00 [2002]10

[1999]101

2002 3 1

[1992] 375

50%

50%

○ ○

1

1.0.1

1.0.2

1

2

1.0.3

1.0.4

1 × 1 ±

2

3 × ×

4 = ×

1.0.5

1.0.6

1.0.7

1.0.8

, , 1

1.0.9 ≥ 35 ≤ -10

1.2

1.0.10 2000m

2000 3000m 1.1

3001 3500m 1.2

3501 4000m 1.3

4001m

1.0.11

5%

1.0.12

1.0.13

1000 /

1360 /

1680 /

1.0.14 4

1.0.15 1.0.1

2

2.1

22

2.2

2.2-1

		≤ 20m	≤ 80m	80m
		≤ 20%	≤ 40%	≤ 60%
		, ≤ 5 ≤ 30%	, ≤ 8 ≤ 50%	, 8 50%

2.2-2

					( )		
1					4263	4842	6232
					3136	3565	4584
					2737	3112	4006
					1096	1244	1602
					728	829	1069

				km	2818	3203	4122
					2186	2484	3196
					1552	1764	2269
					1086	1234	1589
					759	863	1112
					89	101	131
				km	877	997	1283
					438	500	643
					220	250	323
					167	188	242
					111	124	162
		GPS	C		3727	4274	5500
			D		3198	3632	4671
			E		2821	3203	4123
2			1:200	km^2	76780	102374	163795
			1:500		33383	44510	71216
			1:1000		15174	20232	32374
			1:2000		6676	8901	14244
			1:5000		1975	2630	4210
			1:10000		1109	1478	2364
					1 200 1.8 2.0		
3			1:200	km	1016	1354	1864
			1:500		785	1047	1440
			1:1000		607	809	1113
			1:2000		468	625	860
			1:5000		362	481	665
4					2698	3372	5733

2.2-3

1	( )	0.6	
2		0.5	
3		0.5	
4		1.2	
5	GPS C D E	0.6	
6		0.6	2.2-2
7		0.48	
8		0.7	
9		0.4	

10	20cm	1.3	
11		1.1	
12	60%	1.2 1.5	
13	1:200	1.6	
14		1.5	

2.3

2.3-1

	≤ 300m 3cm	≤ 700m 2cm	700m ≤ 2cm
	≤ 5m	≤ 15m	15m
		1.5m	1.5m

2.3-2

					( )		
1			1:200	km^2	204748	272301	382875
			1:500		89020	118396	166468
			1:1000		40464	53817	75680
			1:2000		17803	23680	33294
			1:5000		5260	7002	9838
			1:10000		2955	3924	5530
2			1		1.5		
3			1:200	km	3245	4316	6474
			1:500		2636	3506	5261
			1:1000		2023	2698	4046
			1:2000		1559	2075	3112
			1:5000		1268	1686	2529

2.4

2.4-1

	1 3	4 5	5

	km ≤10	km ≤20	km 20

2.4-2

			( )		
1		km	1206	1446	1880
2			1416	1700	2337
3			1624	1948	2599

2.5

2.5-1

≥ 2.0 m	≥1.8 m	1.8 m
≥15m	≥11m	11m

2.5-2

		( )		
	km	2698	4384	6744

2.6

2.6-1

						( )		
1				1:500	0.25m²	459	689	1102
				1:1000		756	1099	1732
				1:2000		1049	1509	2362
				1:5000		1966	2739	4215
				1:10000		2882	3969	6066
		2.0						
2				1:2	100cm²	24	34	56
				2:5		28	40	72
						1.5		
				1:2		14	20	36
				2:5		18	24	41
3						1000		
4						3	3	

5				1000

3

3.1

3.1-1

	%
	120
	100
	80

1

2.

