

ESTABLISHMENT OF INTERNATIONAL GREAT LAKES DATUM (1955)

TABLE OF CONTENTS

TEXT

<u>Subject</u>	<u>Page</u>
INTRODUCTION	1
Requirement for internationally coordinated hydraulic and hydrologic data	1
Establishment of international study	1
Authority	3
Purpose and scope	3
Acknowledgements	3
NEED FOR NEW DATUM	4
DESCRIPTION OF DATUMS	4
DEVELOPMENT OF INTERNATIONAL GREAT LAKES DATUM (1955)	5
Reference zero	5
Reference year	6
Dynamic values	6
METHOD OF COMPUTATION OF DYNAMIC ELEVATIONS	7
General	7
Along first-order level lines	7
On the lakes	8
ESTABLISHMENT OF REFERENCE ZERO AT POINTE-AU-PERE	9
ESTABLISHMENT OF INTERNATIONAL GREAT LAKES DATUM (1955)	10
St. Lawrence River	10
Lake Ontario	11
Welland Canal and Niagara River	11
Lake Erie	13
Detroit-St. Clair River System	14
Lake Huron	14
Lake Michigan	15
St. Marys River	15
Lake Superior	15
Elevations on International Great Lakes Datum (1955)	16
Descriptions of bench marks	16
RECOMMENDATIONS	17

APPENDICES

<u>Appendix</u>	<u>Page</u>
A Tabulation of Bench Mark Elevations	A-1
Notes on Corrections to Appendix "A"	A-59
B Sources of Bench Mark Descriptions	B-1

ESTABLISHMENT OF INTERNATIONAL GREAT LAKES DATUM (1955)

SECOND EDITION

INTRODUCTION

1. Requirement for internationally coordinated hydraulic and hydrologic data. The Great Lakes-St. Lawrence River system extends some 2,000 miles from the headwaters of streams tributary to Lake Superior to the Gulf of St. Lawrence. The system drains a great interior basin of more than 295,000 square miles to the outlet of Lake Ontario, reaches almost halfway across the North American continent, and borders upon eight states of the United States and two provinces of Canada. This vast series of lakes and rivers is shared by the United States and Canada. The joint use of these waters poses numerous international problems in the solution of which coordinated basic data are required.

2. Prior to 1953 data pertaining to the hydraulic and hydrologic factors of the Great Lakes and the St. Lawrence River were collected and compiled independently by the responsible Federal agencies in Canada and the United States, with only superficial and informal correlation of some of the data. As a consequence, the data in many instances were developed on different bases and datums and were divergent in other respects.

3. Establishment of international study. International problems were greatly increased by the advent of extremely high lake levels in 1952 and by the imminent power and navigation development in the St. Lawrence River. Recognizing that continued independent development of the basic data was illogical under the circumstances and that early agreement upon the hydraulic and hydrologic factors was of paramount importance, the Corps of Engineers, United States Army, and the Departments of Transport, Mines and Technical Surveys, and Resources and Development, Canada, opened negotiations early in 1953 to establish a basis for the development and acceptance of identical data by both countries. The negotiations culminated in a meeting of representatives of the interested agencies at Ottawa on 7 May 1953.

4. At the meeting the Coordinating Committee on Great Lakes Basic Hydraulic and Hydrologic Data was formed to study the problem and to establish a basis of procedure. Recommendations of this committee were to be advisory to the agencies of the United States and Canada which are charged with the responsibility for collecting and compiling the Great Lakes hydraulic and hydrologic data. The committee was constituted as follows:

Canada

T. M. Patterson, Water Resources
Division, Department of
Resources and Development,
Chairman

J. E. R. Ross, Geodetic Survey
of Canada, Department of
Mines and Technical Surveys

D. M. Ripley, Special Projects
Branch, Department of
Transport

United States

Gail A. Hathaway, Office,
Chief of Engineers
Department of the Army,
Chairman

Edwin W. Nelson, Great Lakes
Division, Corps of Engineers,
U.S. Army

W. T. Laidly, U.S. Lake Survey
Corps of Engineers,
U.S. Army

The present membership of the coordinating committee is as follows:

Canada

D. F. Witherspoon,
Environmental Management
Service, Ontario Region,
Environment Canada,
Chairman

W. D. Forrester, Ocean and
Aquatic Sciences,
Environment Canada

P. P. Yee, Environmental
Management Service, Ontario
Region, Environment Canada,
Secretary

United States

D. J. Leonard,
Corps of Engineers,
Department of Army
Chairman

C. I. Thurlow, National Oceanic
and Atmospheric Administration,
Department of Commerce

R. E. Wilshaw, Corps of Engineers,
Department of Army
Secretary

Messrs. C. M. Cross, A. T. Prince and R. H. Smith have also served as Canadian members of the Committee while Messrs. L. D. Kirshner, F. F. Snyder, H. F. Lawhead, F.A. Blust and B. G. DeCooke have served as United States members of the Committee.

5. Four working groups, designated the River Flow Subcommittee, the Vertical Control Subcommittee, the Lake Levels Subcommittee and the Physical Data Subcommittee, were formed to assist the Coordinating Committee in its work. These subcommittees were directed to conduct the required technical studies through the collaboration of the appropriate agencies of Canada and the United States. In September 1969, the Vertical Control and the Lake Levels Subcommittees were combined into one body known as the Vertical Control-Water Levels Subcommittee. The Subcommittee was normally composed of three members from Canada and three from the United States. The following persons served as members at various times during the progress of the work reported herein:

Canada

G. C. Dohler
W. D. Forrester
L. P. Robertson
B. E. Russell
E. A. MacDonald
J. M. Murakami
M. H. Quast*
R. W. Serviss
B. J. Tait*
F. W. Young*

United States

B. G. DeCooke
C. F. Feldscher
C. F. Ellingwood
R. M. Berry*
D. R. Rondy
H. A. Lippincott*
G. E. Ropes
R. E. Wilshaw*

*Current Members

6. Authority. The Vertical Control-Water Levels Subcommittee of the Coordinating Committee on Great Lakes Basic Hydraulics and Hydrologic Data was instructed to provide an International Great Lakes Datum which would be acceptable to all agencies concerned. The following subjects were determined to be within the purview of the subcommittee:

- a. Establishment of a reference zero near the mouth of the St. Lawrence River,
- b. First-order leveling from reference zero to Lake Ontario and between the lakes,
- c. Crustal movement in the Great Lakes area, and
- d. Establishment of elevations for bench marks and reference planes in the Great Lakes-St. Lawrence River system.

7. Purpose and scope. The purpose of this report is to update the information contained in the first edition of this report which documented the studies leading to the establishment of a new International Great Lakes Datum starting at Pointe-au-Pere (Father Point), Quebec, and terminating at the head of the system, and to record the elevations of all bench marks along the route followed by the level lines and at the various harbors on the lakes where gage records are available to permit establishment of the new datum by water level transfer. Changes from the first edition include an update of the present membership of the Coordinating Committee and a revision of the information concerning the subcommittees. "Acknowledgments" has been amended in order to recognize the assistance given by two additional agencies. Appendix A has been modified to include corrections and update status of bench marks given in the original appendix. Appendix B has been changed to give the current addresses where bench mark descriptive data can be obtained. Other than the above mentioned changes the text of this edition is essentially the same as that of the first edition.

8. Acknowledgments. The Coordinating Committee acknowledges and expresses its appreciation of the high caliber of service which its Vertical Control-Water Levels Subcommittee rendered in the development of the results presented herein. It recognizes and appreciates also, that other

personnel and facilities of the Canadian Hydrographic Service and the Geodetic Survey of Canada, Department of Mines and Technical Surveys, and the U.S. Lake Survey, Corps of Engineers, U.S. Army, were employed throughout the study. Subsequent to 1970, the assistance provided by the Lake Survey in maintaining updated data was taken over by the Detroit District, U.S. Army Corps of the Engineers and the National Ocean Survey, National Oceanic and Atmospheric Administration of the United States.

NEED FOR NEW DATUM

9. There were two reasons why it was highly desirable to establish an entirely new datum. One reason was that it would correct for changes in elevation caused by crustal movement prior to the date of the new datum. Because the crust of the earth in the Great Lakes region is moving with respect to sea level, and because the rate of movement is not uniform throughout the area, the elevations of bench marks are changing with respect to each other and with respect to sea level. The other reason was to provide a common datum which could be used by all agencies interested in vertical control on the Great Lakes-St. Lawrence River system.

10. There are several vertical control datums in existence in the area which have been used by the two governments, the most notable of which are Canadian Geodetic Datum, U.S. Coast and Geodetic Survey Datum, U.S. Lake Survey 1903 Datum, U.S. Lake Survey 1935 Datum and Georgian Bay Ship Canal Datum. Since the undisturbed lake surfaces are surfaces of equal gravity potential, the first two datums are not entirely suitable for hydraulic purposes on the Great Lakes-St. Lawrence River system because of their use of the orthometric method of computation, nor can they be changed or modified because of their continent-wide coverage. Although the use of the other three datums could be continued locally, many advantages from a hydraulic standpoint result from their replacement by a single datum applicable throughout the system.

DESCRIPTION OF DATUMS

11. Prior to 1900 numerous datums had been used on the Great Lakes as references for water levels, charting, and river and harbor improvements. In 1903 the U.S. Coast and Geodetic Survey made an adjustment without the use of the orthometric correction based on level lines and tide gage records in the United States east of the Mississippi. This adjustment was available at a number of places on the Great Lakes and provided the basis for U.S. Lake Survey 1903 Datum. This datum was extended to all major harbors around the lakes, along the connecting rivers, and down the St. Lawrence River to Cornwall, Ontario, by the U.S. Lake Survey and the Canadian Hydrographic Service through water level transfers and instrumental levels, the latter agency making use of instrumental differences supplied by the Geodetic Survey of Canada.

12. By 1935 differential movement in the earth's crust was causing gages at harbors on the same lake to show appreciable differences in water surface elevations, and the U.S. Lake Survey reopened the study of datums. A control point was chosen on each lake; Oswego, New York, on Lake Ontario; Cleveland, Ohio, on Lake Erie; Harbor Beach, Michigan, on Lake Michigan-Huron and Point Iroquois, Michigan, on Lake Superior. The bench mark elevations at the control points were adopted as given on U.S. Lake Survey 1903 Datum except for Point Iroquois, where elevations were derived from Harbor Beach by water level transfer and levels of 1934 between Lake Huron and Lake Superior. Bench mark elevations at other sites on the United States side of the Great Lakes were computed from these control points by water level transfers supplemented by local leveling, and the resulting elevations were said to be on U.S. Lake Survey 1935 Datum. In other words the elevations derived were the elevations of the bench marks as of 1935 with respect to their particular control point. The Canadian Hydrographic Service continued to use U.S. Lake Survey 1903 Datum.

