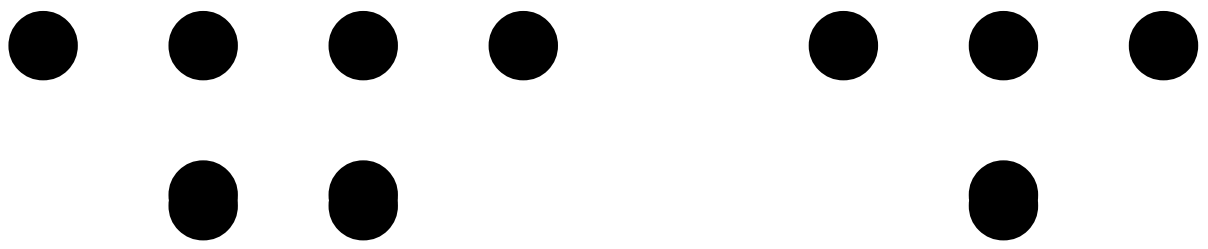




1.6	5
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4.6

7.9	169
7.10	170
8	171
8.1	171
8.2	171
8.3	174
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9	175
9.1	175
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10	177
10.1	177
10.2	179
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11.1	181
11.2	181
11.3	182
11.4	183
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12.1	184
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12.3	185
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9					2016	7	2		
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12							2007	11	1
13							2019	1.1	
14							2018	10	26
15						2019	4	23	
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4							2.4-2009		2009
12	23			2010	4	1			
5							610-2016		
2016	1	7		2016	1	7			
6							169-2018		2018
10	15			2019	3	1			

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1				
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	14554-93	1
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	3838-2002	
	/ 14848-2017	
	3096-2008	2
	36600-2018	1

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		24	0.15	/ 3
2	2	1	0.2	/ 3
		24	0.08	/ 3
3	10	24	0.15	/ 3
4	2.5	24	0.075	/ 3
5		200		/ 3
		8	160	/ 3
6		1	10	/ 3
		24	4	/ 3
7		1	3	/ 3
8			2.0	/ 3
9			20	
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		6.5-8.5		/	1.0
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1		7440-38-2	60
2		7440-43-9	65
3		18540-29-9	5.7
4		7440-50-8	18000
5		7439-92-1	800
6		7439-97-6	38
7		7440-02-0	900
8		56-23-5	2.8
9		67-66-3	0.9
10		74-87-3	37
11	1,1-	75-34-3	9
12	1,2-	107-06-2	5
13	1,1-	75-35-4	66
14	-1,2-	156-59-2	596
15	-1,2-	156-60-5	54
16		75-09-2	616
17	1,2-	78-87-5	5
18	1,1,1,2-	630-20-6	10
19	1,1,2,2-	79-34-5	6.8
20		127-18-4	53
21	1,1,1-	71-55-6	840
22	1,1,2-	79-00-5	2.8
23		79-01-6	2.8

24	1,2,3-	96-18-4	0.5
25		75-01-4	0.43
26		71-43-2	4
27		108-90-7	270
28	1,2-	95-50-1	560
29	1,4-	106-46-7	20
30		100-41-4	28
31		100-42-5	1290
32		108-88-3	1200
33	, -	108-38-3,106-42-3	570
34	-	95-47-6	640
35		98-95-3	76
36		62-53-3	260
37	2-	95-57-8	2256
38	()	56-55-3	15
39	()	50-32-8	1.5
40	()	205-99-2	15
41	()	207-08-9	151
42		218-01-9	1293
43	(,)	53-70-3	1.5
44	(1,2,3-)	193-39-5	15
45		91-20-3	70

		37/2801.7-2019	1 2
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2					16	37/2801.7-2019 2
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	/	6.5-9.5	45	400	350 500

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12348-2008

3	()	65 55

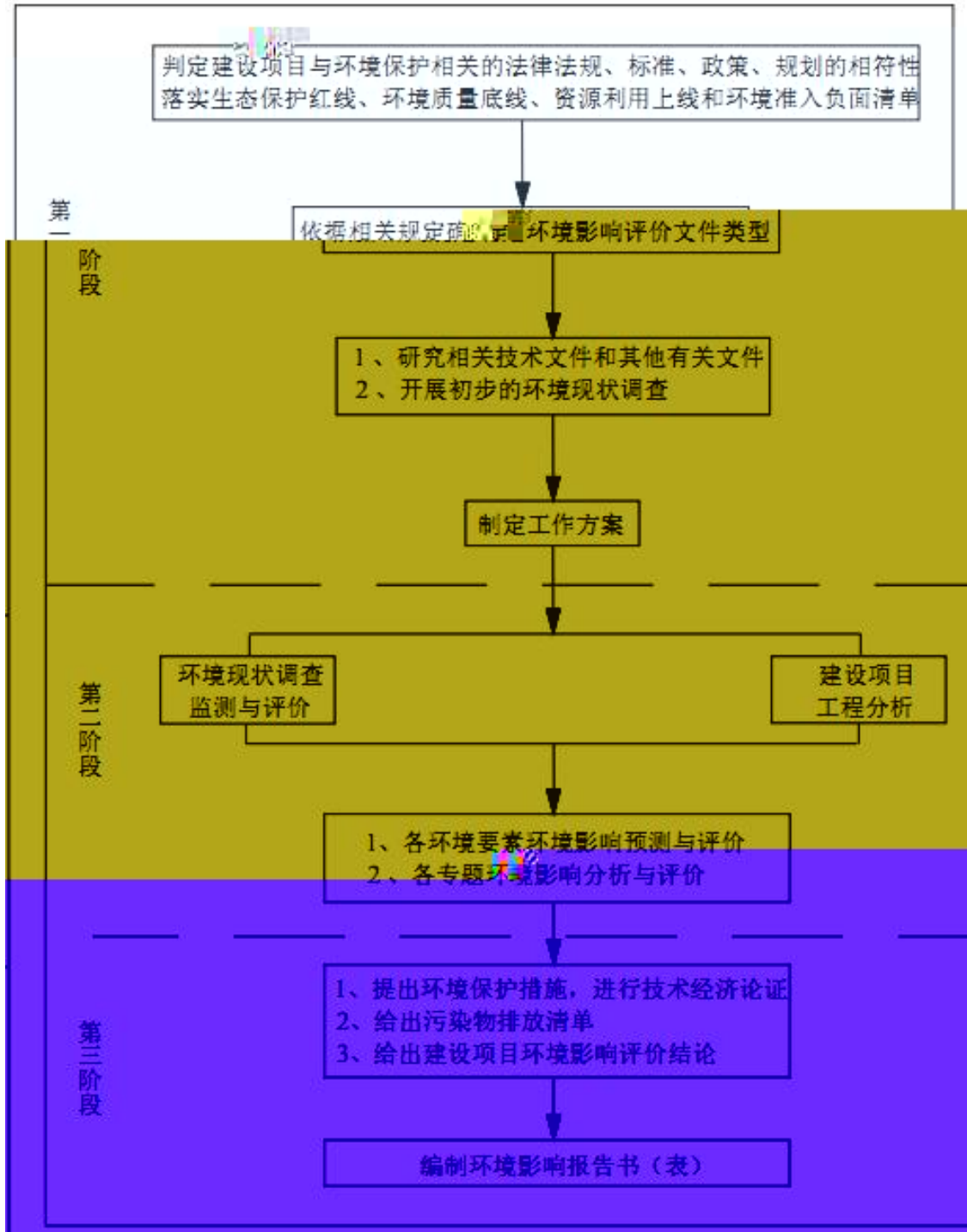
12348-2008

	()	70 55

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18599-2001

1.7-1



117 47 118 09 37 13 37 36

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3.1-1

	36 / 28 / 8 /	2012 16 2013 121		2019 380600 06
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2.4 3	6 4145 3 20 13.2 6 6	2019 27		
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3.2-1

3.2-2

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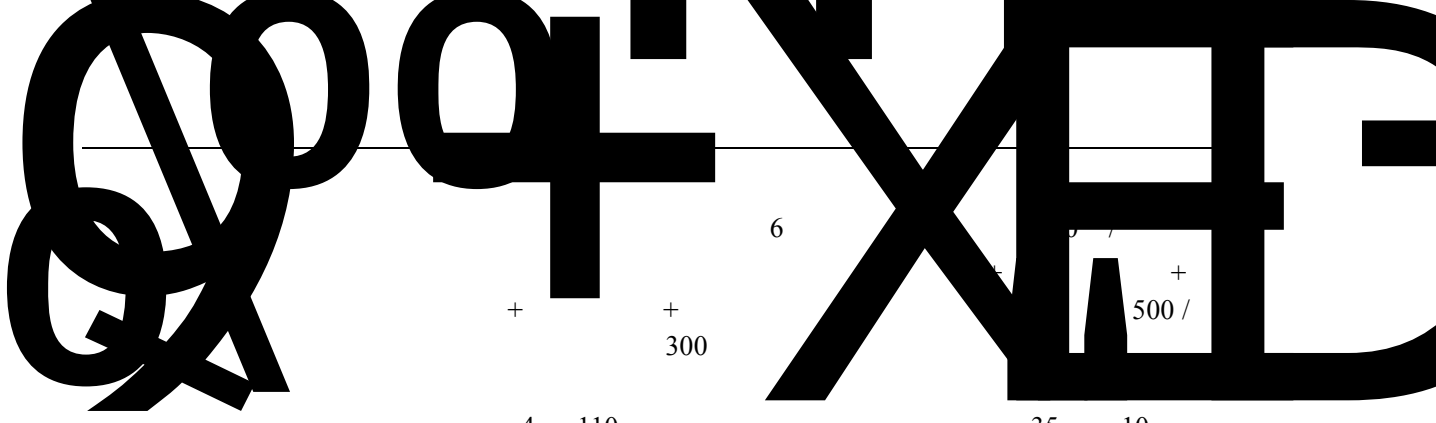
1 6 /

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			/	4450	
		31%	/	117693.4	
	8 /		/	80000	
		31%	/	251294.23	
		50#	/	6672.66	
		10%	/	41295.29	
		80#	/	5705.87	
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		()	/		
		32% ()	/	360000	
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3.3-2

	2	1.605
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		2.046 1.14
		0.947 4.3
1		16.877 8.71
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		6260776
2		375.79
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3				
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3.2		²	4464.05	
3.3		²	1500	
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5				
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5.3		/	24	

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4.2-2

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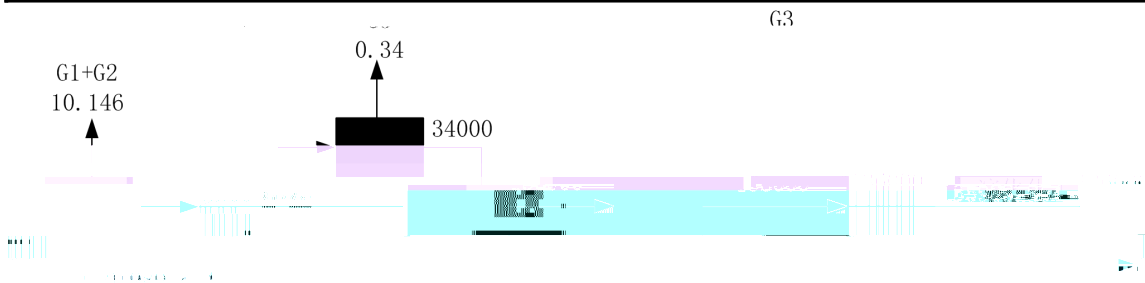
4.3-1

