

Generators - No. 1 and 2 units - 2 @ 3000 kva, 3-ph, 11,000 v,
 1800 rpm, 60 cyc, BTH-make
 1 @ 120 kw, dc, 125 v,
 450 rpm, AEG-make
 No. 4 unit - 1 @ 7500 kva, 3-ph, 11,000 v,
 3600 rpm, 60 cyc, W-make
 No. 3 unit - 1 @ 15,600 kva, 3-ph, 11,000 v,
 1800 rpm, 60 cyc, W-make
 No. 5 unit - 1 @ 15,600 kva, 3-ph, 11,000 v,
 1800 rpm, 60 cyc, MV-make
 No. 6 unit - 1 @ 37,500 kva, 3-ph, Shibaura-
 make, has probably been installed
 Transformers - 2 @ 900 kva, 3-ph, 11/0.22 kv, D-D conn,
 self-cooled, core-type, Mitsubishi-make
 1 @ 450 kva, 3-ph, 11/0.22 kv, D-D conn,
 self-cooled, core-type, Mitsubishi-make
 4 @ 200 kva, 1-ph, 11/0.22 kv, D-D conn,
 self-cooled, core-type, Okumura-make
 3 @ 200 kva, 1-ph, 11/0.22 kv, D-D conn,
 self-cooled, core-type, Mitsubishi-make
 2 @ 180 kva, 3-ph, 11/0.22 kv, D-D conn,
 self-cooled, core-type, GE-make
 Other equipment - At least 2 exciters @ 75 kw; 5 condensers;
 1 beeding feedwater heater; at least 20 superheaters;
 8 economizers; units No. 1-4 have chain-grate stoking
 while units No. 5 and 6 have pulverized coal firing.
 Area served - Kobe-shi, as of 1933

See: Photograph No. III-107

Sources: DnN 1940; ZKT 1939 p.1908; DnK; DJY 1927; DJY 1929 p.346;
Ohm 6/31 supp p.7, 12/34 p.889; Ohm-sha Guide 1933 p.39; TD Map

475. MINAWA HYDRO PLANT

Approx. Lat. 33°58'
 Long. 133°47'

Company: Shikoku Suiryoku Denki KK

Location: Plant - Otekawa-oaza, Minawa-mura, Miyoshi-gun, Tokushima-ken

Capacity Commonly in Use (in kw): 3750, as of Dec 1936

Importance: Rank in Japan - 250 + ; rank in Shikoku supply area - 15 +

Source of Power: Iya-kawa of the Yoshino-gawa system

Date of Construction: Founded Nov 1912; in operation Mar 1940

Details: Particular capacities (in kw) - 4735 installed cap; 1250 reg;
 2500 spec

Layout - Aqueduct-type

Eff head - 130 ft and 34.5 ft*

Penstocks - Probably 4

Plant, equipment -

Turbines - 2 @ 1500 hp, Francis-type, vertical-shaft,
 Dengyosha-make

1 @ 1500 hp, Francis-type, horizontal-shaft,

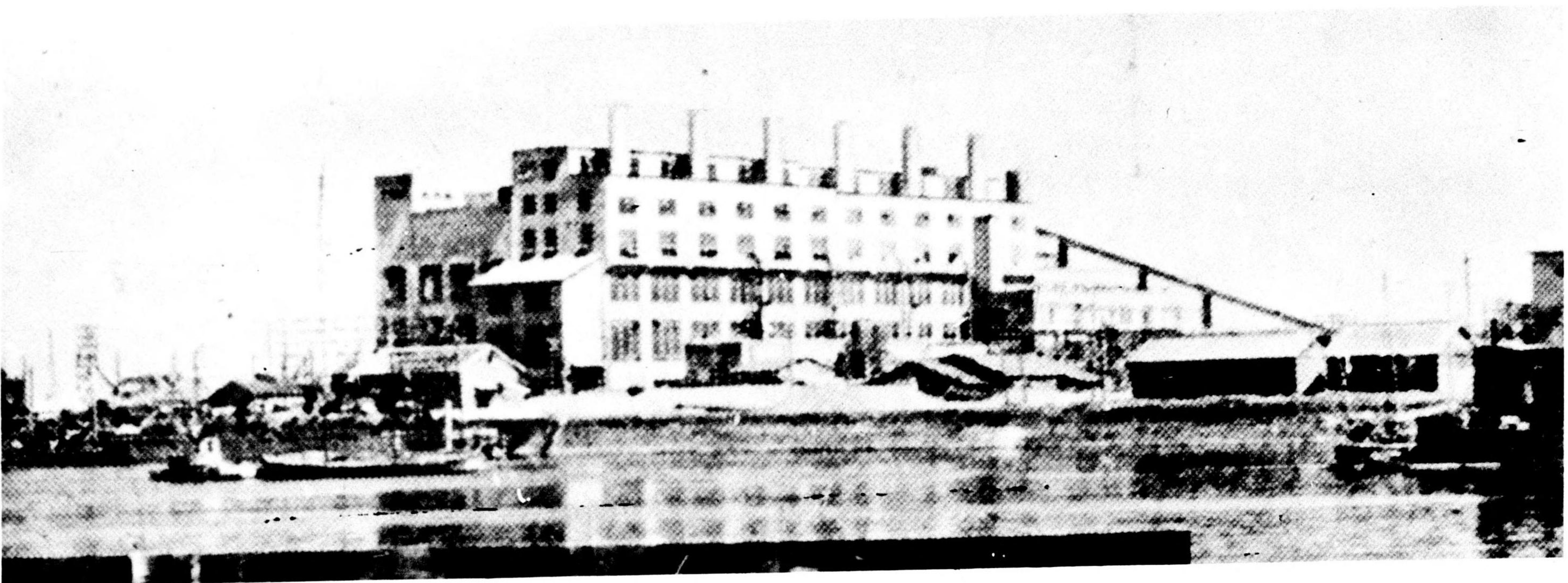
EW-make

1 @ 1350 hp, Francis-type, vertical-shaft, EW-make

*34.5 ft eff head for 1350 hp turbine only



Photograph No. III-104, Minato Steam Plant during the construction of extension in 1936



Photograph No. III-105 Minato
Steam Plant in 1940

RESTRICTED



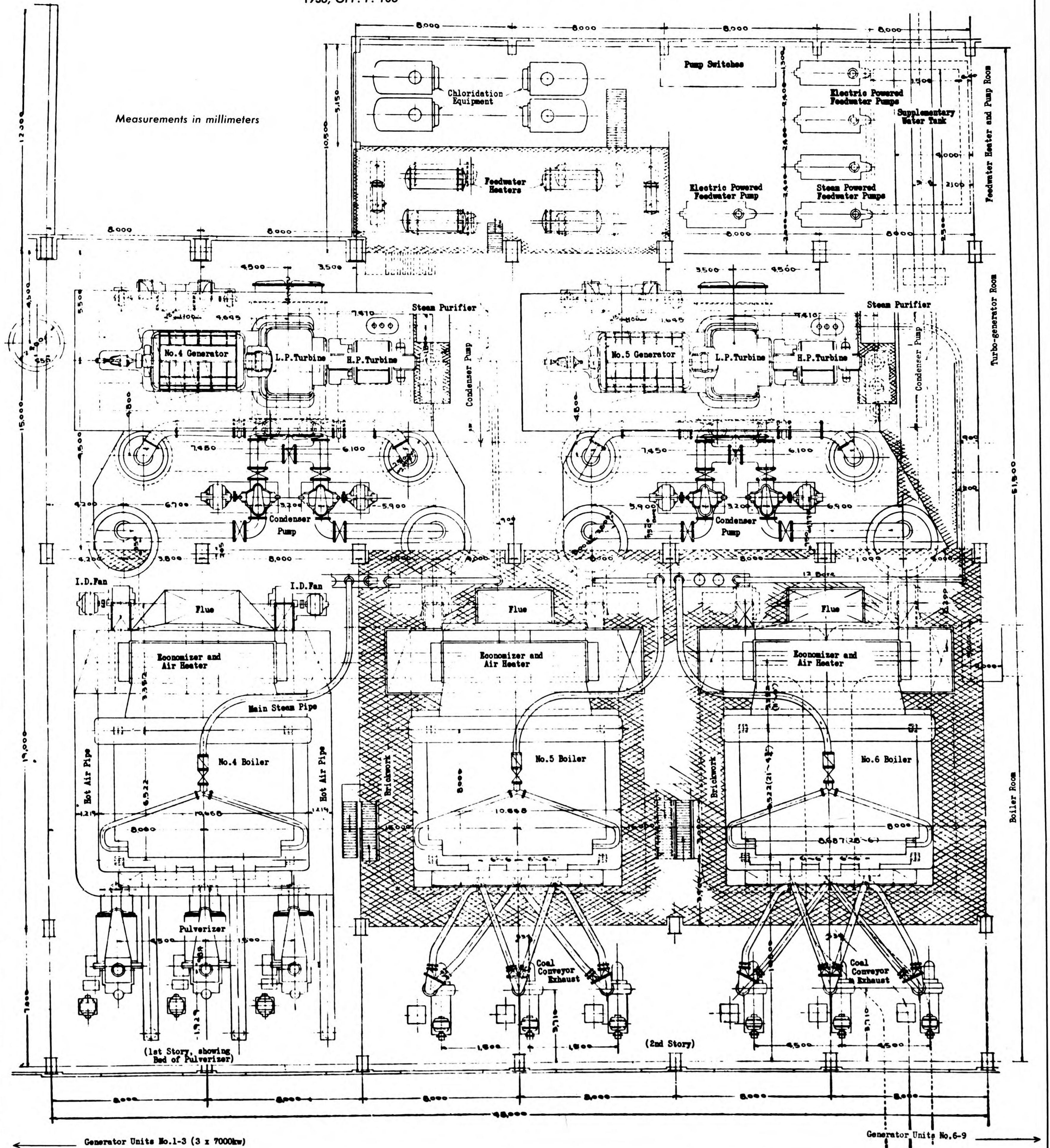
Photograph No. III-106 Minato Steam Plant in 1940

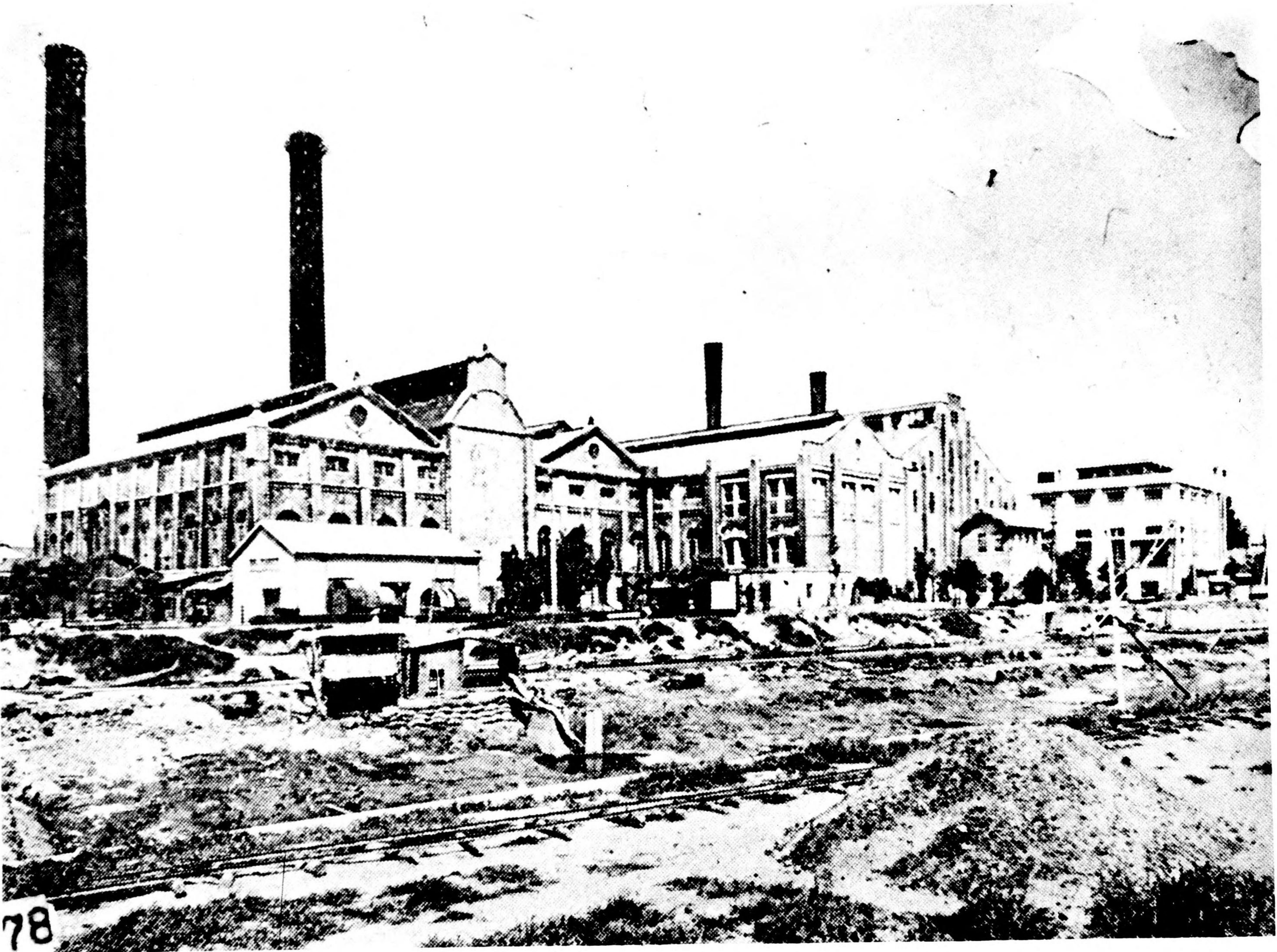
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MINATO STEAM ELECTRIC PLANT-UNITS NO. 4 AND 5

