



山东朗格环保工程有限公司
Shandong Langge Environmental Protection Engineering Co., Ltd.

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GB12348-2008

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GB3096-2008

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18	34	Э	Ю 2015	6	5
19	[2016]45	Э	Ю 2016	4	15
20	[2016]31	Э	Ю		
2016	5	28			
21	[2016]150	Э	Ю 2016	10	26
22	[2016]81	Э	Ю 2016	11	10
23	42	Э	Ю 2016	12	31
24	Ч	Э	Ю 2017	2	7
25	682	Э	Ю 2017	10	1
26	[2017]84	Э	Ю 2017	11	14
27	[2018]11	Э	Ю 2018	1	25
28	[2018]266	Э	Ю 2018	5	10
29	[2018]17	Э	Ю 2018	6	16
30	4	Э	Ю 2019	1	1
31	Ч	2019	4	Э	
2018	Ю 2019	1	23		
32	2019	8	Э	<	
	2019	>	Ю 2019	2	27
33	[2019]17	Э	<		>

	>	Ю 2021	9	1			
49		[2021]104	Э		<2021-2022		
	>	Ю 2021	10	28			
50		[2021]1524	Э		<І	Ł	
	>	2021	10	29			
51		[2021]495	Э		<	2021	>
		Ю 2021	11	2			
52	Э					Ю 2021	
11	2						
53		[2021]108	Э		І	Ł	
		2021	11	19			
54		748	Э		Ю 2021	12	1
55		Ч	Ч		23	Э	
		Ю 2021	11	30			
56		[2021]26	Э				
		Ю 2021	12	21			
57		[2021]120	Э		І	Ł	Ч
		Ю 2021	12	29			
58		2021	82	Э	<		
	>	Ю 2021	12	30			
59		[2022]17	Э			Ю 2022	
3	3						
60		[2022]29	Э				
						Ю 2022	3
28							
61		[2022]26	Э		<І	Ł	
	>	Ю 2022	4	1	Ш		
1.1.2							
1		[2015]249	Э				
					Ю 2015	12	10

[illegible]

Ю 2019 10 16

32 83 Э

Ю 2020 1 1

33 [2020]5 Э

Ю 2020 1 16

34 [2020]6 Э

Ю 2020 4 7

35 [2020]50 Э

Ю 2020 4 20

36 [2020]83 Э

Ю 2020 6 19

37 [2020]29 Э

Ю 2020 6 22

38 [2020]48 Э

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Ł Ю 2020 11 6

39 Э Ю 2020 11 27

40 Э Ю

2020 11 27

41 [2021]58 Э

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Ю 2021 3 4

42 [2021]81 Э

Ю 2021 4 4

43 [2021]5 Э

2035

Ю 2021 4 6

44 [2021]92 Э

<

> Ю 2021 4 9

45 [2021]143 Э

┆

Ł Ю 2021 8 11

46 [2021]30 Э

2021-2025 Ч

	2021-2025	Ч		2021-2025
	Ю 2021	8	22	
47	[2021]12	Э		┌
	Ю 2021	8	22	
48	[2021]3	Э		<
┌	└	2021-2023	>	2021 10 26
49	[2021]8	Э		< ┌
		>	Ю 2021	11 13
50	[2021]249	Э		
	Ю 2021	11	19	
51	[2021]9	Э	2021-2022	
	Ю 2021	11	25	
52	[2022]1	Э	Э	Ы Ч
		Ь	Ю	Ю 2022 4 3
53		11	Э	Ю
2018.1.2				
54		16	Э	Ю
2018.8.30				
55	[2019]6	Э		<
	>	Ю		
56	[2019]7	Э		<
	>	Ю		
57	[2019]19	Э		<
		>	Ю	
58	[2019]39	Э		<
>	Ю 2019	7	17	
59	[2020]3	Э		
	Ю 2020	01	17	
60	[2020]8	Э		
2020	Ю 2020	4	10	

61	[2020]17	Э						
	Ю							
62	[2020]49	Э						
			Ю	2020	10	29		
63	[2020]65	Э						
			Ю					
64	[2021]6	Э					Г	Л
			Ю	2021	05	21		
65	[2022]2	Э					Г	Л
			Ю	2022	01	21		
66	[2018]62	Э						
			Ю	2019.12.25				
67	[2019]30	Э						
			Ю	2019.10.18				
68	[2019]29	Э						
			Ю	2019.10.18				
69	[2021]34	Э						
			Ю	2020.11.11				
70	[2021]3							
								(2021.4.9)Ш

1.1.3

1	Э	Ю	HJ2.1-2016
2	Э	Ю	HJ2.2-2018
3	Э	Ю	HJ2.3-2018
4	Э	Ю	HJ610-2016
5	Э	Ю	HJ2.4-2009
6	Э	Ю	HJ964-2018
7	Э	Ю	HJ169-2018
8	Э	Ю	HJ19-2011
9	Э	Ю	HJ2000-2010

10	Э	Ю	HJ2015-2012			
11	Э	Ю	HJ2035-2013			
12	Э	Ю	HJ2034-2013			
13	Э	Ю	HJ589-2010			
14	Э	Ю	HJ2042-2014			
15	Э	Ю	HJ 819-2017			
16	Э		Ю HJ 1139-2020			
17	Э		Ю HJ942-2018			
18	Э		Ю HJ			
1102-2020						
19	Э		Ю			
20	Э	Ю	2021			
21	Э	Ю	2015.11			
22	Э	Ю	2016.9.26			
23	Э	Ю				
24	Э	Ю	2018-2035	Ш		
1.1.4						
1		1				
2		2				
3		3				
4		4				
5		Э			4.5	
6	/		Ю		[2007]21	
5						
6		Э			45000t/a	6
/			Ю	[2010]12	6	
7		Э			45000t/a	6
/				Ю	7	
8		Э				
			Ю		[2014]49	

	8			
9	Э		Ю	[2018]31
	9			
10	Э	Ю	[2018]96	10
11	Э	Ю	[2018]207	11
12	Э	Ю	[2019]7	12
13	Э		Ю	13
14	14			
15	15			
16	16			
17		17	Ш	
1.2				
1.2.1				
	Ч		Ч	
				Ч
	Ш			
1.2.2				
			Ч	Ч
				Ч

1.2.3

1.3

W

1.3-1 Ⅲ

	Ч Ч Ч Ч	
	Ч	SS Ч COD Ч BOD Ч
	Ч	
	Ч	Ч

1.3-2Ш

	环境要素识别与评价			
	环境要素	识别方法	评价方法	评价结果
	大气环境 水环境 声环境 土壤环境 生态环境 其他环境要素	清单法 矩阵法 专家法 其他方法	定性评价 定量评价 半定量评价	重要 一般 不重要
大气环境	SO ₂ 、NO _x 、PM ₁₀ 、PM _{2.5} 、VOCs	清单法、矩阵法	定量评价	重要
水环境	COD _{Cr} 、BOD ₅ 、NH ₃ -N、TP、TN	清单法、矩阵法	定量评价	重要
声环境	等效连续A声级	清单法、矩阵法	定量评价	一般
土壤环境	重金属、石油类、农药类	清单法、矩阵法	定性评价	一般
生态环境	生物多样性、土地利用、植被覆盖	清单法、矩阵法	定性评价	一般
其他环境要素	气候、地质、地震、文物、文化遗产	清单法、矩阵法	定性评价	一般

	Э	Ю GB3838-2002	Ö
	Э	Ю GB5084-2021	1
	Э	Ю GB/T14848-2017	η
	Э	Ю GB3096-2008	2 43 44a

	Ů 1000	Ů 3.0	Ů 1.0	Ů 0.02	Ů 0.002	Ů 3.0	Ů 100
	Ů 0.005	Ů 0.1	Ů 0.3	Ů 0.01	Ů 0.01	Ů 0.001	Ů 0.05
	Ů 0.05	Ů 0.20	Ů 1.00	Ů 1.00	Ů 0.01	Ů 0.7	Ů 0.5
		Ca ²⁺	Mg ²⁺	CO ₃ ²⁻	HCO ₃ ⁻	K ⁺	
	Ů 0.3	--	--	--	--	--	Ů 200

1.4-5

dB(A)

2	60	50
3	65	55
4a	70	55

1.4-6

mg/kg

		pH Ů 5.5	5.5	pH Ů 6.5	6.5	pH Ů 7.5	pH 7.5
1		0.3		0.3		0.3	0.6
2		1.3		1.8		2.4	3.4
3		40		40		30	25
4		70		90		120	170
5		150		150		200	250
6		50		50		100	100
7		60		70		100	190
8		200		200		250	300

1.4-7

mg/kg

	60
	65
	5.7
	18000
	800
	38
	900
	2.8
	0.9
	37
1,1-	9
1,2-	5
1,1-	66
-1,2-	596
-1,2-	54
	616
1,2-	1

1,1,1,2-	2.6
1,1,2,2-	1.6
	11
1,1,1-	840
1,1,2-	2.8
	2.8
1,2,3-	0.5
	0.43

	Э Ю [2019]39	NO _x
	Э Ю GB/T31962-2015	GB/T31962-2015 1A
	Э Ю GB12523-2011	↓
	Э Ю GB12348-2008	3 Ч 4a
	Э Ю GB18599-2020	↓
	Э Ю GB18597-2001 2013	↓

1.4-9

Ю

			Ш	
			3	
			3dB(A)	
			П	
			П	
			E1	
			П	
			E1	
	Ч П П			

1.6

Ч

1.6-1Ш

1.6-2 Ч

1.6-1 Ч 1.6-2Ш

1.6-1

	5km
	500m 2000m
	1000m 2000m 1000m 6km ²
	200m
	200m

1.6-2

						(m)			
Ч	1		N	116.198E	36.853N	100	735	210	(GB3095-2012)
	2		W	116.190E	36.846N	130	1488	425	
	3		S	116.191E	36.840N	545	924	264	
	4		NNE	116.202E	36.857N	755	595	170	

5		N	116.196E	36.859N	765	403	115
6	2#	N	116.191E	36.859N	780	2800	1400
7		E	116.212E	36.845N	840	3385	967
8		E	116.212E	36.847N	880	567	162
9		NE	116.210E	36.855N	970	417	119
10		NE	116.214E	36.857N	1210	1722	492
11		SSW	116.187E	36.835N	1220	637	182
12		E	116.215E	36.845N	1220	630	180
13		NNE	116.204E	36.860N	1230	560	160
14		N	116.200E	36.863N	1330	462	132
15		ENE	116.215E	36.855N	1340	3015	--
16		SSE	116.205E	36.830N	1390	1593	455
17		NNE	116.205E	36.862N	1390	1911	546
18		SW	116.181E	36.838N	1390	252	72
19		SSE	116.208E	36.832N	1400	830	237
20		SW	116.183E	36.836N	1420	347	99
21		ENE	116.219E	36.851N	1430	1365	390
22		E	116.218E	36.846N	1490	770	220
23	1#	NNW	116.191E	36.865N	1490	388	194
24		E	116.219E	36.848N	1520	743	212

	29		SSW	116.190E	36.830N	1690	492	140	
	30		NE	116.214E	36.862N	1700	2695	770	
	31		SSE	116.210E	36.830N	1710	710	200	
	32		NE	116.211E	36.863N	1730	98	28	
	33		NNE	116.204E	36.865N	1760	945	270	
	34		SSE	116.208E	36.829N	1770	400	114	
	35		N	116.199E	36.869N	1800	469	134	
	36		WSW	116.172E	36.842N	1810	693	198	
	37		NNE	116.210E	36.864N	1820	1050	300	
	38		ENE	116.222E	36.851N	1830	560	160	
	39		NE	116.212E	36.864N	1850	1670	--	
	40		NNE	116.202E	36.867N	1860	350	--	
	41		NE	116.219E	36.860N	1870	791	226	
	42		NNE	116.205E	36.867N	1880	300	--	
	43		NNW	116.191E	36.867N	1890	116	33	
	44		NE	116.215E	36.865N	1980	2205	630	
	45		ENE	116.224E	36.850N	2000	994	284	
	46		W	116.170E	36.849N	2040	787	225	
	47		NNW	116.186E	36.868N	2060	850	--	
	48		NE	116.217E	36.865N	2150	840	240	
	49		NNE	116.208E	36.868N	2170	1610	460	
	50		ENE	116.226E	36.850N	2170	882	252	
	51		NNE	116.768E	36.229N	2250	462	132	
	52		NE	116.216E	36.870N	2370	840	240	
	53		NW	116.176E	36.869N	2390	539	154	
	54		NE	116.221E	36.866N	2430	1820	520	
55			ENE						

57		N	116.191E	36.878N	2550	1386	396
58		NE	116.220E	36.868N	2580	350	100
59		NE	116.219E	36.867N	2580	630	180
60		ENE	116.224E	36.859N	2590	578	165
61		E	116.231E	36.846N	2600	400	--
62		NE	116.222E	36.865N	2600	1190	340
63		S	116.191E	36.821N	2610	613	175
64		E	116.231E	36.850N	2620	600	--
65		NE	116.217E	36.869N	2630	1500	--
66		E	116.231E	36.842N	2630	1554	444
67		ENE	116.229E	36.858N	2650	81	23
68		NE	116.220E	36.868N	2650	420	120
69		ENE	116.231E	36.854N	2670	665	190
70		SSE	116.262E	36.868N	2720	150	--
71		NE	116.222E	36.867N	2730	200	--
72		NW	116.172E	36.871N	2740	784	224
73		ENE	116.230E	36.855N	2750	1890	540
74		E	116.231E	36.847N	2770	1260	360
75		S	116.193E	36.819N	2940	588	168
76		NE	116.215E	36.873N	2970	5355	1530
77		ESE	116.233E	36.839N	2970	732	209
78		SSW	116.179E	36.822N	2970	221	63
79		NE	116.231E	36.860N	2980	2450	700
80		NNE	116.208E	36.875N	3010	840	240
81		NNW	116.190E	36.877N	3020	455	130
82		ENE	116.234E	36.852N	3020	315	90
83		NE	116.226E	36.867N	3050	840	240
84		NE	116.228E	36.866N	3090	315	90
85		NE	116.222E	36.871N	3130	875	250

	86		ENE	116.235E	36.853N	3130	385	110	
	87		WNW	116.166E	36.862N	3170	1064	304	
	88		NW	116.168E	36.869N	3170	539	154	
	89		SE	116.230E	36.829N	3180	683	195	
	90		NNE	116.208E	36.877N	3210	998	285	
	91		NE	116.232E	36.863N	3210	210	60	
	92		W	116.159E	36.855N	3220	546	156	
	93		NE	116.230E	36.866N	3230	595	170	
	94		ENE	116.230E	36.855N	3260	420	120	
	95		NE	116.225E	36.871N	3270	1260	360	
	96		E	116.237E	36.844N	3290	350	--	
	97		E	116.237E	36.843N	3320	840	240	
	98		ENE	116.237E	36.857N	3350	630	180	
	99		ENE	116.236E	36.860N	3370	87	25	
	100		NE	116.222E	36.874N	3380	1260	360	
	101		NE	116.224E	36.873N	3380	560	160	

115		ENE	116.240E	36.855N	3620	1260	360
116		SSW	116.179E	36.815N	3620	546	156
117		ENE	116.238E	36.863N	3640	315	90
118		NE	116.236E	36.865N	3670	2205	630
119		NE	116.232E	36.870N	3680	455	130
120		E	116.241E	36.844N	3680	840	240
121		ENE	116.242E	36.849N	3690	840	240
122		SW	116.167E	36.821N	3700	364	104
123		ENE	116.241E	36.858N	3710	560	160
124		SE	116.236E	36.829N	3710	455	130
125		ESE	116.238E	36.832N	3710	728	208
126		SW	116.163E	36.824N	3770	504	144
127		NW	116.159E	36.868N	3800	462	132
128		NE	116.239E	36.864N	3840	3430	980
129		WSW	116.163E	36.824N	3850	798	228
130		NE	116.231E	36.874N	3900	2310	660
131		ENE	116.243E	36.859N	3980	3850	1100
132		NE	116.237E	36.870N	4030	123	35
133		NNW	116.188E	36.886N	4060	546	156
134		NE	116.234E	36.875N	4110	840	240
135		SSE	116.210E	36.809N	4130	637	182
136		NE	116.230E	36.878N	4140	991	283
137		ESE	116.244E	36.823N	4170	420	120
138		SE	116.233E	36.819N	4170	886	253
139		NE	116.242E	36.866N	4190	1050	300
140		NE	116.240E	36.870N	4220	370	200
141		ENE	116.247E	36.857N	4250	100	--
142		S	116.189E	36.807N	4300	245	70
143		ENE	116.249E	36.851N	4310	700	200
144		E	116.248E	36.843N	4310	315	90
145		ENE	116.249E	36.855N	4350	300	--
146		SSE	116.218E	36.809N	4350	126	36

	147		ENE	116.249E	36.849N	4370	630	180	
	148		SE	116.234E	36.816N	4430	168	48	
	149		NE	116.246E	36.866N	4450	462	132	
	150		NE	116.244E	36.870N	4490	1260	360	
	151		NNE	116.206E	36.889N	4500	672	192	
	152		NE	116.246E	36.867N	4550	525	150	
	153		ESE	116.250E	36.836N	4550	616	176	
	154		SW	116.163E	36.824N	4580	210	60	
	155		NE	116.242E	36.874N	4610	3360	960	
	156		ESE	116.248E	36.829N	4610	455	130	
	157		ENE	116.252E	36.848N	4620	700	200	
	158		SE	116.226E	36.809N	4660	536	153	
	159		NW	116.145E	36.866N	4730	269	77	
	160		NNW	116.180E	36.891N	4760	578	165	
	161		E	116.253E	36.843N	4760	539	154	
	162		SSE	116.200E	36.802N	4760	357	102	
	163		SSW	116.173E	36.806N	4780	259	74	
	164		NNE	116.209E	36.892N	4870	809	231	
	165		ENE	116.256E	36.858N	4940	1015	290	
	166		W	116.139E	36.851N	4940	315	90	
	167		NE	116.254E	36.863N	4980	462	132	
168		ENE	116.257E	36.847N	4990	182	52		
169		S	116.188E	36.798N	5080	432	123		
170		SW	116.212E	36.798N	5060	510	145		
171		SW	116.144E	36.819N	5160	815	232		
	1		NE			6200	——	——	(GB3838-2002) O
	2		W			400	——	——	(GB3838-2002) η
	1	6km ²							(GB/T14848-2017) η
	1	——	200m			200	——	——	(GB3096-2008) 2
	1	——	200m			200	——	——	(GB36600-2018)

7	1-2	2849.26	1# 2#	—	[2015]16	2015.6	2016.7	[2016]6 2016 12		√
8		3288.39	2# 1 4 SNCR	—	[2016]46	2016.11	2016.7			√
9	3×130t/h	1300	FOSS	—	[2017]26 2017.5.26	2017.7	2017.7	2018 6		√
10	5×130t/h	2456.87	1# 2# 3# 4# 5×130t/h	2018-371526-44-03-0 44625	[2018]208 2018.12.21	2018.12	2018.12	2019 3		√
11		170	EPS 20	2019-371526-50-03-0 02920	[2019]24 2019.04.25	2019.4	2020.3	2020.4		—
8	45000 6 /	13420		[2005]95	2007.9.20 [2007]21	2006.2	2009.5	[2010]12 2010 5		√

9		634	15 15 6		[2017]377 2017 9 11	2017 10	2017.12	2018 6		√
10		36000	135		[2014]49 2014 9 27	2016.10	2017.12	2018 6		√
11		1150.87	2850		2011 7 6 [2022]18	2015.10	2017.12	2018 6		√
12		956	50		[2018]96 2018 7 20	2018.07 .21	2019.02.20	2019 3 16		√
13		650	80	2017-371526-30-03-0 72538	[2018]207 2018 12 21	2018.12	2018.12	2019 3 16		√
14		185	50		20173715260000 0255	-	2017.9			—
15		120	1500		20173715260000		2017.8			—

										√
24	15 VOC	5000	VOC		[2019]56 2019.07.18	2019.08	2019.08	2019.08.27		√
25	10	65491.6	10 130		2012.6.27 [2012]10	2014.12	2016.2	2016.10.9 [2016]25		√
26	VOCs	3053.8	VOCs		[2018]209	2018.12	2019.01	2019.03.16		√
27	20 /	20000	20	2020-371526-41-03-0 01799	[2020]3					—
28	20	987	20	2020-371526-41-03-1 35626	[2020]212					—

2.2

2.2.1

2.1-1

45000t/a 6 /

2.1-1

913715261682127528005U

2.2.2

2.2-1

2.2-1

45000t/a 6 /	6	45000t	2
	6	20500t	90%
	6	35000t	2
	6	20000t	
		30	--
		62	--
		20	--
		1.8	--
		84	--
		100	--
		50	--
		80 m ²	--
		50	--
		1500	--
		450	--

2.2.3

2.2-2

2.2-2

	45000t/a / 6	3 2
		1 1 1 1
		1
		1
		1
		1
		1
		1
		1
		1
		1
		1
	1	1 1
	2	1 1
	3	1
	4	1
		1
		2 1 1
		8 1 1 170m ³ 2 515m ³

			1 30m DA024 20m DA018 25m DA029
		45000t/a 6 /	
		/ /	
			759m ³

2.2.4

2

2 1

4 3

2.2-1

2.2.5

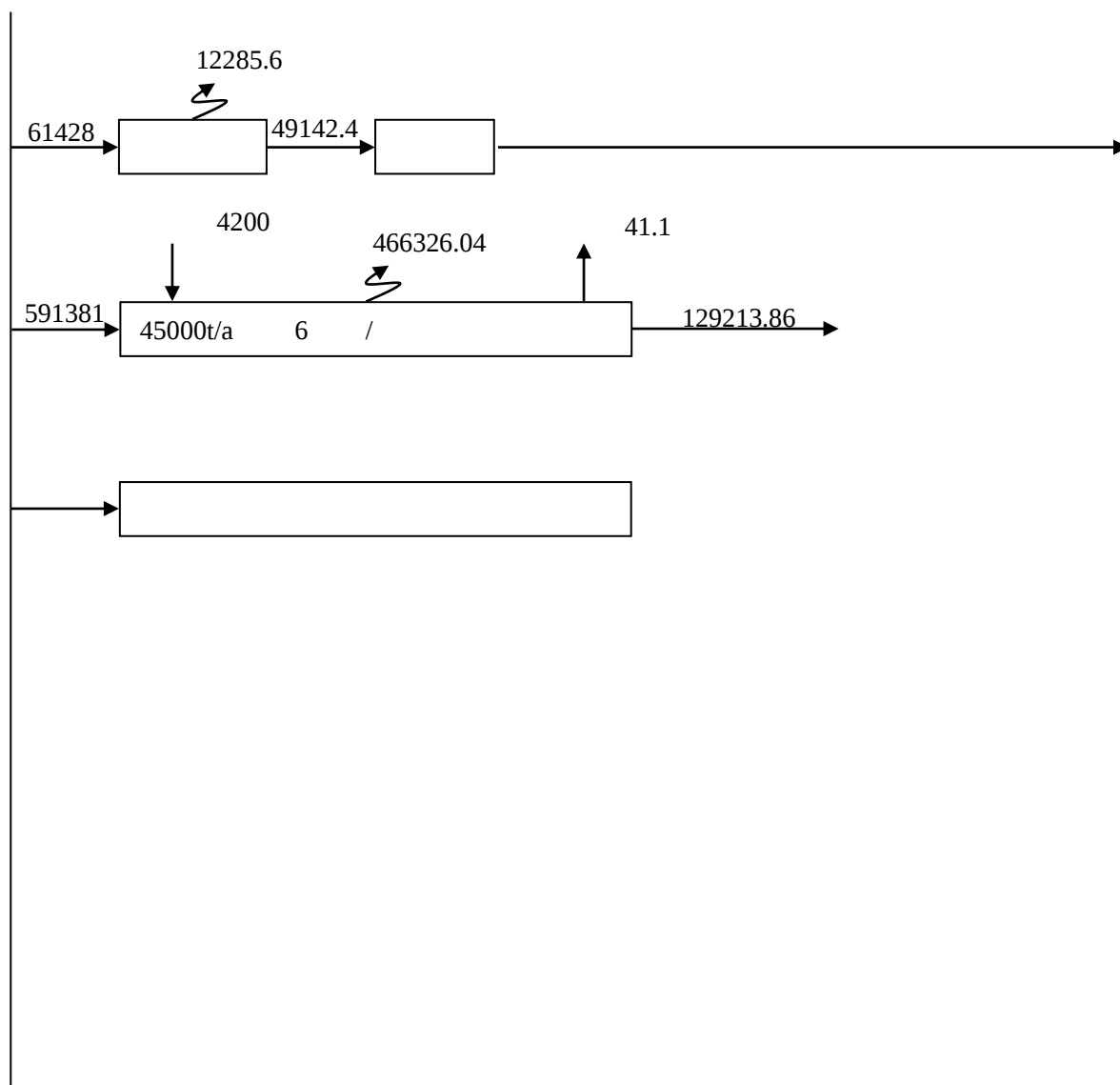
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2.2-3

