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錄セリ、又唧筒ノ許容揚程以上ノ井戸湧水量ニ對シテハ唧筒ヲ運轉シツヽ、一定不變ノ水位ヲ觀測シ、空樽ニ井水ヲ吸揚ゲ水量ヲ計量シ水位快復曲線圖ヲ作成滲透係數及地下水面ノ勾配、觀測、當日ヨリ前數日間ノ天候竝帶水層ノ厚等ヲ考量シ湧水量ヲ定メタリ。（備考第七表參照）湧水量ノ最モ大ナルハ湊區下三條町平野小學校及兵庫區大開通リ大開小學校ニシテ前者ハ深度九●八米、後者ハ六●四米湧水量ハ共ニ一晝夜四七〇立方米（約二、五八五石）ニシテ斯ク湧水量多量ナルコトハ前者ハ天王川氾濫ノ際上流ノ砂礫等ヲ該所ノ低地ニ運ビ委棄沈澱シテ此處ニ數段ノ帶水層ヲ構成シタルニ依ルモノト思考セラレ、後者ハ昭和十一年三月一日發行地球第二五卷第三號理學士上治寅次郎氏著、六甲山塊南麓ニ於ケル新生低地ノ發達ニ關スル考案ノ文獻附圖第二圖湊川及兵庫附近海陸變遷圖（別紙添付圖參照）ニ依レバ該位置ハ源平時代ノ湊川主流ニ當レルヲ以テ多量ノ伏流水ヲ含有スルニ依ルモノト思考セラル。測定淺井戸中ニ於テ斯クノ如キ多量ノ湧水量ヲ得タルモノハ前記ノ二個所ニシテ全市他ノ淺井戸全部ニ付テ測定スルモ斯ク多量ノ湧水量ヲ得ル事ハ困難ナラン。

其他ノ湧水量ハ灘區平均一六●〇五立方米、神戸兵庫兩區ノ平均一二●八立方米、湊區一一●六立方米、林田、湊東、須磨、葺合區ノ順序トナレリ。

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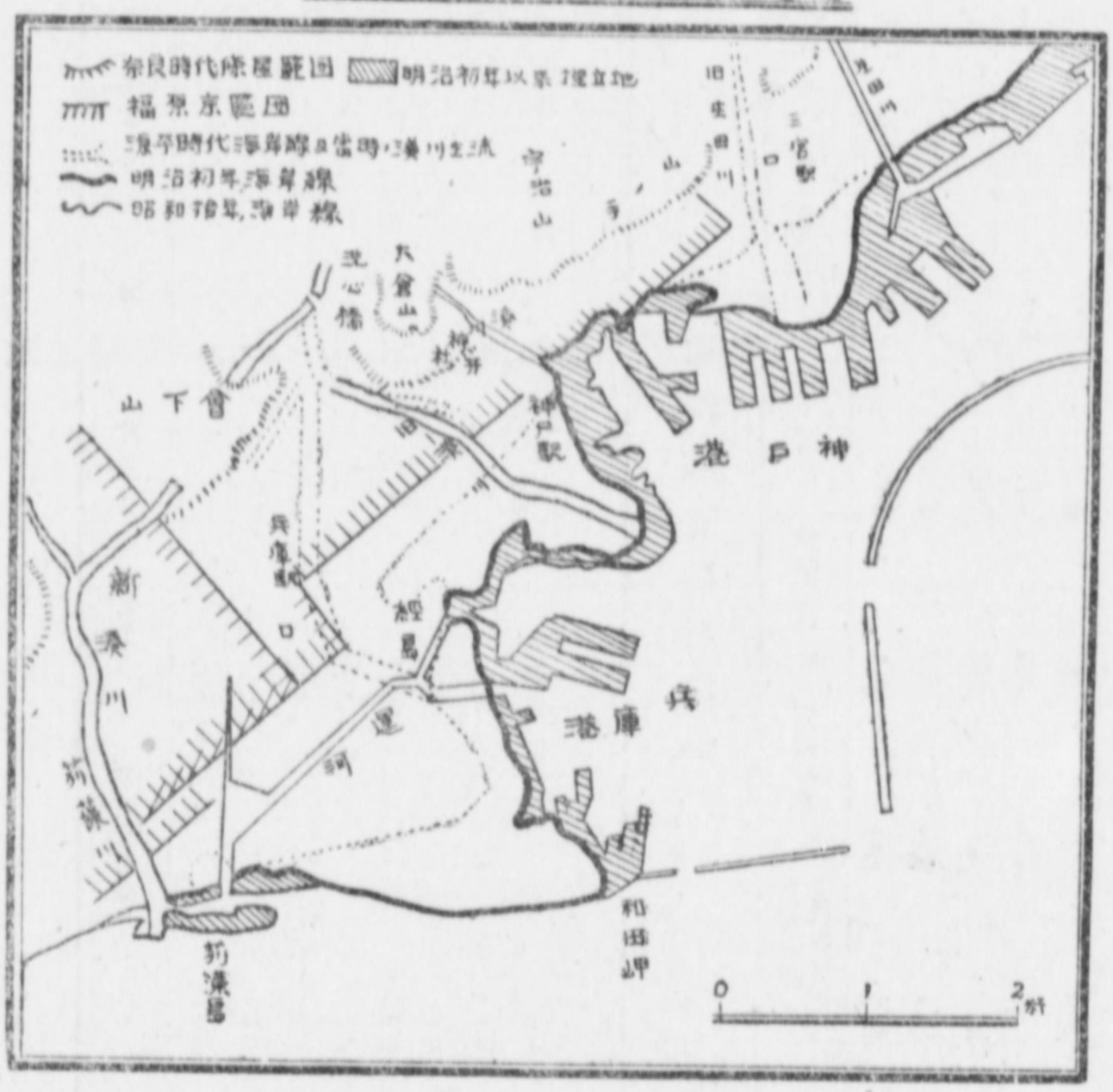
灘川及兵庫附近海陸要邊圖



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第七表　湧水量測定表

區名＼種別	調査井戸個數	全湧水量(m³/日)	推定湧水量(m³/日)	摘要
灘區	4	64.3	15.0	
葺合區	1	5.3	4.0	
神戸東	4	51.3	8.0	
湊東	1	8.7	4.5	
湊西	4	46.5	8.0	平野小學校ヲ省ク
兵庫	5	64.9	8.0	大開小學校ヲ省ク
林田	3	27.0	4.0	
須磨	7	54.6	5.5	
計	29			

湧水量測定記錄表

區名及測定ヶ所記號		井戸ノ徑(米)	水面迄ノ深(米)	水深(米)	恢復水位(糎)	恢復時間(分)	每分平均恢復水位(糎)	摘要
灘區	1	0.90	2.35	3.90	300	189	1.58	
	2	0.80	3.80	3.45	252	164	1.54	
	3	0.76	6.00	2.60	155	215	0.73	
	4	0.90	3.40	2.30	130	35	3.73	
葺合區	1	0.90	8.75	1.40	41	71	0.58	

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神戸區	1	0.90	7.27	2.45	145	116	1.25	
	2	0.70	2.00	1.55	71	28	2.53	
	3	0.82	3.59	1.11	31	21	1.475	
	4	0.80	5.00	2.45	166	70	2.37	
湊東區	1	0.70	1.52	2.34	183	116	1.58	
湊　區	1	0.70	3.00	3.15	235	180	1.305	
	2	0.92	3.54	6.26	—	—	—	水量ヲ計量セリ
	3	0.90	1.70	3.00	229	70	3.27	
	4	0.85	5.56	2.09	109	315	0.346	
	5	0.80	3.10	2.90	204	184	1.11	
兵庫區	1	0.74	4.40	2.00	—	—	—	水量ヲ計量セリ
	2	0.90	0.80	2.10	136	185	0.735	
	3	0.74	2.78	3.30	258	160	1.614	
	4	0.70	2.25	2.00	109	31	3.52	
	5	0.67	2.10	1.30	56	30	1.87	
	6	0.95	3.30	2.90	211	95	2.22	
林田區	1	0.76	3.50	1.60	100	185	0.54	
	2	0.74	1.65	4.15	302	110	2.745	
	3	0.70	2.25	1.70	102	85	1.20	
須磨區	1	0.60	4.04	2.00	127	275	0.463	
	2	0.70	1.55	2.00	139	40	3.48	
	3	0.75	5.68	1.22	22	250	0.088	

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鑿井分布状況

現在市内ニ於ケル鑿井總數ハ八十有餘(第八表鑿井一覽表、第一圖市内鑿井分布圖參照)ニシテ深度ハ三〇米(一〇〇尺)乃至三三〇米(一、一〇〇尺)一晝夜湧水量、三六立方米(二〇〇石)乃至二、九〇〇立方米(一六、〇〇〇石)ナリ。用途ハ冷却竝冷房用ガ總個數ノ六割四分ヲ占メ洗滌用及工場用水之ニ次グ。又飲料水ニ使用スルモノハ本市施工ノ灘區ノ二ケ所アルノ外唯僅カノ水量ニ對シ阪神元町ビル、三越及湊川神社等ニ於テ一晝夜九立方米(五〇石)内外ノ急速濾過機ヲ設置シ飲料水ニ供シヲレルノミナリ。穿鑿セシ地層中段丘及舊扇狀地ニ屬スルモノハ本市市民運動場内ニ在ル「プール」用水ノ鑿井、古期更新層ニ屬スルハ大倉山ニ建設豫定セル公會堂ニ使用スル鑿井ニシテ其ノ他ハ全部新期沖積層ニ屬シオレリ。

特記スベキハ河川附近竝ニ舊川敷内ニ存在スル鑿井ハ總數ノ約三割四分ニ當リ、其ノ湧水量多量ナレ共水質ハ概シテ不良ニシテ「クロール」「アムモニヤ」及鐵分等ヲ含有シ飲料水ニハ不適ト認メラレタリ

4	0.70	3.90			
5	0.90	3.20			
6	0.70	2.73			
7	0.90	3.45			
	5.10		427	192	2.22
	1.30		240	125	1.92
	1.30		79	75	1.05
	2.55		9	165	0.054

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従ツテ若シ本市ニ於テ上水道補助水源トシテ鑿井ヲ計畫スルモノトセバ前記河川附近地竝ニ舊川敷ガ最モ適當ナル候補地ナリト認メラルヽモ唯水質ニ關シテハ穿鑿ノ上ナラデハ適否ヲ斷ジ難シ。

河川附近及舊川敷ニ穿鑿サレタル鑿井個數及湧水量ヲ列擧スレバ第九表ノ如シ。

第八表　鑿井一覽表

圖面番號	井戸徑(吋)	深度(尺)	一晝夜湧水量(石)	使用目的	摘要
1	14	350	13,400	飲料用	
2	6	300	3,600	冷却用	
2	10	360	4,000	同	
3	14	350	13,400	飲料用	
4	6	220	10,000	車體洗濯用	
5	3	180	4,000	冷却用	
6	12	200	15,000	工場用水	
7	12	450	7,000	洗滌用	
8	2	250	1,000	同	
9	12	395	4,000	冷却用	
10	5	300	500	同	
10	5	300	1,000	同	
11	6	130	8,000	同	
11	6	130	8,000	同	

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12	12	500	4,000	同		
12	12	350	2,500	同		
12	12	350	2,500	同		
12	12	300	500	同		
13	4	150	2,500	同		
14	12	550	8,000	同		
15	4	224	1,000	同		
16	5½	400	3,000	洗	濯	用
17	4	150	800	同		
18	8	350	4,000	雑	用	水
18	8	300	4,000	同		
19	6	300	1,000	冷	却	用
20	14	380	9,500	洗	浴	用
21	12	450	8,000	同		
21	12	450	7,000	同		
22	10	400	7,000	冷	房	用
23	10	350	10,000	同		
24	12	350	4,000	同		
25	14	600	15,000	同		
25	14	600	15,000	同		
26	14	450	16000	同		
26	12	400	15,000	同		

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27	12	300	13,800	雜用水
28	14	390	7,500	冷房用
29	14	420	10,000	同
29	14	400	10,000	同
30	4½	300	1,500	同
31	5	430	5,000	冷却用
31	12	500	5,500	同
32	12	1,100	5,000	入浴用
33	12	190	200	洗滌用
34	第一 12 第二 12 第三 12	616 616 616	6,000 6,000 7,500	雜用水
35	6	120	2,000	洗滌用
36	9	295	7,000	同
37	5	147	8,000	冷房用
38	12	420	4,300	同
39	12	625	15,000	同
40	6	530	14,000	冷却用
40—1	10	317	11,000	同
41	12	400	6,000	冷房用
42	6	330	15,000	同
43	6	330	3,600	冷却用
44	6	100	1,000	營業用(菓子)

川水

480	5,000	洗滌用水	12	3	45		
490	2,200	冷却用水	3	1	46		
600	5,000	洗滌用水	12	4	47		
600	10,000	冷却用水	12	8	48		
300	5,000	同	10	4	49		
315	10,000	洗滌用水	12	4	50		
400	4,000	工場用水	12	4	51		
350	10,000	冷房用水	12	4	52		
350	4,000	同	12	4	52		
350	4,000	同	12	4	52		
270	8,000	同	12	4	52		
350	3,000	同	12	4	52		
100	3,000	洗滌用水	12	4	52		
300	3,000	工場用水	6	2	53		
100	3,300	雜用水	5⅝	2	54		
100	3,000	冷却用水	2½	1	55		
600	8,500	同	3	1	56		
400	3,000	雜用水	12	4	57		
400	1,200	冷却用水	6	2	58		
400	1,200	同	3	1	59		
713	16,000	同	3	1	59		
500	4,500	雜用水	14	5	60		
250	6,000	冷房用水	8	3	61		
			4	1	62		

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第九表　河川附近地及舊川敷ト鑿井個數

河川名及舊川敷	鑿井個數	一晝夜總湧水量(石)	深度(尺)
紀ノ川	一一	一三、四〇〇	三五〇尺
舊生田川川敷	一一	一一二、三〇〇	三〇〇尺乃至六〇〇尺
宇治川	五	三二、〇〇〇	三〇〇尺乃至五〇〇尺
舊湊川川敷	九	七九、一〇〇	一九〇尺乃至一、一〇〇尺
菊藻川	三	一四、八〇〇	一〇〇尺乃至六〇〇尺
計	二九	二五一、六〇〇	

鑿井ノ深度竝揚水量

鑿井ノ深度ハ地下ニ存在セル帶水層ノ深淺、地下水位ノ動向竝ニ湧水量及水質等ニ依ッテ決定サルベモノナリ。

本調査ニ依レバ深度二〇〇尺乃至四〇〇尺ノモノ總數ノ五割三分ヲ占メ深度四〇〇尺乃至六〇〇尺ノモノ二割三分、深度一〇〇尺乃至二〇〇尺ノモノ一割六分トナレリ、深度ノ最モ大ナルモノハ湊區湊山温泉一、一〇〇尺(湧水量五、〇〇〇石)ナリ。

深度ト揚水量(一晝夜石)トヲ分類スレバ總揚水量(一晝夜石)ノ四割九分ハ深度二〇〇尺乃至四〇〇尺約一割一分ハ深度一〇〇尺乃至二〇〇尺約一割ハ深度六〇ニアリ、三割ハ深度四〇〇尺乃至六〇〇尺

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○尺以上ノ割合(第十表深度ト揚水量)トナレリ。

第十表　深度ト揚水量

深度(尺)	一晝夜總揚水量(石)	摘要
一〇〇—二〇〇	五八、八〇〇	口徑三吋乃至一二吋
二〇〇—四〇〇	二五二、七〇〇	同三吋乃至一四吋
四〇〇—六〇〇	一五四、〇〇〇	同三吋乃至一四吋
六〇〇以上	五五、五〇〇	同三吋乃至一四吋
計	五二一、〇〇〇	同一二吋乃至一四吋

鑿井ト水質

鑿井ノ水質ハ其ノ穿鑿場所ノ地質及伏流水ノ通過スル地質等ニ因リ大イニ異ナルモ概シテ細菌學的ニハ良質ナレ共、深所ニ到達スルニ從ッテ種々ナル地質ヲ經由スル結果地層中溶解性不純物殊ニ「クロール」「アムモニヤ」亞消酸、其他ヲ含有シ物理學及化學的ニハ屢々飲料水ノ規格ニ抵觸スルモノアリ、市内鑿井八十有餘ノ中水質試驗ノ完了セルモノヲ列擧スレバ第十一表(鑿井ト水質)ノ如クニシテ飲料水適ト判定サレタルモノ總數ノ僅カ約一割七分ニシテ斯クモ僅少ナル結果ヲ見タルハ本市内地域ガ鑿井ニ不適當ナル地層ナリト認メラル、モノナリ。

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第十一表　　鑿井ト水質

圖面番號	外觀	クロール(mg/L)	硫酸	硝酸	アムモニア	飲料判定
イ	殆清澄、濁度 4.0	19.0	痕跡	微量	不檢出	適
ロ	同　同 5.0	10.5	同	痕跡	同	適
ハ	同　同 3.0	42.0	同	同	同	不
ニ	稍濁、濁度 50.0	26.0	微量	微量	檢出	不
ホ	同　同 10.0	29.2	痕跡	痕跡	同	不
ヘ	殆清澄、濁度 7.0	26.5	同	微量	同	不
ト	同　同 20.0	27.5	同	同	同	不
チ	同　〃　同 7.0	73.0	微量	同	不檢出	不
リ	微濁、濁度 16.0	1,700.0	多量	痕跡	同	不
ヌ	同　同 18.0	17.0	痕跡	少量	同	適
ル	同　同 18.0	34.0	微量	痕跡	檢出	適
ヲ	同　同 24.0	37.5	同	同	同	不
ワ	殆清澄、濁度 5.0	17.0	痕跡	少量	不檢出	適
カ	稍濁、濁度 400.0	16.0	同	痕跡	檢出	不
ヨ	清澄、濁度 24.0	60.0	少量	同	同	不
タ	色度 12.0 濁度 3.0	10.0	痕跡	同	微量	不
レ	同　40.0 同　12.5	14.5	同	同	同	不
ソ	清澄、濁度 3.0	68.5	微量	微量	不檢出	不

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E○

ツ	色度 140.0 濁度 32.0	28.0	同	痕跡	中量	不
ネ	同 5.0 同 6.0	40.0	同	同	微量	不
ナ		20.0	痕跡	同	不檢出	適
ラ	清澄、濁度 5.0	70.0	同	微量	同	不
ム	同 同 5.0	30.0	微量	同	檢出	不
ウ	微濁、濁度 15.0	70.0	同	痕跡	同	不
キ	清澄、濁度 3.0	70.0	少量	同	同	不
ノ	殆清澄、濁度 16.0	34.0	痕跡	同	同	不
オ	清澄、濁度 2.0	60.0	同	同	不檢出	不
ク	同 同 2.0	90.0	同	同	同	不
ヤ	同 同 3.0	90.0	同	同	同	不
マ	同 同 2.0	200.0	同	同	同	不
ケ	同 同 5.0	90.0	同	同	檢出	不
フ	殆清澄、濁度 8.0	120.0	同	同	同	不
コ	同	1,412.0	少量	同	同	不
エ	色度 50.0 濁度 55.0	264.0	同	微量	多量	不
テ	清澄 一日后濁濁 0.0	30.0	痕跡	痕跡	不檢出	不
ア	微濁、濁度 25.0	27.0	同	同	檢出	不

井戸ト径路

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鑿井ノ口徑ハ揚水量及揚水裝置ノ種類ニ關係ス、口徑ハ二吋乃至一四吋。唧筒ハボアーホール、エアーリフト及渦卷ノ三種トス、總數ニ對シテ口徑一二吋ガ四割口徑六吋一割七分、口徑一四吋一割二分ヲ占メ其ノ他ノ口徑ハ僅少ニシテ之レヲ列記セバ左ノ如シ。

鑿井ト口徑

口徑	二吋	三吋	四吋	五吋	六吋	八吋	九吋	一〇吋	一二吋	一四吋	合計
個數	一	六	四	五	一四	三	一	五	三三	一〇	八二

鑿井使用者ノ種別

鑿井ヲ使用者ノ種別ニ分類スレバ第十二表ノ如クニシテ總數ニ對シテ工場五割七分、官公衙一割六分百貨店、劇場、ピル、會社等ノ順序ナリ。

第十二表　鑿井使用者ノ種別

種別	官公衙	ピル、會社	百貨店	銀行	病院	劇場	市場	工場	停車場	其他	計
個數	一三	四	六	一	一	五	一	四七	二	二	八二

鑿井ノ得點ト缺點

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鑿井ハ著シク深所ニ潜在伏流セル帶水層ヨリ揚水スル爲種々ナル點ニ於テ特性ヲ有ス。次ニ其ノ得點ヲ示サン。

一、鑿井ノ得點

一、地表及地表下附近ノ汚染ヲ除去シオル爲特ニ細菌學的性質ニ於テハ優良ナル事。

二、外氣温度ノ影響ヲ殆ンド受ケザル事。

三、地層ノ構成上潜在水ニ壓力ヲ有スル場合ニハ地表ニ自噴スル事。

本例トシテハ昭和十四年八月末竣功ヲ見タル市内長田神社境内ニ穿鑿サレタル鑿井内徑六吋深度一二〇尺ハ境内ノ地盤ニ自噴セリ。

一、鑿井ノ缺點

一、揚水量ニ對シテハ持續性ノ不確實ナル事。

初期揚水量ト現在揚水量トヲ比較スルニ現在揚水量ハ精密ナル水量測定方法ノ設備ヲ有セザルニ依リ正確ナル數量ニハ非ザレ共相當ノ差異ヲ生ジオリ又「ストレナー」(集水管)ノ位置ニ依リ揚水中ニ混入スル細砂其他浮游物等ニ依リ「ストレナー」ヲ閉塞シ、揚水量ヲ減退ス、一例ヲ擧グレバ兵庫區ニアル某鑿井ハ竣功後僅カ三年ニシテ管内ニ推積セル細砂高約七十尺ニモ及ビ初期揚水量一晝夜一三、〇〇〇石ナリシモノガ現在揚水量一晝夜五、〇〇〇石内外ニ減退シオル狀況ニシテ地

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層ノ狀態ニ依ル事ハ勿論ナレ共一般ニ揚水量ハ使用期間ノ經過ニ伴ヒ遞減ス。

第十三表(鑿井初期及現在揚水量ノ比較)ノ如シ。

二、淺井戸竝ニ附近地ニアル他ノ鑿井ノ水位及湧水量ニ影響ヲ及ボスコト。

鑿井ヲ實施スル場合ニハ附近淺井戸及鑿井ニ水位ノ遞減及湧水量ノ減退ヲ來タス事多分ニシテ灌區及兵庫區ニ於テ此ノ實例ヲ見タリ、其ノ例トシテ灌區ノ或ル地點ニ於テ鑿井ヲ實施ノ際附近淺井戸ノ影響ニ就テノ記錄ヲ示セバ第十四表(鑿井ト水位及湧水量影響調書)ノ如クニシテ鑿井中心ヨリ半徑四〇〇米以内ハ全部水位及湧水量減少ノ影響ヲ受ケタリ。尙鑿井中心ヨリ近キN町五丁目及四丁目ニ涸渇井戸數ナク、却ツテ遠キ距離ニアルT町二丁目ニソノ影響特ニ大ナルヲ見タルハ地層ノ關係ニ依ルモノナラン。

第十三表　鑿井初期及現在揚水量ノ比較

記號	初期揚水量(石)	經過年數(年)	1ヶ年平均減水量(石)	現在揚水量(石)
A	5,000	9	222	3,000
B	4,300	2	350	3,600
C	6,000	9	555	1,000
D	6,000	2	1,000	4,000
E	1,000	5	125	250

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F	3,400	2,200	7	171	
G	10,000	4,000	17	325	

第十四表

鑿井ト水位及湧水量影響調書

被害町名	井戸個數	被害アリシ井戸數	被害ナキ井戸數	被害前總深度（尺）	被害總深度（尺）	鑿井ヨリ被害町間距離（m）	減水井戸數	減水最甚井戸數	摘要
T町三丁目	8	7	1	46.0	20.0	350	6	1	
T町二丁目	20	20	—	140.0	66.0	400	18	2	
T町四丁目	16	16	—	120.0	64.0	200	13	3	
T町五丁目	11	11	—	73.0	41.0	150	9	2	
N町三丁目	4	4	—	19.3	14.6	250	1	3	
N町四丁目	1	1	—	7.0	2.0	120	1	—	
N町五丁目	5	5	—	5.0	3.5	60	5	—	混凝土造リ蓋アリ水位測定不能 4ヶ所
Y町三丁目	1	1	—	9.0	4.0	290	1	—	
Y町四丁目	1	1	—	8.7	6.9	200	—	1	
計	67	66	1	—	—	—	54	12	

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調　査　票

設置場所	名稱	井戸徑	深度 水面迄ノ深サ 水深	一晝夜 湧水量(石)	使用目的	摘要

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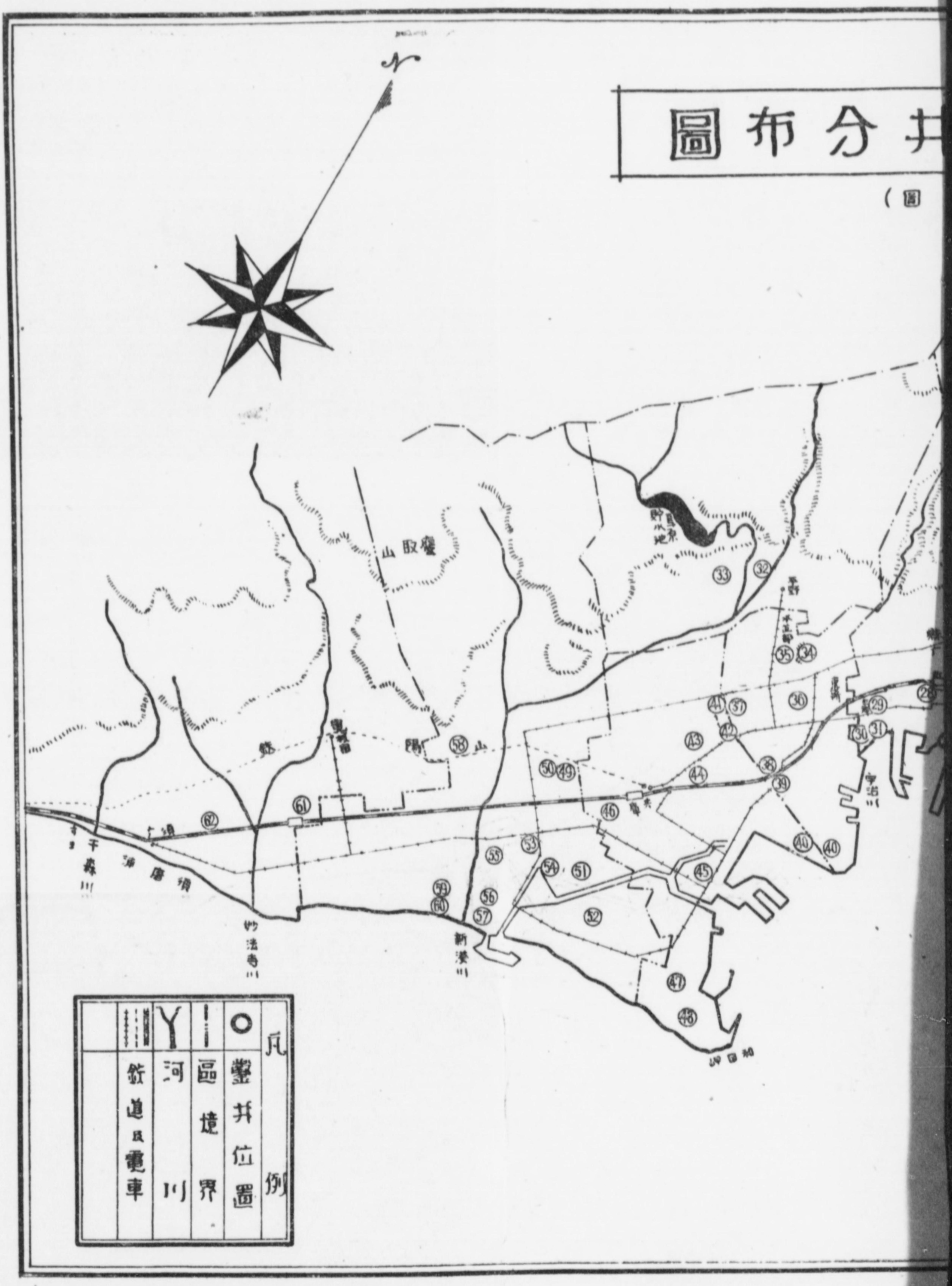

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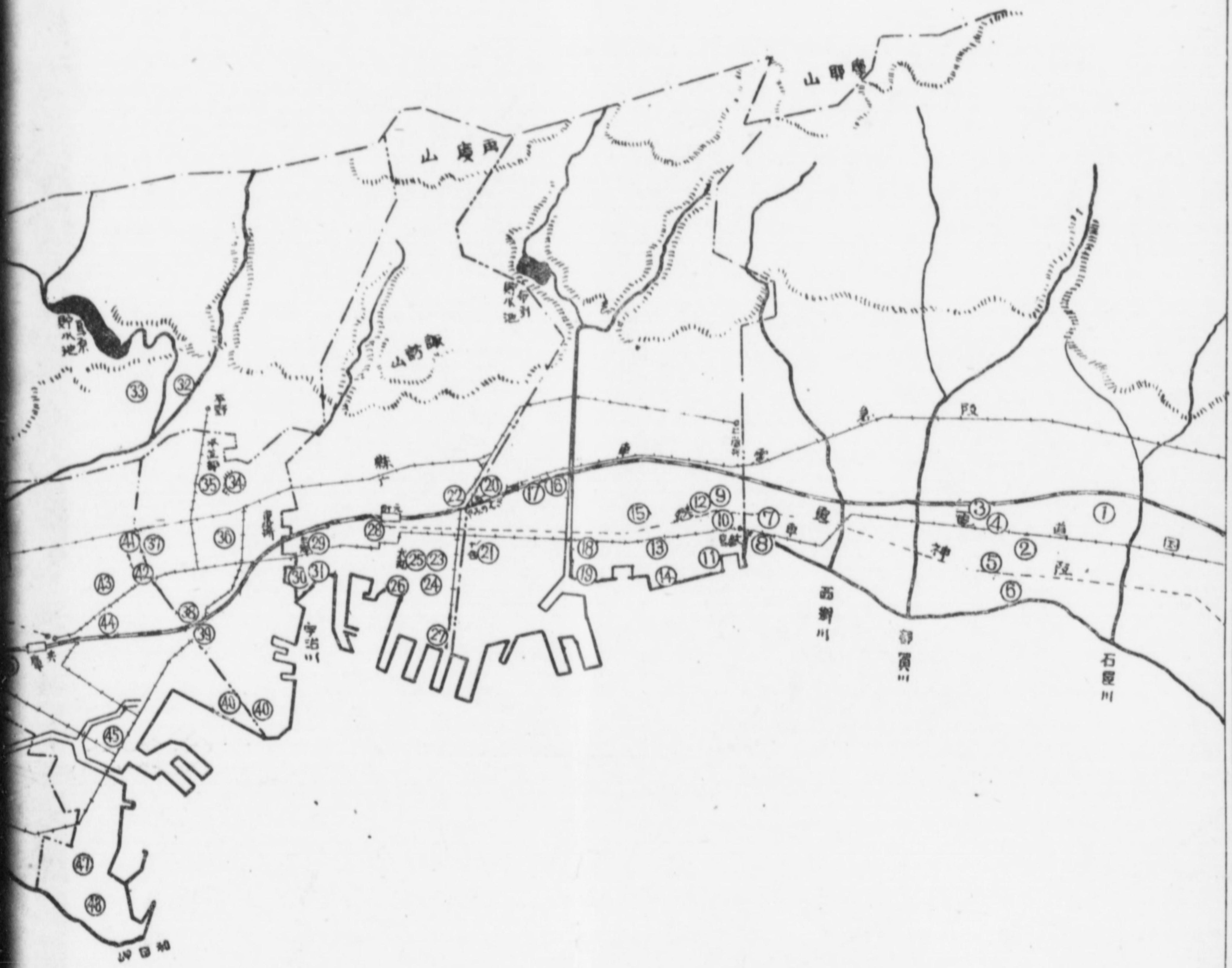
神戸市内鑿井分布圖