FUKUOKA-KEN

SHIBAURA REVYU (REVIEW OF THE SHIBAURA ENGINEERING WORKS), MARCH
1936, OPP. P. 106





Photograph No. III-107 Minatogawa Steam Plant
In 1934 before recent extension

78

RESTRICTED

Generators - 2 @ 1000 kw, 3-ph, 3450 v, 514 rpm, 60 cyc,
SS-make
 2 @ 1000 kw, 3450 v, 360 rpm, 60 cyc,
Shibaura-make
 1 @ 735 kw, 3-ph, 3450 v, 225 rpm, 60 cyc,
Shibaura-make
Transformers - 3 @ 900 kva, 1-ph, 3.45/35 kv, D-D conn,
water-cooled, 60 cyc, shell-type, SS-make
 3 @ 900 kva, 3.45/35 kv, D-D conn, water-
cooled, 60 cyc, shell-type, Shibaura-make

Sources: DnN 1940; ZKT 1939 p.1650; DnK; DJY 1927; DJY 1929 pp.272,366;
TD Map

476. MINE HYDRO PLANT

Approx. Lat. 35°23'
Long. 139°02'

Company: Fuji Denryoku KK; formerly Fuji Gasu Boseki KK

Location: Plant - Kawanishimine-oaza, Shimizu-mura, Ashigarakami-gun,
Kanagawa-ken

Capacity Commonly in Use (in kw): 5000, as of Dec 1936

Importance: Rank in Japan - 250 + ; rank in Tokyo supply area - 100 +

Source of Power: Ayusawa-kawa

Date of Construction: Founded Mar 1910; in operation Mar 1940

Details: Particular capacities (in kw) - 5000 installed cap; 3750 reg;
1250 spec; 5000 reg pk
Eff head - 215 ft
Plant, equipment -
Turbines - 4 @ 2150 hp, Francis-type, EW-make
Generators - 4 @ 1250 kw, 3-ph, 6600 v, 500 rpm, 50 cyc,
GE-make

Sources: DnN 1940; DnK; DJY 1927; DJY 1929 p.304; ZKT 1939 p.1644;
Ohm 6/32 p.343; TD Map

477. MINOCHI HYDRO PLANT

Approx. Lat. 36°34'
Long. 138°03'

Company: Saikawa Denryoku KK

Location: Plant - Minochi-mura, Kami Minochi-gun, Nagano-ken

Capacity Commonly in Use (in kw): Est 31,500 (see Date of Construction)

Importance: Rank in Japan - 71 ; rank in Tokyo supply area - 25

Source of Power: Sai-kawa

Date of Construction: Under construction Mar 1940; plant probably has gone into operation since.

Details: Eff head - 26.7 m
Plant, equipment -
Turbines - 3 @ 10,500 kw, Francis-type, vertical-shaft,
Hitachi-make
Generators - 3 @ unknown cap

See:

Sources: DnN 1940 HH 1/40 p.4

478. MINOWA HYDRO PLANT

Approx. Lat. 36°04'30"
Long. 138°29'

Company: Tokyo Dento KK

Location: Plant - 3500, Minowa-aza, Kouni-mura, Minami Saku-gun,
Nagano-ken

Capacity Commonly in Use (in kw): 4600, as of Dec 1936

Importance: Rank in Japan - 250 + ; rank in Tokyo supply area - 100 +

Source of Power: Chikuma-gawa of the Shinano-gawa system

Date of Construction: Completed Dec 1920; in operation Mar 1940

Details: Particular capacities (in kw) - 4600 installed cap; 2930 reg;
1670 spec
Layout - Aqueduct-type
Eff head - 63.64 m; flow - 9.75 m³/sec
Dam - 92.35 m long, 2.57 m high, of concrete and stone
construction
Settling basin - 407.31 m² water surface
Aqueduct - 2791.3 m tunnel
Forebay - 106.62 m² water surface
Penstocks - 2 @ 179.98 m long
Excess water spillway - 219.48 m long
Plant, external features - Of brick construction, 2 stories high;
about a dozen wooden shacks are located nearby.
Plant, equipment -
Turbines - 2 @ 3250 kva, Francis-type, horizontal-shaft,
Dengyosha-make
Generators - 2 @ 2875 kva, 80% pf, 3-ph, 3500 v, 600 rpm,
50 cyc, Shibaura-make
Transformers - 4 (incl 1 res) @ 1900 kva, 1-ph, 3.6, 3.5, 3.4/66
kv, D-D conn, water-cooled, 50 cyc, shell-type, Shibaura-
make
Other equipment - 2 exciters @ 25 kw; 1 crane @ 81-ton cap
Tail race - 61.5 m long

Sources: DnN 1940; ZKT 1939 p.1646; DJY 1927; DnK; DJY 1927 p.300

479. MINOWA HYDRO PLANT

Approx. Lat. 36°43'
Long. 137°26'

Company: Tateyama Suiryoku Denki KK

Location: Plant - Muramaki-aza, Minowa-oaza, Higashi Kazumi-mura,
Naka Niikawa-gun, Toyama-ken

Capacity Commonly in Use (in kw): 4000, as of Dec 1936

Importance: Rank in Japan - 250 + ; rank in Osaka-Nagoya supply area-100+

Source of Power: Hayatsuki-gawa

Date of Construction: Founded Jan 1927; in operation Mar 1940

Details: Plant operates on 60 cyc

Sources: DnN 1940 DnK; ZKT 1939 p.1648; DJY 1929 p.295; TD Map

MINOWA HYDRO PLANT (FUKUSHIMA) - See OTOSHI NO. 1 HYDRO PLANT

480. MISAKI STEAM PLANT

Approx. Lat. 42°19'30"
Long. 140°59'

Company: Muroran Dento KK; formerly Hokkaido Tanko Kisen KK

Location: 9-chome, Misaki-cho, Muroran-shi, Hokkaido

Installed Capacity (in kw): Est 9000 (see Date of Construction)

Importance: Rank in Japan - 246 ; rank in Hokkaido supply area - 12

Date of Construction: Founded Dec 1926 with an initial installed capacity of 1000 kw. This capacity was increased in 1930 to 2000 kw and in May 1933 to 4000 kw. As estimated additional unit of about 5000 kw was scheduled for installation and has probably been added since. Plant was in operation Mar 1940

Details: Plant, equipment -
Boilers - 3 @ B&W-type, 210 lbs/in², 200° C, 1619 ft², B&W-make. Additional boiler units have been installed since.
Turbines - 1 @ 1340 hp, Ljungstrom-type, Mitsubishi-make. Additional turbines have been installed since.
Generators - 1 @ 1250 kva, 3-ph, 3300 v, 3000 rpm, 50 cyc, Mitsubishi-make
1 @ 2500 kva, 3-ph, 3300 v, 3000/3600 rpm, 50/60 cyc, Shibaura-make. 1 additional generator has probably been put into operation since.

Sources: DnN 1940; DnK; ZKT 1939 p.1652; Ohm 4/29 p.212, 4/30 p.215, 2/31 p.111, 8/33 p.473, 9/34 p.681; SR 1/34; DJY 1929 p.293

481. MISHIMA NO. 2 STEAM PLANT

Approx. Lat. 33°59'
Long. 133°33'Company: Iyo Tetsudo Denki KK; formerly Suiyo Denki KKLocation: 641, Dewaki-aza, Mishima-machi, Uma-gun, Ehime-kenInstalled Capacity (in kw): 1400, as of Dec 1934Importance: Rank in Japan - 250 + ; rank in Shikoku supply area - 15 +Date of Construction: Completed May 1926; in operation Mar 1940Details: Particular capacities (in kw) - 1000 reg

Plant, equipment -

Boilers - 3 (incl 1 res) @ B&W-type, 250 lbs/in², 1098 ft²,
B&W-make

Turbines - 1 @ 1900 hp, Ljungstrom-type, STAL-make

Generators - 1 @ 1750 kva, 3-ph, 3300 v, 3000 rpm, 50 cyc,
STAL-makeSources: DnN 1940; DJY 1927; DJY 1929 p.370; Ohm 4/30 p.215; ZKT 1939
p.1650

482. MISUMAI HYDRO PLANT

Approx. Lat. 43°01'
Long. 141°20'30"Company: Hokkai Suiryoku Denki KK; formerly Sapporo Suiryoku Denki KKLocation: Plant - Hirakishi-ozaza, Toyohira-mura, Sapporo-gun, HokkaidoCapacity Commonly in Use (in kw): 1840, as of Dec 1934Importance: Rank in Japan - 250 + ; rank in Hokkaido supply area - 15 +Source of Power: Toyohira-kawaDate of Construction: Founded Feb 1920; in operation Mar 1940Details: Particular capacities (in kw) - *1800 installed cap; 1150 reg;
690 spec

Eff head - 114 ft

Plant, equipment -

Turbines - 3 @ 1100 hp, Francis-type, horizontal-shaft,
Hitachi-make

Generators - 3 @ 750 kva, 3-ph, 3500 v, 720 rpm, 60 cyc, GE-make

Transformers - 7 (incl 1 res) @ 600 kva, 1-ph, 3.5, 3.25, 3.0/22
kv, D-D conn, water-cooled, 60 cyc, shell-type, GE-makeSources: DnN 1940; ZKT 1939 p.1652; DJY 1927; DJY 1929 pp.291,404

483. MITAKE HYDRO PLANT

Approx. Lat. 35°51'
Long. 137°36'30"Company: Nippon Hassoden KK; formerly Daido Denryoku KK

Location: Plant - On the right bank of the Nishino-gawa just above its junction with the Otaki-kawa in Mitake-mura, Nishi Tsukuma-gun, Nagano-ken

Capacity Commonly in Use (in kw): 61,800 (see Date of Construction)

Importance: If completed, would be 28th largest plant in Japan

Source of Power: Nishino-kawa, Ugui-kawa, and Otaki-kawa

Date of Construction: Planned Nov 1937; no evidence of construction has been received.

Details: Layout - Combined aqueduct and dam-type

See: Figure No. III-28

Sources: Ohm 12/37 p.1390

484. MITAKE HYDRO PLANT

Approx. Lat. 35°45'
Long. 138°34'

Company: Kofu Denryoku KK

Location: Plant - 1057, Inoshishi-oaza, Miyamoto-mura, Haka Koma-gun, Yamanashi-ken

Capacity Commonly in Use (in kw): 2560, as of June 1928

Importance: Rank in Japan - 250 + ; rank in Osaka-Nagoya supply area-100+

Source of Power: Ara-kawa and branches of the Fuji-kawa system

Date of Construction: Completed Oct 1927; in operation Mar 1940

Details: Particular capacities (in kw) - 3600 installed cap; 2560 reg; 3600 reg pk; 3600 max pk

Layout - Aqueduct-type

Eff head - 345 m

Forebays - 2

Penstocks - 1

Plant, equipment -

Turbines - 1 @ 3000 hp, Pelton-type, Voith-make

Generators - 2 @ 1800 kw, 3-ph, 3500 v, 600 rpm, 60 cyc

Transformers - 4 (incl 1 res) @ 1500 kva, 1-ph, 3.5, 3.4, 3.3/22, 21, 20 kv, D-D conn, water-cooled, 60 cyc, shell-type, Shibaaura-make

Sources: DnN 1940; ZKT 1939 p.1646; DnK; Ohm 1/28 p.80, 3/33 p.130; DJY 1929 pp.245, 314; TD Map

485. MITSUISAWA HYDRO PLANT

Approx. Lat. 38°16'
Long. 140°50'

Company: Sendai-shi

Location: Plant - Aramaki-oaza, Nanakita-mura, Miyagi-gun, Miyagi-ken

Capacity Commonly in Use (in kw): 1000, as of Dec 1934

Importance: Rank in Japan - 250 + ; rank in Tohoku supply area - 20 +

Source of Power: Hirose-kawa

Date of Construction: Unknown; in operation as early as Dec 1926 and as recently as Mar 1940

Details: Particular capacities (in kw) - *1040 installed cap
Eff head - 88 ft
Plant, equipment -
Turbines - 1 @ 1800 hp, Francis-type, Voith-make
Generators - 1 @ 1310 kva, 3-ph, 3300 v, 428 rpm, 50 cyc, SS-make

Sources: DnN 1940; DJY 1927; DJY 1929 p.384

486. MIYADAIRA HYDRO PLANT

Approx. Lat. 35°56'
Long. 138°53'

Company: Tokyo Dento KK; formerly Teikoku Dento KK

Location: Plant - Narate-aza, Odaki-oaza, Odaki-mura, Chichibu-gun, Saitama-ken

Capacity Commonly in Use (in kw): 1500, as of May 1936

Importance: Rank in Japan - 250 + ; rank in Tokyo supply area - 100 +

Source of Power: Ara-kawa

Date of Construction: Completed Jan 1923; in operation Mar 1940

Details: Particular capacities (in kw) - 2080 installed cap; 1050 reg; 450 spec
Layout - Aqueduct-type
Eff head - 70.91 m; flow - 2.78 m
Dam - 37.9 m long, 2.4 m high, of concrete construction with stone pitching
Intake - 5 gates
Settling basins - 2, incl 1 @ 32 m² water surface and 1 @ 8 m² water surface
Aqueduct - 2952 m long tunnel
Forebay - 426 m² water surface
Penstocks - 1 @ 132 m long
Excess water spillway - 104 m long
Plant, external features - Of reinforced concrete construction, 1 story high; about 5 wooden shacks are situated nearby.
Plant, equipment -
Turbines - 2 @ 1600 hp, Francis-type, vertical-shaft, AC-make
Generators - 2 @ 1300 kva, 80% pf, 3-ph, 3450 v, 500 rpm, 50 cyc, AC-make
Transformers - 4 (incl 1 res) @ 867 kva, 1-ph, 3.45/35 kv, D-D conn, water-cooled, AC-make

Sources: DnN 1940; ZKT 1939 p.1645; Ohm 4/28 p.244; DJY 1927; DJY 1929 p.306

487. MIYANOHARA HYDRO PLANT

Approx. Lat. 36°59'30"
Long. 138°35'

Company: Chuo Denki KK; formerly Shikumigawa Denryoku KK

Location: Plant - 21, Kotane Shinden, Miyahara-aza, Kamigo-mura,
Naka Uonuma-gun, Niigata-ken

Capacity Commonly in Use (in kw): Est 2440, as of Dec 1936

Importance: Rank in Japan - 250 + ; rank in Osaka-Nagoya supply area-100+

Source of Power: Shinano-gawa

Date of Construction: Founded Nov 1914; in operation Mar 1940

Sources: DnN 1940; DnK; ZKT 1939 p.1645

488. MIYASONO HYDRO PLANT

Approx. Lat. 32°13'
Long. 130°52'

Company: Nippon Chisso Hiryo KK; formerly Kumamoto Denki KK

Location: Plant - Shimo Arata-aza, Kinoo-mura, Kuma-gun, Kumamoto-ken;
between the Kawabega No. 1 and No. 2 Hydro Plants

Capacity Commonly in Use (in kw): 2150 (see Date of Construction)

Importance: Rank in Japan - 250 + ; rank in Kyushu supply area - 50 +

Source of Power: Itsuki-kawa of the Kawabe-gawa system

Date of Construction: Construction was begun Dec 1927; no evidence of
completion has been received.