3.2

3.2-1

3.2-2

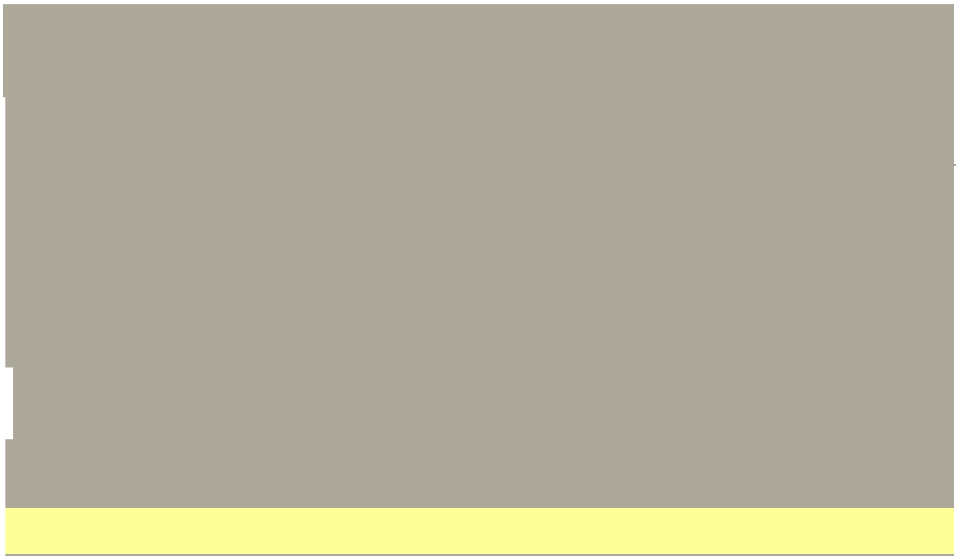
1			1 200	km^2	16065	22950	34425
			1 500		8033	11475	17213
			1 1000		5355	7650	11475
			1 2000		3570	5100	7650
			1 5000		1071	1530	2295
			1 10000		536	765	1148
			1 25000		268	383	574
			1 50000		134	191	287
2		1.3					
3		1.5					

3.3

3.3-3

				≤ 30m	30m
		φ=80 100mm L=150 200mm		40	50
		φ=80 100mm L=150 200mm		65	95
		φ=75mm L=800mm		310	460
		φ=75mm L=800mm		420	620
		φ=75mm L=800mm		360	560
		φ=75mm L=200mm		150	240

			20 D ≤ 30				210	495	619	701
			30 D ≤ 40				249	587	734	832
			40 D ≤ 50				297	700	875	991



		m^2	400		5490		6040	
			500		6400		7040	
			500		4.2-1 1			
8		m^2			≤500 kPa		500 kPa	
		0.10			2775	3330	3330	3996
		0.25			3965	4758	4758	5710
		0.50			5156	6188	6188	7425
9			(kN)					
			≤500		6786		7488	
			1000		7424		8237	
			1000 500		1.1			
					3978		4563	
10					9945		11412	
					8775		9891	
					7020		7605	
11								
		/			29250		58500	
					35100			
12			D	D≤20	1753			
			m	D 20	2104			
					409			
					205			

3.3-5

1					1.5	
2					2.0	
3					1.3	
4					1.3	
5					3.0	
				D≤10	2.0	
			D(m)	10 D≤ 20	2.5	
				D 20	3.0	

	$F \leq 1000m^2$ 0.5 m/d $K \leq 20m/d$ S $\leq 7.0m$	$1000m^2$ $F \leq 2000m^2$ 0.5m/d $K \leq 50m/d$ 7.0 m S $\leq 13.0m$	F $2000m^2$ $K \leq 0.5m/d$ K 50m/d S 13.0m

4.1-2

	10	50	100	500	1000	2000

1.

2. 0.5 0.5

3. 2000 I 3.5% 4.5% 5.0%

4. 4.1.1

4.2

4.2.1

22%

4.2.2

4.2-1

1		(kn)	≤ 500		6400
			1000		10000
			3000		15000
			5000		25000
			10000		40000
			15000		55000
			20000		70000
			20000 5000		1.25
		φ (㎜)	φ ≤ 500		5000
			500 φ ≤ 800		7000
			800 φ ≤ 1000		9000
			φ 1000		12000
2					500
		(kn)	≤ 1000		3500
			3000		4500
			5000		6000
			10000		9000
			10000 5000		1.25
3		D(m)	D<30		1200
			30 D ≤ 40		1500
			40 D ≤ 50		1800
			50 D ≤ 60		2200
			D 60		2600
4					60
					100