（第一圖）



尺一之分万五

米 1000 500 0 1000 2000 3000 4000

哩 10 5 0 10 20 30 1里

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調査係設置

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給水管布設調査

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本市配置圖

壹之仐壹

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神戸市

六甲山麓住宅地

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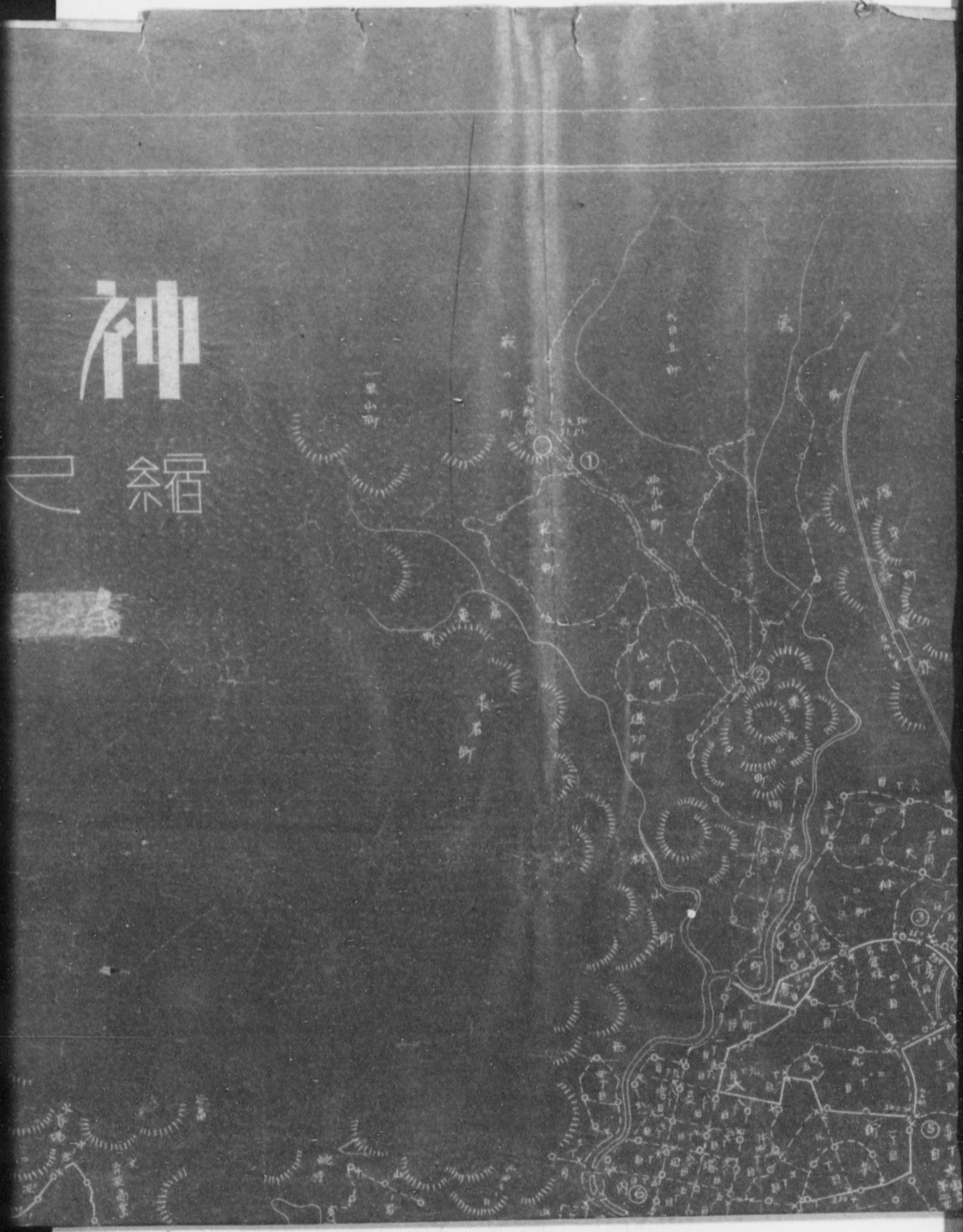

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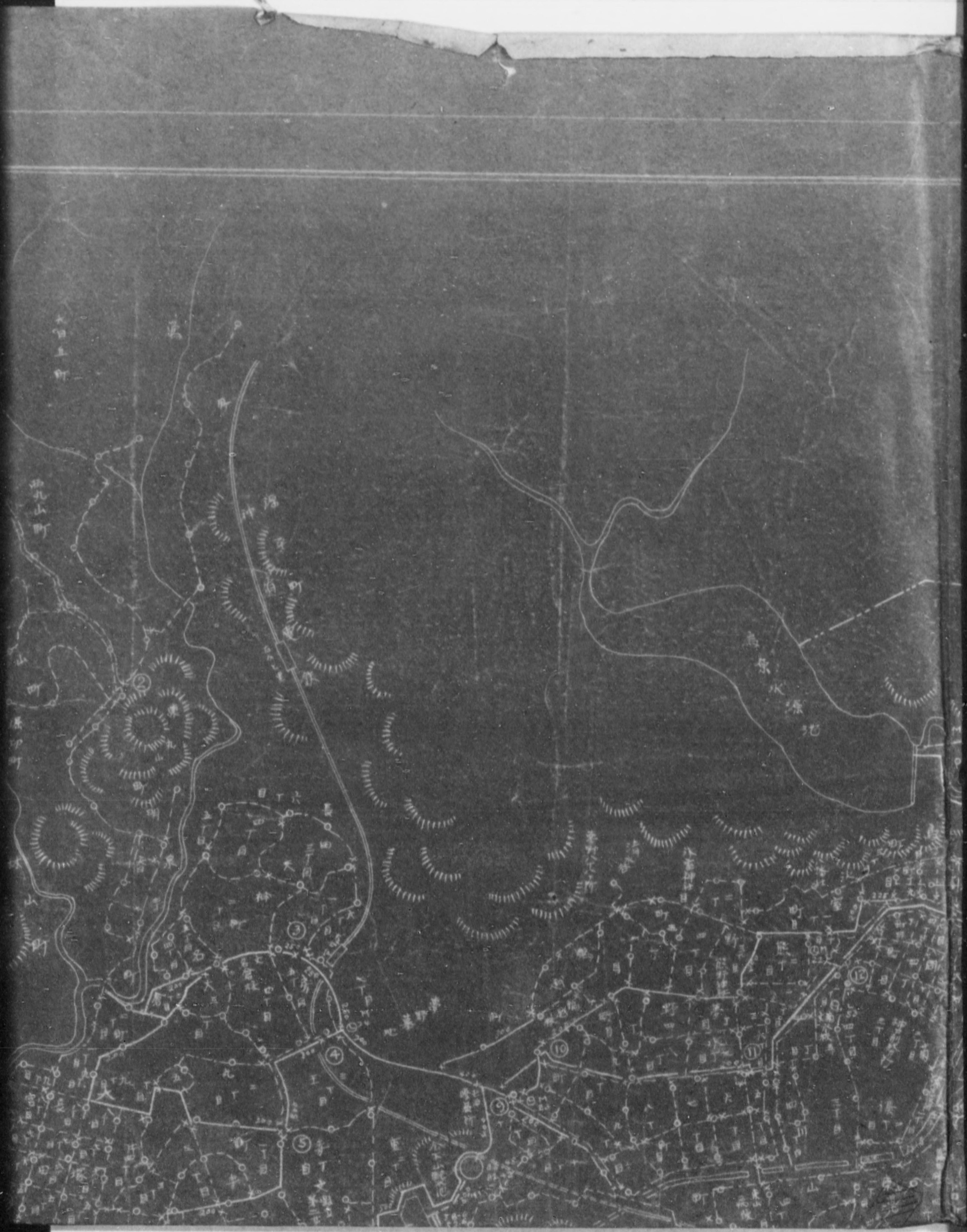

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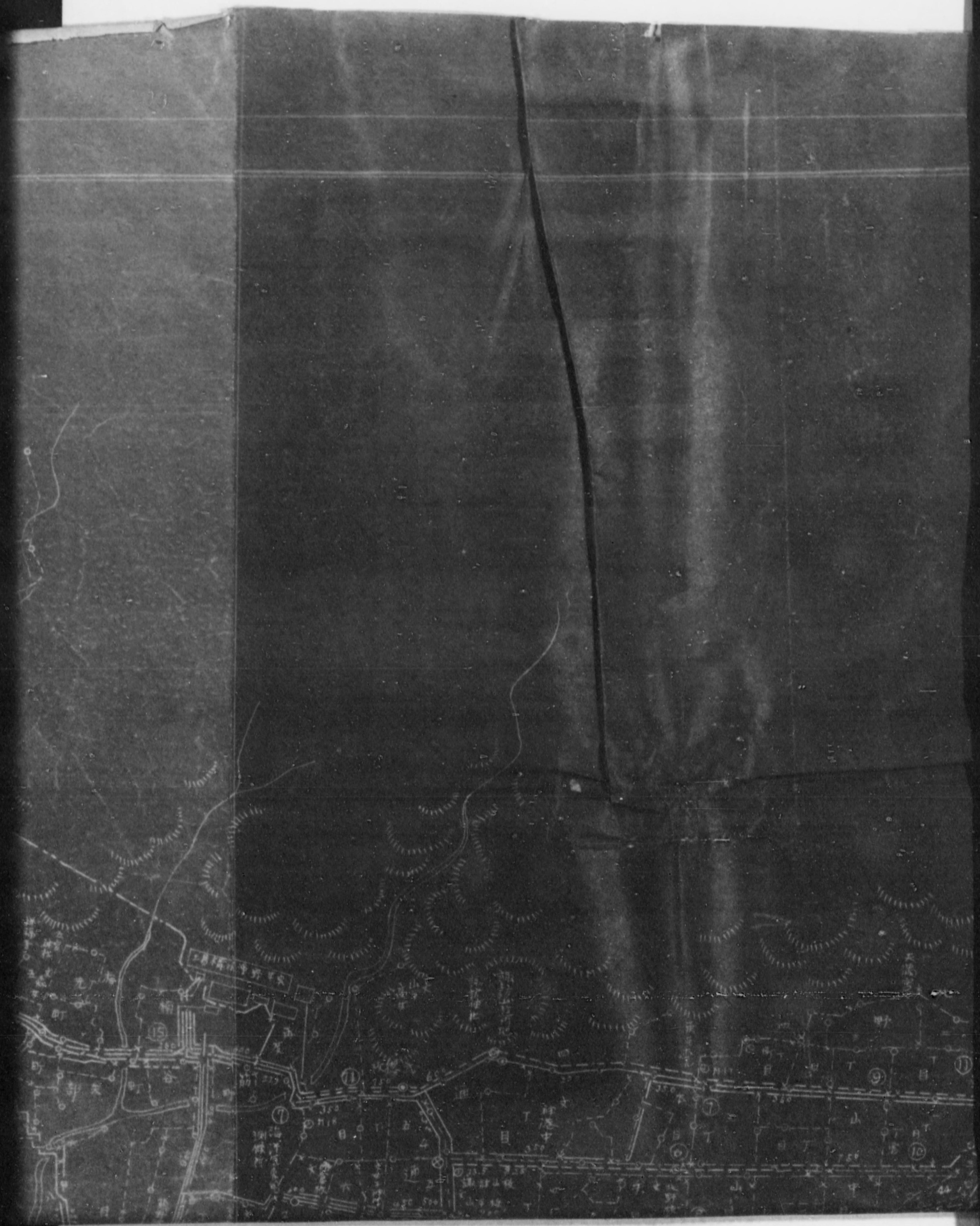

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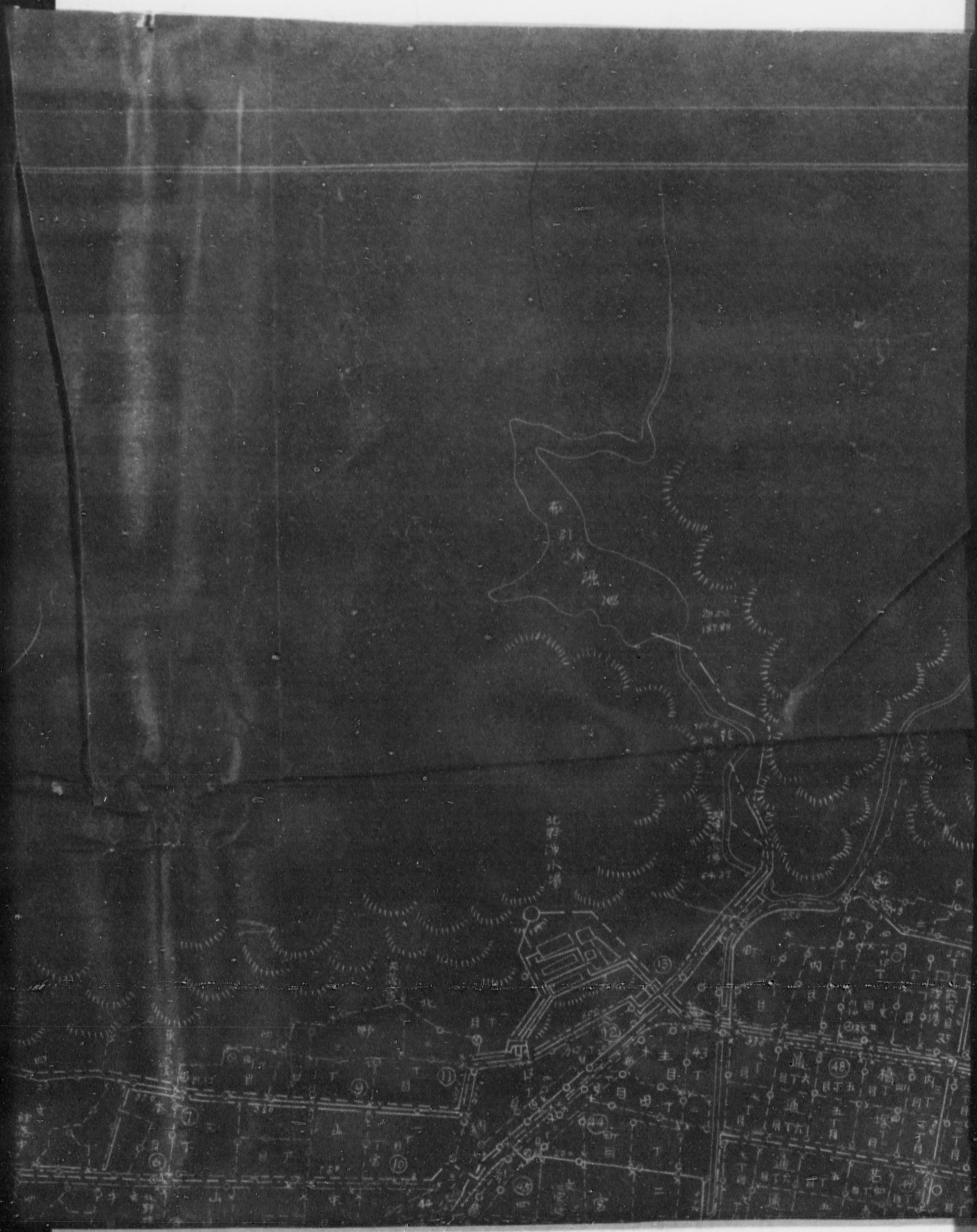

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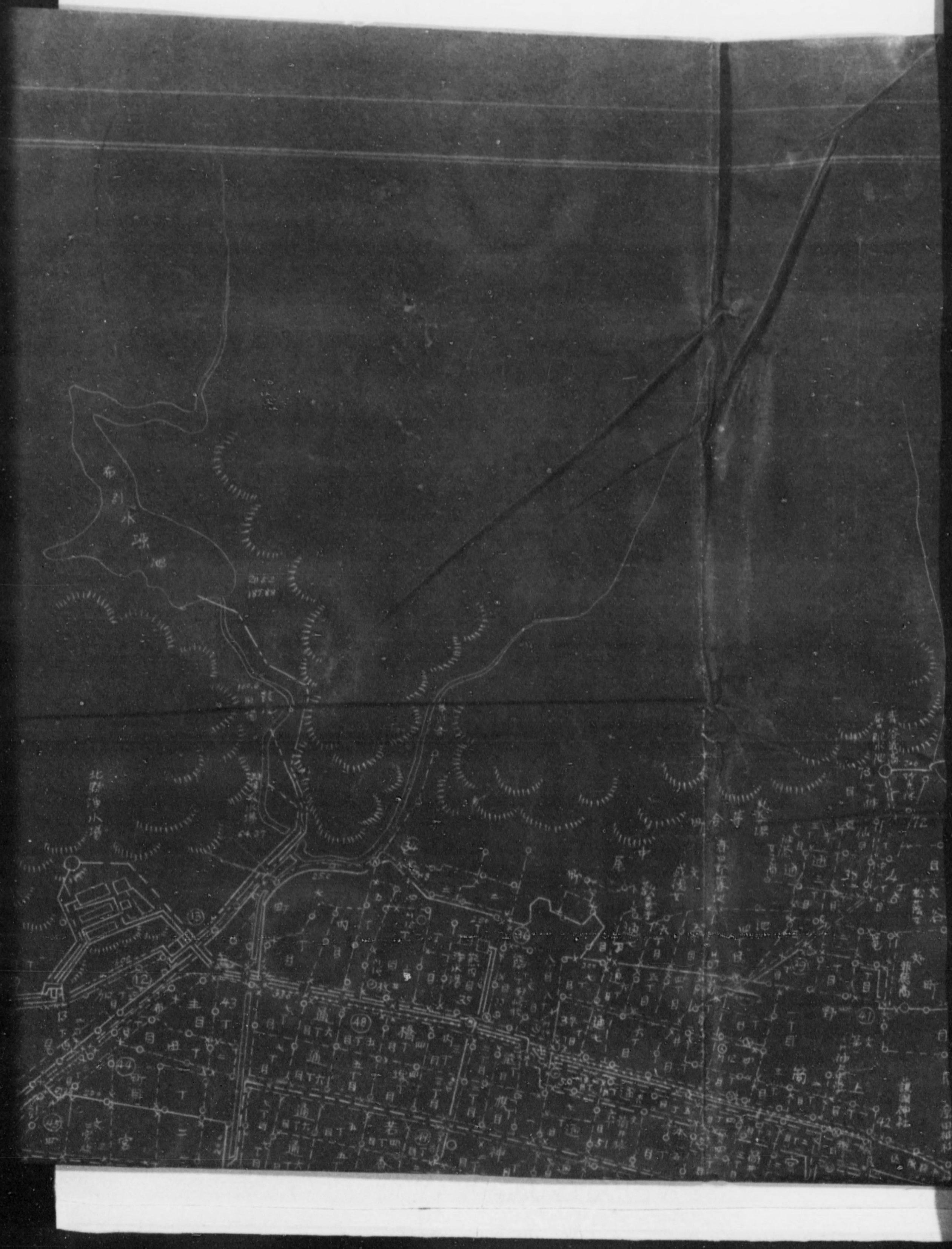

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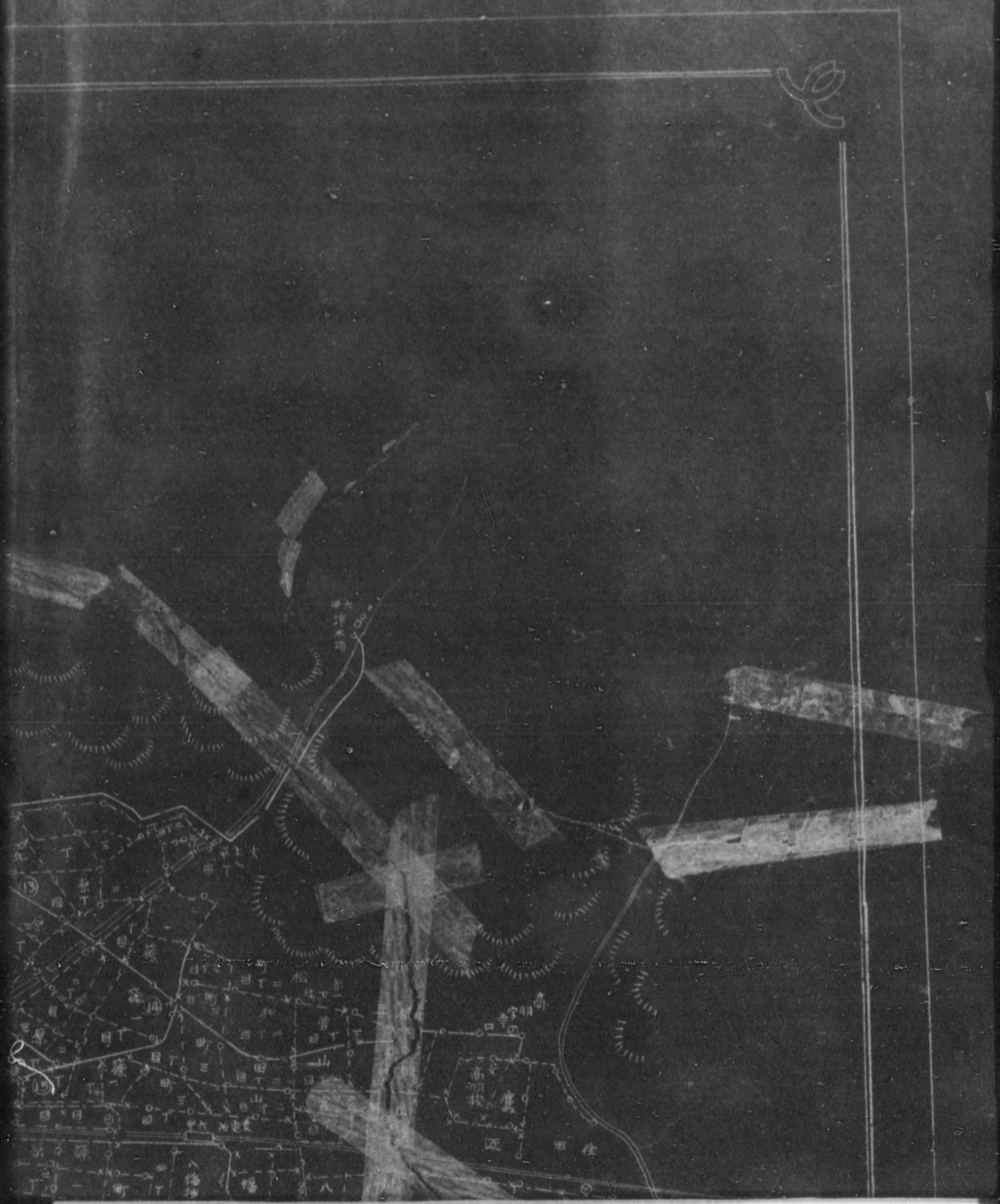

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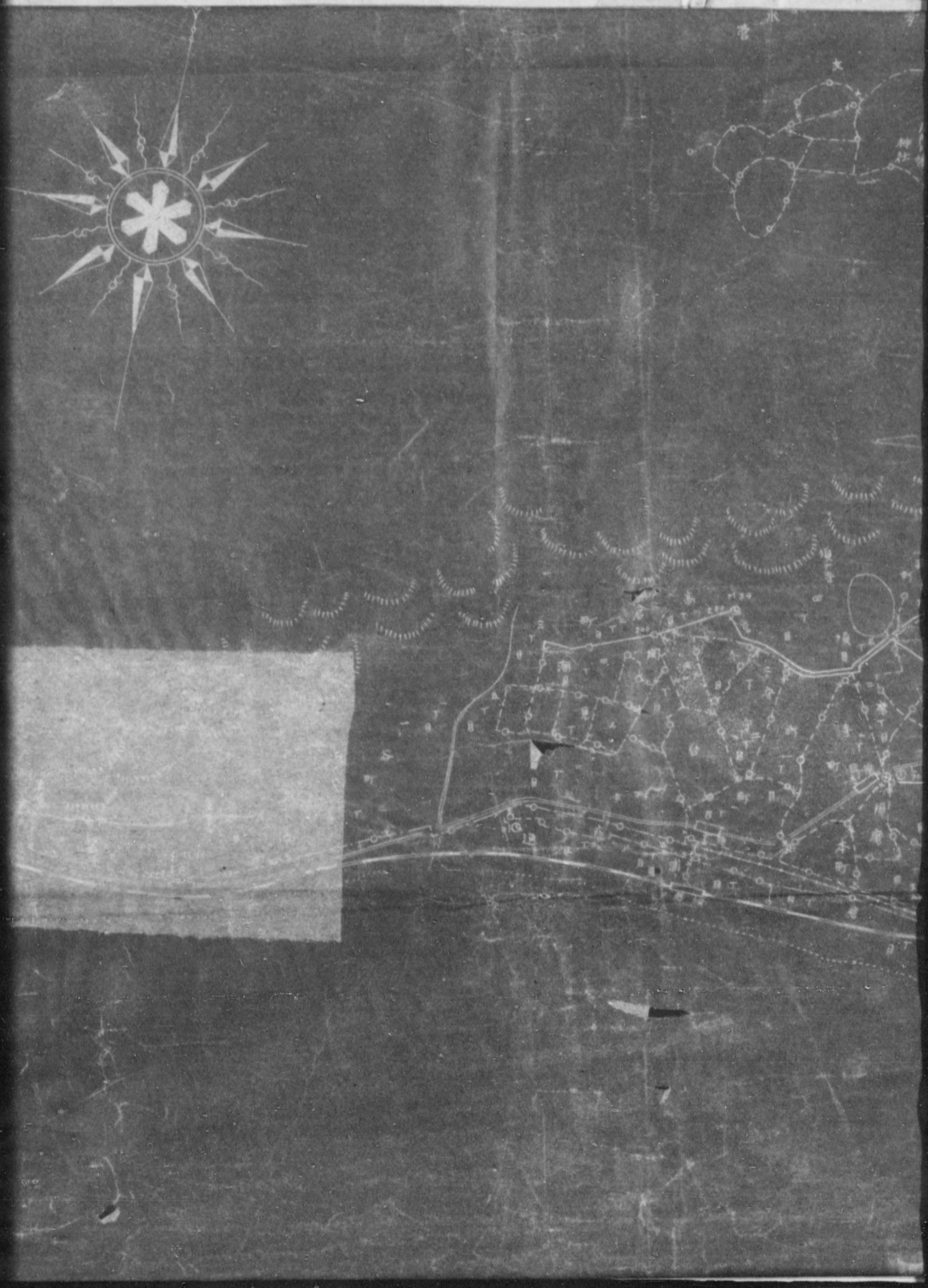

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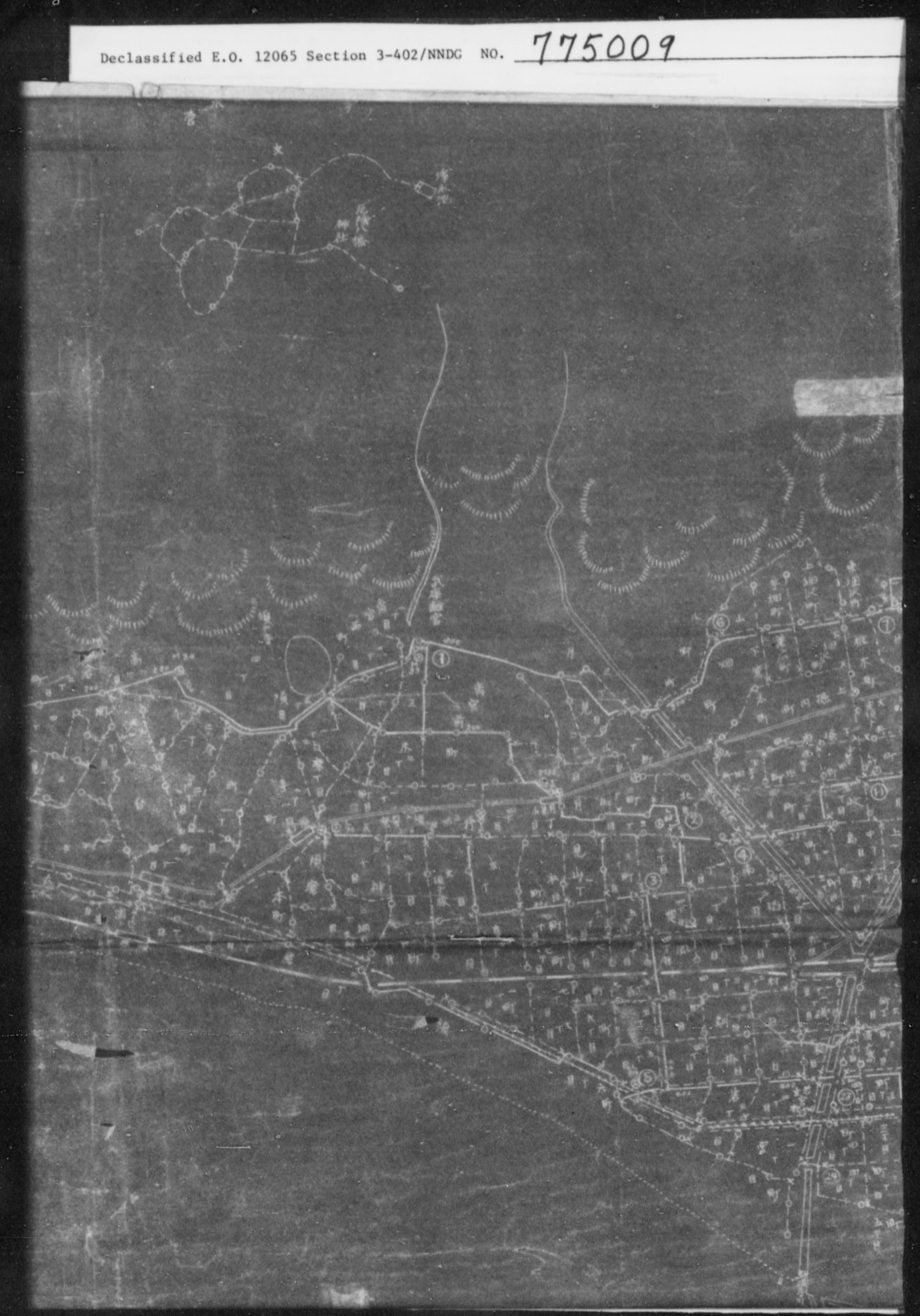