2.2-3

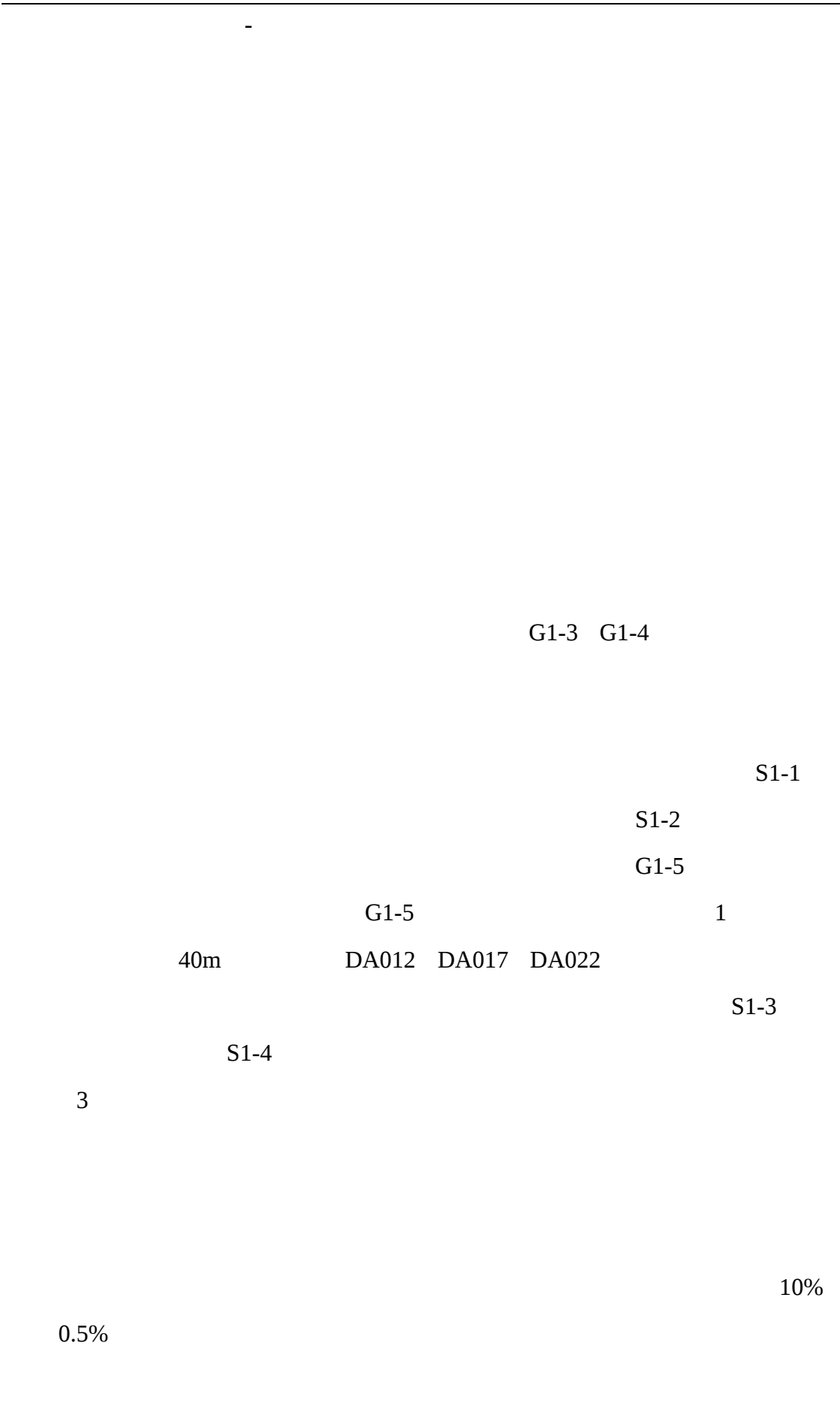
--	--	--	--

1 45000t/a 6 /



2.2-2

m³/a



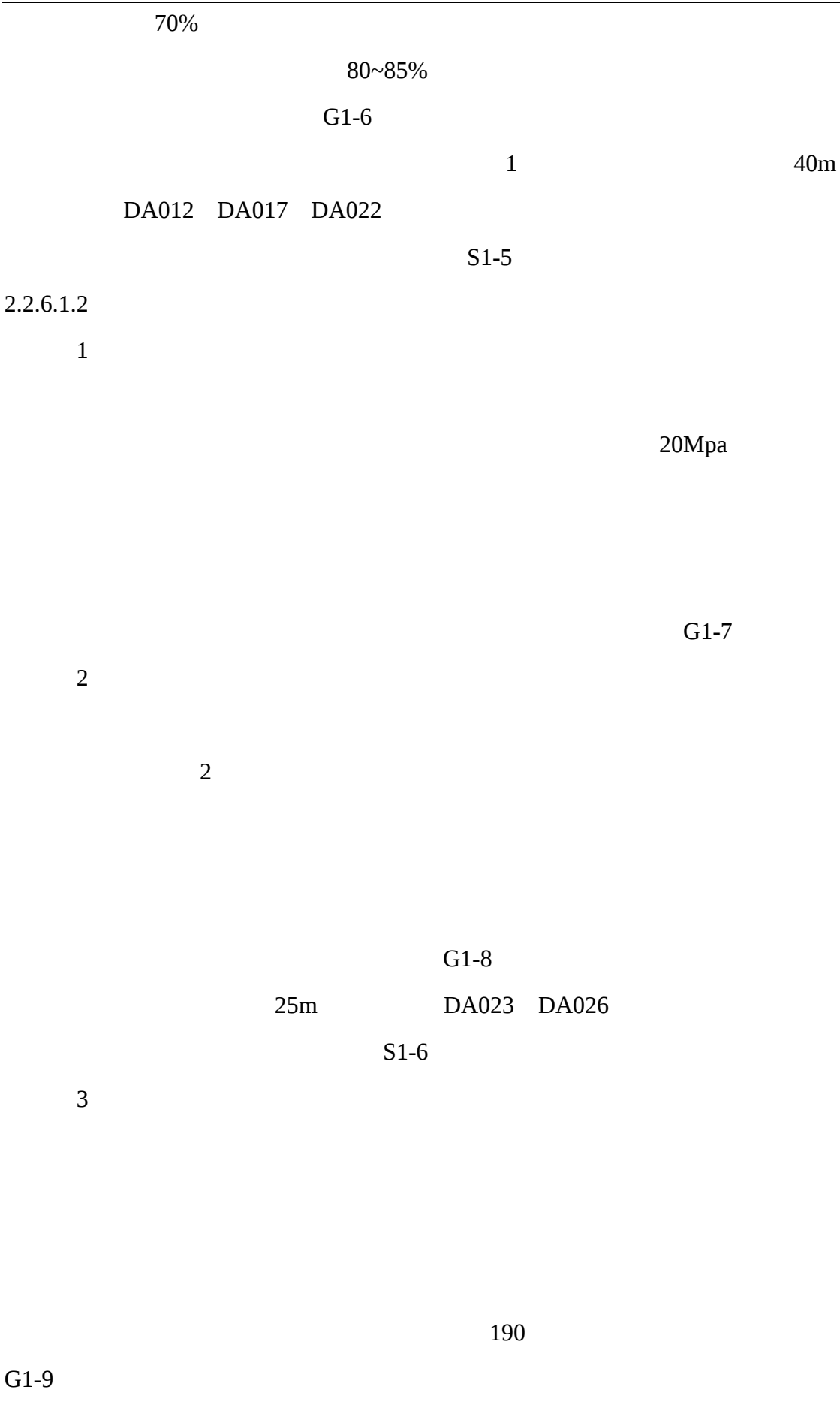
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4

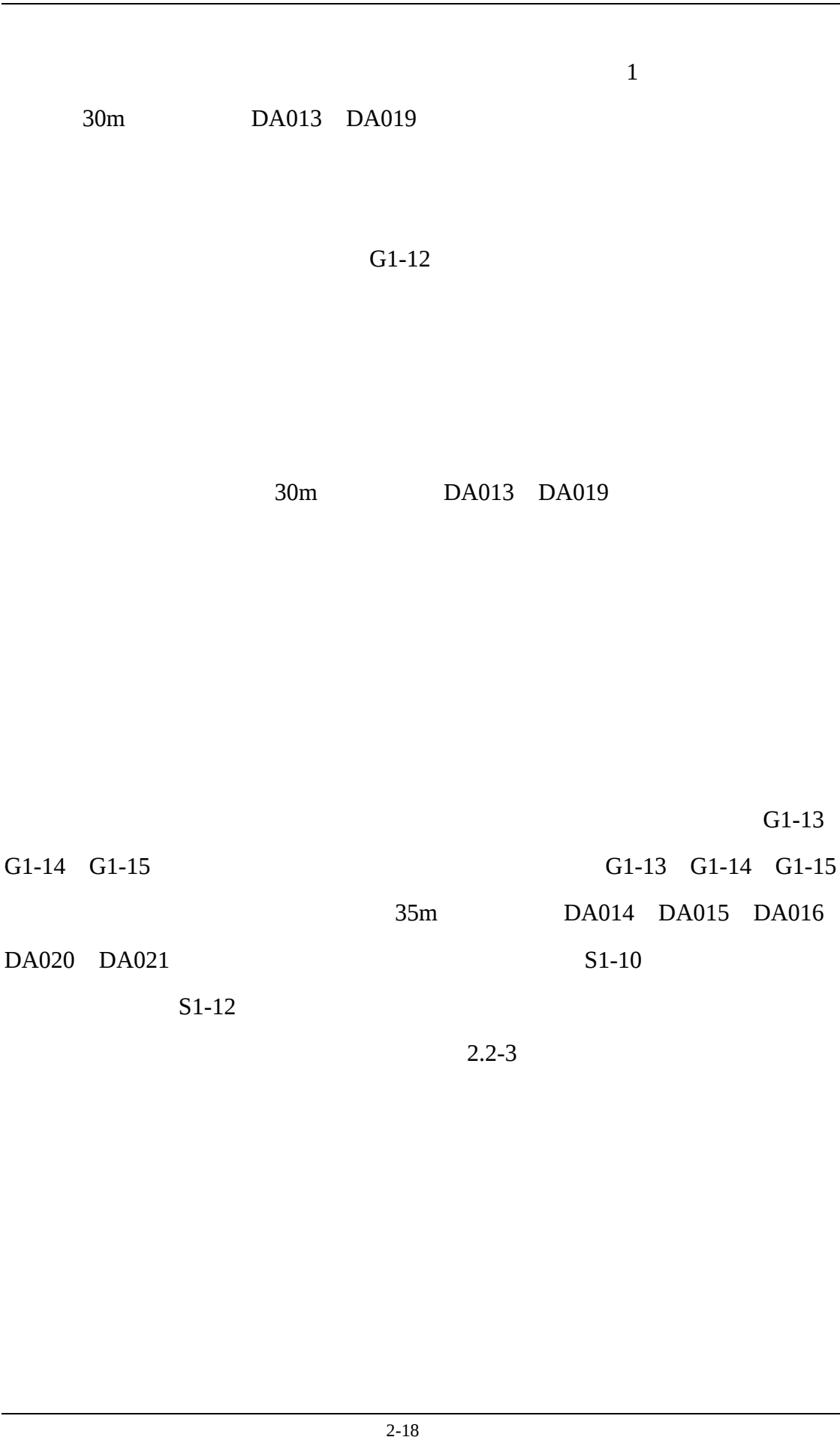
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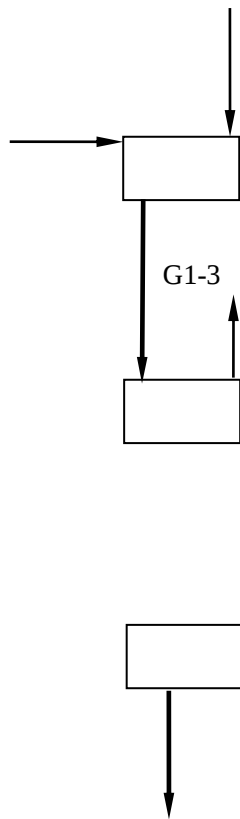
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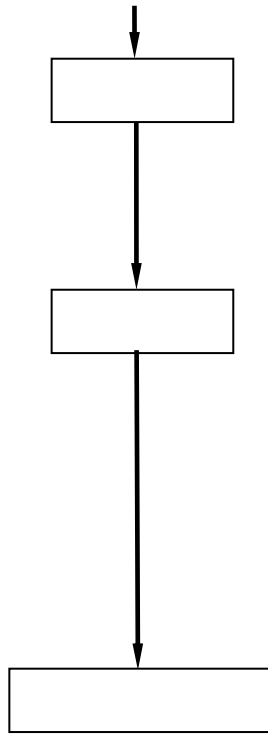
5

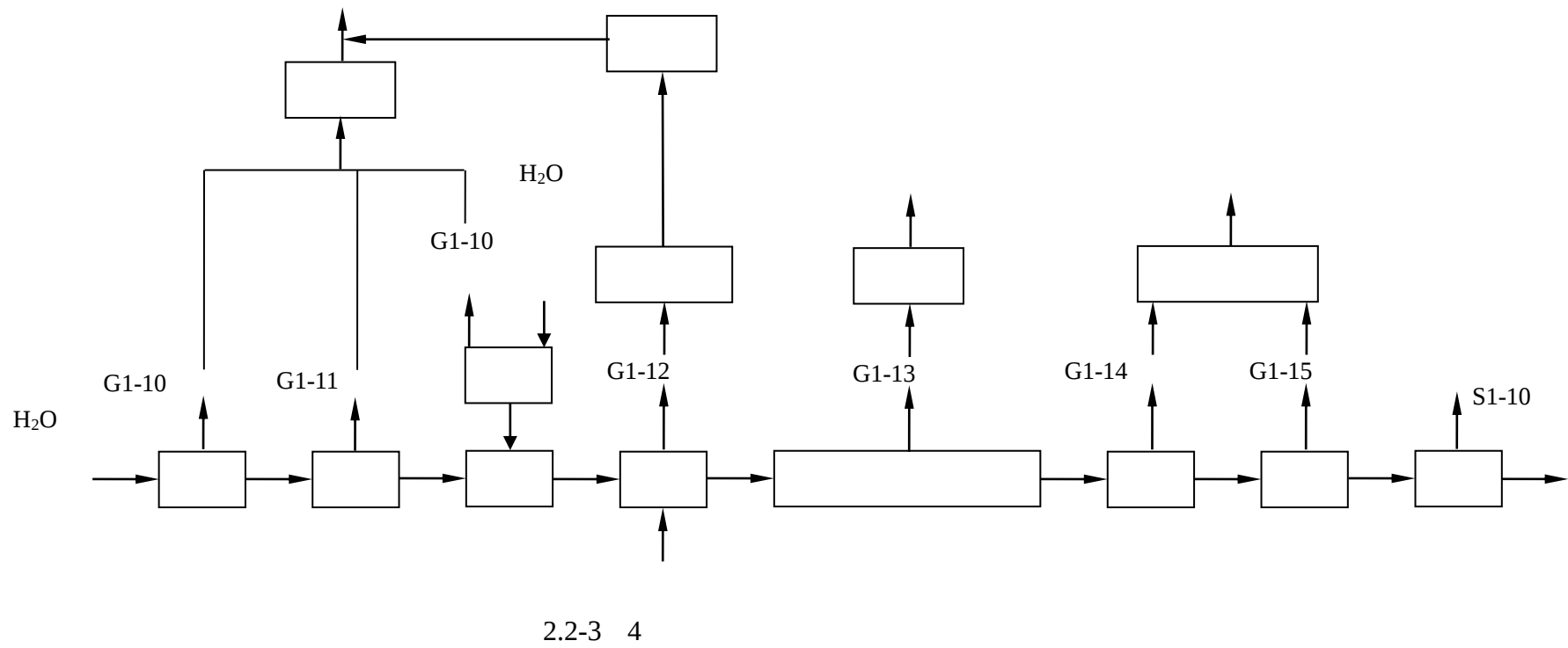
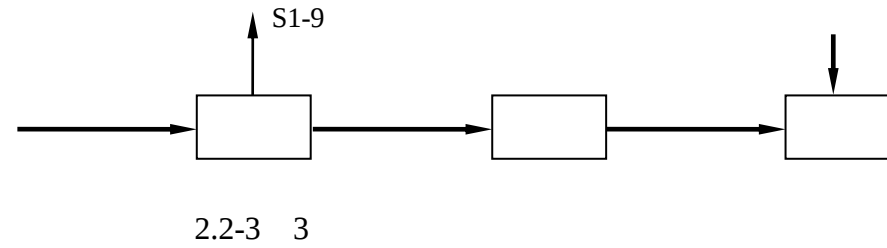


			20~25	
				S1-7
	15m	DA027	DA028	
4				
		S1-8		S1-12
2.2.6.1.3				
			S1-9	
2.2.6.1.4				
				20~30
	-	1.3~2.3		
pH	25			
G1-10		G1-11		
		G1-16		







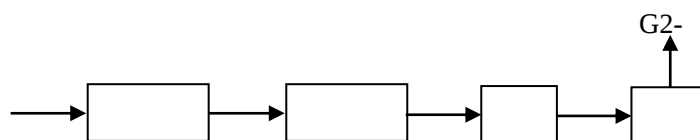


2.2.6.2

2.2.6.2.1

2.2-4~2.2-6

2.2-4



2.2-5

2.2-6

2.2.6.2.2

2.2-7

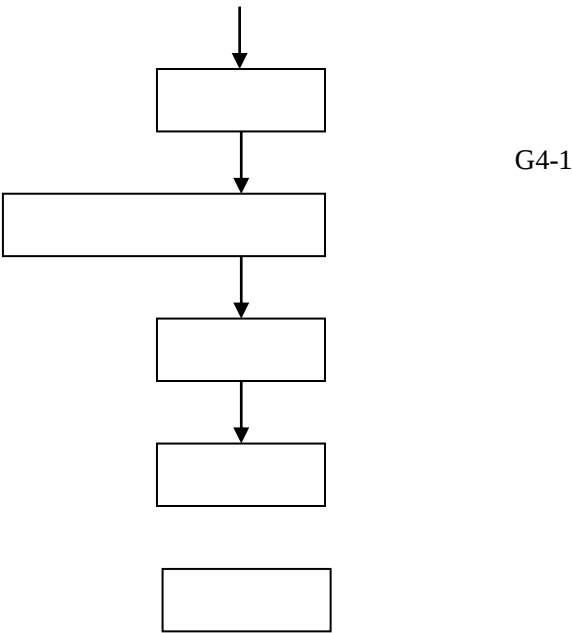
2.2.6.2.3

2.2.6.3

2.2.6.4

1						/	/
		60~110					
2					150		160
165	175		180	30			
3							
	/	/					
4							
5							

2.2-8



2.2.6.5

1

2

3

4

8m³

1

8m³

SS

5

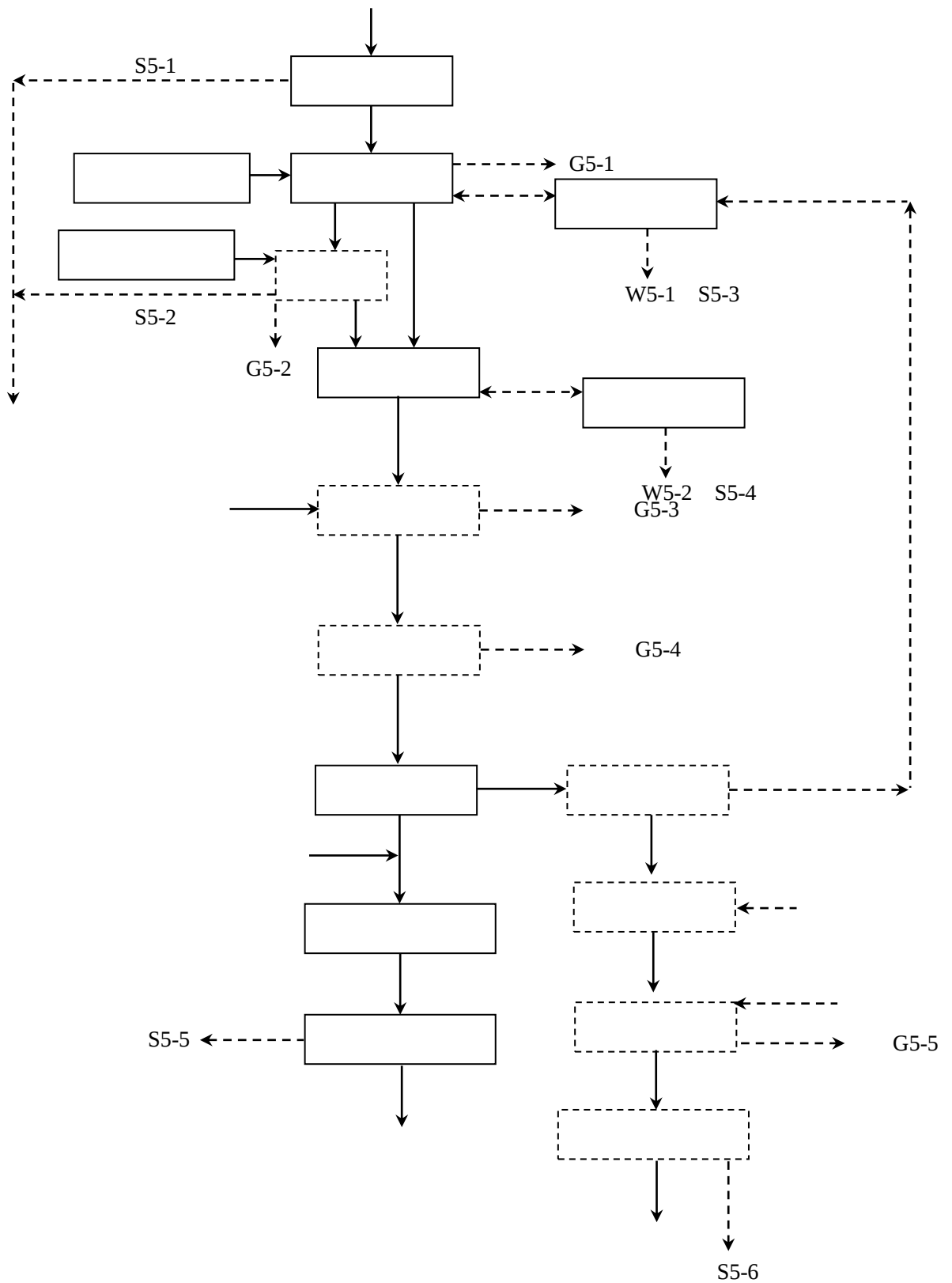
6

700

7

8

2.2-9



[]

2.2-9

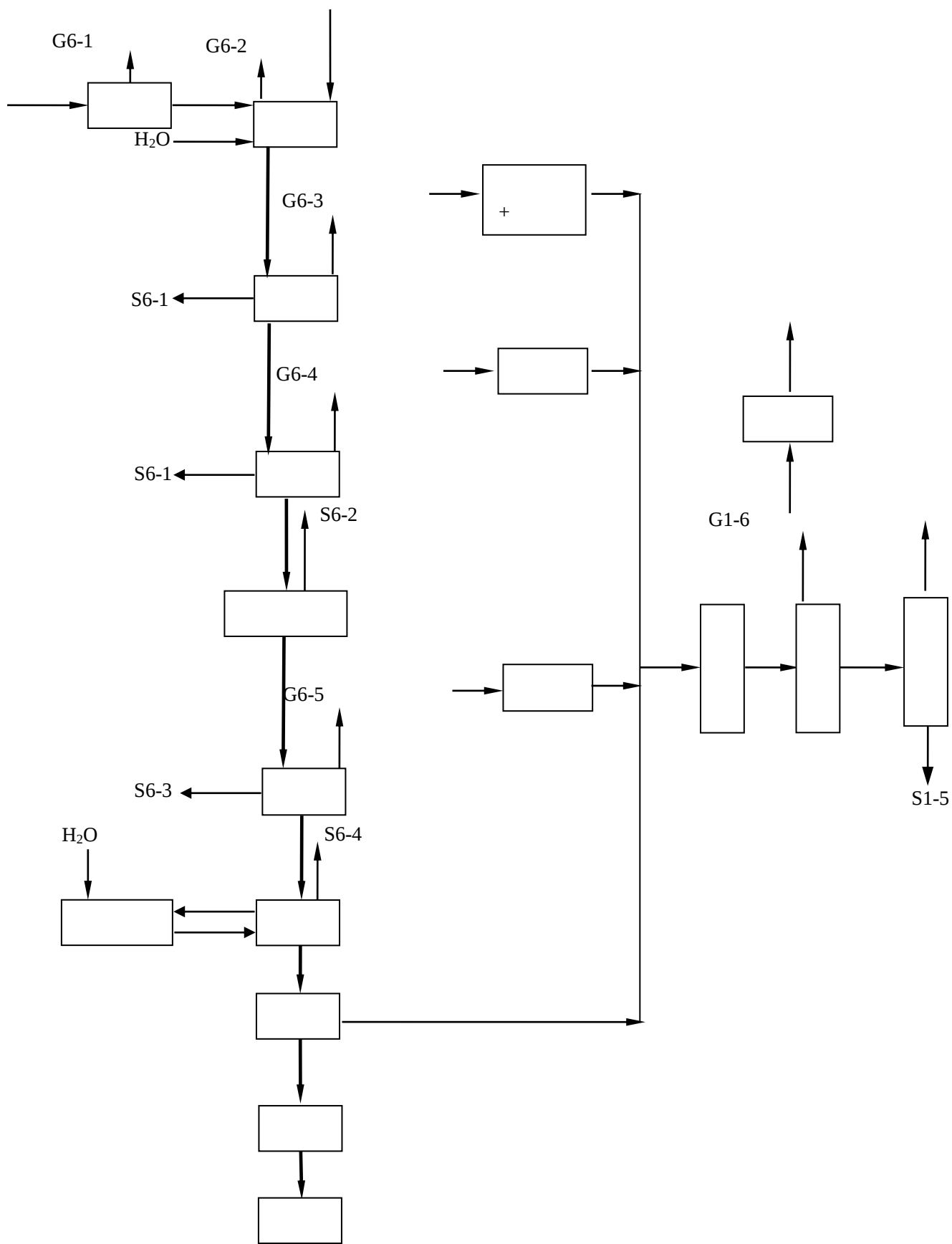
2.2.6.6

“ -
” “ ”