5		·	23

5.3-1

		( )		
	km²	760	1080	1400
		608	864	1120
		730	1037	1344
		1094	1555	2016
		1216	1728	2240
		912	1296	1680

5.3-2

		( )			
1:5000	[redacted]	768	960	1152	2.2-1
1:10000		640	800	960	
1:25000		512	640	768	
1:50000		384	480	576	
1:100000		320	400	480	
1:250000		256	320	384	
1:500000		192	240	288	

5.4-3

		D ≤ 50	1.2
		50 D ≤ 100	1.0
		100 D ≤ 150	1.2
		150 D ≤ 200	1.4
		200 D ≤ 250	1.7

6					420
7					170
		L km	L≤5		20
			5 L≤10		40
			L 10		50
			1.3		
8		3.3-3			

5.6

5.6-1

							( )
1							840
				D≤300			6800
				300 D≤1000			10200
				1000 D≤2000			13600
				D 2000			20400
				D≤300			3400
				D 300			5100
			D (m)	D≤100		M	30
				100 D≤200			40
				D 200			50
2				D≤200			20000
				200 D≤1000			30000
				1000 D≤1500			40000
				D 1500			50000

5.6-2

						( )
1						840
						8000
						2000
						4500
2		D (m)	D≤50			5000
			50 D≤100			10000
			D 100			15000
3						

6

6.1

6.2

6.2-1

6.2-2

				( )		
1				54600	78100	109300
				6900	9900	13900
				29100	41700	58400
				32800	46900	65600
				9100	13000	18300
				16400	23400	32900
				102100	145800	204100
2				47400	67700	94800
				91200	130200	182300
				47400	67700	94800
3				51000	72900	102100
				76500	109500	153200
				12400	17800	24800
4				21900	31300	43800
				32900	47000	65600
				3300	4900	6800
				2700	3900	5400

1			5600	8000	11300
2			5500	7800	11000
3			3300	4900	6800
4			5000	7300	10200
5			1800	2600	3600
6			5500	7800	11000

7

7.1

22%

7.2

7.2-1

1				·	18
					25
					45
					220
					130
					260
2					18
				km	14400
					21600
			D ≤ 10		1800
			10 D ≤ 20		2520
			20 D ≤ 30		3240
			30 D ≤ 50		4320

		0.8				
		2.4				
		1.2				
5		L (m)				
		L 10		6	4	3
		10 L≤20		8	6	5
		20 L≤50		9	8	6
		L 50		14	12	10
6		I	2.0	3	3	
7		D(m)	D≤3000	2160		
			D 3000	3600		
8		D(m)	D≤100	4320		
			D 100	5760		
		200m		0.5		

7.2-1

9	CT		·	20	
				14	
				20	20
			Km	13500	6300 ≤ ≤ ≤ " km "

		2.4-1 3 3			
14				km	3600
					4500
					3600
					3600
		3 3			
15				.	1440
					2160
					3600
					4500
					6300
16				m	23
					27
					45
					41
					108
					108
			D ≤ 100		14
			100 D ≤ 300		27
			300 D ≤ 500		32
			D 500		45

7.2-1

			( )

				D 50		14400
		1.3				

1.2 3.0

8

8.1

10

8.2

8.2-1

				( )	
1				8	
2				8	
				18	
3				19	
4				26	
				40	
				70	
				49	0.002mm 12
				47	
5				23	
				15	
6				30	
7				23	
8				14	
9				52	
10				319	
				638	
11				55	
				29	
12				264	1.3
				497	
13				40	
				116	12 15
14				53	
15				23	
16				137	5
				56	2
17				413	

	≤ 600kPa			775	
				930	
				1240	
18				29	17
				56	
19				49	30
				71	
				99	
20				133	
21				14	
22				27	
23				36	
24				56	
25				258	
26				30	
27	≤ 600 kpa	( )( )		4341	
		( )( )		9096	
		( )		1447	,
		( )		3514	