4.3-1

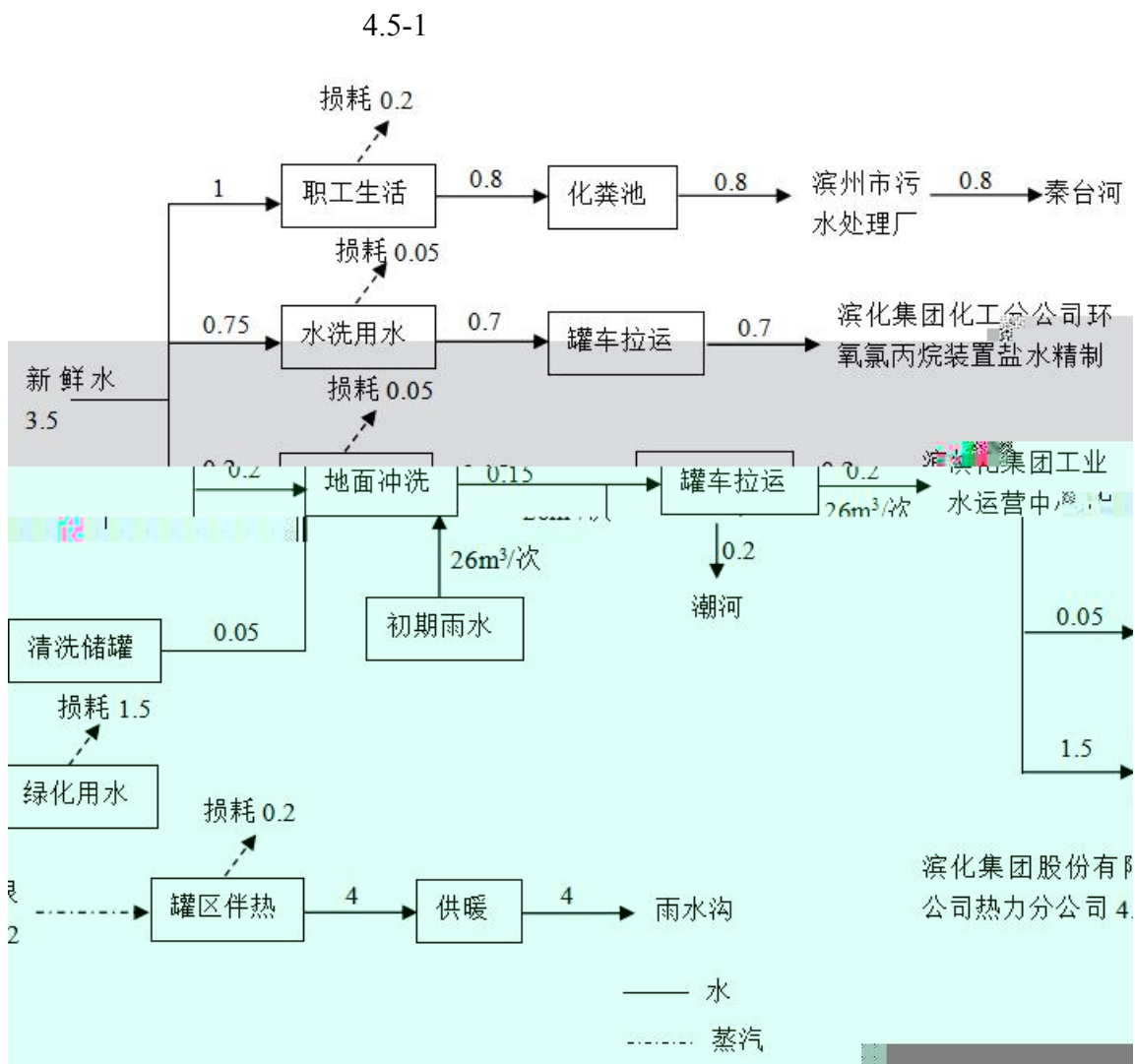
1					1 15
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4.3-2 4.3-2

	136000		135989.514
			10.486
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4.4-1



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	3000	10.146	427.02	90%	1.02	0.129
		0.304	12.79	90%	0.03	0.004
						42.93
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37/2801.7-2019

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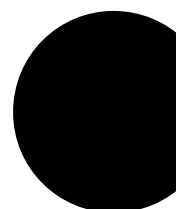
4

37/3416.4-2018

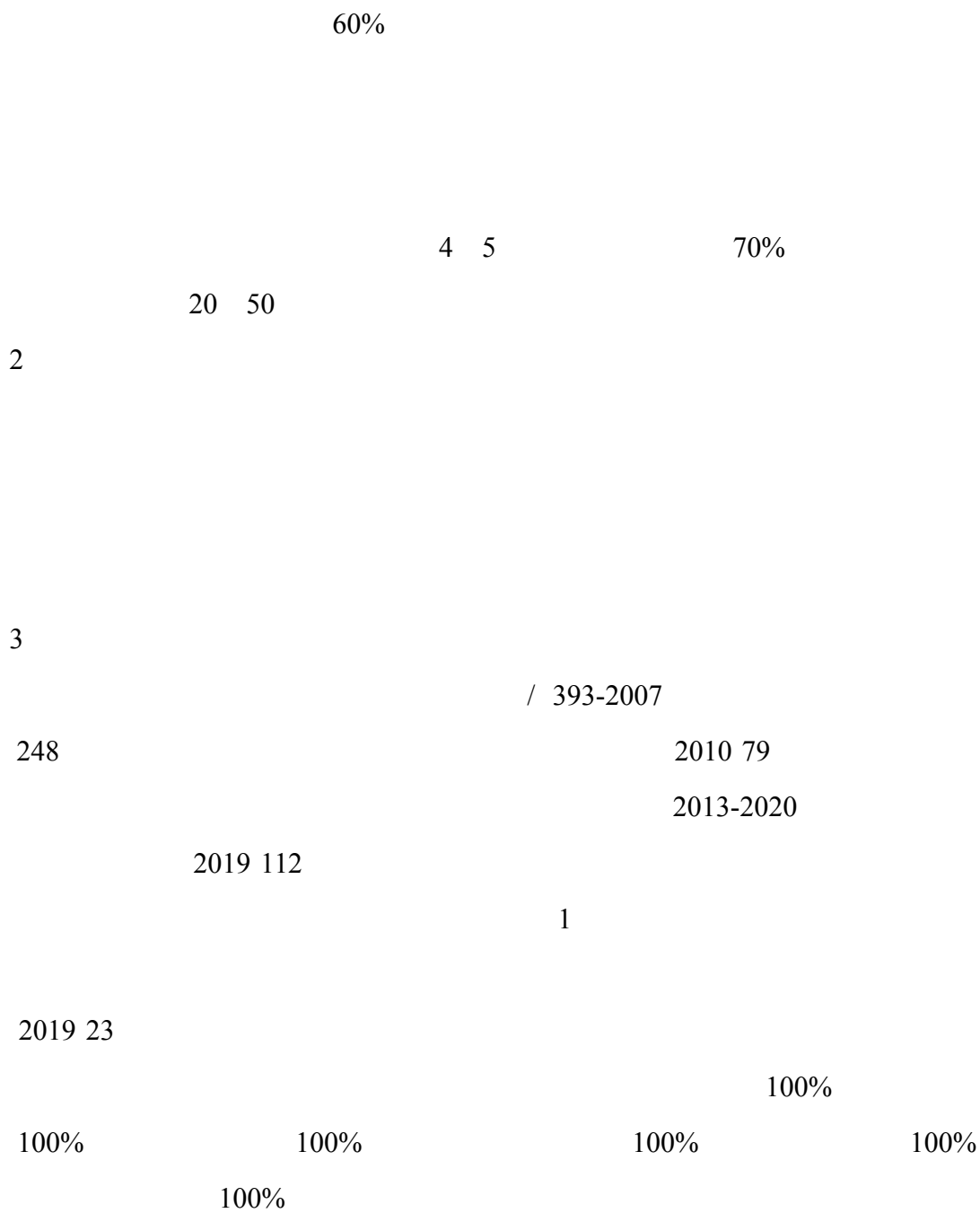
700 ^{3/}

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			0.656	0	0.656
			0.218 14.95	1.02 0.34	1.238 15.29
			7.5	0	7.5
			0.0017	0	0.0017
2			6260776	327	6261103
			375.79	0.018	375.808
			62.63	0.003	62.633
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		82-98

2

4.7-2

	82	72.5	70	66.5	64	62	56	52.5
	74	64.5	62	58.5	56	54	48	44.5
	81	71.5	69	65.5	63	61	55	51.5
	81	71.5	69	65.5	63	61	55	51.5
	74	64.5	62	58.5	56	54	48	44.5
	84	74.5	72	68.5	66	64	58	54.5
	81	71.5	69	65.5	63	61	55	51.5
	84	74.5	72	68.5	66	64	58	54.5

	84	74.5	72	68.5	66	64
4.7-1						

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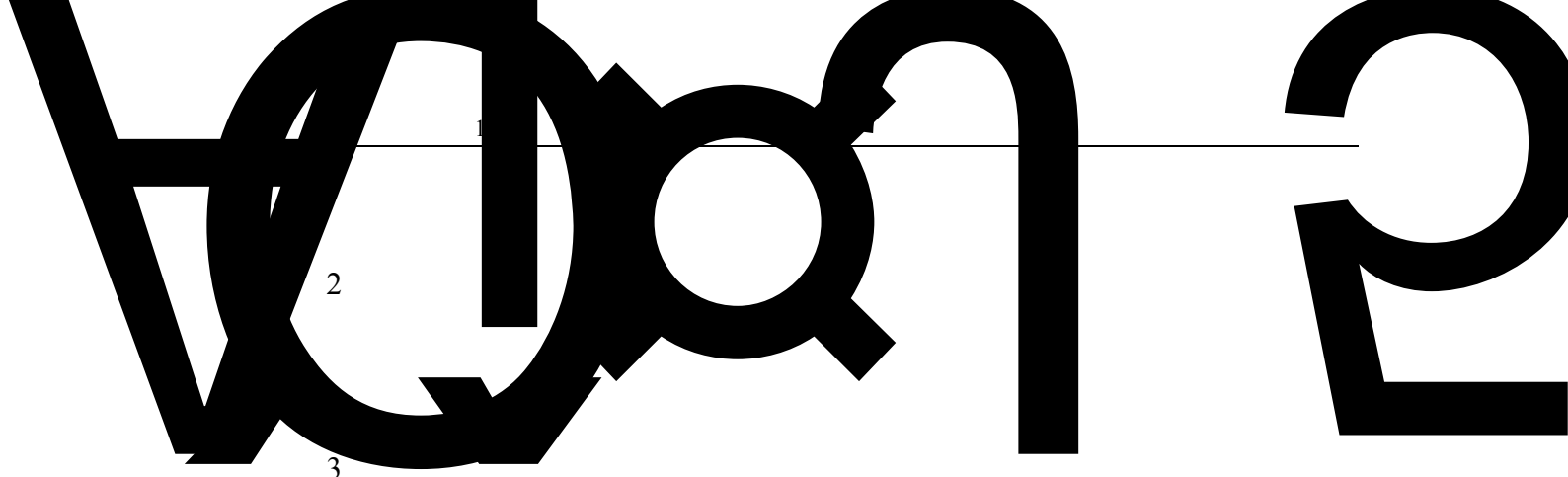
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4.7-4

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4.8-4

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	3838-2002	
	/ 14848- 2017	
	3096-2008	3
	36600-2018	1
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4.8-1

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	1	2.5	8	2.0	0.5
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	1	5.9	16.7		

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4.9-2

	0.3 0.5	0.6 0.9	2.5 4.0
	-30 110	-30 110	80

/ ²	65-73	90-98	80-83
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63 ^{3/}

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37/3416.4-2018

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663-2013

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5.1-1

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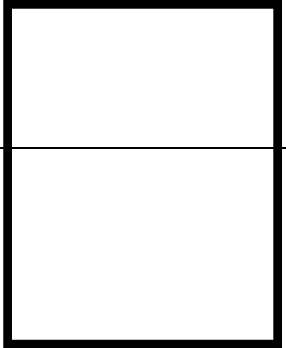
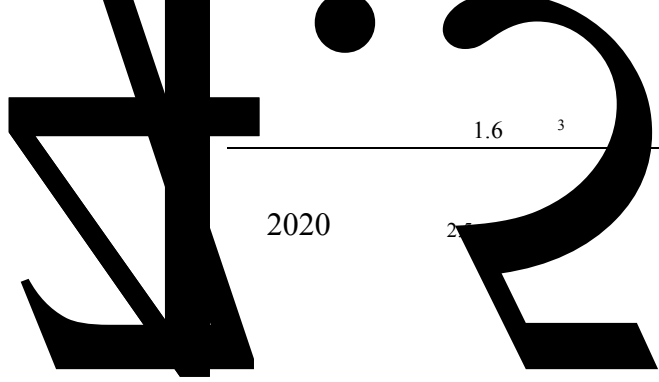
3095-2012

					%	
2	/ 3		20	60	33.33	
	/ 3	98%	46	150	30.67	
2	/ 3		39	40	97.5	
	/ 3	98%	76	80	95	
10	/ 3					
	/ 3	95%				
2.5	/ 3		52	75	69.33	
	/ 3	95%				
	/ 3	95%	1.8	4	45	
3	/ 3	90%				

2013-2020

2018-2020

,



1.6 3

2020

1

2

5.1-2 5.1-2

1#			1580	
2#				

3

4

2020 3 23 3 29 7

5.1-3

		7	4	2 00
		8 00	14 00	20 00
		7	4	2 00
		8 00	14 00	20 00

2020.03.23 02 00 7.8 40.1 102.9 1.0 4 1
 08 00 ~~41.2~~ ~~32.8~~ ~~46.5~~ 2 ~~0.8~~ 842003.231 (,
 400



