer	Cinangka	Padarincang
141	93	97.5	148.5	147	163.5	187.5	186	270	84	243	130.5
25	18	23	15	12	18	17	10	8	4	4	7
35.93	35.93	39.53	34.68	34.68	34.68	32.81	32.81	36.09	27.95	27.95	27.95
30	30	30	30	30	30	30	30	30	30	30	30
-0.105	0	-0.075	0.045	0.09	0	0.015	0.12	0.15	0.21	0.21	0.165
-3.77265	0	-2.96475	1.5606	3.1212	0	0.49215	3.9372	5.4135	5.8695	5.8695	4.61175
39.70265	35.93	42.49475	33.1194	31.5588	34.68	32.31785	28.8728	30.6765	22.0805	22.0805	23.33825
101.29735	57.07	55.00525	115.3806	115.4412	128.82	155.18215	157.1272	239.3235	61.9195	220.9195	107.16175
0	0	0	0	0	0	0	0	239.3235	61.9195	0	107.16175
142.99	142.99	142.99	142.99	142.99	142.99	142.99	142.99	118.1	118.18	142.99	129.33
101.29735	57.07	55.00525	115.3806	115.4412	128.82	155.18215	157.1272	0	0	220.9195	0
70.8373	39.9091	38.4652	80.6857	80.7281	90.0839	108.5190	109.8792	0	0	154.4892	0
56.6698	31.9273	30.7722	64.5486	64.5825	72.0671	86.8152	87.9033	0	0	123.5913	0
112.3093	101.3875	79.9888	66.4566	78.6031	85.9114	94.7871	108.9614	118.1188	70.8713	42.5228	99.6685
168.9791	133.3147	110.7610	131.0052	143.1856	157.9785	181.6023	196.8647	118.1188	70.8713	166.1141	99.6685
-18.2030	-35.6644	-22.5537	20.2442	12.1804	14.7929	23.6238	15.2624	-78.7459	-47.2475	95.2428	-66.4456
89.0403	75.5735	61.0189	60.4416	68.5477	75.2910	84.8952	94.6167	78.7459	47.2475	59.2463	66.4456
30.4600	17.1609	16.5400	34.6949	34.7131	38.7361	46.6632	47.2480	0	0	66.430339	0
119.5004	92.7344	77.5590	95.1364	103.2608	114.0271	131.5584	141.8648	78.7459	47.2475	125.6767	66.4456
6.185	4.800	4.014	4.924	5.345	5.902	6.809	7.343	4.076	2.445	6.505	3.439
6185.250	4799.863	4014.395	4924.191	5344.702	5901.959	6809.363	7342.816	4075.828	2445.497	6504.932	3439.177
10	10	11	10	10	10	10	10	11	10	10	10
5.3441	4.1471	3.4684	4.2545	4.6178	5.0993	5.8833	6.3442	3.5215	2.1129	5.6203	2.9714