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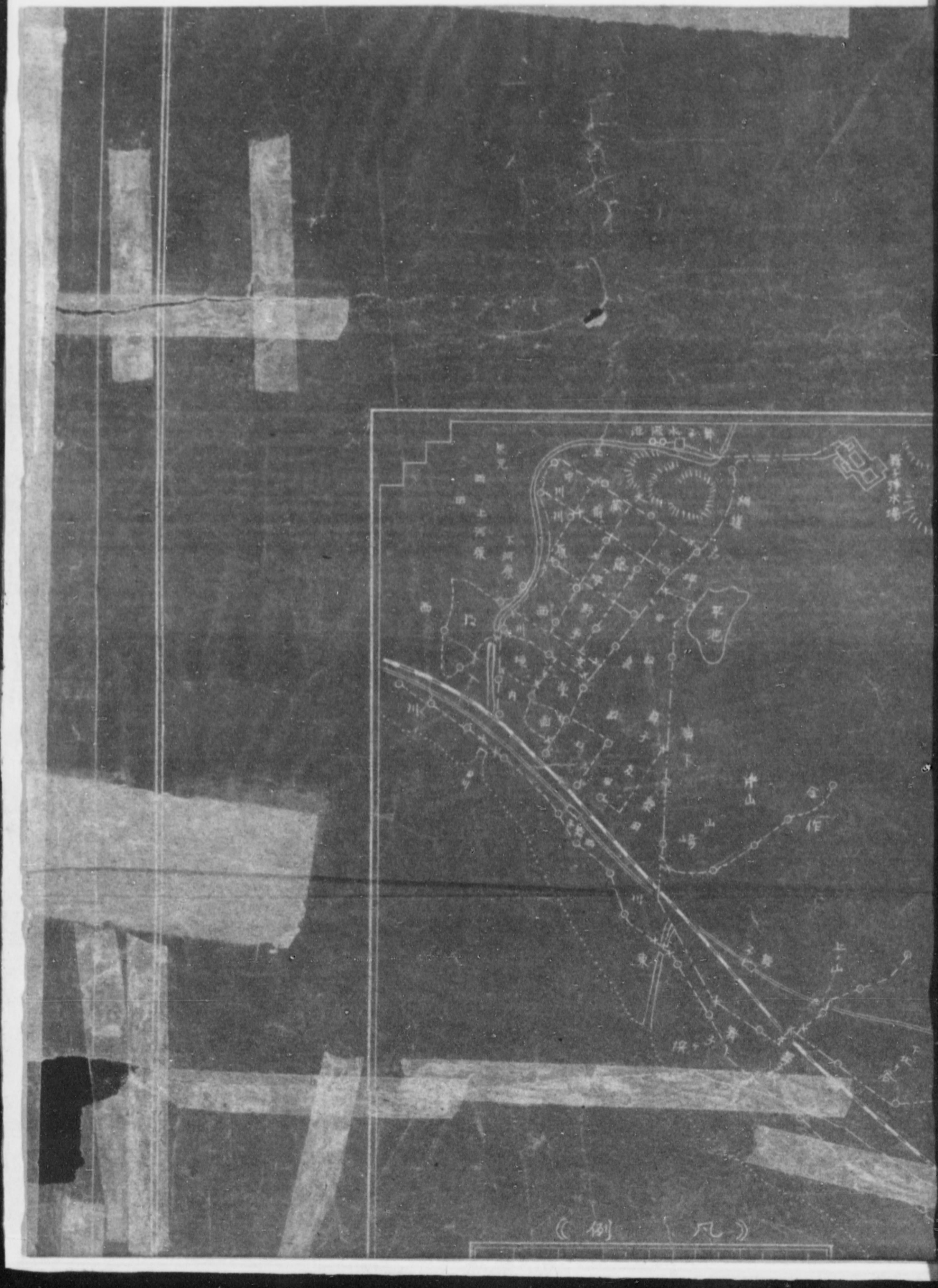

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埼玉県水道布設図

漏水調査係

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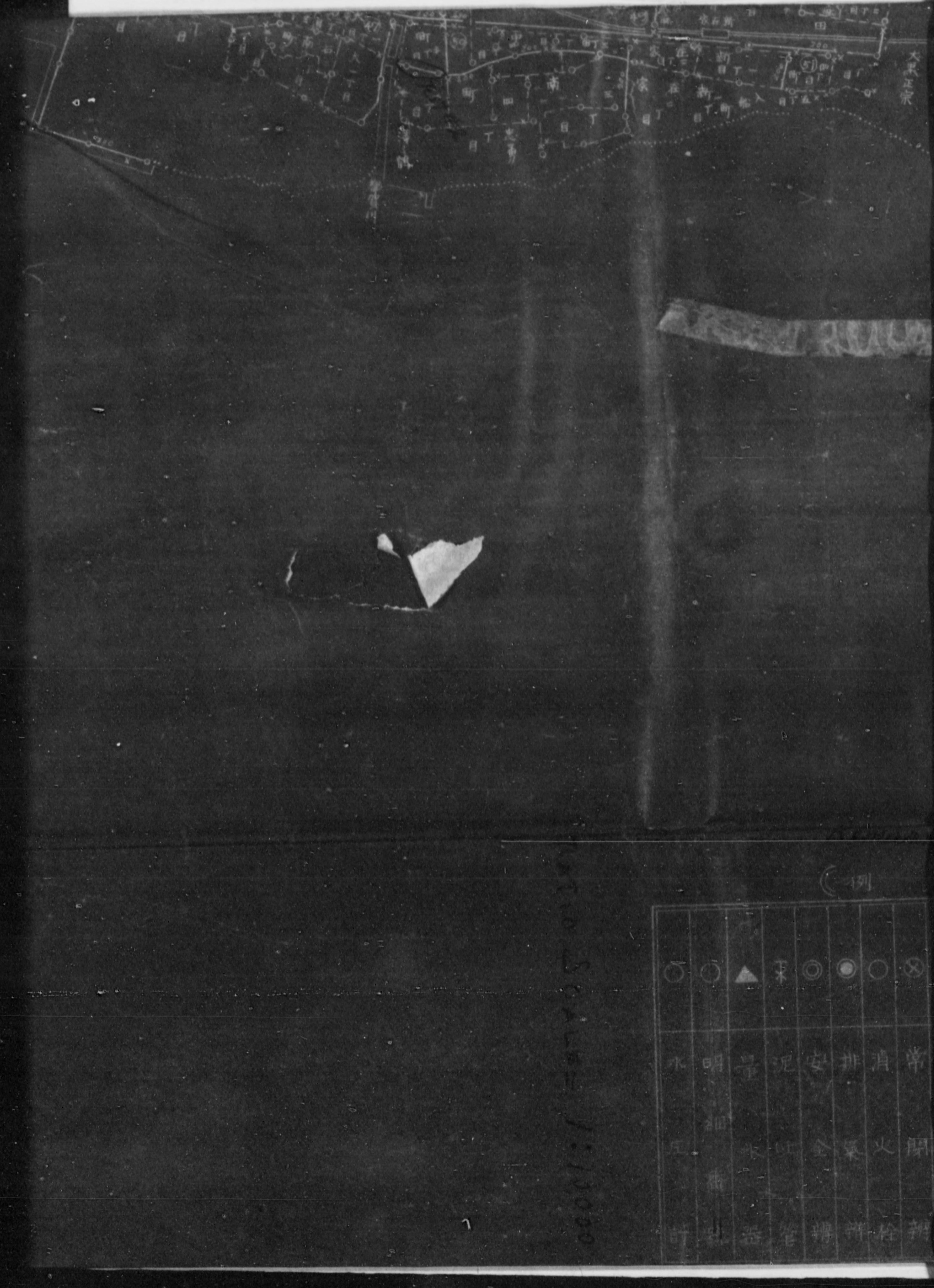

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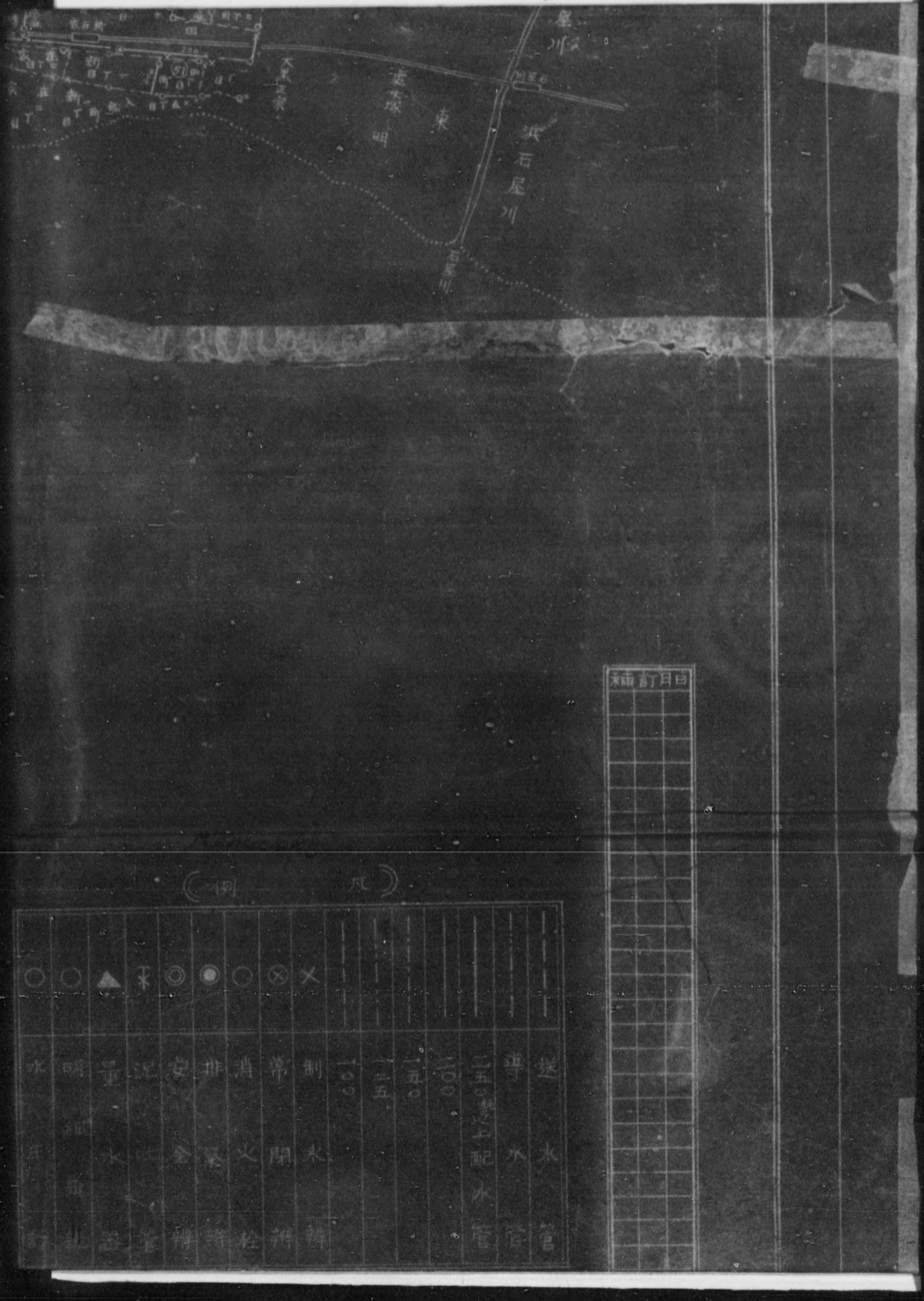

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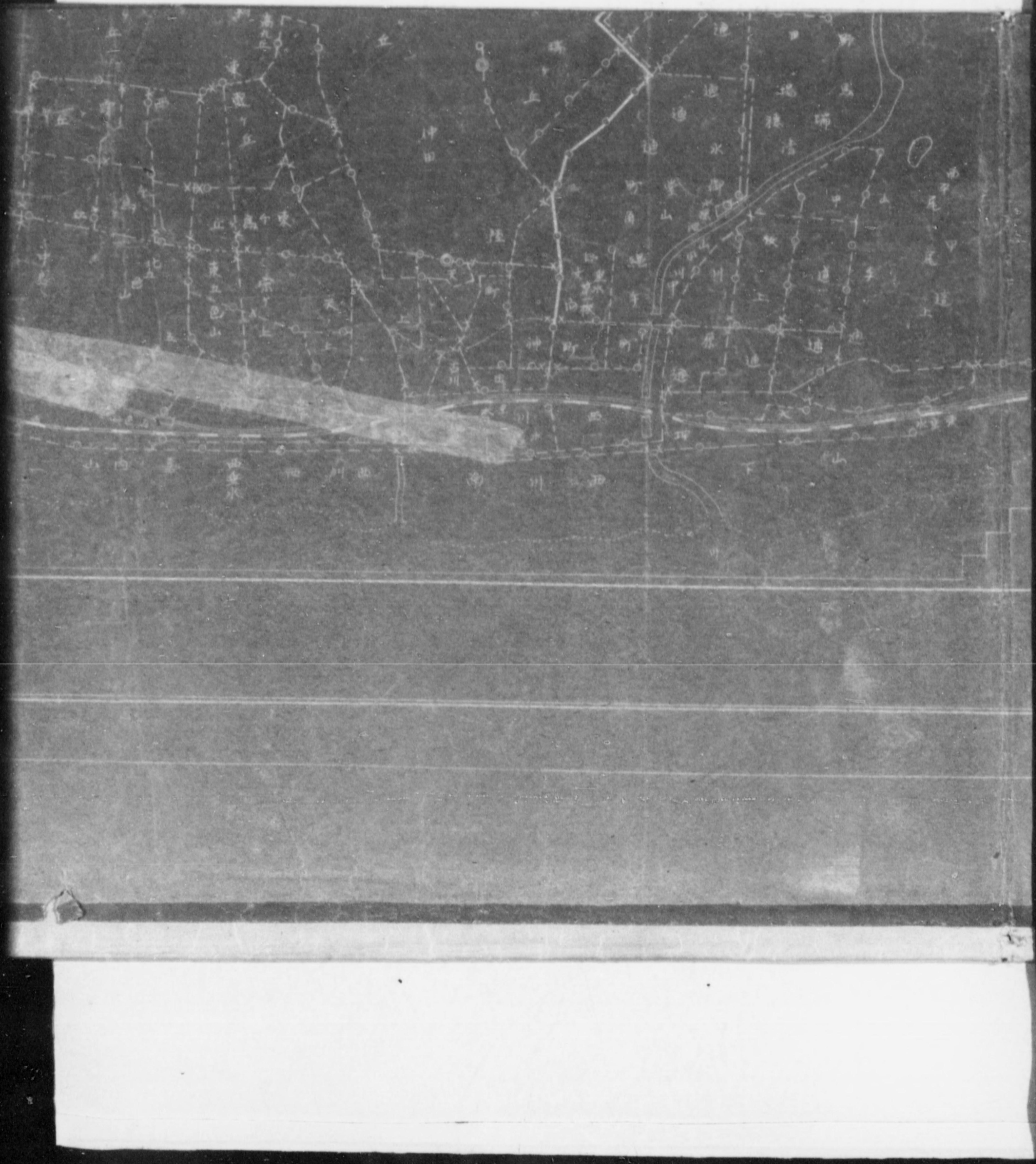

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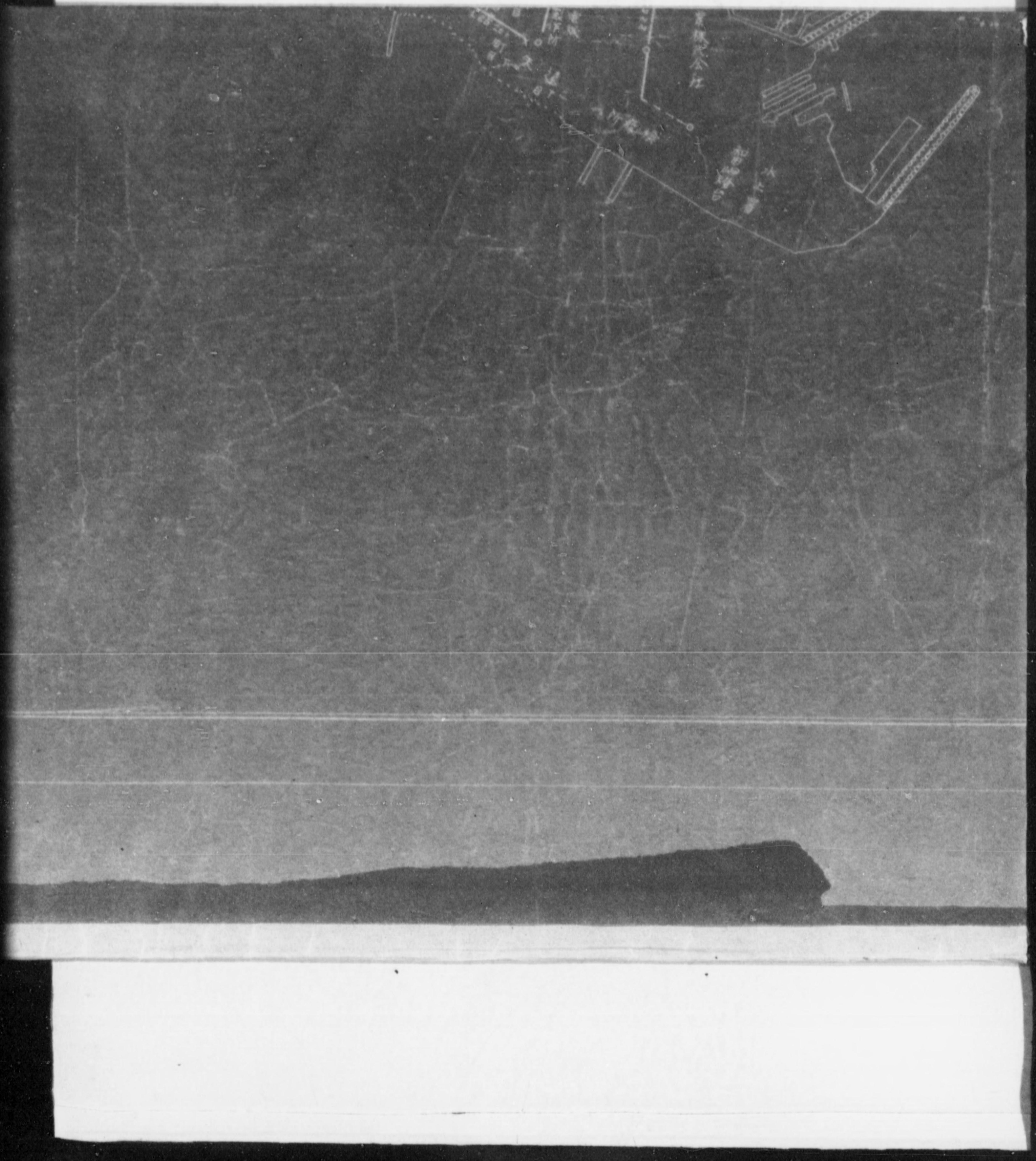

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ENCLOSURE "F"

Declassified E.O. 12065 Section 3-402/NNDG NO. 775009

GAT Furnace Data + Distribution Plant

Declassified E.O. 12065 Section 3-402/NNDG NO. 775009

1939

1939

2/
1947
8

1939

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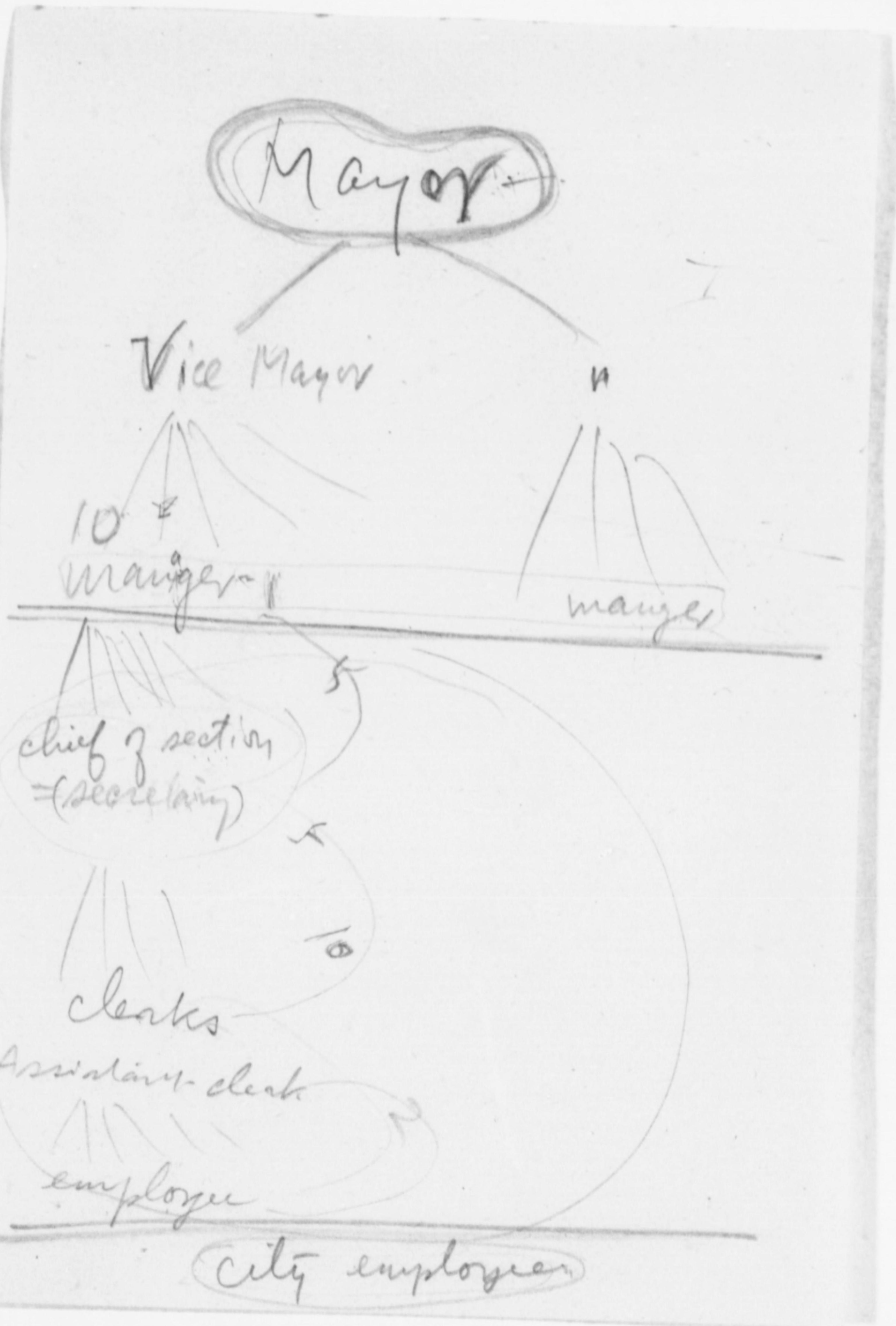

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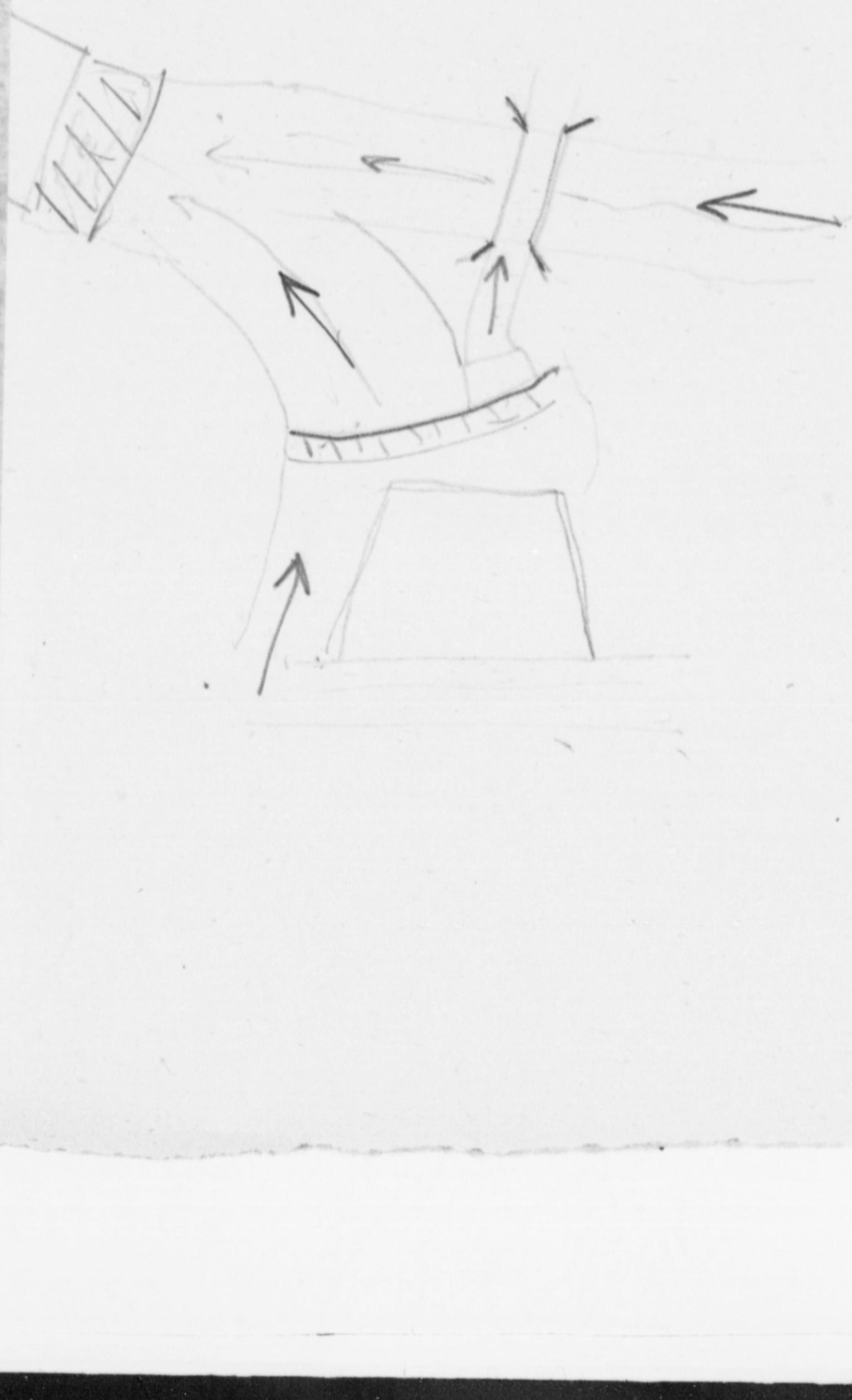

KOBE

	Ward name	Area	Population
1.	Nada		94.392
2.	Fukiai		32.309
3.	Ikuta		46.529
4.	Hyogo		98.876
5.	Nagata		149.681
6.	Suma		56.621
7.	Tarumi		44.765

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5.	Nagata	149,681
6.	Sima	56,621
7.	Tanumi	41,765
	total	520,173

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Fire Supt.	Court rank
" Inspector) =	Senior Official
" Engineers	1st rank
" Asst. Inspector) =	
" " Engineer	
" Sergeant	
(Plain) Fireman	7th "

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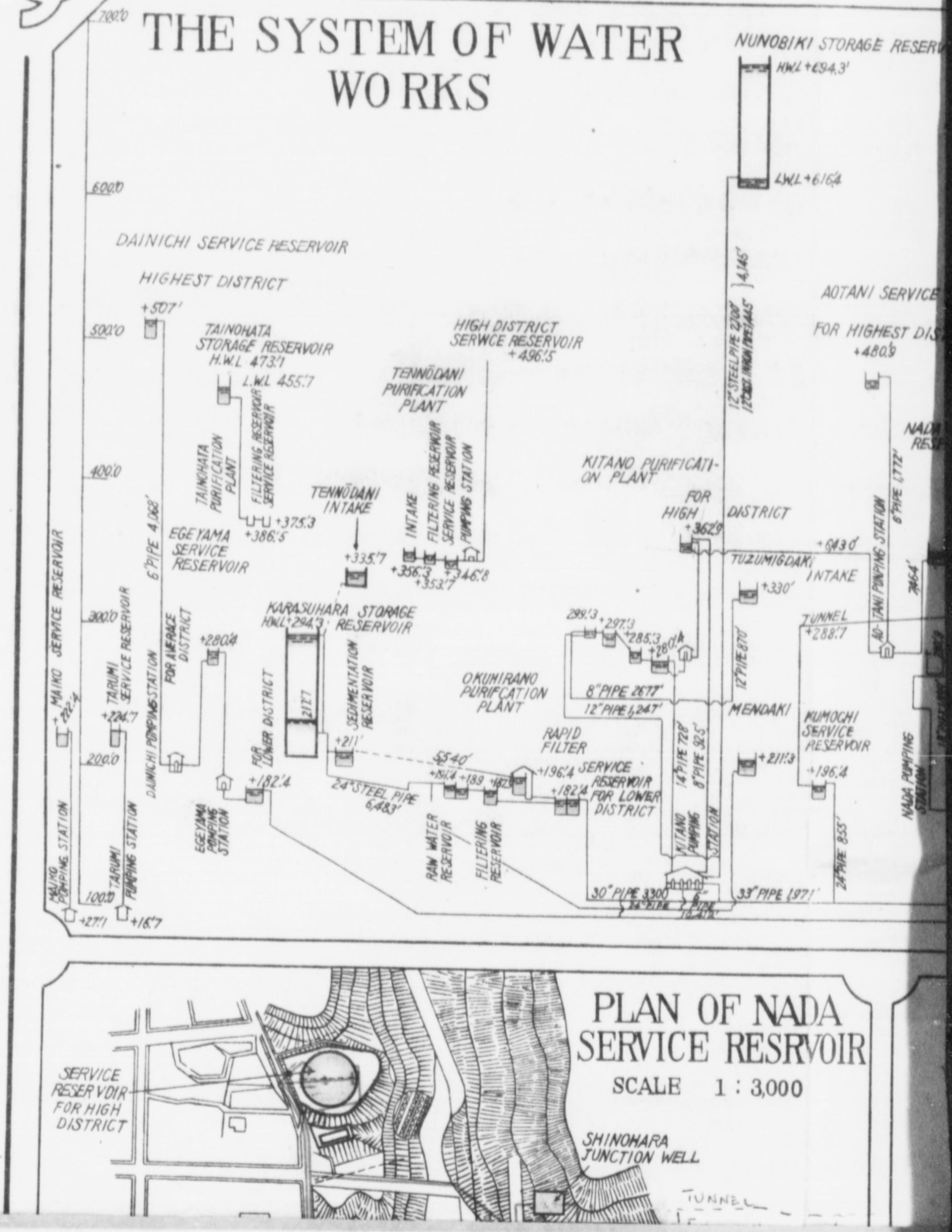
THE SYSTEM OF WATER WORKS