13. The Georgian Bay Ship Canal Datum was in effect an extension of the U.S. Lake Survey 1903 Datum, and was established by instrumental leveling and water level transfers. The leveling for this datum was done by the Canadian Department of Public Works in the years 1904 to 1908, and consisted of level lines from Rouses Point, New York, through Montreal and North Bay to French River on Georgian Bay, and from Toronto to North Bay with a connection to Collingwood, Ontario. Water level transfers were made from U.S. Lake Survey gages to French River, Collingwood and Toronto. Elevations on Georgian Bay Ship Canal Datum were determined after adjustment around the several loops in the system. Instrumental elevations were released before the adjustment was made, so that a distinction has been necessary between the adjusted and unadjusted elevations in the system. The Georgian Bay Ship Canal Datum has not been in general use since the Geodetic Survey of Canada took over the Public Works leveling and adjusted it to Canadian Geodetic Datum. However, it does survive locally in some areas, notably along the St. Lawrence River between Summerstown, Ontario, and Montreal, where it is employed as a reference for water level gages of the Canadian Hydrographic Service, and along the Trent Canal System, where it is employed as a reference datum by the Canal Services Branch of the Department of Transport.

DEVELOPMENT OF INTERNATIONAL GREAT LAKES DATUM (1955)

14. Reference zero. The committee agreed that the Great Lakes-St. Lawrence River system should be considered as a unit with datum and reference surfaces based on mean water level at the outlet of the system in the Gulf of St. Lawrence. Pointe-au-Pere was chosen as the site for the new reference zero because: a) it is at the outlet of the system, b) the tide gage at that location has a long period of reliable record, c) the mean water level at that point approximates mean sea level, and d) it had been connected to the remainder of the system by first-order levels.

15. Reference year. When a new datum is established, it brings the elevations of all bench marks in the system into harmony -- that is, the assigned elevations are measurements of their respective places in the vertical. Because crustal movement causes these positions to shift, it becomes very important to show the year in which the assigned elevations were true. Extensive crustal movement studies have shown that rates of movement are small enough to be neglected over a span of three to five years, and in most instances it is not necessary to make over-all adjustment of elevations more often than once every 20 years. Many miles of first-order levels and many months of gage records had to be used to determine the new international datum on the Great Lakes. An analysis of this information has shown the year 1955 to be the best date to adopt.

16. Dynamic values. To make certain that elevations quoted in terms of the proposed datum would be satisfactory to all interested agencies, investigations were made into the existing practices of the U.S. Lake Survey, the Canadian Hydrographic Service and the Geodetic Survey of Canada -- the organizations immediately concerned with the establishment of elevations on the Great Lakes-St. Lawrence River system. These organizations recognize that orthometric elevations do not represent lake surfaces as being level surfaces and that they do not give a true representation hydraulically of river slopes. The U.S. Lake Survey has adopted the practice of using instrumental level differences, which were always observed along the same route between the lakes, and water level transfers between points on the same lake. The Canadian Hydrographic Service has used water level transfers, but has not carried out leveling between the lakes. The Geodetic Survey of Canada applies orthometric corrections to establish the elevations of its bench marks, but recognizes the problems involved in using orthometric elevations around large bodies of water, and in such cases publishes bench mark elevations without orthometric corrections.

17. Since neither orthometric elevations nor instrumental differences are satisfactory, the possibility of employing dynamic elevations throughout the lakes for the new datum was considered. It should be noted that the dynamic value, or number, of a bench mark is not a true linear elevation, but simply a serial number given to the level surface on which the mark lies. It is in fact the work required to raise a mass of one pound against the force of gravity from the geoid to the level surface in question in foot-pounds. However, to avoid confusion this committee has agreed to refer to the dynamic number or value of any bench mark as its "dynamic elevation." Where a dynamic elevation is quoted in feet, it should be understood that in reality the unit of measurement is the foot-pound. The pound force is defined for this report as the force of gravity on a one-pound mass at sea level in latitude 45°.

18. The orthometric and dynamic elevations of a point are definite values associated with that point, and if errors of observations and changes in the earth's crust are ignored, redetermination of them at any time and by any method will always yield the same values. Instrumental differences in the elevation between bench marks, however, are functions not only of the end points, but also of the routes along which the lines of

levels are run. Such instrumental differences can only be compared when the same route is followed in each case.

19. Because the level surfaces of the earth are not parallel, being farther apart at the equator than at the poles, the orthometric elevation varies from point to point on a given level surface. However, by definition dynamic elevations are the same for all points on a level surface. Thus, the difference between the dynamic elevations of two points represents the potential head which would exist in a water system joining them.

20. Following are some of the advantages of dynamic elevations:

a. In crustal movement studies, differences in the dynamic elevation of bench marks from lake to lake may be compared regardless of the route along which the leveling is done. This is also possible with orthometric elevations, but not with instrumental differences.

b. Differences in dynamic elevations give an accurate measure of the potential head between the points. This is true of neither of the other two methods.

c. If the mean surfaces of the lakes are indeed level, every point on the lake surface will have the same dynamic elevation. If the lake surfaces are not level, the use of dynamic elevations should make it easier to detect their departure from level.

21. For the foregoing reasons it was decided to use dynamic elevations in establishing the new datum to be known as International Great Lakes Datum (1955), or IGLD (1955).

METHOD OF COMPUTATION OF DYNAMIC ELEVATIONS

22. General. There were made available for determination of IGLD (1955) the results of first-order level lines run from Pointe-au-Pere to Lake Ontario, from Lake Ontario to Lake Erie, from Lake Erie to Lake Huron, and from Lake Huron to Lake Superior, as described in the section of this report, titled Establishment of International Great Lakes Datum (1955). To provide a continuous leveling system, it was necessary to bridge the gaps intervening between the lake termini of these first-order level lines by water level transfers. Also, it was agreed that IGLD (1955) should be established in harbors on the lakes, wherever sufficient water level records are available. The following paragraphs discuss the method of computation of dynamic elevations along the first-order level lines and on the lakes.

23. Along first-order level lines. Starting with the dynamic elevation of the control bench mark at the beginning of each line of levels, instrumental differences were used to arrive at an instrumental elevation for each bench mark along the line. From these instrumental values the

orthometric elevation for each successive bench mark was computed by formula. A correction was then applied to the orthometric elevations to arrive at the dynamic elevation.

24. The equation used for the orthometric correction to the difference of elevation between two neighboring points is

$$\text{Orthometric Correction} = - Chd\phi \quad (1)$$

where

- C is a function of latitude taken directly from prepared tables;
- h is the average elevation of the instrument between the points;
- $d\phi$ is the difference of latitude in minutes, positive where the second point is north of the first.

Any unit of length may be used for the factor h. The adopted unit of length will determine the unit of the resulting orthometric correction.

25. The dynamic correction to an orthometric evaluation is expressed as

$$\text{Dynamic Correction} = - D_1h - D_2h^2 \quad (2)$$

where

- D_1h constitutes the dynamic correction for latitude and is expressed in the same unit as h;
- D_2h^2 is mainly a dynamic correction for elevation.

The values for D_1 and D_2 have been obtained from published tabulations. Both of the above equations are clearly developed in United States Coast and Geodetic Survey Special Publication No. 240 (1948) (reprinted by NOAA, 1977) "Manual of Leveling Computation and Adjustment", pp. 43-49 and Appendix C, pp. 155-160. Tables for the factors C, D_1 and D_2 are also found in the same publication, Tables II, pp. 142-148 inclusive.

26. On the lakes. As noted in subparagraph 20c, every point on a lake surface will have the same dynamic elevation when the mean surface of the lake is level. This affords a means, called water level transfer, which was used to bridge the gaps between the level lines and to establish

the datum in the harbors. For water level transfers, it was decided to use only water levels recorded in the four months of June to September of each year because it was considered that the lake surface is least disturbed at this time of year. Since 1955 was chosen as the year for the new datum, water level transfers to extend the datum should be based around that year insofar as possible. The water level transfers were based on the data available in the seven-year period 1952-1958. At gage sites where water level records were inadequate, it was decided to establish the new datum by using the latest level line connecting the harbor with the site previously established. At the short-period record sites not connected by level lines, it was decided to establish IGLD (1955) by taking the mean of water level transfers from the two nearest gage sites having datum established from the full seven-year record.

ESTABLISHMENT OF REFERENCE ZERO AT POINTE-AU-PERE

27. A tide gage has been maintained at Pointe-au-Pere by the Canadian Hydrographic Service intermittently since 1897. The records of this gage were used to determine the mean water level which would be used as the zero for the IGLD (1955), and to compute the elevation of the Point-au-Pere control bench mark above the mean water level for this period. The water level elevations recorded by the Canadian Hydrographic Service are quoted in feet above local chart datum, which in turn is fixed at 24.72 feet below bench mark R and 19.93 feet below bench mark 1248-G. For convenience this convention was retained during early computations; later the bench mark elevations were converted into terms of feet above the mean water level at Pointe-au-Pere.

28. A graph was plotted showing the yearly mean water elevations at Pointe-au-Pere for the 39 years of record between 1897 and 1956, each yearly mean being the sum of the hourly readings taken during the year, divided by the number of hours of record for that year. The average of all thirty-nine yearly means between 1897 and 1956 is 7.481 feet above chart datum, while the average of the eleven yearly means between 1941 and 1956 is 7.486. The latter period, between 1941 and 1956, was used in the final determination to minimize the effect of any crustal movement or long-term fluctuation in mean water level at Pointe-au-Pere, and because better gaging equipment, improved methods, and more rigid control were used during that time.

29. Using this mean water elevation of 7.486 feet above chart datum at Pointe-au-Pere as the IGLD (1955) reference zero, and employing the relations of paragraph 22, the reference zero for the IGLD (1955) was established at 17.234 feet below bench mark R, and 12.444 feet below bench mark 1248-G.

30. Since bench mark R has become almost inaccessible, it was decided to use bench mark 1248-G as the primary reference bench mark.

ESTABLISHMENT OF INTERNATIONAL GREAT LAKES DATUM (1955)

31. St. Lawrence River. IGLD (1955) was established along the St. Lawrence River to the easterly end of Lake Ontario by first-order levels from the reference zero at Pointe-au-Pere. The Geodetic Survey of Canada had made several connections between Pointe-au-Pere and Kingston, Ontario, the various lines having been run between the years of 1910 and 1947. In 1953, 1954 and 1955 the Geodetic Survey of Canada re-ran the entire line except for a 181-mile section along the south shore of the St. Lawrence River between Longueuil and Levis, Quebec, which had been completed in 1947, and which was supported by a 1946 line on the north side of the river. Although the 1947 line from Levis to Longueuil was a few years older than the rest of the line, it was felt that the crustal movement was not sufficient to justify the rerunning of this section.

32. In 1958 it became necessary for both the U.S. Lake Survey and the Geodetic Survey of Canada to relocate their control level lines in the area of the International Rapids Section of the river, affected by the flooding of the power pool. Also, at that time the U.S. Lake Survey continued its line southwesterly along the south shore of the river to Cape Vincent, New York, to establish IGLD (1955) elevations for bench marks on the United States side of the river.

33. With the advice of the Geodetic Survey of Canada, the best line between Pointe-au-Pere and Kingston was selected. Much consideration was given to the stability of junction bench marks, recentness of leveling, continuity, and directness of route followed. The selected links forming this line with dates and mileages are shown below.

LINE	MILES	YEAR
Pointe-au-Pere to Levis	198.3	1955
Levis to Longueuil	181.2	1947
Longueuil to Valleyfield	54.4	1954
Valleyfield to Coteau Landing	1.8	1954
Coteau Landing to Cornwall	38.8	1954
Cornwall to Power Dam	2.3	1958
Power Dam to Iroquois Dam	35.2	1958
Iroquois Dam to Prescott	14.8	1953-58
Prescott to Thousand Islands Bridge	37.3	1953-58
Thousand Islands Bridge to Kingston	30.4	1953
TOTAL	594.5	

IGLD (1955) was established at other places along the St. Lawrence River not connected by the above-mentioned line by utilizing the latest first-order level lines of the Geodetic Survey of Canada and U.S. Lake Survey through the areas concerned and connecting with the main line. The new

elevations of the marks at these connections were held fixed, the dynamic values on IGLD (1955) were computed along the lines.