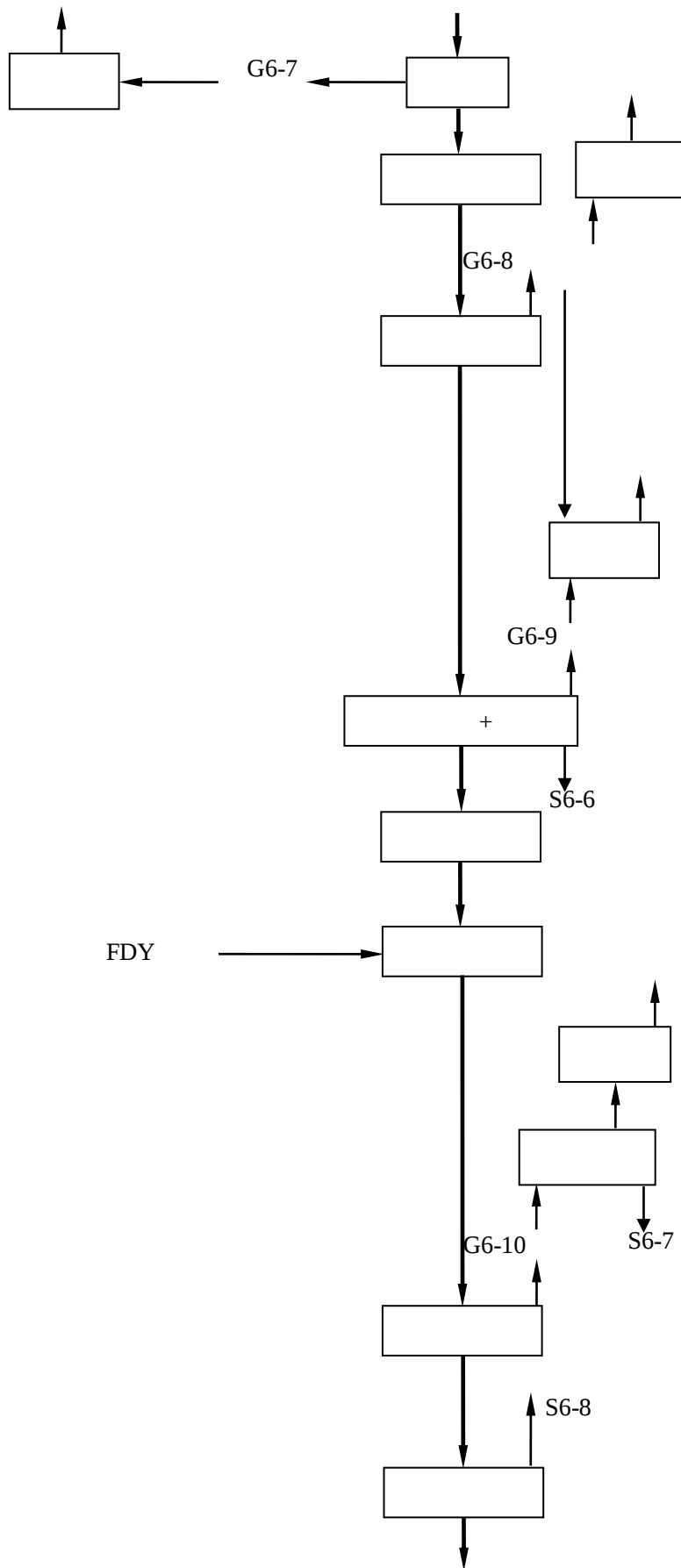
45000t/a 6 /

45000t/a 6 /

2.2.6.1.1 2.2-10



2.2-10 1



2.2.7 “ ”

2.2.7.1

2.2.7.1.1

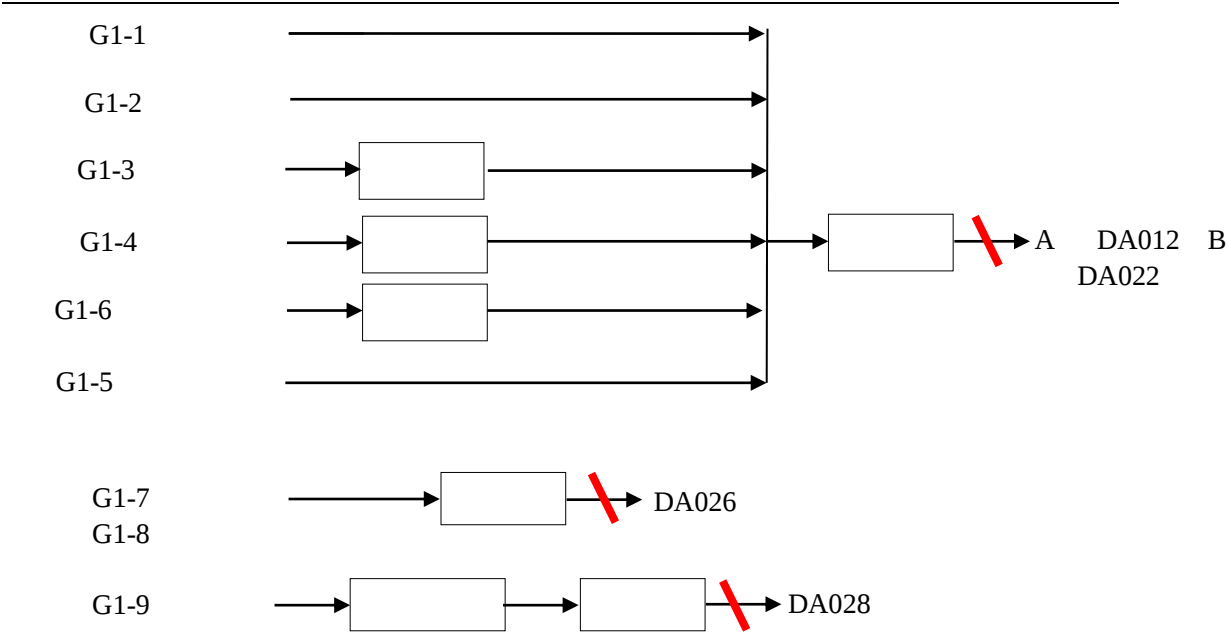
45000t/a 6 /

2.2-5

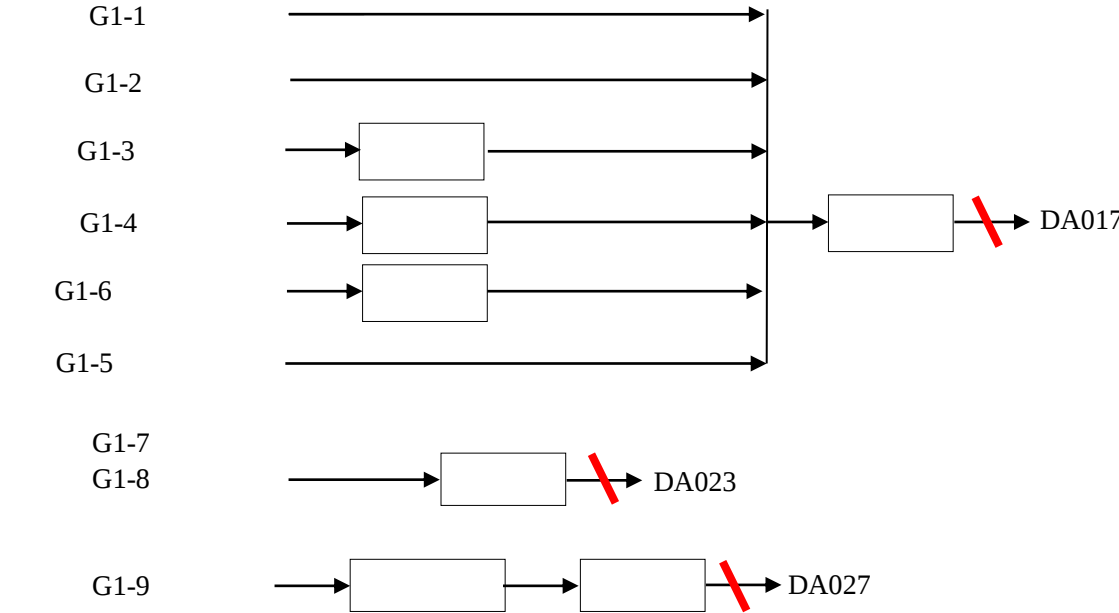
2.2-5

G1-1			1 DA012 DA017 DA022 40m
G1-2			
G1-3			
G1-4			
G1-6			
G1-5			
G1-7			DA023 DA026 25m
G1-8			
G1-9			DA027 DA028 15m
G1-12			DA013 DA019 30m
G1-10			
G1-11			
G1-16			
G1-13			35m DA014 35m DA015 35m DA020
G1-14			DA016 DA021 35m
G1-15			

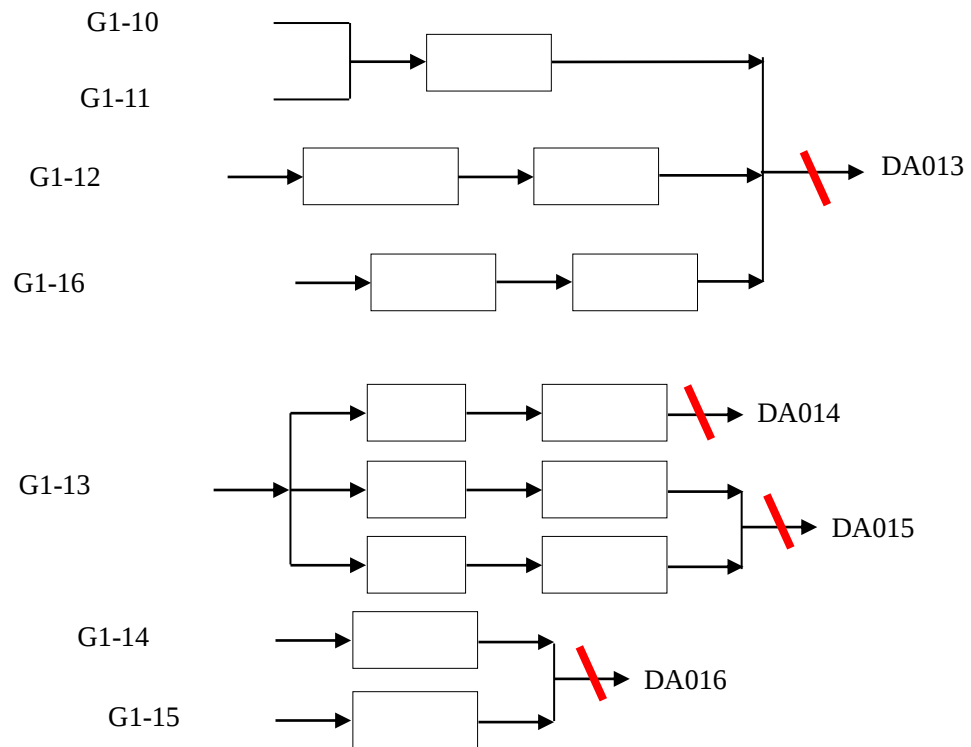
2.2-11~2.2-14



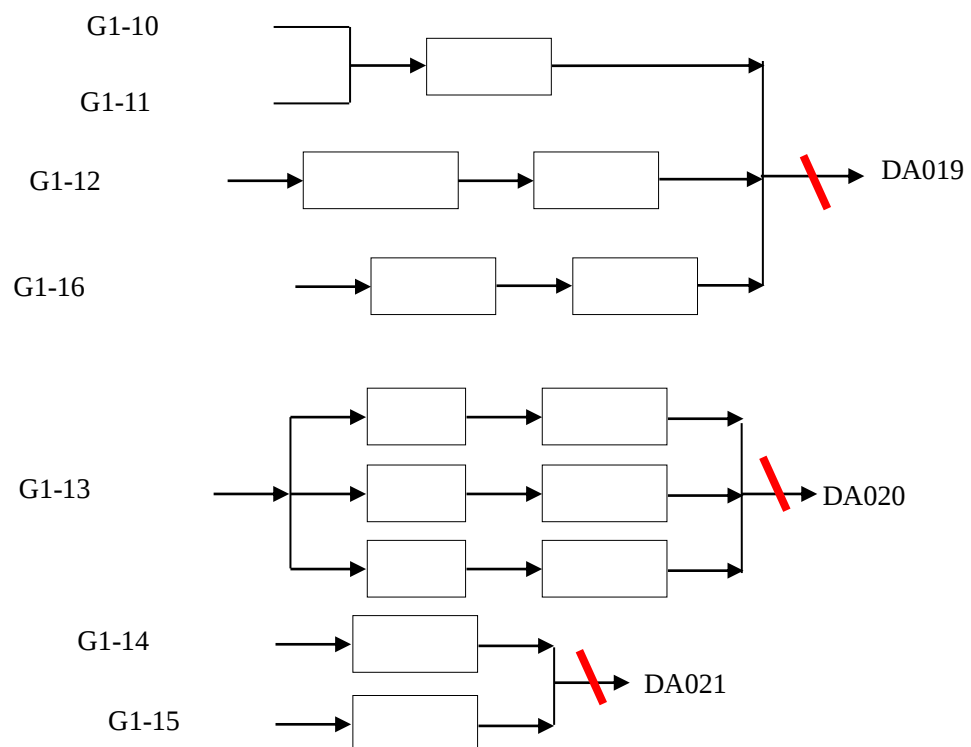
2.2-11



2.2-12



2.2-13



2.2-14

2.2-6

							kg/h	m m				
				m³/h		mg/m³			kg/h	mg/m³		kg/h
DA012	VOCs	2022.1.19	1	2022		1.5	0.00303	0.00364	40/0.5	10	39	
			2	2207		1.7	0.00375					
			3	1976		2.1	0.00415					
			1	2022		4.52	0.00914	0.00855		60	3.0	
			2	2022		4.10	0.00829					
			3	2022		4.06	0.00821					

DA022



			2	30896	8.87	0.274					
			3	31944	9.80	0.313					
	VOCs		1	7645	7.28	0.0557	0.0519		60	3.0	
DA028		2022.3.10						35/0.6			

			3	1031	4.1	0.00423						
DA019		2022.1.20	1	1718	1.9	0.00326	0.00374	30/0.5	10	23		
			2	1997	2.3	0.00459						
			3	1536	2.2	0.00338						
			1	1997	37.5	0.0749						
	VOCs		2	1997	36.6	0.0731	0.0740		60	3.0		
			3	1997	37.1	0.0741						
			1	1997	4.63	0.00925						0.00846
			2	1997	4.12	0.00823						
			3	1997	3.95	0.00789						
			1	1997	0.7	0.00140	0.00147		5	—		
			2	1997	0.9	0.00180						
			3	1997	0.6	0.00120						
			2022.3.27	1	1159	1.6	0.00185		0.00238	15	—	
				2	1119	2.8	0.00313					
				3	1023	2.1	0.00215					
DA014	VOCs	2022.1.20	1	1268	5.65	0.00716	0.00691	30/0.5	60	3.0		
			2	1268	5.43	0.00689						
			3	1246	5.36	0.00668						
			1	1003	2.5	0.00251	0.00293		10	23		
			2	1268	2.3	0.00292						
			3	1246								

		2022.3.27	1	2169	1.2	0.00260	0.00348		15	—		
			2	2609	1.6	0.00417						
			3	2041	1.8	0.00367						
DA015	VOCs	2022.1.20	1	12375	11.9	0.147	0.164	30/0.8	60	3.0		
			2	12375	13.7	0.170						
			3	12226	14.3	0.175						
				1	12375	0.8	0.00990		0.00905	5	—	
	2		12375	0.8	0.00990							
	3		12226	0.6	0.00734							
				1	12375	2.9	0.0124		0.00631	10	23	
	2		12226	2.4	0.00359							
	3		10883	2.7	0.00293							
				1	12375	2.62	0.0324		0.0365	—	20	
	2		12375	3.08	0.0381							
	3		12226	3.19	0.0390							

			2	2884	0.7	0.00202					
			3	2884	0.7	0.00202					
		2022.3.27	1	2733	1.2	0.00328	0.00367		15	—	
			2	2953	1.8	0.00523					
			3	2786	0.9	0.00251					
DA016	VOCs	2022.3.07	1	5606	3.63	0.0203	0.0213	30/0.8	60	3.0	
			2	6160	3.97	0.0245					
			3	5529	3.48	0.0192					
DA021	VOCs	2022.3.07	1	10657	3.02	0.0322	0.0320	30/0.8	60	3.0	
			2	10496	3.03	0.0318					
			3	10343	3.08	0.0319					

2.2-6													
GB16297-1996						2							
						DB37/2376-2019							
1							GB14554-93						
2	VOCs												
						6	DB37/801.6-2018						
1													
6						DB37/801.6-2018						2	
						GB31572-2015						5	
												6	
						DB37/801.6-2018						2	
						132917m ³ /h						111650.28	m ³ /a
1.883t/a						VOCs						7.661t/a	
1.955t/a						0.213t/a						0.497t/a	
						1	15m		DA031				
												2021	C210848-20
2021	12	13											

2.2-7

2.2-7

				m ³ /h	mg/m ₃	kg/h			mg/m ³	kg/h	
DA031		2021.12.13	1	8822	5.1	0.045	0.0402	15/0.35	10	3.5	
			2	8640	5.6	0.0484					
			3	6469	4.2	0.0272					

2.2-7

1

7977m³/h 5743.44 m³/a

0.29t/a

			1	5125.481		——	—		15	0.8			
			2	5125.734		——							
			3	5056.011		——							
			1	5125.481	4.6	0.0236	0.025 4		10				
			2	5125.734	5.3	0.0272							
			3	5056.011	5.0	0.0253							
DA00 8		2020. 12.22	1	4264.790	4.0	0.0171	0.016 9	15	10	3.5			
			2	3814.772	4.3	0.0164							
			3	4540.407	3.8	0.0173							

DA007		VOCs		6		DB37/801.6-2018	
1		GB16297-1996		2		DB37/2376-2019	
DA005		VOCs		5		DB37/2801.5-2018	
DB37/801.6-2018		1		15776m ³ /h		3783.84 m ³ /a	
0.102t/a		0.134t/a		0.27kg/a		VOCs	
G5-3		G5-4		G5-5		2.2-10	
2.2-10		2.2-10		2.2-10		2.2-10	

G5-3		UV	
G5-4			
G5-5			
		1	15m
		DA007	

2.2-9		DA007	
VOCs		4	
DB37/2801.4-2017		2	

2.2-11

2.2-11

G6-1			44m DA025 1
G6-3			
G6-4			
G6-6			
G6-5			30m 1 DA024
G6-2			
G6-7			
G6-8			
G6-9			
G6-8			20m DA018
G6-10			25m

2.2-12

						kg/h	m m			
			m³/h	mg/m³	kg/h			mg/m³	kg/h	
		1	20265	24.4	0.494	0.449		—	—	—

DA018

30/1.2

		2	10925	2.6	0.0248					
		3	10108	2.9	0.0293					
	VOCs	1	10925	4.10	0.0448	0.0479		60	3.0	
		2	10925	5.09	0.0556					
		3	10925	3.95	0.0432					

2021 C210848-08

2021 9 30

2.2-15

2.2-16

2.2-15



2.2-15

2.2-15

2.2-16

2.2-15

HCl

GB16297-1996 2

GB14554-93 1

VOCs 4

DB37/2801.4-2017 3 5

DB37/2801.5-2018 3

6 DB37/801.6-2018 3

[2019]7

100m

100m

50m

2.2.7.2

2.2.7.2.1

2.2-17

2.2-17

1	45000t/a 6 /		
2			
3			
4			
5			

2.2.7.2.2

1000m³/d

“

+ + + ”

2.2-16

2022

7 2.2-18

2.2-18 2022 2

	m ³ /d	COD _{Cr} mg/L	mg/L	mg/L
2022-07-01	2576	4.23	0.377	0.0555
2022-07-02	3459	5.29	0.529	0.0835

2022-07-11	1355	20.7	1.63	0.0963
2022-07-12	1633	18.3	2.3	0.517
2022-07-13	1203	14.9	1.84	0.0965
2022-07-14	1914	39.1	3.95	0.21
2022-07-15	1636	15.9	0.826	0.0676
2022-07-16	1462	14.8	0.899	0.0715
2022-07-17	1660	27.9	1.43	0.107
2022-07-18	1684	16.9	1.09	0.189
2022-07-19	1535	23.6	1.88	0.333
2022-07-20	1398	16.5	0.952	0.0821
2022-07-21	1413	20	0.89	0.095
2022-07-22	1455	20.9	0.668	0.098
2022-07-23	1269	23.8	1.14	0.082
2022-07-24	1770	22.3	2.68	0.181
2022-07-25	1515	17.1	2.11	0.212
2022-07-26	1494	20.5	2.91	0.227
2022-07-27	834	17.1	1.86	0.136
2022-07-28	1326	17.1	1.92	0.223
2022-07-29	928	15.7	1.16	0.102
2022-07-30	836	20	2.86	0.319
2022-07-31	2015	40.8	3.83	1.19
	1750	18.5	1.69	0.178
	834	3.8	0.301	0.0039
	4126	40.8	4.86	1.19
GB/T31962-2015 A	—	500	45	8
	—	300	20	8

GB/T31962-2015 1A

2.2.7.2.3

21.890186 m³/a

COD_{Cr}

29.6mg/L 15.4mg/L 1.53mg/L

COD _{Cr}		19.4mg/L		0.253mg/L	
0.202mg/L	8.61mg/L	4.247t/a	0.055t/a	0.044t/a	1.885t/a

2021 C210848-08 2021

2.2-19

		2021 9 27	
		dB(A)	dB(A)
1#	1	57.3	48.6
2#	1	52.2	49.1
3#	1	55.4	48.8
4#	1	55.3	47.9
		65	55



52.2~57.3dB(A)

GB12348-2008 3

GB12348-2008 4a

3-52

2.2-20~2.2-25

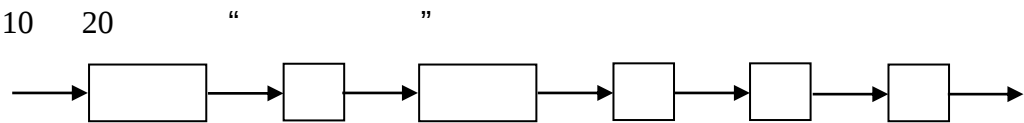
45000t/a 6 /

2.2-20

2.2-20

				t/a	
			--	0.35	
			--	8	
			--	40	
			--	20	
			--	128.53	
			--	185	
			--	265	
			HW08 900-249-08	0.12	
			--	70	
			--	82	
			--	12	
			--	150	
	--		HW49 900-041-49	12	
			HW08 900-249-08	26t/4a	
			--	0.4	

2000



2.2-21

2.2-21

				t/a	
			--	10	
			HW08 900-249-08	1.0	
			HW08 900-249-08		
			HW09 900-006-09	1.2	
	--		HW09 900-006-09	2.0	
			--	0.03	
			--	60	

2.2-22

2.2-22

				t/a	
			--	2.0	
			--	6.0	
			HW12 900-252-12	6.2	
	--		HW49 900-041-49	0.4	
			HW49 900-041-49	0.1	
	UV		HW29 900-023-29	0.02	
			--	0.07	
	--		--	0.5	
			--	6.0	

2.2-23

2.2-23

--	--	--	--	--	--

				t/a	
--	--	--	--	-----	--

2.2-25

2.2-25

		m³/a	148618.2
		t/a	3.672
		VOCs t/a	10.206
		t/a	1.955
		t/a	0.213
		t/a	0.497
		kg/a	0.27
	m³/a		218901.86
	COD _{Cr} t/a		4.247
	t/a		0.055
	t/a		0.044
	t/a		1.885
t/a			0

2.4

1 1.787t/a VOCs

14.248t/a

2 45000t/a 6 /

3 10000m³

2019 134

1 2022 10

2 45000t/a 6 /

			RTO
	RCO	VOCs	2022
11			
	3	.	B

		1 6 5592.66m ²
		1
		1t/h
		1 666m ²
	1	1 4032m ² 1
	2	1 4032m ² 1
	3	1 4368m ²
	4	1 1152m ²
		1 2000m ²
		1 7.5m ²
		1 800L
		1 3.9m ³
		1 3.9m ³
		3304.7 kWh 4872t

--	--	--

2.5.4

2.2-1

2.5.5

2.5.5.1

45000t/a 6

/

2.5.5.2

1

140-150

24-36h

18

90 左右

18

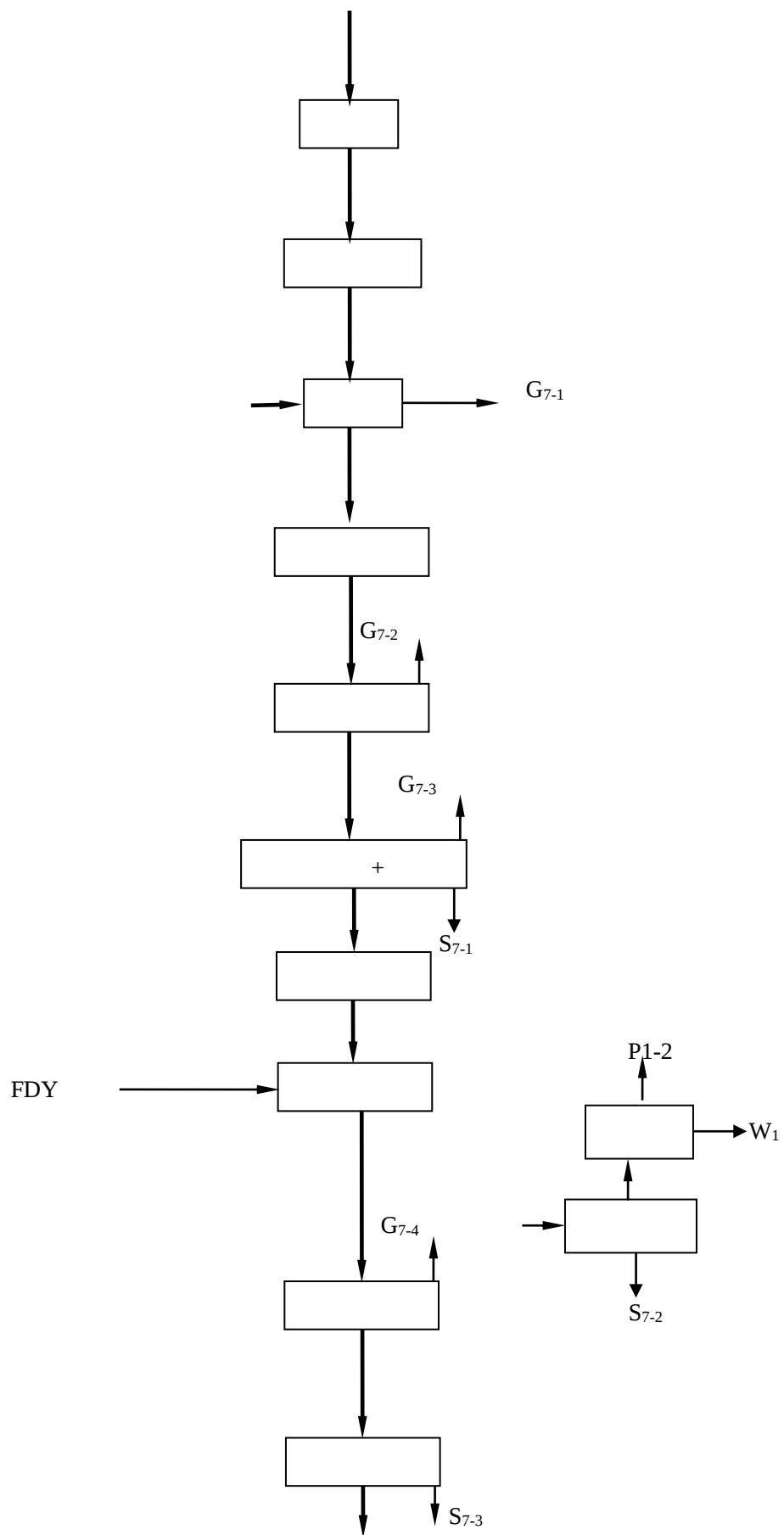
90 左右

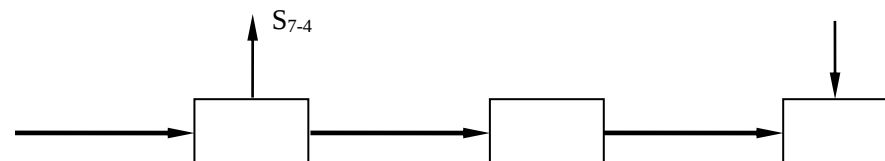
2

2

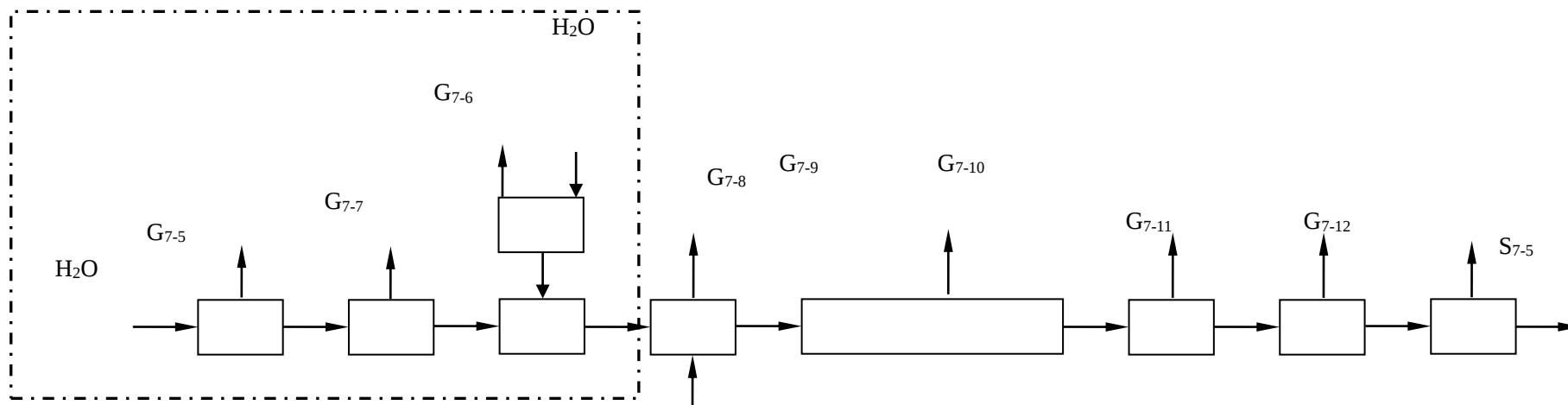
2.2.6.1.1

2.5-1





3.2-6 2



2.5-2 3

2.5.6

“ ”

2.

