KCDC March 1995

Kapiti Coast District Council

Beach Renourishment Trial at Marine Parade, Paraparaumu

Interim Report No 2

This second interim report provides a brief description of the changes that have occurred at the beach renourishment trial site at the south end of Marine Parade, Paraparaumu, and in the source area opposite Manly Street, since transfer of the sand was completed during November 1994.

The trial renourishment was 200 metres long and the sand was obtained by beach scraping from the inter-tidal zone on a section of the beach fronting Manly Street. Fourteen profile sites were established for the purpose of monitoring the trial and these are shown on the two accompanying site plans.

Each profile was surveyed from the dunes to a point as far off-shore as could be reached by wading into the surf, between 26 October and 1 November 1994 before the work commenced, between 25 - 28 November 1994 following completion of the work, and again between 9 - 11 January 1995. Some of the profiles were also surveyed on 15 and 18 November 1994 to record the effects of storm action.

The amount of sand deposited along the 200 metre long trial site at Marine Parade was 6000 cubic metres. This equates to 30 cubic metres for each metre of beach. Profiles were surveyed immediately before the trial began and again just after the work had been completed. Three profiles (141,142 143) at intervals across the deposit zone showed build-ups of sand of 26, 27 and 31 cubic metres respectively, indicating losses during the trial of only around 6% which is quite acceptable considering the series of north and northwest storms that occurred during the renourishment work. Two further profiles (14 and 144), immediately to the south and to the north of the trial site, also showed a build-up of sand during the same period of 7 and 16 cubic metres respectively, indicating some minor lateral spreading of the replenishment sand, which is to be expected.

If each profile is considered to represent a 1 metre wide strip across the beach, the volumetric changes, per metre of beach at that location, can be assessed. The results, showing changes that have occurred between Oct 94 and Nov 94 (before and after the renourishment work) and between Oct 94 and Jan 95, have been produced by the Wellington Regional Council and are shown in the following table. By subtraction, the net change in profile volume between Nov 94 and Jan 95 is also shown.

There is nothing unexpected in these results and subsequent surveys should show further movement of sand shorewards. Erosion of the beach towards the north end of Manly Street is noted and will be reviewed after further survey. The Manly Street beach shows no impact from sand removal. Losses from the renourishment area are approx. 20% and this amount was allowed for during construction. Much of this sand is probably beyond the outer limit of the profile able to be surveyed and is not necessarily lost to the system.

equilibrium. Indications are that this sand has moved off-shore beyond outer limits of survey and is not necessarily lost to the system.

Profile 143 North end of trial site. Toe of dune moved seawards 15 metres during replenishment work and subsequently receded 7 metres. Sand movement is building off-shore profile and there is evidence that some is returning to the beach. 6.24 m^3/m "lost" since Nov 94 has most likely moved beyond limit of survey.

Profile 144 Just north of trial site opposite Tahi Street. Evidence of sand from trial site moving north during Oct - Nov 94 and deposited in off-shore bars. Significant movement of sand in off-shore bar formations. Little further change in beach levels following lowering (250 mm) during Oct - Nov 94.

Profile 20 270 metres north of trial site opposite Rua Road. Accretion during Oct -Nov 94 of 2.684 m^3/m followed by further accretion of 2.987 m^3/m during Nov 94 - Jan 95. Lowering of beach (300 mm) during Oct - Nov 94. Significant movement of sand in off-shore bars.

Profile 151 280 metres south of source area (35 Manly St). General lowering of beach by approx. 200 mm during Oct - Nov 94 with significant building of dune face and movement of sand to off-shore bars. Overall profile accretion and evidence of bar movement shorewards.

Profile 152 South end of source area (71 Manly St) Very little change in beach elevation above mean sea level. Changes in bar formations off-shore and evidence of shoreward movement. Significant profile accretion Oct - Nov 94 (during sand removal) and little volumetric change Nov 94 - Jan 95.

Profile 16 Through source area opposite Nathan Street. 12.229 m^3/m depletion Oct - Nov 94 followed by 19.991 m^3/m accretion during Nov 94 - Jan 95. Some dune building evident but little change in beach levels. Movement of sand in off-shore bars.

Profile 18 Through source area (103 Manly St). Depletion of beach (43.858 m^3/m) during Oct - Nov 94 followed by 18.611 m^3/m accretion during Nov 94 - Jan 95. Lowering of beach approx. 150 mm during Oct - Nov 94 and significant movement of sand in off-shore bars. Evidence of sand movement shorewards during Nov 94 - Jan 95.

Profile 181 North end of source area (131 Manly St). Profile depletion 58.141 m^3/m Oct -Nov 94 and 14.490 m^3/m Nov 94 - Jan 95. Significant movement of sand off-shore beyond outer limit of profile.

Profile 182 300 metres north of source area (163 Manly St). Significant lowering of beach (up to 500 mm) above mean sea level with 69.581 m^3/m depletion during Oct -Nov 94. Some recovery 12.754 m^3/m during Nov 94 - Jan 95. Movement of sand off-shore beyond limit of survey.