	20 00	18.1	35.4	102.3		3.0	6	2
2020.03.25	02 00	10.1	37.8	102.7		0.9	4	1
	08 00	16.2	35.4	102.4		1.1	4	1
	14 00	24.7	31.2	102.0		2.9	5	2
	20 00	18.9	33.9	102.2		1.2	5	1
2020.03.26	02 00	6.1	44.3	103.2		1.2	6	2
	08 00	11.4	42.8	102.8		1.0	6	2
	14 00	18.5	39.9	102.5		3.4	5	1
	20 00	9.1	40.2	102.7		1.8	6	1
2020.03.27	02 00	2.1	45.9	103.7		2.7	6	2
	08 00	4.2	43.2	103.5		3.4	6	2
	14 00	10.8	41.8	103.0		3.8	6	2
	20 00	3.9	42.9	103.6		2.0	6	2
2020.03.28	02 00	4.8	43.7	103.4		1.0	4	1
	08 00	8.4	41.2	103.1		1.1	5	1
	14 00	14.3	38.9	102.8		1.6	4	2
	20 00	7.9	40.7	103.2		1.5	4	1
2020.03.29	02 00	7.4	41.4	102.9		1.0	5	1
	08 00	9.0	40.5	102.8		1.1	6	2
	14 00	14.8	39.1	102.2		1.8	6	2
	20 00	8.9	40.2	102.8		1.4	6	2

5

3095-2012 3

5.1-5

			5	
		/ 33-1999	- 010	2 / 3
		/ 14675-1993		10
	-	604-2017	5 - 010	0.07 / 3

6

5.1-6

	02 00	0.30	10
2020.03.23	08 00	0.33	11
	14 00	0.36	10
	20 00	0.35	10

2020.03.2-0

	20 00	0.30	12
	02 00	0.34	11
2020.03.24	08 00	0.31	13
	14 00	0.32	12
	20 00	0.35	11
	02 00	0.49	11
2020.03.25	08 00	0.52	13
	14 00	0.60	12
	20 00	0.79	13
	02 00	0.47	11
2020.03.26	08 00	0.49	12
	14 00	0.65	13
	20 00	0.51	13
	02 00	0.51	11
2020.03.27	08 00	0.77	12
	14 00	0.70	12
	20 00	0.56	12
	02 00	0.57	11
2020.03.28	08 00	0.47	13
	14 00	0.66	12
	20 00	0.69	11
	02 00	0.76	11
2020.03.29	08 00	0.70	12
	14 00	0.78	13
	20 00	0.66	12

2		2.0	/ 3	
3		20		14554-93 1

3

$$S_i = \frac{C_i}{C_{si}}$$

$$S_i \quad i$$

$$C_i \quad i \quad / \quad 3$$

$$C_{si} \quad i \quad / \quad 3$$

$$P_i \quad 1$$

$$P_i \quad 1$$

4

5.1-8

1#		0.33				
		0.25-0.55		0		0
		0.15-0.33		0		0
2#		0.33				
		0.55-0.65		0		0
		0.14-0.395		0		0
1 / 3			5			

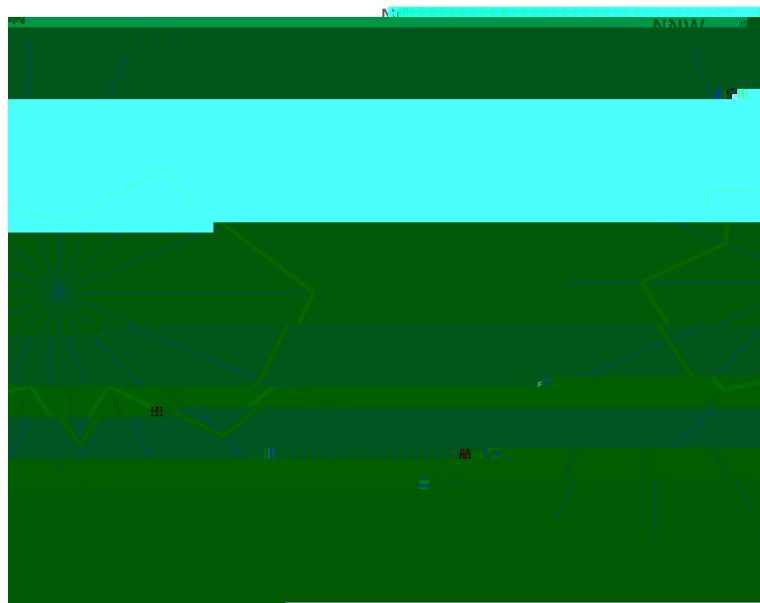
5.1-8

118 01' 37 22'

20 1999-2019 15.9 /
 2001 40.7 2005 -16.4 2001
 809.0 2003 20 5.1-9
 20 5.1-10 5.1-3 20

	1	2	3	4	5	6	7
/	2.3	2.5	2.9	3.1	2.8	2.5	2.2
	-2.4	1.0	2.4	14.4	20.6	25.0	27.0
%	61	59	53	56	60	64	77
	4.7	11.1	9.1	28.2	49.6	77.8	158.7
	154.6	158.9	213.0	229.7	261.6	225.7	180.9
	8	9	10	11	12		
/	2.0	1.9	2.0	2.2	2.2	2.4	
	25.8	21.4	14.6	6.3	-0.3	13.4	
%	80	75	70	67	63	65	
	142.8	44.4	28.8	16.9	4.5	577.2	
	190.1	187.5	178.2	162.1	151.5	2294.3	

	3	3	7	7	10	9	8	4	6
	4	6	6	7	4	5	4	6	



2.3-2018

2019 1 9

5.2-1

2019 10 -12

5.2-2

5.2-1

	1	2	3	4	5	6	7	8	9
	6.2	2.8	11.6	13.2	18.2	29.2	28.8	30.6	27.6
	7.83	7.75	7.72	6.29	7.35	7.99	8.27	7.82	7.74
/	3500	4100	3090	1624	1650	3890	2100	3840	583
	11	13.3	9.1	9.6	10.6	8.3	11	7.2	8.1
	14	13.3	8.4	14.1	10.7	5.1	6.9	5.9	5.6
s	3.4	2.3	3.2	1.8	3.4	2.7	2.5	1.6	3.7
	0.16		0.66	0.39	0.85	0.3	0.47	0.28	0.19
	0.28	0.12	0.04	0.04	0.04	0.01	0.05	0.03	0.03
	0.0002	0.0002	0.0002	0.0002	0.0022	0.002	0.0002	0.0022	0.0029
	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002
	0.0001	0.0001	0.00026	0.00023	0.00065	0.0033	0.00024	0.002	0.0096
	38	49	31	21	35	2	39	13	24
	6.97	7	5.34	8.91	6.73	6.47	6.15	7.03	3.46
	0.24	0.18	0.14	0.15	0.12	0.1	0.04	0.22	0.16
	0.006	0.012	0.00531	0.00568	0.0005	0.0023	0.0012	0.0028	0.0025
	0.05	0.03	0.0128	0.0057	0.038	0.096	0.003	0.197	0.01
	1.33	1.19	1.14	0.88	1.17	1.1	0.54	1.27	0.96
	0.002	0.0008	0.0002	0.0004	0.0007	0.0011	0.0005	0.0012	0.0016
	0.0009	0.0008	0.0008	0.0019	0.001	0.002	0.003	0.002	0.004
	0.0005	0.0007	0.00009	0.00019	0.000025	0.000025	0.00006	0.000025	0.000025
	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
	0.07	0.08	0.03	0.03	0.1	0.06	0.025	0.07	0.08
	0.002	0.002	0.0025	0.0025	0.003	0.003	0.003	0.003	0.003
	5.2	2.7	3	6.7	5	2.57	1.3	2.48	1.76
	0.16	0.07	0.08	0.03	0.22	0.332	0.106	0.623	0.035

5

10

2020

1

2

7

5.3-1

5.3-1

1#				
2#			1530	
3#			1150	
4#			550	
5#			850	
6#			1070	
7#				

3

1#-3#

+

+

2+

2+

3²⁻

3⁻

38

4#-7#

2020

3

23

3

24

2

1

4

5.3-2

	776-2015	32	0.05 /
			0.12 /
			0.02 /
			0.003 /
			0.01 /
			0.01 /
			0.04 /
			0.009 /
			0.009 /
3 ²⁻			/ 0064.49-1993
3 ⁻	5 /		
	/ 5750.4-2006(5.1)		
	535-2009		0.025 /
	/ 5750.5-2006(5.3)		0.15 /
	/ 7493-1987		0.003 /
	/ 5750.5-2006(3.2)		0.75 /
	/ 5750.5-2006(2.1)		1.0 /
	/ 5750.4-2006(7.1)		1.0 /
	/ 5750.5-2006(3.2)		0.1 /
	/ 5750.7-2006(1.2)		0.05 /
	/ 5750.4-2006(8.1)		
	503-2009	4-	0.0003 /
	/ 5750.5-2006(4.1)	-	0.002 /
	/ 5750.6-2006(6.1)		1.0 /
	/ 5750.6-2006(11.1)		2.5 /

	/ 5750.6-2006(9.1)		0.5 /
	694-2014		0.4 /
Σ 0'03'33	/ 5750.6-2006(8.1)	I'	0.1 /
	/ 5750.6-2006(10.1)		0.004 /
	/ 5750.12-2006(2.1)		2 /100
	/ 5750.12-2006(1.1)		
	/ 16489-1996		0.005 /
	/ 7494-1987		0.05 /
	/ 5750.4-2006(1.1)		5
	/ 5750.4-2006	3.1	
	/ 5750.4-2006(2.1)	(-)	0.5
	/ 5750.4-2006	4.1	

5

5.3-3

5.3-4

2020.03.23		25	5	16.2
2020.03.24	1#	25	5	16.3
2020.03.23		10	5	15.9
2020.03.24	2#	10	5	16.1
2020.03.23		7	4	15.7
2020.03.24	3#	7	4	15.9
2020.03.23		15	5	16.0
2020.03.24	4#	15	5	16.1
2020.03.23				

2020.03.23	7#	25	5	16.1
2020.03.24		25	5	16.3

1	(/)	2.27	2.38
2	(/)	1.36 10 ³	1.33 10 ³
3	(/)	150	148
4	(/)	270	267
5	()	7.39	7.48
6	()		
7	()	0	0
8	()	1.65	1.72
9	(/)		
10	(/)	1.44 10 ³	1.41 10 ³
11	(/)	5.19 10 ³	5.27 10 ³
12	(/)	1.00	0.97
13	(/)	0.359	0.367
14	(/)		
15	(/)	2.29 10 ³	2.25 10 ³
16	(/)	997	1.02 10 ³
17	(/)	0.283	0.299
18	(/)		
19	(/)	0.0009	0.0011
20	(/)	2.42	2.34
21	(/)	4.84	4.84
22	(/)		
23	(/)		
24	(/)		
25	(/)	2.20	2.20
26	(/)	0.02	0.02
27	(/)	0.07	0.07
28	(/)		
29	(/)		
30	(/)	0.027	0.027
31	(/)		
32	(/)		
33	(/)		
34	(/)	67	64

35	(/)		
36	(/)	0.756	0.648
37	3^2 (/)	0	0
38	3^3 (/)	719	695

1	(/)	0.96	0.95
2	(/)	204	209
3	(/)	182	183
4	(/)	237	238
5	()	7.22	7.31
6	()		
7	()	0	0
8	()	2.75	2.48
9	(/)		
10	(/)	$1.43 \cdot 10^3$	$1.44 \cdot 10^3$
11	(/)	$2.41 \cdot 10^3$	$2.37 \cdot 10^3$
12	(/)	0.70	0.64
13	(/)		
14	(/)	0.003	0.004
15	(/)	745	729
16	(/)	389	406
17	(/)	0.325	0.340
18	(/)		
19	(/)		
20	(/)		
21	(/)	4.19	4.19
22	(/)		
23	(/)		
24	(/)		
25	(/)	1.95	1.95
26	(/)	0.02	0.02
27	(/)	0.07	0.07
28	(/)		
29	(/)		
30	(/)	0.023	0.023
31	(/)		

32	(/)		
33	(/)		
34	(/)	98	95
35	(/)		
36	(/)	0.400	0.375
37	3^2 (/)	0	0
38	3^3 (/)	651	674

1	(/)	0.57	0.56
2	(/)	154	146
3	(/)	102	102
4	(/)	97.5	97.0
5	()	7.26	7.37

30	(/)	0.021	0.022
31	(/)		
32	(/)	0.008	0.011
33	(/)		
34	(/)	94	91
35	(/)		
36	(/)	0.413	0.525
37	3 ² (/)	0	0
38	3 ⁻ (/)	685	715

1

+ 2+ 2+ 3²⁻ 3⁻

+

2

/ 14848-2017

5.3-5

		3			
	/	200			
	/	0.10		/	3.0
		6.5-8.5		/	1.0
	/	0.3		/	450
	/	0.01		/	0.5
	/	250	()	/	0.05
	/	1000		/	250
	/	20.0		/	1.0
	/	0.002		/	0.005
	/	0.1		/	0.02
	/	100			
	+ 2+ 2+ 3 ²⁻ 3 ⁻				

3

1

$$S_i = \frac{C_i}{C_{si}}$$

S_i

C_i /

C_{si} /

2

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

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

S_{pH_j} pH

pH_j j pH

pH_{sd} pH

pH_{su} pH

4

5.3-6

	2020	3	23	0.26	0.147	0.173
	2020	3	24	0.32	0.207	0.247
	2020	3	23			
	2020	3	24			
	2020	3	23			
	2020	3	24			
	2020	3	23	0.333	0.233	0.467
	2020	3	24	0.323	0.213	0.513
	2020	3	23	0.566	0.65	0.846