8.3

8.3-1

			( )

8.4

8.4-1

				( )
1	(mm)	Φ50 70		19
		50 × 50 × 50		35
		50 × 50 × 100		38
		70 × 70 × 70		43
		100 × 100 × 100		69
2	(mm)	50 × 50 × 50		38
3	(mm)	50 200		16
4				14
5				27
				59

8.4-2

				( )	
1				14	
2				47	
3				14	
				14	
				18	
4				47	3
5				117	
6				47	
				70	
7				185	
				233	
8				760	5
9				93	3
10				269	5
				289	
11				26	
12				2455	25 3
13				52	

8.4-3

				( )
1				23
2				81
3				70

4	SiO_2			103
5	R_2O_3			52
6	Fe_2O_3			14
7	Al_2O_3			21
8	CaO			26
9	MgO			5
10	MnO			29
11	TiO_2			29
12	K_2O			65
13	NaO			52
14	P_2O_5			18
15	SO_3			23

10.1.3

× 1±

× × ×

10.1.4

10.1.5

10.1.6 15 20%

10.2

10.2—1

%	60	68	68	73	73
%	10	4	4	3	3
%	30	28	28	24	24

10.2—2

1		1.40
2		1.04
3		1.70
4		0.5 0.55
5		0.8
6		0.3 0.4
7		0.84 0.92
8		0.76 0.88

10.3

10.3 1

1	H (m)	H<30	-5	6			-2
		30≤H 50	-2				1
		50≤H 70	1				2
		70≤H 150	3				3
		150≤H 250	5	7		10 m	-2
2			-1			10 20 m	1

			1			20 40 m	2
		3 km	2			40 60 m	4
			3		8		-2
			4				1
3			-2				2
			0				3
			1			10 m^3	0
			2			10 100 m^3	2
		X	3			100 500 m^3	3
4			-2		9	500 m^3	4
			1				-1
			2				2
			3		10		3
5			-2				-1
			1				1
			2		11		3
			3				

10.3 2

	≤ 3	3 10	≥10
	≤30%	≤60%	60%
	≤30%	≤ 60%	60%

10.3 3

1			0.7

2

4			1.2
5		60 m	1.1
6		≥8	1.1 1.2
7		250 m	1.1
8		1000 m 8 km	1.2
9			1.05 1.5

10.4

10.4 1

1	200	9
2	500	20.9
3	1,000	38.8
4	3,000	103.8
5	5,000	163.9
6	8,000	249.6
7	10,000	304.8
8	20,000	566.8
9	40,000	1,054.0
10	60,000	1,515.2
11	80,000	1,960.1
12	100,000	2,393.4
13	200,000	4,450.8
14	400,000	8,276.7
15	600,000	11,897.5
16	800,000	15,391.4
17	1,000,000	18,793.8
18	2,000,000	34,948.9

2,000,000 1.7

11.

11.1

11.1.1

11.1.2

× ×

11.1.3

×

11.1-1

	≥300MW	300MW	≥330kV	330kV	≥330kV	330kV
%	15	17	20	23	17	20

11.2

11.2.1 11.7-1

11.2.2 11.7-2

11.3

11.3-1

MW							
1000			303.66	425.12	607.31	880.60	1093.16
1000			274.27	383.98	548.54	795.38	987.37
800			241.62	338.27	483.24	700.70	869.83
600			204.07	285.70	408.14	591.80	734.65
300			163.26	228.56	326.51	473.44	587.72
200			25.71	175.99	251.42	364.56	452.56
100			83.27	116.57	166.53	241.47	299.75

11.4

11.4-1

kV							
500			18.35	25.69	36.70	53.22	66.06
330			14.85	20.79	29.70	43.07	53.46
220			7.90	11.06	15.80	22.91	28.44
110			4.75	6.65	9.50	13.78	17.10
≤ 35			2.85	3.99	5.70	8.27	10.26
			0.8				

11.4-2

1			0.80	
2			1.35	
3			1.15	
4			1.10	
5			0.67	
6			0.15	
7			0.41	
8			0.24	11.2-3 300MW
9			0.42	

10		30m	1.05	
11		0.4km²	100m	
12			1.10	
13			1.80	
14			0.30	
15			0.60	
16			0.05	