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15 March 1995

Changes in Beach Profile Oct 94 to Jan 95 (m^3/m)

Profile	Oct 94 to Nov 94	Oct 94 to Jan 95	Nov 94 to Jan 95
131	+2.950	+1.541	-1.409
132	+3.038	+3.665	+0.627
14	+7.275	+12.795	+5.520
141	+25.488	+25.953	+0.465
142	+27.016	+20.886	-6.130
143	+30.940	+24.695	-6.245
144	+15.785	+8.350	-7.435
151	+30.067	+51.136	+21.069
152	+46.709	+44.297	-2.412
16	-12.229	+7.762	+19.991
18	-43.858	-25.247	+18.611
181	-58.141	-72.631	-14.490
182	-69.581	-56.827	+12.754
20	+2.684	+5.671	+2.987

Note: Positive values represent accretion and negative values represent depletion.

Comments on the individual profiles follow:

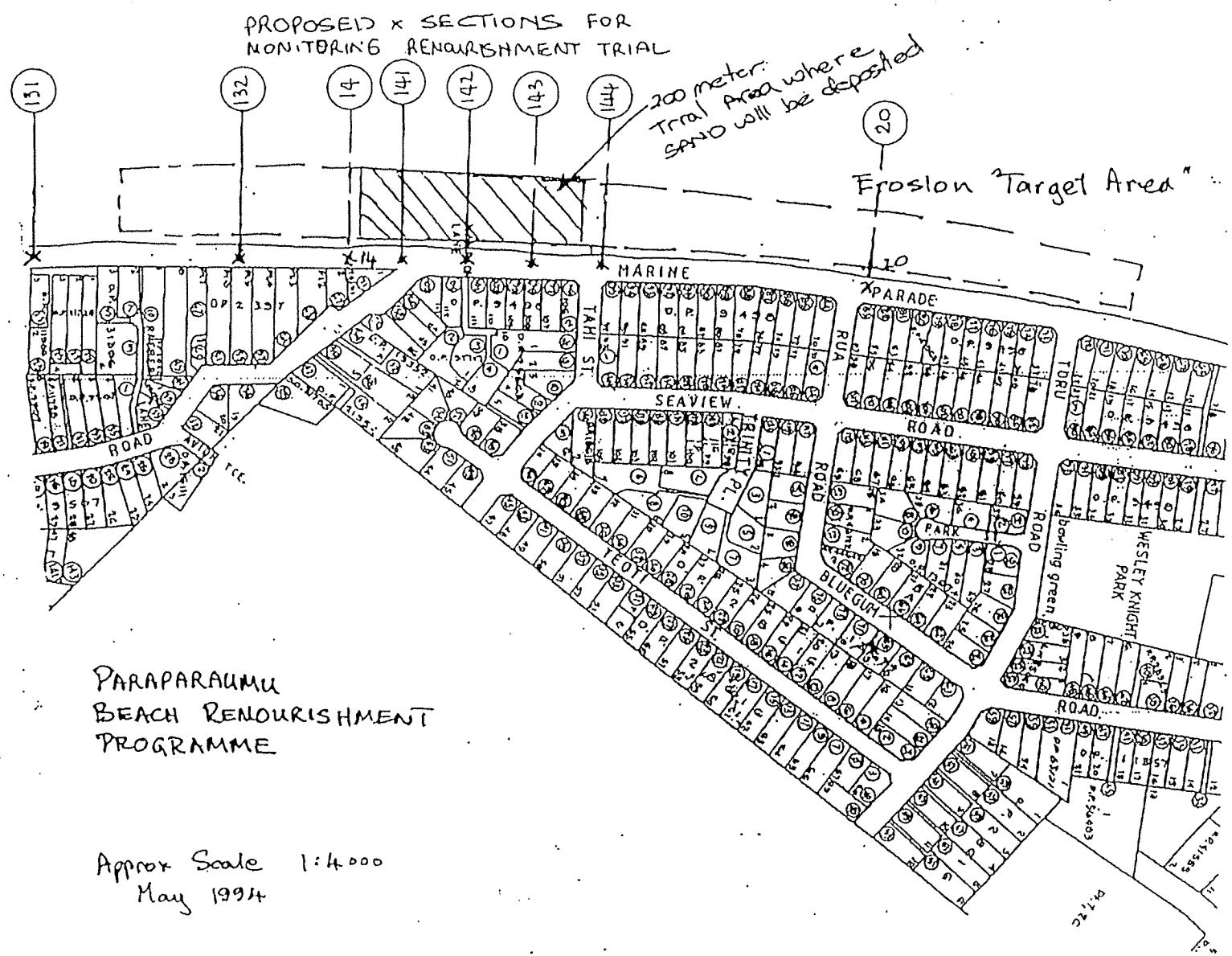
Profile 131 300m south of the trial site. Approx. 200 mm was lost from the beach and 1 to 2 metres from the face of the dunes was removed during the Oct - Nov 94 period. Volumetric changes were small indicating a build-up of sand off-shore. Little change in beach levels since Nov 94.