PLAN OF NADA SERVICE RESRVOIR

SCALE 1 : 3,000

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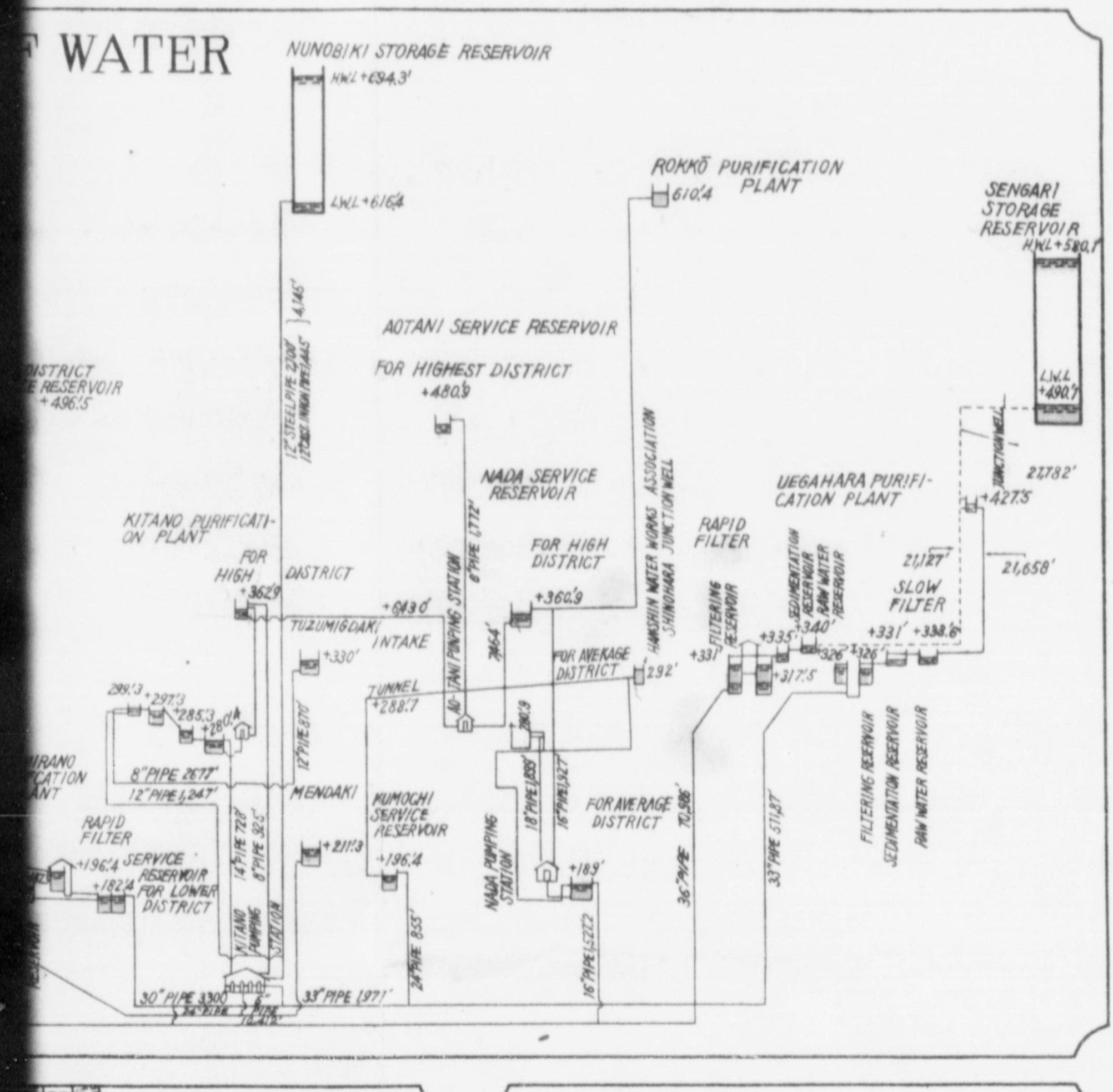
F WATER



PLAN OF K

DAM	MATERIAL	RUBBLE C
	HEIGHT (ft)	10
	LENGHT (ft)	40
RESERVOIR	CATCHMENT AREA (ft²)	212,70
	HIGH WATER AREA (ft)²	1,33
	EFFECTIVE DEPTH (ft)	7
	EFFECTIVE CAPACITY (GALLON)	23,00

PLAN OF NADA SERVICE RESRVOIR

SCALE 1 : 3,000

PLAN OF KUMOCHI SERVICE RESERVOIR

SCALE 1 : 3000

PLA

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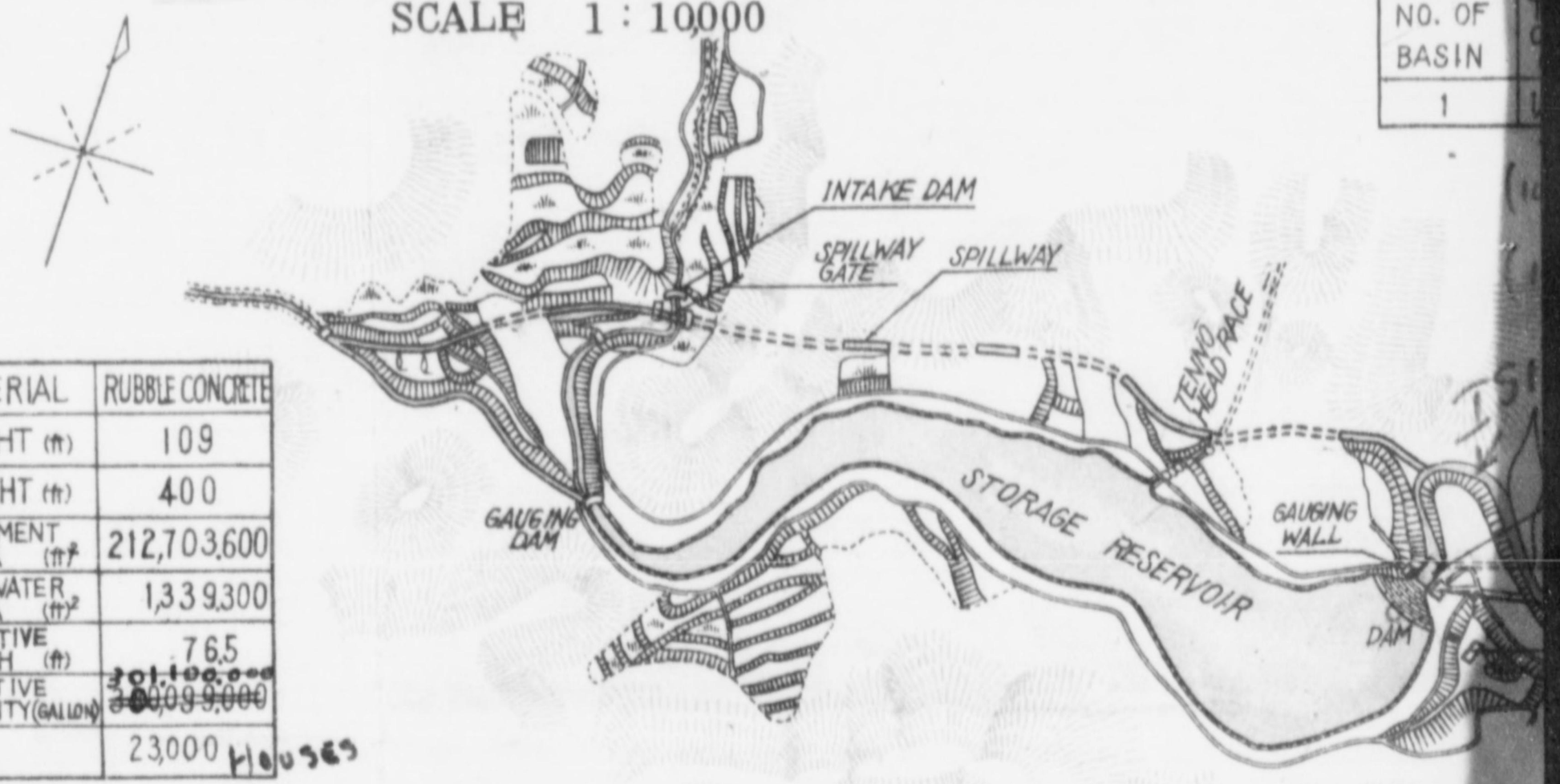
GENERAL VIEW

SENGARI STORAGE RESERVOIR
H.W.L +580.1'
L.W.L +490.7'
27,782'
+427.5
21,658'
JUNCTION WELL

PLAN OF KARASUHARA STORAGE RESERVOIR

SCALE 1 : 10,000

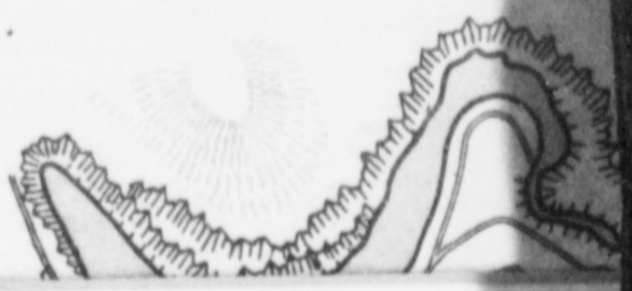


DAM	MATERIAL	RUBBLE CONCRETE
	HEIGHT (ft)	109
	LENGHT (ft)	400
RESERVOIR	CATCHMENT AREA (ft²)	212,703,600
	HIGH WATER AREA (ft²)	1,339,300
	EFFECTIVE DEPTH (ft)	76.5
	EFFECTIVE CAPACITY (GALLON)	~~300,099,000~~ 301,100,000
		23,000 HOUSES

NO. OF BASIN
1

PLAN OF NUNOBIKI STORAGE RESERVOIR

SCALE 1 : 7,000



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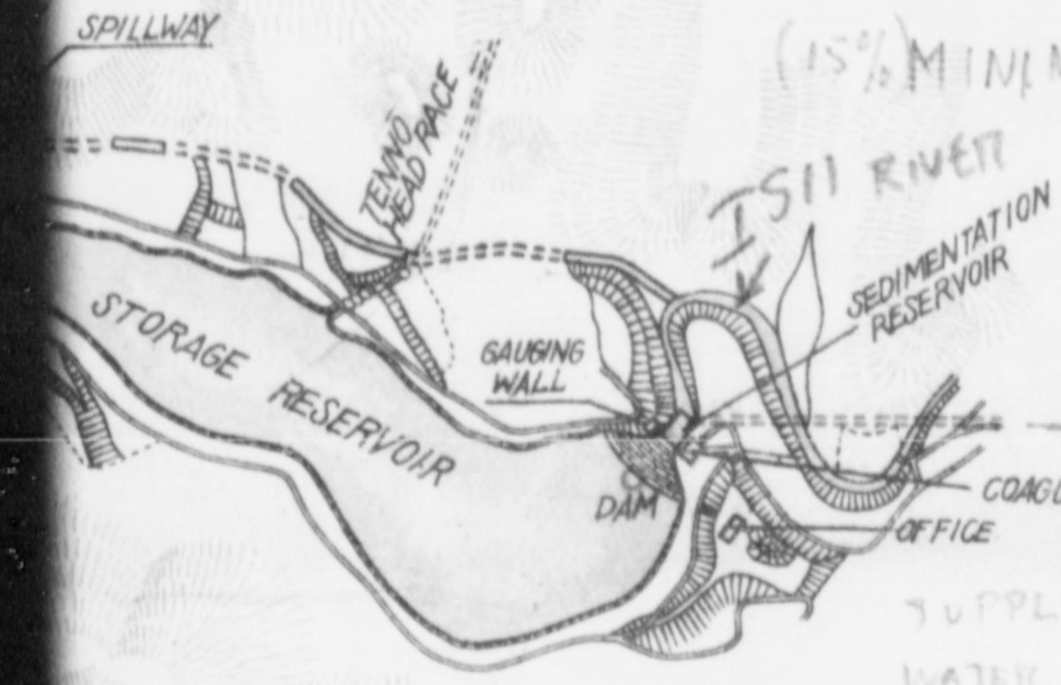
NERAL VIEW OF KŌBE CITY WATER W

RESERVOIR

SEDIMENTATION RESERVOIR					
NO. OF BASIN	TOTAL CAPACITY (GALLON)	DIMENTION(ft)		DEPTH (ft)	
		LENGTH	WIDTH	TOTAL DEPTH	EFFECTIVE DEPTH
1	1,025,300	198.8	61.7	13.1	11.8

DAM



(100%) MAXIMUM - JUNE-JULY

(15%) MINIMUM - MARCH & AUG.

SUPPLIES 10% OF WATER NEEDS OF KOBE

PLAN OF SENGARI STORAG

SCALE 1:20,000

(100%) MAXIMUM - June, July

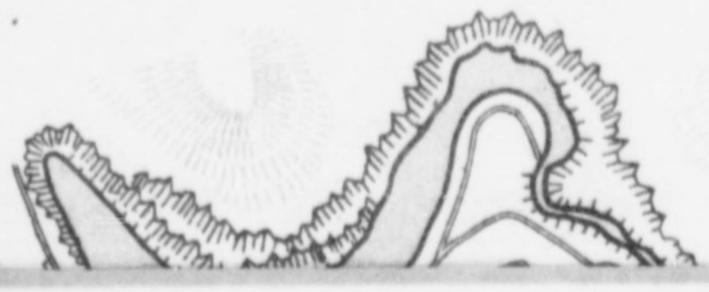
FOR SA

(50%) MINIMUM - March & Aug

SUPPLIES 50% OF WATER NEED

DAM	MATERIAL	RUBB
	HEIGHT (ft)	
	LENGTH (ft)	
RESERVOIR	CATCHMENT AREA $(ft)^2$	1,01
	HIGHWATER AREA $(ft)^2$	1
	EFFECTIVE DEPTH (ft)	
	EFFECTIVE CAPACITY (GALLON)	3,06
NOMBER OF SUPPLY DOMESTIC		

GE RESERVOIR



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TY WATER WORKS

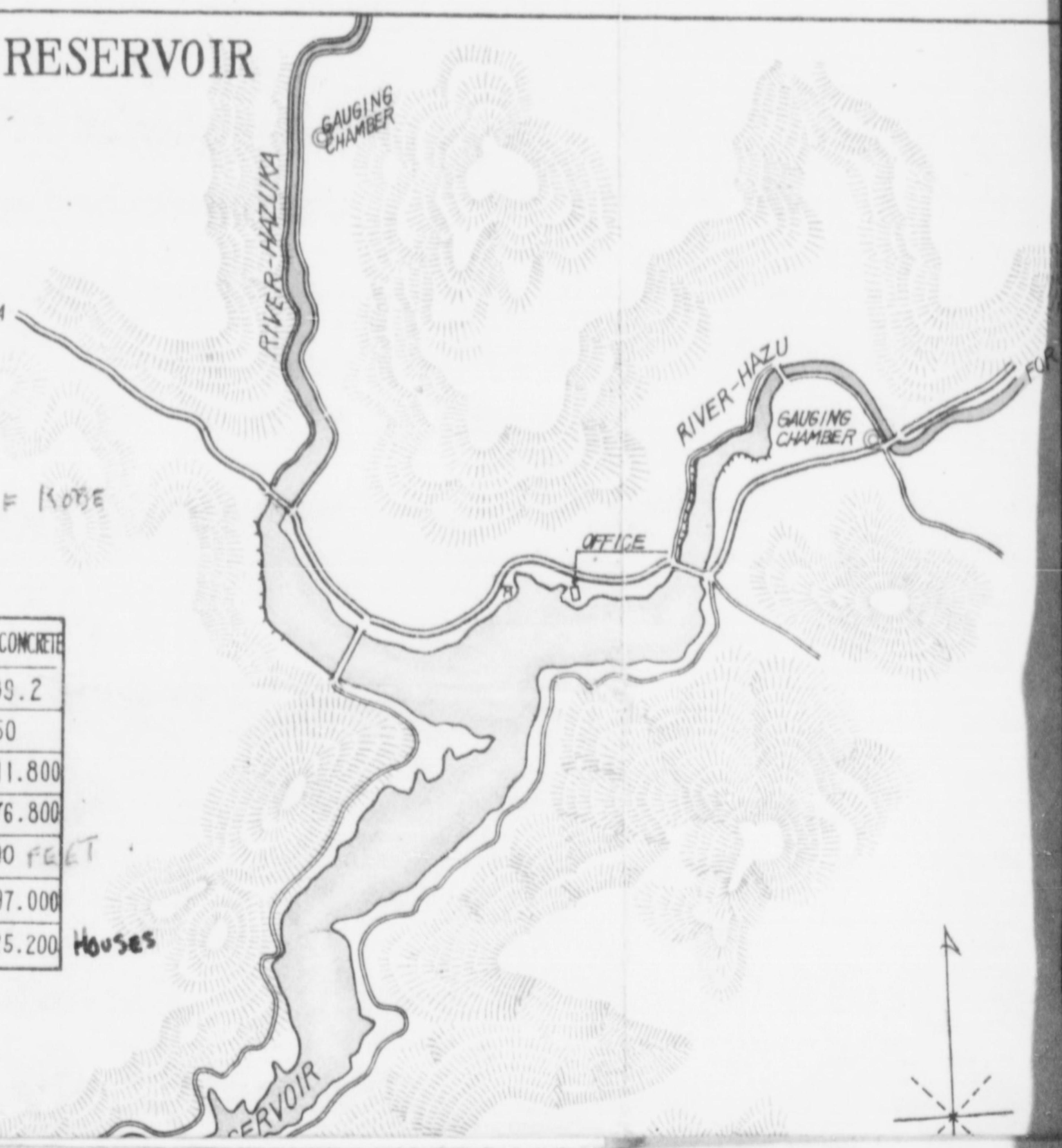
AN OF SENGARI STORAGE RESERVOIR

SCALE 1:20,000

AXIMUM - June, July

NIMUM - March & Aug.

PPLIES 50% OF WATER NEEDS OF KOBE



DAM	MATERIAL	RUBBLE CONCRETE
	HEIGHT (ft)	139.2
	LENGTH (ft)	350
RESERVOIR	CATCHMENT AREA (ft)²	1,017,211.800
	HIGHWATER AREA (ft)²	12,076.800
	EFFECTIVE DEPTH (ft)	90 FEET
	EFFECTIVE CAPACITY (GALLONS)	3,067,297.000
NOMBER OF SUPPLY DOMESTIC		125.200 HOUSES

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GENERA

SCALE 1

TENNŌ. KARASUHARA HEAD RACE

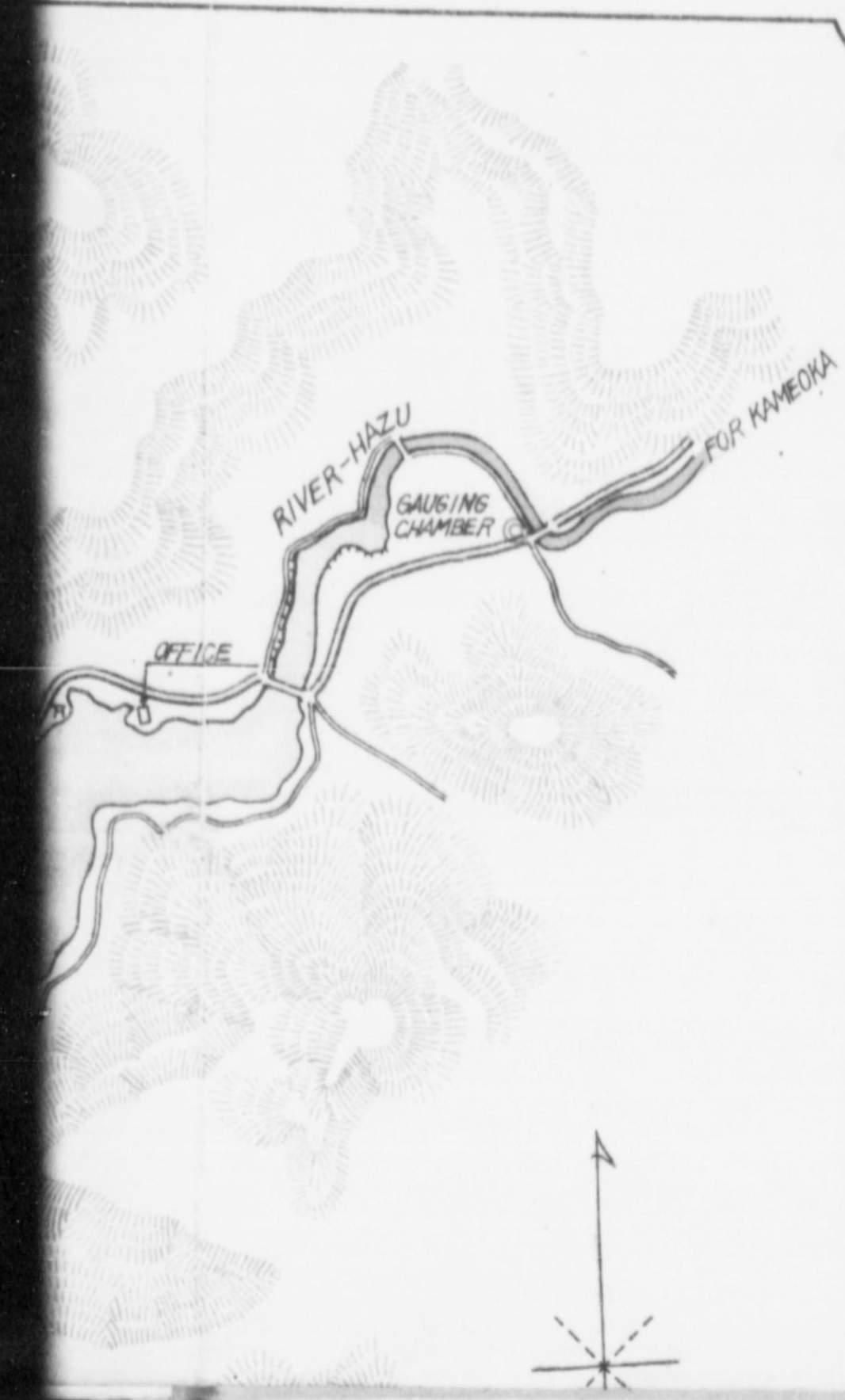
	QUALITY	NO. OF PIECES	DISTANCE (ft)
FROM TENNŌ INTAKE TO KARASUHARA STORAGE RESERVOIR	CONDUIT	4	305.1
	TUNNEL	2	3,244.7
	OPEN CHANNEL	2	410.1
	TOTAL		3,959.9
FROM KARASUHARA STORAGE RESERVOIR TO OKUHIRANO PURIFICATION PLANT	CONDUIT	2	370.7
	TUNNEL	3	3,904.2
	CAST IRON	28 INCH	1,312.3
	〃	24 INCH	6,482.9
	TOTAL		12,070.1

NUNOBIKI HEAD RACE

		DIAMETER	DISTANCE (ft)
NUNOBIKI FROM STORAGE RESERVOIR TO KITANO PURIFICATION PLANT		12 INCH	4,146.9
		〃	1,246.7
		TOTAL	5,393.6
TUZUMI-DAKI FROM INTAKE TO KITANO PURIFICATION PLANT		12 INCH	869.4
		8 INCH	2,673.9
		TOTAL	3,543.3
MENDAKI FROM INTAKE TO OKUHIRANO PURIFICATION PLANT		24 INCH	10,413.3
		TOTAL	10,413.3

SENGARI HEAD RACE

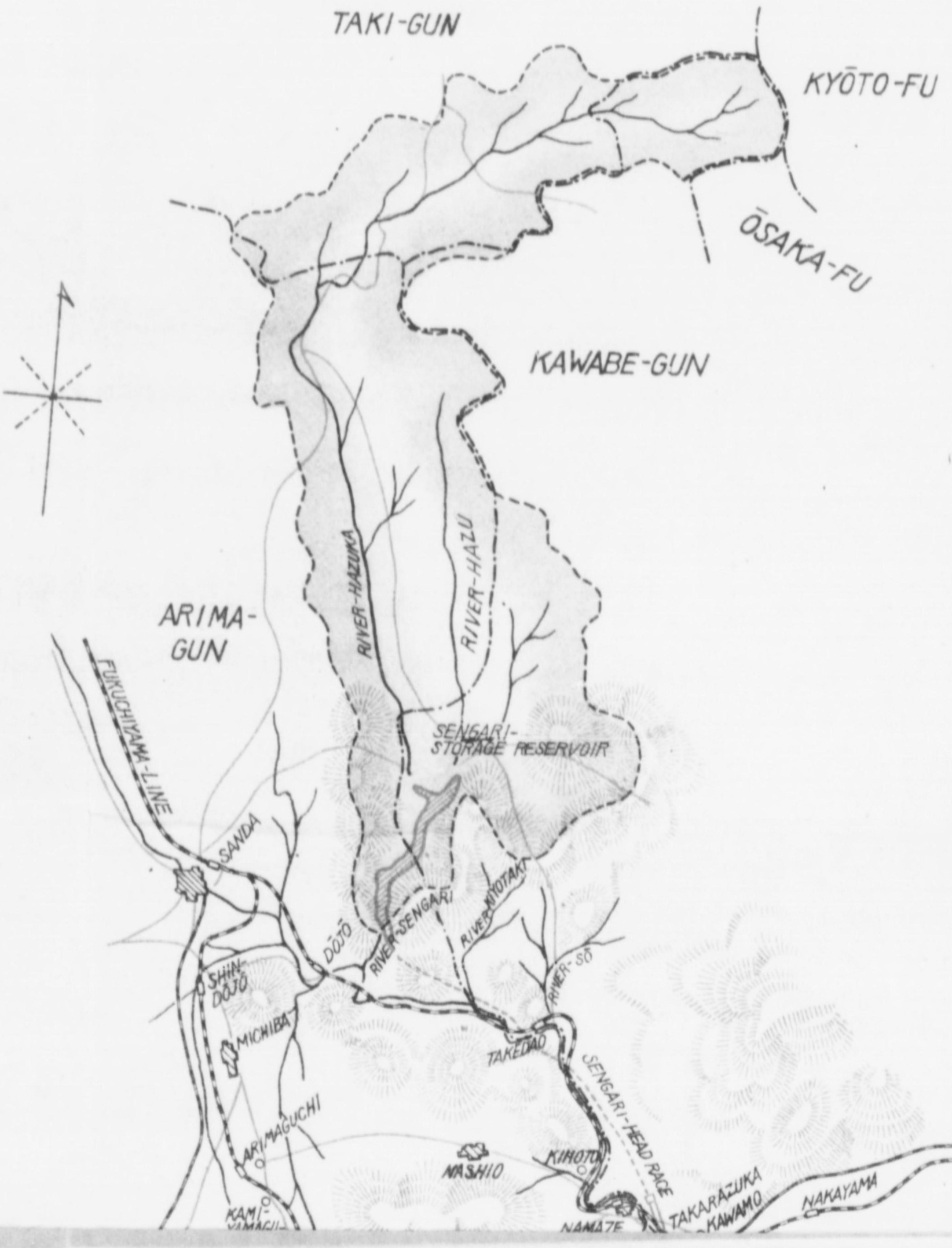
	QUALITY	NO. OF PIECES	DISTANCE (ft)
SENGARI STORAGE RESERVOIR TO NO.12 JUNCTION WELL	CONDUIT	8	994.1
	TUNNEL	12	25,888.8
	JUNCTION WELL	8	68.9
	CAST IRON	45 INCH	928.5
	〃	30 INCH	826.8