Sources: DGS 11/34 p.1343; Ohm p.180

489. MIYAZU NO. 1 STEAM PLANT

Approx. Lat. 35°32'
Long. 135°11'30"

Company: Kyoto Dento KK; formerly Teikoku Dento KK

Location: 2385, Namiji-aza, Miyazu-machi, Yose-gun, Kyoto-fu

Installed Capacity (in kw): 3000, as of Dec 1936

Importance: Rank in Japan - 250 + ; rank in Osaka-Nagoya supply area-100+

Date of Construction: Founded Jan 1921; in operation Mar 1940

Details: Particular capacities (in kw) - 2000 supp, 1000 res
Plant, equipment -
Boilers - 2 @ B&W-type, 200 lbs/in², 116° C, 2690 ft²,
B&W-make
2 @ B&W-type, 200 lbs/in², 121° C, 4510 ft²,
B&W-make
Turbines - 1 @ 1500 hp, Curtis-type, horizontal-shaft,
GE-make
1 @ 3000 hp, Curtis-type, horizontal-shaft,
GE-make
Generators - 1 @ 1250 kva, 3-ph, 3300 v, 3600 rpm, 60 cyc,
BBC-make
1 @ 2500 kva, 3-ph, 3300 v, 3600 rpm, 60 cyc,
BBC-make

Transformers - 4 (incl 1 res) @ 1250 kva, 1-ph,
3.4, 3.3, 3.15, 3/33 kv, D-D conn, water-cooled, 60 cyc,
shell-type, GE-make

Sources: DnN 1940; DJY 1927; DJY 1929 p.344; ZKT 1939 p.1644; DnK; TD Map

490. MIYAZU NO. 2 STEAM PLANT

Approx. Lat. 35°32'
Long. 135°11'

Company: Kyoto Dento KK

Location: 770, Nawashiroya-aza, Namiji-oaza, Miyazu-machi, Yose-gun,
Kyoto-fu

Installed Capacity (in kw): 20,000 (see Date of Construction). A
total capacity of 40,000 kw is planned.

Importance: Rank in Japan - 113 ; rank in Osaka-Nagoya supply area - 52
Supplies power to the Maizuru Naval Base and factories of
the area.

Date of Construction: Construction was begun Nov 1935 and completed
Dec 1936 with an installed capacity of 20,000 kw; additional units
totaling 20,000 kw were planned for future installation; plant in
operation Mar 1940

Details: Particular capacities (in kw) - 10,000 reg; 3000 supp; 7000 res
Plant, external features - Of reinforced concrete construction,
6 stories high, with 2 chimneys; small shacks are situated
nearby and thickly wooded country is back of the plant.
Plant, equipment -
Fuel supply - Probably by water
Turbines - 2 @ 10,000 kw, AEG-make
Generators - 2 @ 12,500 kva (eco load 8150 kva), 80% pf,
3-ph, 11,000 v, 3600 rpm, 60 cyc, AEG-make
Area served - Kyoto and environs, as of 1936

See: Photograph No. III-108

Sources: DnN 1940; DnK; ZKT 1939 p.1644; Ohm 10/35 p.1034, 12/36 pp.1178,
1240, 3/37 p.308, 8/37 p.789

491. MIYOSHI HYDRO PLANT

Approx. Lat. 33°18'
Long. 130°57'

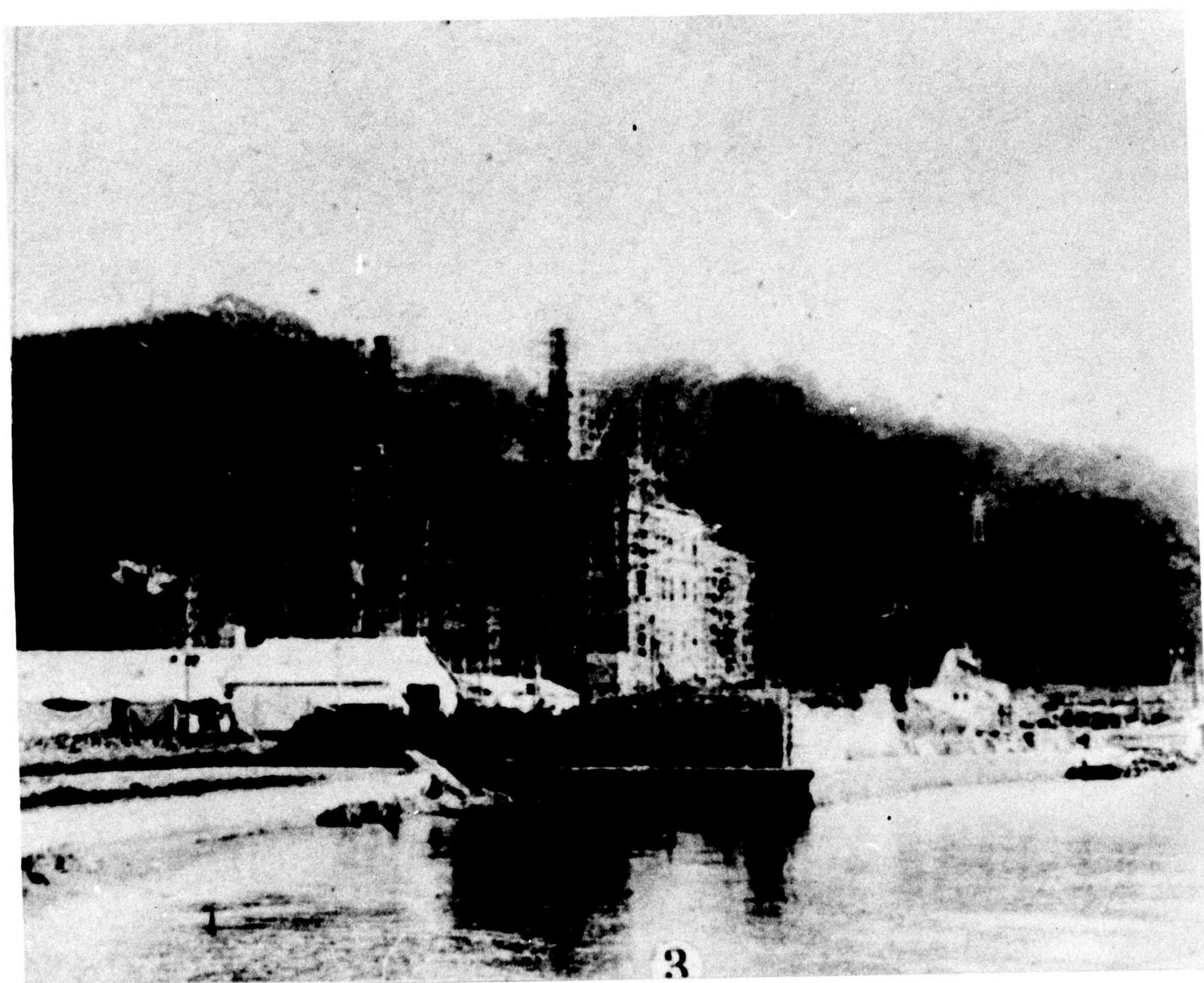
Company: Kyushu Suiryoku Denki KK

Location: Plant - 471 of 2, Hitaka Makihara-oaza, Miyoshi-mura, Hida-gun,
Oita-ken

Capacity Commonly in Use (in kw): 2500, as of July 1937

Importance: Rank in Japan - 250 + ; rank in Kyushu supply area - 50 +

RESTRICTED



Photograph No. III-108 Miyazu No. 2 Steam Plant
under construction in 1936

Source of Power: Kuma-gawa of the Chikugo-gawa system

Date of Construction: Construction was begun Feb 1930 and completed July 1937; in operation Mar 1940

Details: Particular capacities (in kw) - 1400 reg; 1100 spec; 3200 reg pk; 4600 max pk
Layout - Aqueduct-type

Sources: DnN 1940; Ohm 5/30 p.262, 10/37 p.1088; DGS 4/37 p.111

492. MIZUGATORO HYDRO PLANT

Approx. Lat. 38°26'
Long. 140°05'

Company: Yamagata Denki KK

Location: Plant - On the right bank of the Sagae-gawa in Mizugatoro-aza, Irima-oaza, Kawadoi-mura, Nishi Murayama-gun, Yamagata-ken

Capacity Commonly in Use (in kw): 12,700, as of Dec 1936

Importance: Rank in Japan - 175 ; rank in Tohoku supply area - 8

Source of Power: Sagae-gawa of the Mogami-gawa system

Date of Construction: Construction was begun Nov 1928 and completed Feb 1930

Details: Particular capacities (in kw) - *12,000 installed cap; 3700 reg; 9000 spec; 10,000 reg pk
Eff head - 115.24 m; flow - 13.9 m³/sec
Dam - 22.7 m high, 52.7 m long, overflow gravity-type
Log chute - 2.7 m wide, 22 m long
Plant, equipment -
Turbines - 2 @ 9300 hp, reaction-type, vertical-shaft, Dengyosha-make
Generators - 2 @ 7500 kva, 3-ph, 6600 v, 500 rpm, 50 cyc, Shibauro-make
Transformers - 7 (incl 1 res) @ 2500 kva, 1-ph, 6.6/66,33 kv, D-D conn, water-cooled, core-type, Hitachi-make
Other equipment - 2 exciters @ 60 kw
Area served - Yamagata-shi and environs, as of 1933

See: Figure No. III-25

Sources: DnN 1940; DnK; Ohm 7/29 adv p.16, 2/30 p.122, 5/30 p.262, 6/31 supp p.6; Ohm-sha Guide 1933 p.23; DnGZ 7/37; HSG p.324; DGS 8/33 p.670

MIZUGAYODO HYDRO PLANT - See MIZUGATORO HYDRO PLANT

493. MOIWA HYDRO PLANT

Approx. Lat. 43°01'
Long. 141°20'30"

Company: Hokkai Suiryoku Denki KK; formerly Hokkaido Suiryoku Denki KK

Location: Plant - On the left bank of the Toyohira-kawa in Kami Yamabana-
aza, Yamabana-oaza, Moiwa-mura, Sapporo-gun, Hokkaido
Dam - Shirakawa-aza, Yamabana-oaza, Moiwa-mura, Sapporo-gun,
Hokkaido

Capacity Commonly in Use (in kw): 11,200, as of Sept 1936

Importance: Rank in Japan - 197; rank in Hokkaido supply area - 8

Source of Power: Toyohira-kawa

Date of Construction: Construction was begun May 1935 and completed
Sept 1936; in operation Mar 1940

Details: Particular capacities (in kw) - *12,000 installed cap; 2420 reg;
8780 spec; 6830 reg pk
Layout - Aqueduct-type
Eff head - 97.8 m; flow - 14.14 m³/sec
Dam - Gravity-type, of concrete construction with andesite
foundation, 7.8 m high, 105.5 m long, 5 m wide at top, with
2 rolling gates @ 5 m high
Aqueduct - 10,466 m long, incl 7949 m tunnel, 2429 m covered
ditch, and 88 m open ditch
Forebay - 60 m long, 18 m wide
Penstocks - 3
Excess water channel - 320 m long, of reinforced concrete
Log chute - 5 m wide, 0.6 m deep
Plant, external features - Of reinforced concrete construction
with andesite foundation, 2 stories, 10.6 m high, 23 m wide
Plant, equipment -
Turbines - 3 @ 4450 kw, reaction-type, Dengyosha-make
Generators - 3 @ 5000/3900 kva, 3-ph, 3300/2750 v, 514/429 rpm,
60/50 cyc, Shibauro-make
Tail race - Of reinforced concrete construction