Profile 132 100 metres south of trial site. 200 - 400 mm was removed from the beach and 1 metre from the face of the dunes occurred during the Oct - Nov 94 period. Volumetric changes relatively small with build-up of sand off-shore. Evidence of sand movement shorewards.

Profile 14 Just south of the trial site. Approx. 1 metre recession of dune toe during Oct - Nov 94 period and some movement of sand off-shore. Continuing growth of profile 7.275 m^3/m (Oct - Nov 94) and 5.520 m^3/m (Nov 94 - Jan 95) suggests some lateral spreading of the renourishment sand, which is to be expected.

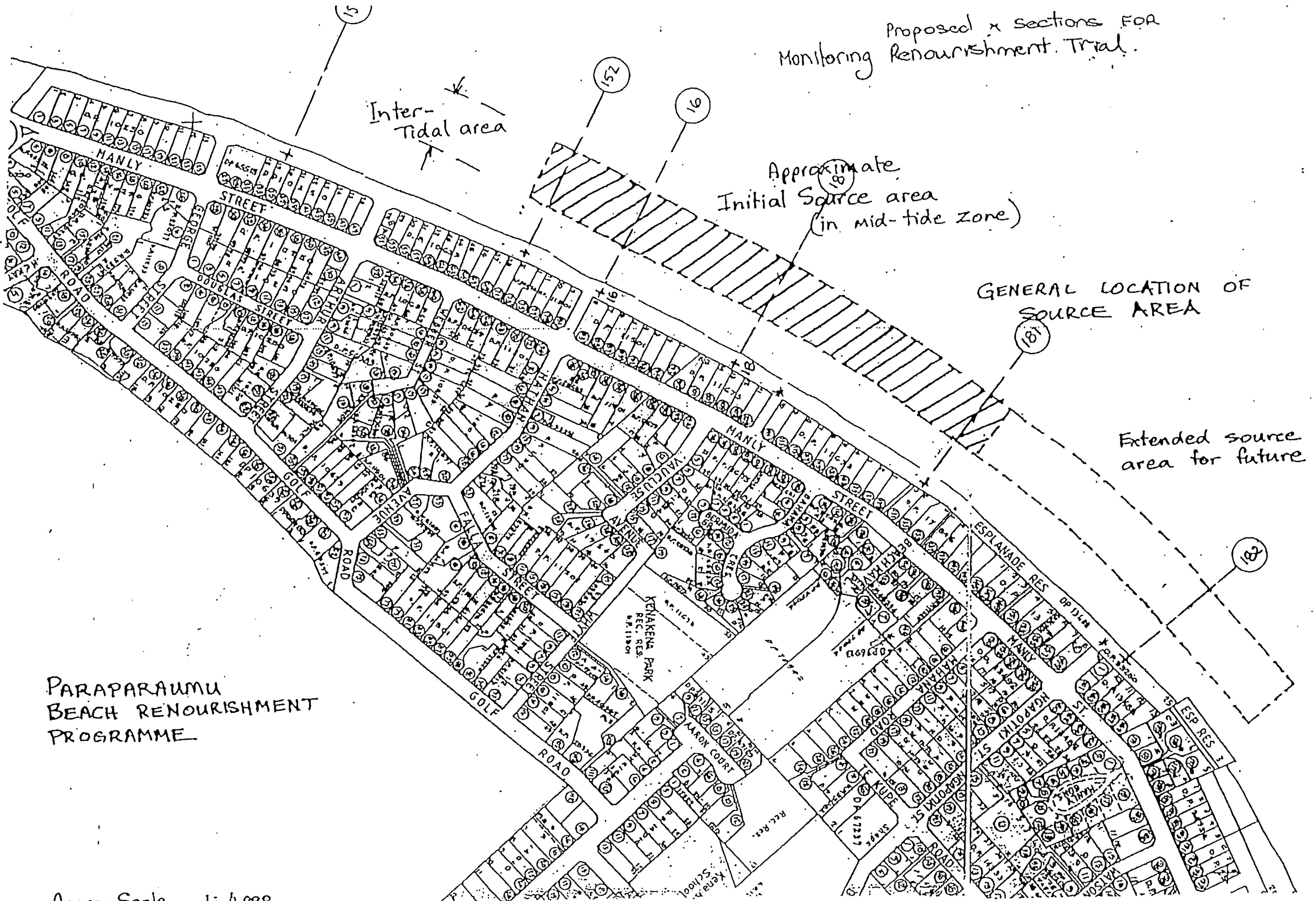
Profile 141 At the south end of the trial site. Toe of dune moved seaward 10 metres (renourishment) and receded approx. 2 metres during Oct - Nov 94 (storm action). Volumetric increase during renourishment of 25.488 m^3/m and this has increased slightly by 0.465 m^3/m during Nov 94 - Jan 95. Sand movement in off-shore zone evident.