	2020	3	24	0.598	0.68	0.888
	2020	3	23	0.018	0.004	0.004
	2020	3	24	0.018	0.004	0.004
	2020	3	23	0.002	0.003	0.005
	2020	3	24	0.002	0.004	0.006
	2020	3	23			
	2020	3	24			
	2020	3	23			
	2020	3	24			
	2020	3	23	0.756	0.4	0.413
	2020	3	24	0.648	0.375	0.525
	2020	3	23			0.77
	2020	3	24			0.73
	2020	3	23	0.7	0.7	0.9
	2020	3	24	0.7	0.7	0.9
	2020	3	23	0.067	0.067	0.033
	2020	3	24	0.067	0.067	0.033
	2020	3	23	0.04	0.04	0.3
	2020	3	24	0.04	0.04	0.26
	2020	3	23	0.45	0.075	0.075
	2020	3	24	0.55	0.075	0.075
	2020	3	23	0.27	0.23	0.21
	2020	3	24	0.27	0.23	0.22
	2020	3	23	0.125	0.125	0.4
	2020	3	24	0.125	0.125	0.55
	2020	3	23	0.67	0.98	0.94
	2020	3	24	0.64	0.95	0.91
	2020	3	23	0.44	0.39	0.496
	2020	3	24	0.44	0.39	0.482
	2020	3	23	0.484	0.419	0.581
	2020	3	24	0.484	0.419	0.581
	2020	3	23	0.55	0.917	0.963
	2020	3	24	0.55	0.917	0.983
				0.002 /	0.00015 /	0.0025 /
1.25 /				0.075 /	0.0015 /	

+

/ 14848-2017

+

1

2

5.4-1 5.4-1

1		1	1
2		1	1
3		1	1
4		1	1



3

()

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2020 3 23-3 24 2

5 /

5

3096-2008

6

5.4-2

1#		09 53 10 03	56.0	02 27 02 37	48.7
2#		10 16 10 26	54.8	02 45 02 55	46.4
3#		10 32 10 42	57.7	03 11 03 21	45.3
4#		10 49 11 09	54.6	03 28 03 48	48.3
1#		15 13 15 23	54.5	22 01 22 11	48.5
2#		15 30 15 40	53.4	22 19 22 29	46.3
3#		15 44 15 54	53.9	22 40 22 50	47.2
4#		15 58 16 18	57.8	22 51 23 11	45.0
1#		10 06 10 16	53.1	03 40 03 50	46.5
2#		10 23 10 33	54.3	04 00 04 10	46.4
3#		10 39 10 49	55.2	04 19 04 29	48.1
4#		10 54 11 14	53.9	04 32 04 52	46.3
1#		15 17 15 27	56.0	22 10 22 20	45.8
2#		15 35 15 45	53.8	22 28 22 38	47.4
3#		15 48 15 58	54.1	22 44 22 54	47.8
4#		16 06 16 26	55.3	23 00 23 20	47.9

1

3096-2008 3

60 ()

50 ()

2

-

()

()

()

3

5.4-3

2

5.5-1 5.5-1

1#		0 0.2 1
2#		0 0.2 1
3#		0 0.2 1
4#		0 0.2 1

3

36600-2018

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- () () () ()
 (,) (1,2,3-)
 2020 3 20 1 1

4

/ 166-2004 / 17134-1997 / 17141-1997
 / 14550-1993 5.5-2

		/ 22105.1-2008	-9700 - -110	0.002 /
			2550 - -027	2 /

	/	680-2013	/ 32/ -5043 -6000/ -2027	0.01 /
		/ 17141-1997	-7000/ -5044 -1800/ -2033	0.01 /
		491-2019	-7000/ -5044 -1800/ -2033	1 /
		491-2019	-7000/ -5044 -1800/ -2033	10 /
		491-2019	-7000/ -5044 -1800/ -2033	3 /
	/	741-2015	/ 2010 / -5041	0.03 /
	/	741-2015	/ 2010 / -5041	0.02 /
	/	741-2015	/ 2010 / -5041	0.02 /
1,1-	/	741-2015	/ 2010 / -5041	0.02 /
1,2-	/	741-2015	/ 2010 / -5041	0.01 /
1,1-	/	741-2015	/ 2010 / -5041	0.01 /
-1,2-	/	741-2015	/ 2010 / -5041	0.008 /
-1,2-	/	741-2015	/ 2010 / -5041	0.02 /

	/	741-2015	/ 2010 / -5041	0.02 /
1,2-	/	741-2015	/ 2010 / -5041	0.008 /
1,1,1,2-	/	741-2015	/ 2010 / -5041	0.02 /
1,1,2,2-	/	741-2015	/ 2010 / -5041	0.02 /
	/	741-2015	/ 2010 / -5041	0.02 /
1,1,1-	/	741-2015	/ 2010 / -5041	0.02 /
1,1,2-	/	741-2015	/ 2010 / -5041	0.02 /
	/	741-2015	/ 2010 / -5041	0.009 /
1,2,3-	/	741-2015	/ 2010 / -5041	0.02 /
	/	741-2015	/ 2010 / -5041	0.02 /
	/	741-2015	/ 2010 / -5041	0.01 /
	/	741-2015	/ 2010 / -5041	0.005 /
1,2-	/	741-2015	/ 2010 / -5041	0.02 /
1,4-	/	741-2015	/ 2010 / -5041	0.008 /
	/	741-2015	/ 2010 /	0.006 /

			-5041	
	/	741-2015	/ 2010 / -5041	0.02 /
	/	741-2015	/ 2010 / -5041	0.006 /
+	/	741-2015	/ 2010 / -5041	0.009 /
	/	741-2015	/ 2010 / -5041	0.02 /
	-	834-2017	/ - 2020/ -5034 -100 / -2025	0.09 /
	-	834-2017	/ - 2020/ -5034 -100 / -2025	0.09 /
2-	-	834-2017	/ - 2020/ -5034 -100 / -2025	0.06 /
	-	834-2017	/ - 2020/ -5034 -100 / -2025	0.1 /
	-	834-2017	/ - 2020/ -5034 -100 / -2025	0.1 /
	-	834-2017	/ - 2020/ -5034 -100 / -2025	0.2 /

	-	834-2017	/ - 2020/ -5034 -100 / -2025	0.1 /
	-	834-2017	/ - 2020/ -5034 -100 / -2025	0.1 /
	-	834-2017	/ - 2020/ -5034 -100 / -2025	0.1 /
1,2,3-	-	834-2017	/ - 2020/ -5034 -100 / -2025	0.1 /
	-	834-2017	/ - 2020/ -5034 -100 / -2025	0.09 /

5

5.5-3

1	20	0467-1- 001	/	0.110
2			/	
3			/	11.2
4			/	0.01
5	26-	2-0101	/	22
6			/	7
7			/	2.7
8	26-	1-0102	/	0.03
9			/	
10	26-	1-0101	/	0.02
11			/	0.02

12		1,1-	/	0.02	
13		1,2-	/	0.01	
14		1,1-	/	0.01	
15		-1,2-	/	0.008	
16		-1,2-	/	0.02	
17			/	0.02	
18		1,2-	/	0.008	
19		1,1,1,2-	/	0.02	
20		1,1,2,2-	/	0.02	
21			/	0.02	
22		1,1,1-	/	0.02	
23		1,1,2-	/	0.02	
24			/	0.009	
25		1,2,3-	/	0.02	
26			/	0.02	
27			/	0.01	
28			/	0.005	
29		1,2-	/	0.02	
30		1,4-	/	0.008	
31			/	0.006	
32			/	0.02	
33			/	0.006	
34		+	/	0.009	
35			/	0.02	
36	26- 2-0101		/	0.09	
37			/	0.09	
38		2-	/	0.06	
39			/	0.1	
40			/	0.1	
41			/	0.2	
42			/	0.1	
43			/	0.1	
44			,	/	0.1
45			1,2,3-	/	0.1
46				/	0.09

1	20 0467-1- 002		/	0.144
2			/	
3	26- 2-0202		/	0.032

4				
5			/	10.5
6	26-	2-0201	/	25
7			/	7
8			/	3.6
9	26-	1-0202	/	0.03
10			/	0.02
11			/	0.02
12			/	0.02
13		1,1-	/	0.02
14		1,2-	/	0.01
15		1,1-	/	0.01
16		-1,2-	/	0.008
17		-1,2-	/	0.02
18			/	0.02
19		1,2-	/	0.008
20		1,1,1,2-	/	0.02
21		1,1,2,2-	/	0.02
22			/	0.02
23	26-	1-0201	/	0.02
24		1,1,2-	/	0.02
25			/	0.009
26				

46		,	/	0.1
47		1,2,3-	/	0.1
48			/	0.09

1	20	0467-1- 003	/	0.154
2			/	
3			/	11.5
4			/	0.01
5	26-	2-0301	/	20
6			/	5
7			/	3.4
8			/	0.03
9			/	0.02
10			/	0.02
11			1,1-	0.02
12			1,2-	0.01
13			1,1-	0.01
14			-1,2-	0.008
15			-1,2-	0.02
16			/	0.02
17			1,2-	0.008
18			1,1,1,2-	0.02
19			1,1,2,2-	0.02
20			/	0.02
21	26-	1-0301	1,1,1-	0.02
22			1,1,2-	0.02
23			/	0.009
24			1,2,3-	0.04
25			/	0.02
26			/	0.01
27			/	0.005
28			1,2-	0.02
29			1,4-	0.008
30			/	0.006
31			/	0.02
32			/	0.006
33			+	0.009
34			/	0.02
35	26-	2-0301	/	0.09

36			/	0.09
37		2-	/	0.06
38			/	0.1
39			/	0.1
40			/	0.2
41			/	0.1
42			/	0.1
43		,	/	0.1
44		1,2,3-	/	0.1
45			/	0.09

1	20	0467-1- 004	/	0.0237
2			/	
3			/	9.0
4			/	0.01
5	26-	2-0401	/	5
6			/	3
7			/	2.8
8			/	0.03
9			/	0.02
10			/	0.02
11			1,1-	0.02
12			1,2-	0.01
13			1,1-	0.01
14			-1,2-	0.008
15			-1,2-	0.02
16				0.02
17			1,2-	0.008
18	26-	1-0401	1,1,1,2-	0.02
19			1,1,2,2-	0.02
20				0.02
21			1,1,1-	0.02
22			1,1,2-	0.02
23				0.009
24			1,2,3-	0.02
25				0.02
26				0.01
27				0.005
28			1,2-	0.02

29		1,4-	/	0.008	
30			/	0.006	
31			/	0.02	
32			/	0.006	
33			+	/	0.009
34				/	0.02
35		26- 2-0401		/	0.09
36			/	0.09	
37	2-		/	0.06	
38			/	0.1	
39			/	0.1	
40			/	0.2	
41			/	0.1	
42			/	0.1	
43			,	/	0.1
44			1,2,3-	/	0.1
45			/	0.09	

1

36600-2018

1

5.5-4

1		7440-38-2	60
2		7440-43-9	65
3		7440-50-8	18000
4		7439-92-1	800
5		7439-97-6	38
6		7440-02-0	900

2

$$S_i = \frac{C_i}{C_{si}}$$

3

5.5-5 5.5-6

	1#	0.187	0.00008	0.0004	0.003	0.003	0.024
	2#	0.175	0.0005	0.0004	0.005	0.004	0.027
	3#	0.192	0.00008	0.0003	0.004	0.004	0.022
	4#	0.15	0.00008	0.0002	0.004	0.001	0.006
	%	100	25	100	100	100	100
	%	0	0	0	0	0	0

1	/	0.154	0.0237	0.108	0.059
2	/	11.5	9	10.55	1.115
3	/	0.032	0.005	0.012	0.014
4	/	25	5	18	8.907
5	/	7	3	5.5	1.915
6	/	3.6	2.7	3.125	0.443

5.5-6 1# 2# 3# 4#

36600-2018 1

10724 ² 40 ² 13734 ² 3010 ² 10724 ²

5.6-1

1					
2					
3					
4					
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7					
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5.6-1

5.6-2

1.6³

5.6-2

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/	/	
		86389
	/	40.7
	/	-16.4
	/	90
	/	
	/	

			1.54	0	
			0.03	0	
			9.2	0	
			0.5	0	

10	141.15	7.10	11.7625	0.40
25	183.21	9.20	15.2675	0.50
50	116.87	5.80	9.73917	0.30
75	84.277	4.20	7.02308	0.20
100	66.113	3.30	5.50942	0.20
125	53.429	2.70	4.45242	0.10
150	44.167	2.20	3.68058	0.10
175	37.242	1.90	3.1035	0.10
200	31.935	1.60	2.66125	0.10
225	27.775	1.40	2.31458	0.10
250	24.444	1.20	2.037	0.10
275	21.74	1.10	1.81167	0.10
300	19.51	1.00	1.62583	0.10
325	17.639	0.90	1.46992	0.00
350	16.053	0.80	1.33775	0.00
375	14.705	0.70	1.22542	0.00
400	13.532	0.70	1.12767	0.00
425	12.509	0.60	1.04242	0.00
450	11.611	0.60	0.967583	0.00
475	10.824	0.50	0.902	0.00