34. Lake Ontario. Using the level lines described above, IGLD (1955) was established at Kingston on Lake Ontario. The monthly mean water elevations at Kingston were computed to thousandths of a foot on 1903 Datum, and were converted to the new datum by subtracting 1.046 feet -- the difference between the elevation of 252.710 feet for control bench mark Steel Rivet on 1903 Datum and 251.664 feet for the same bench mark on IGLD (1955). At gage sites Toronto, Ontario, and Oswego and Fort Niagara, New York (for which records are available for all months June to September, 1952 to 1958) each of the twenty-eight monthly mean water elevations on the existing datum was subtracted from the corresponding IGLD (1955) water elevation at Kingston. The mean of these differences at each site was applied to the elevation of the control bench mark on the existing datum to obtain its elevation on the new datum. Instrumental differences in elevation between the control bench mark and other bench marks at each site were used to obtain their new elevations. To illustrate the water level transfer method employed, a sample calculation, Kingston to Oswego, is given on page 12 of this report.

35. At gage sites Sackets Harbor, Port Ontario, Little Sodus Bay, Sodus Bay, Rochester, Oak Orchard, Olcott and Wilson, New York, and Port Dalhousie, Ontario, (for which records are available for only part of the period 1952 to 1958), water level transfers for the partial period were made from two of the long-period sites, giving two values for the correction to the control bench mark. The mean of the two corrections was then applied to the control bench mark elevation to obtain its elevation on IGLD (1955). Therefore, for Sackets Harbor, Port Ontario, Little Sodus Bay and Sodus Bay, transfers were made from Oswego and Kingston, and for Rochester, Oak Orchard, Olcott, Wilson and Port Dalhousie, transfers were made from Oswego and Toronto. Holding the new elevations at Kingston, Toronto, and Port Dalhousie, the latest first-order level lines of the Geodetic Survey of Canada between these sites were used to compute elevations on IGLD (1955) at Cobourg, Port Weller and other places around the lake where the new datum might be needed in the future.

36. Welland Canal and Niagara River. At the request of the Coordinating Committee in 1954, the Geodetic Survey of Canada completed first-order levels between Lake Ontario and Lake Erie. The leveling was started at Port Dalhousie and Port Weller, on Lake Ontario and progressed southward to Port Colborne, on Lake Erie following the Welland Canal route. Connections to gage control bench marks were made on both lakes.

37. In 1958 the U.S. Lake Survey completed a first-order level connection from Olcott and Wilson, New York, on Lake Ontario to Buffalo and Lackawanna, New York, on Lake Erie along the United States side of the Niagara River connecting to gage control bench marks on both lakes and along the Niagara River.

ILLUSTRATION OF WATER LEVEL TRANSFER, KINGSTON TO OSWEGO

MONTH AND YEAR	KINGSTON IGLD (1955)	OSWEGO 1935 DATUM	DIFFERENCE
June 1952	248.075	249.292	- 1.217
July	247.698	248.900	- 1.202
August	247.156	248.365	- 1.209
September	246.649	247.860	- 1.211
MEAN	247.394	248.604	- 1.210
June 1953	246.686	247.913	- 1.227
July	246.375	247.589	- 1.214
August	245.958	247.196	- 1.238
September	245.592	246.793	- 1.201
MEAN	246.153	247.373	- 1.220
June 1954	246.548	247.772	- 1.224
July	246.160	247.429	- 1.269
August	245.673	246.913	- 1.240
September	245.331	246.537	- 1.206
MEAN	245.928	247.163	- 1.235
June 1955	246.934	248.194	- 1.260
July	246.399	247.675	- 1.276
August	245.950	247.204	- 1.254
September	245.516	246.728	- 1.212
MEAN	246.200	247.450	- 1.250
June 1956	246.541	247.751	- 1.210
July	246.217	247.431	- 1.214
August	245.776	247.016	- 1.240
September	245.562	246.819	- 1.257
MEAN	246.024	247.254	- 1.230
June 1957	245.054	246.270	- 1.216
July	245.212	246.431	- 1.219
August	244.831	246.089	- 1.258
September	244.466	245.682	- 1.216
MEAN	244.891	246.118	- 1.227
June 1958	244.237	245.460	- 1.223
July	244.084	245.304	- 1.220
August	243.854	245.066	- 1.212
September	243.625	244.839	- 1.214
MEAN	243.950	245.167	- 1.217
M E A N			- 1.227
Elevation of Bench Mark A (Oswego) 1935 Datum			251.898
			<u>- 1.227</u>
Elevation of Bench Mark A (Oswego) 1955 Datum			250.671

38. Starting with the dynamic elevation of BM MMDIII at Port Dalhousie, using the instrumental differences and applying the orthometric corrections, the orthometric elevations of bench marks along the line terminating at BM RIVET at Port Colborne were computed. The dynamic conversion correction was then applied to these elevations producing elevations on IGLD (1955) for all bench marks.

39. To establish the new datum along the Canadian side of the Niagara River, the latest level line along the river and connecting to the Welland Canal line was used. The junction marks on the Welland Canal line were held fixed on IGLD (1955) and the new elevations of the intermediate bench marks along the river were computed.

40. Following the same general procedure outlined in the preceding paragraph, the elevations of bench marks along the United States side of the Niagara River were computed in IGLD (1955) terminating at Lackawanna, New York. A water level transfer to Port Colborne was made from the Niagara River line, and the closing error was well within the allowable error for first-order leveling.

41. Lake Erie. The foregoing computation gave the elevation on BM RIVET at Port Colborne on IGLD (1955) as 583.015 feet. The monthly mean water elevations at Port Colborne were computed to thousandths of a foot on 1903 Datum and were converted to the new datum by subtracting 1.642 feet -- the difference between the elevation of 584.657 feet for control BM RIVET on 1903 Datum and 583.015 feet for the same bench mark on IGLD (1955). At the gage sites Port Stanley, Ontario and Toledo and Cleveland, Ohio, (for which records are available for all months June to September 1952 to 1958), each of the twenty-eight monthly mean water surface elevations on the existing datum was subtracted from the corresponding IGLD (1955) water surface elevation at Port Colborne. The mean of these differences at each site was applied to the elevation of the control bench mark on the existing datum to obtain its elevation on the new datum. Differences in elevations between the control bench mark and other bench marks at each site were used to obtain their new elevations.

42. At gage sites Dunkirk and Barcelona, New York; Erie, Pennsylvania; Conneaut, Ashtabula, Fairport, Rocky River, Lorain, Vermilion, Huron, Put-In-Bay, Sandusky and Port Clinton, Ohio; and Monroe, Michigan, (for which records are available for only part of the period 1952 to 1958), water level transfers were made for the partial period from two of the long-period sites, Port Stanley and Cleveland, giving two values for the correction to the control bench mark. The mean of the two corrections was then applied to the control bench mark elevation to obtain its elevation on IGLD (1955). Holding the new IGLD (1955) elevations at Port Colborne, Port Stanley, and Erieau, Ontario (established from the Detroit River level line) and using the latest levels of the Geodetic Survey of Canada along the north shore of the lake, the new datum was established at Port Dover, Ontario, and elsewhere along that shore.

43. Detroit-St. Clair River System. In 1959 the U.S. Lake Survey ran first-order levels from Monroe on Lake Erie to Lakeport, Michigan, on Lake Huron. At the same time the Geodetic Survey of Canada ran a line from Eriean on Lake Erie to Windsor, Ontario, on the Detroit River and from Eriean to Goderich on Lake Huron via Chatham, Port Lambton and Sarnia, Ontario.

44. Four river crossings were made using reciprocal leveling methods to connect the two lines. The U.S. Lake Survey ran levels across the Detroit River at the lower end across the islands between Trenton, Michigan, and Amherstburg, Ontario, and between Detroit and Windsor via Belle Isle. The Geodetic Survey of Canada made crossings of the St. Clair River at Port Lambton and Sarnia, Ontario. The closures of the three loops thus formed were very satisfactory.

45. Using the dynamic value of BM W.L. 103 at Monroe, the dynamic elevations of all the marks along both lines were computed. Water transfers across Lake Erie from the Eriean gage to Monroe and between Lakeport and Goderich on Lake Huron gave acceptable closures at both ends of the two lines.

46. Lake Huron. The foregoing computations gave the elevation of BM STEEL RIVET at Goderich on IGLD (1955) as 586.822 feet. The monthly mean water surface elevations at Goderich were computed to thousandths of a foot on 1903 Datum and were converted to the new datum by subtracting 1.757 feet -- the difference between the elevation of 588.579 feet for the control BM STEEL RIVET on 1903 Datum and 586.822 feet for the same bench mark on IGLD (1955). At gage sites Harbor Beach, Mackinaw City and De Tour, Michigan, Thessalon and Collingwood, Ontario (for which records are available for all months June to September, 1952 to 1958), each of the twenty-eight monthly mean water surface elevations on the existing datum was subtracted from the corresponding IGLD (1955) water surface elevation at Goderich. The mean of these differences at each site was applied to the elevation of the control bench mark on the existing datum to obtain its elevation on the new datum. Differences in elevations between the control bench mark and other bench marks at each site were used to obtain their new elevations.

47. At gage sites for which records are available for only part of the period 1952-1958, water level transfers were made for the partial period from two of the long-period sites as follows: At gage sites Port Sanilac and Lexington, Michigan, water level transfers were made from Harbor Beach and Goderich. At gage sites Port Austin, Essexville, Alpena and Presque Isle, Michigan, water level transfers were made from Goderich and De Tour. At Calcite, Hammond Bay, Cheboygan, St. Ignace and Mackinac Island, Michigan, water level transfers were made from De Tour and Mackinaw City. These transfers gave two values for the correction to the control bench mark, and the mean of the two corrections was then applied to the control bench mark elevation to obtain its elevation on IGLD (1955). Holding the new elevations of the control bench marks at Goderich, Collingwood and Thessalon, the latest level lines of the Geodetic Survey of

Canada were used to compute IGLD (1955) along the Bruce Peninsula, Georgian Bay and North Channel.

48. Lake Michigan. At gage sites Ludington, Michigan, Calumet Harbor, Illinois, Milwaukee and Sturgeon Bay Canal, Wisconsin (for which records are available for all months June to September, 1952 to 1958), each of the twenty-eight monthly mean water surface elevations on the existing datum was subtracted from the corresponding IGLD (1955) water surface elevation at Goderich. The mean of these differences at each site was applied to the elevation of the control bench mark on the existing datum to obtain its elevation on the new datum. Differences in elevations between the control bench mark and other bench marks at each site were used to obtain their new elevations.