Profile 142 Centre of trial site. Only minor changes in beach levels since completion of sand replenishment. 6.13 m^3/m "lost" since Nov 94 as profile seeks



PARAPARAUMU
BEACH RENOURISHMENT
PROGRAMME

Approx Scale 1:4000
May 1994



PARAPARAUMU
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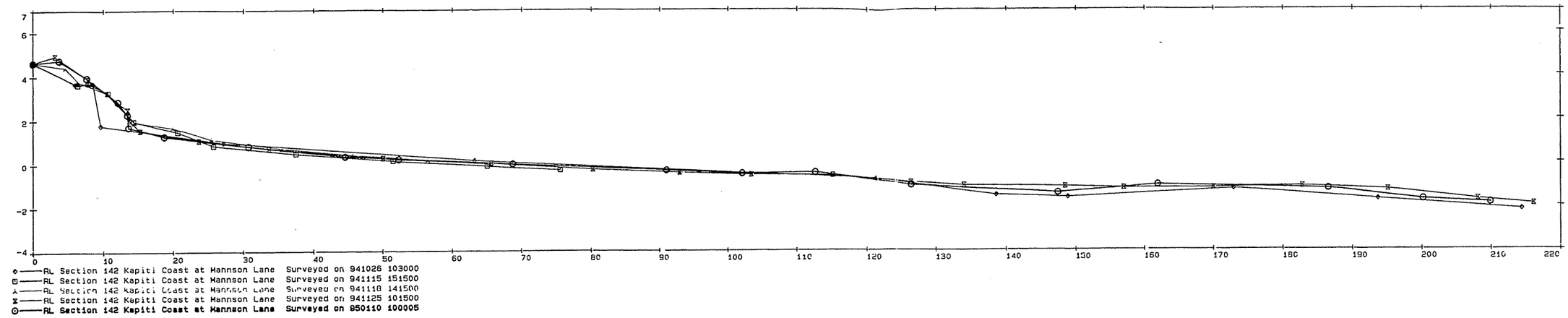