P1-3 P1-4	SO ₂	3.4	0.085	0.716	3.4	0.085	0.716	43/1.2 P1-3 P1-4 43/0.8
	NO _x	13.7	0.342	2.871	13.7	0.342	2.871	
	VOCs	17.8	0.446	3.75	0.4	0.0089	0.075	
		18.6	0.464	3.898	1.86	0.0464	0.3898	
		2.2	0.054	0.454	0.04	0.0011	0.0091	
		1.1	0.027	0.227	0.02	0.00054	0.00454	

2.5-4

GB16297-1996 2 45.3kg/h

DB37/2376-2019 1 10mg/m³ 50mg/m³

100mg/m³ < >

[2019]39 50mg/m³

GB31572-2015

5 15mg/m³ 5mg/m³

6 2 15mg/m³

5mg/m³ VOCs

6 DB37/801.6-2018 1

VOCs60mg/m³ 3.0kg/h

GB14554-93 2 41kg/h

2.5.6.1.2

1.151t/a VOCs 0.187t/a

0.097t/a VOCs

0.416t/a 0.433t/a 0.05t/a 0.025t/a

0.194t/a

VOCs 0.832t/a 0.866t/a 0.1t/a 0.05t/a

90%

90%

2.5.6.2

[2017]5	COD _{Cr}	NH ₃ -		
			10878m ³ /a	
COD _{Cr}		0.21t/a	0.003t/a	15599.5m ³ /a
COD _{Cr}		0.30t/a	0.004t/a	
26477.5m ³ /a	COD _{Cr}		0.51t/a	0.007t/a
2.5.6.3				

	RTO		12t/5a	24t/5a		282-999-99	
			2530.82	1290.3			
			3.1	3.5			

2.5.6.4

20

25dB(A)

GB12348-2008 3

GB12348-2008 4a

2.5.7

2.5-7

2.5-7

		Nm ³ /a	113400	
		t/a	3.684	
		VOCs		
		t/a	1.367	
		SO ₂ t/a	2.148	
		NOx t/a	8.613	
		t/a	1.1694	
		t/a	0.0273	
		t/a	0.01362	
		t/a	1.442	
		VOCs		
		t/a	1.435	
		t/a	1.299	
		t/a	0.15	
		t/a	0.075	
	m ³ /a		26477.5	
	COD _{Cr} t/a		0.51	
	t/a		0.007	

	t/a	0	
--	-------	---	--

3

3.1

2019 1 28 [2019]7

3.5 6

2019 6 23

6 2 2022 1

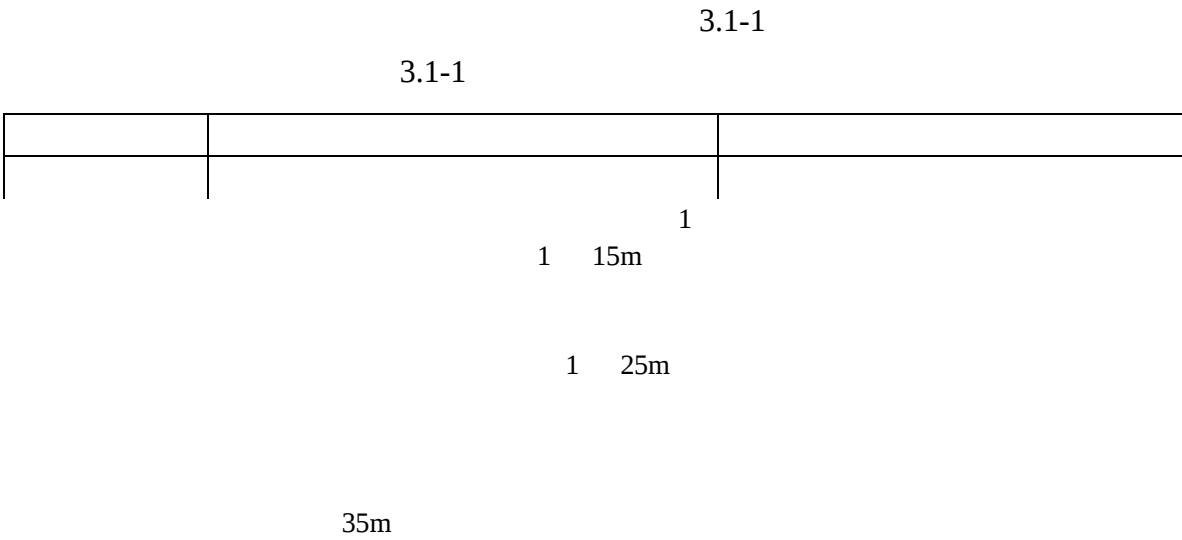
“ ” 30

2020 17 “

30

“ ” 30

5 × 130t/h 1 5 1 2.4



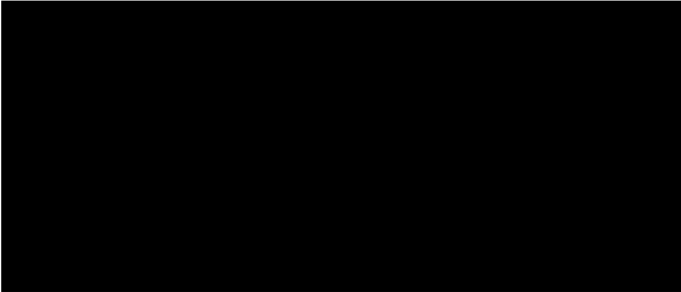
[2020]688

“

”

	3.2-2	
3.2-2	6	GBT9102-2016

		1t/h	
	1	4032m ² 1	
	2	4032m ² 1	
	3	4368m ²	
	4	1152m ²	
		2000m ²	
		7.5m ²	
		3.9m ³	
		3.9m ³	
		750 kWh	
		4872t	



3.2.4

3.2-4

3.2-4

1	6	t/a	20000
		d/a	350
			60
		m²	1800
			40000
		/	152159
		/	143434
		/	8458
		/	2117.2
		/	6340.8
		%	21.1
		%	15.2
			2202
			7.1
		%	47.1

3.2.5

3.2.5.1

3.2-6

3.2-6 1

t/a t

3.2.7

3.2-8

3.2-8

1		152/168	33	
2		MNB190CM	14	
3		--	18	
4		--	1	
5		--	46	
6		--	57	
7		40Nm ³ /min	1	

3.2.8

3.2.8.1

1

S₁

2

6

15

72

20~30

45 ~50

85

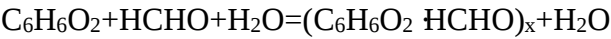
95

25

35

-

1.3~2.3



-

-

-

PH

PH

PH

10

2.0Cps

18%

15

G₁ G₂

G₃

3

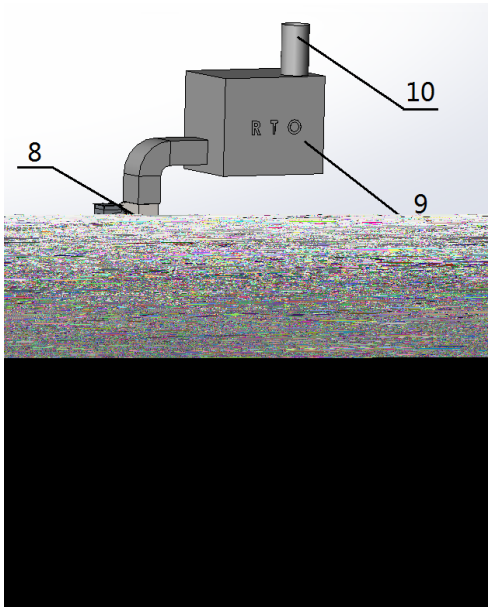
G₄

+RTO 43m

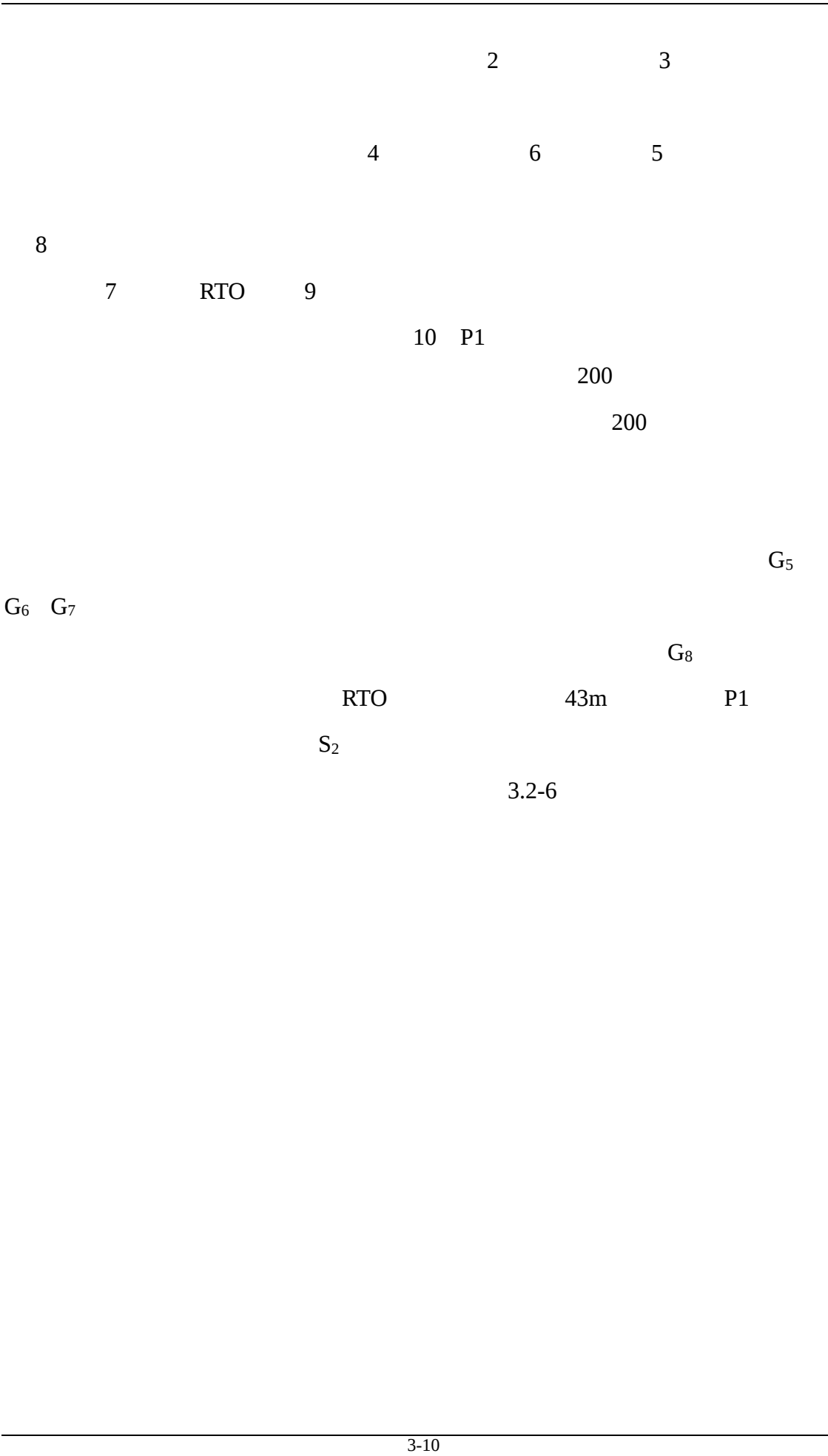
P1

110-140

110-140



1.
2.
3.
4.
5.
6.
7.
8.
- 9.RTO
10.



3.2.9

3.2.9.1

1

2

1

4m³/d 1400m³/a

2

9.6m³/d 3360m³/a

12.8m³/d 4480m³/a

3

35m³/h 294000m³/a 3%

1.05m³/h 25.2m³/d 8820m³/a

4

6.6m³/d 2310m³/a

5

60 120L/ ·

7.2m³/d 2520m³/a

6

0.15t/h 1260t/a

0.02t/h 168t/a

0.13t/h 1092t/a

18480m³/a

13608m³/a

1092m³/a

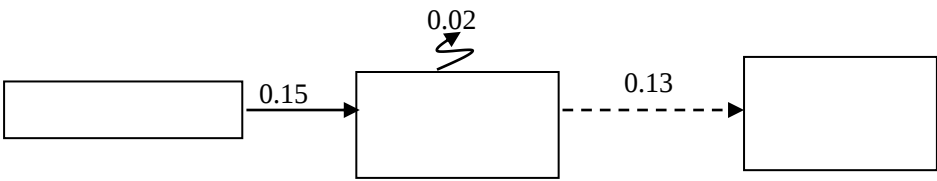
3.3.9.2

“

”

3.2-9

3.2-12



3.2-12 t/h

3.2.9.3

750 kWh

3.2.9.4

520.7m³/h 437.388 m³/a
RTO 47.92m³/h 40.2528 m³/a

3.2.9.5

3.2-11

3.2-11

			m	m	m ³		t
	2		1.5	2.2	3.9	0.8	2.84
	2		1.5	2.2	3.9	0.8	2.54

3.2.9.6

1

EDI EDI Electrodeionization

EDI

EDI

EDI

15MΩ.cm

EDI

EDI

EDI

3~5

EDI

3.2-13

2

3

3.3

3.3.1

R134a

15 500N/mm² 368.9ETQ205

“ ”

EDI

EDI

EDI

15MΩ.cm

EDI

EDI

3~5

EDI

3.2-13

2

3

R134a

15 500N/mm² 368.9ETQ205

3.3 “ ”

3.3.1

EDI

EDI

EDI

15MΩ.cm

EDI

EDI

EDI

3~5

EDI

3.2-13

2

3

R134a

15 500N/mm² 368.9ETQ205

3.3 “ ”

3.3.1

EDI

EDI

EDI

15MΩ.cm

EDI

EDI

EDI

3~5

EDI

3.2-13

2

3

15 500N/mm²±368.9ETQ205

3.3

3.3.1

“ ”

R134a

EDI

EDI

EDI

15MΩ.cm

EDI

EDI

EDI

3~5

EDI

3.2-13

2

3

R134a

15 500N/mm² 368.9ETQ205

3.3 “ ”

3.3.1

EDI

EDI

EDI

15MΩ.cm

EDI

EDI

EDI

3~5

EDI

3.2-13

2

3

15 500N/mm²±368.9ETQ205

3.3

3.3.1

“ ”

R134a

EDI

EDI

EDI

15MΩ.cm

EDI

EDI

3~5

EDI

3.2-13

2

3

R134a

15 500N/mm² 368.9ETQ205

3.3 “ ”

3.3.1

EDI

EDI

EDI

15MΩ.cm

EDI

EDI

EDI

3~5

EDI

3.2-13

2

3

R134a

15 500N/mm² 368.9ETQ205

3.3 “ ”

3.3.1

EDI

EDI

EDI

15MΩ.cm

EDI

EDI

EDI

3~5

EDI

3.2-13

2

3

R134a

15 500N/mm² 368.9ETQ205

3.3 “ ”

3.3.1

EDI

EDI

EDI

15MΩ.cm

EDI

EDI

EDI

3~5

EDI

3.2-13

2

3

3.3

3.3.1

R134a

15 500N/mm² 368.9ETQ205

“ ”

EDI

EDI

EDI

15MΩ.cm

EDI

EDI

EDI

3~5

EDI

3.2-13

2

3

3.3

3.3.1

R134a

15 500Nm³/h 368.9ETQ205

“ ”

EDI

EDI

EDI

15MΩ.cm

EDI

EDI

3~5

EDI

3.2-13

2

3

R134a

15 500N/mm² 368.9ETQ205

3.3 “ ”

3.3.1

EDI

EDI

EDI

15MΩ.cm

EDI

EDI

EDI

3~5

EDI

3.2-13

2

3

3.3

3.3.1

R134a

15 500N/mm² 368.9ETQ205

“ ”

EDI

EDI

EDI

15MΩ.cm

EDI

EDI

EDI

3~5

EDI

3.2-13

2

3

3.3

3.3.1

R134a

15 500N/mm² 368.9ETQ205

“ ”

EDI

EDI

EDI

15MΩ.cm

EDI

EDI

EDI

3~5

EDI

3.2-13

2

3

R134a

15 500N/mm² 368.9ETQ205

3.3 “ ”

3.3.1

EDI

EDI

EDI

15MΩ.cm

EDI

EDI

EDI

3~5

EDI

3.2-13

2

3

15 500N/mm²±368.9ETQ205

3.3

3.3.1

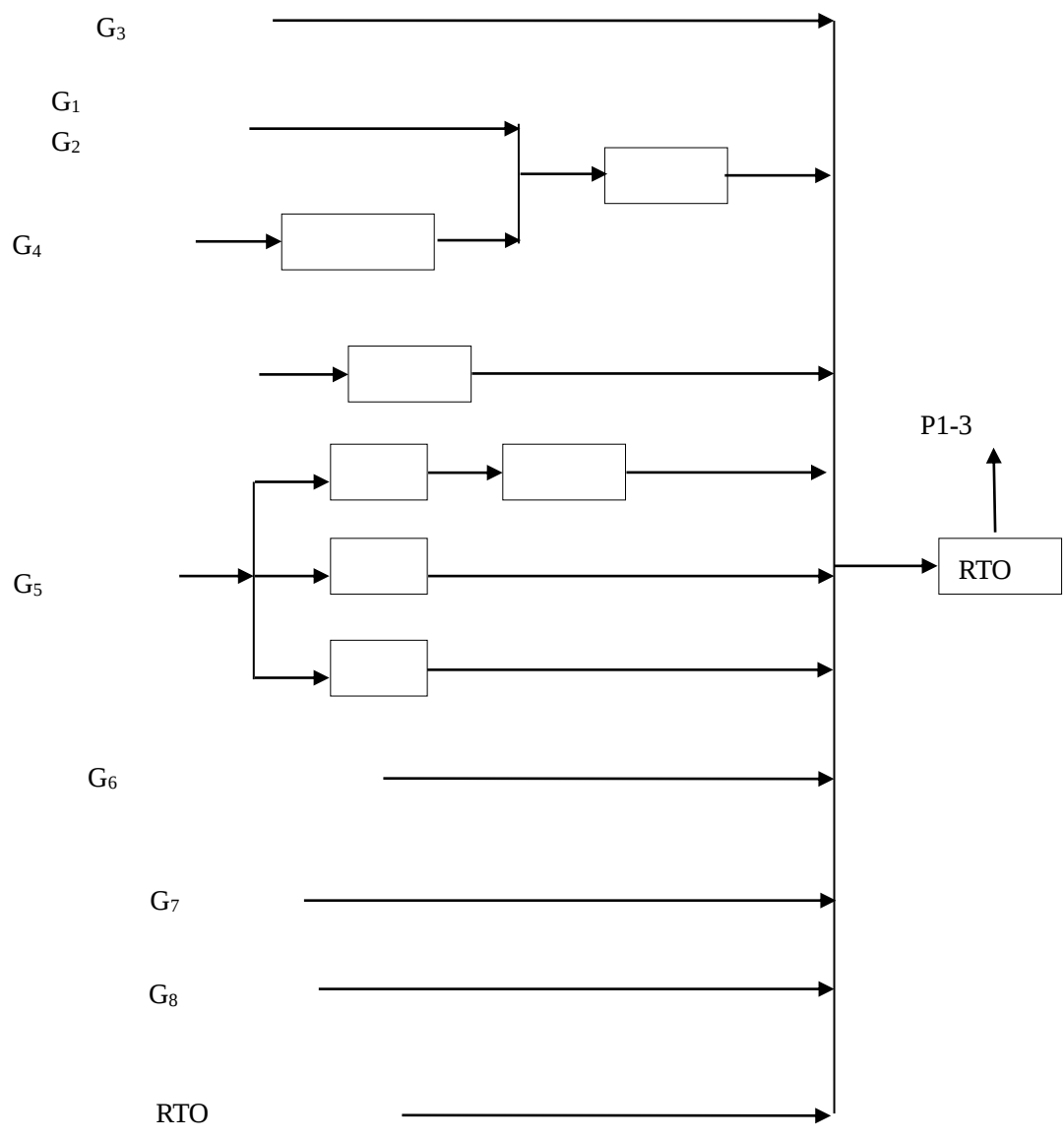
“ ”

R134a

G₇ G₈
G₆ RTO

45000t/a 6 /
+RTO

3.3-1



3.3-1

3.3.1.1

3.3-1 3.3-1

3.3-1

G ₁			RTO 43m
G ₂	VOCs		
G ₄	VOCs		
G ₅	VOCs		
G ₃		—	
	VOCs	—	
G ₆			
RTO			
G ₇	VOCs	—	
G ₈	VOCs	—	

1

HJ991-2018 C

1m³ C.3

$$V_0 = 0.0476[0.5\varphi(CO) + 0.5\varphi(H_2) + 1.5\varphi(H_2S) + \sum(m + \frac{n}{4})\varphi(C_mH_n) - \varphi(O_2)]$$
 C.3

V_0 — m^3/m^3 Ψ
 $\varphi(\text{CO})$ — %
 $\varphi(\text{H}_2)$ — %
 $\varphi(\text{H}_2\text{S})$ — %
 $\varphi(\text{C}_m\text{H}_n)$ — % m n
 $\varphi(\text{O}_2)$ — %

3.3-2

	CH ₄	C ₂ H ₆	C ₃ H ₈	C ₄ H ₁₀	C ₅ H ₁₂	C ₅₊	H ₂	H ₂ S	CO ₂	N ₂
	96	2	0.5	0.2	0.05	0.05	—	—	0.6	1.5

C.3 $V_0=9.732\text{m}^3/\text{m}^3$
 α 1 1kg

C.4

$$V_{\text{RO}_2} = V_{\text{CO}_2} + V_{\text{SO}_2} = 1.866 \times \frac{C_{\text{ar}} + 0.375S_{\text{ar}}}{100} \quad \text{C.4}$$

$$V_{\text{RO}_2} = 0.01[\varphi(\text{CO}_2) + \varphi(\text{CO}) + \varphi(\text{H}_2\text{S}) + \sum m\varphi(\text{C}_m\text{H}_n)]$$

$$V_{\text{N}_2} = 0.79V_0 + \frac{\varphi(\text{N}_2)}{100}$$

$$V_g = V_{\text{RO}_2} + V_{\text{N}_2} + (\alpha - 1)V_0$$

V_g — m^3/kg
 V_{RO_2} — m^3/m^3
 $\varphi(\text{CO}_2)$ — %
 $\varphi(\text{CO})$ — %
 $\varphi(\text{H}_2\text{S})$ — %
 $\varphi(\text{C}_m\text{H}_n)$ — % m n
 V_{N_2} — m^3/m^3
 V_0 — m^3/m^3
 $\varphi(\text{N}_2)$ — %

V_{H_2O} —	m^3/m^3	
$\varphi(H_2)$ —	%	
α ——		1.75
	$V_{RO_2}=1.034$ $V_{N_2}=7.703$	
$V_g=1.034+7.703+(1.75-1) \times 9.732=16.036m^3/m^3$		
	$520.7m^3/h$ 437.388 m^3/a	
7013.95 m^3/a		
$E_{SO_2}=2R \times S_t \times (1-\eta_s/100) \times K \times 10^{-5}$		
E_{SO_2} ——		t
R ——		m^3
S_t ——		mg/m^3
η_s ——	%	
K ——		
	GB17820-2018	1
	$100mg/m^3$	
0 K 1		$E_{SO_2}=2 \times 437.388 \times 100 \times 10^{-5}=0.875t/a$
$10mg/m^3$		$10mg/m^3$
	$0.701t/a$	
	NO_x	$50mg/m^3$
		$50mg/m^3$

3.507t/a

3.3-3

3.3-3

	Nm ³ /a						
				SO ₂		NO _x	
		t/a	mg/Nm ³	t/a	mg/Nm ³	t/a	mg/Nm ³
	7013.95	0.701	10	0.875	12.2	3.507	50
DB37/2376-2019 1		—	10	—	50	—	100
[2019]39		—	—	—	—	—	50

3.3-3

DB37/2376-2019 1

10mg/m³

50mg/m³

100mg/m³

<

>

[2019]39

50mg/m³

1 43m

P1

2 RTO

RTO

RTO

3.5 Nm³/h

≥ 98%

RTO

3.3-4

3.3-4

RTO

	25000m ³ /h
	1000mg/m ³
VOCS	≥ 98%
	≥ 0.75
	95%
	≤ 80
	≤ 5000Pa
	15 × 5m

RTO

VOCs

a.

$$\text{热效率} = \frac{T_{com} - T_{out}}{T_{com} - T_{in}} * 100\%$$

T_{com}——

T_{out}——

T_{in}——

RTO

760

RTO

80

RTO

≥ 95%

RTO

114

T=114 -80 =34

b.