49. At gage sites for which records are available for only part of the period 1952-1958, water level transfers were made for the partial period from two of the long-period sites as follows: At Beaver Island, Petoskey, Charlevoix, Traverse City, Leland, Naubinway, Manistique, Escanaba and Menominee, Michigan; Oconto, Pensaukee, Big Suamico, Green Bay, Sturgeon Bay, Detroit Harbor and Jackson Harbor, Wisconsin, water level transfers were made from Mackinaw City and Sturgeon Bay Canal. At Frankfort, Portage Lake and Manistee, Michigan; Manitowoc, Two Rivers, Kewaunee and Algoma, Wisconsin, water level transfers were made from Sturgeon Bay Canal and Ludington. At Pentwater, White Lake, Muskegon, Grand Haven, Holland and Saugatuck, Michigan; Port Washington and Sheboygan, Wisconsin, water level transfers were made from Ludington and Milwaukee. At South Haven and St. Joseph, Michigan; Michigan City and Indiana Harbor, Indiana; Chicago and Waukegan, Illinois; Kenosha and Racine, Wisconsin, water level transfers were made from Milwaukee and Calumet. These transfers gave two values for the correction to the control bench mark and the mean of the two corrections was then applied to the control bench mark elevation to obtain its elevation on IGLD (1955).

50. St. Marys River. In 1959 the Geodetic Survey of Canada ran a line of first-order levels in Ontario from Thessalon on Lake Huron to Gros Cap on Lake Superior with a connection across the compensating works at Sault Ste. Marie to U.S. Lake Survey marks. The U.S. Lake Survey ran a line of levels from De Tour on Lake Huron through Sault Ste. Marie to Point Iroquois on Lake Superior in 1960. A water level transfer could not be made to the upper end of the Canadian line because of insufficient records; however, the loop closure through the De Tour-Thessalon water transfer was very satisfactory.

51. Lake Superior. The foregoing computations gave the elevation of bench mark Iroquois Lighthouse (1901) at Point Iroquois on IGLD (1955) as 620.623 feet. The monthly mean water surface elevation at Point Iroquois was computed to thousandths of a foot on 1935 Datum, and was converted to the new datum by subtracting 1.626 feet -- the difference between the elevation of 622.249 feet for the control bench mark on 1935 Datum and 620.623 feet for the same bench mark on IGLD (1955). At gage sites Michipicoten and Port Arthur, Ontario; Two Harbors and Duluth, Minnesota;

Keweenaw Lower Entry and Marquette, Michigan, (for which records are available for all months June to September, 1952 to 1958), each of the twenty-eight monthly mean water surface elevations on the existing datum was subtracted from the corresponding IGLD (1955) water surface elevation at Point Iroquois. The mean of these differences at each site was applied to the elevation of the control bench mark on the existing datum to obtain its elevation on the new datum. Differences in elevations between the control bench mark and other bench marks at each site were used to obtain their new elevations.

52. At gage sites for which records are available for only part of the period 1952-1958, water level transfers were made for the partial period from two of the long period sites as follows: At gage sites Ontonagon and Black River, Michigan; Ashland, Bayfield, Cornucopia and Port Wing, Wisconsin; Knife River, Beaver Bay, Lutsen and Grand Marais, Minnesota, water level transfers were made from Two Harbors and Port Arthur. At gage sites Isle Royale, Keweenaw Upper Entry, Houghton, Eagle Harbor, Copper Harbor, Grand Traverse Bay and Presque Isle (Marquette), Michigan, water level transfers were made from Port Arthur and Marquette. At gage sites Munising, Grand Marais, and Whitefish Point, Michigan, water level transfers were made from Marquette and Point Iroquois. These transfers gave two values for the correction to the control bench mark and the mean of the two corrections was then applied to the control bench mark elevation to obtain its elevation on IGLD (1955). Holding the new elevations of the control bench marks at Michipicoten and Port Arthur, the latest first-order level line of the Geodetic Survey of Canada was used to establish IGLD (1955) along the Canadian Shore of the lake.

53. Elevations on International Great Lakes Datum (1955). The elevations of bench marks at each site and along the level lines are shown in Appendix A. After publication of the first edition of "Establishment of International Great Lakes Datum (1955)" in September 1961, anomalies in water surface elevations became evident at the Cape Vincent, Buffalo and Lakeport gage locations. Recommendations by the Committee for resolving these anomalies were completed in 1964 and the resulting dynamic elevations for bench marks at U.S. gage location are listed in this edition.

54. Descriptions of bench marks. Appendix B lists the addresses where bench mark descriptions can be obtained.

RECOMMENDATIONS

55. The Coordinating Committee on Great Lakes Basic Hydraulic and Hydrologic data considers that the establishment of International Great Lakes Datum (1955) along the Rivers and Lakes of the Great Lakes system satisfies the requirements for a new datum in this area.

56. The advantages of International Great Lakes Datum (1955) may be summarized as follows:

a. Elevations, consistent with one another as of a recent date (1955), are provided for bench marks and reference surfaces throughout the Great Lakes-St. Lawrence River system, with the reference zero at Pointe-au-Pere.

b. The elevations given on this datum are based on the dynamic principle, and are therefore more suitable for hydraulic studies.

c. The new datum provides a desirable replacement for the many conflicting datums at present employed in the Great Lakes-St. Lawrence River system. Replacement of these datums by International Great Lakes Datum (1955) and conversion of records to the new datum will greatly facilitate hydraulic, hydrographic and other engineering studies.

57. To assure that the advantages of having this coordinated datum in general use may be fully exploited, this committee strongly recommends that all agencies interested in water levels on the Great Lakes-St. Lawrence River system adopt International Great Lakes Datum (1955) as set forth in this report.

APPENDIX A

TABULATION OF BENCH MARK ELEVATIONS

C A N A D A

Bench Mark Elevation

Bench Mark Elevation

RIVIERE DU LOUP

RIVIERE OUELLE

CCXVI 166.407
 CCXVII 187.426
 1289-G 209.906
 1290-G 278.318
 821-B 303.478
 MCLXIII 311.458
 78-B 412.334
 76-B *(307.093)
 75-B 338.400
 1291-G 138.845
 1292-G 74.347
 1293-G 20.408

MCXLI 26.525
 Tidal 13.897
 1314-G 42.613
 CLXVII 27.694
 MXCVI 53.814
 867-B 77.669
 1315-G 72.496
 1316-G 101.995
 1317-G 133.936
 1318-G *(148.622)
 1319-G 20.161
 1320-G 22.755
 1321-G 67.243
 1322-G *(64.600)

NOTRE DAME DU PORTAGE

ST. ROCH DES AULNAIS

CCXIX 35.905
 1294-G 29.580
 1295-G 13.159
 1296-G 66.653
 1297-G 91.179
 1298-G 67.663
 1299-G 11.814
 1300-G 13.080
 1301-G 70.943
 1302-G 9.564
 1303-G 9.476

CLXXIII 26.688
 1323-G 23.025
 CLXXIV 18.491
 1324-G 32.347
 1325-G 113.031
 CLXXV 138.616
 1326-G *(183.201)
 1327-G 121.765
 1328-G 65.175

ST. GERMAIN DE KAMOURASKA

ST. JEAN PORT JOLI

CLXXXVIII 101.060
 1304-G 11.789
 1305-G 22.557

CLXXVII 49.310
 1329-G 85.974
 1330-G 87.103
 1331-G *(51.470)
 1332-G 19.677
 1333-G 55.667
 TOPO: F2 *(48.263)
 1334-G *(22.554)
 1335-G 22.378
 1336-G 22.505
 1337-G 49.349
 Stat. 59.024
 TOPO: F1 58.556
 1338-G 18.694
 1339-G 24.359

KAMOURASKA

CLXXXV 56.296
 1306-G 12.390
 1307-G 22.701
 TOPO: F28 27.443

ST. DENIS DE LA BOUTEILLERIE

CAP ST. IGNACE

CLXXXI 88.041
 1308-G 51.882
 1309-G 77.542
 TOPO-F29 104.830
 1310-G *(77.678)
 1311-G 50.978
 1312-G 17.564
 1313-G 35.797

CLI 43.868
 1340-G 46.759
 1341-G *(46.034)
 1342-G 58.359
 MCXVI 53.805
 MCXV *(53.429)
 1343-G 56.472

*() = B.M. Destroyed

C A N A D A

Bench Mark	Elevation	Bench Mark	Elevation
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MONTMAGNY

CXLIX	32.234
1344-G	51.098
1345-G	37.088
1346-G	79.561
1347-G	141.987
1348-G	184.093
1349-G	37.424
CLVI	47.688
1350-G	** (25.319)

BERTHIER EN BAS

CLVII	33.530
1352-G	35.640
1351-G	28.259
1354-G	30.680
1353-G	128.504

ST. VALLIER

CLIX	90.920
1355-G	77.210
1356-G	26.214
CLX	** (72.166)
1357-G	63.879

ST. MICHEL DE BELLECHASE

CLXI	34.177
1358-G	31.848
1359-G	55.348
1360-G	** (131.041)
1361-G	145.864
1362-G	** (187.961)
CLXIV	180.833

BEAUMONT

CLXIII	176.921
1363-G	195.319
1364-G	** (226.973)
1365-G	175.982
219-B	176.969
MCXXXVI	72.713
220-B	66.727
881-B	54.190

LEVIS

221-B	** (19.236)
1366-G	17.455
MMCLXXII	18.503
222-B	16.937
2613	33.633

RIVIERE A LA SCIE

MMMDCV	** (26.528)
2612	18.885

ST. ROMUALD D'ETCHEMIN

MMMDCVI	65.502
AG 1913	18.704

NEW LIVERPOOL

MMMDCVII	15.869
LXVI	23.716

PONT DE QUEBEC

MMMDCVIII	** (125.530)
259-B	** (157.100)
LXV	** (17.107)
LXIV	** (7.146)
MMMDCIX	** (148.447)
MMMDCX	109.749
MMMDCXI	** (123.169)
LXIII	11.299
LXI	16.343
MMMDCXII	142.479
△	11.172
Ship Chan.	14.630

ST. NICHOLAS

MMMDCXIII	** (225.728)
MMMDCXIV	233.767
MMMDCXV	** (222.734)
MMMDCXVI	225.473

** () = B.M. Destroyed

C A N A D A

Bench Mark	Elevation	Bench Mark	Elevation
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LECLERCVILLE

MMDCXVII	224.378
MMDCXVIII	** (252.696)
MMDCXIX	** (231.838)
2611	228.664

MMCCIX	** (34.006)
MMCCVIII	** (25.957)
LXXXVII	32.594
2607	93.167
MMCCXII	98.761
2606	** (39.136)
MMCCXIV	128.331
Hydro	15.416
MMCCXV	** (117.914)
MMCCXVI	** (144.428)

ST. ANTOINE DE TILLY

MMDCXXI	169.218
MMDCXXII	31.642
2610	** (23.478)
MMDCIV	** (120.100)
MMDCIII	194.433
MMDCII	** (215.204)
MMDCI	220.638
MMDC	** (205.155)
LXXVI-A	19.184

DESCHAILLONS

#1 Ship Chan.	19.401
CXVI	154.093
CAPA 1/1958	** (19.320)
CAPA 2/1958	** (16.281)
MMDXCII	148.973

STE. CROIX

MMDXCIX	221.710
MMDXCVIII	** (182.481)
MMDXCVII	243.126
MMDXCVI	** (175.624)
MMDXCV	** (159.922)
MMDXCIV	148.757
MMDXCIII	** (97.963)

BRICKYARDS

#3 Ship Chan.	22.253
MMCCXIX	155.130
MMCCXX	** (116.795)
MMCCXXI	** (127.301)
MMCCXXII	** (118.507)
MMCCXVIII	113.026

POINTE PLATON

LXXXVII-A	29.809
MMCCXCIX	** (16.412)
MMCCI	** (151.368)