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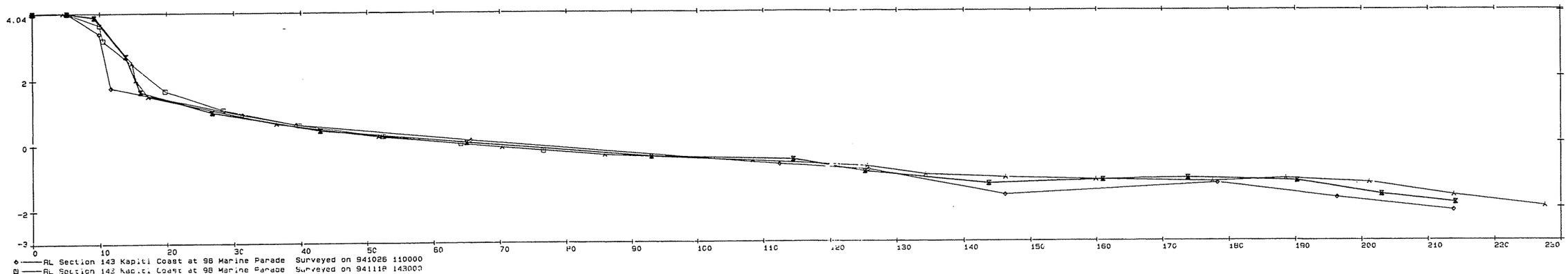
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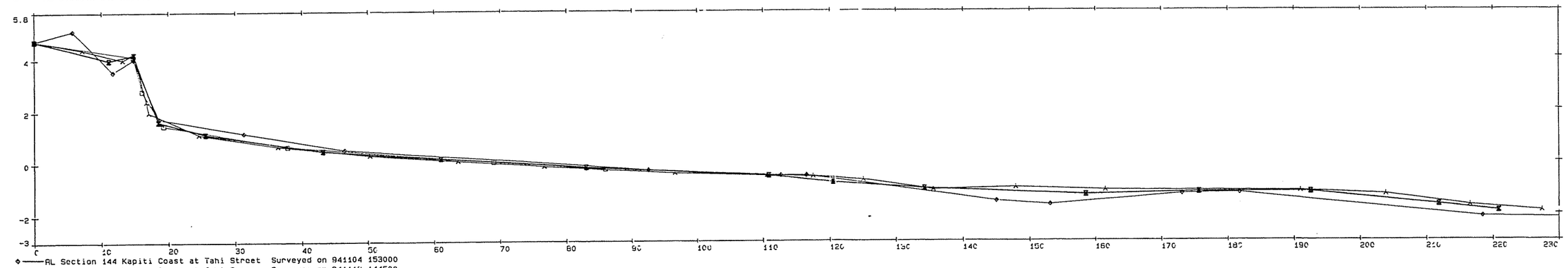
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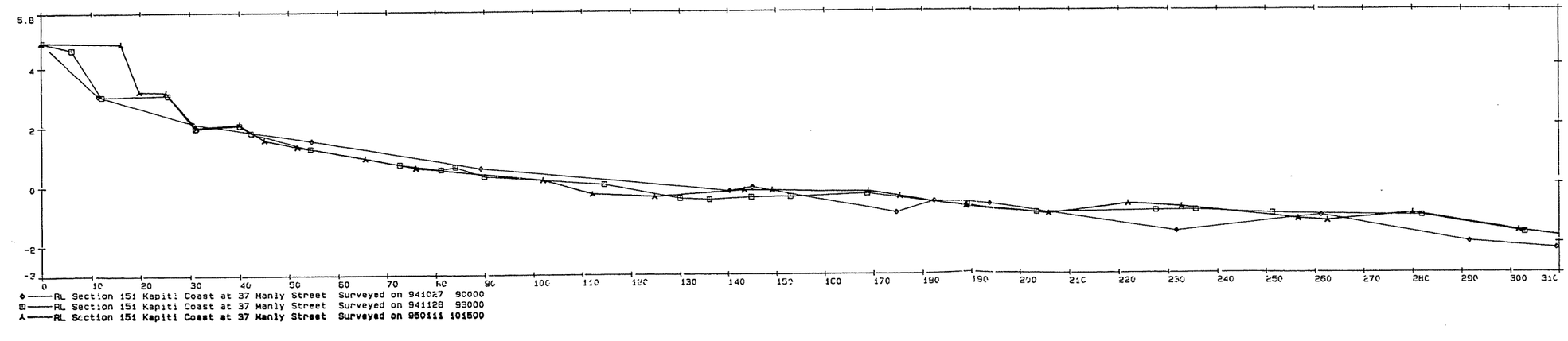