RTO

RTO

RTO

VOCs

RTO

$$Q=CM_{\Delta}T$$

C—— kJ/ kg ·

M—— kg/h

T——

RTO

Q =1.005kJ/ kg · ×1.293kg/Nm³ ×

40000Nm³/h ×34 =1767272.4kJ/h

$$36440 \text{ kJ/Nm}^3 = 48.50 \text{ Nm}^3/\text{h}$$

3.3-5

	kJ/mol	g/mol	mg/m ³		kJ/h
	2847.8	110.111	0.9	98%	21295
	2345	30.026	1.8		
	2826.51	263.377	14.9		
	2826.51	105.137	14.9		

$$36440 \text{ kJ/Nm}^3 = 0.58 \text{ Nm}^3/\text{h}$$

$$48.50 \text{ Nm}^3/\text{h} - 0.58 \text{ Nm}^3/\text{h} = 47.92 \text{ m}^3/\text{h}$$

40.2528 m³

RTO

HJ991-2018 C

$$1\text{m}^3 \quad \text{C.3}$$

$$V_0 \sim m^3/m^3 \quad \Psi$$

— %

— %

— %

— % m n

— %

3.3-2

V_g	—	m^3/kg		
V_{RO2}	—		m^3/m^3	
	—		%	
	—		%	
	—		%	
	—	%	m	n
V_{N2}	—	m^3/m^3		
V_0	—	m^3/m^3		
	—	%		
V_{H2O}	—	m^3/m^3		
	—	%		
α	—			1.75
		$V_{RO2}=1.034$	$V_{N2}=7.703$	
		$V_g=1.034+7.703+(1.75-1) \times 9.732=16.036m^3/m^3$		
	RTO	$47.92m^3/h$		

[2019]39				50mg/m ³	
	RTO	1	43m	P1-3	
3					
					RTO
43m					
	VOCs				
HJ 1102-2020	D.1				“ 6
	56.16g/		+		38.19g/ ”
	VOCs		32%		
				85-89%	85%
				RTO	RTO
	98%			80%	
					2.05
			2		
RTO					
	25000Nm ³ /h		≥ 98%		
3.3-7					
	3.3-7		P1		

		(t/a)	kg/h	(mg/m ³)	(m ³ /h)		(%)	(t/a)	(kg/h)	(mg/m ³)
P1		1.9252	0.229	9.2			51.2	0.94	0.112	4.5
	SO ₂	0.955	0.114	4.6			0	0.955	0.114	4.6
	NO _x	3.83	0.456	18.2			0	3.83	0.456	18.2
VOCs		4.998	0.595	23.8	25000		98	0.10		

RTO

43m

	NOx	2.871	0.342	13.7	RTO 43m	0	2.871	0.342	13.7
	VOCs	3.75	0.446	17.8		98	0.075	0.0089	0.4
		3.898	0.464	18.6		90	0.3898	0.0464	1.86
		0.454	0.054	2.2		98	0.0091	0.0011	0.04
		0.227	0.027	1.1		98	0.00454	0.00054	0.02
3.3-7		3.3-8		4.5		3.3-9			
P1		P1		P1		P1			
3.3-9		P1		P1		P1			

		(t/a)	kg/h	(mg/m ³)	(m ³ /h)		(%)	(t/a)	(kg/h)	(mg/m ³)
P1		3.3704	0.401	8.0	50000	RTO	51.2	1.65	0.197	3.9
	SO ₂	1.671	0.199	4.0			0	1.671	0.199	4.0
	NOx	6.701	0.798	16.0			0	6.701	0.798	16.0
	VOCs	8.748	1.041	20.8			98	0.175	0.0209	0.4
		9.358	1.114	22.3			90	0.9358	0.1114	2.2
		1.059	0.126	2.5			98	0.0212	0.0025	0.05

3.3-10

													m		
		Nm ³ /h	mg/m ³	kg/h	t/a			mg/ m ³	kg/h	t/a	mg/m ³	kg/h			
G1			9.2	0.229	1.9252	ç É"d çB„ %	Å								
G2															
G3															
G4															
G5		25000													
G6															
	RTO														
G7															
G8															

3.3.1.2

			90%	10%
			0.129t/a	VOCs
0.555t/a	0.607t/a	0.067t/a	0.033t/a	
				90%

3.3.2

3.3.2.1

		3.3-9	3.3-10
3.3-9			
		mg/L	
	m ³ /a	COD _{Cr}	BOD ₅

3.3-10

		m ³ /a	mg/L	t/a
1	COD _{Cr}	12439	752	9.35
2	BOD ₅		379	4.71
3			13	0.16
4			21	0.26
5			1220	15.18
6			2.1	0.03

3.3-10 12439m³/a COD_{Cr}

9.35t/a 0.16t/a

3.3.2.2

“ 2.2.7.2.2 ”

2022 7

COD_{Cr} 18.5mg/L 1.69mg/L
GB/T31962-2015 1A

3.4.2.3

1

2004

8 4 m³/d

2007 9

8 m³/d 4 m³/d

1 A

2009 5 8

16km

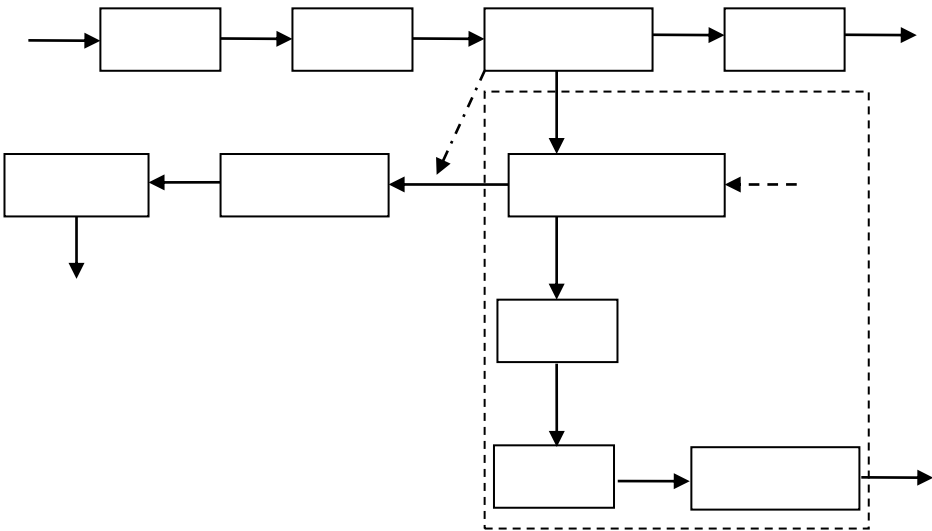
0.9mm

BIOLAK

BIOLAK

BIOLAK

3.3-3



3.3-3

pH 6~9

COD_{Cr}≤300mg/L ≤20mg/L BOD₅ ≤150mg/L ≤15mg/L

(GB18918-2002) A

[2017]5

COD_{Cr}≤40mg/L NH₃-N≤2mg/L

2

2022 7

3.4-16

3.4-16

2021 7

		pH				
	(m ³)		(mg/L)			
2022-07-01	33432	7.53	18.8	0.273	0.13	8.43
2022-07-02	38560	7.59	22.7	0.259	0.146	6.79
2022-07-03	46168	7.48	21.3	0.22	0.153	6.88
2022-07-04	50168	7.48	20.9	0.225	0.166	5.95
2022-07-05	51248	7.51	22.9	0.197	0.153	4.73
2022-07-06	66896	7.42	22.9	0.679	0.179	5.28
2022-07-07	57160	7.47	12.3	0.925	0.169	5.09
2022-07-08	49792	7.61	6.97	0.912	0.206	5.98
2022-07-09	46328	7.61	6.52	0.92	0.264	7.87
2022-07-10	58800	7.4	14.5	0.929	0.299	11.3
2022-07-11	55080	7.33	15.7	0.934	0.248	11.4
2022-07-12	74280	7.1	15.8	0.929	0.198	10.7
2022-07-13	70640	7.06	15	0.719	0.198	6.19
2022-07-14	66784	7.07	13.9	0.216	0.187	5.72
2022-07-15	63840	7.05	17.9	0.208	0.18	5.84
2022-07-16	65168	7.35	20	0.253	0.181	4.37
2022-07-17	65952	7.5	20.7	0.272	0.197	4.45
2022-07-18	63536	7.47	20.6	0.338	0.197	4.56
2022-07-19	58784	7.46	21	0.342	0.226	6.45
2022-07-20	50503	7.41	21.3	0.945	0.243	6.98
2022-07-21	49904	7.21	18.6	1.26	0.147	9.17
2022-07-22	57064	7	15.7	1.23	0.134	10.1
2022-07-23	73064	7.28	14.1	1.21	0.153	5.64
2022-07-24	63024	7.43	11.5	1.2	0.141	3.04
2022-07-25	63088	7.39	11	1.14	0.136	3.84
2022-07-26	64584	7.12	9.45	0.964	0.136	9.58
2022-07-27	62232	6.9	12.4	0.694	0.139	10.8
2022-07-28	72944	6.81	14.1	0.465	0.15	8.23
2022-07-29	72624	6.71	10.1	0.298	0.152	7.03
2022-07-30	61992	6.69	8.2	0.422	0.158	7.92
2022-07-31	58184	6.82	14.9	0.654	0.205	7.59
	59091	7.27	15.9	0.653	0.180	7.03
	74280	7.61	22.9	1.26	0.299	11.4
	33432	6.69	6.52	0.208	0.13	3.04
	1831823	/	/	/	/	/
	——		40	2	4	45

3.4-16

GB18918-2002

A

[2017]5

COD_{Cr}≤40mg/L NH₃-N≤2mg/L

3

GB18918-2002

A

[2017]5 COD_{Cr}≤40mg/L NH₃-N≤2mg/L

3.4.2.4

3.4-17

3.4-17

		m ³ /a	mg/L	t/a	m ³ /a	mg/L	t/a
1	COD _{Cr}	12439	18.5	0.23	12439	15.9	0.20
2	BOD ₅		9	0.11		8	0.10
3			1.69	0.021		0.653	0.008
4			3	0.04		1.2	0.02

3.4-19

						/m			/m	/dB(A)		/dB(A)		
						X	Y	Z					/dB(A)	
1			—	85/1		274	-507	32.57	5	71.0	24h	26	45.0	1
2			—	90/1		285	-508	30.11	2	84.0	24h	26	58.0	1
3			—	85/1		254	-488	31.36	5	71.0	24h	26	45.0	1
4			40Nm3/min	90/1		304	-494	30.13	2	84.0	24h	26	58.0	1

3.3.3.2

A

B

C

15 25dB A

GB12348-2008 3

GB12348-2008 4a

3.3.4

2021

“ HW08

900-249-08

”

FDY

“ HW49

900-041-49

”

2

FDY

3.4-20

3.4-20

			t/a			
S ₁			209		282-999-99	
S ₂			627.6		282-999-99	
—			0.15		282-999-99	
—			10.5	—	—	
—		--	2.3		HW49 (900-041-49)	
—	RTO		16t/5a		282-999-99	
	—	—	965.55 2.3	—	—	—

3.3.5

3.3-21

3.3-22

		Nm³/a	21000	0	21000	P1
		t/a	1.9252	0.9852	0.94	
		VOCs t/a	4.998	4.898	0.10	
		SO ₂ t/a	0.955	0	0.955	
		NOx t/a	3.83	0	3.83	
t/a						

		t/a	0.294	0.28812	0.00588	
		t/a	0.129	0	0.129	
	VOCs	t/a	0.555	0	0.555	
		t/a	0.607	0	0.607	
		t/a	0.067	0	0.067	
		t/a	0.033	0	0.033	
		m ³ /a	12439			

3.3.7.2

0

3.3-24

3.3-24

		mg/m ³	kg/h	mg/m ³	kg/h	
P1		9.2	0.229	10	45.3	
	SO ₂	4.6	0.114	50	—	
	NO _x	18.2	0.456	50	—	
	VOCs	23.8	0.595	60	3.0	
		26	0.65	—	41	
		2.9	0.072	5	—	
		1.4	0.035	15	—	

ũ

	VOCs	10.206	1.217	0	0.1	11.523	+0.1
	t/a						
	SO ₂ t/a	—	0.716	0	0.955	1.671	+0.955
	NO _x t/a	—	2.871	0	3.83	6.701	+3.83
	t/a	1.955	0.3898	0	0.546	2.8908	+0.546
	t/a	0.213	0.0091	0	0.0121	0.2342	+0.0121
	t/a	0.497	0.00454	0	0.00588	0.50742	+0.00588
	kg/a	0.27	—	0	—	0.27	—

t/a

2

3.4.3

1

2

20%

3

3.4.4

3.5-1

3.5-1

	m ³ /t	0.92	1.5
	kWh/t	375	500

	t/t	0.06	1.75
	m ³ /t	238.8	—

3.5-1

3.4.5

3.4-2

3.4-2

6	t/t	0.98	0.92
	t/t	0.076	0.06
	t/t	0.02	0.02

3.5-1

6

3.4.6

3.4-3

3.4-3

	kg/t	0.05	0.12
VOCs	kg/t	0.005	0.03

VOCs

3.4.7

3.4.8

3.4-4

1		GB16297-19962 DB37/2376-20191 12 DB37/801.6-2018123 GB31572-201559 GB12348-200834a GB18599-2020 GB14554-936 GB18597-2001
2		3
3		
4		
5		
6		

3.4-4

3.4.9

1

2

3

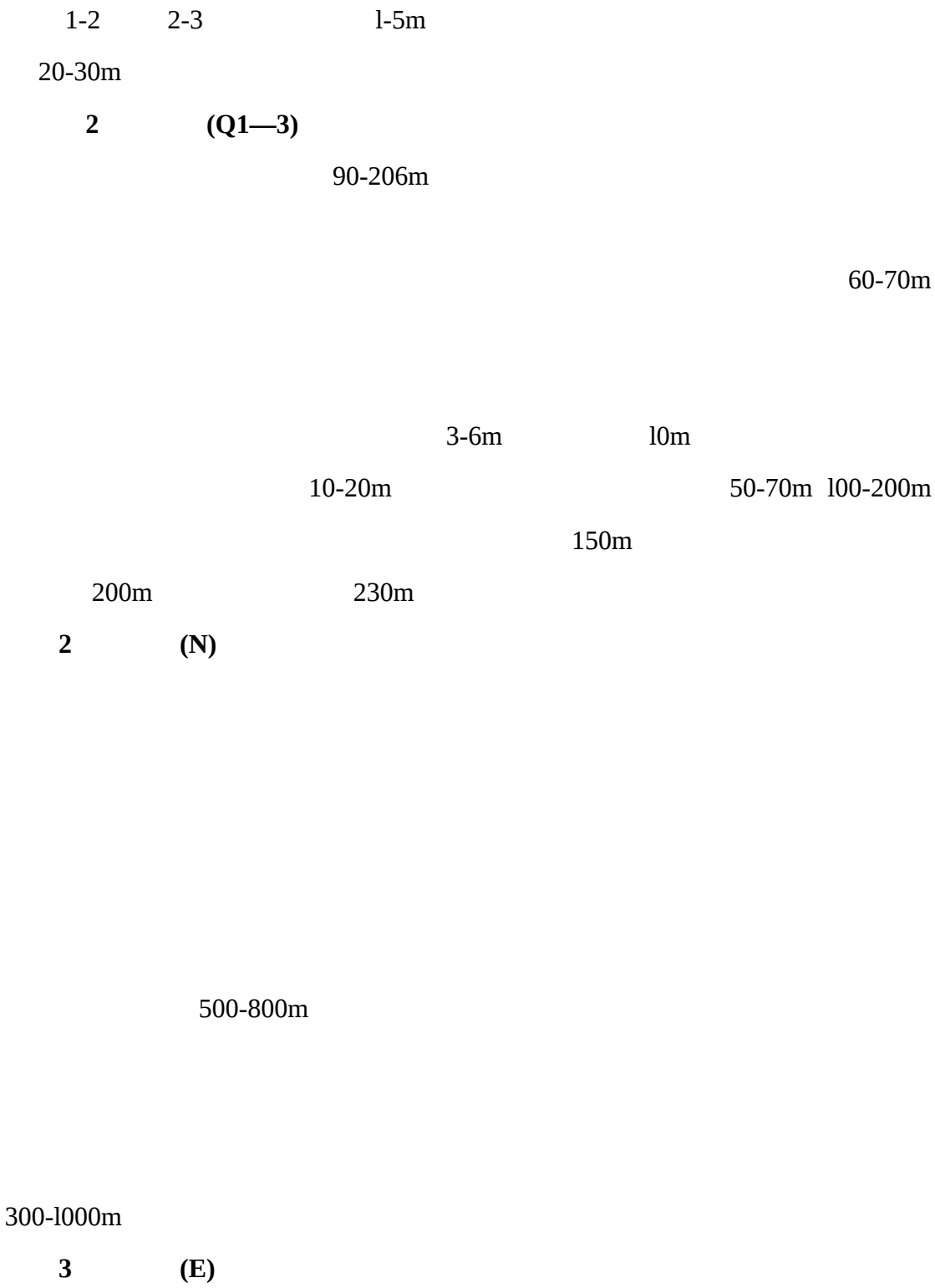
“ ”

4

4.1

116 ° 36 °40'

116°00'00" 116°30'00" 36°37'30" 37°02'30"



4.2.2.2

II

III

270km

NE10°-30°

NW

40°-70°

-

-

6.3m

800-1000m

6500-7000m

5000-6500m

40°-45°

55km

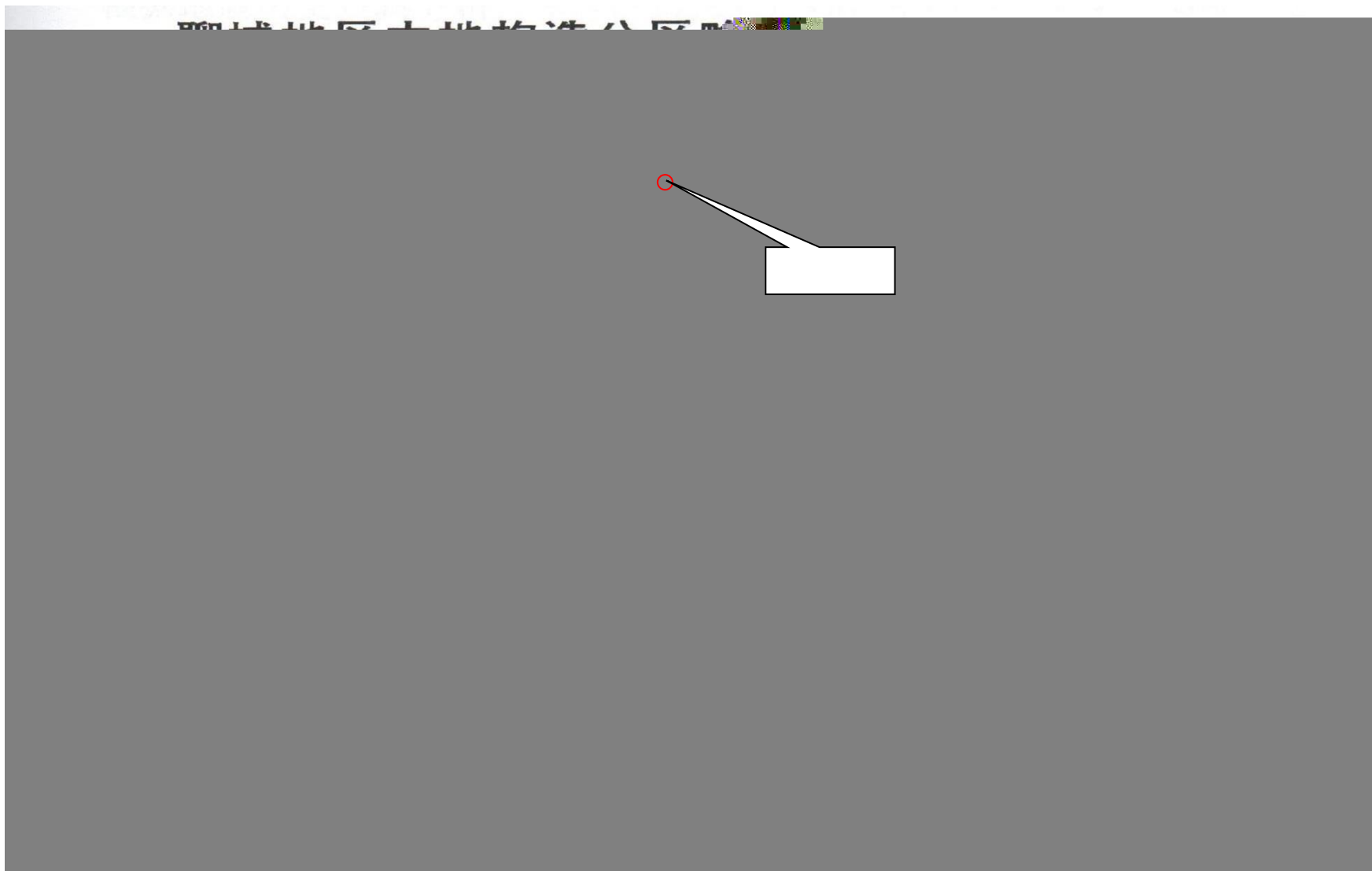
145km

III

IV

V

4.2-1



4.2-1

4.2.3

4.2.3.1

——

——

-

- -

(50m) (2g/L)

(50-120m)(2-5g/L)

120-140m (2g/L)

4.2.3.2

1

-

2

0.1‰

4.2.3.3

	“	—	—	”	“	—	—	”
1-6				6		12.48m		6-9
						9		
15.07m						2.59m		

4.2.4

17

			4181.2km ²	
			26km	393.62km ²
	26km	393.6km ²	9	
100km ²		100km ²		
	28km	432.3km ²	6	100km ²
		100km ²		

4.2-2

4.2.5

	“ ”			
	13.1		26.6	
41.2	(1958 6 18)		-3.0	-20.8
(	1981 1 26)	1	-3.1	7
26.8	195		43cm	31cm
	3.7m/s		4	4.7m/s
	8	2.5m/s		
	508.8mm	7 8 9		
73.2	975.9mm	1961		287.1mm 2002
	3.4		1.2mm	121.6mm
	56.1mm		150mm	1644.9mm

	E601		1892.3mm	1994	
	1368.1mm	2007		10m	24m/s
	2.3m/s		1.9m/s	2.3m/s	
	18%	4%	18%	20	/
4.2.6	GB18306-2015				
	0.15g		VII		
				7	
4.2.7					
		142		119	
	76.79%	33.41		23.21%	
	94.4		65.41%	8.87	6.15%
	7.5	5.2%	1.46	1%	
	22.32	15.5%		11.01	7.71%
		18.68	m ³		
	2.7	m ³	1.56	m ³	
				60m	
	16.7	m ³	15.9	m ³	1.34
	m ³			3.9974	m ³
4.2.8					
		142		119	
				83	58%

	19.9	14%		
			40	27%
				2—3m
	20	15%		
4.2.9				
	58715.8	338500	8%	
	93			
4.3				

4.4.1.1

1

1

54.6

308

0.6

2

“

”

“

”

“

”

“

”

“

”

“

”

“

”

“

”

6.7

6.4

0.8

“ ”

0.6

0.4

15.6	0.4%
------	------

0.4%

3.4.1.4

6.3%

4.4.1.5

28.9%

1.0

1.9

4.4.1.6

"

4-14

4

GB/T4754-2017

2011

2013

[2013]12

3.4-1

3.4-1

1	1	
2		1
3	2	
4		2 “ ”
5	3	
6	4	3
7	5	
	6	4
	7	
	8	
	9	5
2016 442	10	
	11	
	12	
2015-2020		

4.4-2

4.5

4.5.1

4.5.1.1

1

2021

4.5-1

4.5-1

μg/m³

	SO ₂	NO ₂	PM ₁₀	PM _{2.5}	CO	O ₃
					24 95	8 90
	11	33	81	49	1.4mg/m ³	159
	60	40	70	35	4 mg/m ³	160

2021

SO₂ NO₂

CO 24

95

O₃

8

90

GB3095-2012

PM₁₀

PM_{2.5}

GB3095-2012

PM_{2.5} PM₁₀

2

HJ2.2-2018

4.5-1

2021

PM₁₀

PM_{2.5}

GB3095-2012

4.5.1.2

1

S

4.5

HJ2.2-2018

4.5-1

4.5-2

			m		
1#		N	100	TSP	

2

TSP

9

3

2022118~125

7

		GB/T 15516-1995	0.01mg/m ³
--	--	-----------------	-----------------------

5

4.5-4

4.5-5

4.5-6

4.5-4

			(m/s)	()	(kPa)		/
2022.01.18- 2022.01.19	13:48	S	1.6	7.3	100.34		10/7
	19:47	S	1.4	-3.2	102.27		/
	01:47	S	1.3	-3.7	102.35		/
	07:46	S	2.1	0.2	101.46		10/8
2022.01.19- 2022.01.20	14:02	S	1.9	5.7	102.16		10/7
	20:25	S	2.3	-2.8	102.33		/
	02:17	S	1.7	-6.3	102.50		/
	07:56	S	2.0	-6.2	102.63		9/6
2022.01.20- 2022.01.21	13:50	S	1.4	1.3	102.21		10/7
	19:50	S	1.2	-2.2	103.24		/
	01:50	S	1.1				