SAINT-PIERRE-LES-BESQUETS

CXIII	103.725
MMCCXCVII	19.074
MMCCXCVI	53.606
MMCCXCV	** (98.843)
2605	102.919
2604	** (103.539)
MMCCVI	32.575
MMCCV	** (51.132)

GRIST MILL

LXXXI	41.616
MMCCII	73.666
MMCCIII	** (68.501)
LXXXIII	15.104
MMCCIV	** (80.046)

GENTILLY

RAPIDES RICHELIEU

LXXXIV	89.723
XXVII	14.975
2609	21.116
MMCCVI	18.411
2608	100.552

MMCCIV	59.406
MMCCII	36.191
2603	33.068
MMCCI	28.680
CXVII	25.720
MMCC	28.544
MMCCIX	38.097

** () = B.M. Destroyed

C A N A D A

Bench Mark	Elevation	Bench Mark	Elevation
NICOLET			
XCIII	33.229	MCCLVII	**(67.880)
MMMXCVIII	30.100	2595	**(67.069)
MMMXCVII	26.349	2594-A*	64.467
BECANOUR			
MMMXCVI	39.926	MCCLVI	58.763
Hydro B.M.	15.572	MCCLV*	81.521
Becancour Pl.	20.958	MMMDXCI*	70.764
2602	32.503	MCCLVIII*	64.498
MMMXCIV	**(22.448)	MCCLIX	62.053
STE. ANGELE DE LAVAL			
XCIV	27.512	CIII*	42.033
2601	21.814	†	**(29.968)
H - 5	20.974	2594	37.785
MMMXCIII	21.630	CV	32.025
MMMXCII	**(28.966)	2593	37.275
XCVI	34.888	2592	46.699
MCCXLVII	39.921	CVII-A	37.009
MCCXLVI	30.266	LI	**(42.410)
MCCXLV	38.387	LA BAIE	
ST. GREGOIRE			
MCCLIII	99.992	L-A	**(77.043)
2600	25.598	XLIX	**(42.731)
MMMLXXIX	27.042	2591	**(40.101)
2599	32.183	MCCLXIX	55.826
MMMLXXXI	31.180	MCCLXVIII	58.556
MMMLXXXII	26.331	MCCLXVII	62.555
MMMLXXXIII	34.388	MCCLXVI	71.307
MMMLXXXIV	31.065	MMDXC	**(77.916)
RIVIERE MARGUERITE			
MMMLXXXV	23.827	PIERREVILLE	
XCVIII	31.192	MCCLXV	73.518
2598	28.360	2589	45.898
PORT-ST.-FRANCOIS			
MMMLXXXVII	**(16.421)	ILETS PERCES	
POSF 1/1960*	24.201	XLVII	**(31.492)
POSF 2/1960*	22.538	XLV-A	**(29.042)
MMMLXXXVIII	26.621	2590	30.677
MMMLXXXIX	**(33.537)	2588	**(75.478)
2596	27.645	MCCLXIV	**(68.796)
2597	22.360	MCCLXII	70.291
MMMXCI	**(26.987)	ST. FRANCOIS DU LAC	
MMCLXXI	**(53.591)	MCCLXIII	71.772
** () = B.M. Destroyed			
* Gaging Site.			

C A N A D A

Bench Mark Elevation Bench Mark Elevation

YAMASKA

XL 57.414
 2584 35.224
 XXXIX 43.271
 2583 *(42.397)
 2582 46.420
 MMMDLXXXIX 39.175
 2581 45.117

SOREL

MCCCVII *(46.878)
 SORE 1/1958 *(27.150)
 SORE 2/1958* 26.918
 SORE 3/1958 27.012
 2578 22.217
 2579 20.036
 2580 33.979
 2576 28.102
 2577* 47.304
 2577 (Sub) 40.286
 + 47.771
 MMDCCCCLV *(26.397)
 2575 29.989
 "G" *(40.815)

ST. JOSEPH DE SOREL

MMDCCCXCI *(42.675)
 2575-A 34.103
 2574 40.067
 CXXV-A *(37.035)
 CXXVI *(39.771)
 CXXXVII 47.056
 2573 49.340
 2572 47.262
 2571 43.155
 MMDCCCXCIII 49.780
 MMDCCCXCIV *(67.285)
 2570 *(55.210)

CONTRECOEUR

CXXIX *(44.155)
 COCR 1/1960 *(27.162)
 COCR 2/1960* 25.123
 MMDCCCXCVII *(25.017)
 MMDCCCXCVIII 38.544
 2569 *(55.872)
 2568 40.156
 + 27.764
 MIMI 33.542

VERCHERES

CXXXII-A* 63.390
 CXXXIII* 64.159
 2567* 31.335
 VERS 1/1958* 28.378
 VERS 2/1958 *(24.816)
 VERS 3/1958* 35.491
 † *(30.882)
 MMMIV 67.815
 2566 69.202
 CXXXIV 67.900
 2565 55.922
 MMMVII *(40.385)
 T *(42.799)
 2564 61.867
 MMDCCCLXI *(26.694)

VARENNES

CXLV* 53.845
 VARE 2/1958 *(44.993)
 VARE 3/1958* 34.512
 MMDCCCLX* 49.145
 MMMCM *(39.325)
 2563 *(35.872)
 MMDCCCLIX 50.501
 MMDCCCLVIII 30.708
 2562 *(35.946)
 2561 40.273

BOUCHERVILLE

CXLIII 49.046
 † 48.371
 2560 36.626
 2559 *(37.618)
 2558 37.436
 2557 *(45.486)
 MMDCCCLIX *(36.575)

LONGUEUIL

CXXIII 50.643
 MMDCCCLVII *(41.828)
 MMDCCCLVI *(42.936)

PONT JACQUES-CARTIER

MMMVIII 45.491
 MMDCCCLIV 50.838
 MMDCCCLIII *(50.260)

*() = B.M. Destroyed

* Gaging Site.

C A N A D A

Bench Mark	Elevation	Bench Mark	Elevation
CAUGHNAWAGA			
597-B-2	** (55.496)	MMDCXXXVI	89.512
2556	57.850	MMDCXXXVII	74.510
DLXXXVI	71.986	2549	113.360
2555	52.603	2756	95.354
		2548	98.717
		MMDCXXXVIII	** (88.115)
		MMDCXL	** (98.329)
ST. LAMBERT			
CXLI*	49.335	CHATEAUGUAY	
LSTLA 1/1958*	34.622	MMDCXLI	95.466
LSTLA 2/1958*	34.598	2547	148.425
LSTLA 3/1958*	34.579	WOODLANDS	
LSTLA 4/1959*	42.693	MMDCXLII	102.655
"G.S."*	34.539	2546-A	82.620
USTLA 1/1958*	42.681	MMDCXLV	72.919
USTLA 2/1958*	42.785	2546	89.626
USTLA 3/1958*	42.628	BELLEVUE	
USTLA 4/1959*	55.215	MMDCXLVI	** (76.314)
DLXXXV	** (67.552)	MMDCXLVII	** (79.945)
2554	** (51.558)	2757	80.940
MMDCXLVI	** (56.300)	BEAUHARNOIS	
MMDCXLV	** (51.804)	MMDCXCI	129.289
2553	** (57.500)	2006	114.900
MMDCXLIV	** (50.910)	2758*	89.704
MMDCXLIII	** (49.126)	LOBE 1/1958*	78.548
LA PRAIRIE			
CXXXIX	56.343	LOBE 2/1958*	78.515
MMDCXLII	53.592	LOBE 3/1958*	78.549
MMDCCLIII	** (59.850)	LOBE 4/1959*	88.244
CXXXVIII	54.878	2007*	165.274
MMDCCLX	** (56.626)	UPBE 1/1958*	157.519
2552	55.467	UPBE 2/1958*	157.585
MMDCCLIX	49.909	UPBE 3/1958	** (157.652)
MCCCXXXII	93.187	UPBE 4/1959*	157.660
593-B	90.321	1929	143.009
MMDCCLVIII	** (38.525)	2759	168.032
2754*	63.769	PTE. ST. TIMOTHEE	
COTE STE. CATHERINE			
2551*	57.325	MMDC	** (116.788)
COSC 1/1958*	77.848	STTI 1/1958	95.789
COSC 2/1958*	77.743	STTI 2/1958	94.353
COSC 3/1958*	77.834	2760	153.019
COSC 4/1959*	77.713	GBC 732	160.939
MMDCCLVII	** (53.888)		
MMDCCLVI	** (66.540)		
2550	** (67.515)		
MMDCCLV	67.006		
MMDCCLIII	** (70.653)		
2755	85.002		
MMDCCLII	** (86.289)		
MMDCXXXIV	128.805		

** () = B.M. Destroyed

* Gaging Site.

C A N A D A

Bench Mark	Elevation	Bench Mark	Elevation
SUMMERSTOWN			
1933	** (151.637)	HS Summerstown	** (174.124)
2761	169.022	2616*	166.157
1935	147.390	SUMM 1/1959	** (158.294)
502-G	167.624	MMVII	** (156.882)
500-G	159.470	MMVI*	176.214
		2615-A	188.949
		890-A	194.462
		891	172.612
		MMIV	** (157.383)
		MM	177.420
		2615	173.189
		MCMXCV	190.419
		2614	185.406
VALLEYFIELD			
MMMDCLXIX	162.127		
DCCCIV	157.191		
MMMDCXCII	153.685		
499-G	156.307		
89	** (162.010)		
2762	** (169.162)		
2763	160.559		
2764	165.122		
503-G*	160.935		
H.S. 547	** (160.979)		
2624*	158.693		
504-G*	171.121		
2765	175.949		
CORNWALL			
		"B"	** (162.448)
		H.S. 1/1958*	179.024
		H.S. 2/1958	173.528
		H.S. 3/1958*	173.315
		"BOLT"	** (162.608)
		DLXIII*	158.898
		489	181.609
		MCMLXVI	182.822
		491	194.671
		490	** (193.625)
		MCMLXXII	184.581
		894	193.459
		DLXII	** (194.011)
		DLXXX	** (195.922)
		"C"	** (187.902)
		SL-31	** (195.952)
		MCMLXXIV	** (224.727)
		MCMLXXIII	** (223.842)
		2878	208.326
		894A3	204.812
		894A4	186.722
		2877	203.647
		2895	196.258
		Headwater	257.038
		2896	191.046
		Moses Headwater	247.630
		Power	190.933
		International	173.266
		Center Line Units	194.488
		Moses Tailwater	194.360
		894 A2	214.774
		2884	212.267
		2885	252.545
		895 A	** (223.510)
		2886	247.404
		896	** (220.193)
COTEAU LANDING			
MMXIX	** (156.765)		
COLD 1/1958*	155.870		
COLD 2/1958*	156.454		
COLD 3/1958*	155.966		
ST. ZOTIQUE			
MMXVIII	** (159.271)		
1941	155.410		
MMXVII	156.692		
1944	165.458		
MCKIES POINT			
2623	161.438		
2622	156.145		
2621	162.478		
2620	172.172		
LANCASTER			
2619-A	165.224		
MMXI	169.389		
2619	159.040		
MMX	160.812		
2618	169.818		
2617	165.105		
LONG SAULT			
		2887	282.309
		2889	260.619
		897A	270.444
		2890	251.899

** () = B.M. Destroyed

* Gaging Site.