500	10.123	0.50	0.843583	0.00
-----	--------	------	----------	------

10	116.28	5.80	7.752	0.30
25	147.31	7.40	9.82067	0.30
50	152.6	7.60	10.1733	0.30
75	119.32	6.00	7.95467	0.30
100	87.778	4.40	5.85187	0.20
125	68.579	3.40	4.57193	0.20
150	56.976	2.80	3.7984	0.10
175	48.362	2.40	3.22413	0.10
200	41.64	2.10	2.776	0.10
225	36.274	1.80	2.41827	0.10
250	31.953	1.60	2.1302	0.10
275	28.402	1.40	1.89347	0.10
300	25.464	1.30	1.6976	0.10
325	23.011	1.20	1.53407	0.10
350	20.915	1.00	1.39433	0.00
375	19.13	1.00	1.27533	0.00
400	17.585	0.90	1.17233	0.00
425	16.243	0.80	1.08287	0.00
450	15.059	0.80	1.00393	0.00
475	14.023	0.70	0.934867	0.00
500	13.1	0.70	0.873333	0.00

1% 10

9.2% 25

1% 10

1 15

0

6.1-8

			0.356	1	1
			0.011		

6.1-9

10	0.47805	0.00	0.0147712	0.00
25	33.916	1.70	1.04797	0.00
39	89.166	4.50	2.75513	0.10
50	196.55	9.80	6.07317	0.20
75	280.5	14.00	8.66713	0.30
100	304.5	15.20	9.40871	0.30
125	305.05	15.30	9.4257	0.30
150	299.96	15.00	9.26843	0.30
175	285.79	14.30	8.83059	0.30
200	266.78	13.30	8.2432	0.30
225	246.87	12.30	7.62801	0.30
250	227.76	11.40	7.03753	0.20
275	210.12	10.50	6.49247	0.20
300	194.14	9.70	5.99871	0.20
325	179.76	9.00	5.55438	0.20
350	166.88	8.30	5.1564	0.20
375	155.34	.		

			68	10	15
		/ ³	0.095	0.116	0.128
			2 / ³ 37/2801.7-2019 2		
			68	10	15
		/ ³	0.006	0.008	0.009
			12 / ³ 16297-1996		
			2		

37/2801.7-2019 2

16297-1996 2

2018

7

/ 3095-2012

22 / ³

39 / ³

98 / ³

0.40

54 / ³

0.54

1.8 / ³

209 / ³

0.31

6.05

11.4%

	4 68	7 99	8 339	6 253	0.4 3.5	8 286
	22	39	98	54	1.8	209
	0	0			0	

	-31.3%	-2.5%	-10.9%	-15.6%	-30.8%	4.5%
	6.1%	16.2%	23.1%	25.5%	7.4%	21.7%
	150	80	150	75	4	160
	60	40	70	35	-	-

6.1-12

			42.93	0.129	1.02
			1.26	0.004	0.03
				0.054	0.425
				0.002	0.013

6.1-13

"D

ó s s a a

			2000	/			
		50	5 50		5		
					2.5		
					2.5		
	100%				100%		
		10%			10%		
		30%			30%		
1			100%		100%		
	-20%				-20%		
			0				
					0		
		2 (0) /	(0) /	(0) /	(1.445) /		

6.2-1

		20000	600000
		200	6000

6.2-1

2019 4 2020
 3
 4 37/3416.4-2018 60 / 10 /
 18919-2002 1
 50 / 5 / 100%

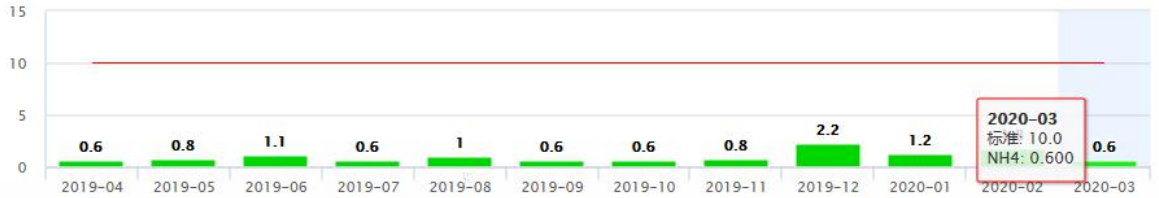


历史数据详情 ×

滨化集团 (G、S)

NH₄ 化学需氧量 单位:毫克/升(mg/l) ■ 正常 ■ 超标

最近12个月浓度统计



2020年03月 日均值

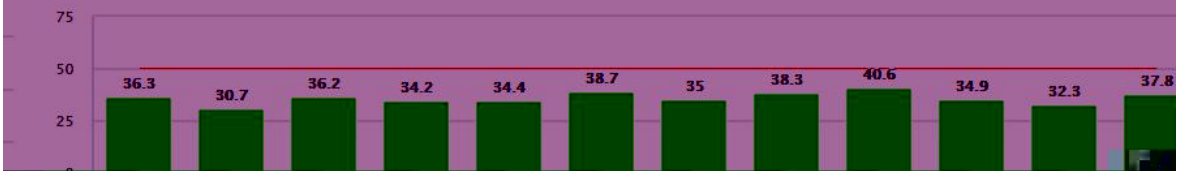


历史数据详情 ×

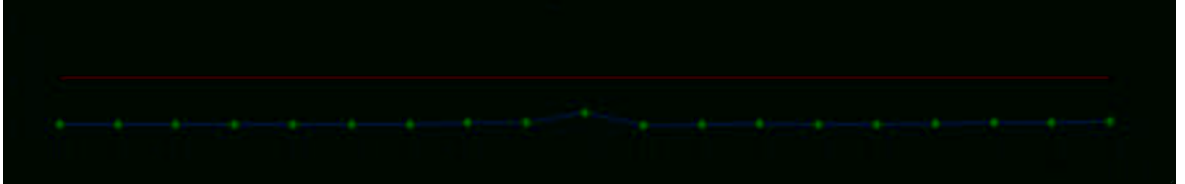
中和水质(出口)G、S

NH₄ 化学需氧量 单位:毫克/升(mg/l) ■ 正常 ■ 超标

最近12个月浓度统计



2020年03月 日均值



历史数据详情

×

中和水质(出口)G、S

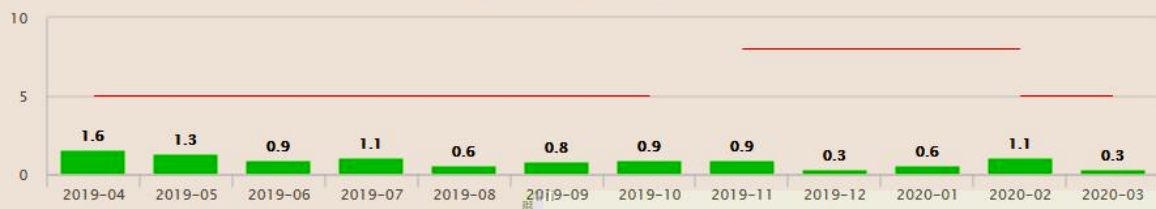
●NH₄ ○化学需氧量

单位:毫克/升(mg/l)

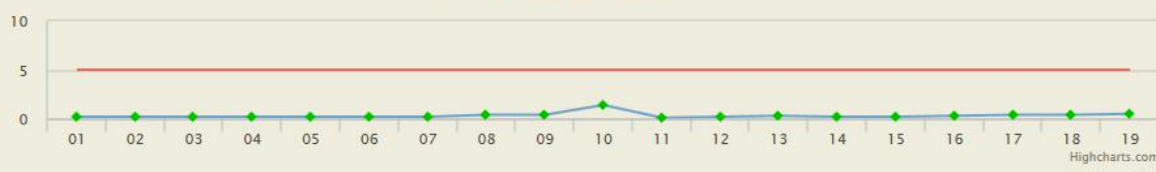
■正常 ■超标

日数据 最近24小时

最近12个月浓度统计

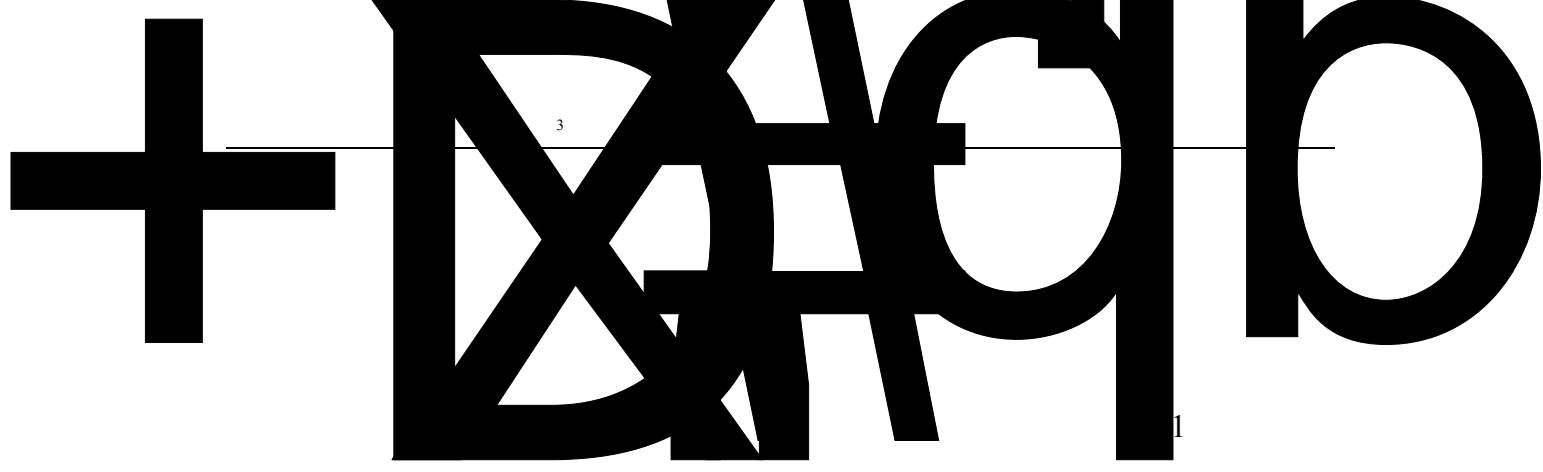


2020年03月 日均值



		2
		/

			/ /	/ /	
			0.018	50	
			/ /	/ /	
			0.003	5	
				/ /	/ /
			3/	3/	3/
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			/		



3

1

610-2016

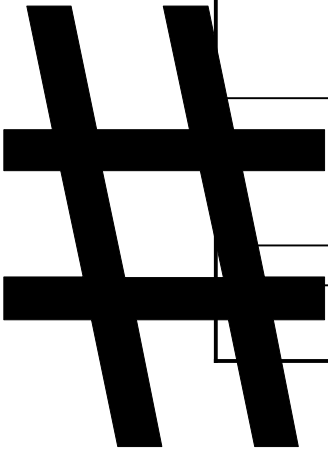
89

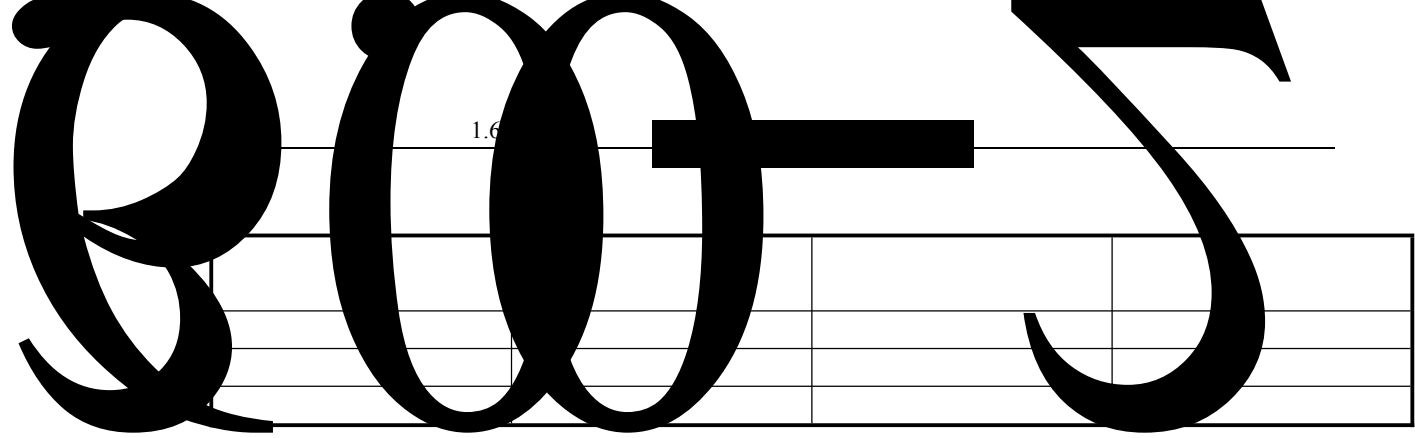
2«

154

610-2016

6.3-1





1.6

610-2016

6²

200

1.2

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3 /

60-650

3 4

- 3 - 3-
1-2 / 508-1018 /
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1.43 10-4