Declassified E.O. 12065 Section 3-402/NNDG NO. 775009

GENERAL PLAN

SCALE 1:145,000



A HEAD RACE

PIECES	DISTANCE(ft)
4	305.1
2	3,244.7
2	410.1
	3,959.9
2	370.7
3	3,904.2
8 INCH	1,312.3
4 INCH	6,482.9
	12,070.1

RACE

DISTANCE (ft)
4,146.9
1,246.7
5,393.6
869.4
2,673.9
3,543.3
10,413.3
10,413.3

D RACE

PIECES	DISTANCE (ft)
	994.1
	25,888.8
	68.9
INCH	928.5
INCH	826.8

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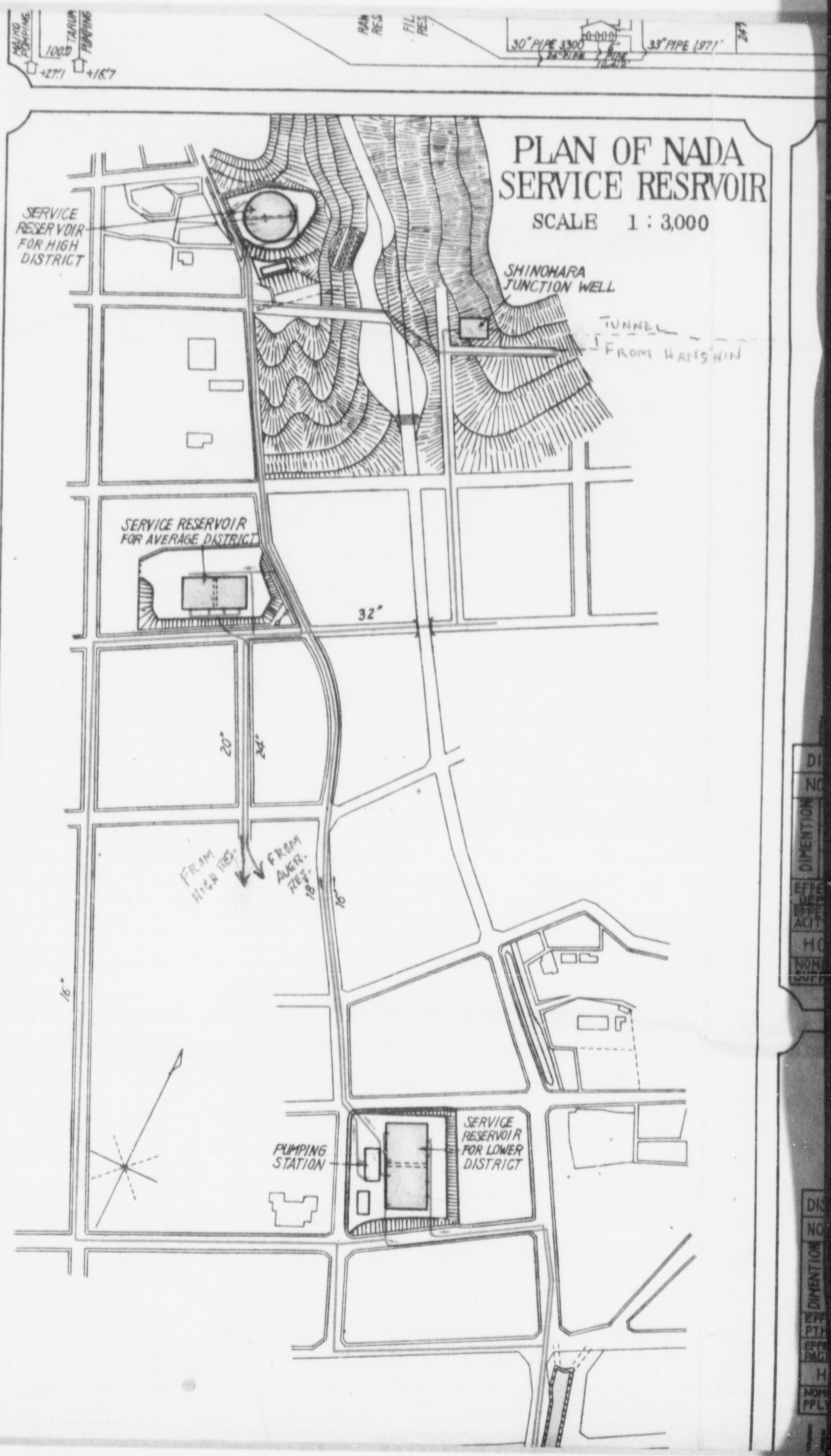

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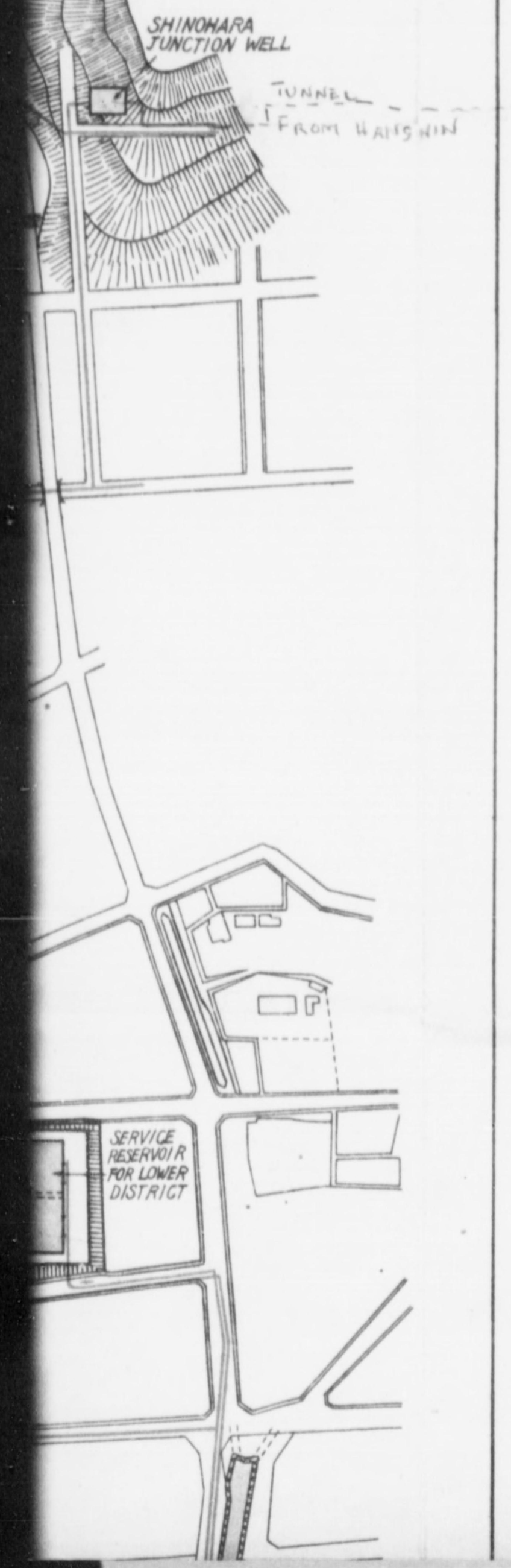
30" PIPE 3300'
33" PIPE 1977'
24"
16" PIPE

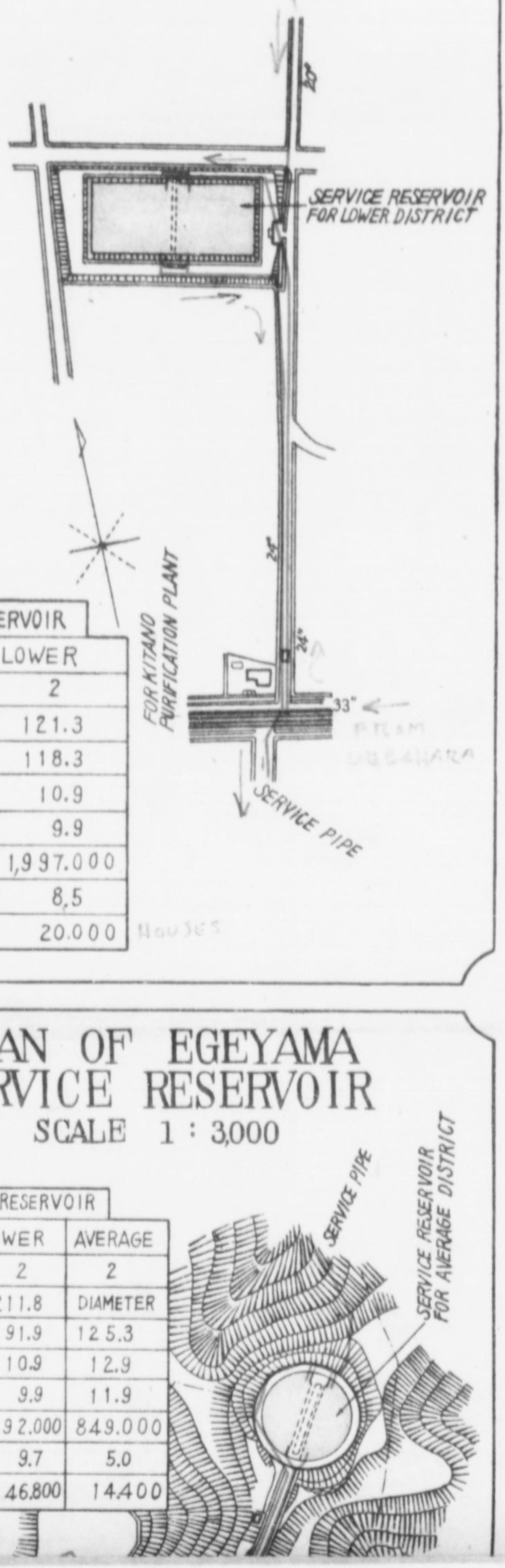
PLAN OF NADA SERVICE RESRVOIR

SCALE 1 : 3,000



PLAN OF KUMOCHI SERVICE RESERVOIR

SCALE 1 : 3000



SERVICE RESERVOIR		
DISTRICT		LOWER
NO.OF BASIN		2
DIMENTION	LENGTH (ft)	121.3
	WIDTH (ft)	118.3
	DEPTH (ft)	10.9
EFFECTIVE DEPTH (ft)		9.9
EFFECTIVE CAPACITY (GALLON)		1,997.000
HOUR		8,5
NOMBER OF SUPPLY DOMESTIC		20.000

PLA

DAM	MATERIAL	RUBBLE CO
	HEIGHT (ft)	10
	LENGTH (ft)	3
RESERVOIR	CATCHMENT AREA (ft)²	114,9
	HIGH WATER AREA (ft)²	6
	EFFECTIVE DEPTH (ft)	
	EFFECTIVE CAPACITY (GALLON)	
NOMBER OF SUPPLY DOMESTIC		13,0

PLAN OF EGEYAMA SERVICE RESERVOIR

SCALE 1 : 3,000

SERVICE RESERVOIR			
DISTRICT		LOWER	AVERAGE
NO.OF BASIN		2	2
DIMENTION	LENGTH (ft)	211.8	DIAMETER
	WIDTH (ft)	191.9	125.3
	DEPTH (ft)	10.9	12.9
EFFECTIVE DEPTH (ft)		9.9	11.9
EFFECTIVE CAPACITY (GALLON)		5,292.000	849.000
HOUR		9.7	5.0
NOMBER OF SUPPLY DOMESTIC		46.800	14.400

PLAN OF

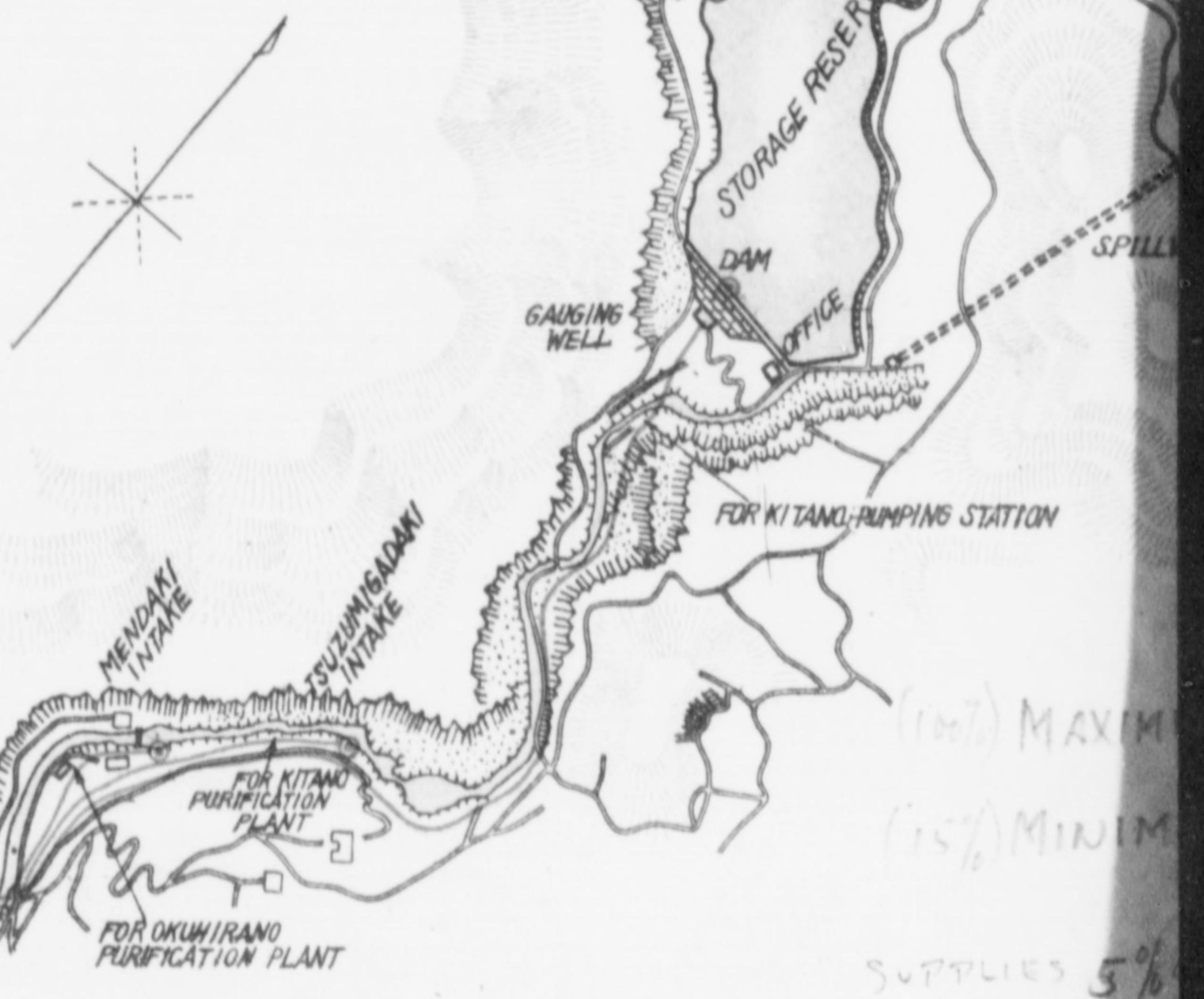
Declassified E.O. 12065 Section 3-402/NNDG NO. 775009

23,000 Houses

PLAN OF NUNOBIKI STORAGE RESERVOIR

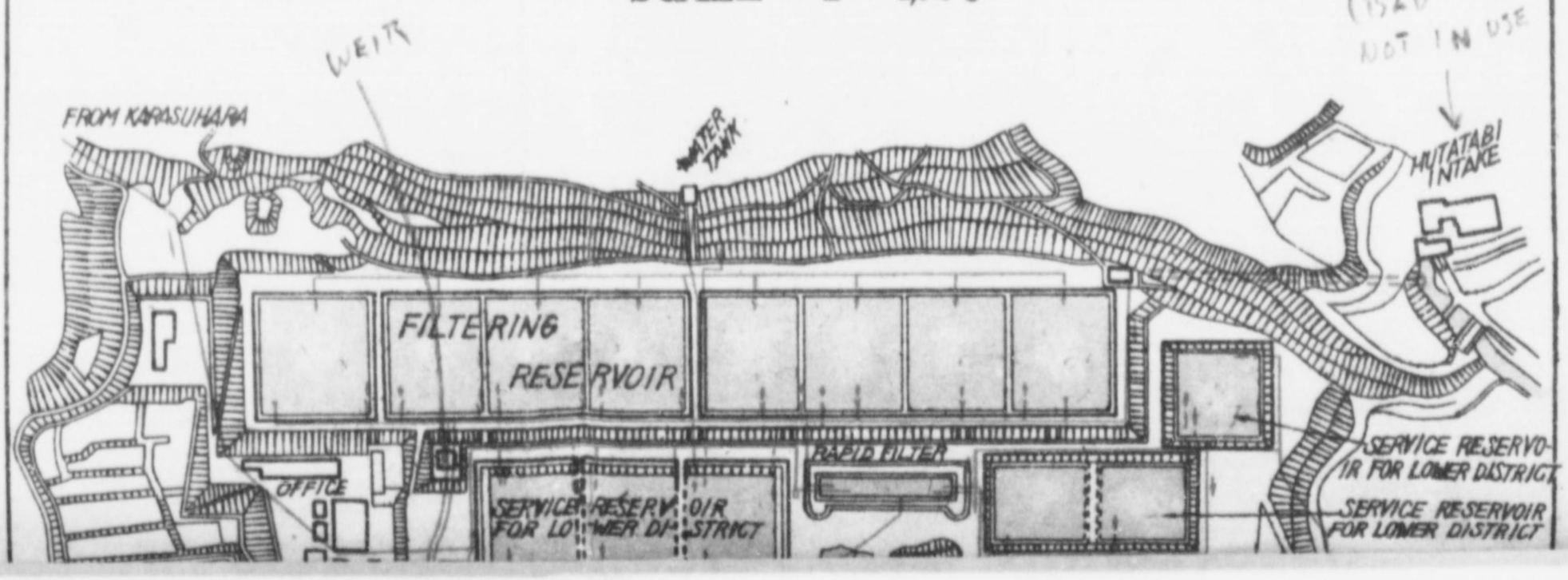
SCALE 1 : 7,000

DAM	MATERIAL	RUBBLE CONCRETE
	HEIGHT (ft)	109.3
	LENGTH (ft)	361.9
RESERVOIR	CATCHMENT AREA (ft)²	114,950,900
	HIGH WATER AREA (ft)²	608,600
	EFFECTIVE DEPTH (ft)	78
	EFFECTIVE CAPACITY (GALLON)	~~132,000,000~~ ~~200,661,800~~
NUMBER OF SUPPLY DOMESTIC		13,000 Houses



PLAN OF OKUHIRANO PURIFICATION PLANT

SCALE 1 : 3,000



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WATER NEEDS OF KOBE

RAGE RESERVOIR

00

(1%) MAXIMUM - June, July

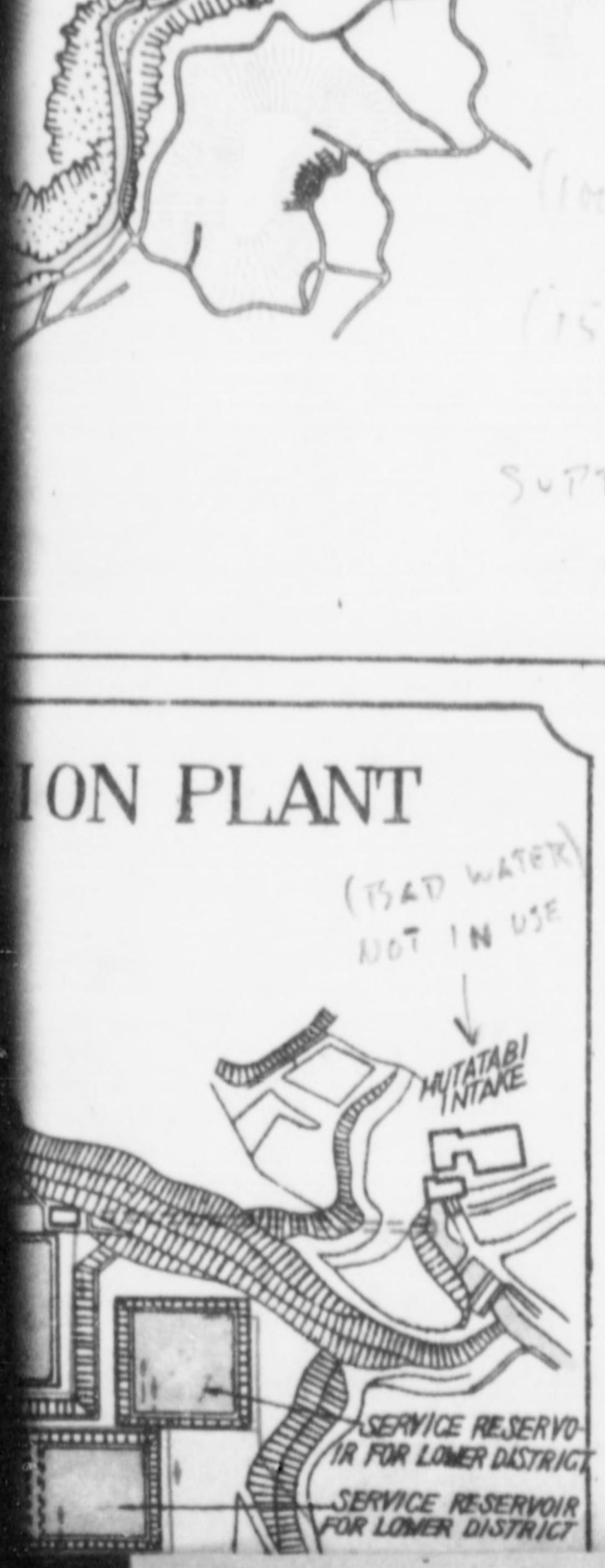
(15%) MINIMUM - March + Aug.

SUPPLIES 5% OF WATER NEEDS OF KOBE

RESERVOIR DA	
	HEIGHT (ft)
	LENGTH (ft)
	CATCHMENT AREA (ft)
	HIGHWATER AREA (ft)
	EFFECTIVE DEPTH (ft)
	EFFECTIVE CAPACITY (GAL)
NOMBER OF SUPPLY DOMESTIC	

ION PLANT

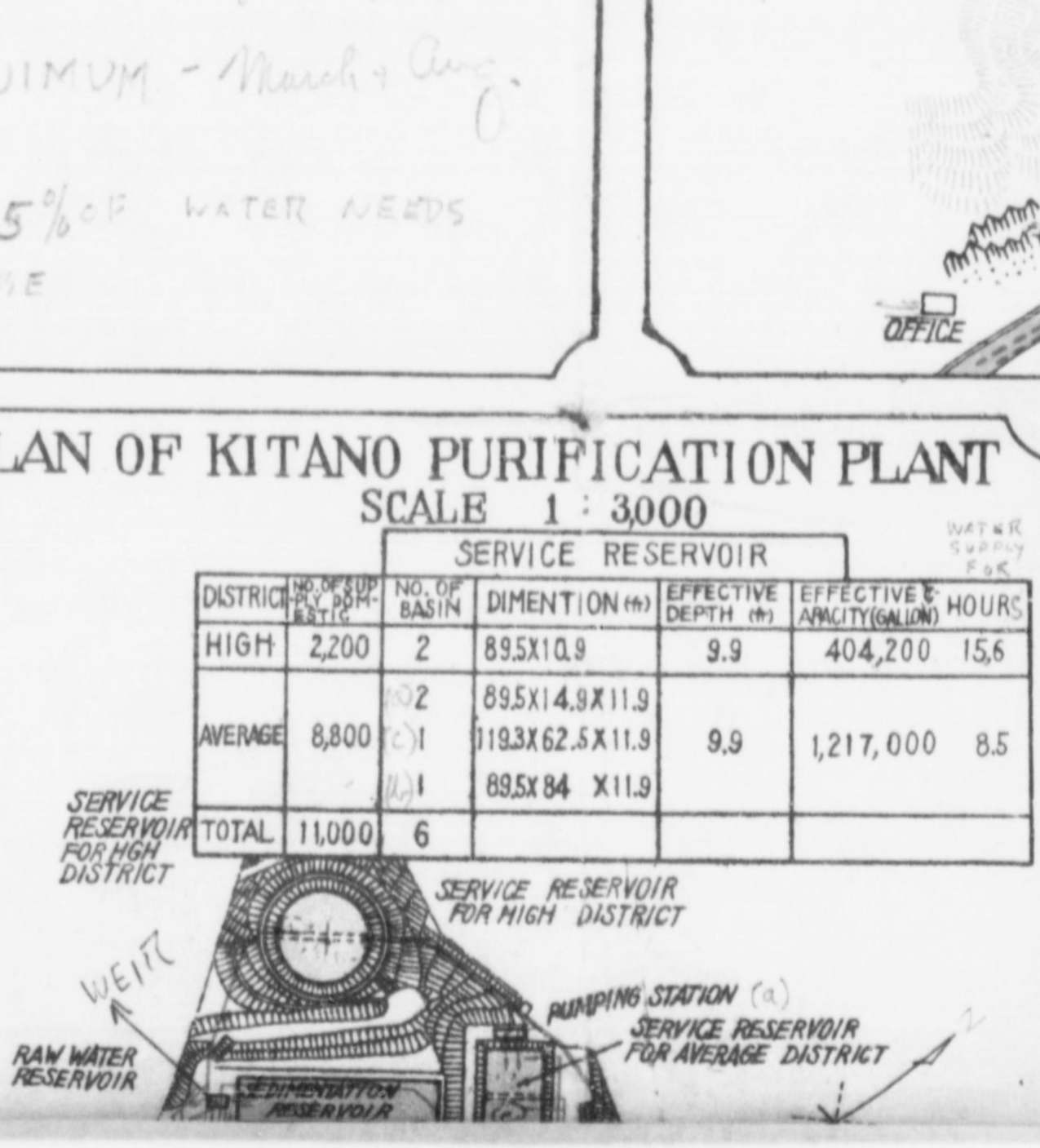
(BAD WATER) NOT IN USE

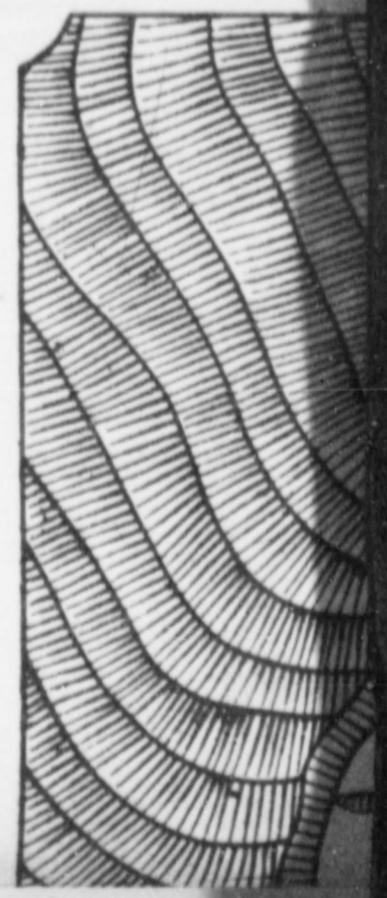


PLAN OF KITANO PURIFICATION PLANT

SCALE 1 : 3,000

DISTRICT	NO. OF SUPPLY DOMESTIC	SERVICE RESERVOIR NO. OF BASIN	DIMENTION (ft)	EFFECTIVE DEPTH (ft)	EFFECTIVE CAPACITY (GALION)	WATER SUPPLY FOR HOURS
HIGH	2,200	2	89.5X10.9	9.9	404,200	15.6
AVERAGE	8,800	(a) 2	89.5X14.9X11.9	9.9	1,217,000	8.5
		(c) 1	119.3X62.5X11.9			
		(d) 1	89.5X84 X11.9			
TOTAL	11,000	6				





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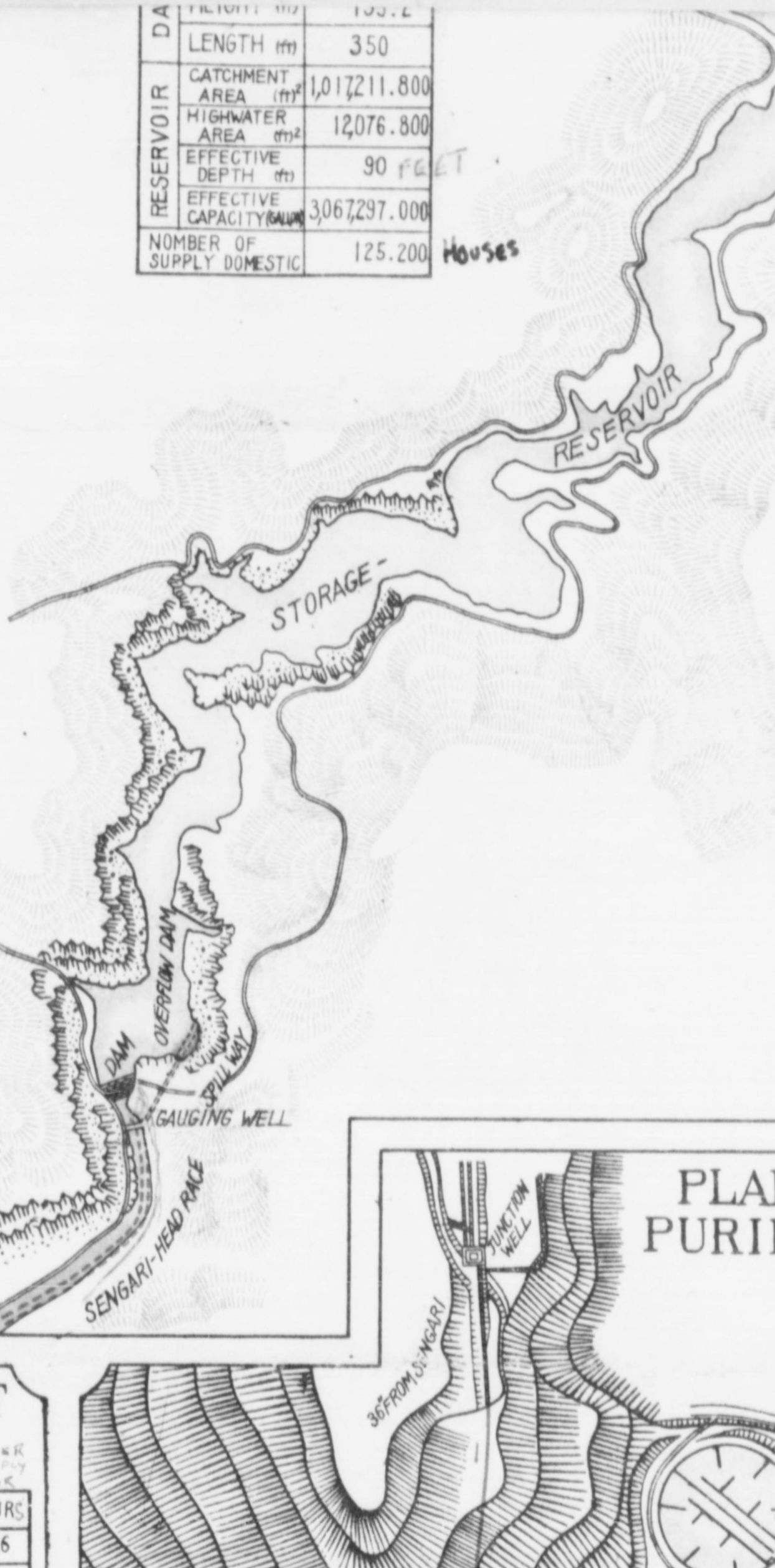
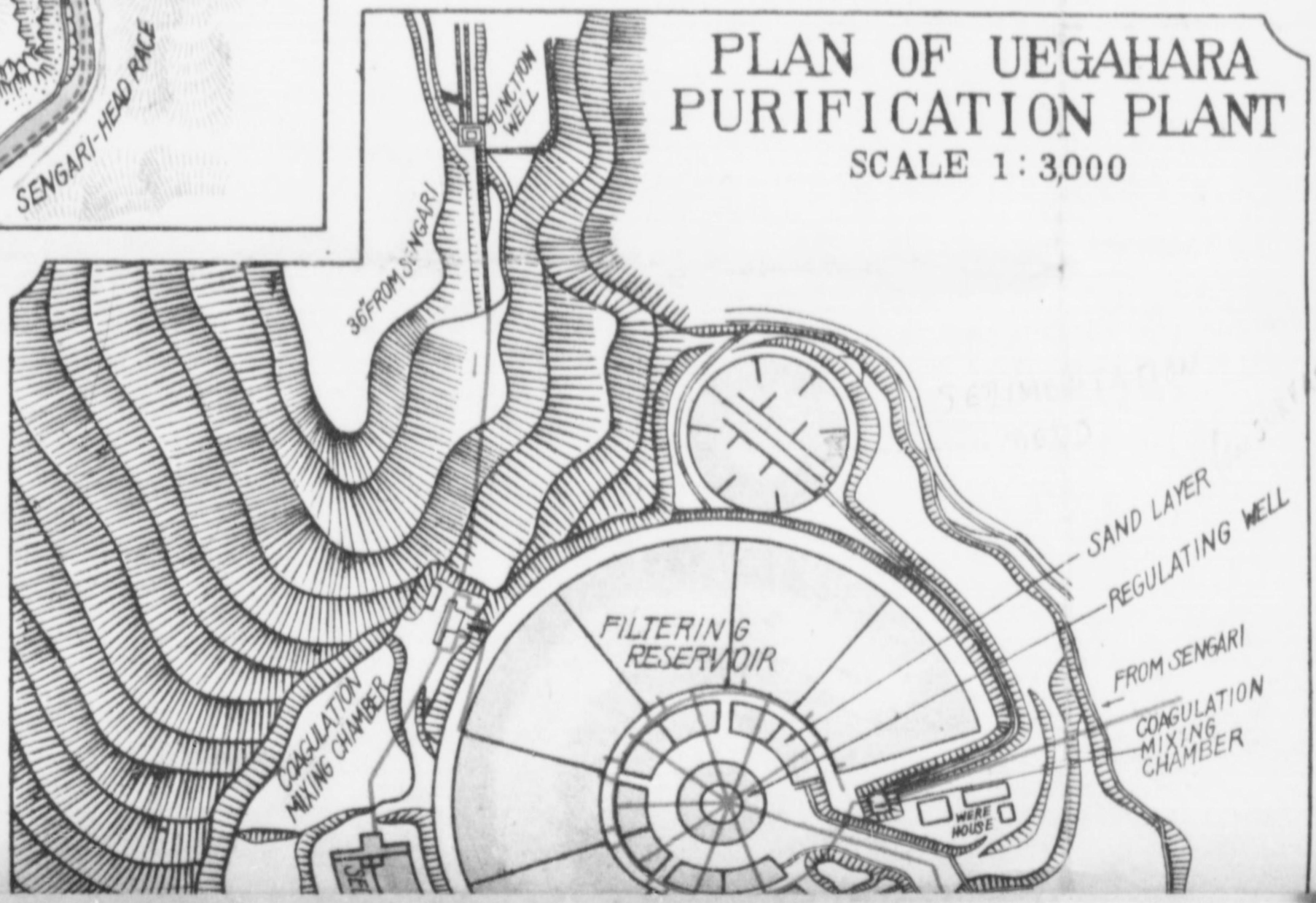
DA	HEIGHT (ft)	155.2
	LENGTH (ft)	350
RESERVOIR	CATCHMENT AREA (ft)²	1,017,211.800
	HIGHWATER AREA (ft)²	12,076.800
	EFFECTIVE DEPTH (ft)	90 FEET
	EFFECTIVE CAPACITY(GALLON)	3,067,297.000
NOMBER OF SUPPLY DOMESTIC		125.200 HOUSES