C A N A D A

Bench Mark	Elevation	Bench Mark	Elevation
INGLESIDE		PRESCOTT	
2891	259.213	1505*	286.888
2892	258.470	913	268.272
899A	255.297	914*	300.739
2894	277.071	3150	** (268.388)
2897	261.200	MMXXV*	262.768
2898	** (270.711)	MMXXVI	** (269.978)
2899	** (263.509)	PRES 1/1959*	246.848
2900	267.645	PRES 2/1959*	247.936
2901	269.540	590-S	252.843
		MMXXIII	** (264.221)
		MMXXII	271.308
		591-S	283.587
MORRISBURG		MAITLAND	
2902	** (265.146)	MMXX	258.627
905 A	252.587	592-S	297.901
2905	254.014	MMCLXXV	** (307.007)
2906	258.315	593-S	339.466
906 A	** (269.193)	MMCLXXVII	** (252.961)
907	** (254.798)	MMCLXXVIII	252.488
2907	248.645		
2908*	265.101		
IROQUOIS		BROCKVILLE	
"LOCK 25"*	236.211	106-G	298.641
2910*	248.990	105-G	313.010
2911*	259.016	1507	271.121
BOLT	261.262	594-S	282.211
H.S.O.*	252.926	MMCLXXX	253.186
H.S. L 1*	248.312	595-S	273.536
H.S. L 2*	248.986	596-S	303.702
H.S. L 3*	248.959	597-S	256.333
H.S. 1*	250.435	598-S	274.080
H.S. 2*	250.974	599-S	256.578
H.S. 3	** (250.482)	600-S	256.922
Iroquois	260.526	601-S	260.556
908 A2	** (254.508)		
909	280.979		
909 A	278.490		
CARDINAL		ROCKPORT	
MMXLIV	278.179	MMCCXLV	290.197
910	274.671	MMCCXLVI	246.677
911	279.437	2709	338.397
911 A2	281.151	2708	279.608
912	285.606		
535 G	286.258		

** () = B.M. Destroyed
 *Gaging Site.

C A N A D A

Bench Mark	Elevation	Bench Mark	Elevation
IVY LEA			
MMCCCLII	295.844	141-A	275.758
602-S	258.017	1531 Sub	** (265.648)
603-S	253.491	139	276.739
604-S	250.915	1530-A	301.201
605-S	** (279.635)	140	** (254.442)
		143	** (264.784)
		MMCCXVIII	** (261.836)
GANANOQUE			
1525	302.670		
1526	292.527		
MMCCXXXVI	256.757		
MMCCVIII	271.606		
MMCCVII	288.135		
MMCCVI	** (254.139)		
606-S	** (257.027)		
MMCCIV	** (267.520)		
MMCCIII	** (253.250)		
607-S	337.678		
PITTS FERRY			
MMCCI	323.619		
MMXCIX	280.631		
MMCXCVIII	** (257.123)		
MMCXCVII	** (343.202)		
MMCXCVI	347.507		
EASTVIEW			
609-S	276.870		
MMCXCIV	** (355.273)		
BARRIEFIELD			
610-S	358.052		
611-S	341.733		
MMCXCII	250.348		
142	258.475		
MMCXC	254.309		
KINGSTON			
Steel Rivet*	251.664		
H.S. 1/1958*	248.336		
H.S. 2/1958*	251.880		
1531*	271.535		
MMCCX	249.659		
MMCXC	254.368		
142	258.477		
141	263.476		
COLLINS BAY			
		MMCCXIX	258.194
		1532	248.774
		144	** (271.801)
		145	314.116
ERNESTOWN			
		1533	296.573
		146	327.363
		1534	300.791
		147	340.008
NAPANEE			
		1535	299.367
		1536	291.469
		148	295.931
		1537	323.190
		149	314.199
		150-A	304.580
		150-A-2	** (294.531)
		150	316.026
DESERONTO			
		1539	303.501
		1540	253.310
		1541	280.554
		1542	279.620
		1543 Sub	289.241
		1543	296.045
		1538	** (322.638)
		151	** (290.512)
MARYSVILLE			
		1544	** (320.349)
		152	338.435

** () = B.M. Destroyed
 *Gaging Site.

C A N A D A

Bench Mark	Elevation	Bench Mark	Elevation
COLBORNE			
1545	** (281.892)	1564	365.688
1546	** (282.525)	MMCCXC	** (337.319)
		1565	291.517

SHANNONVILLE	
153	284.215
154	337.184
1547	328.406

GRAFTON	
167	280.543
1566	290.050
168	273.346
1567	251.896

BELLEVILLE	
155	316.884
156	** (288.302)
1548 Sub	298.649
1548	305.461
157-A	261.096
157	256.778
157-A-2	250.578
1549	280.195
158	306.870
1550	307.859

COBOURG	
MMCCCI	295.448
1568	** (298.553)
169	291.891
1569*	299.570
1570*	297.518
171*	262.750
MMCCCI*	247.129
COBO 1/1960*	261.948
H.S.	** (249.702)
1571	** (263.437)
MMCCXLVIII	** (250.672)
1572	267.239
170	249.960

TRENTON JCN.	
160	305.922
1551	271.308
161	283.577
1552	259.750
1553	** (257.340)
MCXCI	255.556
1554	250.718
1555 Sub	271.436
1555	278.229
MCXCII	** (264.620)
1556	340.674
MCXCIV	333.108
1557	313.683
1558	306.756
1559	317.154

PORT HOPE	
1573	** (249.955)
173	287.310
172	256.504
1574 Sub	251.672
1574	255.461
172-A	267.313
MMCCXCVII	256.300
MMCCXXLIX	249.062
174	365.741
175	** (390.290)

BRIGHTON	
MCXCVIII*	255.509
163	306.579
1560	** (324.548)
1561	324.488
164	310.409
1562	** (335.905)
MMCCLXXXVII	** (348.928)
1563	320.801
165	282.898
166	298.477

NEWCASTLE	
175-A	367.466
176	301.946

BOWMANVILLE	
176-A	278.140
177	265.081
178	295.035
179	** (333.760)

** () = B.M. Destroyed
 * Gaging Site.

C A N A D A

Bench Mark	Elevation	Bench Mark	Elevation
OSHAWA		TORONTO	
179-A	344.717	MMCCCLXVIII	249.639
1696*	346.446	H.S. "25"	** (249.367)
1696 Sub	339.717	T-152*	266.957
178-A	** (348.607)	T-151*	269.497
PORT WHITBY		MMCCCLXIV*	254.546
180-A	288.318	Bench Plate*	253.833
WHITBY		MMCCCLXIV*	254.546
180	261.219	578-F*	252.236
PICKERING		579-F*	252.124
180-A-2	293.379	TORO 1/1959*	250.245
DUNBARTON		580-F	263.748
181	281.491	MMCCCLX	249.895
3181	321.253	H.S. "6"	250.038
3180	284.127	581-F	259.886
T-58	277.611	T-149	290.394
T-57	290.929	T-148	290.972
T-56	392.049	DCXVIII	** (296.247)
Scarboro	** (448.003)	DCXX	351.508
T-55	470.097	T-139	360.418
T-54	509.354	238-G	395.172
		DCXXI-A	394.378
		583-F	388.162
		240-G	** (389.191)
		241-G	** (389.840)
		584-F	391.559
		T-230	396.872
		T-231	399.217
		LAMBTON	
		242-G	** (395.884)
		T-237	404.243
		ISLINGTON	
		243-G	398.574
		244-G	** (396.972)
SCARBOROUGH		LONG BRANCH	
183	** (530.203)	245-G	** (315.374)
T-53	532.851	191	** (287.655)
T-52	596.584	CLARKSON	
T-51	534.979	192	** (323.247)
T-50	502.841		
MMCCCLXXV	251.001		
T-49	469.488		
T-48	421.508		
T-160	429.830		
T-159	395.079		
T-158	363.839		
T-155	338.176		
T-156	273.085		
T-157*	251.913		

** () = B.M. Destroyed

* Gaging Site.

C A N A D A

Bench Mark	Elevation	Bench Mark	Elevation
OAKVILLE		BEAMSVILLE	
193	**(329.791)	204	294.100
1999	**(296.080)	2001	272.045
1999 Sub	**(289.393)	2001 Sub	**(265.228)
2000	285.954		
MMCCCCXXII	**(270.924)		
MMCCCCXXIII	**(270.799)		
		JORDAN	
		205	306.094
		206	**(329.290)
		ST. CATHARINES	
		207	**(356.549)
		MMCCCLXXXIII	**(355.893)
		208	357.868
		1991	367.549
		565-F	360.266
		566-F	**(383.659)
		PORT DALHOUSIE	
		133-F	**(320.236)
		MMDIII	262.149
		C	**(256.309)
		560-F	257.892
		561-F	248.512
		562-F	292.616
		PORT WELLER	
		MMDVI*	293.844
		H.S. 1	**(256.911)
		H.S. 2*	253.294
		H.S. 3*	257.404
		Bolt*	251.246
		MMDXXXVI	**(294.128)
		"Δ"*	251.504
		MMDV	**(271.651)
		563-F	**(339.315)
		564-F	**(340.659)
		THOROLD	
		567-F	385.416
		MMDXII	**(524.850)
		MMDXIII	566.754
		210-A	**(571.304)
		568-F	571.102
		HAMILTON	
198	288.059		
199	**(315.706)		
MMCCCLVI	**(317.698)		
1697	302.403		
1697 Sub	**(295.457)		
1697-A	360.447		
1697-A Sub	353.549		
200	**(265.137)		
		STONEY CREEK	
201	270.883		
		WINONA	
202	278.212		
		GRIMSBY	
203	282.788		
1989	287.164		
1989 Sub	**(280.915)		
MMCCCLVIII	**(301.075)		
1990	286.415		

**() = B.M. Destroyed

* Gaging Site.

C A N A D A

Bench Mark	Elevation	Bench Mark	Elevation
ALLANBURG		PORT WHITLAND	
569-F	572.718	MMDCXVII	584.380
MMDXXXV	** (579.732)	MMDCXVIII	575.383
MMDXXXIV	** (579.691)	MMDCXIX	580.645
		MMDCXX	** (578.010)
		MMDCXLI	600.489
PORT ROBINSON		DUNNVILLE	
570-F	574.437	MMDCXLI	** (612.113)
MMDXXXI	** (580.457)	MMDCXL	** (578.592)
		MMDCXLI	** (591.016)
WELLAND		SOUTH CAYUGA	
571-F	** (573.420)	MMDCXLI	642.411
148-F	587.820	MMDCXLV	** (634.437)
MMDXXVII	** (583.714)	MMDCXLVI	** (600.686)
1699	581.924	MMDCXLVII	** (597.737)
MMDXXVI	576.044	MMDCXLVIII	** (589.301)
572-F	583.853	MMDCXLI	** (601.976)
WELLAND JCN.		SELKIRK	
573-F	576.201	MMDCL	** (629.373)
PORT COLBORNE		MMDCLI	** (638.196)
574-F	** (574.854)	MMDCLII	** (637.332)
Steel Rivet*	583.015	MMDCLIII	** (619.887)
137-F	** (578.047)	MMDCLXXX	626.659
575-F*	588.014	MMDCLXXXIX	645.899
576-F*	578.095	MMDCLXXVIII	** (621.486)
577-F*	578.308	NANTICOKE	
135-F*	582.226	MMDCLXXVII	606.694
+ Sill Gov't		MMDCLXXVI	** (597.198)
Elevator	** (578.110)	MMDCLXXV	** (610.749)
MMDXIX	** (577.190)	MMDCLXXIV	** (589.384)
MMDCII	** (577.080)	MMDCLXXIII	** (606.643)
		MMDCLXXII	** (626.051)
BURNABY		PORT DOVER	
MMDCIII	585.916	MMDCLXXI	** (625.807)
MMDCIV	586.391	MMDCLXX	** (642.682)
MMDCV	584.604	MMDCLXIX	650.556
MMDCVI	582.352	MMDCLXVIII	** (583.477)
MMDCVII	634.027	MMDCCXXXI*	616.250
MMDCVIII	** (575.787)	MMDCCXXX*	576.279
MMDCIX	583.206	H.S. 1 1958	** (582.730)
LOWBANKS		H.S. 2 1958	** (575.403)
MMDCX	** (582.308)	B.M. "+" *	577.294
MMDCXI	** (578.287)	H.S. 1/1959*	575.485
MMDCXII	** (577.362)	MMDCCXXXII	** (611.341)
MMDCXIII	** (586.708)	MMDCCXXXIII	** (687.318)
MMDCXIV	** (579.248)		
MMDCXV	** (587.163)		
MMDCXVI	610.254		

** () = B.M. Destroyed

* Gaging Site.