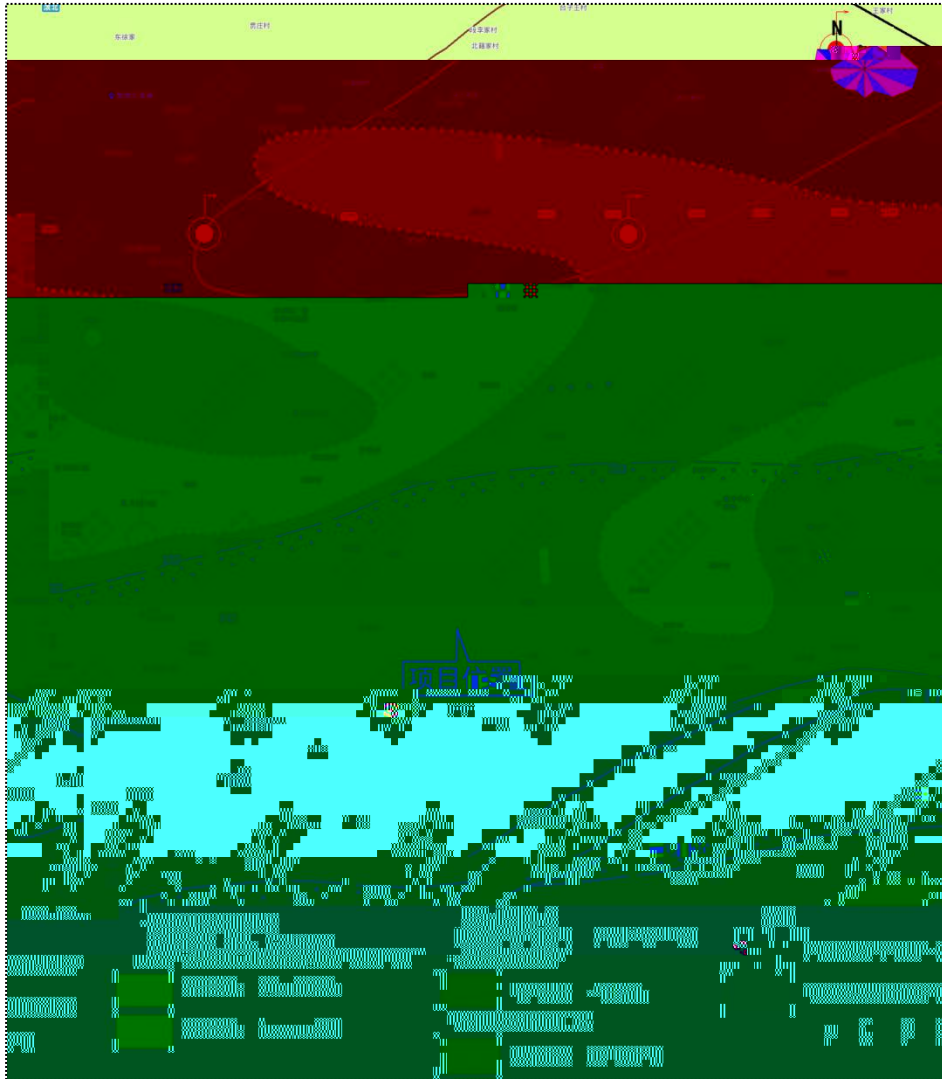
(2.31 3.5)

1991

1991

1.8

0.5



系	统	组	符号	柱状图	厚度 (米)	地质—水文地质特征	界
		全			14	浅层淡水(潜水、承压水)系， 主要分布于图幅西南部，岩性上部为土黄色粘质砂土、粉土；中部灰黑色淤泥质粉砂土；下部系一层土黄色粉砂、粉细砂，砂层厚度1-8米，最厚可达15米。浅层淡水底板埋深20-50米，水位埋深<5米，单井涌水量沿黄河古道带在500米 ³ /日，其两侧<500米 ³ /日，水质较好，矿化度均<2克/升。	
		新			31		
		第					

4

10

			0.30	1.50	0.64	8.17	9.38
8.97			0.30	1.50	0.64		
			0.40	2.30	1.01	6.62	8.66
7.96			1.00	3.20	1.65		
			1.20	3.90	2.63		4.54
6.63	5.33		2.90	5.40	4.27		
			1.30	3.10	2.06	2.43	4.53
3.27			5.00	7.40	6.33		
	,			0.30	1.80	0.91	
1.52	3.47	2.37		6.10	8.10	7.23	
			0.60	3.30	1.75		-0.45
1.69	0.65		7.90	10.10	8.96		
						-	
					1.40	5.50	2.35
	-4.24	-1.11	-1.71		10.70	13.80	, 11.31
					,		
				3.20	7.30	6.29	
-9.30	-5.17	-8.12		14.70	18.70	17.74	
				4.00	4.60	, 4.36	
-13.00	-12.32	, -12.79		22.20	22.70	, 22.52	
							2.90

8.94

,

0.66

2.50

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6.3-3 6.3-4 6.3-3

	-				1.5 10^{-7} / 16889 2008

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6.3-5

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1			35	2	1	270	300	20	1

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6.3-6

1#									

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1.6

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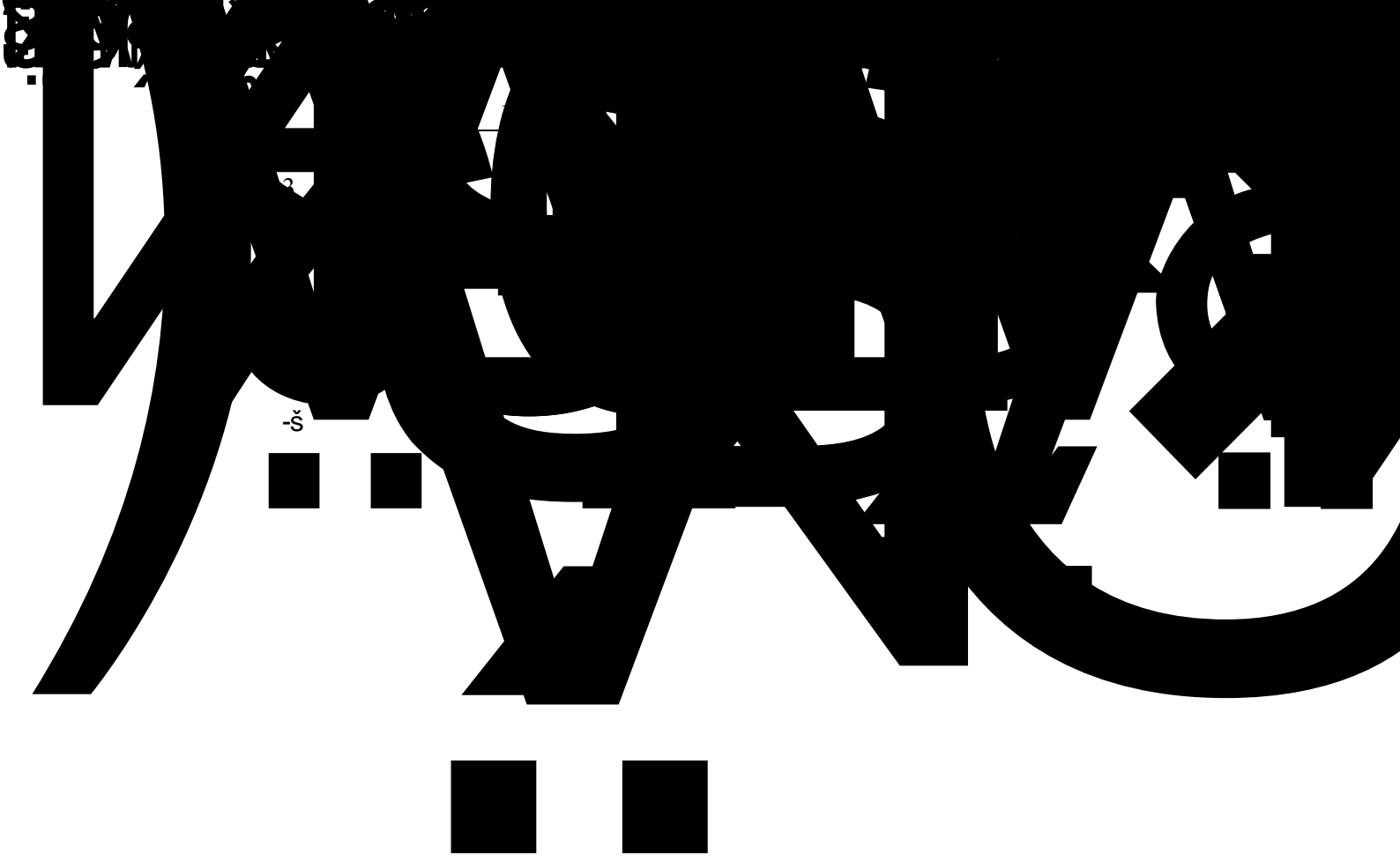
610 2016

3

4

1

2



6.4-2

1		70	10	26	72

6.4-3

	28.1
	45
	26.7
	27.9

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12348-2008 3

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6.4-4

	28.1	65	-36.9	28.1	55	-26.9
	45		-20	45		-10
	26.7		-38.3	26.7		-28.3
	27.9		-37.1	27.9		-27.1

12348-2008 3

20 -
0.54 /
3.564 /
43.27 / 0.01 /

18599-2001

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3
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1.6

964-2018

964-2018

6.6-1

6.6-1

10684 ²

5 ²

0.2

6.6-3

			5
			1
			2
			0.2
			1
			0.05

0.05

0.2

6.6-2

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1

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964-2018

819-2017

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/ 50934-2013

		1.0724	²
			550

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6.7-1

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16.4

- 1
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2

3

1.6³

1.0724²

1.0684²

40²

40²

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2

3

10724 ²

4

2013 188

700 / ²

1

13734 ² 6.7-2

1		10724
2		3010
		13734

2

50433-2008

2

2020 ⁵

2020

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2

$$\Delta W = \sum_{j=1}^3 \sum_{i=1}^n (F_{ij} \times T_{ij})$$

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1 2 3

1

2

1.3734 2

/ 21010-2007

13734 2

3

È

72.37

62.76

6.7-3

13734	1	700	4570	9.61	72.37	62.76
-------	---	-----	------	------	-------	-------

72.37

62.76

1

2

3

1

72.37

62.76

2

10724 ²

1

2

3

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2

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2

3

1500 ²

1

13734 ²

10724 ²

3010 ²

1.6 ³

10724 ²

2

3

72.37

62.76

4

169-2018

2012 77

7.1-1

				56-81-5	
	3 8 3			92.09	
	1.3		3.2		18
	370	%			177
	1993	%	0.9		290
	18				
	50 31500 / ()				
	20-30				
	1				
	150				

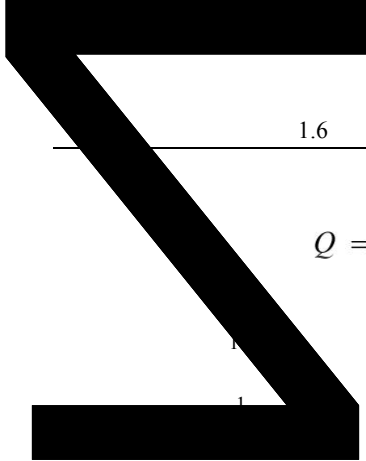
	0	1
--	---	---

7.1-2

1			550	540
2			850	622
3			1030	
4			1040	
5			1070	
6			1150	
7			1150	2138
8			1420	
9			1440	563
10			1530	1971
11			1580	302
1				
2				
3			300	

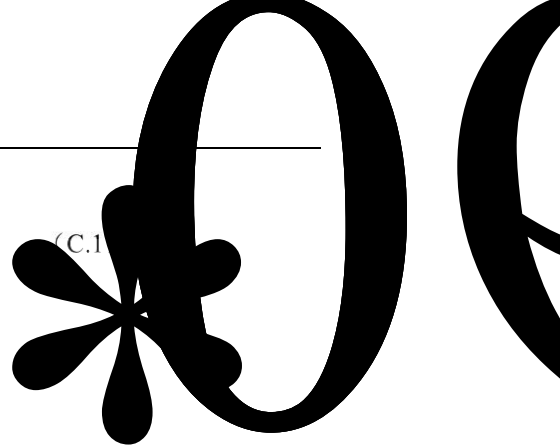
1

.1



1.6 ³

$$Q = \frac{q_1}{Q_1} + \frac{q_2}{Q_2} + \dots + \frac{q_n}{Q_n}$$



(C.1)