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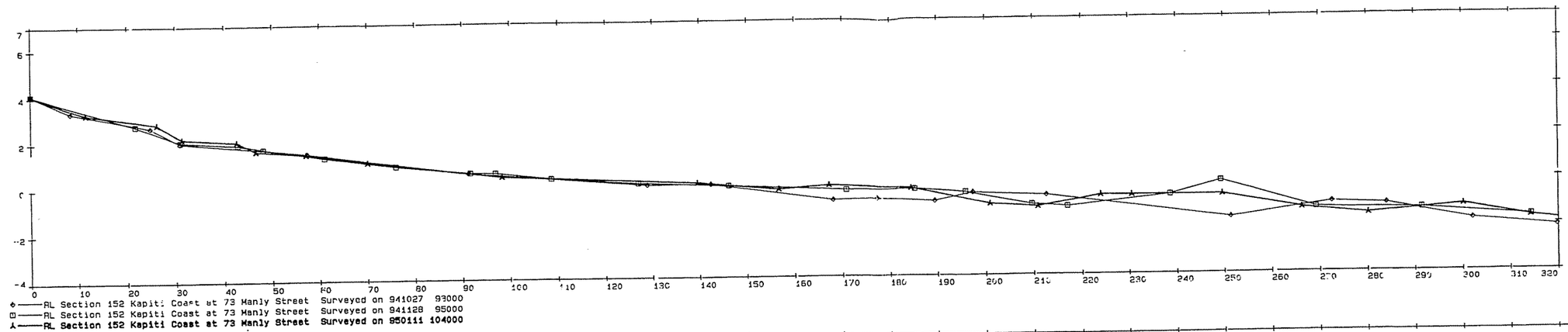
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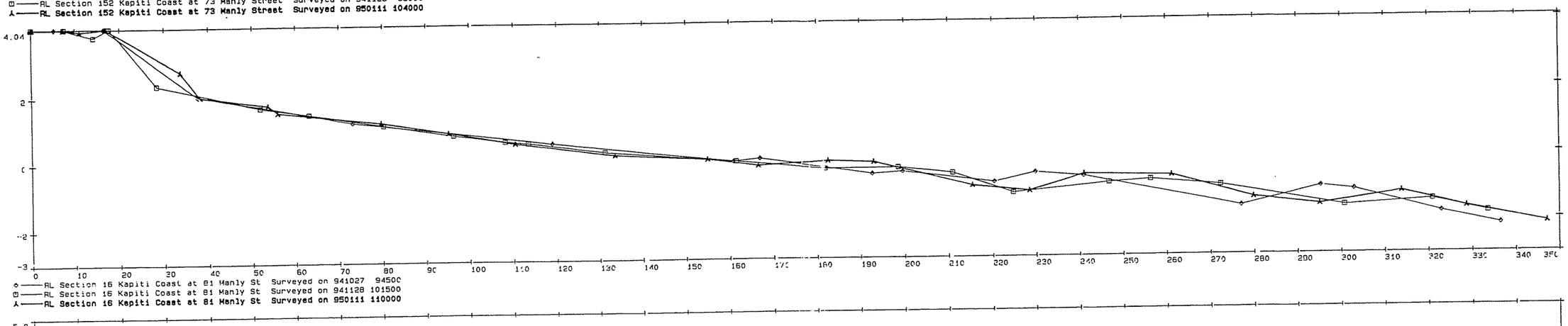
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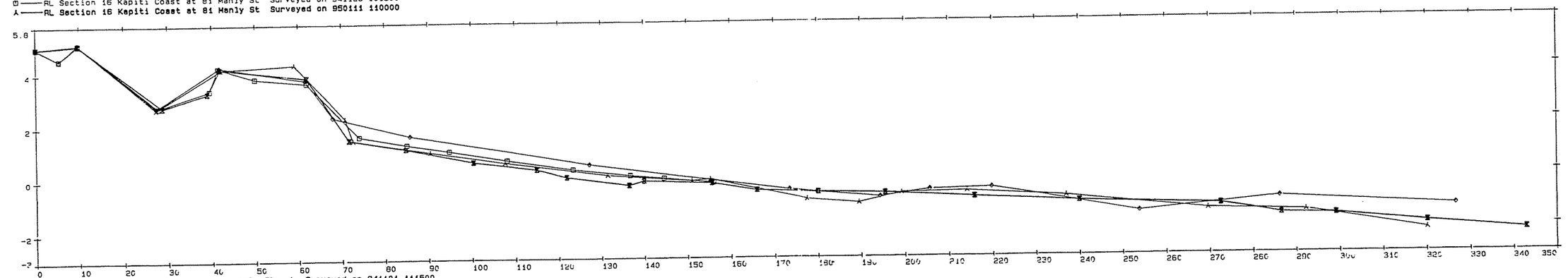
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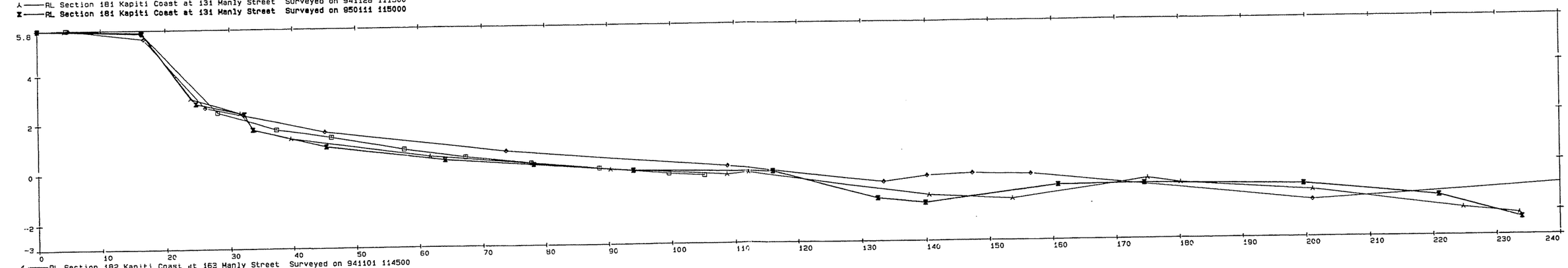