Jul			Agt			Sep			Okt		
Anyer	Cinangka	Padarincang	Anyer	Cinangka	Padarincang	Anyer	Cinangka	Padarincang	Anyer	Cinangka	Padarincang
99	129	118.5	82.5	181.5	112.5	106.5	237	259.5	96	220.5	219
27	23	4	17	5	7	18	15	2	14	4	7
28.77	28.77	31.65	32.74	32.74	36.02	38.62	38.62	38.62	41.61	41.61	45.77
40	40	40	40	40	40	40	40	40	40	40	40
-0.18	-0.1	0.28	0.02	0.26	0.22	0	0.06	0.32	0.08	0.28	0.22
-5.1786	-2.877	8.862	0.6548	8.5124	7.9244	0	2.3172	12.3584	3.3288	11.6508	10.0694
33.9486	31.647	22.788	32.0852	24.2276	28.0956	38.62	36.3028	26.2616	38.2812	29.9592	35.7006
65.0514	97.353	95.712	50.4148	157.2724	84.4044	67.88	200.6972	233.2384	57.7188	190.5408	183.2994
65.0514	97.353	95.712	50.4148	157.2724	84.4044	67.88	200.6972	233.2384	0	190.5408	0
110.92	92.5	72.25	55.63	34.68	11.63	-13.09	-34.57	-51.06	142.99	116.36	142.99
0	0	0	0	0	0	0	0	0	57.7188	0	183.2994
0	0	0	0	0	0	0	0	0	40.3628	0	128.1814
0	0	0	0	0	0	0	0	0	32.2902	0	102.5451
59.8011	35.8806	21.5284	12.9170	7.7502	4.6501	2.7901	1.6740	1.0044	0.6027	19.7357	11.8414
59.8011	35.8806	21.5284	12.9170	7.7502	4.6501	2.7901	1.6740	1.0044	32.8929	19.7357	114.3866
-39.8674	-23.9204	-14.3523	-8.6114	-5.1668	-3.1001	-	1.8601	-0.6696	31.8885	-13.1572	94.6508
39.8674	23.9204	14.3523	8.6114	5.1668	3.1001	1.8601	1.1160	0.6696	8.4743	13.1572	33.5306
0	0	0	0	0	0	0	0	0	17.356003	0	55.1180014
39.8674	23.9204	14.3523	8.6114	5.1668	3.1001	1.8601	1.1160	0.6696	25.8303	13.1572	88.6486
2.064	1.238	0.743	0.446	0.267	0.160	0.096	0.058	0.035	1.337	0.681	4.588
2063.506	1238.104	742.862	445.717	267.430	160.458	96.275	57.765	34.659	1336.959	681.005	4588.385
10	10	11	10	10	11	10	10	10	10	10	11
1.7829	1.0697	0.6418	0.3851	0.2311	0.1386	0.0832	0.0499	0.0299	1.1551	0.5884	3.9644

Nov			Des		
Anyer	Cinangka	Padarincang	Anyer	Cinangka	Padarincang
291	303	247.5	144	123	168
23	10	8	20	14	17
39.78	39.78	39.78	36.06	36.06	39.66
30	30	30	30	30	30
-0.075	0.12	0.15	-0.03	0.06	0.015
-2.9835	4.7736	5.967	-1.0818	2.1636	0.5949
42.7635	35.0064	33.813	37.1418	33.8964	39.0651
248.2365	267.9936	213.687	106.8582	89.1036	128.9349
0	0	0	106.8582	0	0
142.99	142.99	142.99	126.51	142.99	142.99
248.2365	267.9936	213.687	0	89.1036	128.9349
173.592	187.4081	149.4315	0	62.3102	90.1643
138.8736	149.9265	119.5452	0	49.8482	72.1314
68.6319	124.5033	164.6579	170.5218	102.3131	91.2968
207.5055	274.4298	284.203	170.5218	152.1613	163.4282
93.1189	66.9243	9.7733	-113.681	-18.3606	11.2669
80.473	120.4838	139.6582	113.6812	80.6708	78.8974
74.64454	80.58549	64.25553	0	26.79339	38.77063
155.1176	201.0693	203.9137	113.6812	107.4642	117.668
8.029	10.407	10.554	5.884	5.562	6.09
8028.77	10407.2	10554.42	5884.056	5562.266	6090.408
10	10	10	10	10	11
6.9369	8.9918	9.119	5.0838	4.8058	5.2621

Lampiran 4. Hasil debit andalan dengan kurva FDC.

Data terurut	
Q (m ³ /dt)	P(%)
10.55	2.7
10.41	5.41
8.03	8.11
7.34	10.81
7.13	13.51
6.81	16.22
6.5	18.92
6.19	21.62
6.09	24.32
5.9	27.03
5.88	29.73
5.56	32.43
5.34	35.14
5.08	37.84
4.97	40.54
4.92	43.24
4.8	45.95
4.59	48.65
4.27	51.35
4.08	54.05
4.01	56.76
3.44	59.46
3.04	62.16
2.96	64.86
2.45	67.57
2.06	70.27
1.34	72.97
1.24	75.68
0.74	78.38
0.68	81.08
0.45	83.78
0.27	86.49
0.16	89.19
0.1	91.89
0.06	94.59
0.03	97.3



Lampiran 5. Koefisien *Hazen Williams* untuk mencari *Headloss Mayor* (C).