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100

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10

2

10

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3

18218-2018

169-2018

30000.18

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3

2

18218-2018

169-2018

2015

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7.4-1

		0.9	177	370		

2

3

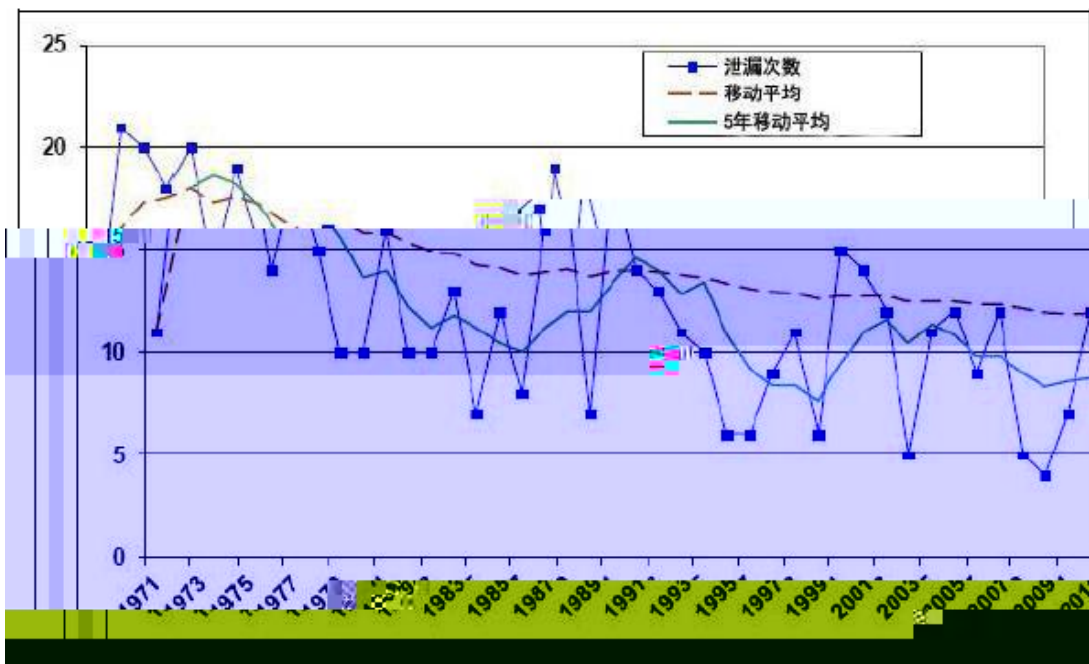
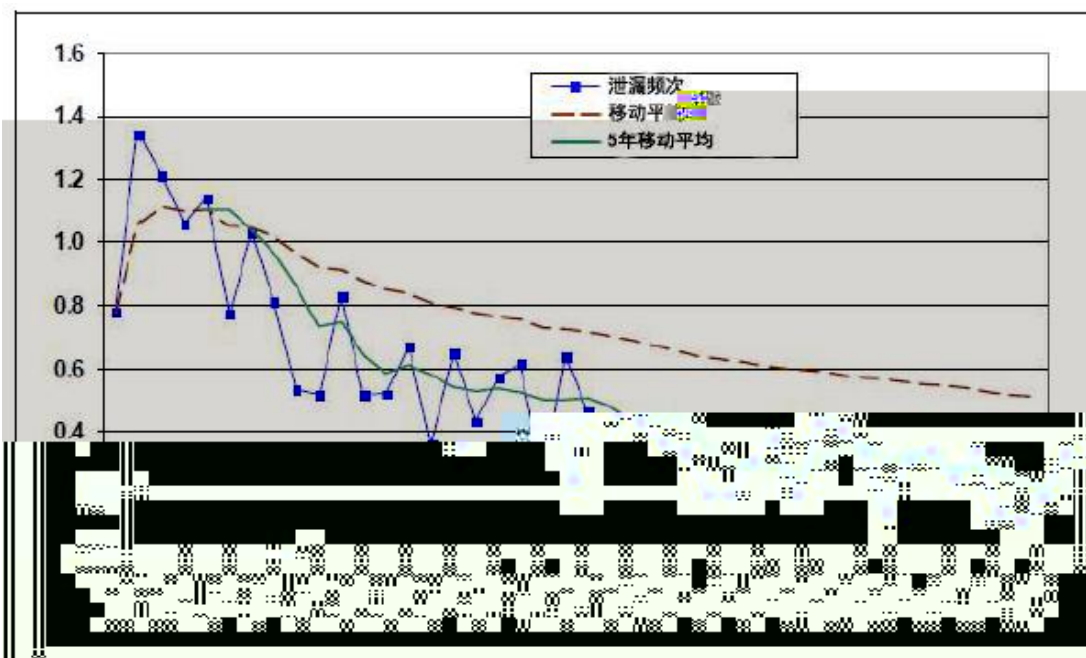
25

7.5-1

1

1971-2012

42		7.5-1	7.5-2			
/1000	5	70	1.1	2012	0.2	
/	5	70	18	2012	8.7	

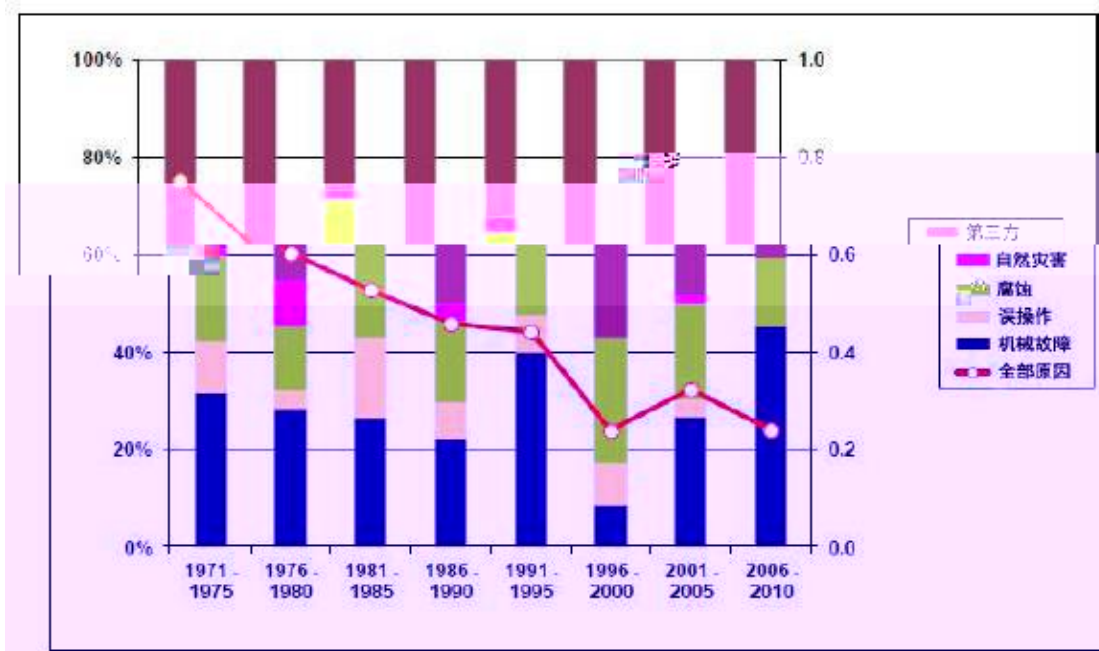


2

5

7.5-2 7.5-3

	42	38	44	44
	5	3	2	1
	16	23	22	17
	7	12	8	2
	30	24	24	36



3

	2	2	
	2+	75	10%
	2+	75	10%
	75+	1000	10%

75 10%

42

7.5-3

45%

28%

70%

	12	33	45	88	51	57	286
%	4	12	16	31	18	20	100
	8	4	14	13	16	7	62
	1	0	1	1	3	4	10
	0	23	11	23	17	5	79
	0	1	2	0	2	2	7
	3	5	17	51	13	39	128
%	76	12	31	15	31	12	22
	8	0	2	1	6	7	3
	0	70	25	26	33	9	28
	0	3	4	0	4	4	2
	25	15	28	58	26	68	45
³	45	49	245	89	242	362	285

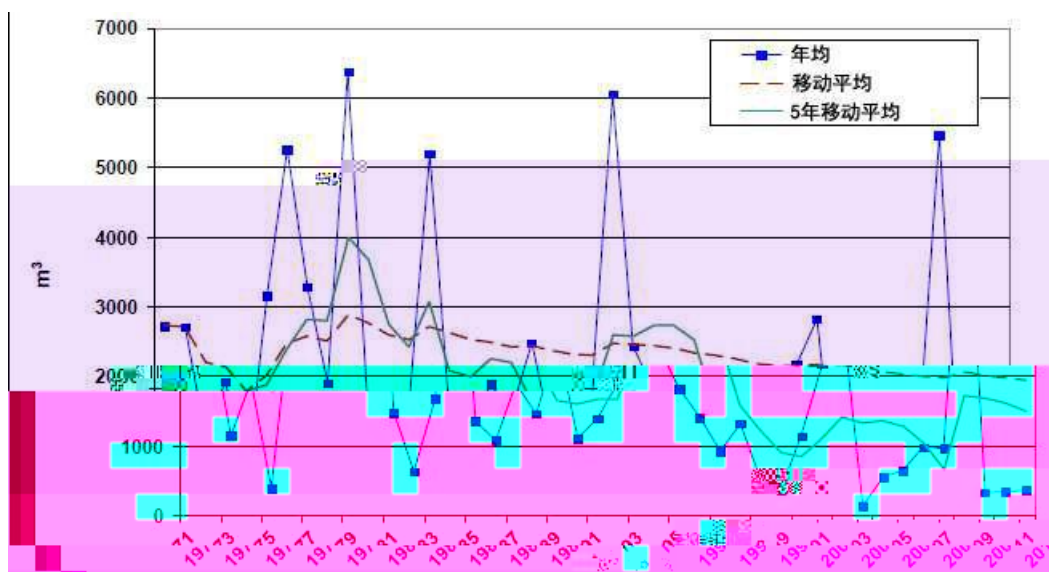
4

1971 2012

7.5-4

7.5-6

7.5-3



82 ³

5

42% 85%

5

7.5-4

100 999 ²

100

36.0%

80 ²

1000 9999 ²

66

23.7%

186 ²

²		%	³
10	28	10.0	14
10 99	51	18.3	40
100 999	100	36.0	80
1000 9999	66	23.7	186
10000 99999	32	11.5	760
100000	1	0.5	173
	278	100	1223

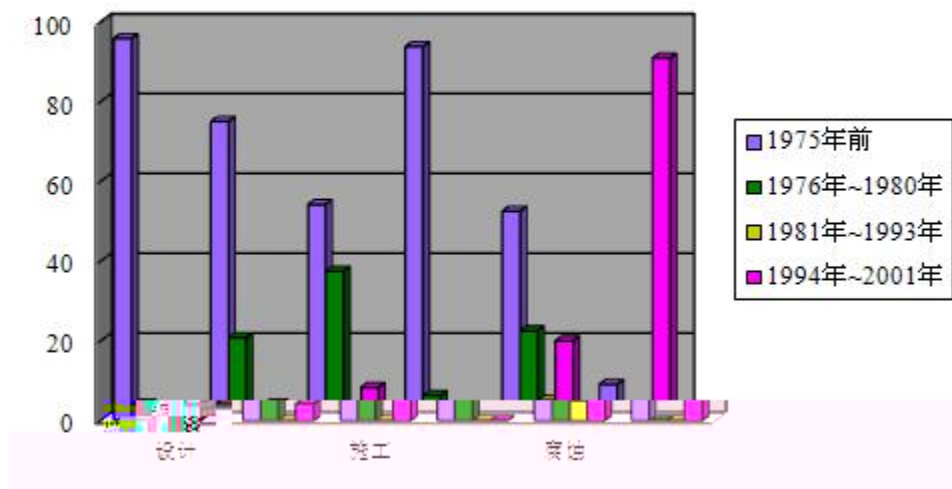
/

/

7.5-5

	17	5.1	2	5.9	0	0
	195	58.7	11	32.4	9	15
	28	8.5	3	8.8	3	5
/	79	23.8	17	50	48	80
	9	2.7	0	0	0	0
	3	0.9	0	0	0	0
	1	0.3	1	2.9	0	0
	332	100	34	100	60	100

90



7.5-7

		2010	7	16	
1				50	

2		2010 4 15	
3		2011 7 4	
4	-	2013 11 22 9	
5		2014 6 30 18 30 7 1	

1

2

3

$$Q_L = C_d A \rho \sqrt{\frac{2(P - P_0)}{\rho} + 2gh}$$

 Q_L C_d

0.6-0.64

0.62

A ² 0.002
 ρ / ³ 1260
 P 101325
 P_0 101325
 g 9.8 / ²
 h 10
 21.9 / 30 39420
 7.5-1