	2022.1.20-2022.1.21	0.004	0.004	0.004	0.004	0.132	12	14	13	14
	2022.1.21-2022.1.22					0.147	12	14	14	13
	2022.1.23-2022.1.24		0.004	0.004	0.004	0.168	11	14	14	13
	2022.1.24-2022.1.25					0.182	11	15	12	13
	2022.1.25-2022.1.26		0.004	0.004	0.004	0.126	12	14	13	14

=

4.5-6 mg/m³

1#	TSP	—	—	—	7	0.126	0.182
		28			—	—	—
		28		0.03	—	—	—
		28	0.40	1.30	—	—	—
		28		0.004	—	—	—
		28			—	—	—
		28			—	—	—
		28			—	—	—
		28	11	15	—	—	—

=

4.5.1.3

1

TSP

2

GB3095-2012

(HJ2.2-2018) D 1.4-2

3

$$P_i = \frac{C_i}{C_{0i}}$$

C_i— i mg/m³

,

()

2 3.6

2021 12 ,

10 /

+

SCR

() VOCs

VOCs 10

2021 12

VOCs

VOCs

()

“ ”

()
7 / .
()

()
2021 12
VOCs
VOCs 65%

2021
“ ” ()
) 2022 3

4.5.2

4.5.2.1

1

4.5

2

4.5-8

4.5-2

4.5-8

1 [#]	200m	
2 [#]	2000m	

2

2022 1 20~23 3

3

pH SS COD_{Cr} BOD₅

32

4

GB3838-2002

4.5-9

4.5-9

mg/L												
µ g/L	33.8	34.0	34.4	32.0	35.8	35.4	33.7	32.3	34.7	31.6	35.4	31.3
mg/L	4.11	4.03	4.10	4.15	4.10	4.09	4.23	4.16	4.02	4.06	4.16	4.15
mg/L	0.113	0.117	0.113	0.115	0.113	0.117	0.180	0.180	0.176	0.170	0.174	0.172
mg/L	408	418	363	374	360	365	448	458	441	442	457	462
mg/L	1.19	1.16	1.41	1.28	1.28	1.12	1.32	1.28	1.16	1.22	1.22	1.32
mg/L												
mg/L	5.4	4.8	5.6	4.9	5.4	4.7	5.5	5.3	5.7	5.3	5.4	5.1
mg/L	220	218	220	22	230	232	218	212	202	202	217	192
mg/L	1620	1500	1760	1190	1600	1370	1630	1500	1850	1280	1770	1470
mg/L												
mg/L	0.02	0.03	0.03	0.02	0.03	0.03	0.02	0.02	0.03	0.03	0.02	0.03
mg/L												
mg/L												
µ g/L												
µ g/L												
µ g/L												
MPN/L	2800	1600	2200	1400	1700	1300	5400	3500	1400	3500	2400	3500

=

4.5.2.2

1

pH SS COD_{Cr} BOD₅

15

14

2

GB3838-2002

GB 3838-2002 2

SS GB5084-2021 1

1.4-3

3

1 ()

$$S_{i,j} = \frac{C_{i,j}}{C_{s,i}}$$

$S_{i,j}$ —— $S_{i,j} \leq 1$ $S_{i,j} = 1$

$C_{i,j}$ —— i j mg/l

$C_{s,i}$ —— i mg/l

2 --pH

$$S_{pH,j} = \frac{7.0 - pH_j}{7.0 - pH_{sd}} \quad pH_j \leq 7.0$$

$$S_{pH,j} = \frac{pH_j - 7.0}{pH_{su} - 7.0} \quad pH_j > 7.0$$

S_{pHj} ——pH

pH_j ——pH

pH_{sd} —— pH

pH_{su} —— pH

3

$$S_{DO_j} = |DO_f - DO_j| / (DO_f - DO_s) \quad DO_j \geq DO_s$$

$$S_{DO_j} = 10 - 9 \frac{DO_j}{DO_s}$$

$$DO_j < DO_s$$

$$S_{DO_j} \text{ --- DO}$$

$$DO_f \text{ --- mg/L}$$

$$DO_f = 468 / (31.6 + T) \quad T$$

$$DO_j \text{ --- mg/L}$$

$$DO_s \text{ --- mg/L}$$

4

4.5-11

4.5-11

	2022.1.20	1#	2#

4.5.2.3

											2021	8~2022		
4	4.5-12										4.2-2			
4.5-12										mg/L				
		pH												
2021.08		6.89	7.09	29	0.360	0.52	8.2	5.60	0.30	1.44		0.0058	0.022	0.04
2021.09		6.81	7.11	29	0.284	0.52	8.9	0.80	0.07	1.79		0.0007		
2021.10		7.6	7.2	22	1.35	0.278	5.3	3.10	0.33	1.79				
2021.11		7.29	10.81	27	1.20	0.28	9.4	3.10	0.27	1.54				
2021.12		7.5	5.8	31	1.07	0.437	7.6	3.30	0.25	1.68		0.0008		0.03
2022.01		7.2	7.6	30	0.410	0.360	7.2	7.80	0.10	7.82		0.0007		0.03
2022.02		7.2	5.7	19	0.924	1.34	5.0	8.20	0.15	1.94				0.03
2022.03		6.9	6.8	16	0.447	0.62	4.8	7.20	0.11	1.49				0.02
2022.04		8.9	6.34	33	0.099	0.52	5.9	6.50	0.08	—				0.03
		6~9	3.0	30	1.5	1.5	6	10	0.3	1.5	0.2	0.01	0.5	0.5

2021 8~2022 4 pH

GB3838-2002

4.5.2.3

2021

2019

2020 5

2020

A²O

4.5.3

4.5.3.1

1

4.5

8

4.5-13 **4.5-1**

4.5-13

			m	
1#		SW	545	
2#		--	--	
3#		N	100	
4#		SW	1420	
5#				

GB/T5760-2006

HJ610-2016

4.5-14

4.5-14

1	pH	pH	HJ 1147-2020	/
2			GB/T 13195-1991	/
3			HJ 694-2014	0.3µg/L
4				0.04µg/L
5		GB/T 5750.4-2006 7.1		1.0mg/L
6		8.1	GB/T 5750.4-2006	/
7			HJ 535-2009	0.025mg/L
8			GB/T 11911-1989	0.03mg/L
9				0.01mg/L
10		4.1 4.2	GB/T 5750.6-2006	5µg/L
11		5.1	GB/T 5750.6-2006	0.05mg/L
12		9.1 9.2	GB/T 5750.6-2006	0.5µg/L

11.1

13

20		1.1	GB/T 5750.7-2006	0.05mg/L
21			GB/T 7493-1987	0.003mg/L
22			HJ/T 346-2007	0.08mg/L
23		F ⁻ Cl ⁻ Br ⁻	HJ 84-2016	0.007mg/L
24		NO ₃ ⁻ PO ₄ ³⁻ SO ₃ ²⁻ SO ₄ ²⁻		0.018mg/L
25		/	HJ 639-2012	0.4μg/L
26				0.4μg/L
27				0.2μg/L
28	+			0.5μg/L
29			HJ 601-2011	0.05mg/L
30	Na ⁺	22.1	GB/T 5750.6-2006	0.01mg/L
31	K ⁺	22.1	GB/T 5750.6-2006	0.05mg/L
32	Ca ⁺		GB/T 11905-1989	0.02mg/L
33	Mg ⁺			0.002mg/L
34		10.1	GB/T 5750.6-2006	0.004mg/L

4.5-16

	2022.1.24	2022.1.18	
	1#	2#	3#
pH	7.1	7.1	7.0
mg/L	1588	1042	1692
mg/L	3.15×10^3	2.25×10^3	2.71×10^3
mg/L			
mg/L	1.42	1.64	1.34
mg/L			0.22
mg/L	0.04		0.07
µg/L	45		
mg/L	0.40		
mg/L			
mg/L	0.422		0.463
mg/L			
mg/L			
mg/L	0.53	1.40	0.17
mg/L	0.30	0.88	0.44
mg/L			
mg/L	822	700	732
mg/L	1079	650	707
mg/L			
µg/L			
µg/L			
µg/L	6.2	7.0	8.1
µg/L			
mg/L			
µg/L			
µg/L			
µg/L			
+	µg/L		
mg/L			
K ⁺ mg/L	3.71	1.33	1.33
Na ⁺ mg/L	690	164	171
Ca ²⁺ mg/L	264	24.2	193
Mg ²⁺			

$K^+ + Na^+ \quad Ca^+ \quad Mg^+ \quad CO_3^{2-} \quad HCO_3^-$

2

GB/T14848-2017

1.5-4

3

 $Pi = Ci/Si$

Pi—

Ci— i mg/L

Si— i mg/L

pH

 $pH \leq 7 \quad Pi = (7.0 - pH)/(7.0 - pH_{sd})$
 $pH > 7 \quad Pi = (pH - 7.0)/(pH_{su} - 7.0)$

Pi—pH

pH—pH

pH_{sd}— pHpH_{su}— pH

4

4.5-17

4.5-17

	2022.1.24	2022.1.18	
	1#	2#	3#
pH	0.07	0.07	0.00
	3.53	2.32	3.76
	3.15	2.25	2.71
	0.47	0.55	0.45
	0.05	0.05	0.73

	0.40	0.05	0.70
	0.045	0.003	0.003
	0.400	0.025	0.025
	0.84	0.03	0.93
	0.03	0.07	0.01
	0.30	0.88	0.44
	3.29	2.80	2.93
	4.32	2.60	2.83
	0.62	0.70	0.81

3

GB/T14848-2017

4.5.4

4.5.4.1

1

4.5

1m

6

4.5-20

4.5-3

4.5-20

1#			
2#			
3#			
4#			
5#			
6#			

2

L_{Aeq}

3

2022 1 19 -1 20

2

4

4.5-21

4.5-21dB(A)

2022.1.19		1#	57.4	47.1
		2#	58.6	47.7
		3#	57.7	47.1
		4#	58.9	47.8
2022.1.19	5#		49.9	40.5
2022.1.20	6#		53.4	43.2

4.5.4.2

1

GB12348-2008365dB(A)55dB(A)4a

70dB(A)55dB(A)

GB3096-2008260dB(A)50dB(A)

2

A Leq(A)

$P=Leq-L_b$

P—dB(A)

Leq—A dB(A)

L_b—dB(A)

3

4.5-22

4.5-22dB(A)

	LAeq	Lb	P	LAeq	Lb	P

	1#	57.4	70	-12.6	47.1	55	-7.9
	2#	58.6		-11.4	47.7		-7.3
	3#	57.7		-12.3	47.1		-7.9
	4#	58.9	65	-6.1	47.8		-7.2
5#		49.9	60	-10.1	40.5	-9.5	-9.5
6#		53.4		-6.6	43.2		-6.8

4.5-22

GB12348-2008 3

GB12348-2008 4a

GB3096-2008 2

4.5.5

4.5.5.1

1

HJ964-2018

4.5

10

4.5-23

4.5-4

4.5-23

--	--	--	--	--	--	--	--

1#

6#		116.200E	36.845N	0~0.2m			
----	--	----------	---------	--------	--	--	--

2

1#

GB15618-2018

1

pH

+

13

3#

GB36600-2018

1

1,1-

1,2-

1,1-

-1,2-

-1,2-

1,2-

1,1,1,2-

1,1,2,2-

1,1,1-

1,1,2-

1,2,3-

1,2-

1,4-

+

2-

[a]

[a]

[b]

[k]

[a h]

[1,2,3-cd]

46

2#

4#

5#

6#

+

5

3

2022

2

9

1

4

4.5-24

4.5-24

1	pH	pH	HJ 962-2018	/
2		/	HJ 680-2013	0.01mg/kg
3				0.002mg/kg
4			GB/T 17141-1997	0.01mg/kg
5		-	HJ 1082-2019	0.5mg/kg
6			HJ 491-2019	1mg/kg
7				10mg/kg
8			HJ 491-2019	3mg/kg

9		/ -	HJ 605-2011	1.0 µg/kg
10				1.0 µg/kg
11				1.5 µg/kg
12	-1,2-			1.3 µg/kg
13	-1,2-			1.4 µg/kg
14	1,1-			1.2 µg/kg
15				1.1 µg/kg
16	1,1,1-			1.3 µg/kg
17				1.3 µg/kg
18				1.9 µg/kg
19	1,2-			1.3 µg/kg
20				1.2 µg/kg
21	1,2-			1.1 µg/kg
22	1,1-			1.0 µg/kg

40				0.1mg/kg
41	[a]			0.1mg/kg
42	[b]			0.2mg/kg
43	[k]			0.1mg/kg
44	[a,h]			0.1mg/kg
45	[1,2,3-cd]			0.1mg/kg
46	[a]			0.1mg/kg

5

HJ 964-2018

4.5-25

4.5-25(1)

	2022.2.9
	1#
	0~0.2m
	116.19757 ° 36.84259 °
	5%
pH	7.92
cmol ⁺ /kg	2.8
mV	466
mm/min	0.491
g/cm ³	1.43

	5%	5%	5%
pH	7.86	8.12	8.01
cmol ⁺ /kg	3.0	3.1	3.4
mV	457	449	468
mm/min	0.497	0.475	0.485
g/cm ³	1.45	1.51	1.53
%	49.3	48.9	48.5

1# 4.5-26 2#
 4.5-27 4# 5# 6# 4.5-28 3#
 4.5-29

4.5-26 1# mg/kg

	pH						
1#	7.92	0.42	0.150	8.85	37	53	23
			C ₁₀ -C ₄₀			+	
1#	22	146	39				

4.5-27 2# mg/kg μ g/kg

	2#	4#			5#			6#
		0~0.5m	0.5~1.5m	1.5~3m	0~0.5m	0.5~1.5m	1.5~3m	
C ₁₀ -C ₄₀	21	18	20	26	46	23	29	45
+								

=
 4.5-28 4# 5# 6# mg/kg μ g/kg

	8#			9#			10#
	0~0.5m	0.5~1.5m	1.5~3m	0~0.5m	0.5~1.5m	1.5~3m	
C ₁₀ -C ₄₀	16	19	14	23	20	24	15

[] mg/kg			
[] mg/kg			
[b] mg/kg			
[k] mg/kg			
mg/kg			
[a,h] mg/kg			
[1,2,3-cd] mg/kg			
mg/kg			
mg/kg	27	23	25

=

4.5.5.2

1

1# 9

+

2# 4# 5# 6# 1 +

3# 7

1,1- 1,2- 1,1- -1,2-
-1,2- 1,2- 1,1,1,2- 1,1,2,2-

1,1,1- 1,1,2- 1,2,3-
1,2- 1,4- +

2- [a] [a] [b] [k] [a]
h] [1,2,3-cd]

2

1#

GB15618-2018 1

GB36600-2018 1 2
1.4-6 1.4-7

3

$$P_i=C_i/S_i$$

P_i — i

C_i — i mg/kg

S_i — i mg/kg

4

4.5-230

4.5-30 1 1#

	0.70	0.04	0.35	0.22	0.31	0.23	0.12	0.49	0.0087

4.5-30 2 2# 4# 5# 6#

	2#	4#			5#			6#
		0~0.5m	0.5~1.5m	1.5~3m	0~0.5m	0.5~1.5m	1.5~3m	
	0.005	0.004	0.004	0.006	0.01	0.005	0.006	0.01
	—	8#			9#			10#
		0~0.5m	0.5~1.5m	1.5~3m	0~0.5m	0.5~1.5m	1.5~3m	
	—	0.004	0.004	0.003	0.004	0.004	0.005	0.003

4.5-30 3 3#

3#	0~0.5m	0.18	0.006	0.001	0.05	0.002	0.03	0.006
	0.5~1.5m	0.18	0.005	0.001	0.07	0.001	0.03	0.005
	1.5~3m	0.16	0.005	0.001	0.06	0.001	0.03	0.006

4.5-30 1#

GB15618-2018 1

GB36600-2018

5

5.1

100m
130m 500m
600m

5.2

5.2.1

20 2001 2020
116°16'E 36°52'N

20 2001 2020
22.0m/s 2005 41.5
2013 -19.2 2001 802.9mm 2009 20
5.2-1 20 5.2-2 5.2-1
20

5.2-1 20 2001 2020

	1	2	3	4	5	6	7	8	9	10	11	12	
(m/s)	2.2	2.6	3.2	3.2	2.7	2.3	2.0	1.7	1.7	2.0	2.3	2.3	2.4
()	-2.3	1.7	8.3	14.9	20.4	25.2	26.7	25.1	20.7	14.3	6.4	-0.3	13.4

(%)	65	60	55	60	72	64	79	83	78	73	68	68	69
(mm)	3.6	7.1	9.4	27.9	43.5	74.1	110.7	105.2	63.2	41.5	7.3	4.0	497.6
(h)	149.9	156.9	203.7	222.5	246.3	210.9	179.2	189.7	187.3	158.6	154.7	133.0	2192.8

5.2-2 20 2001 2020

	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	C
	5.1	9.0	8.0	5.2	3.3	2.8	3.3	5.8	17.4	14.0	4.5	2.5	1.4	2.1	3.4	5.3	7.0



5.2-1 20 2001-2020

5.2.2

HJ2.2-2018 “ 5.3 ”

5.2.2.1

HJ2.2-2018

Pi Pi

$$P_i = \frac{C_i}{C_{0i}} \times 100\%$$

Pi—— i %

Ci—— i mg/m³

C0i—— i mg/m³

5.2-3

5.2-4

5.2-7

5.2-2

5.2-3

/	/	
		50
/		41.5
/		-19.2
	/m	90m
	/km	/
	/°	/

5.2-4

			/m	/m	/m	/ m/s	/	/h		/ kg/h
	X	Y								
P1	116.200E	36.846N	29	30	0.8	16.59	114	8400		0.112kg/h SO ₂ 0.114kg/h NO _x 0.456kg/h 0.012kg/h 0.065kg/h 0.0014kg/h 0.0007kg/h
P1	116.200E	36.846N	29	30	0.8	16.59	114	8400		0.197kg/h SO ₂ 0.199kg/h NO _x 0.798kg/h 0.0209kg/h 0.01114kg/h 0.0025kg/h 0.00124kg/h

5.2-5

			/m	/m	/m	/°	/m	/h		/ kg/h				
	X	Y									VOCs			
	116.193E	36.843N	33	90	20	10	33	8400		0.0154	0.066	0.0723	0.008	0.004

5.2-6

/m /m /m / m/s / /h /

DA021	116.200E	36.849N	29	30	0.8	3.96	20	8400		VOCs	0.0320kg/h
DA031	116.196E	36.848N	29	15	0.35	25.33	20	7200			0.0402kg/h
DA005	116.197E	36.848N	29	26	0.4	11.06	20	2400		0.0254kg/h VOCs	0.00679kg/h
DA007	116.197E	36.848N	29	15	0.4	14.38	20	2400		VOCs	0.049kg/h
DA008	116.197E	36.848N	29	15	0.4	9.95	20				

										VOCs	0.0089kg/h
											0.0464kg/h
											0.0011kg/h
											0.00054kg/h
P1-4	116.193E	36.843N	30	43	0.8	13.82	114	8400		VOCs	0.085kg/h
											SO ₂ 0.085kg/h
											NO _x 0.342kg/h
											0.0089kg/h
											0.0464kg/h
											0.0011kg/h
											0.00054kg/h

DA012 A DA022 B DA017 DA026 DA023

DA028 DA027 DA013 DA019 DA014

DA015 DA020 DA016 DA021 DA031

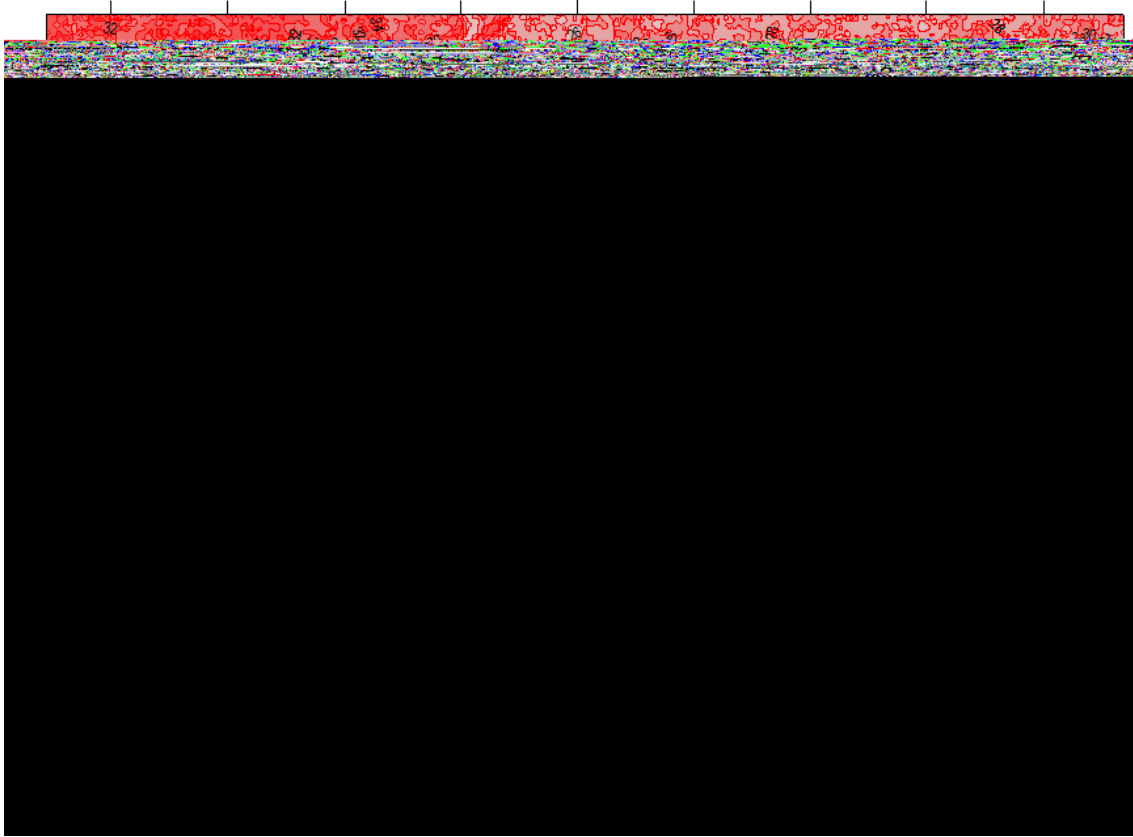
DA005 DA007 DA008 DA025 DA024

DA018 DA029 DA001 DA002 P1-1

P1-2 P1 P1-3 P1-4

5.2-7

			/m	/m	/m	/°	/m	/h		/ kg/h				
	X	Y									VOCs			
	116.196E	36.846N	29	78	62	10	27	8400		0.137	0.0223	—	—	—
	116.199E	36.846N	29	90	25	10	33	8400		0.0116	0.0495	0.0515	0.006	0.003
	116.193E	36.843N	30	66	47	10								



5.2-2

5.2.2.2

5.2-8

		mg/m ³	m	D _{10%}	mg/m ³	% P _{max}
P1		0.00048	197		0.45	0.11
	SO ₂	0.000485	197		0.5	0.10
	NO _x	0.001946	197		0.20	0.78
	VOCs	0.000051	197		2	0.0026
		0.000027	197		0.2	0.01
		0.000006	197		0.05	0.01
		0.001983	46		0.9	0.22
	VOCs	0.008497	46		2	0.42
		0.009308	46		0.2	4.65
		0.00103	46		0.05	2.06

3

1%

HJ2.2-2018

“ 5.4.2

1.6-1

/

/m /m / m/s

5.2.5

5.2-10

5.2-11

5.2-12

5.2-10

			mg/m ³	(kg/h)	(t/a)		
						mg/m ³	kg/h
1	P1		4.5	0.112	0.94	10	45.3
		SO ₂	4.6	0.114	0.955	50	—
		NO _x	18.2	0.456	3.83	50	—
		VOCs	0.5	0.012	0.10	60	3.0
			2.6	0.065	0.546	—	41
			0.06	0.0014	0.0121	5	—
			0.03	0.0007	0.00588	15	—
		0.94t/a VOCs	0.1t/a SO ₂				
		0.955t/a NOx	3.83t/a	0.546t/a	0.0121t/a		
		0.00588t/a					

5.2-11

							t/a
						mg/m ³ /	
1					GB16297-1996 2	1.0	0.129
			0.2			0.067	
			0.08			0.033	
					GB14554-1993 1	1.5	0.607
VOCs	6 DB37/801.6-2018 3	2.0	0.555				
			t/a		0.129		
			t/a		0.067		
			t/a		0.033		

	t/a	0.607
	VOCs t/a	0.555

5.2-12

		%	m³/h	mg/m³	kg/h				/h	/	
						mg/m³	kg/h				
		0		9.2	0.229	10	45.3		1	1	
	SO ₂	0		4.6	0.114	50	—		1	1	
	NO _x	0		18.2	0.456	50	—		1	1	
VOCs											
P1		0	25000	23.8	0.595	60	3.0		1	1	

[2018]207

100m

[2019]7

100m

50m

4.5

100m

150m

5.2-3

5.2.6.2

GB/39499-2020

15m

$$Q_C / C_m = 1 / A \times (B \times L^C + 0.25 \times r^2)^{0.50} \times L^D$$

Q_C ——

kg/h

C_m ——

mg/m³

L ——

m

r ——

m

A

$\bar{E}$

5.2-13

		m	m	m	(kg/h)	mg/m ³		m	
		90	20	33	0.0154	0.9	1.0	50	100
	VOCs				0.066	2	2.2	50	
					0.0723	0.2	22.9	50	
					0.008	0.05	8.9	50	

5.2-13

100m

100m

130m

500m 600m

5.2-4

5.2-5

5.2.6

100m

5.2.7

5.2-1

5.3

5.3.1

GB/T31962-2015 1A

5.3-1

5.3-2

5

4.5

5.3-1

--	--	--	--	--	--	--	--	--	--

					GB18918-2002 A COD _{Cr} ≤40mg/L NH ₃ -N≤2mg/L					70
										5

5.3-3

				/ mg/L	
1	DW001	COD _{Cr}	GB/T31962-2015 1A	500	
		BOD ₅		350	
				45	
				70	
				5	
		COD _{Cr}		300	
				20	
		BOD ₅		150	