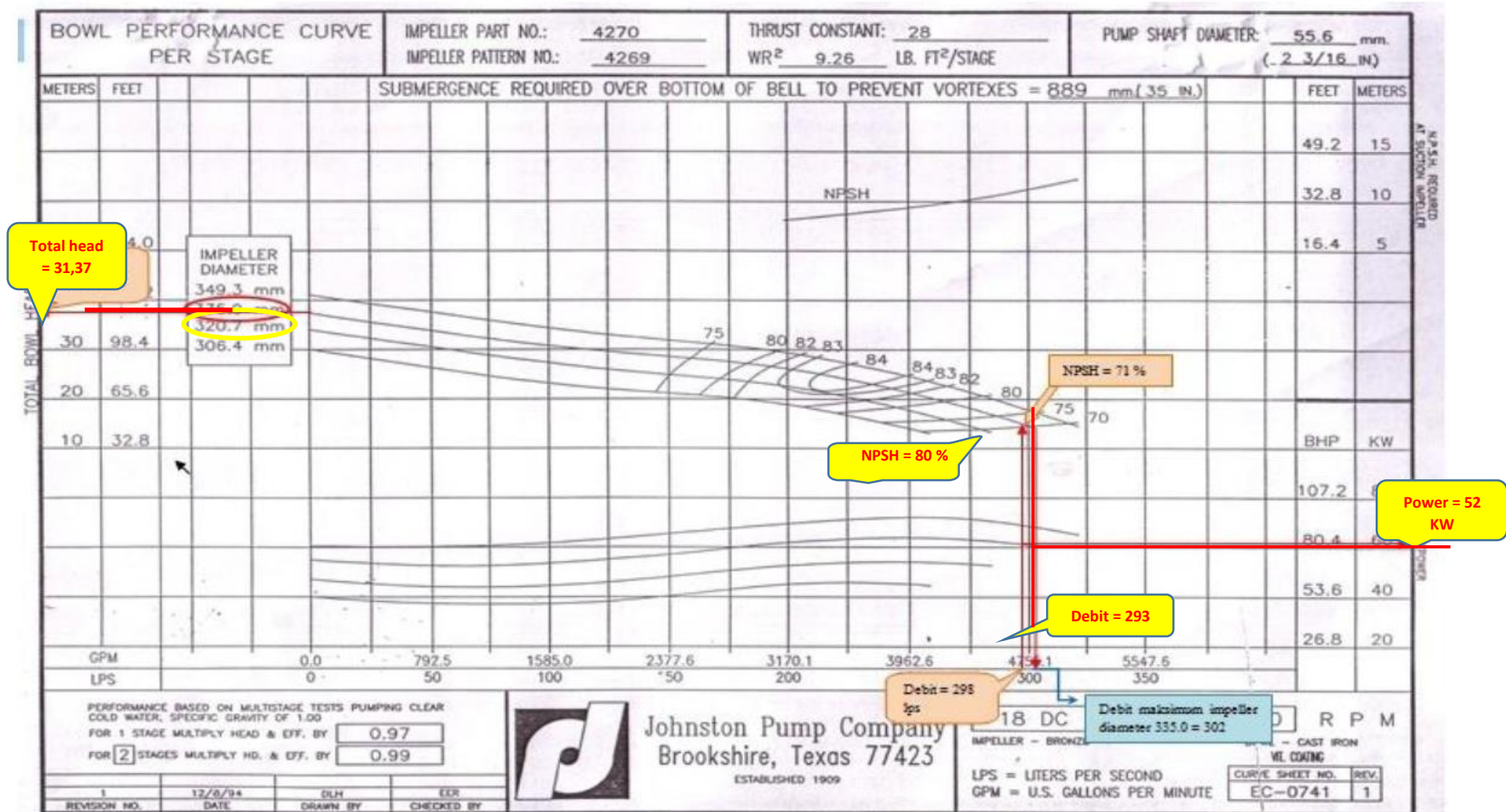
No.	Jenis (material) Pipa	Nilai C perencanaan
1.	Asbes Cement	120
2.	Poly Vinil Chloride (PVC)	120-140
3.	High Density Poly Ethylene (HDPE)	130
4.	Medium Density Poly Ethylene (MDPE)	130
5.	Ductile Cast Iron Pipe (DCIP)	110
6.	Besi tuang, Cast Iron (CIP)	110
7.	Galvanized Iron Pipe (GIP)	110
8.	Steel Pipe (Pipa Baja)	110