11.5

11.5-1

	kV							
1	500		km	1303	1902	2605	3777	4950
	330			1107	1615	2213	3209	4205
	220			651	950	1302	1888	2474
	110			495	723	990	1436	1881
2				4.0				

11.5-2

1	35kV	0.43	11.4-1 110kV
2		1.00	11.4-1
3	110kV 220kV	1.20	
4			
5			
6		1.15	
7			
8		1.10	
9		0.40	
10	50%	1.30	
11	1.5		
12	10km 10km		

11.6

11.6.1

11.6.2 30

11.7

11.7-1

		1 1/1	≤ 20m	3 3/3	≤ 80m	5 6/6	≤ 150m	7 10/10	150m	9 14/14
		1 1/10	≤ 20%	2 5/16	≤ 40%	4 8/22	≤ 50%	6 12/28	50%	8 16/36
	≤ 5%	1 (1/1)	≤ 10%	2 (2/2)	≤ 25%	3 (3/3)	≤ 40%	4 4/4)	>40%	5 (5/5)
		1 5/2		3 15/5		5 25/8				9 45/14

		(1/1)		(2/2)		(3/3)		(4/4)	;	(5/5)

1.

2.

11.7-2

		9	18	35	52	73
		12	21	34	50	67

11.7-3

	4	10	15	20	25

12

12.1

12.1.1

12.1.2

12.1.3

× ×

12.2

12.2.1 11.7-1

12.2.2 11.7-3

12.3

12.3-1

			( )				
1		Km	0.22	0.33	0.51	0.77	1.11
2			0.71	1.08	1.67	2.52	3.64

13

13.1

13.1.1

13.1.2

13.1.3

13.1.4 1 2000 0.4 0.6 0.2

13.1.5 × ×

13.2

13.2.1 11.7-1

13.2.2 11.7-3

13.3

13.3-1

			( )				
1			2.46	3.16	4.64	6.30	8.50
2			3.00	3.86	5.66	8.67	11.67
3			5.46	7.02	10.30	14.97	20.17

1.

2.

13.3-2

1		0.8	
2		0.6	
3		1.1	
4		1.0	
5		0.6 0.9	
6		1.05	
7		1.15	
8		1.05	
9		0.8 1.05	
10		0.7	
11	160 200	1.3	
12	30	1.5	
13		1.0	

1.

2.

3.

2

4.

0.5

5.

1 2

14

14.1

14.1.1

14.1.2

14.1.3 1 2000 0.4 0.6

0.2

13.1.4

× ×

14.2

14.2.1 11.7-1

14.2.2 11.7-3

14.3

14.3-1

				( )				
				I	II	III	IV	V
1				2.70	4.32	6.15	8.35	10.60
				2.20	3.60	5.05	6.50	9.40
				1.10	1.75	2.40	3.55	5.00
				3.00	4.65	6.75	9.40	11.80
				2.50	3.85	5.55	7.15	10.00

15.

15.1

15.2

15.2-1

	PH		PH

15.3

15.3-1

	80	40	60
	80	60	40

15.4

15.4-1

				( )	
1		L≤0.2	km	1000	
		0.2 L≤1.0		1000	
		1.0 L≤3.0		3560	
		3.0 L≤5.0		9026	
		5.0 L≤10.0		12760	
		10.0 L≤50.0		20095	
		L 50.0		68095	
2		L≤1.0		2500	
		1.0 L≤50.0		2500	
		50.0 L≤200.0		58360	
		200.0 L≤1000.0		206860	
		L 1000.0		926860	
3		L≤1.0		2000	
		1.0 L≤10.0		2000	

		10.0 L≤50.0	km	15
		L 50.0		60
4		L≤1.0		3
		1.0 L≤5.0		3
		5.0 L≤20.0		13
		L 20.0		43
5		L≤5.0		8
		5.0 L≤20.0		8
		20.0 L≤50.0		31
		50.0 L≤100.0		72
		L 100.0		137

1.