5.3.2

(HJ2.3-2018)

B

5.3.3

GB/T31962-2015

1A

(GB18918-2002)

A

[2017]5

	8	m ³ /d	2021.7	
5.9091	m ³ /d		35.54m ³ /d	
0.17%				
	CODcr≤18.5mg/L	BOD ₅ ≤9mg/L	≤1.69mg/L	
			CODcr≤300mg/L	
BOD ₅ ≤150mg/L	≤20mg/L			

5.3.5

	12439m ³ /a			
		COD _{Cr}	0.20t/a	NH ₃ -N
0.008t/a	COD	40mg/L		

5.3.6

5.3-4

5.3-4

		√ □			
		□ □ □ □ □ □ □ □			
		√			
		□ √ □		□ □ □	
		□ □ □ √ □ √ pH		□ □ □ □ □ □	
		√ □ √ √			
		□ □ A □ B √		□ □ □	
		□ □ □ □		□ □ □ □ □ □ □ □	
		□ □ □ □		□ □ □ □ □ □ □ □	
		□ □ □ √ □ □		□ □ □ √ □	
		□ □ □ □ □ □			
		□ 40% □ 40% □			
		□ □ □ □ □ □		□ □ □ □	
		□ □ □ □ □ □			

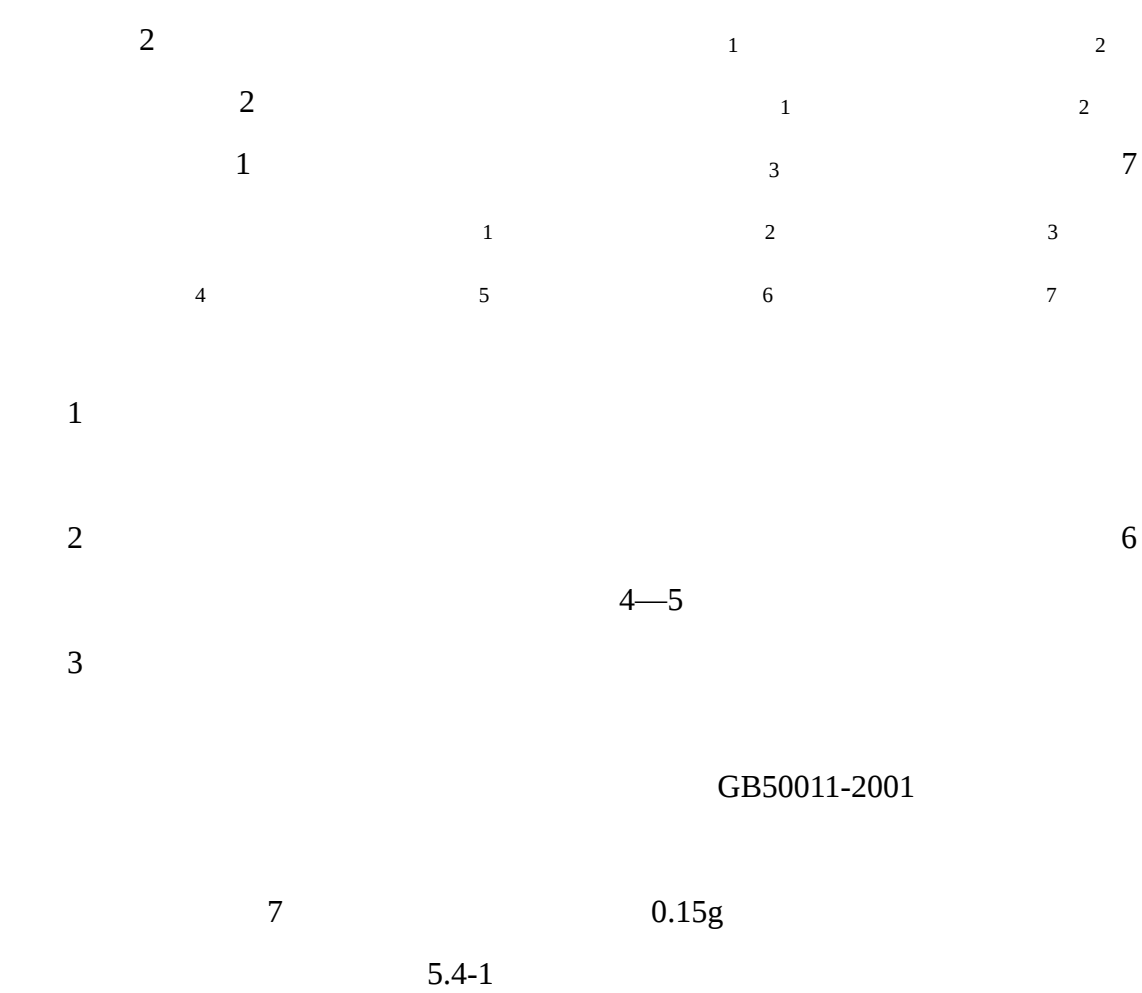
		□ □ □ □			
		□ □ □ □			
		□ □			
		□ √ □ □ □ √ □			
		√			
			/ t/a		/ mg/L
		COD _{Cr}	COD _{Cr} 0.23t/a 0.021t/a 12439m ³ /a		COD _{Cr} 18.5mg/L 1.69mg/L COD _{Cr} 15.9mg/L 0.653mg/L

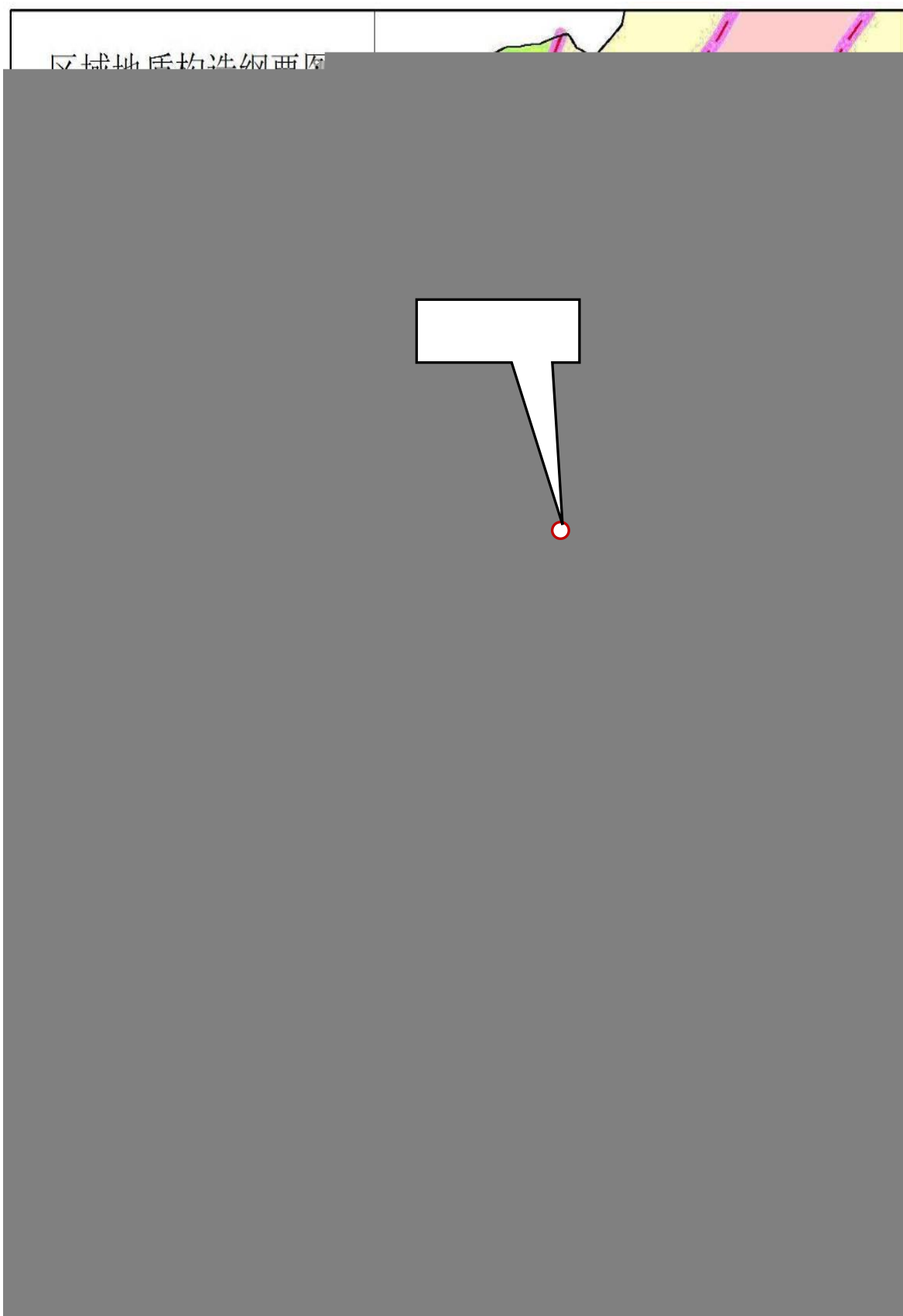
		√	□	□	□	□	□
			□	□	□	√	√ □
						pH	COD _{Cr} TP TN BOD ₅
		√					
		√	□				
“□”		√	“	”	“	”	

5.4

5.4.1

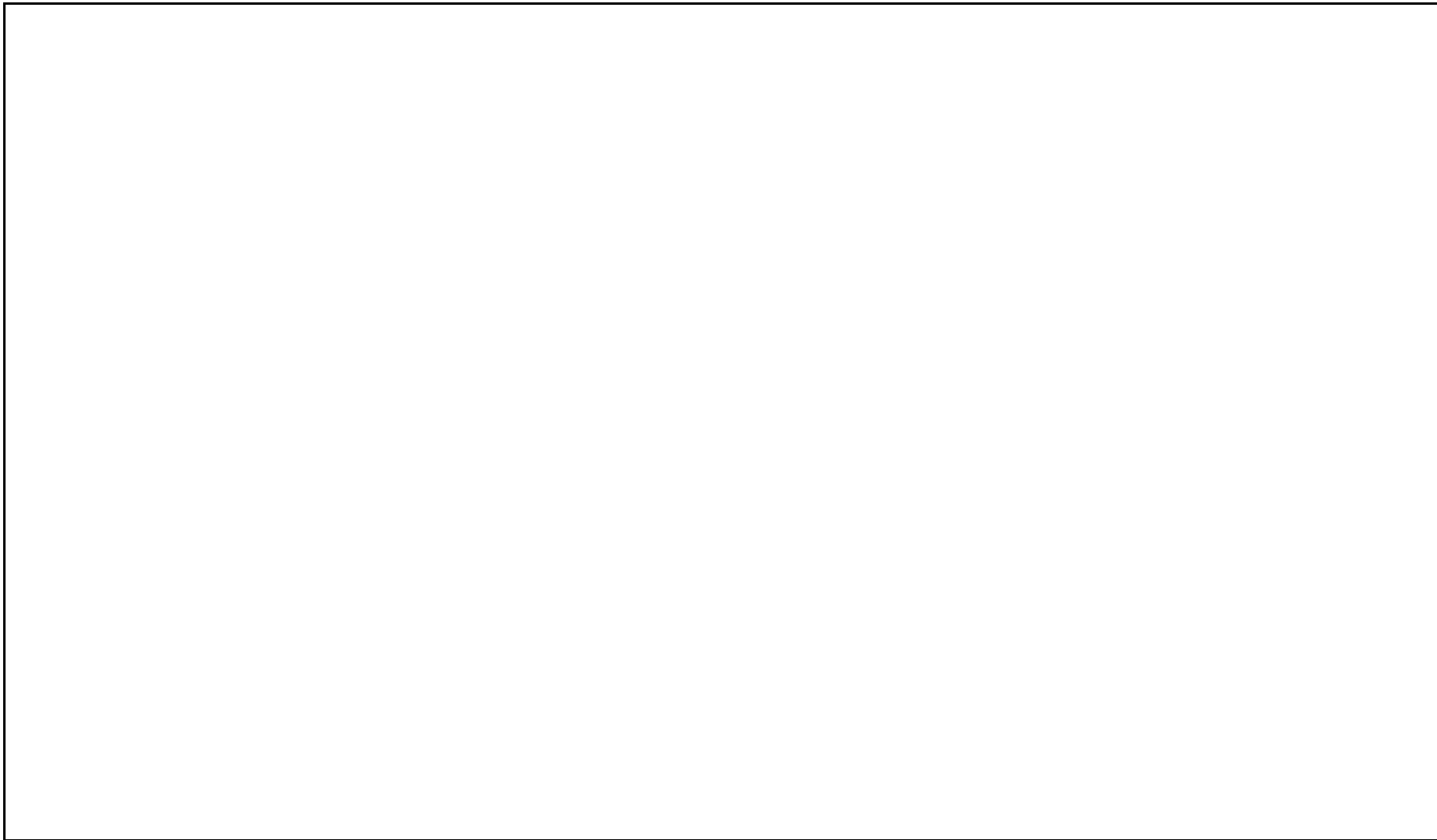
5.4.1.1





5.4.1.2

6	-		
		1.30~2.50m	1.78m
-18.80~-18.20m	-18.44m	18.30~18.90m	18.54m
7			
	6.10~7.10m	6.68m	-25.40~-24.70m
-25.08m	24.80~25.50m	25.18m	
8			
	5.4-2~5.4-5		

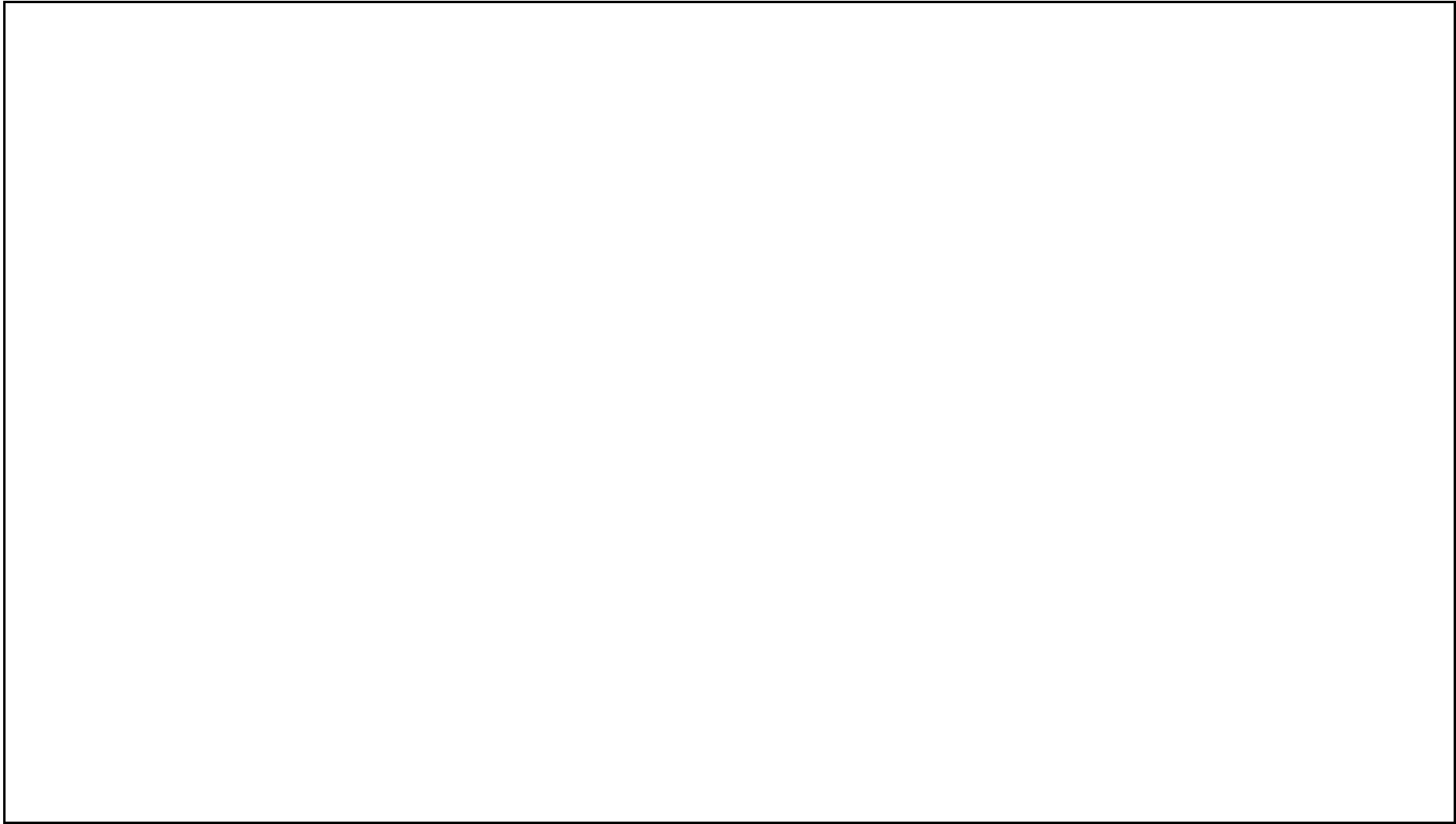


5.4-2

2-2' 工程地质剖面图



5.4-3



5.4-4



5.4-5

5.4.3

5.4.3.1

1

HJ610-2016

5.4-2

4.4.3.2

—

HJ610-2016

$\leq 6\text{km}^2$

5.4-3

	km^2	
	≥ 20	
	6-20	
	≤ 6	

1000m

1000m

2000m

6km^2

5.4.4

5.4.4.1

5.4.4.2

1

GB/T31962-2015 1A

2

5.4.4.3

100km²

5.4-6

2km

5.4.4.4

“

”

1

“ ”

“ ”

2

3

4

6m

$1.0 \times 10^{-7} \text{ cm/s}$

1.5m

$1.0 \times 10^{-7} \text{ cm/s}$

5.4-4

5.4-7

5.4-4

		300 C30 600 3:7	6.0m 1.0×10 ⁻⁷ cm/s
		C10 ±0.00 100 20 C35	1.5m 1.0×10 ⁻⁷ cm/s
		3:7 300	--

C30

P8

250mm

150mm

1.0mm

2mm

100m

2

1m

≤10⁻⁷cm/s

2mm

2mm

≤10⁻¹⁰cm/s

1.5m

1×10⁻⁷cm/s

C25

P6

100mm

P6

1.0mm

0.3%

HDPE

5.4.4.5

1

5.4-5

5.4-5

		300mm400mmC30	P8	6.0m 1.0×10 ⁻⁷ cm/s	
		300mm3:7200mmC30	P6		
		2500mm350mmC30	P8		
		100C10 20±0.00 C35	—	1.5m 1.0×10 ⁻⁷ cm/s	
		3:7300	—	--	

2

5.4-5

5.4.4.6

1

5.4-7

5.4-6

5.4-6

“ ”

5.4.5

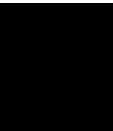
5.5

80~90dB(A)

5.5.1

5.5-1

5.5-2



5.5-1

dB(A)

						/m			/m	/dB(A)		dB(A) /		
				/ dB(A)/m		X	Y	Z					/dB(A)	
1			—	85/1		274	-507	32.57	5	71.0	24h	26	45.0	1
2			—	90/1		285	-508	30.11		84.0	24h			

5.5-2

	i		A	L_{Ai}	T
t_i	j		A	L_{Aj}	T
	t_j				
		N	M		
L_{eqg}					

5.5-3

/m

dB(A)

(3)

5.5.4

5.5-5

5.5-5

		☐		☐		☒					
		200m ☒		200m ☐		200m ☐					
		A ☒		A ☐						☐	
		☒				☐				☐	
		0	☐ 1	☐ 2	☐ 3	☒ 4a	☒ 4b			☐	

5.6

5.6.1

()

5.6.1.1

1

(

) HJ964-2018 A “ ” ‘ ’

VOCs

HJ964-2018 B 5.6-1

5.6-1

	√							

5.6-1

2

1800m²

HJ964-2018 6.2.2.1

≤5hm²

3

() HJ964-2018

5.6-2

5.6-2

4

5

$$\Delta S = n \cdot (I_s - L_s - R_s) / (p_b \times A \times D)$$

ΔS — g/kg
 I_s — g
 L_s — 5880g/a
 R_s — 940000g/a
 p_b — kg/m³ 14800kg/m³
 A — m² 200m 474800m²
 D — 0.2m
 n — a
 E
 $S = S_b + \Delta S$
 S_b — g/kg
 S — g/kg

6

n

5.6-4

5.6-4

	ΔS mg/kg	S mg/kg	ΔS mg/kg	S mg/kg
10	0.000041838	—	0.006688	—
20	0.000083677	—	0.013377	—
30	0.000125515	—	0.020065	—
40	0.000167354	—	0.026754	—
50	0.000209192	—	0.033442	—

g/kg	—

5~50

5.6.1.3

1

2

5.6.1.4

5.6-5

5.6-5

			GB15618-2018	1

5.6.1.5

5.6-6

5.6-6

		√	□	□	
		√	√	□	
		N			100m
		√	□	□	□
		VOCs	SO ₂	NO _x	TSP

		□ √ □ □			
		√ □ □			
		□ √ □			
		a √ b √ c □ d □			
		4.5-23			
			1	2	0~0.2m
			3	0	0~0.5m 0.5~1.5m 1.5~3m
		pH 1,1-1,2-1,1,1,2-1,1,2-1,2-1,4-[b] 1,1-1,2-1,1,2,2-1,2,3-2-[k] 1,2-2-[a h] 1,1-1,2-1,1,1,2-1,1,2-1,2-+[a] [1,2,3-cd]			
		-1,2-1,1,2,2-1,4-1,1-1,2-1,2,3-2-[b] 1,1-1,2-1,1,1-1,1-1,1,1,2-1,1,2-1,2-+[a] [1,2,3-cd]			
GB 15618√ GB3660√ D.1□ D.2□					
		E√ F□			
		200m			
		a √ b □ c □ a □ b □			
		√ √ √			
		2			

5.6.2

5.6-7

5.6-7

--	--	--	--	--	--	--	--	--	--	--	--	--

t/a

S₁

209

5.6.3

5.6.3.1

1

2

3

4

5.6.5

5.7

[2012]77

[2012]98

HJ169-2018

5.7.1

5.7.1.1

45000 6 /

FDY

5.7.1.2

1

5.7-1

5.7-1

1		1 760m ³ 2
2		1 2
3		1 2 3 4 5

2

5.7-2

		11
		170
		388
		30
		9
		5

3

5.7-3

5.7-3

			/
1	pH	PHS-3C	1
2	COD	JH-12	1
3	COD	--	1
4		722N	1
5	BOD ₅	--	1
6		--	1
7		--	1
8		--	

1.5km

30m³

16cm

24kg

5.7-4

5.7-4

			t/a	t/a		
			93	7		
		37%	105	2.54 0.94	3.9m ³ 1	
		20-25%	75	2.84	3.9m ³ 1	
			1.5	0.1		
			1520	87		
			400	23		
			477.6408 m ³	0.024		
			—	0.00588	—	
		VOCs	—	0.1	—	

5.7.2.2

5.7.2.3

MSDS

5.7-5~ 5.7-10

					m-Dihydroxybenzene		
	C ₆ H ₄ (OH) ₂		110.11		608		127
	110.7		276.8		—		
	=1	1.28		(kJ/mol)	2847.8		
	=1	3.79					
(vol%)	—						
	6.1						
	LD ₅₀ 301mg/kg() 3360mg/kg() 29mg/kg						
				UN	2876	CAS NO.	108-46-3
	61725				O53		—
	()						

5.7-6 MSDS

					formaldehyde		
	CH ₂ O		30.03		430		50 (37%)
	-92		-19.4		13.33kPa(-57.3)()		
	=1	0.82		(kJ/mol)	2345		
	=1	1.07			137.2		
(vol%)	7.0 7.3						
	8.3						
	LD50 800mg/kg() 270mg/kg() LC50 590mg/m³()						
				UN	1198	CAS NO.	50-00-0
	83012				O53		8
	15						

5.7-7 MSDS

				Ammonium hydroxide	Ammonia water
	NH4OH		35.05		—
				1.59kPa(20)	
	=1	0.91	(kJ/mol)		
	=1			--	
(vol%)					
	8.2				
	—				
		UN	2672	CAS NO.	1336-21-6
	82503				20

5.7-8

MSDS

					Sodiun hydroxide Caustic soda		
	NaOH		40.01		-		-
	318.4		1390		0.13kPa(739)		
	=1	2.12		(kJ/mol)	-		
	=1	-			-		
(vol%)	-						
	-	MAC	2				
	8.2						
	LD50 LC50						
				UN	1823	CAS NO.	1310-73-2
	82001						-
	， ，						
	15 15						
	()						

5.7-9

					Natural gas dehydration		
	CH ₄		16.05		537		-218
	-182.6		-160		53.32kPa(-168.8)		
	=1	0.45()			890.8kJ/mol		
	=1	0.6			-82.25		
	5 15(vol%)						
	2.1						
	-						
				UN	1971	CAS NO.	74-82-8
	21007						
	() () ())						

5.7-10			MSDS		

α- -5-
butadiene vinyl-pyridine rubber latex

1

50

-

Q

Q

Q

C.1

C.1

$Q=q_1/Q_1+q_2/Q_2+\dots q_n/Q_n$

$q_1\quad q_2\quad \dots\quad q_n$

t

$Q_1\quad Q_2\quad \dots\quad Q_n$

t

$Q\geq 1$

$Q\geq 1$

Q

$1\leq Q\leq 10$

$10\leq Q\leq 100$

$Q\geq 100$

(HJ 169-2018) B

5.7-11

5.7-11

		CAS	t	t	q_1/Q_1	Q
		108-46-3	7	5	1.4	$1\leq Q\leq 3.5664$ 10
	37%	50-00-0	2.54 0.94	0.5	1.88	
	20-25%	1336-21-6	2.84	10	0.284	
		74-82-8	0.024	10	0.0024	