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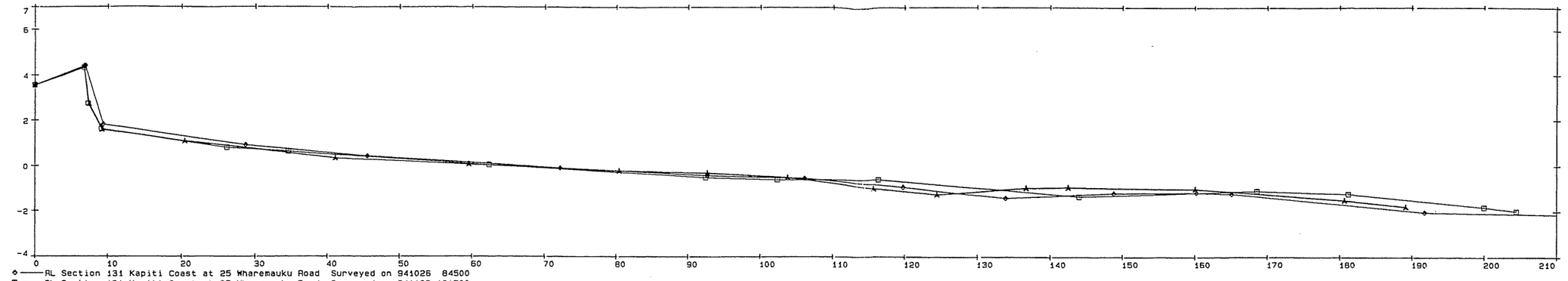
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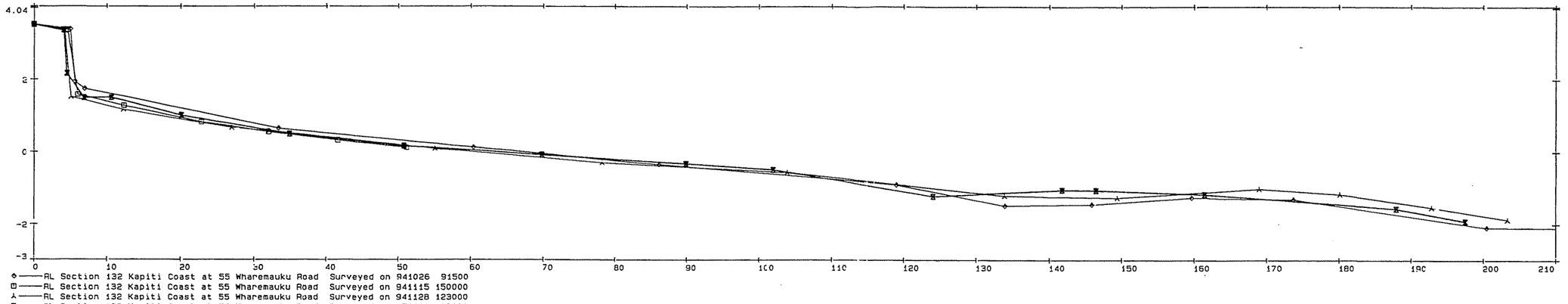
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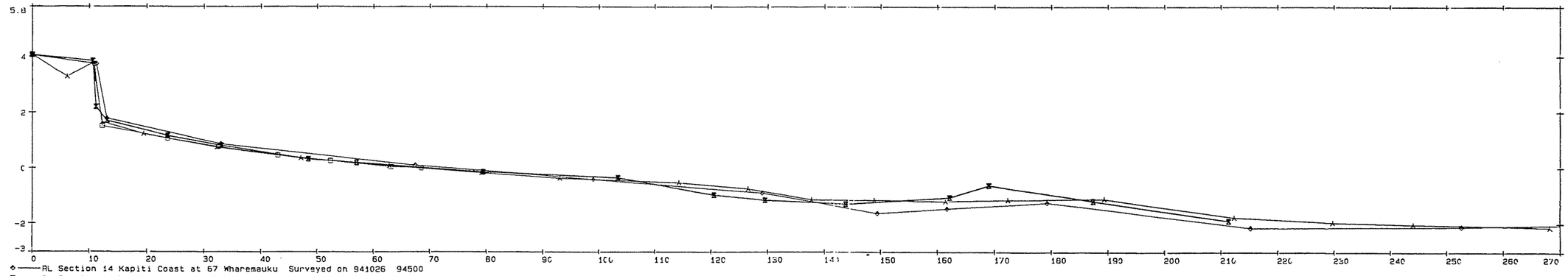