	50		90 100
10	50		70 90
1	10		40 60

0.4

40% 15768 3%
 476.04 7.5-2

			21.9	30	178.7

4675

60

2330
 /
 % 39%
 % 5 20% 5%
 45.44 /
 1% 46.75 45
 786.79 /

169-2018

	380 / ³	95 / ³
	9400 / ³	2700 / ³

169-2018

0.0179 1/6

7.6-2

1	1.5		$-2 \ 95 \ / \ ^3$	1454.662
2	1.5		$-1 \ 380 \ / \ ^3$	584.308
3	1.5		$-2 \ 2700 \ / \ ^3$	0
4	1.5		$-1 \ 9400 \ / \ ^3$	0

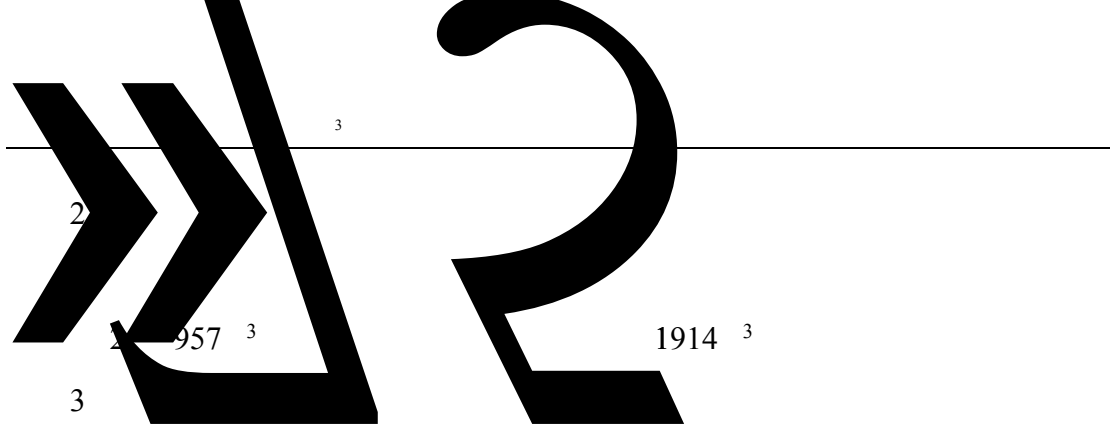
7.6-2

1.5 / -1 -2
 585 1455 1455
 /
 1.5 /
 -1 -2 0

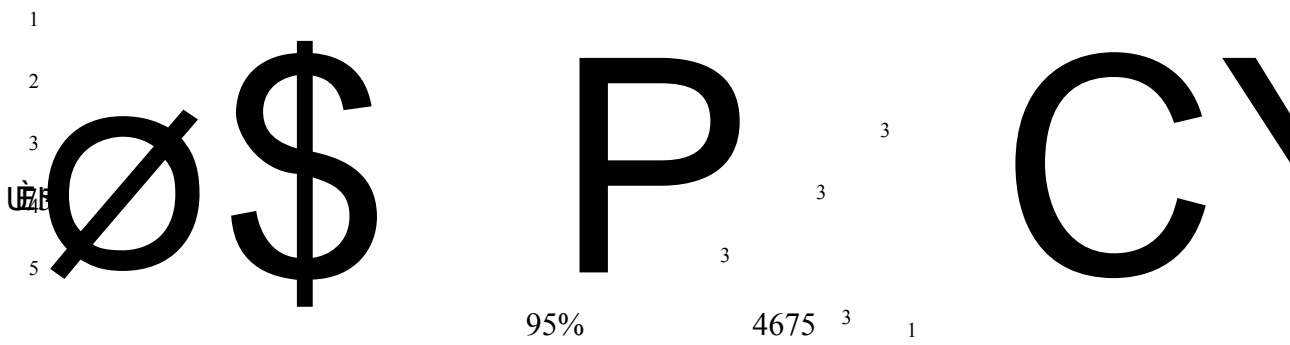


1

4133 ³



1+ 2- 3 + 4+ 5



1911.04 ³1914 ³

7.6-1

0.01 0.05 /1000 .

(1-) +

/

/

$$Q_n = C_d f_n d_n^2 \pi / 4 \times \sqrt{\frac{2(P - P_0)}{\rho}}$$

Q / P
 P_0 C_d 0.6 0.64 / ³

7.7-1

1	0 6	0.0504	0.692
2	6 20	0.0112	0.154
3	20 50	0.0096	0.132
4	50	0.0016	0.022
5		0	0

80 5^2 20 4 5^2
 1 2 0.5 2 4000 5000 20
 $/^2$ 2^2
 0
 1677
 1 2



1

2

3

4

5

8		10	1	
9		721	1	
10		-25	1	
11		-2	1	
12		-12	2	
13		-2	1	

1		2	
2	-25	1	
3	721	1	
4	- 1	1	
5			

7.10-1

118.066000

37.39000

169-2018

1

18218-2018

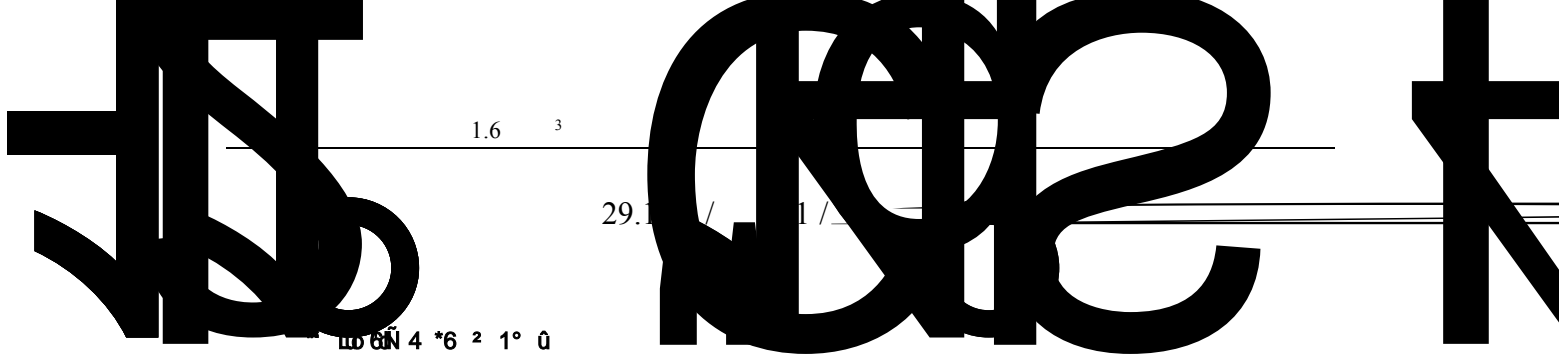
1 15

90%

95%

1 264 ^{3/}
/ 31962-2015 1

2 63 ^{3/}



1.6 3

29.1 / 1 /

6Ñ 4 *6 ² 1° û



% Lö 6Ñ - 4 *6 ² k

2007 1

8

7.8

65

50

240

2007 11

2010 11

2010 12

2013

50

3 /

7822

2/



2013 7

2013 46

2014 5

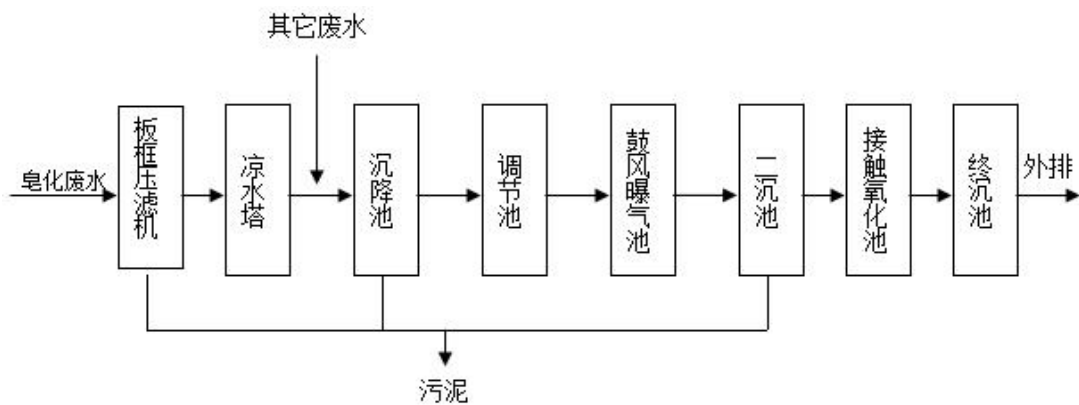
26

2015 2

11

/

37/3416.4-2018



264 ^{3/}

0.8 ^{3/}

1

^{3/}

700 ^{3/}

400 ^{3/}

6-12

1600 /

30 /

28000 /

20 /

63 ^{3/}

1259.4 /

3544.8 /

3.89

29.17 / 231 /

0.5

0.01%

8.1-1

1		6	26.67
2		6	26.67
3		0.5	2.22
4		1	4.44
5		8	35.56
6		1	4.44
		22.5	100

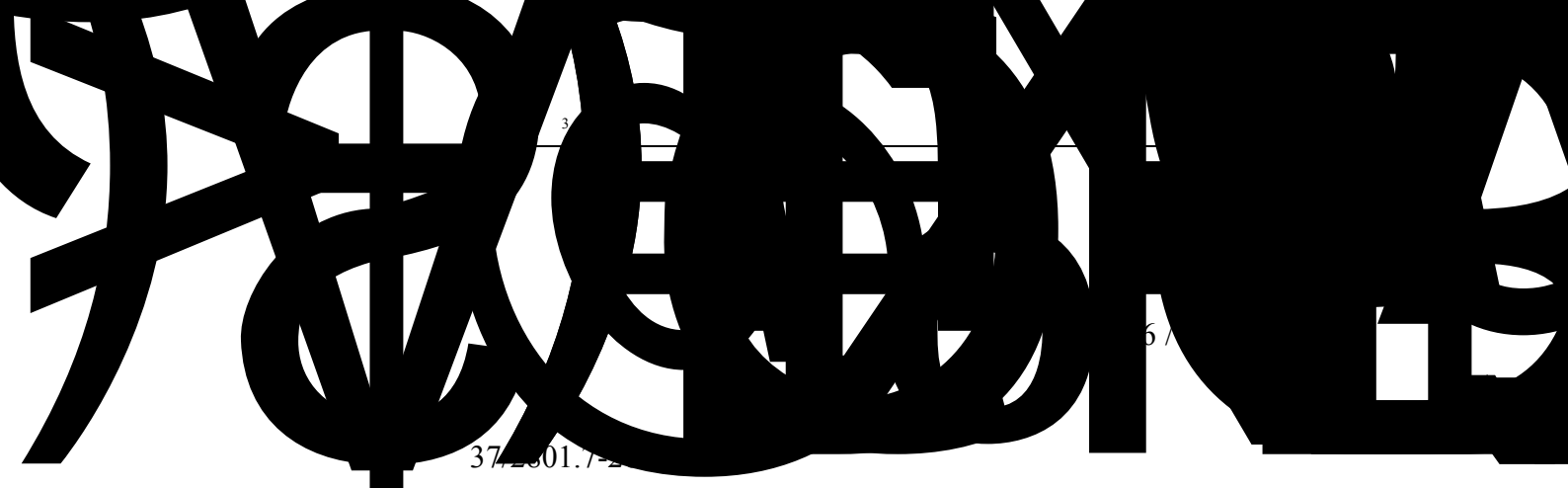
22.5

3510

0.64%

6.6 /

8.1-2



3

6/

37/2801.7-2

162/1996 2

3

37/2801.7-2019 2

3 3 4 1 1

1 /

2

3

4

5

6

7

8

9

10

11

12

13

14

15

1

1

2

3

2

1

96 470

2

3

1

15562.1-1995

10.1-1

2

2



4

1

2

819-2017

964-2018

10.2-2

10.2-3

		/
	5	/
	/	/

10.3-1

		5	/ 31962-2015	1
				6
		1 15	37/2801.7-2019 1 16297-1996 2	6
			37/2801.7-2019 2 16297-1996 2	
				0.5
				8
			12348-2008	1
				1
				22.5

1

2

3

4

5

6

7

50323-2014

5

20

10

5

3

1677

11.3-1

11.3-1

	200	200	200
	1781	1850	1677
2)	1)		1) 2) 3)
		360	

1.6³

3

1# 4#

36600-2018 1

1

1 15

37/2801.7-2019 1

16297-1996 2

3

37/2801.7-2019 2

16297-1996

2

37/2801.7-2019

2

3

1% 10

9.2% 25

1% 10

/ 31962-2015

1

80 ()

12348-2008 3

4

			2020	2	24		
		10	2020	2	27	2020	2
28	2						10

2019 9 2

2019 132

2

2019

2

2.04 /

18918-2002 1

0.014 /

0.002 /

4

37/3416.4-2018

0.004 /

0.001 /