2. 3m 3m

3. 1.2

4.

1			16x2Mb/s	6500

D_s 150		2876

1.

2. 100000 100000

16.3

16.3 1

D_s m		( )
5 $D_s \le 20$	km	2373
20 $D_s \le 50$		2157
50 $D_s \le 100$		2373
100 $D_s \le 150$		2588
D_s 150		3020

15km 15km

16.4

16.4 1

		D_s m		( )
1		D_s 150		2192
		50 $D_s \le 150$		3396
		5 $D_s \le 50$		6208
2		D_s 150		4386
		50 $D_s \le 150$		6792
		5 $D_s \le 50$		12417

1.15 1.30

16.5

16.5 1

				( )
1		/		49000/310000
2		/		50000/300000

16.7

16.7 1

D_s m	5 $D_s \le 10$	10 $D_s \le 20$	D_s 20
T m	T 2	$2 \le T \le 3$	T 3
V_{max} m/s	V_{max}<2 5	2 $5 \le V_{max} \le 3$ 5	V_{max} 3 5
	0 1	2	2

1.

2.

16.7 2

			( )		
1			12000	14000	18000
2			6000	6000	7000
3			7000	7000	8000

16.10

16.10 1

			( )
1			1954
2			16.4-1 1
3			2128
4		·	85000
5		Km	2157

1.

2. 5

3. 500

1

1.0.1

1.0.2

1.0.3

1 × 1±

2

3 × × ×

1.0.4

1.0.5

1.0.6

1.0.7

1.0.10

×

1.0.11

1.0.12 1.1 1.4

1.0.13

5%

1.0.14

5

1.0.15 30%

40%

1.0.16 10

8

1.0.17

1.0.18

1.0.19

1.0.20 10

8

1.0.21 1.0.1

2

2.1

2.2

2.2-1

%	%	%
	40	60
	35	65
	30	70

2.3

2.3.1

2.3-1

	1. 2. ≤3 3.
	1. 2. 500m 3. ≥4 4.
	1. 2. 3. 4. 5.

2.3.2

2.3-2

	1. 2. 120m 3. 4. 5. 6m
	1. 2. ≥120m 3. 4. 5. 6 9m
	1. 2. 3000m 3. 4. 5. 9m

2.3.3	
2.3-3	
	1. 2.

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

2.3.4

2.3-4

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

2.3.5

2.3-5

	1. 2. ≤50m 3.
	1 2 2 50 100m 3
	1 2 2

	≥100m 3

2.3.6 2.3-6	
	1 2
	1 25mm 2 1 4 2 2 3
	1 ≤25mm 2 5 3 4 3

1.4

3

3.1

3.1.1

3.1-1

3.2

3.2-1

%	%	%
	35	65
	40	60

3.3

3.3-1

	1 2 3000t 3 4 5 6 7 8 9 10
	1 2 3000 10000t 3 4 5 6 7 8 9 10 11 12 2000t 13 14
	1

	2	10000t
	3	
	4	
	5	
	6	1000
	7	
	8	
	9	
	10	
	11	
	12 ≥2000t	
	13	
	14	

1. 2.5%

2. 2.5%

4

4.1

4.2

4.2-1

%	%	%	%	%
	35	65	50	50
	50	50	60	40
	40	60	50	50
	60	40	65	35

1.

2.

4.3

4.3-1

	1 50000m³ 5

		45		55
		25	20	55
		45	20	35
		25	20	55
		55	10	35
		60		40
		70	10	20

5.3

5.3.1

5.3-1

	1 4 2 110kV 3 ≤ 20
	1 2 4 50MW 50MW 2 220kV 330kV 3 20 20
	1 2 4 50MW 2 500kV 3 4 ≥ 20