See: Photographs No. III-109, III-110, III-111, III-112
Figure No. III-26

Sources: DnN 1940; DGS 6/37 p.607; DGS Kaimu 1939 p.68; Ohm 8/35 p.829,
12/36 p.1260, 2/37 p.216; DnGZ 12/36 p.(89); SR 1/37 p.4; ZKT 1939
p.1652; HSG pp.198,324

494. MOJI FACTORY STEAM PLANT

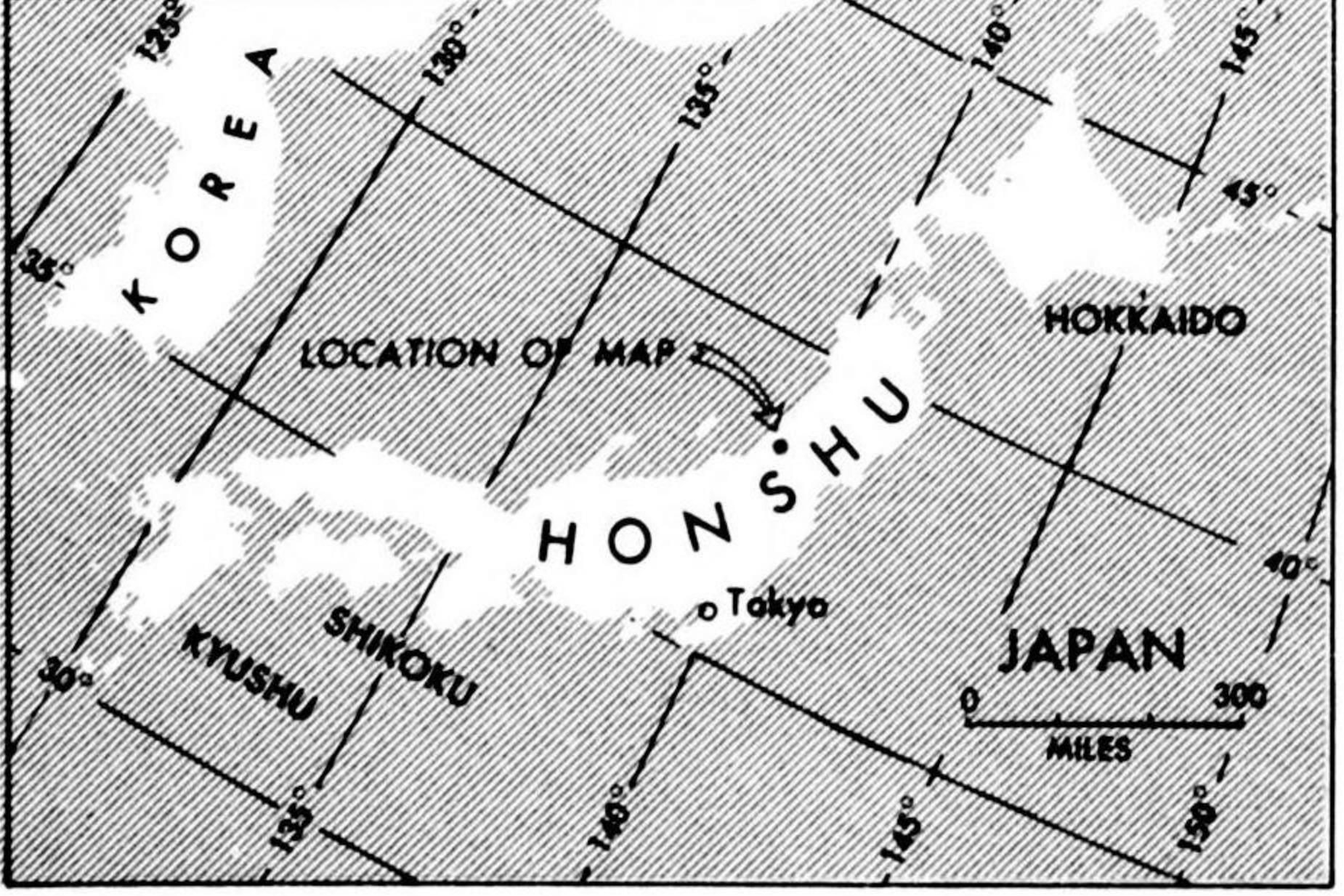
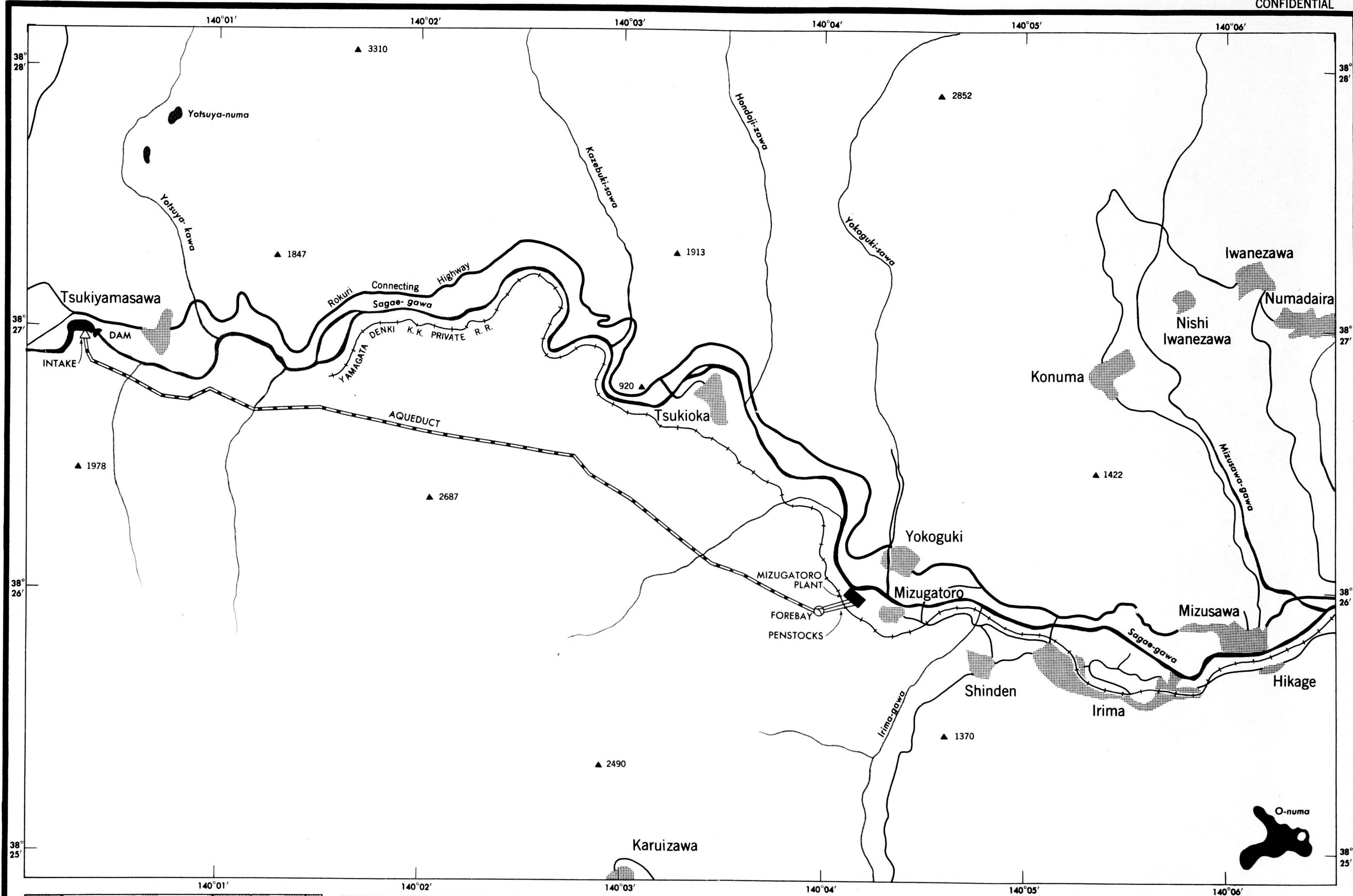
Approx. Lat. 33°57'
Long. 130°58'

Company: Asano Cement KK

Location: Directly to west of Moji railroad station, Moji-shi, Fukuoka-ken

Installed Capacity (in kw): 7000, as of May 1927

Importance: Rank in Japan - 250 + ; rank in Kyushu supply area - 43



MIZUGATORO HYDROELECTRIC PLANT YAMAGATA-KEN

BASE MAP FROM 1:50,000 SERIES, JAPAN IMPERIAL LAND SURVEY BUREAU, 1933
W. D. M. C. FILE NO. JAPAN S30-JGS-30, SHEET 71-14.

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MILES
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KILOMETERS

Reliability Code 1B-1B-1

	SETTLEMENT CENTER
	PRIVATE RAILROAD
	PRINCIPAL HIGHWAY
	SECONDARY ROAD
	SPOT HEIGHT (IN FEET)



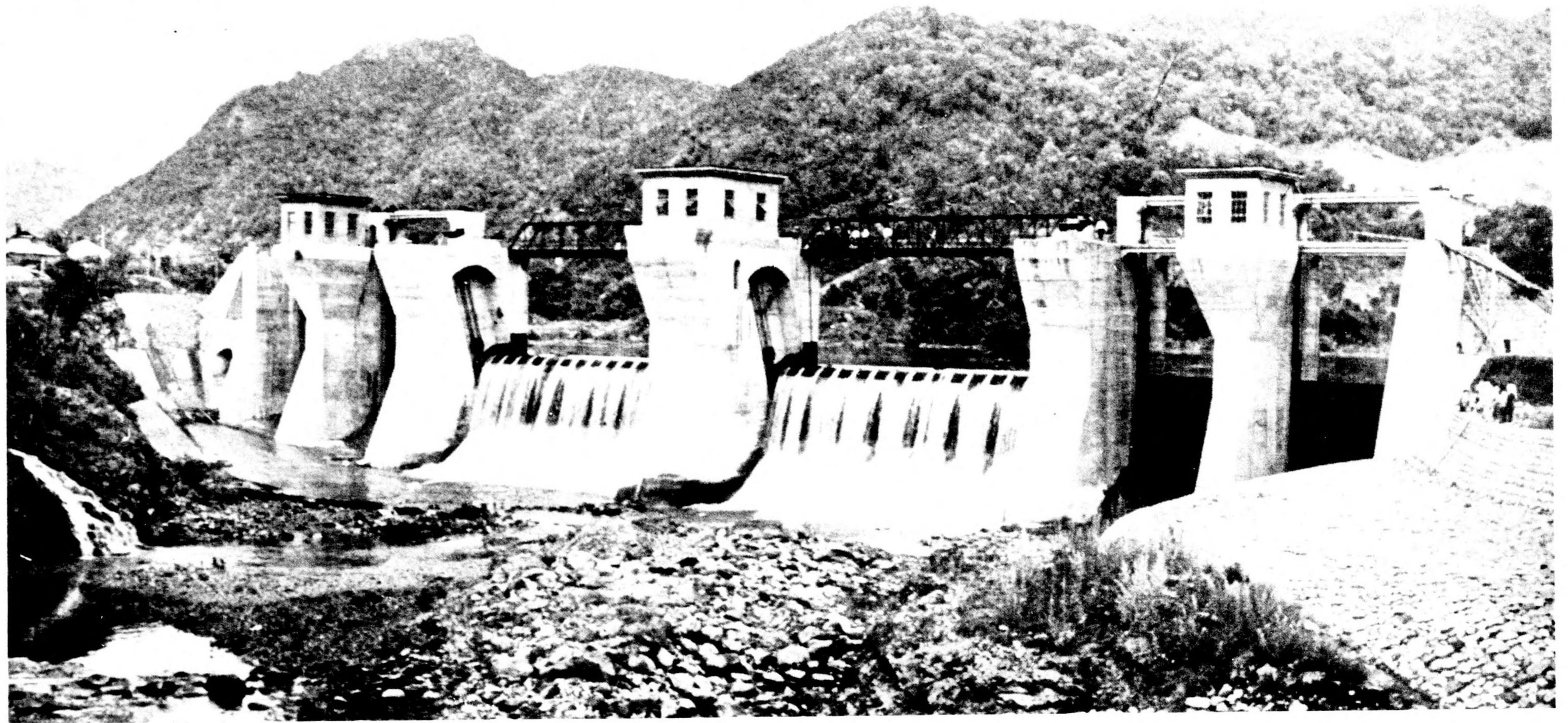
Photograph No. III-109 Moiwana Hydro Plant in 1937