C A N A D A

Bench Mark	Elevation	Bench Mark	Elevation
PORT RYERSE		HAUGHTON	
MMDCCXXXIV	591.492	MMDCCLIII	646.088
MMDCCXXXV	** (574.420)	MMDCCLII	663.135
MMDCCXXXVI	632.275	MMDCCLI	669.368
Geol. Survey Δ Stn.		MMDCCL	** (664.955)
Fisher's Glen Pt.	654.853		
NORMANDALE		PORT BURWELL	
MMDCCXXXVII	** (606.898)	MMDCCXLIX	** (659.446)
MMDCCXXXVIII	700.021	MMDCCXLVIII	609.630
MMDCCXXXIX	587.668	MMDCCXLVII	583.215
MMDCCXL	626.057	MMDCCXLVI	656.588
MMDCCXLI	** (702.565)		
ST. WILLIAMS		COPENHAGEN	
MMDCCXLII	** (629.796)	MMDCCLXVII	665.556
MMDCCXLIII	** (670.360)	MMDCCLXVIII	** (669.486)
MMDCCXLIV	681.820	MMDCCLXIX	** (685.423)
		MMDCCLXX	673.941
		MMDCCLXXI	675.773
		MMDCCLXXII	** (688.582)
		MMDCCLXXIII	** (702.811)
PORT ROWAN		PORT BRUCE	
MMDCCXLV	** (624.729)	MMDCCLXXIV	** (699.460)
MMDCCXLVI	612.667	MMDCCLXXV	583.349
MMDCCXLV	** (585.872)	MMDCCLXXVI	** (577.692)
MMDCCXLIV	** (591.841)	MMDCCLXXVII	579.212
MMDCCXLVIII	** (592.782)	MMDCCLXXVIII	** (697.550)
		MMDCCLXXIX	700.231
		MMDCCLXXX	** (700.060)
		MMDCCLXXXI	693.469
		MMDCCLXXXII	** (704.886)
		MMDCCLXXXIII	710.128
		MMDCCLXXXIV	693.580
		MMDCCLXXXV	707.874
		MMDCCLXXXVI	637.097
		MMDCCLXXXVII	674.446
		MMDCCLXXXVIII	575.370
PORT ROYAL		PORT STANLEY	
MMDCCLXII	** (584.051)	H.S.*	582.716
MMDCCLXI	577.467	Bolt*	584.956
MMDCCLX	597.585		
MMDCCLIX	** (598.810)		
MMDCCLVIII	600.353		
CLEAR CREEK			
MMDCCLVII	** (608.191)		
MMDCCLVI	** (620.171)		
MMDCCLV	** (592.658)		
MMDCCLIV	** (624.464)		

** () = B.M. Destroyed
 * Gaging Site.

C A N A D A

Bench Mark Elevation Bench Mark Elevation

EAGLE

POST 2/1957* 576.364
 POST 3/1959* 575.965
 Pub. Works* 576.322
 G.S.C. 1649 583.276
 MMMCCCLXVIII* 584.185
 MMDCCCLXXXIX *(578.187)
 MMMCCCLXIX *(576.273)
 MMMCCCLXX* 575.742
 MMMCCCLXXI 577.178
 MMMCCCLXVII *(582.449)
 MMMCCCLXVI 601.634
 MMMCCCLXV 714.334

MMMCCCLXIII *(684.133)
 MMMCCCLXII 685.866
 MMMCCCLXI *(677.390)
 MMMCCCLX *(665.538)
 MMMCCCLXXXIX *(666.948)
 MMMCCCLXXXVIII *(661.821)

ALDBOROUGH

MMMCCCLXXXVII *(655.480)
 MMMCCCLXXXVI *(645.659)
 MMMCCCLIX 657.424
 MMMCCCLX *(603.795)
 MMMCCCLXI *(650.683)
 MMMCCCLXII *(620.840)
 MMMCCCLXIII 651.747

FINDLEY

MMMCCCLXIV *(715.146)
 MMMCCCLXIII *(710.017)
 MMMCCCLXII *(714.492)
 MMMCCCLXI *(704.178)
 MMMCCCLX *(698.707)

CLEARVILLE

MMMCCCLXIV *(634.283)
 MMMCCCLXVI *(640.555)
 MMMCCCLXVII *(644.594)
 MMMCCCLXVIII *(652.944)
 MMMCCCLXIX *(651.500)
 MMMCCCLXX *(652.780)

SHEDDEN

MMMCCCLIX *(682.112)
 MMMCCCLVII 731.457
 MMMCCCLVII *(720.922)
 MMMCCCLVI *(674.632)

PALMYRA

MMMCCCLXXI *(671.603)
 MMMCCCLXXII 683.668
 MMMCCCLXXIII *(703.646)
 MMMCCCLXXIV *(729.744)
 MMMCCCLXXV *(736.174)

IONA

MMMCCCLV *(689.382)
 MMMCCCLIV *(698.614)
 MMMCCCLIII 701.631
 MMMCCCLII 709.046
 MMMCCCLXXII *(626.224)
 MMMCCCLXXIII 692.484
 MMMCCCLXXIV 697.044
 MMMCCCLXXV *(583.085)
 MMMCCCLI *(703.764)
 MMMCCCL *(693.167)

MORPETH

MMMCCCLXXVI *(713.522)
 MMMCCCLXXVII *(697.485)
 MMMCCCLXXVIII *(659.257)
 MMMCCCLXXIX *(651.305)
 MMMCCCLXXX 645.081
 MMMCCCLXXXI *(630.019)
 MMMCCCLXXXII *(628.606)

WALLACETOWN

MMMCCCLXIX *(704.671)
 MMMCCCLXVIII 715.346
 MMMCCCLXVII *(705.081)
 MMMCCCLXVI *(709.484)
 MMMCCCLXV *(693.087)
 MMMCCCLXIV 685.932

GUILDS

MMMCCCLXXXIII *(617.729)
 MMMCCCLXXXVIII *(613.637)
 MMMCCCLXXXIX *(624.518)
 MMMCCCLXXCI *(608.541)

*() = B.M. Destroyed

* Gaging Site.

C A N A D A

Bench Mark Elevation Bench Mark Elevation

BLENHEIM

MMMCCCXCII *(626.245)
 MMMCCCXCIII *(655.060)
 MMMCCCXCIV *(688.011)
 MMMCCCXCIX *(706.642)
 MMMCCCC *(697.763)
 MMMCCCXXXIII *(695.932)

CEDAR SPRINGS

MMMCCCXXXII *(680.646)
 MMMCCCXXXI 689.574
 MMMCCCXXX *(682.627)
 MMMCCCXXI *(681.703)
 MMMCCCXXII *(600.713)

CHATHAM

MMMCCCX *(591.036)
 2985 597.530
 MMMCCCXVI *(624.243)
 MMMCCCXVII 631.905
 MMMCCCXVIII 644.343
 2984 *(656.169)
 2981 *(681.803)

(Branch Line to Erieau)

MMMCCCXXII *(600.713)
 2982 573.004
 2983* 576.240

ERIEAU

H.S. 1/1957* 574.645
 H.S. 2/1958* 574.707
 H.S. 3/1958* 575.980
 MMMCCCXXI* 577.919

(Main Line continued)

CEDAR SPRINGS

MMMCCCXXIX *(678.893)
 MMMCCCXXVIII 658.412
 MMMCCCXXVI 654.484
 MMMCCCXXIV *(646.289)
 2988 649.919
 MMMCCCXXIII *(647.928)
 MMMCCCXXII *(647.990)
 MMMCCCXXI *(642.640)

PORT ALMA

MMMCCCXX *(644.083)
 2989 648.610
 MMMCCCXIX *(646.060)
 MMMCCCXVIII 643.426
 MMMCCCXVII *(638.571)
 MMMCCCXVI *(641.648)
 MMMCCCXV *(637.492)
 MMMCCCXIV *(636.374)
 MMMCCCXIII 639.299
 MMMCCCXII *(637.815)
 2990 *(634.794)

ROMNEY

MMMCCCX 633.421
 2991 632.518
 MMMCCCIX 635.269
 MMMCCCVIII 633.789
 MMMCCCVI *(625.850)
 2992 *(624.862)
 2993 *(608.846)
 2994 588.542
 2995 580.486
 2996 *(586.008)

WHEATLY

MMMCCCLXXXII *(599.195)
 MMMCCCLXXXIV 586.836
 2997 *(593.010)

LEAMINGTON

MMMCCCLXXXVIII 596.573
 MMMCCCLXXXIX 600.936
 MMMCCCXC 619.234
 2999 618.484
 2998 624.907
 2058* 576.842
 MMMCCCXCIV *(630.079)
 3000 637.877
 3001 637.626
 3002 626.906

KINGSVILLE

2060 624.705
 3003 622.749
 3030* 596.724
 MMMDI *(591.732)
 3031* 574.833
 2061* 619.571
 2062 *(622.605)

** () = B.M. Destroyed
 * Gaging Site.

C A N A D A

Bench Mark	Elevation	Bench Mark	Elevation
H.S. 1/1958*	578.708	3043	590.491
TECU 2/1959*	577.843	MMMCCCLXXXVI	**(587.342)
3035	579.843	3044	586.759
254	583.896	MMMCCCXXXVIII	582.652
3036	587.494	3045	588.196
3037	585.220	MMCC	**(582.331)
253	582.673	3046	579.095

BELLE RIVER

252-A 578.110

PUCE

MMMDLXIII 578.974
 3062 581.728
 MMMDLXI **(578.254)
 MMMDLX **(580.129)
 3038* 578.419
 3039* 580.217
 3061 **(583.199)
 252 **(580.111)

WALLACEBURG

MMCCII **(582.548)
 3047 573.094
 MMCCV 578.893
 3048 579.050
 3049 578.629
 MMCCVII 582.745
 MMCCVIII 581.954
 MMCCCLXXVII 584.190
 367 **(584.000)
 3050 580.213
 MMCCCLXXVI **(580.168)
 3051 **(579.275)
 3052 578.076

STONEY POINT

251 **(578.571)
 250 584.299

JEANNETTE CREEK

249-A **(580.383)
 249 583.509
 248-A **(579.010)
 248 581.289

CHATHAM

246-A **(596.071)
 247-A **(596.077)
 247 596.370
 MMCCXCIX **(594.185)
 2986 595.970
 2987 597.496
 1708 595.843
 373 593.999
 3040 591.740
 3041 **(583.165)
 3042 593.629

**() = B.M. Destroyed

* Gaging Site.