2

M

(HJ 169-2018)C.1

M

M

20

10

$M\leq 20$

5

$M\leq 10$

$M=5$

M1 M2 M3 M4

M

5.7-12

5.7-12

M

				/	M
1				1	5
$M\sum$				1	5

M=5

M4

3

P

Q

M

5.7-13

5.7-15

	F1	F2	F3
S1	E1	E1	E2
S2	E1	E2	E3
S3	E1	E2	E3

5.7-16

--	--

F1

	E3		
3			
		E1	
E2	E3		5.7-18

4.16

3.47×10⁻⁵cm/s

D2

D2

G3

5.7-18

E3

3

5.7-21

5.7-21

				(m)		
	5km1.6-1					
	500m					2223
	5km					144072
	E					E1
					24h	/km
	1				6.72	
	2				—	
	3				—	
	E					E3 F3 S3
	1				10 ⁻⁶	10 ⁻⁴ cm/s

5.7-22

E	P			
	P1	P2	P3	P4
E1	+			
E2				
E3				
+				



5.7.3.2

HJ 169-2018 1

5.7-23

	+			



5.7.3.3

2018) (HJ 169
5km

				5km
	6km ²			
		1.6-1	1.6-1	1.6-2
5.7.4				
		HJ 169-2018		
	/			
5.7.4.1				
		37%	20-25%	
	VOCs			
		5.7-5~	5.7-10	
5.7.4.2				

				5km
	6km ²			
		1.6-1	1.6-1	1.6-2
5.7.4				
		HJ 169-2018		
	/			
5.7.4.1				
		37%	20-25%	
	VOCs			
		5.7-5~	5.7-10	
5.7.4.2				

				5km
	6km ²			
		1.6-1	1.6-1	1.6-2
5.7.4				
		HJ 169-2018		
	/			
5.7.4.1				
		37%	20-25%	
	VOCs			
		5.7-5~	5.7-10	
5.7.4.2				

				5km
	6km ²			
		1.6-1	1.6-1	1.6-2
5.7.4				
		HJ 169-2018		
	/			
5.7.4.1				
		37%	20-25%	
	VOCs			
		5.7-5~	5.7-10	
5.7.4.2				

				5km
	6km ²			
		1.6-1	1.6-1	1.6-2
5.7.4				
		HJ 169-2018		
	/			
5.7.4.1				
		37%	20-25%	
	VOCs			
		5.7-5~	5.7-10	
5.7.4.2				

				5km
	6km ²			
		1.6-1	1.6-1	1.6-2
5.7.4				
		HJ 169-2018		
	/			
5.7.4.1				
		37%	20-25%	
	VOCs			
		5.7-5~	5.7-10	
5.7.4.2				

				5km
	6km ²			
		1.6-1	1.6-1	1.6-2
5.7.4				
		HJ 169-2018		
	/			
5.7.4.1				
		37%	20-25%	
	VOCs			
		5.7-5~	5.7-10	
5.7.4.2				

				5km
	6km ²			
		1.6-1	1.6-1	1.6-2
5.7.4				
		HJ 169-2018		
	/			
5.7.4.1				
		37%	20-25%	
	VOCs			
		5.7-5~	5.7-10	
5.7.4.2				

				5km
	6km ²			
		1.6-1	1.6-1	1.6-2
5.7.4				
		HJ 169-2018		
	/			
5.7.4.1				
		37%	20-25%	
	VOCs			
		5.7-5~	5.7-10	
5.7.4.2				

					5km
	6km ²				
		1.6-1	1.6-1	1.6-2	
5.7.4					
		HJ 169-2018			
	/				
5.7.4.1					
		37%	20-25%		
	VOCs				
		5.7-5~	5.7-10		
5.7.4.2					

				5km
	6km ²			
		1.6-1	1.6-1	1.6-2
5.7.4				
		HJ 169-2018		
	/			
5.7.4.1				
		37%	20-25%	
	VOCs			
		5.7-5~	5.7-10	
5.7.4.2				

				5km
	6km ²			
		1.6-1	1.6-1	1.6-2
5.7.4				
		HJ 169-2018		
	/			
5.7.4.1				
		37%	20-25%	
	VOCs			
		5.7-5~	5.7-10	
5.7.4.2				

				5km
	6km ²			
		1.6-1	1.6-1	1.6-2
5.7.4				
		HJ 169-2018		
	/			
5.7.4.1				
		37%	20-25%	
	VOCs			
		5.7-5~	5.7-10	
5.7.4.2				

					5km
	6km ²				
		1.6-1	1.6-1	1.6-2	
5.7.4					
		HJ 169-2018			
	/				
5.7.4.1					
		37%	20-25%		
	VOCs				
		5.7-5~	5.7-10		
5.7.4.2					

5.7-24

5.7-24

		/		
	VOCs			

5.7.4.3

37% 20-25%
VOCs

/

5.7.4.4

5.7-1

5.7-25

5.7-25

1							—
2			VOCs				—
3			SO ₂ NO _x VOCs				—

5.7.5

5.7.5.1

110.7

5.7.5.2

(HJ 169-2018) E 10

5.7-26

5.7-26

/ / /	10min 10mm	1.00×10 ⁻⁴ /a 5.00×10 ⁻⁶ /a 5.00×10 ⁻⁶ /a
	10min 10mm	1.00×10 ⁻⁴ /a 5.00×10 ⁻⁶ /a 5.00×10 ⁻⁶ /a
	10min 10mm	1.00×10 ⁻⁴ /a 1.25×10 ⁻⁸ /a 1.25×10 ⁻⁸ /a
≤75mm	10%	1.00×10 ⁻⁸ /a

	10% 50mm	$5.00 \times 10^{-4}/a$ $1.00 \times 10^{-4}/a$
	10% 50mm	$3.00 \times 10^{-7}/h$ $3.00 \times 10^{-8}/h$
	10% 50mm	$4.00 \times 10^{-5}/h$ $4.00 \times 10^{-6}/h$

5.7-33

10%
4.0×10⁻⁵/h

5.7.6

5.7.6.1

1

10%
50mm
3.9m³
0.02m
QL

$$\sqrt{\gamma(P - P_0)}$$

QL—— kg/s
P—— Pa
P₀—— Pa
ρ—— kg/m³
g—— 9.81m/s²
h —— m
C_d—— 0.65
A—— m²
30min

5.7-27

5.7-27

	P Pa	P ₀ Pa	ρ kg/m ³	h m	A m ²	Q _L kg/s
	101325	101325	815	2	0.00000314	0.0104

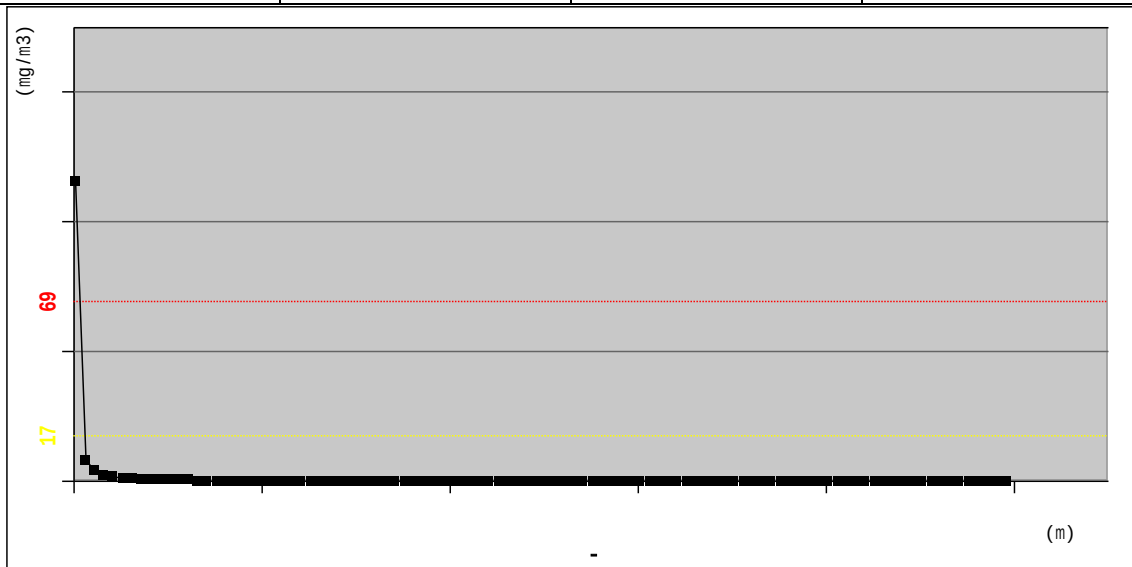
AFTOX

5

F 1.5m/s 25 50%
 5.7-30 — 5.7-5
 5.7-6 5.7-7
 5.7-30

	(m)	min	(mg/m ³)
1	10	0.11	115.44
2	60	0.67	8.29
3	110	1.22	3.95
4	160	1.78	2.43
5	210	2.33	1.66
6	260	2.89	1.21
7	310	3.44	0.93
8	360	4.00	0.74
9	410	4.56	0.60
10	460	5.11	0.50
11	510	5.67	0.42
12	560	6.22	0.36
13	610	6.78	0.32
14	660	7.33	0.28
15	710	7.89	0.25
16	760	8.44	0.22
17	810	9.00	0.20
18	860	9.56	0.18
19	910	10.11	0.16
20	960	10.67	0.15
21	1010	11.22	0.14
22	1060	11.78	0.13
23	1110	12.33	0.12
24	1160	12.89	0.11
25	1210	13.44	0.10
26	1260	14.00	0.10
27	1310	14.56	0.09
28	1360	15.11	0.08
29	1410	15.67	0.08
30	1460	16.22	0.08
31	1510	16.78	0.07

74	3660	45.67	0.02
78	3710	46.22	0.02
76	3760	46.78	0.02
77	3810	47.33	0.02
78	3860	47.89	0.02
79	3910	48.44	0.02
80	3960	49.00	0.02
81	4010	49.56	0.02
82	4060	50.11	0.02
83	4110	50.67	0.02
84	4160	51.22	0.02
85	4210	51.78	0.02
86	4260	52.33	0.02
87	4310	52.89	0.02
88	4360	53.44	0.02
89	4410	54.00	0.02
90	4460	54.56	0.02
91	4510	55.11	0.02
92	4560	55.67	0.02
93	4610	56.22	0.02
94	4660	57.78	0.02
95	4710	58.33	0.02
96	4760	58.89	0.02
97	4810	59.45	0.02
98	4860	60.00	0.02
99	4910	60.56	0.02
100	4960	61.11	0.01



5.7-5

5.7-31

5.7-31

	10%				
	10%				
		/	25	/Mpa	0.101325
		/kg	2540	/mm	2
kg/s /	0.00032	/min	30	/kg	18.72
/m	2	/kg	0.576		4.0×10 ⁻⁵ /h
			mg/m ³ /	/m	/min
		-1	17	40	0
		-2	69	10	0
			/min	/min	mg/m ³ /
			0	0.35	115.44

2

GB/T31962-2015 1A

pH COD SS

3

“

”

5.7.7

5.7.7.1

1

1

2

RTO

3

2

1

2

3

4

5

5.7.7.2

1

1

2

3

2

$$V = 10qF$$

q — mm

$$q = qa/n \quad qa$$

508.8mm n

60

8.48mm

F —

$$2.2152hm^2$$

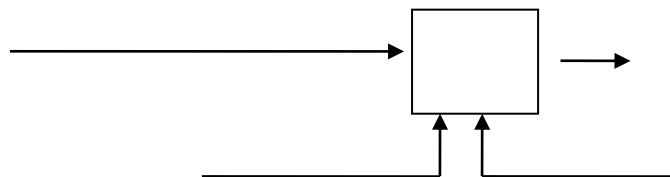
V_5

$$187.85m^3$$

$$V = 3.9 + 180 - 88.2 + 187.85 = 283.55m^3$$

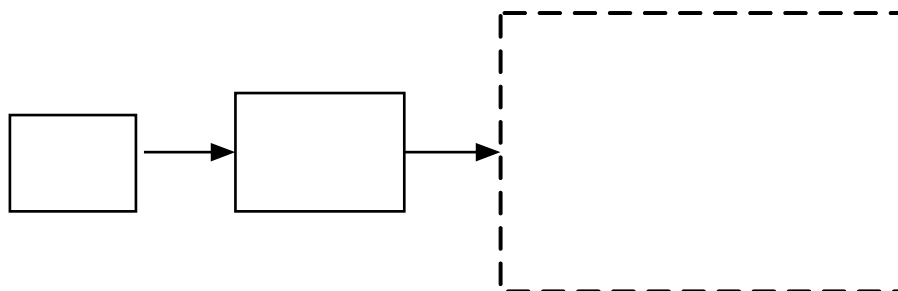
$$760m^3$$

5.7-8



5.78

5.7-9



5.7-9

5.7.7.3

VOCs

1

2

()

3

4

5.7.7.4

1 “ ” “ ”

2 “ ”

3

4

5

6

7

8

5.7.7.5

1

2

3

5.7.7.6

1

2

3

4

5

5.7-31

5.7-31

--	--	--	--

1

1

2

		3 4 5 5.7-10
2		1 GB50160-2008 “ ” 2 760m ³
3		
4		
5		
6		
7		760m ³ /

5.7.8

4.7.8.1

2020 12 30

371526-2020-001-H

4.7.8.2

1

2

1

5.7-42

5.7-42

	200m 500m 1000m 1500m 2000m	NO _x SO ₂ VOCs
	2	

pH BOD₅

COD SS

25.7-43

5.7-43

	pH BOD ₅ COD SS

2

3

3

(1)

()

(2)

24

(3)

(4)

5.7-44

5.7-44

				37%	20-25%		
		/t	7	2.54	2.84	0.024	
			500m <u>2223</u>			5km <u>144072</u> -	
			200m				
				F1 ☐	F2 ☐	F3 ☒	
				S1 ☐	S2 ☐	S3 ☒	
				G1 ☐	G2 ☐	G3 ☒	
				D1 ☐	D2 ☒	D3 ☐	
			Q	Q 1 ☐	1≤Q 10√	10≤Q 100 ☐	Q 100 ☐
			M	M1 ☐	M2 ☐	M3√	M4 ☐
P			P1 ☐	P2 ☐	P3 ☐	P4√	
			E1 ☒		E2 ☐	E3 ☐	
			E1 ☐		E2 ☐	E3 ☒	
			E1 ☐		E2 ☐	E3√	
		+ ☐	☐	√	☐	☐	
		☐	√	☐	☐		

5.8

2008

2008 264

1

2

20 30m

3

5.8-1

6

“ ”

6.1

6.1.1

12439t/a COD_{Cr}

9.35t/a 0.16t/a

6.1.2

6.1.2.1

1000m³/d “ + + + ”

2.2-16

10423m³/a 29.78m³/d

600m³/d 1000m³/d 400m³/d
29.78m³/d

GB/T31962-2015 1A

GB18918-2002 A

12439m³/a COD_{Cr}

0.20t/a 0.008t/a

6.1.3

20

40000

0.05%

6.2

6.2.1

RTO

43

P1

6.2.2

RTO

VOCs

RTO

98%

RTO

VOCs

5-10

95%

VOCs

RTO

VOCs

RTO

GB16297-1996 2

DB37/2376-2019 1

<

> [2019]39

GB31572-2015

5 6

2 VOCs

6 DB37/801.6-2018 1

GB14554-93 2

RTO

HJ1093-2020 6.1-1

6.1-1 RTO HJ1093

	HJ1093			
6.1		105%	105%	
		95%	RTO ≥ 98%	
		98%	98%	
		90%	RTO ≥ 95%	
		GB50051	43m	
6.2			RTO	

6.3			DN200 RTO	
		760	RTO 760 750 850	
6.4				
6.5		25%	RTO	

6.2.3

225 40000

0.56%

6.3

6.3.1

80 95dB(A)

A

B

C

6.3.2

GB12348-2008 3

GB12348-2008 4a

GB3096-2008 2

20

40000

0.05%

6.4

6.4.1

6.4.2

6.4.2.1

6.4.2.2

2021

FDY

“ HW49

900-041-49

"

6.4.3

			GB16297-1996 2 GB14554-93 1 VOCs 6 DB37/801.6-2018 3 GB14554-1993 1	
			GB/T31962-2015 1A	GB/T31962-2015 5 1A
			GB12348-2008 3 GB12348-2008 4a	3 1mL _{Aeq} (A) ≤ 65dB(A) ≤ 55dB(A) 4a 1mL _{Aeq} (A) ≤ 70dB(A) ≤ 55dB(A)

6.6

7

7.1

7.1-1

7.1-1

			40000
		/	152159
		/	143434
		/	8458
		/	2117.2
		/	6340.8
		%	21.1
		%	15.2
			2202
			7.1
		%	47.1

15.2%

7.1

9.0

47.1%

7.2

7.2.1

272

40000

0.68%

7.2-1

7.2-1

--	--	--	--	--	--	--

		RTO	1	150		
			1	10		
3			—	20		
4			—	2	—	
5			—	15	—	
		—	—	272	—	—

7.2.2

“ ”

7.3

60

“ ”

8

8.1

8.1.1

1

2

1

2

a

b

c

d

a

b

c

d

8.2

8.2-1

8.2-1

								t/a		
--	--	--	--	--	--	--	--	-----	--	--

SO₂
NO_x VOCs
+RTO

RTO
1 ; 1
43

						DB37/801.6-2018	3				
	NMHC	-- pH COD _{Cr} NH ₃ -N	--	--	--	GB37822-2019		VOCs 0.555t/a		--	VOCs

				--		0	--		
				--	GB18597-2001	0	--		
		L _{eq}		--	GB12348-2008 3 4a	--	--	--	
			-7cm/s GB18598						
			-7cm/s GB18598						

8.3

8.3.1

HJ 1102-2020

HJ 1139-2020

()

8.3-1

8.3-1

	P1	VOCs SO ₂ NO _x		
		VOCs		
		NMHC		
		pH COD _{Cr}		
		BOD ₅ SS		
		A		
		pH		

8.3-2

8.3-2

		pH	

8.3.2

8.3-2

8.3-2

1		JDC-109	1
2		GC-14C	1
3		GC-2010	1
4		AA7002	1
5	COD	JH-12	1
6		PHS-3C	1
7	COD	--	2
8		HS5660A	1
9		2020	1
10		DIS30	1
11		--	1
12		--	1
13		--	

8.4

8.4.1

1

2

3

8.4.2

1	[1996]470			
2	DB37/T 2463-2014			
3	DB37/T3535-2019			
		0.5m		
		≥ 1.2m		
			100mm × 2mm	
		≥ 100mm	≤ 10mm	
4				

8.4.3

1		600mm	300mm
	2m		
2		GB15562.1	
	[2003]95		
3		**	
			**
4			

8.5

8.5.1

8.5.1.1

“ ”

“ ”

8.5.1.2

“ ” “ ”

SO₂ NO_x

COD NH₃-N

8.5.2

1

12439m³/a COD_{Cr} 0.20t/a

0.008t/a COD_{Cr}

COD_{Cr}

2

VOCs 0.10t/a

9

9.1

9.1.1

2019

29

9.1.2 “ ”

2021 5 19

[2021]6

“ ”

9.1-1

“ ”

9.1-1

9.1-1

“ ”

	“ ”	
	85.08km ² 0.99% 165.68km ² 1.92%	9.1-2

	40% 28% 90% 14% PM_{2.5} 48ug/m³ 70% 2020 92%	GB3095-2012 RTO GB3838-2002 GB3096-2008 2 GB12348-2008 3 4a
	14 146 19 191 193	

20

202

203

22 .

		5	
		2	

VOCs

“ ”

VOCs

4

VOCs

VOCs

6

VOCs

10

11

		+	
		2	
		3	
		4	
		5	
		6	
		1	
		2.	
		2022	
		2025	
		2025	
		50% 2030	
		3	GB/T
		36575-2018	
		4	
		5	

9.1.3

“ ”

2021 58

“ ”

9.1-2

9.1-2

“ ”

	2019	2019	
	“ ” “ ”		
	“ ” “ ” “ ”	“ ” VOCs SO ₂ NO _x	
	“ ” “ ”		

“ ”

9.1.4

9.1-3

	“ ”	

9.1-3

9.1.5 “ ”

“ ” 2021—2023

“ ” 9.1-4

9.1-4 “ ”

	“ ”	
	2023 39600 4400 6% 5	
	2023 10% 150 150 2021 150 2023 90%	

□ BP ò ñ •f00,•Hê ñ ™ ‡ YS(A“eVgŒÖ€\$Av ' u"y / &i2011U2iÉ” ÇCW(™5/8

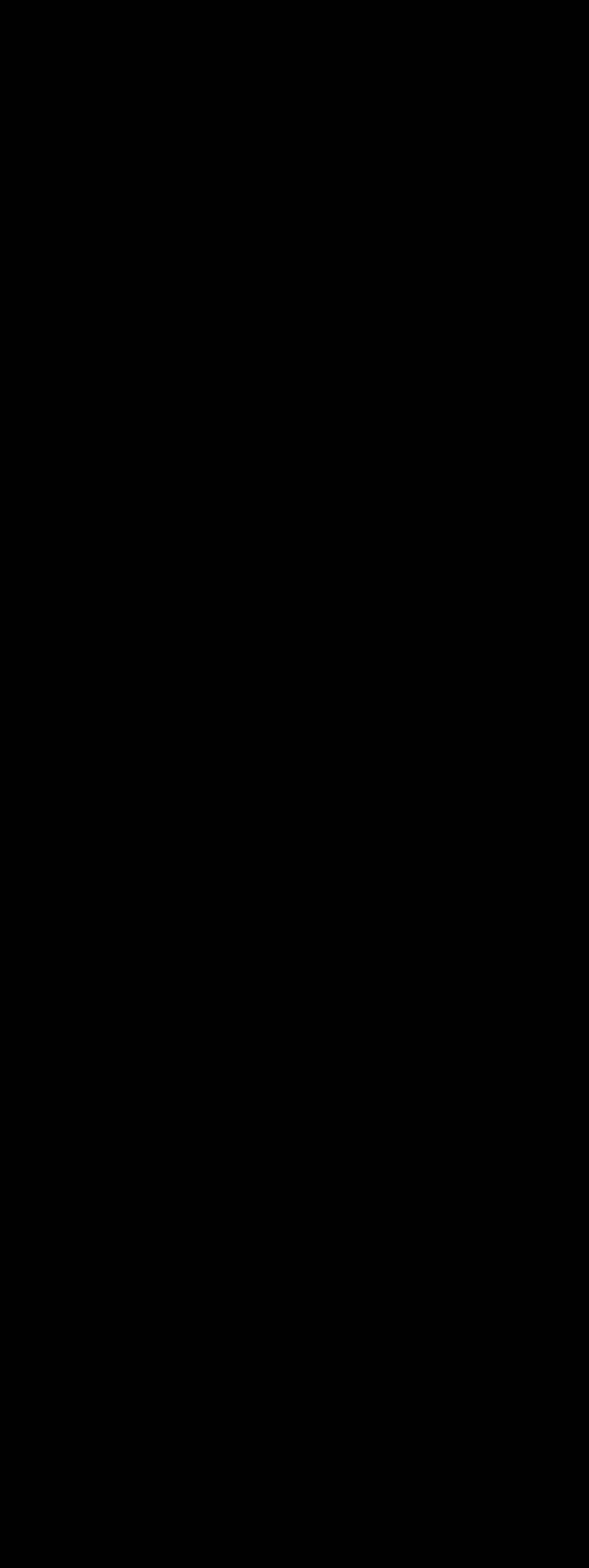
—2023

9.1.6

VOCs

0.3m/s

VOCs



2021—2025	
]30	
2021—2025	
8	
VOCs	
VOCs	
30	
20 15	
20% 2021	VOCs
	VOCs
2022	VOC
	RTO
LDAR	
D ₃	
	LDAR
LDAR	

2023

9.2

9.2.1

2003-2020

9.2.2

2003-2020

9.2.3

100m
100m 130m
500m 600m

9.2.4

9.2.5

9.2.6

1

2

3

2

4

9.3

“ ”

10 ∞

10.1

10.1.1

				GB16297-1996	2	
						DB37/2376-2019
1						
GB14554-93	2		VOCs			
					6	
DB37/801.6-2018	1					
		GB31572-2015	5			
				GB16297-1996	2	
						GB16297-1996
2						
GB14554-93	1			VOCs		
					6	
	DB37/801.6-2018	3				
10.1.4.2						
				GB/T31962-2015	1A	
10.1.4.3						
10.1.4.4						
						GB12348-2008 3

4a

10.1.5 ∞

10.1.5.1

1

RT0 43 P1
GB16297-1996 2

DB37/2376-2019 1 <
> [2019]39

GB31572-2015 5
6 2 VOCs
6

DB37/801.6-2018 1
GB14554-93 2

2

GB14554-93 1

GB16297-1996 2 VOCs
6

DB37/801.6-2018	3			
3				
		100m		
	500m		600m	
10.1.5.2				
			12439m ³ /a	
COD _{Cr}	15.9mg/L	0.653mg/L		
0.20t/a	0.008t/a			
10.1.5.3				
	2			
10.1.5.4				
10.1.6				
10.1.6.1				
		PM ₁₀	SO ₂	NO ₂ CO
O ₃		GB3095-2012		
PM ₁₀	PM _{2.5}		GB3095-2012	

PM_{2.5} PM₁₀

(HJ2.2-2018) D TSP

GB3095-2012

p244

10.1.6.2

1# 2#

GB3838-2002

GB3838-2002

GB18918-2002

A

GB3838-2002

10.1.6.3

5

GB/T14848-2017

10.1.6.4

(GB12348-2008)3

GB12348-2008 4a

GB3096-2008 2

10.1.7

10.1.7.1

10.1.7.2

12439m³/a

COD_{Cr}

15.9mg/L

0.653mg/L

0.20t/a

0.008t/a

10.1.7.3

10.1.7.4

GB12348-2008

3

GB12348-2008

4a

GB3096-2008 2

10.1.7.5

10.1.8

10.1.9

			VOCs0.11798t/a		SO ₂	0.955t/a		NOx	
3.83t/a			0.94t/a						
[2019]132									
2									
10.1.10									
10.1.11									
2022	7	8	2022	7	18				
			2022	9	1	9	13		
			2022	9	5	7			
10.1.12									

10.2

10.2.1

10.2-1

10.2-1

			GB16297-1996 2 DB37/2376-2019 1 < > [2019]39 GB31572-2015 5 6 2 VOCs RTO 1 43 P1 6 1 DB37/801.6-2018 1 GB14554-93 2
			GB16297-1996 2 GB14554-93 1 VOCs 6 DB37/801.6-2018 3
			GB/T31962-2015 1A
			GB12348-2008 3 GB12348-2008 4a

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10.2.2

1

2

3

4

5