Photograph No. III-110 Moitwa Hydro Plant in 1937

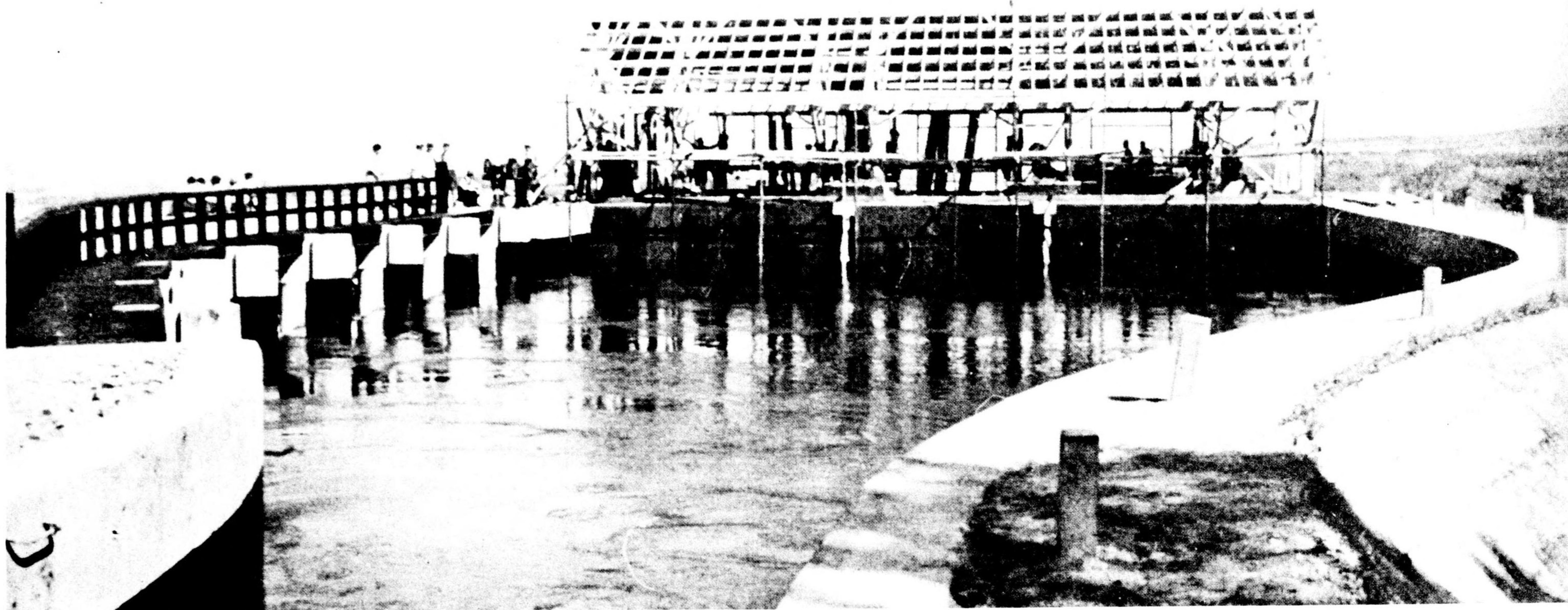
RESTRICTED

取水堰堤 (背面よりローリングゲート上の溢流を見る)



Photograph No. III-111 Moiva Hydro Plant dam from
downstream in 1937

水槽 (起點より下流を見る)



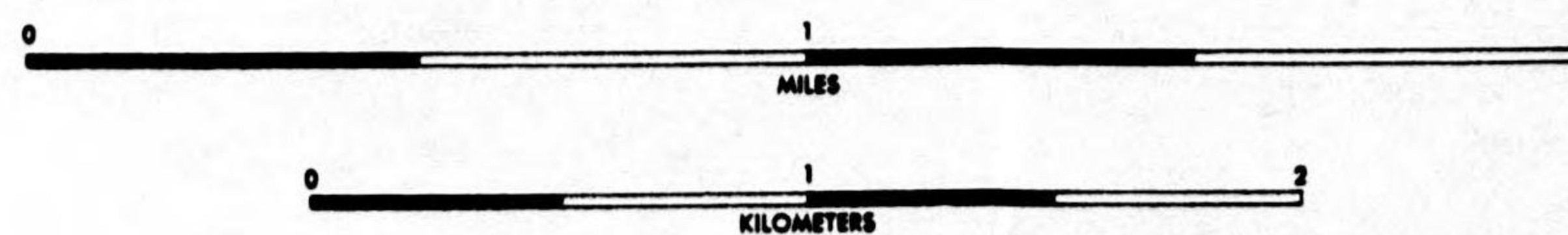
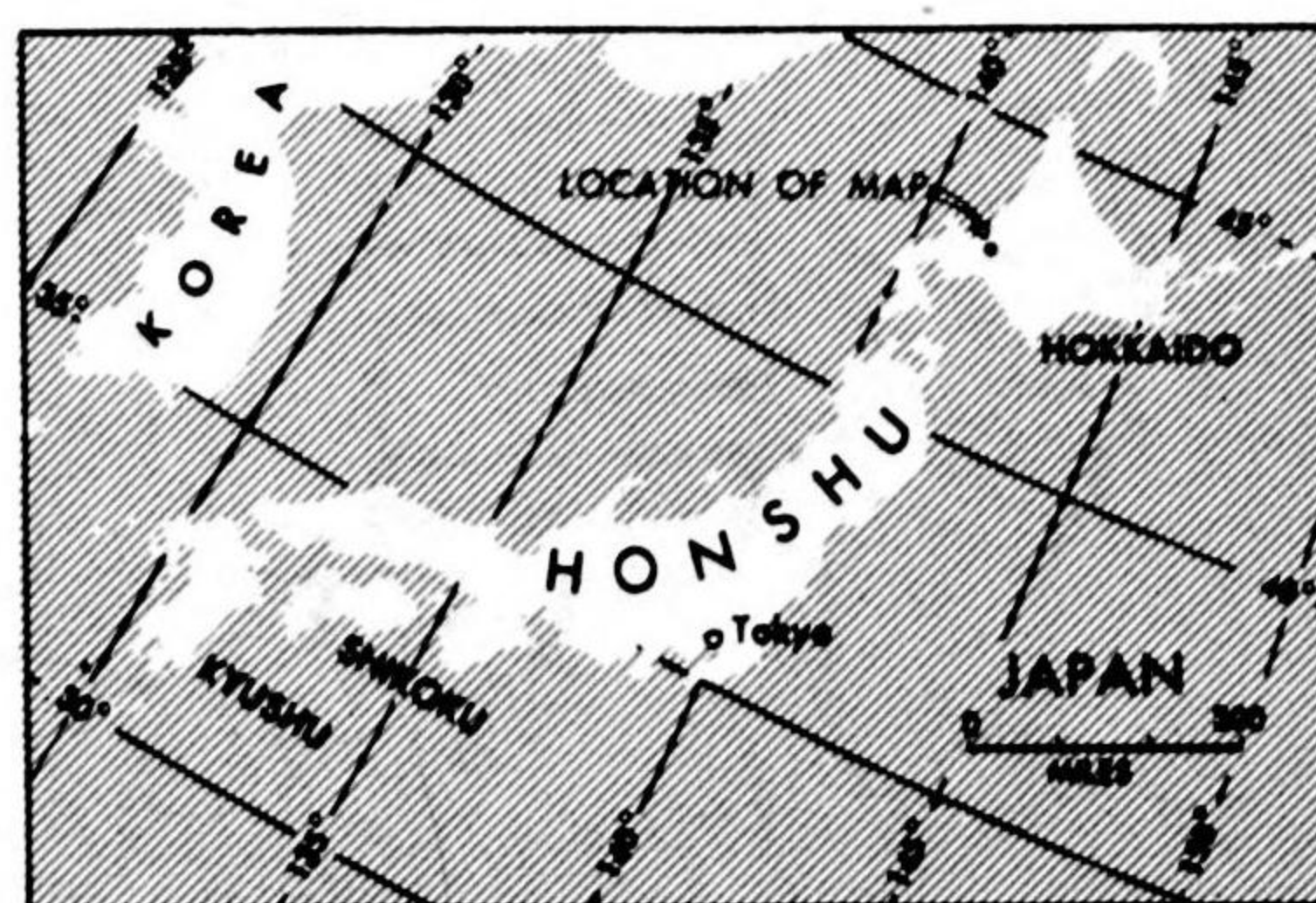
Photograph No. III-112 Moitwa Hydro Plant forebay

PROVISIONAL EDITION



MOIWA AND MISUMAI HYDROELECTRIC PLANTS HOKKAIDO

BASE MAP FROM 1:50,000 SERIES, JAPAN IMPERIAL LAND SURVEY BUREAU, 1937.
W.D.M.C. FILE NO. S30-JGS-50, SHEETS 92-10 AND 92-11.



- SETTLEMENT CENTER
- TUNNEL
- PRINCIPAL HIGHWAY
- SECONDARY ROAD
- SPOT HEIGHT (IN FEET)

Reliability Code: 1B-1B-1

Date of Construction: Unknown; in operation as early as May 1927 and as recently as 1929

Details: Plant, equipment -

Fuel supply - Uses waste gas from cement kilns

Boilers - 3 @ Edgemoor water tube-type

Turbines - 1 @ 3000 kw, Parsons-type

1 @ 4000 kw, Zoelly-type

Generators - 1 @ 3000 kw

1 @ 4000 kw

It has been announced that this plant has been partially converted to ferro-manganese production.

Sources: Ohm 5/27 p.218; Directory of Japanese Portland Cement Manufacturers 1929 p.9

MOKAN STEAM PLANT - See ABOSHI KARYOKU STEAM PLANT

MOMOTSUKI HYDRO PLANT - See DOZUKI HYDRO PLANT

495. MOMOYAMA HYDRO PLANT

Approx. Lat. 35°45'
Long. 137°42'30"

Company: Nippon Hassoden KK; formerly Daido Denryoku KK

Location: Plant - On the right bank of the Kiso-gawa at 2 of 151, Hagihara-aza, Kami Matsu-machi, Nishi Tsukuma-gun, Nagano-ken

Capacity Commonly in Use (in kw): 23,100, as of Dec 1934

Importance: Rank in Japan - 101 ; rank in Tokyo supply area - 39 ; rank in Osaka-Nagoya supply area - 46

Source of Power: Kiso-gawa

Date of Construction: Completed Dec 1923; in operation Mar 1940

Details: Particular capacities (in kw) - *24,000 installed cap; 10,680 reg; 12,420 spec

Layout - Aqueduct-type

Eff head - 81 m (262 ft); flow - 36.8 m³/sec (1300 ft³/sec)

Dam - 282 ft long, 19 ft high, of stone construction, protected by 45 ft concrete apron faced with stone; with 3 sluice gates on right side of dam

Intake - 4 gates @ 9 ft x 10 ft

Settling basin - 300 ft long, 23 ft deep, 68 ft wide

Aqueduct - 14,208 ft long in 2 sections separated by settling basin

Forebay - 86 ft long, 59 ft wide at widest point

Penstocks - 2 @ 674 ft long, 9 ft 4 in inner diam

Excess water spillway - 272 ft long

Plant, external features - Main building, which is of concrete construction, 4 stories high, contains turbines and generators; auxiliary building, which is of concrete construction, 2 stories high, contains transformers, switch-gear, and offices.

Plant, equipment -

Turbines - 2 @ 19,800 hp, Francis-type, vertical-shaft, EW-make

Generators - 2 @ 15,000 kva, 3-ph, 6600 v, 300/250 rpm, 60/50 cyc, W-make

Transformers - 7 (incl 1 res) @ 5000 kva, 1-ph, 6.6/77 kv,

D-D conn, water-cooled, 60/50 cyc, shell-type, W-make

Tail race - 272 ft long

Area served - Tokyo-shi, Osaka-shi, and Nagayo-shi, as of 1933

See: Photographs No. III-113, III-114, III-115, III-116, III-117, III-118
Figures No. III-27, III-28

Sources: DnN 1940; DnK; ZKT 1939 p.1646; DJY 1927; DJY 1929 p.342;
Ohm 6/31 supp p.6, 10/33 opp p.561, 12/37 p.1390; Ohm-sha Guide 1933
p.9; DGS 12/34 p.1545; Engineering News Record 1/22/25 p.154; TD Map

496. MONIWA HYDRO PLANT

Approx. Lat. 38°13'
Long. 140°50'

Company: Miyagi-ken; formerly Nihommatsu Denki KK

Location: Plant - Osawa-aza, Moniwa-oaza, Oide-mura, Natori-gun,
Miyagi-ken

Capacity Commonly in Use (in kw): 1300, as of Dec 1934

Importance: Rank in Japan - 250 + ; rank in Tohoku supply area - 20 +

Source of Power: Natori-kawa

Date of Construction: Founded July 1921; in operation Mar 1940

Details: Particular capacities (in kw) - *1260 installed cap; 580 reg;
720 spec
Eff head - 55 ft
Plant, equipment -
Turbines - 1 @ 1300 hp, Francis-type, vertical-shaft, EW-make
1 @ 850 hp, Francis-type, Hitachi-make
Generators - 1 @ 1050 kva, 3-ph, 11,000 v, 428 rpm, 50 cyc,
W-make
1 @ 650 kva, 3-ph, 11,000 v, 375 rpm, 50 cyc,
Hitachi-make
Transformers - 3 @ 50 kva, 3-ph, 11,10.5,10/3.45,3.3,3.15 kv,
D-D conn, self-cooled, 50 cyc, shell-type, Toba-make

Sources: DnN 1940; ZKT 1939 p.1910; DJY 1927; DJY 1929 pp.282,386

497. MORIOKA DENKI NO. 2 HYDRO PLANT

Approx. Lat. 39°50'
Long. 140°50'