PLAN OF UEGAHARA PURIFICATION PLANT

SCALE 1 : 3,000



TION PLANT

0

RVOIR

ECTIVE TH (ft)	EFFECTIVE CAPACITY(GALLON)	HOURS
9.9	404,200	15.6
9.9	1,217,000	8.5

WATER SUPPLY FOR

ION (a)
CE RESERVOIR
ERAGE DISTRICT

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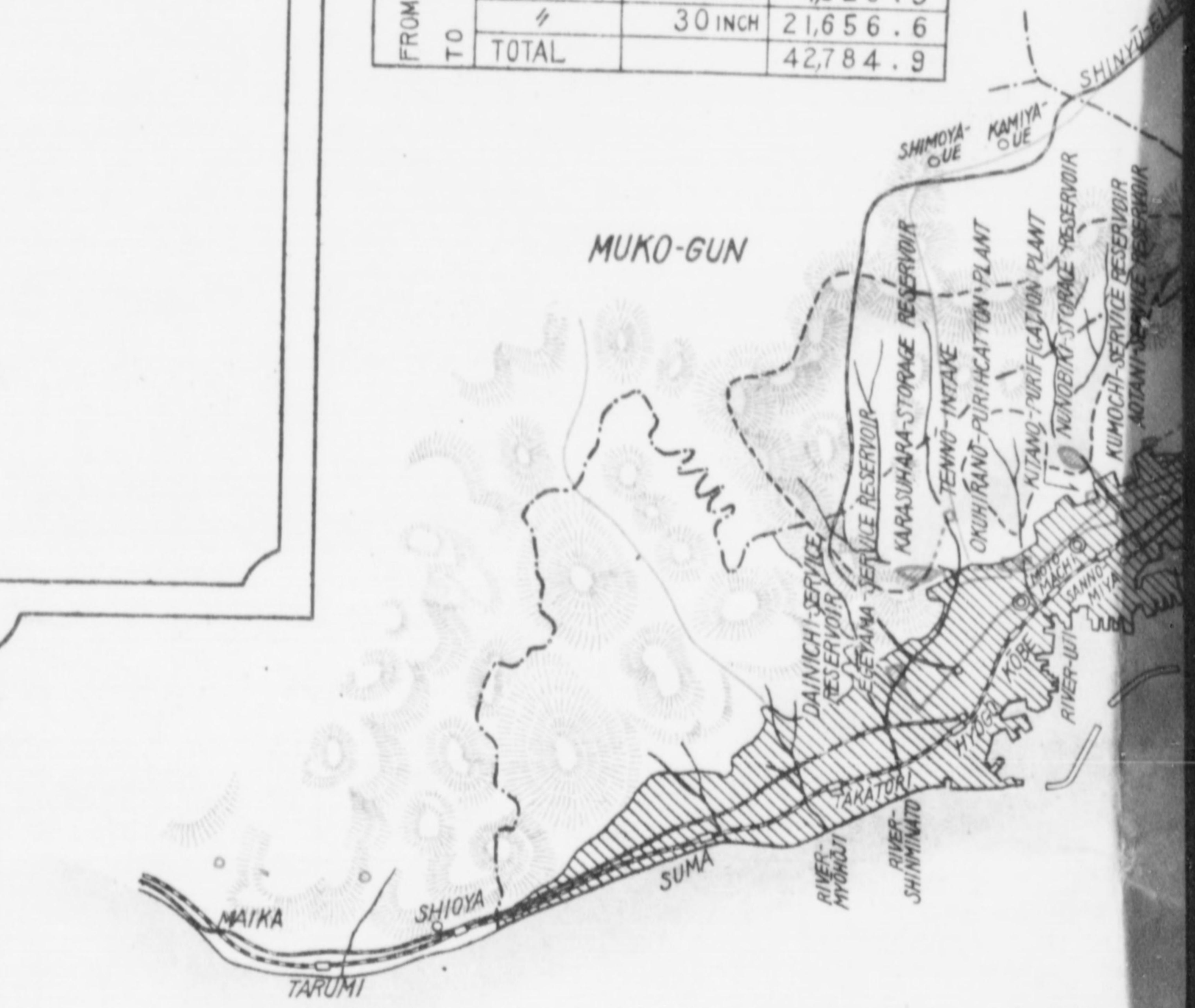
MENDAN/ FROM INTAKE	OKUHIRANO TO PURIFICATION PLANT	TOTAL	3,543.3
		24 INCH	10,413.3
		TOTAL	10,413.3

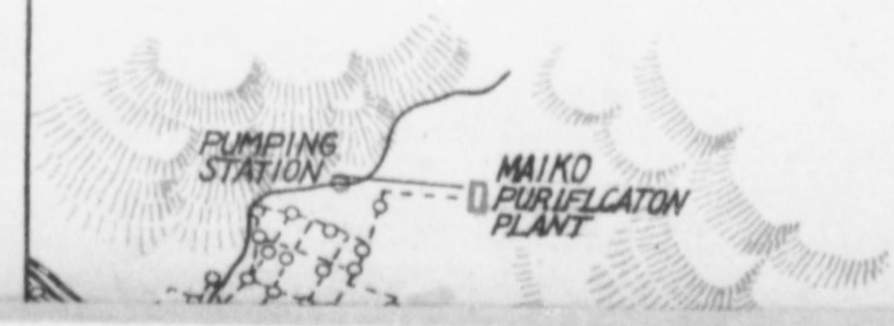
SENGARI HEAD RACE

		QUALITY	NO.OF PIECES	DISTANCE (ft)
SENGARI STORAGE RESERVOIR	NO.12 JUNCTION WELL	CONDUIT	8	994.1
FROM	TO	TUNNEL	12	25,888.8
		JUNCTIONWELL	8	68.9
		CAST IRON	45 INCH	928.5
		〃	30 INCH	826.8
		TOTAL		28,707.1
NO.12 JUNCTIONWELL	UEGAHARA JUNCTIONWELL	CONDUIT	16	2,529.5
FROM	TO	TUNNEL	12	13,697.3
		JUNCTIONWELL	9	72.2
		CAST IRON	36 INCH	4,829.3
		〃	30 INCH	21,656.6
		TOTAL		42,784.9



N OF UEGAHARA
FICATION PLANT
SCALE 1:3,000

PLAN OF PIP
SCALE 1:30,0



Declassified E.O. 12065 Section 3-402/NNDG NO. 775009

	3,543.3
CH	10,413.3
	10,413.3

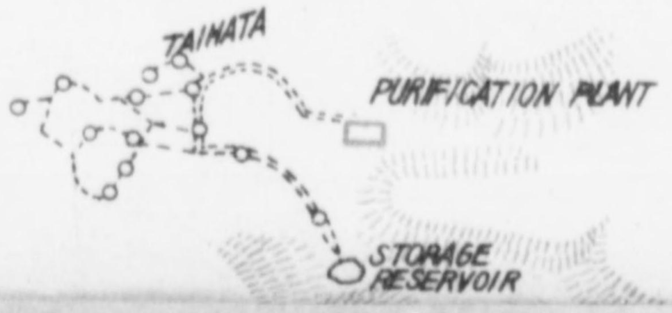
EAD RACE	
OF PIECES	DISTANCE (ft)
8	994.1
12	25,888.8
8	68.9
45 INCH	928.5
30 INCH	826.8
	28,707.1
16	2,529.5
12	13,697.3
9	72.2
36 INCH	4,829.3
30 INCH	21,656.6
	42,784.9

UEGAHARA FEEDER LINE (CAST IRON)

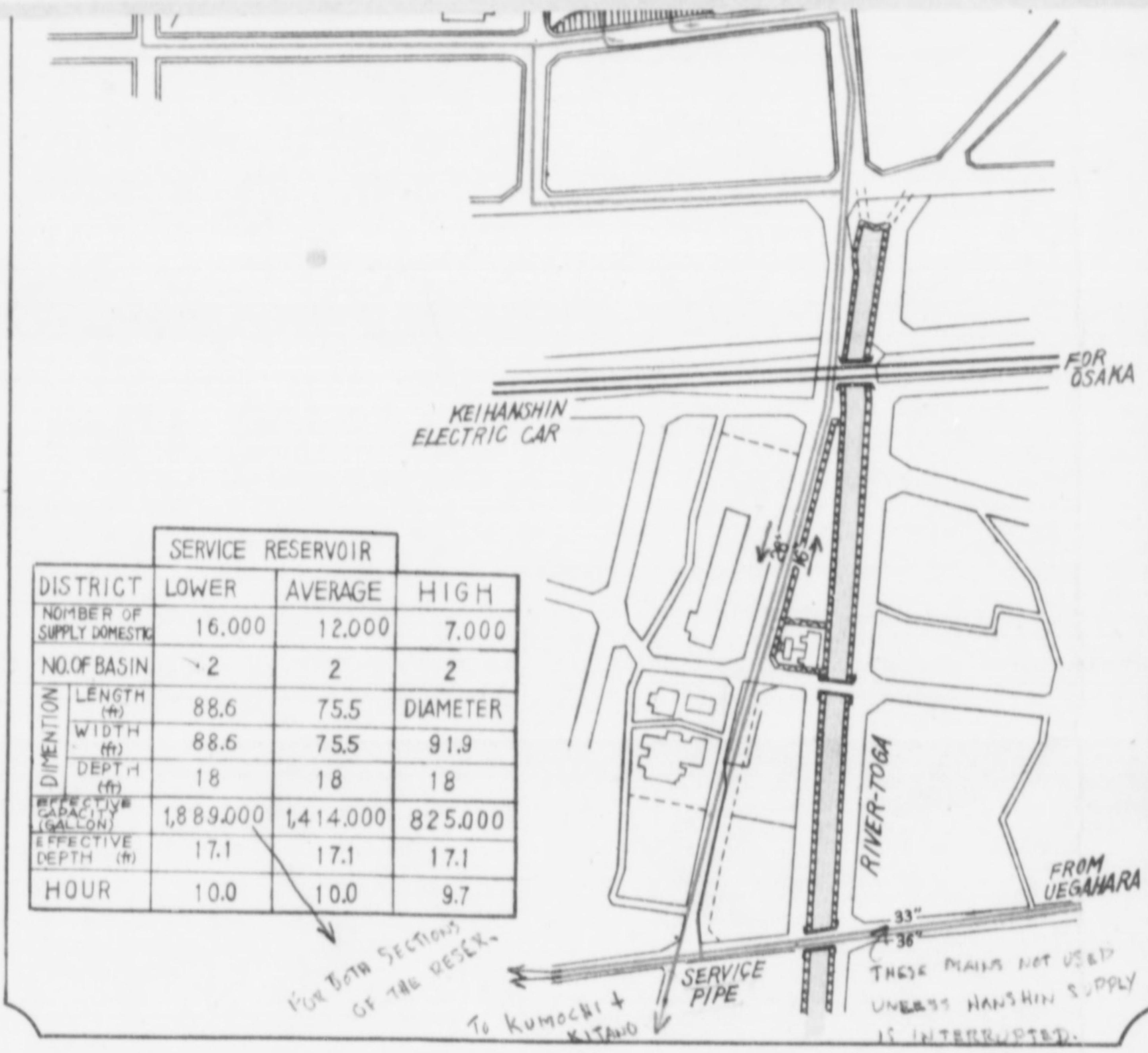
PLACE	DIAMETER	DISTANCE (ft)
FROM UEGAHARA TO KUMOCHI BRANCH	33 INCH	51,187.0
FROM KUMOCHI BRANCH TO KITANO BRANCH	33 INCH	1,971.8
FROM KITANO BRANCH TO OKUHIRANO BRANCH	30 INCH	8,300.4
TOTAL		61,459.2
FROM UEGAHARA TO NADA BRANCH	36 INCH	45,931.2
FROM NADA BRANCH TO EGAYAMA BRANCH	36 INCH	25,052.2
TOTAL		70,983.4

PLAN OF PIPE LINE

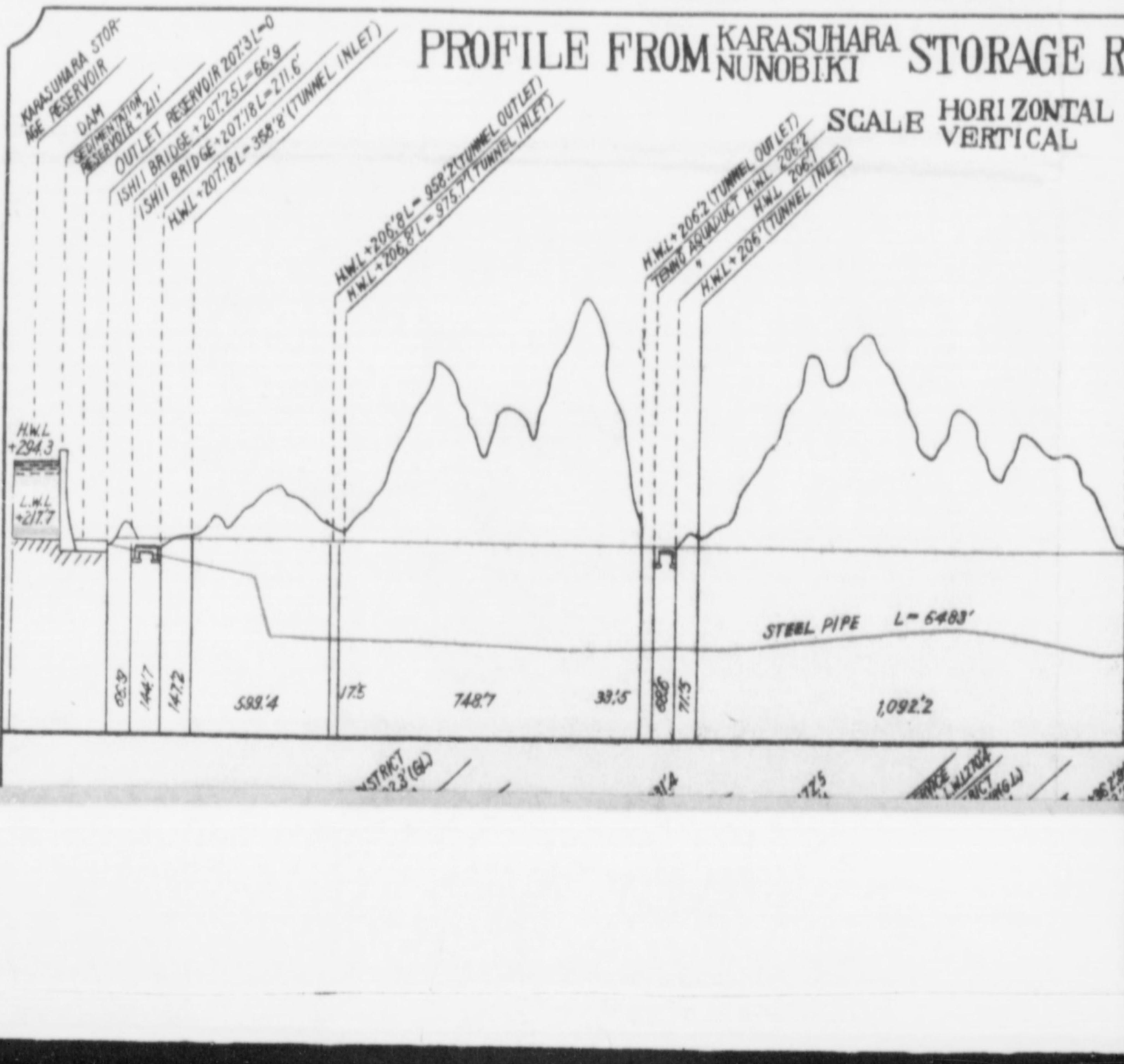
SCALE 1:30,000



Declassified E.O. 12065 Section 3-402/NNDG NO. 775009



DISTRICT	SERVICE RESERVOIR LOWER	AVERAGE	HIGH
NOMBER OF SUPPLY DOMESTIC	16.000	12.000	7.000
NO. OF BASIN	2	2	2
DIMENTION LENGTH (ft)	88.6	75.5	DIAMETER
DIMENTION WIDTH (ft)	88.6	75.5	91.9
DIMENTION DEPTH (ft)	18	18	18
EFFECTIVE CAPACITY (GALLON)	1,889.000	1,414.000	825.000
EFFECTIVE DEPTH (ft)	17.1	17.1	17.1
HOUR	10.0	10.0	9.7



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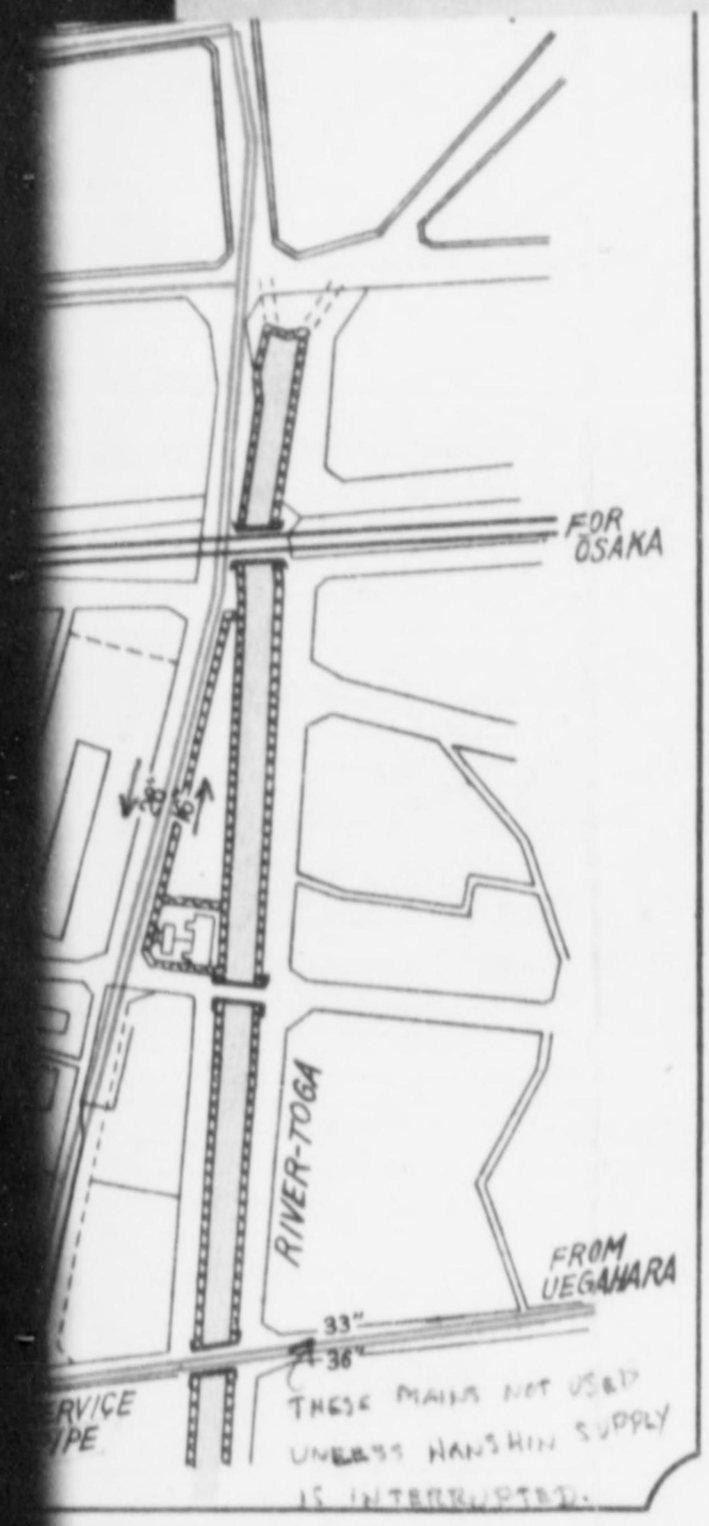
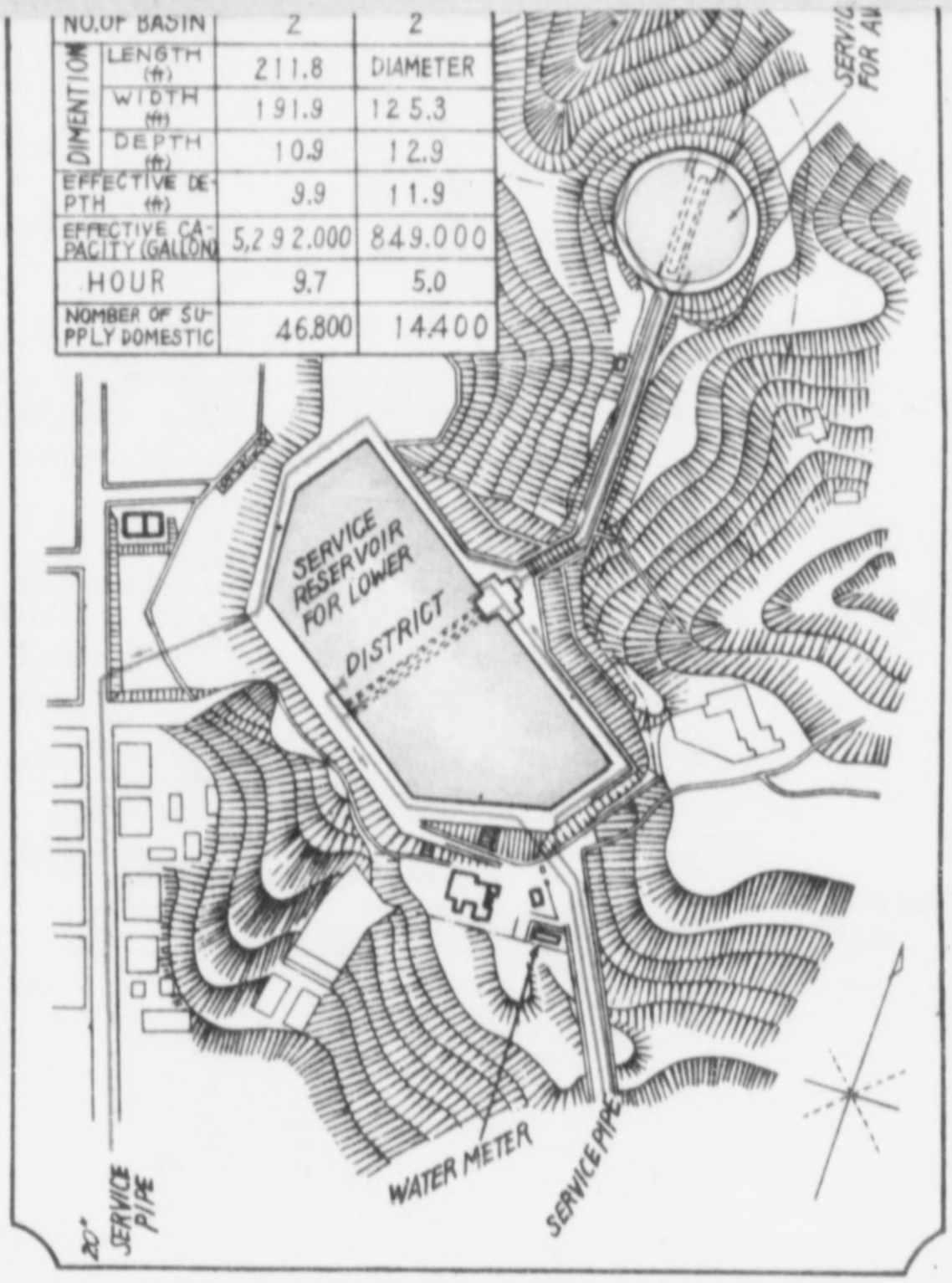
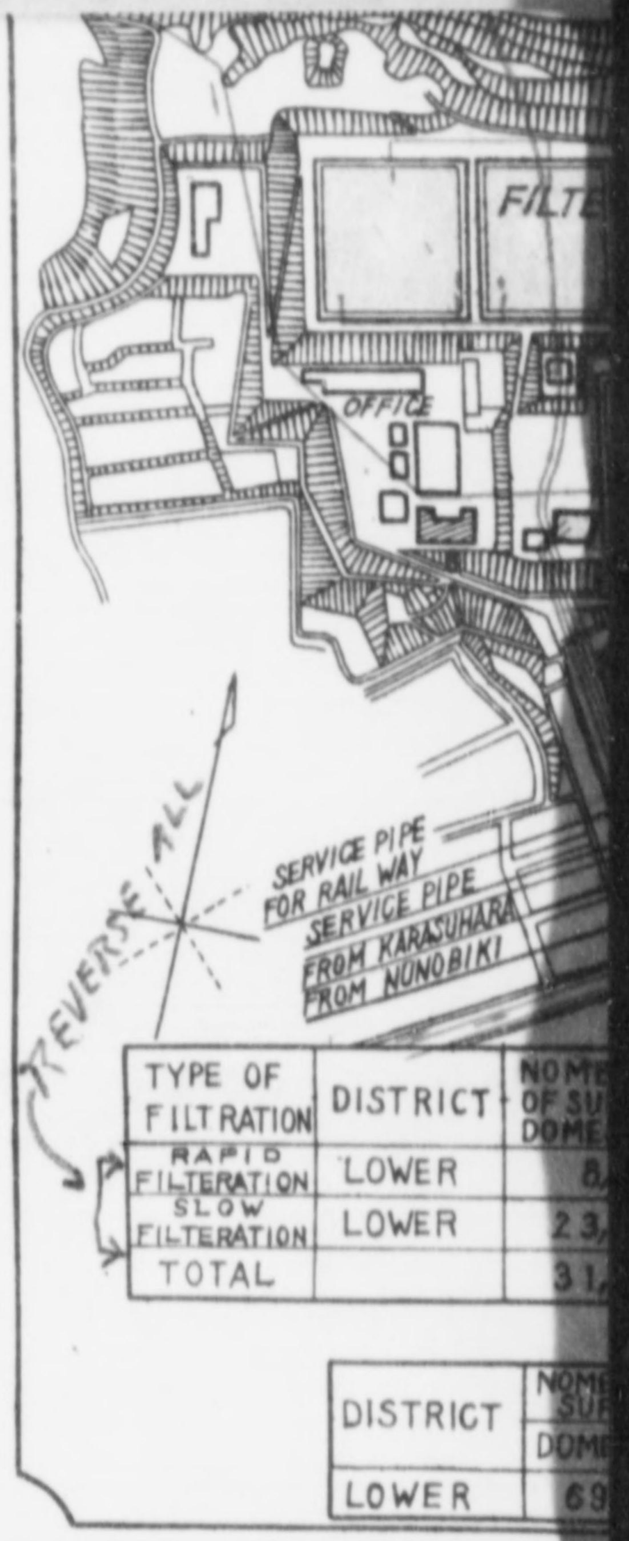
NO.OF BASIN		2	2
DIMENTION	LENGTH (ft)	211.8	DIAMETER
	WIDTH (ft)	191.9	125.3
	DEPTH (ft)	10.9	12.9
EFFECTIVE DEPTH (ft)		9.9	11.9
EFFECTIVE CAPACITY (GALLON)		5,292.000	849.000
HOUR		9.7	5.0
NOMBER OF SUPPLY DOMESTIC		46.800	14.400