1 1.1

2

5.3.2

5.3-2

	1. 30% 2. 30% 3. 4. 5.
	1 30% 60% 2 30% 60%

3

	:	4
	70m 25000m³/s	4
	,	3

6

6.1

6.2

6.2-1

%	%	%
	45	55
	40	60
	45	55
	45	55
	45	55

6.3

6.3.1

6.3-1

	1
	1 2
	1 2. 3 4

1.89 “ 1” 0.61

6.3.2

6.3-2

	1 1000m 15m 30 50m 30 50m 2 500m
	1 1000m 15m 30 50m 30 100m 2 500 1000m 3

	1 1000m 15m 250m 400 1000m 800 1500m 2 1000m 3

1. 2.0 0.7
2. 1.1

6.3.3

6.3-3

	1 1000t 2 300t 100t 3 300t 5000t 4
	1 1000 10000t 2 1000t 3 300 1000t 100 500t 4 300 1000t 5000 30000t
	1 10000t 2 ≥1000t 3 4 1000t 500t 5 1000t 30000t 6

6.3.4

6.3-4

	3C	
	4D 4C	
	4E	

1.
2. , 15 150

6.4

6.4.1

6.4-1

			( )	( )
			1.86	2.34

			1.95	2.44
			2.58	3.23
			3.26	4.07
			4.05	5.08
			0.52	0.64
			0.45	0.54

1.

2. 1.2
1.1 ;

3. , ,
0.6 1.0 ;

4. , 1.5
, ( ) 1040 ;

5.
×0.8

6.
×0.6 ×0.8

7. 160 200km , 1.3
1.1

8. 0.6

9. 30km 5km 1.5

10. ,
1.5 ;

11. 0.92

12. 0.85
1.0.8 2.5%

13. 1.1

14.

6.4.2

6.4-2

%	0.58	0.72

1.
0.8

2. 1.0.8

3. 10km 6.4.1 “ ”

4.

7

7.1

7.2

7.2-1

%		%	%	%
		10	30	60
		15	30	55
		20	30	50

	1 2 3 24 50m 4 20 5 6 7 8 9 10000m²
	1 2 3 50m 4 20 20 5 6 7 8 ≥ 10000m²

1. 20001m² 5001 20000m² 5000m²
2. , 1.3 1.6
3. , 1.3
4. , 1.5
5. , 2.0
6. , 10000 20000 /ha

7.3.2

7.3-2

	1 2
	1 2
	1 2 3.

7.3.3

7.3-3

I	1 2 DN 1.0m 3 4
	1 5000 500m³ 2 (DN 1.0m) 1 m³/s

	3 100t/ 4 ≤2MW
	1 ≥5000 ≥500m³ 2 3 4 2MW 5

7.3.4

7.3-4

	1 1 1 2 2 P≤1kW 3 P≤50kW 4 ( ) P≤1kW 5 6 7
	1 2 3 3 5 2 (1kW P≤20kW 3 50kW P≤150kW 4 ( ) 1kW P≤10kW 200m ; 5 6 7
	1 4 6 2 P 20kW ; 3 P 150kW ; 4 ( ) P 10kW ≥200m ; 5 ( ) 6 7 8 9

8

8.1

8.2

8.2-1

		%	%
		40	60
		100	
		80	20
		70	30
		60	40
		50	50
		30	70

8.3

8.3-1

	1 5m 1/500 2 3 4 5 500m 20km 150000ha 100000m 6
	1 5 50m 1/500 1/100 2 3 4 5 500 1000m 20 30km 150000 350000ha 100000 300000m³ 6
	1 50m 1/100 2 3 4 5 1000m 30km 350000ha 300000m³ 6

1	200	9.0
2	500	20.9
3	1,000	38.8
4	3,000	103.8
5	5,000	163.9
6	8,000	249.6
7	10,000	304.8
8	20,000	566.8
9	40,000	1,054.0
10	60,000	1,515.2
11	80,000	1,960.1
12	100,000	2,393.4
13	200,000	4,450.8
14	400,000	8,276.7
15	600,000	11,897.5
16	800,000	15,391.4
17	1,000,000	18,793.8
18	2,000,000	34,948.9
2,000,000	1.6	

1	
	1.1
	1.2
	1.3
2	
	1.0
	1.1
	1.2
	1.3
3	
	1.2
	1.6
4	

	0.8
	1.0
	1.2
	1.6

	3 4 5 6 7	

1. 1.3

2. ( ) ( ) 0.3