Company: Ou Dento KK; formerly Morioka Dento KK, Morioka Denki Kogyo KK

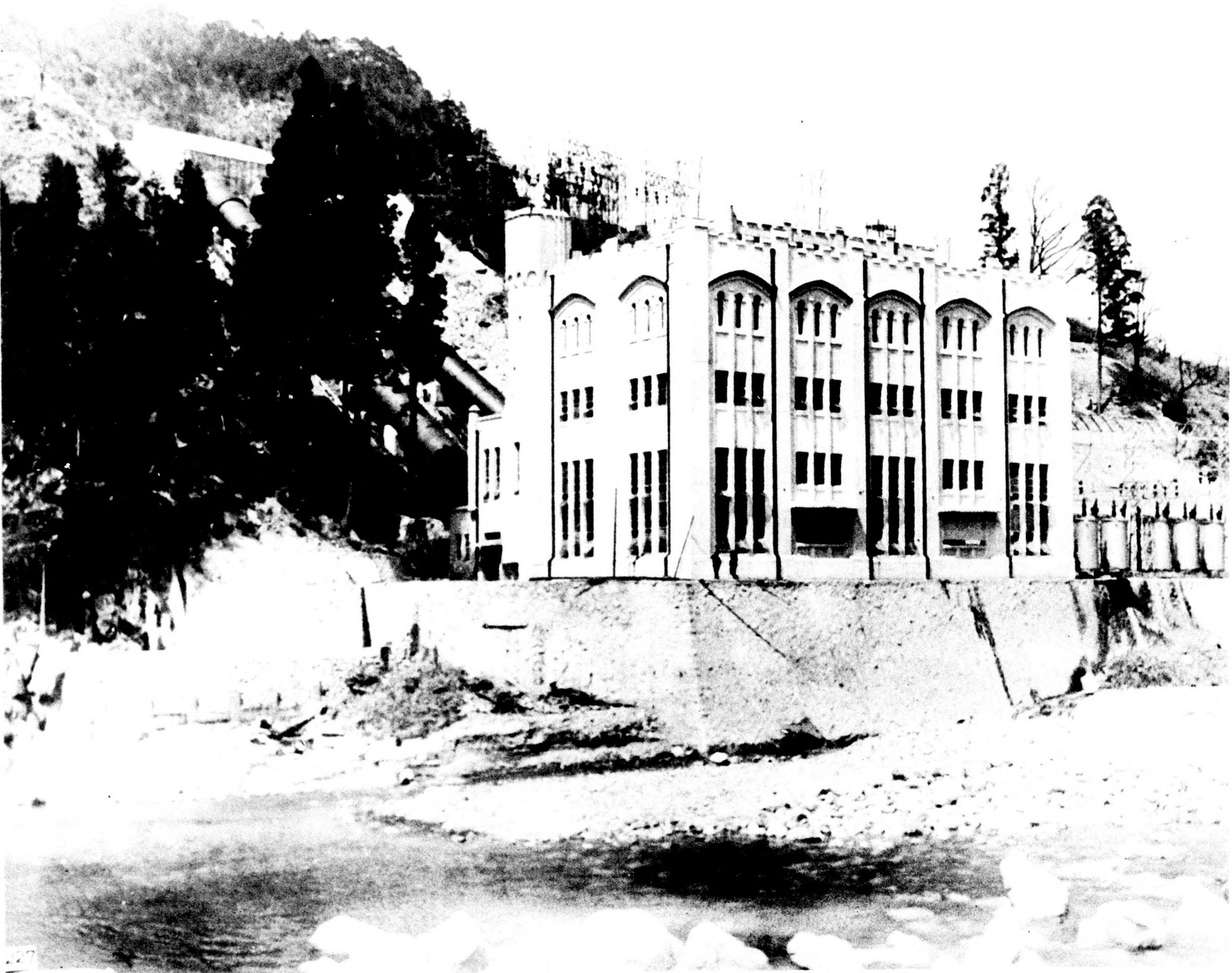
Location: Plant - Nishi Yama-mura, Iwate-gun, Iwate-ken

Capacity Commonly in Use (in kw): 1000, as of Dec 1934

Importance: Rank in Japan - 250 + ; rank in Tohoku supply area - 20 +

Source of Power: Kuzuneda-gawa

Date of Construction: Unknown; in operation as early as Dec 1926 and
as recently as Mar 1940



Photograph No. III-113 Momoyama Hydro Plant before
construction of auxiliary building

RESTRICTED



Photograph No. III-114, Momoyama Hydro Plant before
construction of auxiliary building

RESTRICTED



Photograph No. III-115 Momoyama Hydro Plant
with auxiliary building

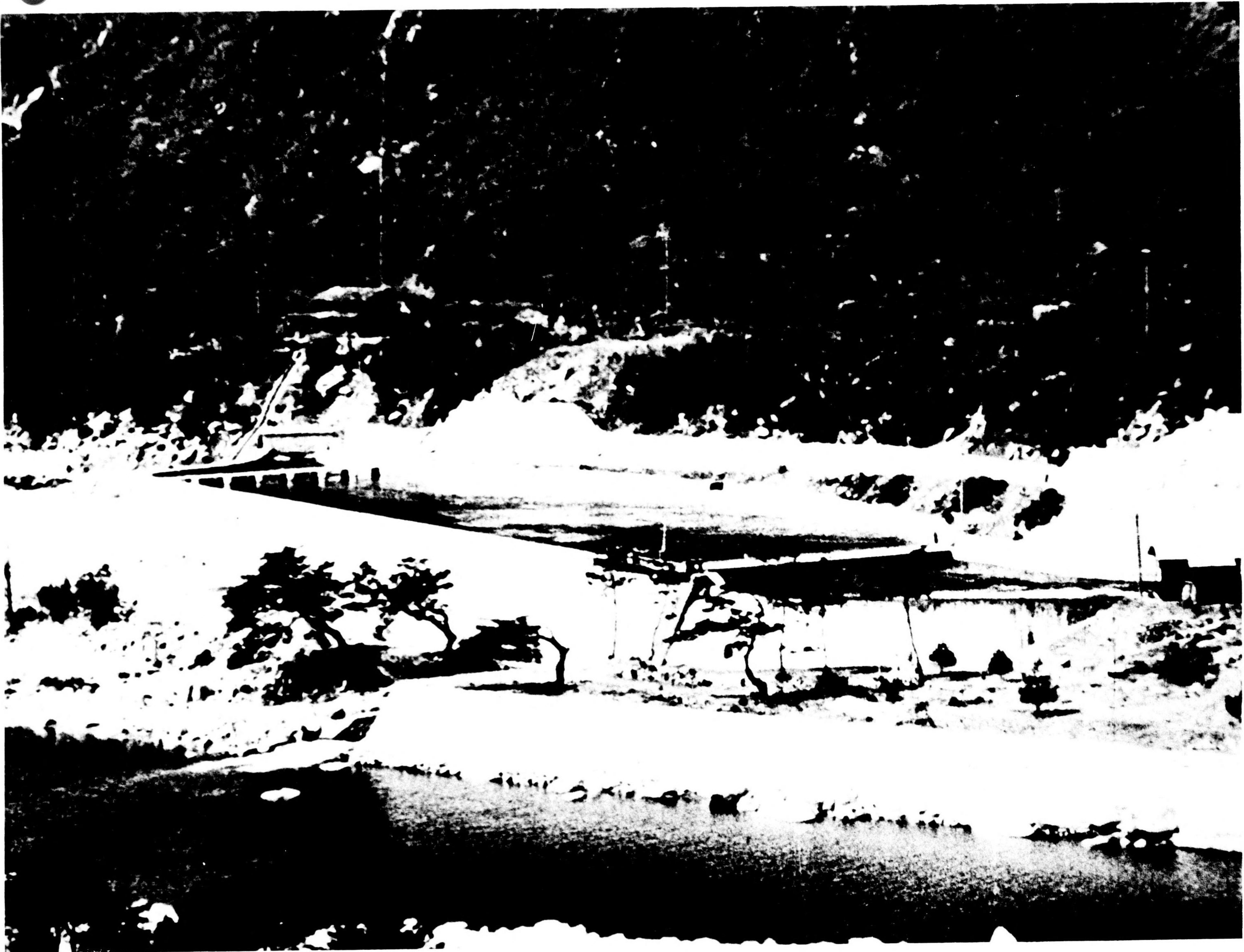
314

RESTRICTED



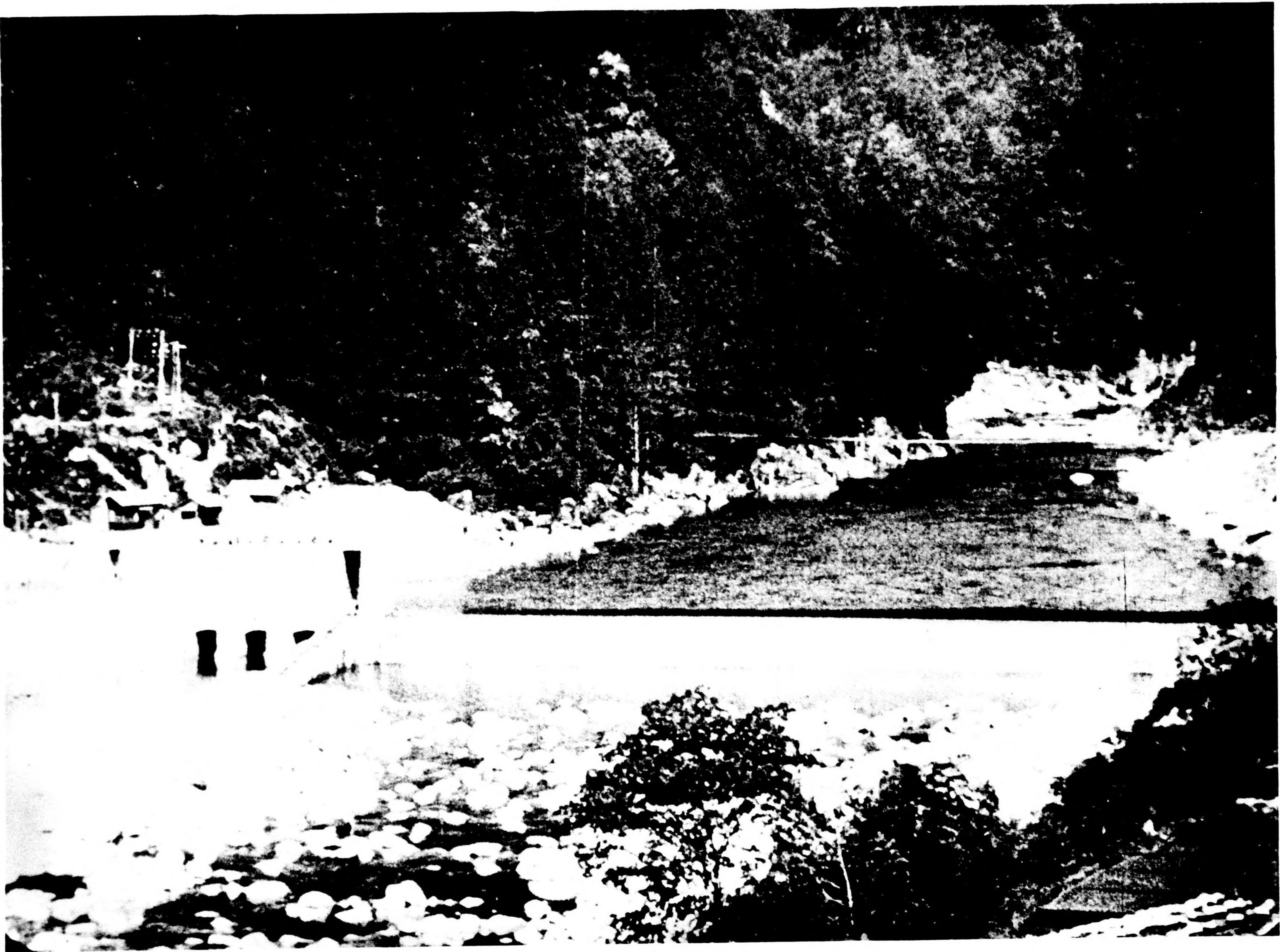
Photograph No. III-116 Momoyama Hydro Plant
intake

RESTRICTED



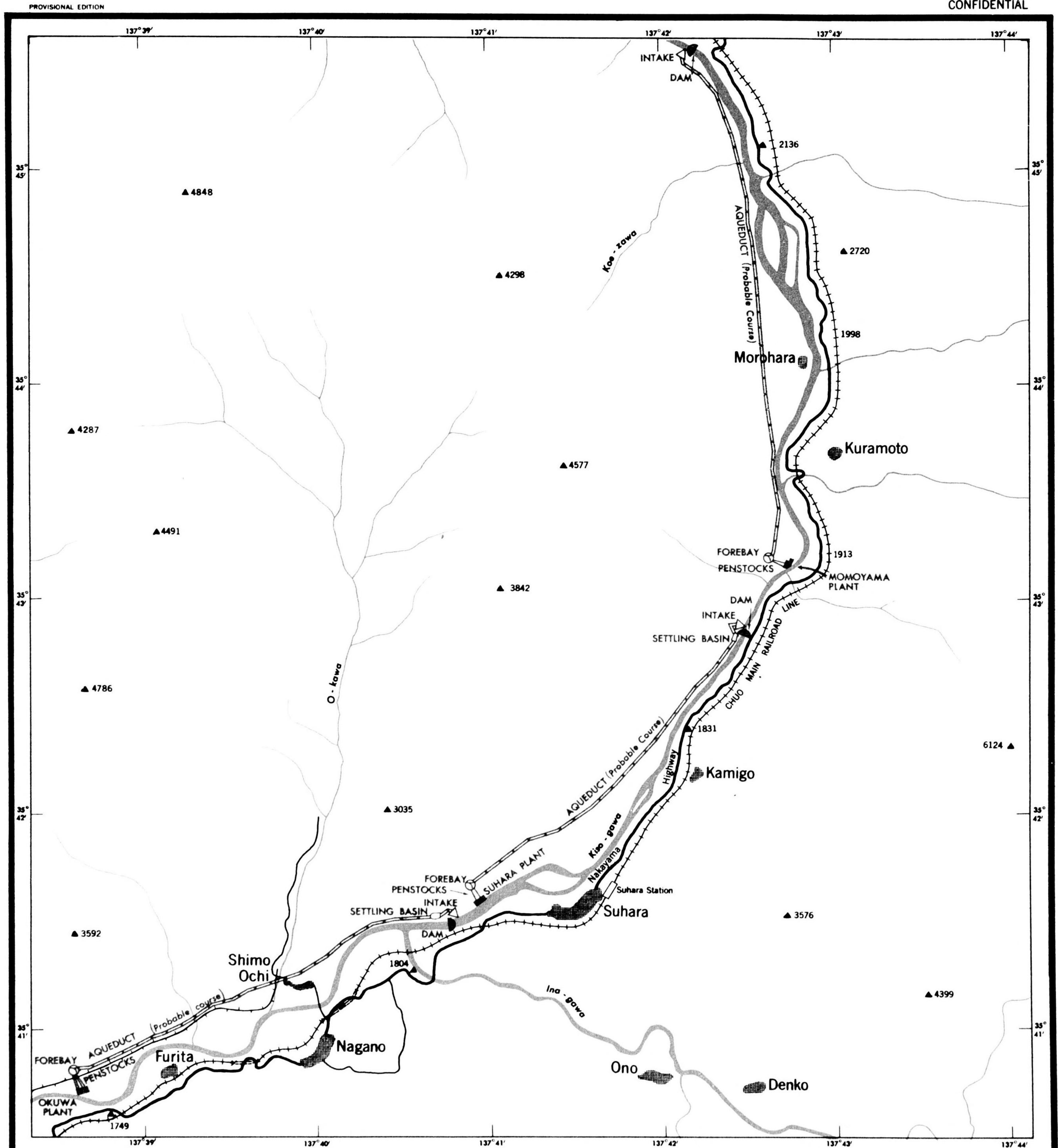
Photograph No. III-117 Momoyama Hydro Plant settling basin