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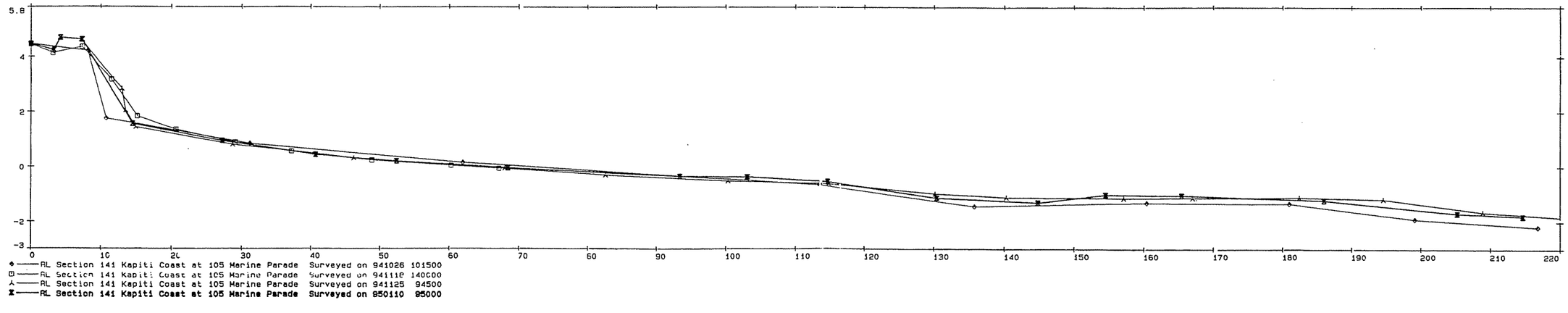
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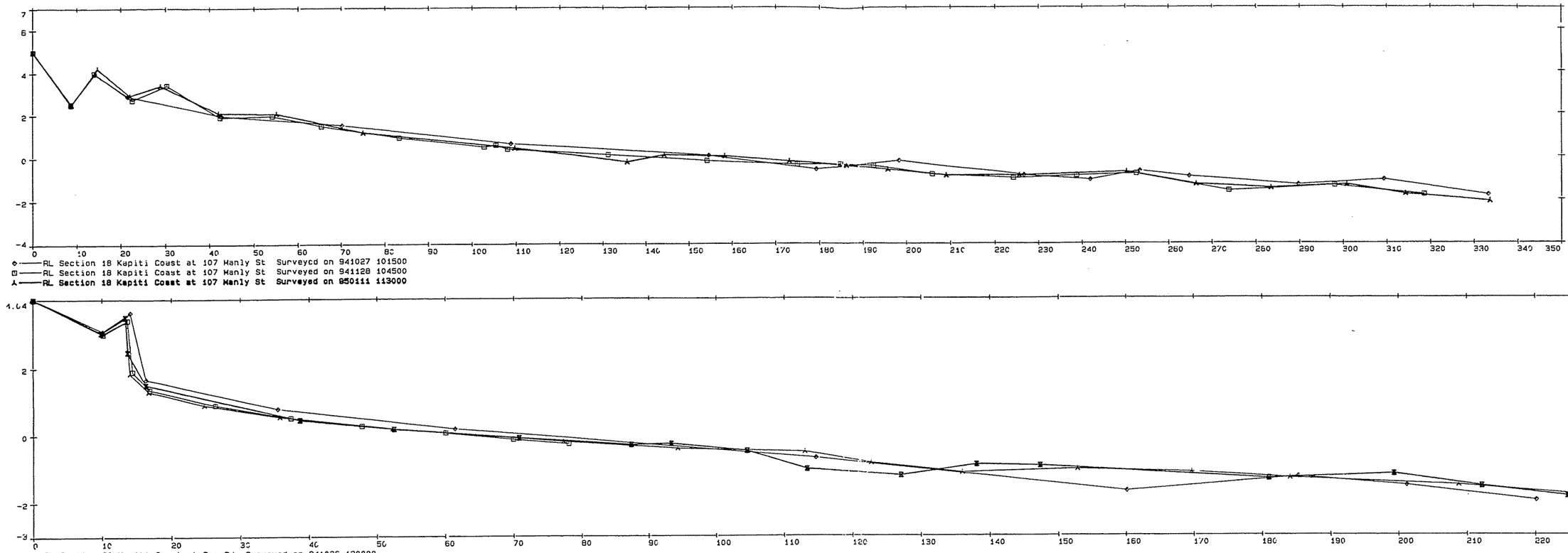
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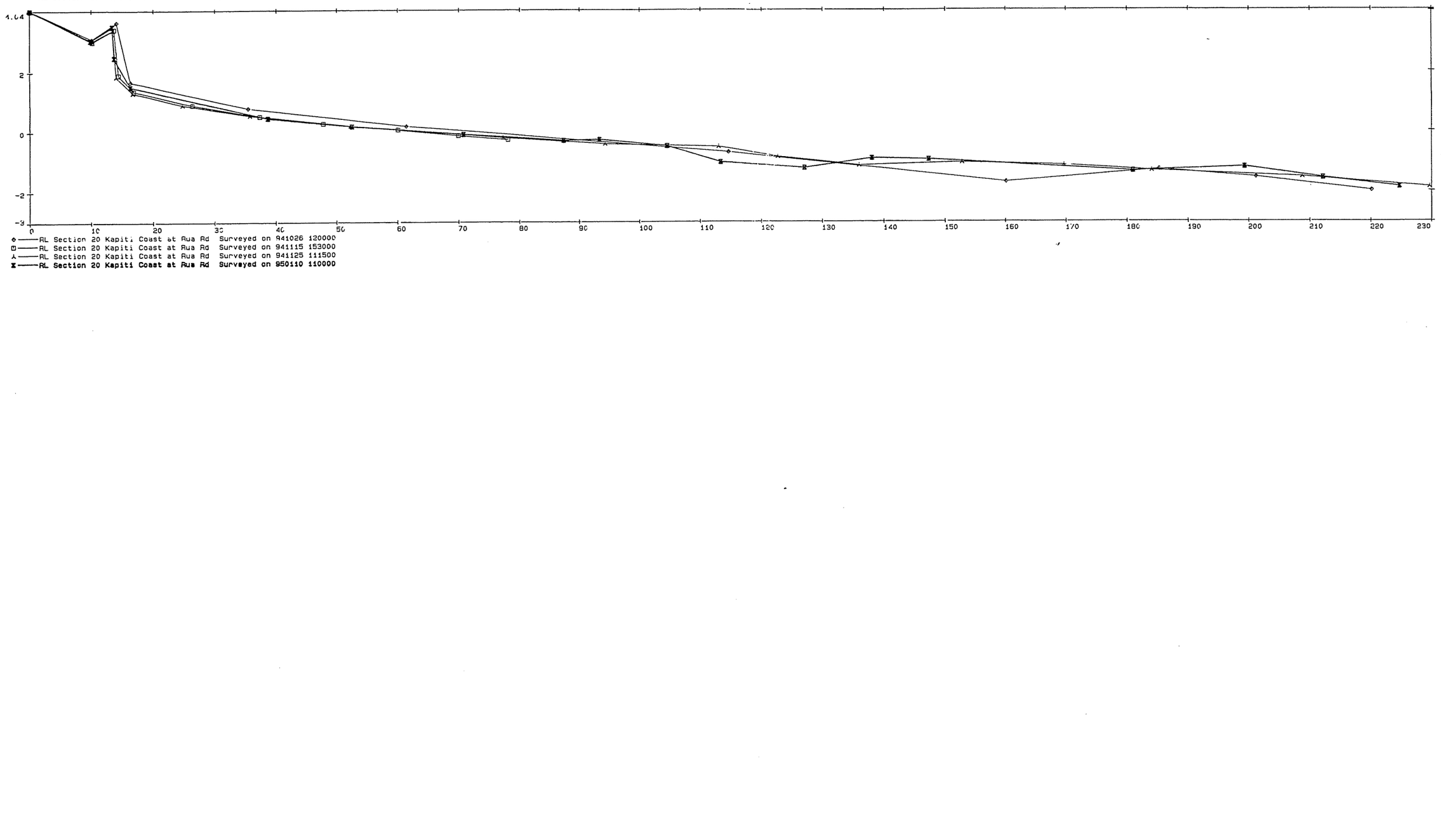
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