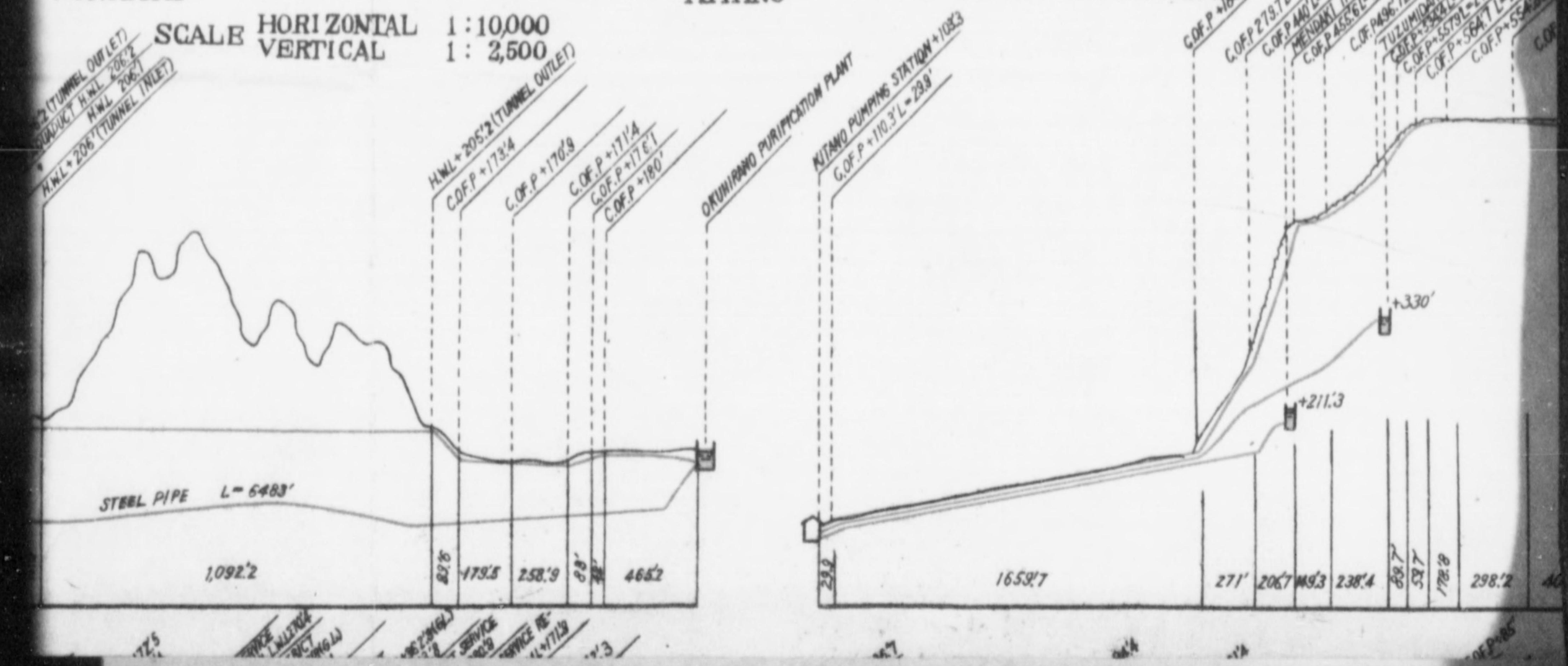


TYPE OF FILTRATION	DISTRICT	NOME OF SU DOME
RAPID FILTERATION	LOWER	8,
SLOW FILTERATION	LOWER	23,
TOTAL		31,

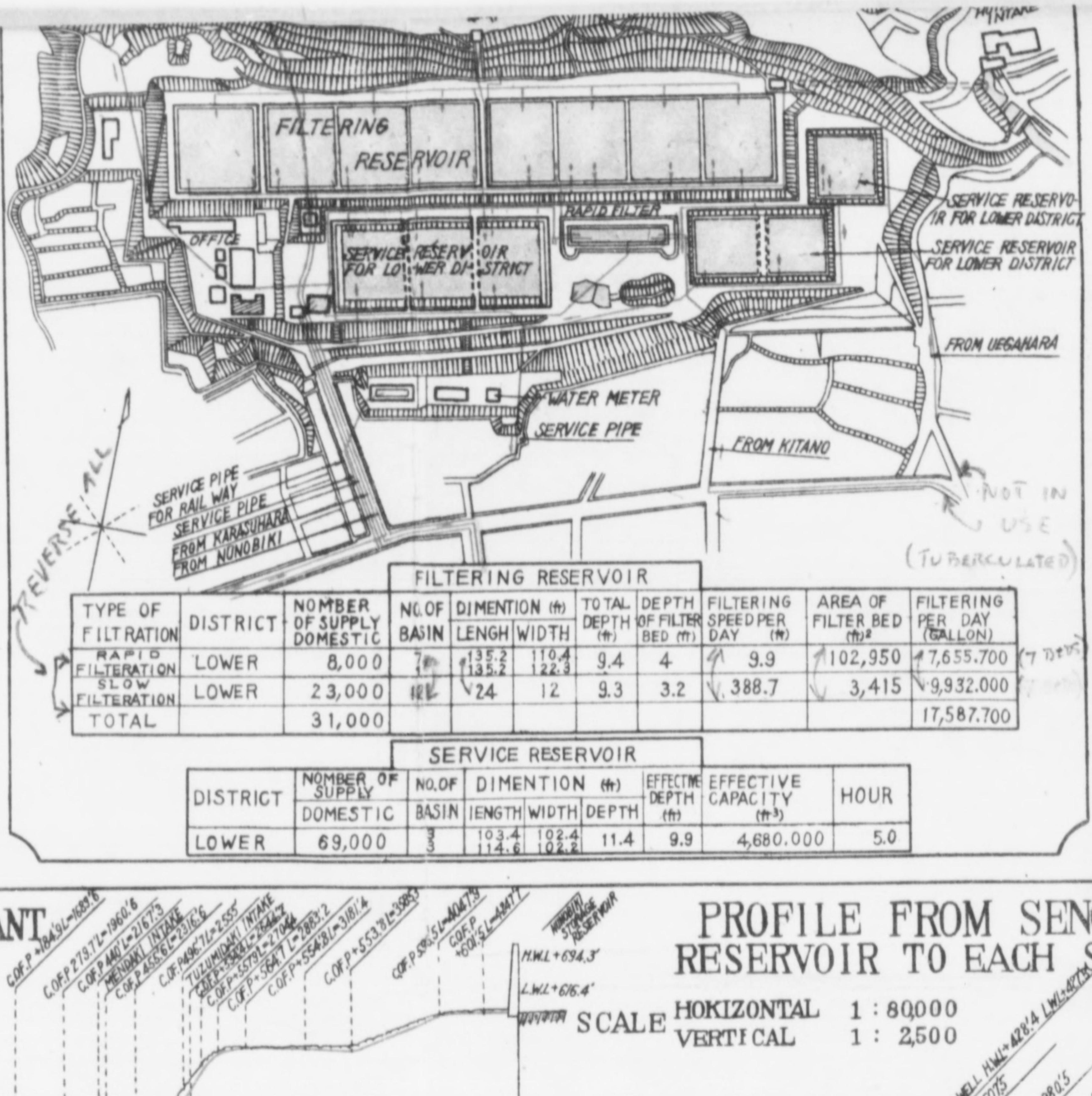
DISTRICT	NOME SUP DOME
LOWER	69

KARASUHARA NUNOBIKI STORAGE RESERVOIR TO OKUHIRANO KITANO PURIFICATION PLANT

SCALE HORIZONTAL 1:10,000
VERTICAL 1: 2,500



Declassified E.O. 12065 Section 3-402/NNDG NO. 775009



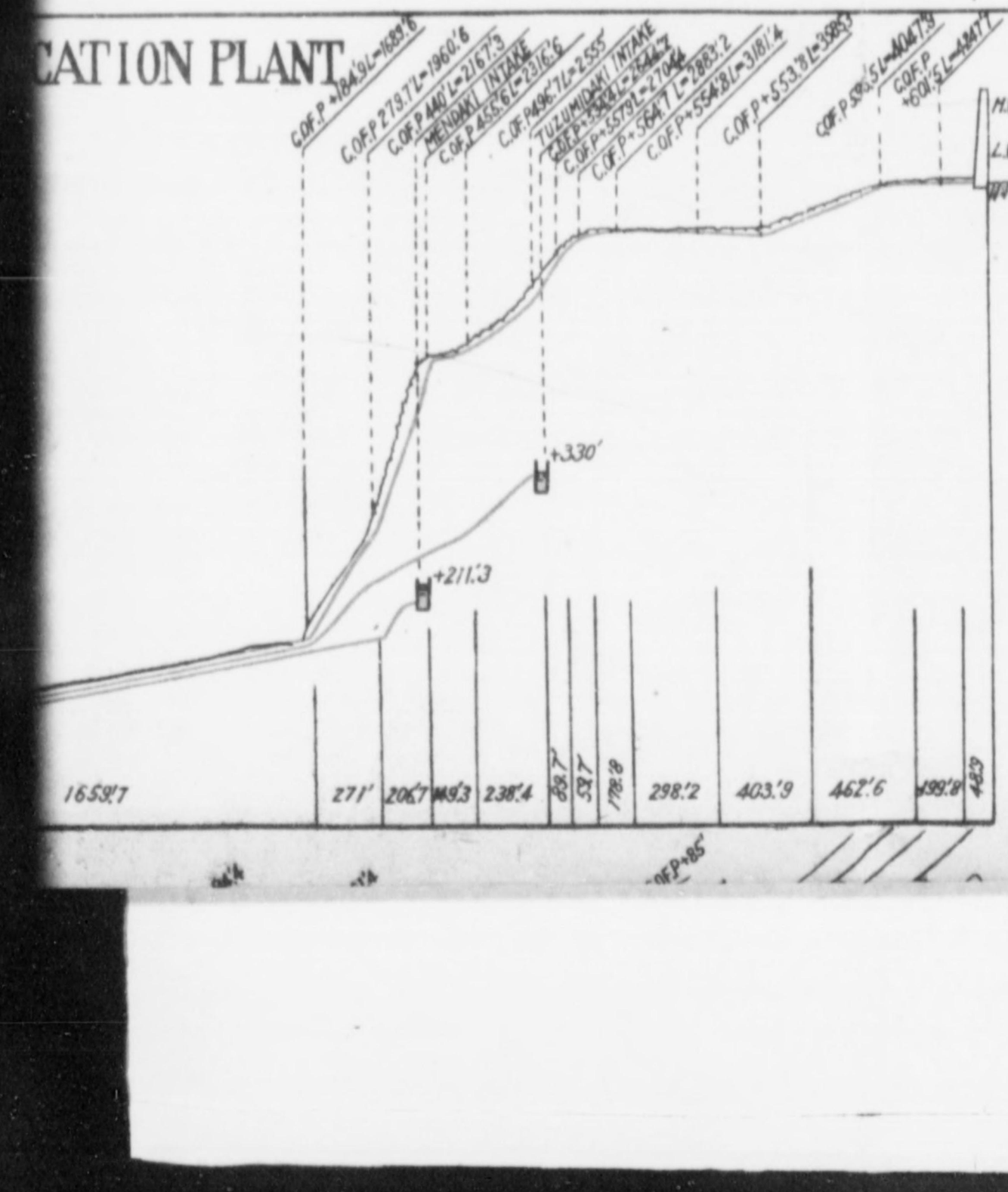
FILTERING RESERVOIR

TYPE OF FILTRATION	DISTRICT	NOMBER OF SUPPLY DOMESTIC	NO. OF BASIN	DIMENTION (ft) LENGH	DIMENTION (ft) WIDTH	TOTAL DEPTH (ft)	DEPTH OF FILTER BED (ft)	FILTERING SPEED PER DAY (ft)	AREA OF FILTER BED (ft)²	FILTERING PER DAY (GALLON)
RAPID FILTERATION	LOWER	8,000	7	135.2 135.2	110.4 122.3	9.4	4	9.9	102,950	7,655.700
SLOW FILTERATION	LOWER	23,000	12	24	12	9.3	3.2	388.7	3,415	9,932.000
TOTAL		31,000								17,587.700

SERVICE RESERVOIR

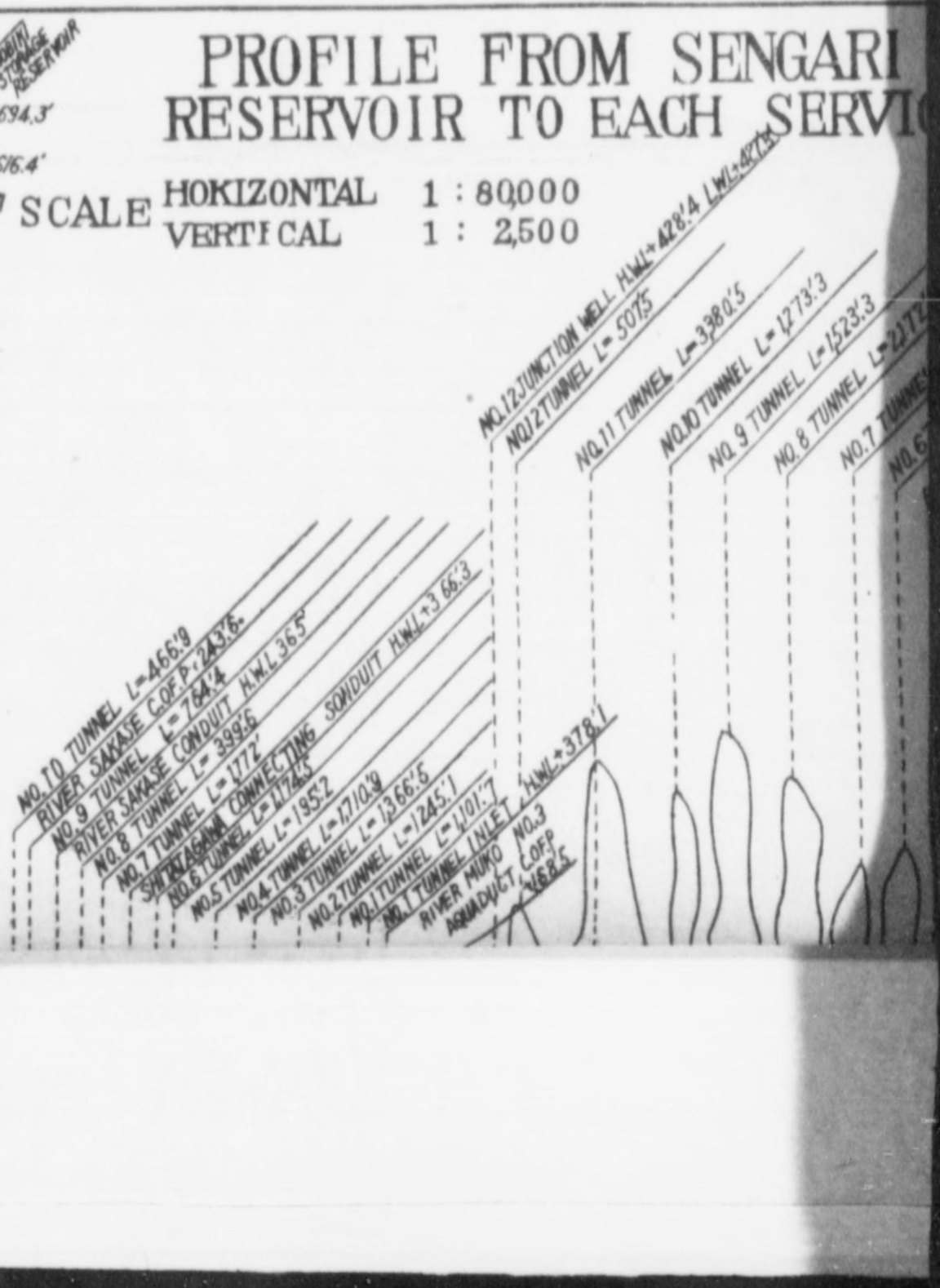
DISTRICT	NOMBER OF SUPPLY DOMESTIC	NO. OF BASIN	DIMENTION (ft) IENGTH	DIMENTION (ft) WIDTH	DIMENTION (ft) DEPTH	EFFECTIVE DEPTH (ft)	EFFECTIVE CAPACITY (ft³)	HOUR
LOWER	69,000	3 3	103.4 114.6	102.4 102.2	11.4	9.9	4,680.000	5.0

CATION PLANT

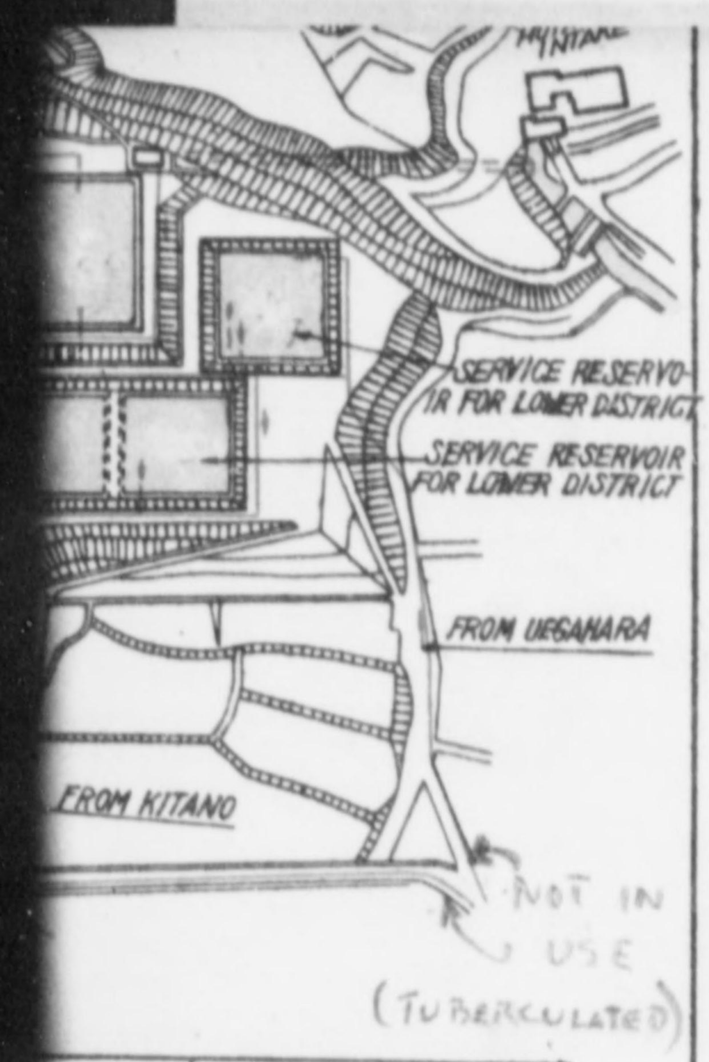


PROFILE FROM SENGARI RESERVOIR TO EACH SERVI

SCALE HOKIZONTAL 1 : 80,000
VERTICAL 1 : 2,500

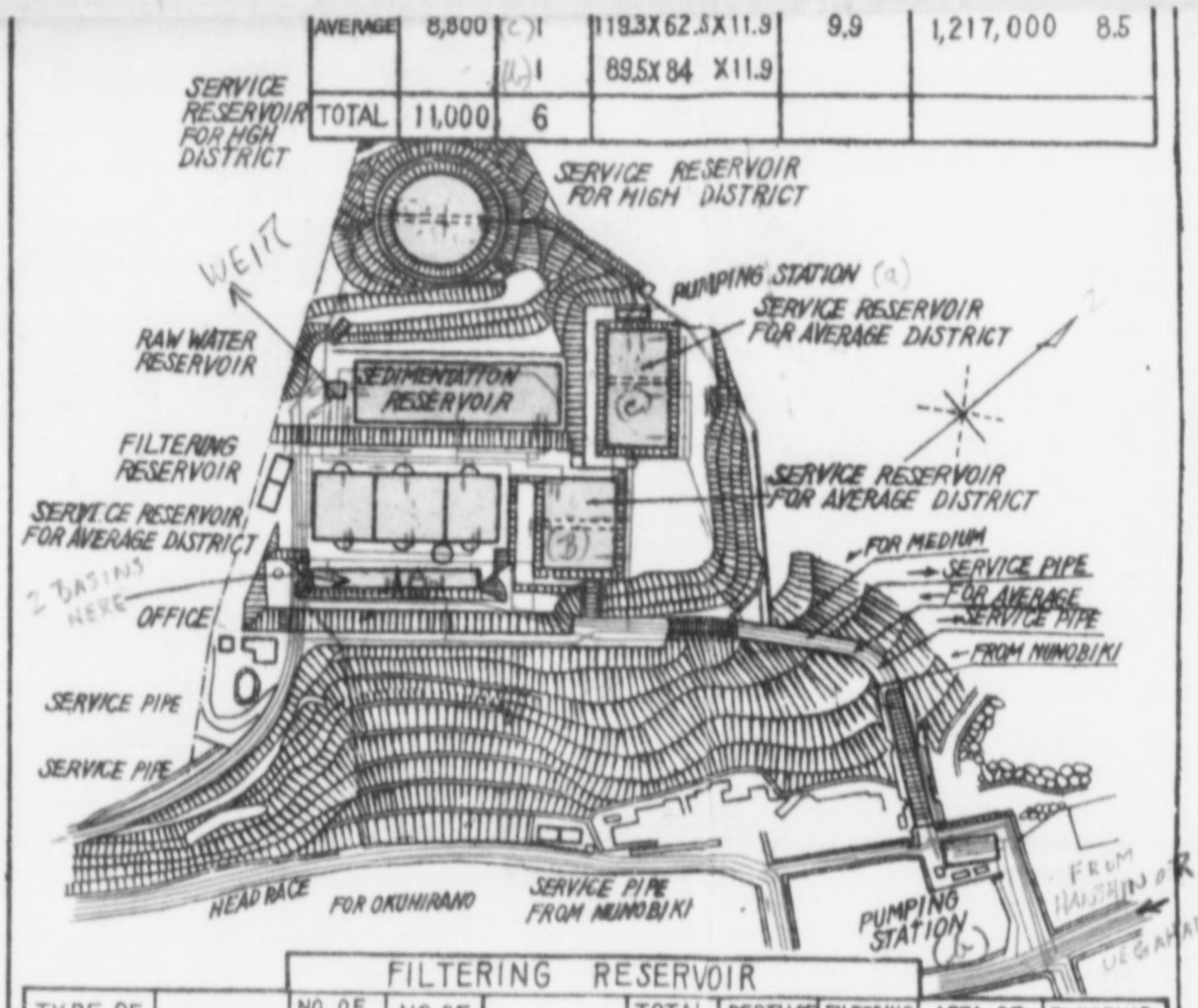


Declassified E.O. 12065 Section 3-402/NNDG NO. 775009



LTERING EED PER Y (ft)	AREA OF FILTER BED (ft)²	FILTERING PER DAY (GALLON)
9.9	102,950	7,655.700
388.7	3,415	9,932.000
		17,587.700

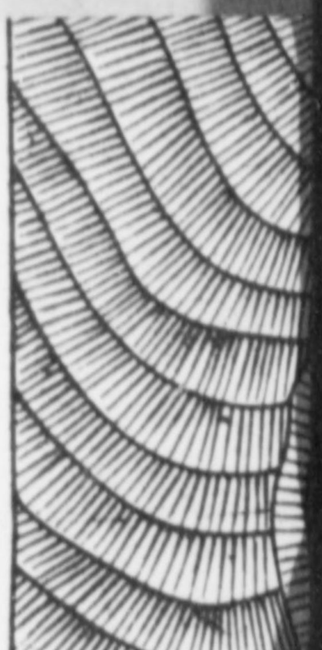
FECTIVE PACITY (ft³)	HOUR
4,680.000	5.0



	AVERAGE	8,800	(c) 1	119.3X62.5X11.9	9.9	1,217,000	8.5	
			(d) 1	89.5x84 X11.9				
	TOTAL	11,000	6					

FILTERING RESERVOIR

TYPE OF FILTRATION	DISTRICT	NO. OF SUPPLY DOMESTIC	NO. OF BASIN	DIMENTION (ft)	TOTAL DEPTH (ft)	DEPTH OF FILTER BED (ft)	FILTERING SPEED PER DAY (ft)	AREA OF FILTER BED (ft)²	FILTERING PER DAY (GALLON)
SLOW FILTRATION	AVERAGE	5,000	3	59.6X56.7	7.9	3.7	11.9	9,785	873,100
IMPROVED	〃	〃	1	232.3X59.4 205.7X34.4	13.1	3.5	11.9	9,646	771,600
TOTAL		5,000	4						



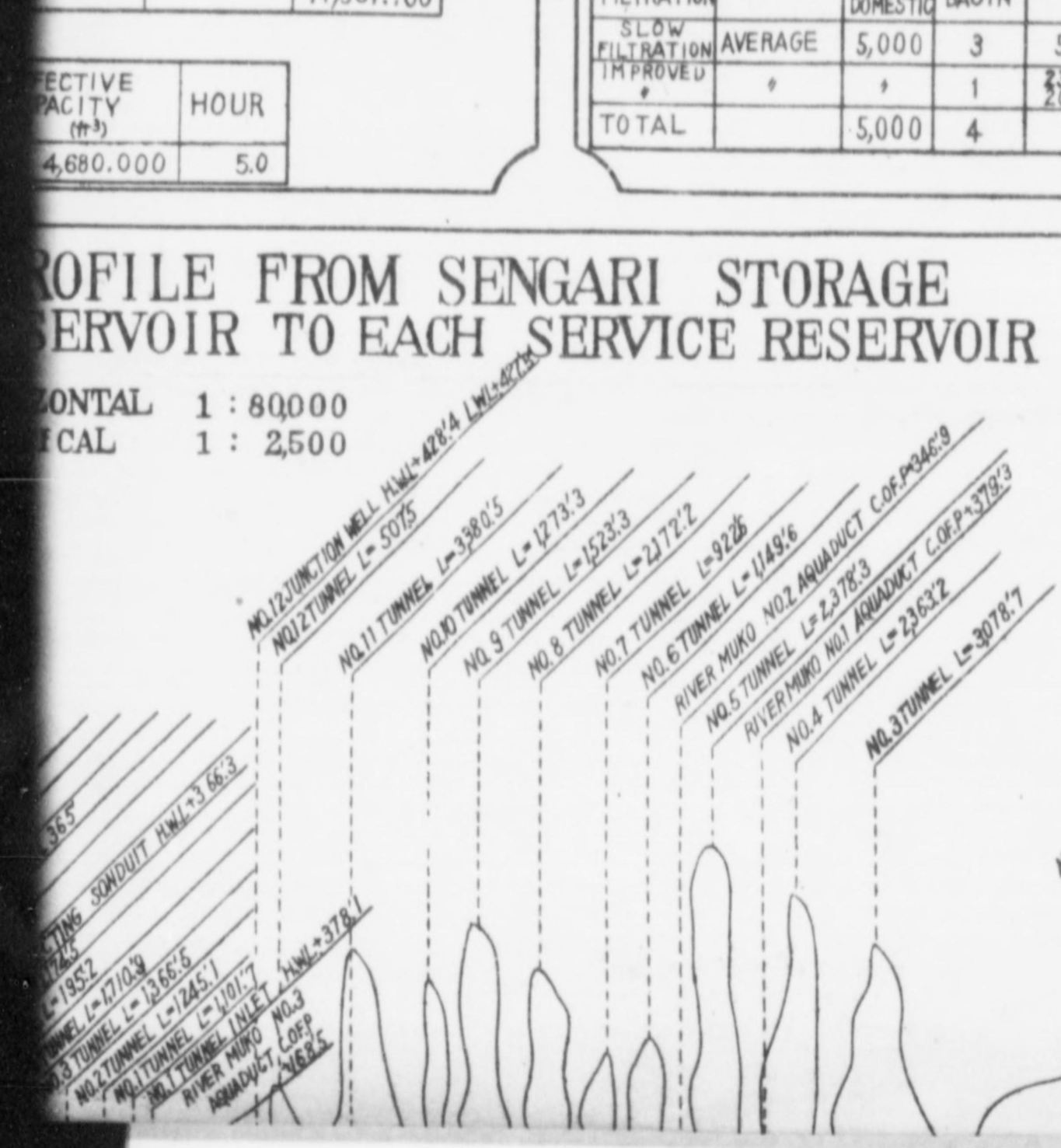
NO. OF BASIN
2
2
4

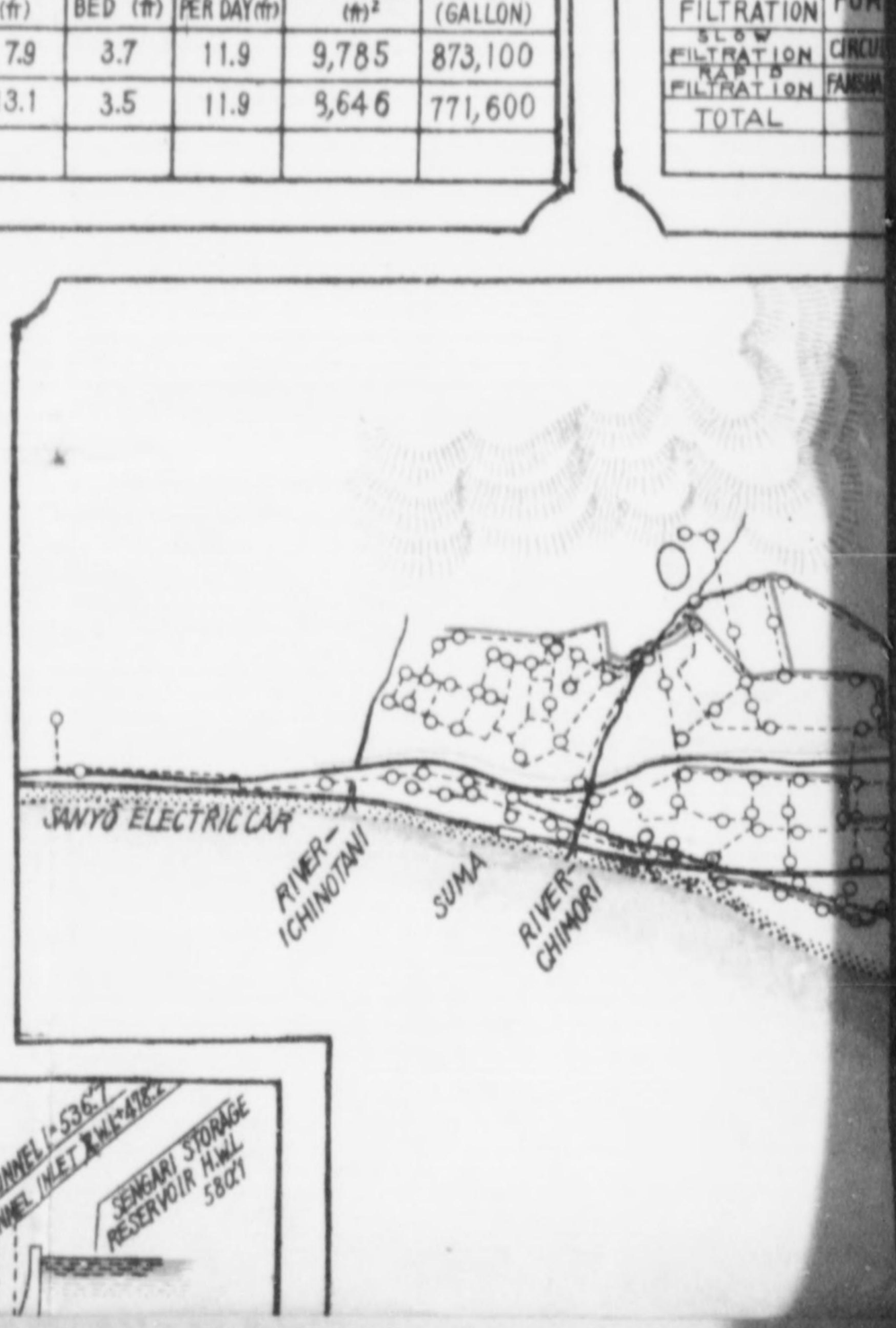
(ERROR) RECTANGULAR

TYPE OF FILTRATION	FOR
SLOW FILTRATION	CIRCU
RAPID FILTRATION	FAMSHA
TOTAL	

ROFILE FROM SENGARI STORAGE SERVOIR TO EACH SERVICE RESERVOIR

ZONTAL 1 : 80,000
FICAL 1 : 2,500





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11.9	9.9	1,217,000	8.5
11.9			

RVOIR
STRICT

NG STATION (a)