RESTRICTED



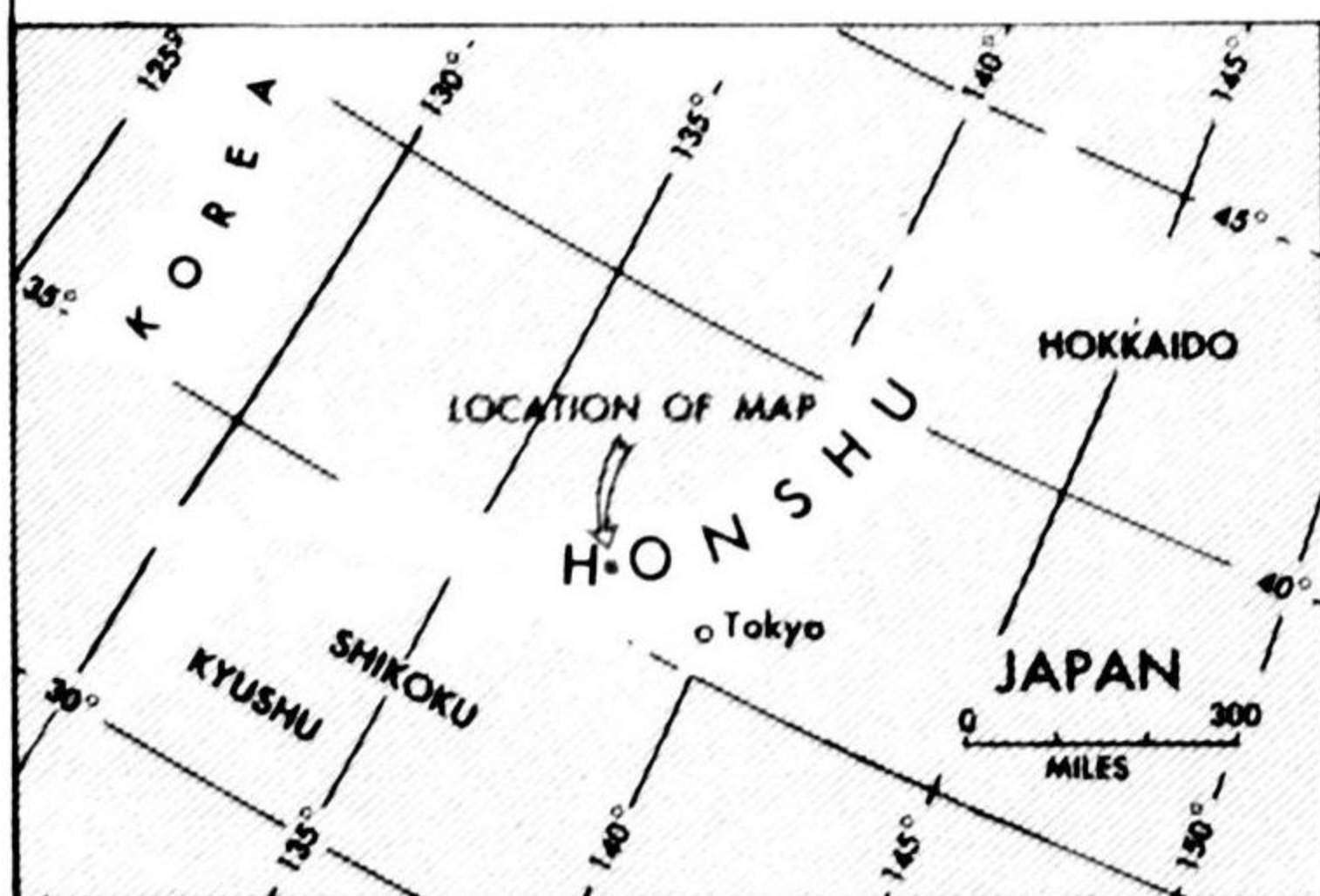
Photograph No. III-118 Momoyama Hydro Plant diversion dam

RESTRICTED



MOMOYAMA, SUHARA, AND OKUWA HYDROELECTRIC PLANTS NAGANO-KEN

BASE MAP FROM 1:50,000 SERIES, JAPAN IMPERIAL LAND SURVEY BUREAU, 1934.
W.D.M.C. FILE NO. S30-JGS-50, SHEET 47-6.

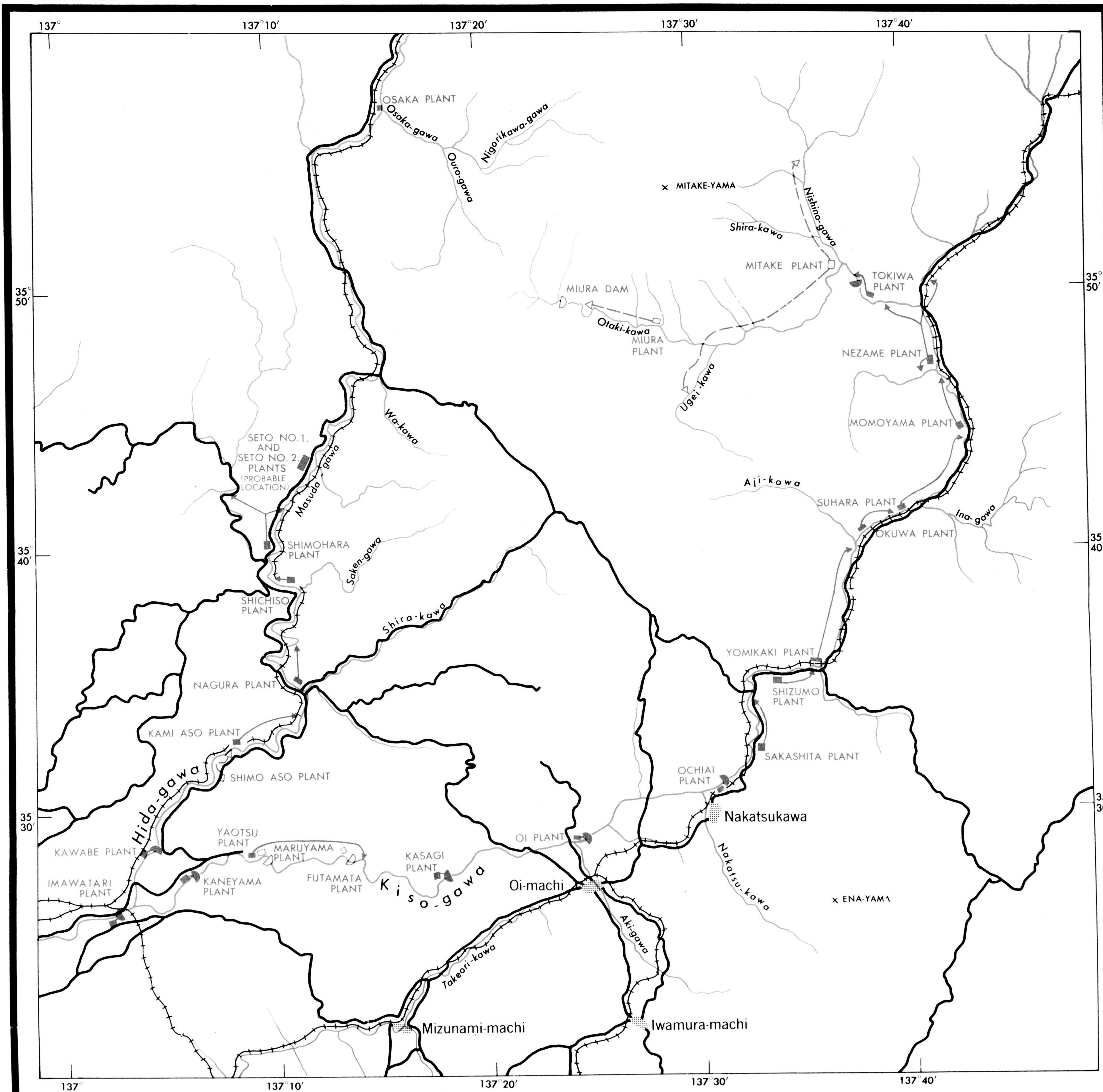


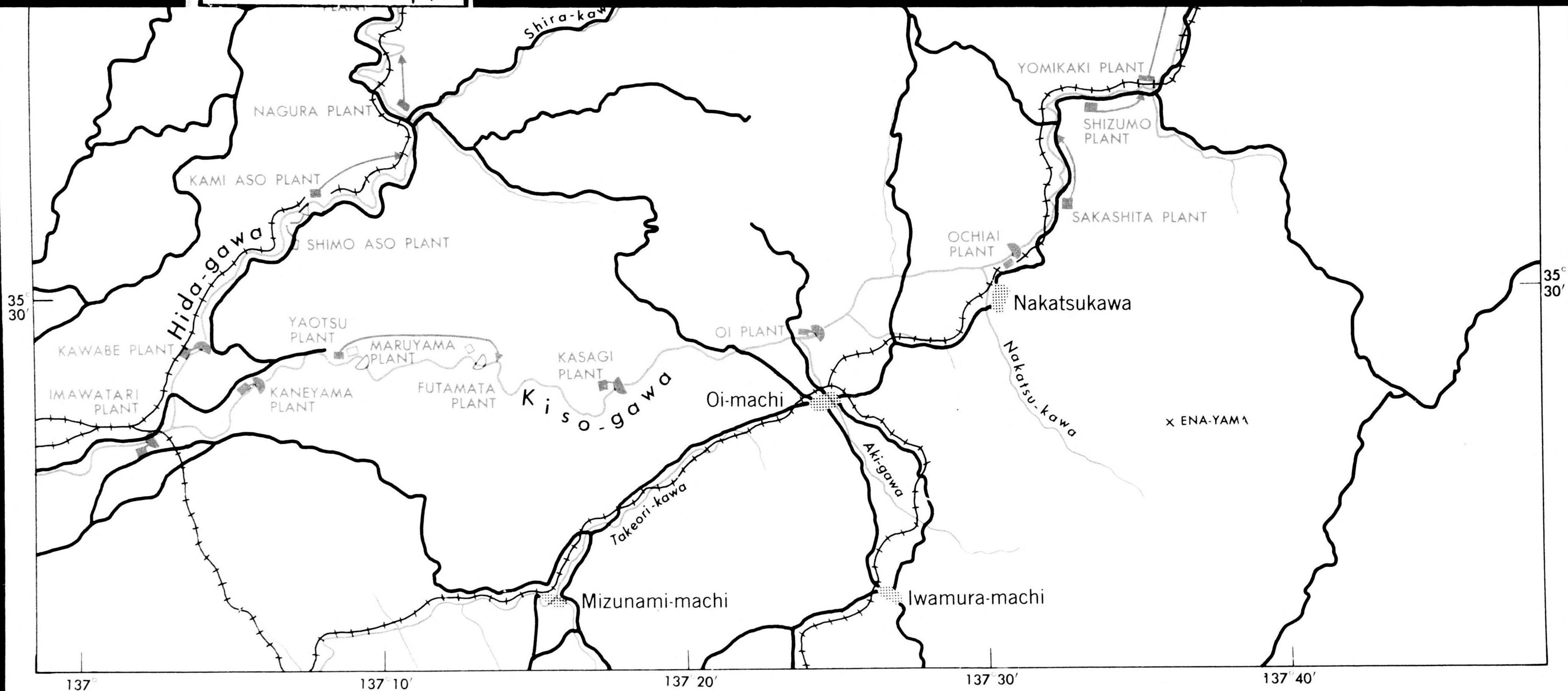
Reliability Code 1B-1B-1

- SETTLEMENT CENTER
- NARROW GAUGE LOGGING RAILROAD
- TUNNEL
- PRINCIPAL HIGHWAY
- SECONDARY ROAD
- SPOT HEIGHT (IN FEET)