Sumber : (Dharmasetiawan 2004)

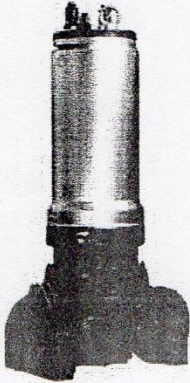
Lampiran 6. Koefisien kehilangan tekanan minor pipa. (K)

No.	Perlengkapan Pipa	K_L	No.	Perlengkapan Pipa	K_L
1.	Ujung Pipa Masuk		9.	Radius Bend 90°	
	Bentuk Lonceng	0,03-0,05		Radius/D =4	0,16-0,18
	Ujung Bulat	0,12-		Radius/D =2	0,19-0,25
	Ujung Tajam	0,250		Radius/D =1	0,35-0,40
	Kerucut	0,5 0,78			
2.	Konstraksi Tajam		10.	Bend	
	D2/D1=0,80	0,18		$\theta = 15^\circ$	0,05
	D2/D1=0,50	0,37		$\theta = 30^\circ$	0,10
	D2/D1=0,20	0,49		$\theta = 45^\circ$	0,20
				$\theta = 60^\circ$	0,35
				$\theta = 90^\circ$	0,80
3.	Konstraksi Kerucut		11.	Tee	
	D2/D1=0,80	0,05		Tee-y	0,35
	D2/D1=0,50	0,07		Tajam	0,80
	D2/D1=0,2	0,08			
4.	Pembesaran Tajam		12.	Cross	
	D2/D1=0,80	0,16		Mulus	0,50
	D2/D1=0,50	0,57		Tajam	0,75
	D2/D1=0,2	0,92			

Lampiran 7. Kurva Pompa Johnston



Lampiran 8. Spesifikasi Pompa Johnston



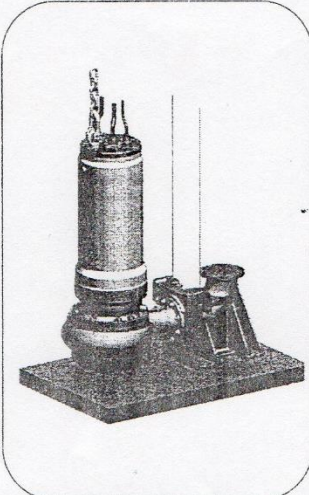
INTAKE PUMP – WTP CINDANAU PLANT

Pump Type : KRTK 350-710/H7706UNG1-K

Operation Parameter :

Flow > <i>debit</i>	: 400 l/s
Head >	: 65 m
Speed >	: 997 rpm (6 Pole)
Efficiency	: 80 %
Power absorbed	: 314.86 kW
Motor Rating	: 400 kW
Voltage	: 6.6 kV
Freq.	: 50 Hz

3 IOM KRT 1 Draw L1 31* March 2017

INTAKE PUMP – WTP CINDANAU PLANT

Installation Type : K
Stationary wet installation (S1 operation, motor outside the medium), guide wire system)

Installation Part :

1. Duck foot bend
2. Power cable and control cable 20 m
3. Claw
4. Guide wire 9,5 m
5. Chain 10 m
6. Bracket
7. Foundation rail
8. Chemical anchor bolt

KRT wet pit installation with cooling jacket

4 IOM KRT 1 Draw L1 31* March 2017