SERVICE RESERVOIR
FOR AVERAGE DISTRICT

SERVICE RESERVOIR
FOR AVERAGE DISTRICT

FOR MEDIUM
SERVICE PIPE
FOR AVERAGE
SERVICE PIPE
FROM MUNOBIKI

PUMPING STATION (a)

FROM HAUSHINJOR

DEGAWA

DEPTH OF FILTER BED (ft)	FILTERING SPEED PER DAY (ft)	AREA OF FILTER BED (ft)²	FILTERING PER DAY (GALLON)
3.7	11.9	9,785	873,100
3.5	11.9	9,646	771,600

FILTERING RESERVOIR

SEDIMENTATION RESERVOIR

COAGULATION MIXING CHAMBER

SEDIMENTATION RESERVOIR

FILTERING RESERVOIR

REGULATING

FROM SENGARI

COAGULATION MIXING CHAMBER

WARE HOUSE

OFFICE

RAPID FILTER

WATER TANK

DISTRIBUTING MAIN PIPE

DAINICHI SERVICE RESERVOIR

(ERROR) RECTANGULAR

NO. OF BASIN	FORM	CAPACITY (GALLON)	DIMENTION (ft) LENGTH	DIMENTION (ft) WIDTH	TOTAL DEPTH (ft)	EFFECTIVE DEPTH (ft)
2	CIRCULAR	1,632,400	DIAMETER 189		8.9	7.9
2	FANSHAPED	2,580,500	387.7	99	9.9	8.2
4		4,212,900				

TYPE OF FILTRATION	FORM	NO. OF SUPPLY DOMESTIC	NO. OF BASIN	DIMENTION (ft) LENGTH	DIMENTION (ft) WIDTH	TOTAL DEPTH (ft)	FILTERING SPEED PER DAY (ft)	AREA OF FILTER BED (ft)²	FILTERING PER DAY (GALLON)
SLOW FILTRATION	CIRCULAR	64.000	8	INNER RAD 122.3	OUTER RAD 323.2	7.9	9.9	197.680	14,700.000
RAPID FILTRATION	FANSHAPED	61.200	8	45.7	21.7	9.5	364.5	7.274	17,352.600
TOTAL		125.200	16						32,052.600

KYO ELECTRIC CAR

RIVER-ICHINOTANI

SUMA

RIVER-CHIMORI

TAKAIDORI

RIVER-MYOHOJI

HYOGO

RIVER-

SENGARI STORAGE RESERVOIR H.W.L. 58.21

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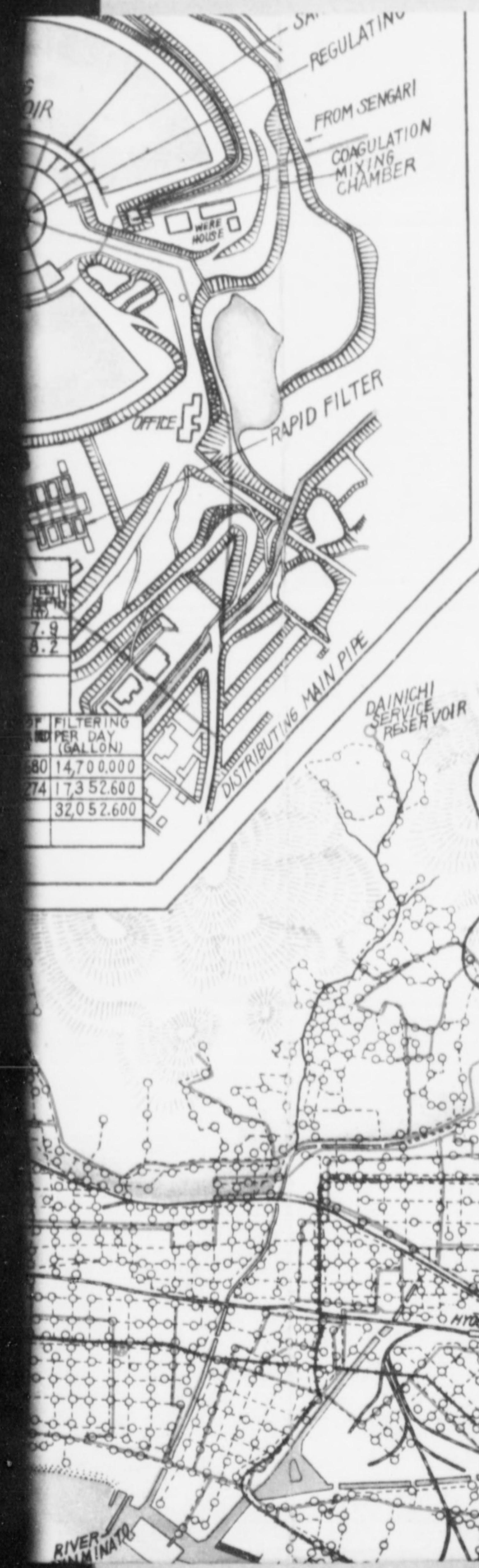
PLAN OF F

SCALE



	FILTERING PER DAY (GALLON)
680	14,700.000
274	17,352.600
	32,052.600

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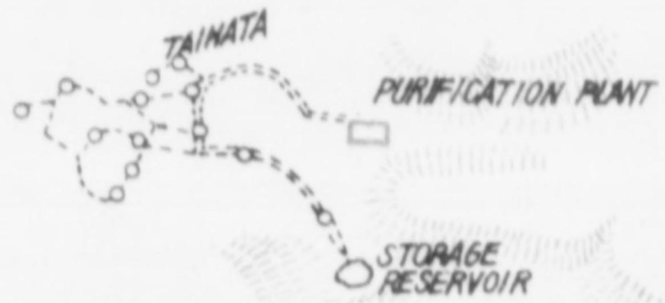
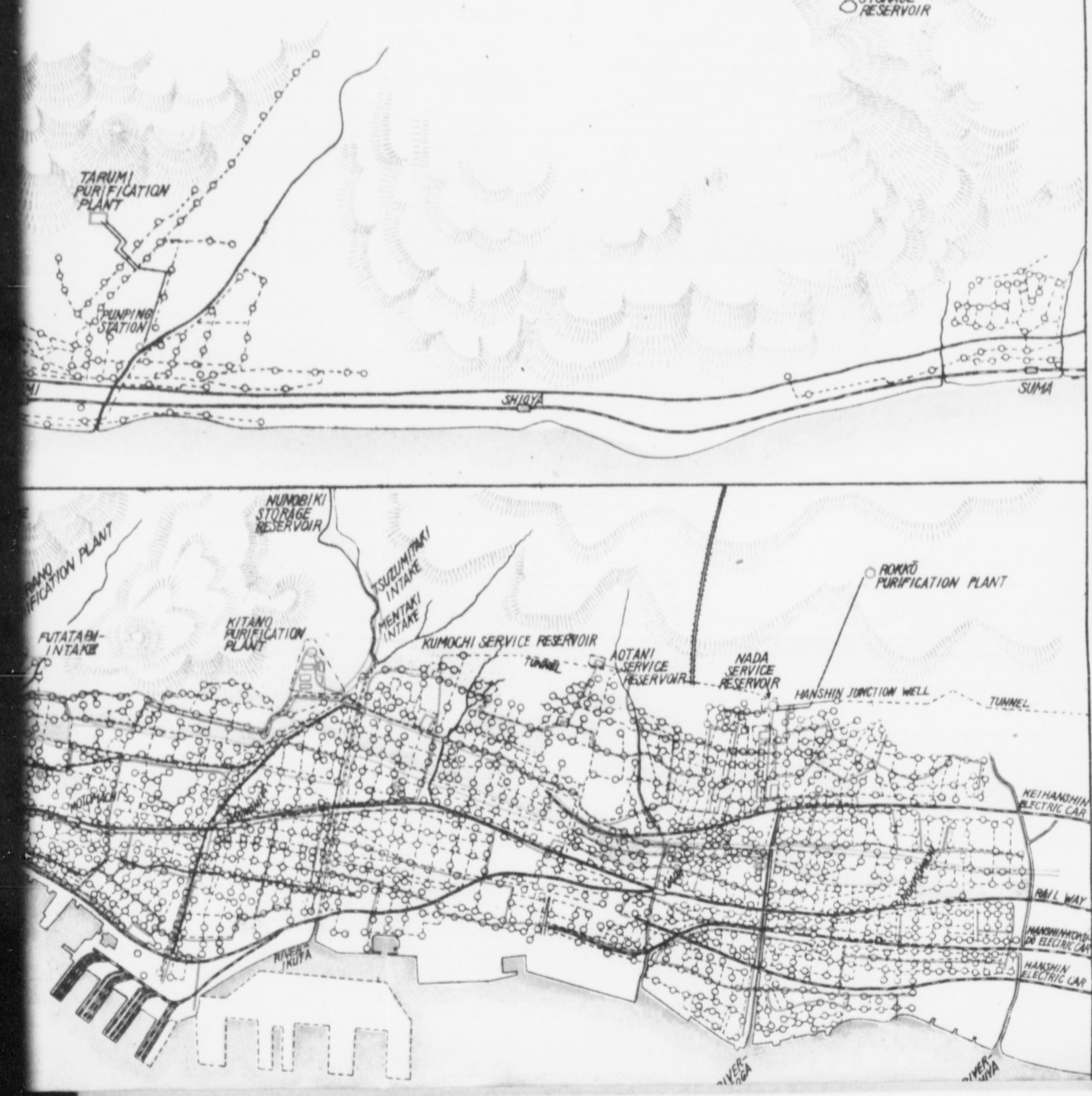
PLAN OF PIPE LINE

SCALE 1:30,000





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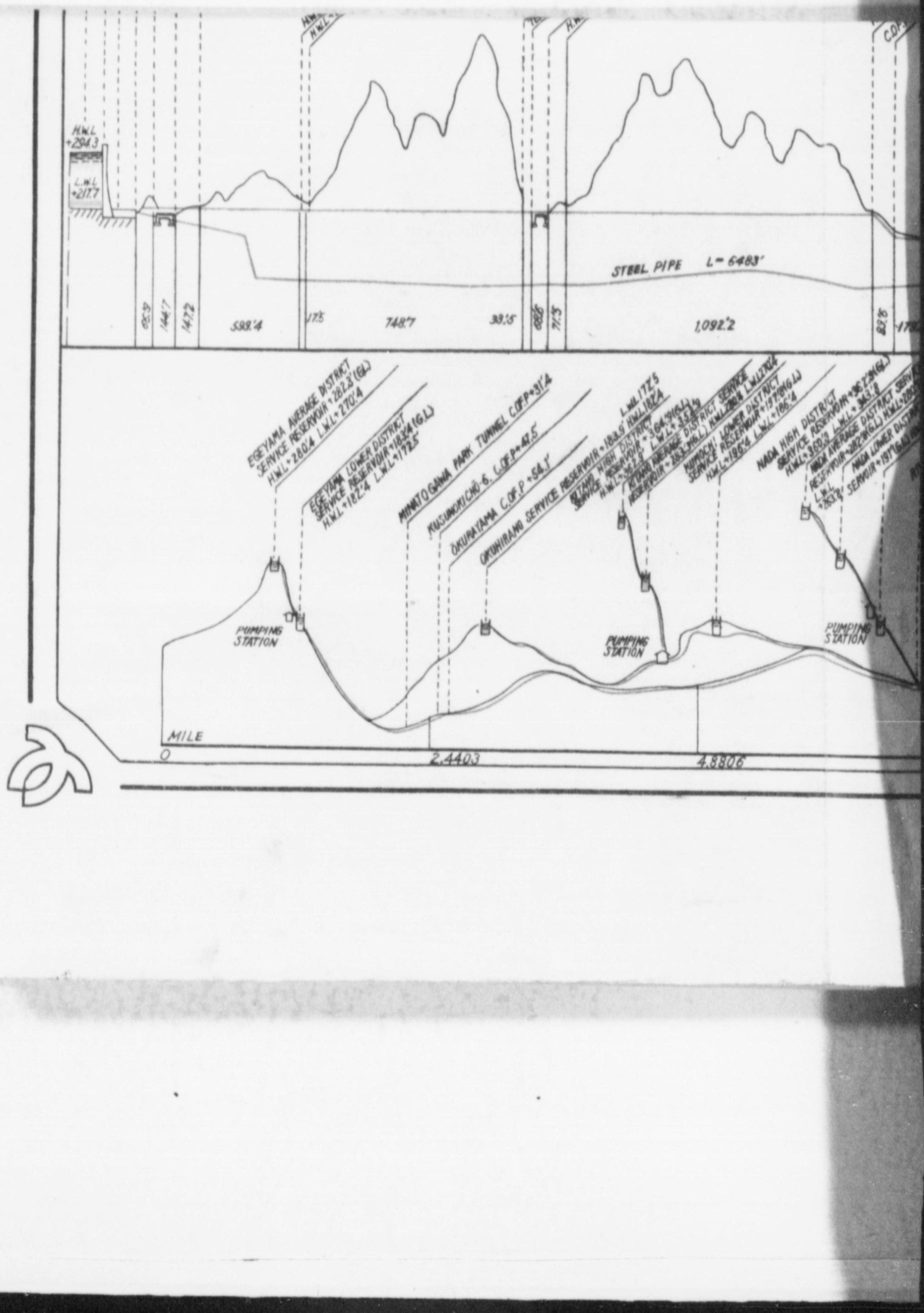

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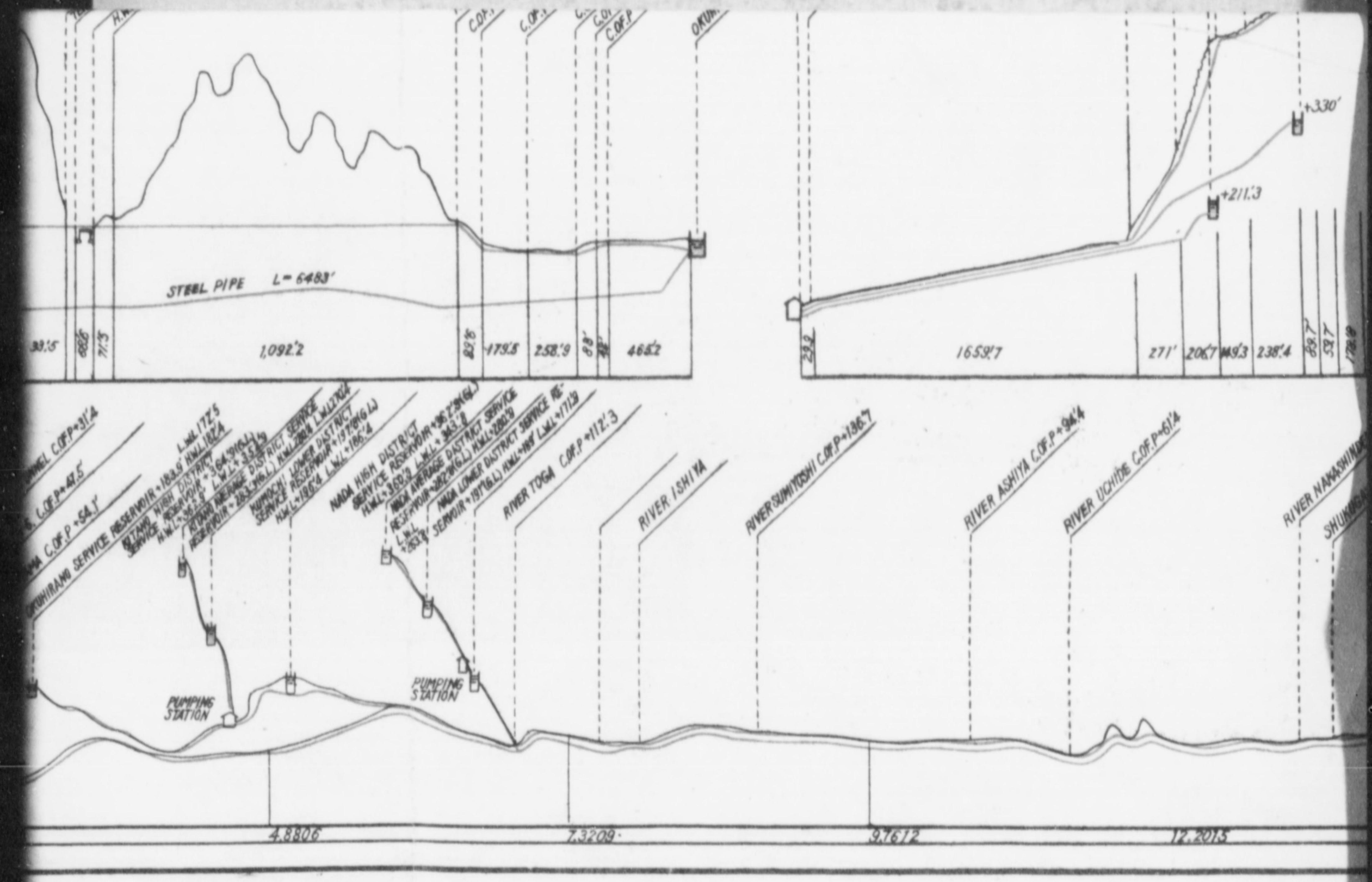

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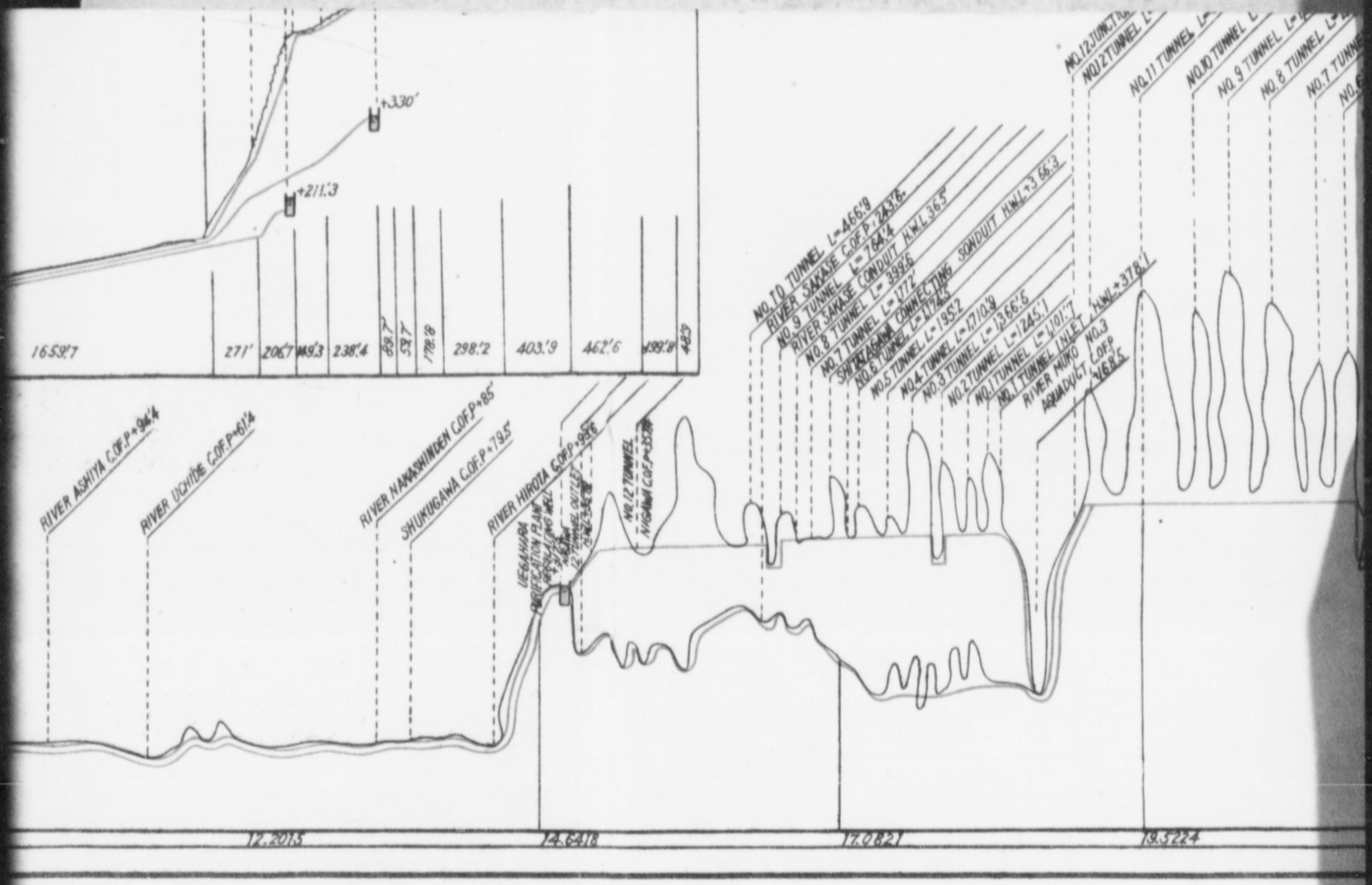

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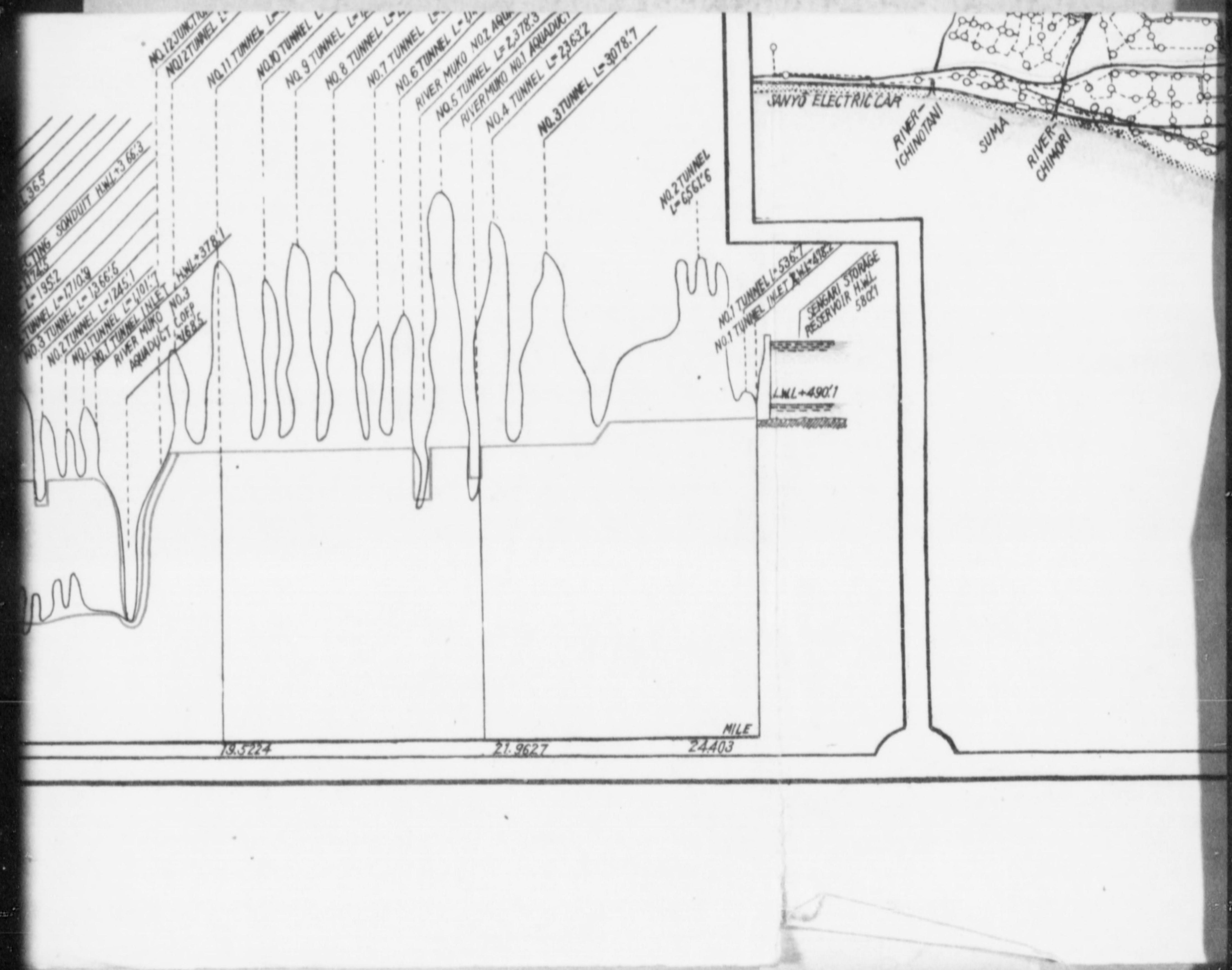
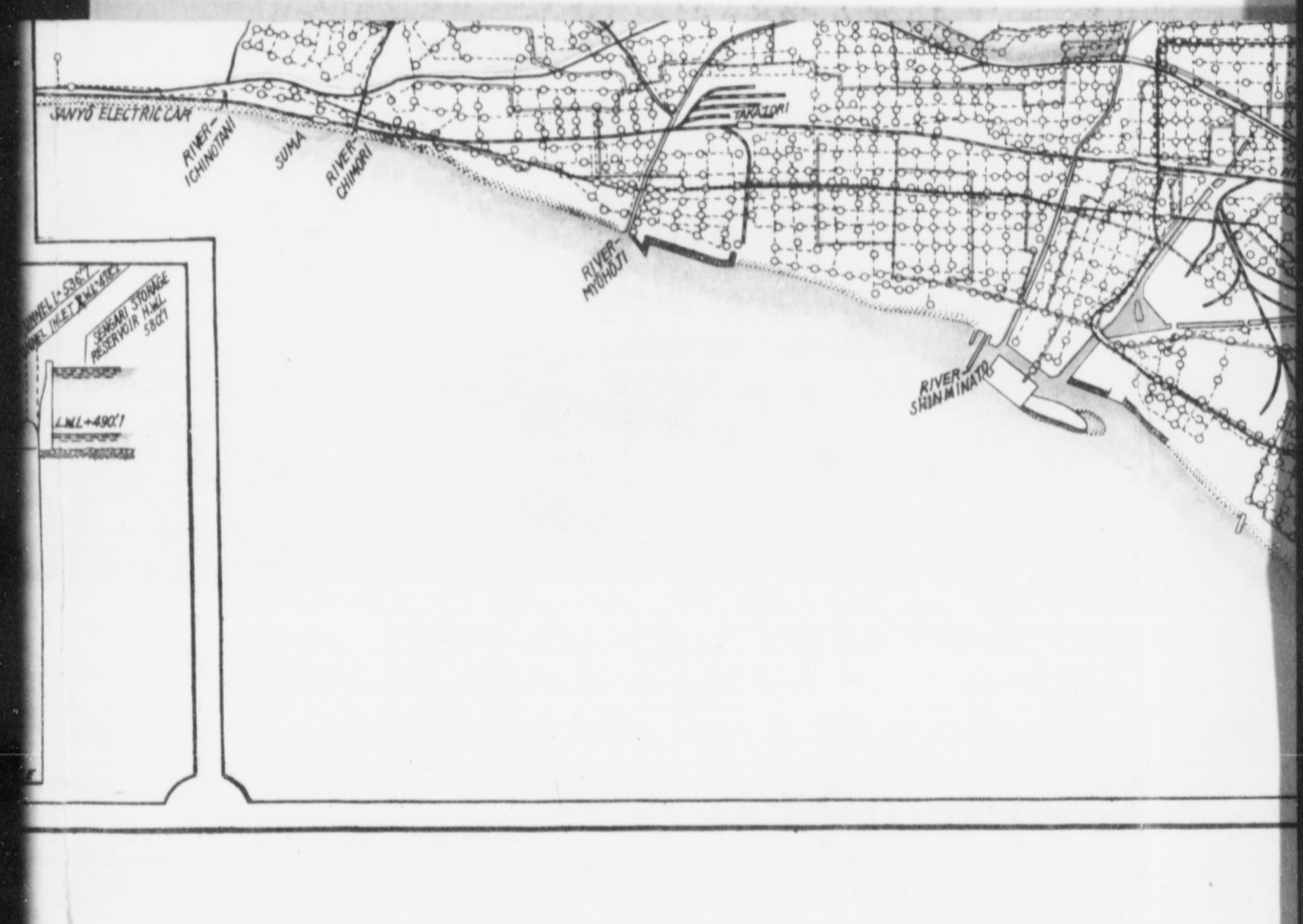
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