Figure III-28
CONFIDENTIAL

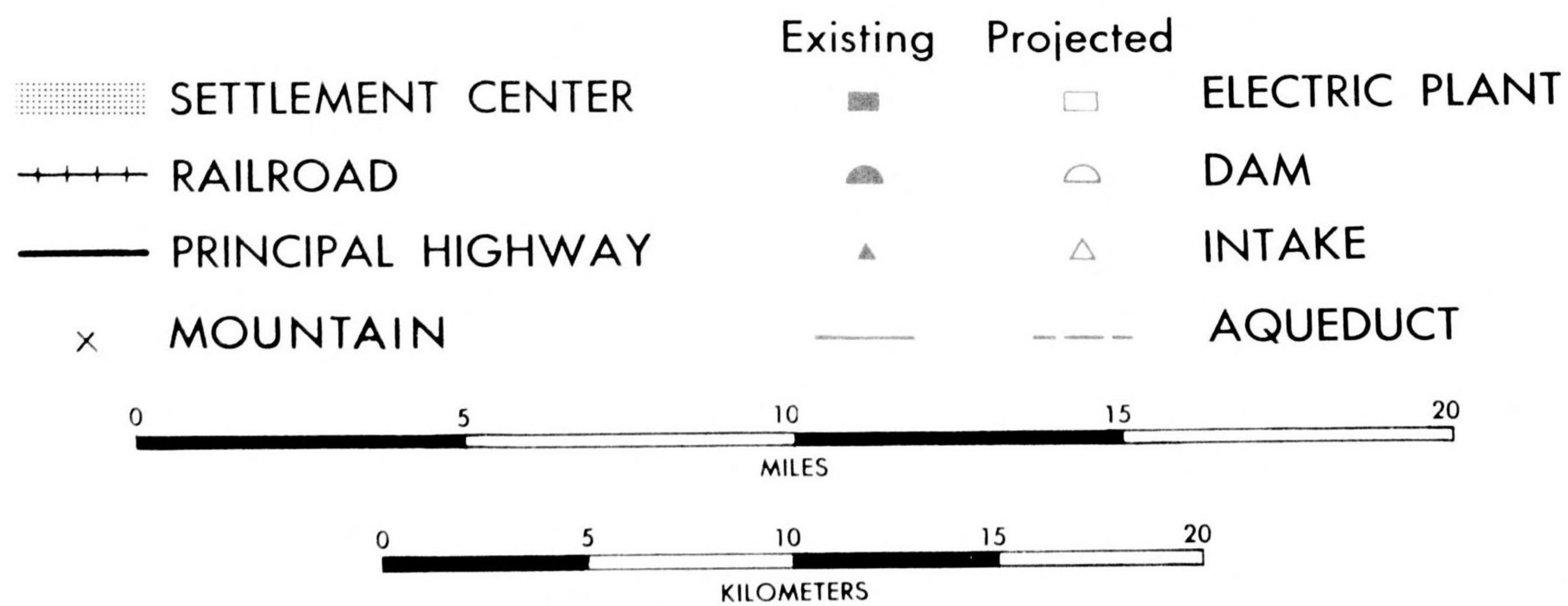
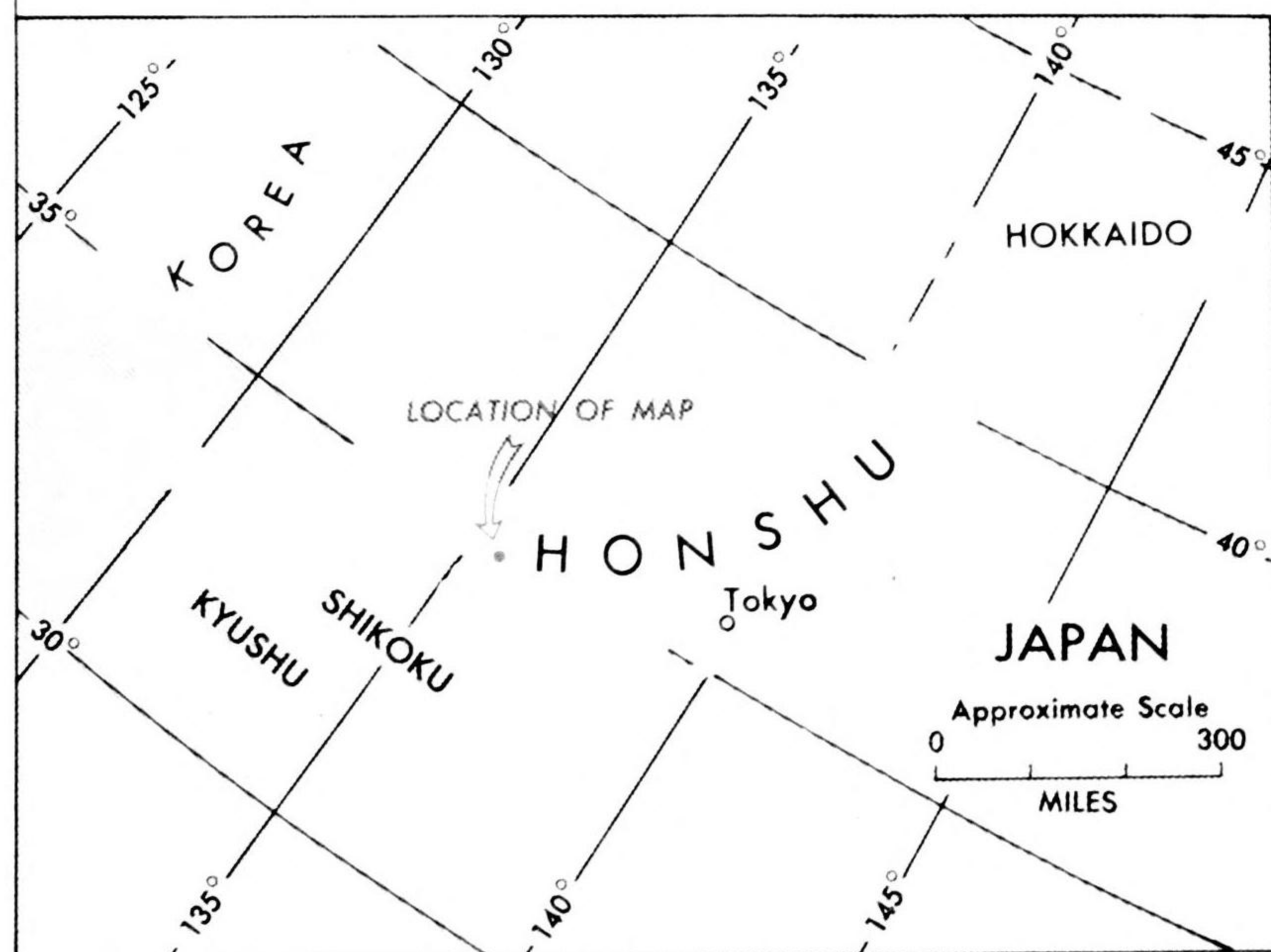
PROVISIONAL EDITION





MAJOR HYDROELECTRIC PLANTS ON THE KISO-GAWA AND HIDA-GAWA SYSTEMS

BASE MAP FROM 1:200,000 SERIES, JAPAN IMPERIAL LAND SURVEY BUREAU, 1918



Reliability Code: 2B--2B--2

Details: Particular capacities (in kw) - *1000 installed cap; 750 reg;
250 spec
Eff head - 193 ft
Plant, equipment -
Turbines - 1 @ 850 hp, Francis-type, Voith-make
1 @ 850 hp, Francis-type, Dengyosha--make
Generators - 1 @ 625 kva, 3-ph, 11,000 v, 600 rpm, 60 cyc,
GE-make
1 @ 625 kva, 3-ph, 11,000 v, 600 rpm, 60 cyc,
Shibaura-make

Sources: DJY 1927; DJY 1929 p.287; DnN 1940

498. MORIOKA KARYOKU STEAM PLANT

Approx. Lat. 39°41'
Long. 141°09'

Company: Ou Dento KK; formerly Morioka Dento KK, Morioka Denki Kogyo KK

Location: 29, Hirado-aza, 65, Shimo Kuriyagawa-oaza, Morioka-shi,
Iwate-ken

Installed Capacity (in kw): 2500, as of Dec 1936

Importance: Rank in Japan - 250 + ; rank in Tohoku supply area - 20 +

Date of Construction: Completed Apr 1926; in operation Mar 1940

Details: Particular capacities (in kw) - 2500 supp
Plant, equipment -
Boilers - Unknown no @ Garbe-type, 225 lbs/in², 3000 ft²,
EW-make
Turbines - 1 @ 3600 hp, Zoelly-type, EW-make
Generators - 1 @ 3125 kva, 3-ph, 3500 v, 3600 rpm, 60 cyc,
BBC-make

Sources: DnN 1940; DnK; DJY 1927; DJY 1929 p.396; ZKT 1939 p.1649;
Ohm 2/28 p.134; TD Map

MORIYAMA HYDRO PLANT - See KAWABE HYDRO PLANT

499. MOSAWA HYDRO PLANT

Approx. Lat. 36°19'
Long. 138°34'

Company: Nagano Denki KK; formerly Nagano Dento KK

Location: Plant - Mosawa-oaza, Goka-mura, Kita Saku-gun, Nagano-ken

Capacity Commonly in Use (in kw): 1600, as of Dec 1934

Importance: Rank in Japan - 250 + ; rank in Osaka-Nagoya supply area-20 +

Source of Power: Susobana-kawa and Yu-kawa of the Shinano-gawa system

Date of Construction: Unknown; in operation as early as Dec 1926 and as recently as Mar 1940

Details: Particular capacities (in kw) - *1500 installed cap; 865 reg;
735 spec
Layout - Aqueduct-type
Eff head - 63.636 m; flow - 3.34 m³/sec
Penstocks - 1
Plant, equipment -
Turbines - 1 @ 2200 hp, reaction-type, horizontal-shaft,
Dengyosha-make
Generators - 1 @ 1875 kva, 3-ph, 3300 v, 600 rpm, 60 cyc,
Shibaura-make
Transformers - 4 (incl 1 res) @ 650 kva, 1-ph, 3.3, 3.2/55 kv,
D-D conn, water-cooled, 60 cyc, shell-type
3 @ 400 kva, 1-ph, 3.3, 3.2/12.5 kv, D-Y conn,
water-cooled, 60 cyc, core-type

Sources: DnN 1940; DJY 1927; DJY 1929 p.328

500. MOTODERA HYDRO PLANT

Approx. Lat. 38°58'
Long. 140°58'

Company: Ichinoseki-machi Denki Sagyo-sho

Location: Plant - Motodera-oaza, Itsukushi-mura, Nishi Iwai-gun,
Iwate-ken

Capacity Commonly in Use (in kw): 1003, as of Dec 1934

Importance: Rank in Japan - 250 + ; rank in Tohoku supply area - 20 +

Source of Power: Iwai-kawa and Ubuonna-kawa

Date of Construction: Unknown; in operation as early as Dec 1926 and as recently as Mar 1940

Details: Particular capacities (in kw) - 1500 installed cap; 394 reg;
609 spec
Eff head - 113 ft
Plant, equipment -
Turbines - 2 @ 1060 hp, Francis-type, EW-make
Generators - 2 @ 750 kw, 3-ph, 11,000 v, 600 rpm, 50 cyc,
W-make

Sources: DnN 1940; DJY 1927; DJY 1929 p.398

ADDENDUM

265a. KAMIISO FACTORY STEAM PLANT

Approx. Lat. 41°49'
Long. 140°39'

Company: Asano Cement KK

Location: Kamiiso-machi, Kamiiso-gun, Hokkaido

Installed Capacity (in kw): 5500, as of 1929

Importance: Rank in Japan - 250 + ; rank in Hokkaido supply area - 15 +
Serves the Kamiiso Factory of the Asano Cement KK

Date of Construction: Unknown; plant in operation in 1929

Details: Plant, equipment -
Fuel supply - Uses waste gas from cement kilns
Boilers - 1 @ B&W water tube-type, B&W-make
4 @ Edgemoor water tube-type
Turbines - 1 @ 2500 kw, Curtis-type
1 @ 3000 kw, Curtis-type
Generators - 1 @ 2500 kw, 3-ph
1 @ 3000 kw, 3-ph

Sources: Directory of Japanese Portland Cement Manufacturers 1929 p.10

325a. KAWAJIRI FACTORY STEAM PLANT

Approx. Lat. 39°42'
Long. 140°06'

Company: Akita Seiko KK

Location: 65, Kawaguchi Sakai, Kawajiri-cho, Akita-shi, Akita-ken

Installed Capacity (in kw): Est 4000 kw (see Date of Construction)

Importance: Rank in Japan - 250 + ; rank in Tohoku supply area - 20 + .
Serves the Akita Seiko-sho, producing about 5000 tons of pig iron and about 14,000 tons of steel by electrolysis and electric furnaces.

Date of Construction: Unknown; factory founded in 1938; power plant in operation Dec 1939

Details: Plant, equipment - High frequency generators have been installed.

Sources: Toyo Keizai Kabushiki Kaisha Nenkan 1940 p.64

473a. MINATO NO. 2 FACTORY STEAM PLANT

Approx. Lat. 40°32'
Long. 141°32'

Company: Iwaki Cement KK

Location: 7, Minato-cho, Hachinoe-shi, Aomori-ken

Installed Capacity (in kw): 4200, as of 1929

Importance: Rank in Japan - 250 + ; rank in Tohoku supply area - 20 +
Serves the Minato No. 2 Factory of the Iwaki Cement KK

Date of Construction: Unknown; cement factory completed in 1927; power plant in operation in 1929

Details: Plant, equipment -
Fuel supply - Uses waste gas from cement kilns
Turbines - 2 @ unknown cap
Generators - Believed to be 1 @ 3000 kw and 1 @ 1200 kw

Source: Directory of Japanese Portland Cement Manufacturers 1929 p.32