PORT LAMBTON

MMCCCLXXIII 580.777
 MMCCCLXXII 580.736
 MMCCCLXXI* 579.354
 MMCCCLXX* 582.206
 POLA 1/1959* 579.795
 POLA 2/1959* 579.381
 3053* 579.111
 366 582.224
 3054* 580.350

(Port Lambton to Sarnia)

U.S. HICK 580.826
 C 49/129 583.769
 Landing 580.961

SOMBRA

365 582.282
 3055 581.120
 3056 584.658
 3057 586.286
 MMCCCLXV 581.462
 3058 584.510
 364 587.665
 MMCCCLXIII **(580.257)
 MMCCCLXII **(589.522)
 3059 581.764

C A N A D A

Bench Mark	Elevation	Bench Mark	Elevation
COURTRIGHT		BLACKWELL	
MMMCLX	598.606	356	**(604.971)
MMMCLLIX	**(592.553)	1-R	**(602.124)
MMMCLLVIII	**(579.353)	3062-A	600.313
2970	601.630	3063	597.957
2971	**(602.421)	3064	601.851
363	594.396	3065	592.052
		2-R	**(592.076)
		3066	595.193
		3067	605.202
		3068	623.036
		3069	645.241
MOORETOWN		CAMLACHIE	
362	590.329	5-R	640.798
2969	583.236	3070	**(621.970)
2968	620.970		
CORUNNA		ABERARDER	
361	612.346	3071	663.464
PIER	**(606.245)	7-R	**(664.269)
U.S. B.M.	598.994	3072	**(675.042)
		3073	**(703.461)
		3074	717.756
		3075	710.677
		3076	717.416
SARNIA		FOREST	
MMMCLLI	599.495	8-R-2	720.574
2967	601.548	8-R-3	717.395
P.C.L. B M	602.031	351	703.814
2966	**(601.606)	3077	705.144
2963	**(602.159)	3078	692.147
2102	617.784	3079	680.749
357	**(548.361)	3080	651.480
1707	**(597.122)	3081	657.382
MMMCLL	**(595.775)		
2962	**(598.654)		
2961*	580.870		
B.M. "+"	586.193		
POINT EDWARD		RAVENSWOOD	
MMMCCXLIV	**(587.008)	10-R-2	651.866
Mon. 55*	585.217	3082	**(635.720)
PTED 1/1959*	583.814	3083	613.613
PTED 2/1959*	583.820	3084	608.094
BM "→"	586.042		
BM "△"	586.190		
2960	**(585.172)		
"CEMENT"	587.136		
3060	587.062		
PORT HURON		PORT FRANK	
I.B.M. 56	587.799	12-R	611.495
2964*	594.663	13-R	595.826
2965	594.283	3085	**(603.227)
		3086	**(601.298)
		3087	**(596.267)

**() = B.M. Destroyed

* Gaging Site.

C A N A D A

Bench Mark	Elevation	Bench Mark	Elevation
GRAND BEND		PORT ALBERT	
14-R	602.748	37-R	**(601.509)
3088	**(616.572)	38-R	683.789
16-R	608.186	39-R	**(687.370)
17-R	591.149	40-R	688.604
3089	603.987		
3090	613.072		
3091	624.521		
19-R	**(625.688)		
3092	**(629.969)		
ST. JOSEPH		KINTAIL	
20-R	**(631.084)	41-R	666.621
3093	644.908	42-R	**(650.271)
3094	649.560		
3095	652.609		
3096	652.889		
3097	655.679		
3098	655.590		
3099	659.157		
BAYFIELD		AMBERLEY	
26-R	672.953	43-R	**(636.095)
25-R	675.380	44-R	**(672.250)
3100	608.860	45-R	**(675.176)
28-R	**(583.588)	46-R	**(663.772)
3101	641.374	47-R	**(691.688)
3102	652.102	48-R	**(677.754)
3103	**(666.693)	49-R	588.229
3104	670.640	50-R	583.804
3105	697.177	51-R	650.065
3106	707.178		
3107	**(712.725)		
3108	714.978		
GODERICH		KINCARDINE	
STEEL RIVET	**(586.822)	52-R	654.703
327 A*	604.415	53-R	**(725.636)
327*	711.661	54-R	**(769.604)
1710*	717.155	55-R	**(746.708)
CODE 1/1959*	583.060		
CODE 2/1959*	583.034		
"BOLT"	**(587.442)		
BM "+"	**(585.177)		
326	**(719.406)		
33-R	**(671.744)		
34-R	**(700.004)		
35-R	**(691.344)		
36-R	698.435		
		TIVERTON	
		56-R	796.476
		57-R	**(809.896)
		58-R	**(812.380)
		59-R	**(782.515)
		60-R	763.113
		61-R	**(756.523)
		62-R	**(699.845)
		PORT ELGIN	
		63-R	661.722
		64-R	719.781
		66-R	583.155
		65-R	585.677
		65-R-2	**(584.039)

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* Gaging Site.

C A N A D A

Bench Mark	Elevation	Bench Mark	Elevation
SOUTHAMPTON		LIONS HEAD	
67-R	636.527	91-R	639.872
68-R	620.124	92-R	596.491
69-R	611.349	93-R	** (633.776)
70-R	** (585.996)	94-R	** (629.454)
71-R	** (584.303)		
CHIPPIWA HILL		STOKES BAY	
72-R	707.235	95-R	646.548
73-R	** (742.297)	96-R	667.431
74-R	** (719.974)	97-R	** (686.309)
		97-R-2	684.288
		98-R	** (656.055)
		98-R-2	654.380
		99-R	660.147
		99-R-2	658.208
ALLENFORD		TOBERMORY	
75-R	737.696	100-R*	596.712
292	** (730.527)	101-R	** (596.828)
76-R	** (750.608)	101-R-2*	592.557
		102-R*	610.503
(Branch Line to Tobermory)		(Main Line continued)	
PARKHEAD		103-R	** (790.188)
77-R	** (726.069)	104-R	788.283
291	** (723.867)		
HEPWORTH		OWEN SOUND	
78-R	** (709.257)	1713	599.089
79-R	727.931	286	** (601.004)
80-R	658.764	285	** (745.855)
		104-R-2	** (884.421)
		105-R	1037.706
WIARTON		WOODFORD	
81-R	611.232	106-R	1176.003
82-R	609.999	107-R	** (861.362)
83-R	584.175	108-R	593.767
84-R	650.621		
85-R	** (684.431)		
86-R	** (637.359)		
87-R	652.559		
88-R	662.513		
89-R	** (629.337)		
90-R	620.636		

** () = B.M. Destroyed

* Gaging Site.

C A N A D A

Bench Mark	Elevation	Bench Mark	Elevation
MEAFORD		CREEMORE	
109-R	604.249	1662	896.891
110-R	583.679	1661	861.891
111-R	584.261	1660	849.556
112-R	603.329		
113-R	** (759.807)		
114-R	687.206		
THORNBURY		GLENCAIRN	
115-R	581.282	1659	729.317
116-R	** (616.605)	1658	737.766
117-R	646.865	1657	737.913
118-R	649.706		
119-R	610.813		
CRAIGLEITH		LISLE	
120-R	** (591.151)	1655	** (741.053)
121-R	** (597.584)	1656	744.206
COLLINGWOOD		TIOGA	
DCLXIX*	583.736	1654	728.190
DCLXVIII*	589.426		
717-F*	582.478		
COLL 1/1959*	582.079		
COLL 2/1959*	583.791		
RIVET	583.946		
1669*	591.467		
1670	** (593.358)		
1668	618.848		
716-F	620.424		
NOTTAWA		EVERETT	
1667	709.894	1653	799.689
1666	805.024		
DUNTROON		ALLISTON	
1665	979.640	1652-A	755.784
1664	979.224	1652	722.820
		383	** (727.581)
		382	722.086
		384	** (724.342)
GLEN HURON		BAXTER	
1663	1038.944	385	** (691.630)
		386	** (688.676)
GLEN HURON		UTOPIA	
		DCLVIII	638.615
GLEN HURON		COLWELL	
		DCLVII	731.206

** () = B.M. Destroyed

* Gaging Site.

C A N A D A

Bench Mark	Elevation	Bench Mark	Elevation
BARRIE		LOVERING	
455-S	750.984	401	596.294
455-S Sub	744.037	402	627.901
ANGUS		BUCKSKIN	
DCLIX	627.589	403	677.664
387	**(719.591)	404	**(683.829)
MIDHURST		SEVERN FALLS	
388	750.555	405	701.651
389	**(740.151)		
390	770.527		
CRAIGHURST		DARLING	
		406	732.702
391	736.448	407	747.881
392	827.568		
393	**(818.871)		
394	**(806.004)		
CARLEY		BALA	
		408	**(742.087)
395	752.125	409	771.278
396	714.077		
397	723.035		
EADY		RODERIC	
398	**(684.949)	410	789.611
		411	**(760.091)
MEDONTE		MACTIER	
399	640.821	412	777.957
399-A	599.326	413	806.601
DCXCIII	**(631.730)		
FOXMEAD		BRIGNALL	
DCXCII	658.642	414	809.990
400	**(595.984)	415	752.518
		DOCKMURE	
		416	754.301
		417	723.619
		418	674.329
		419	683.978
		420	679.982

**() = B.M. Destroyed

C A N A D A

Bench Mark	Elevation	Bench Mark	Elevation
PARRY SOUND		BURWASH	
420-A	**(659.797)	446	731.105
420-A Sub	**(652.933)	447	744.519
421	610.990	448	**(735.280)
421-A	657.859		
422	659.507		
423	676.276		
424	653.745		WANUP
425	638.246		
426	**(602.884)	449	753.690
427	603.651	450	794.165
428	**(613.855)	451	**(821.373)
BYNG INLET		ROMFORD	
429	636.277		
430	604.375	452	860.879
		453	**(849.717)
		454	**(844.614)
BRITT		SUDBURY	
431	**(586.887)		
432	628.727		
433	612.751	567-A	**(858.859)
		568	**(849.033)
		569	874.983
PAKESLEY		WAUGHTON	
434	659.312		
435	**(651.161)		
436	**(627.482)	570	**(789.240)
437	**(626.864)	571	821.118
		572	785.441
		573	790.819
BIGWOOD		WHITEFISH	
438	646.439		
		574	791.224
		575	825.475
		576	806.746
RUTTER		WORTHINGTON	
439	674.491		
440	669.968		
441	651.966		
		577	755.644
		578	697.693
DELAMER		NAIRN	
442	**(647.754)		
442-A	**(622.444)		
443	683.606	579	720.771
444	697.490	580	**(722.274)
445	722.557	581	**(672.226)
		582	698.857

**() = B.M. Destroyed

C A N A D A

Bench Mark	Elevation	Bench Mark	Elevation
MCKERROW		ALGOMA	
583	684.424	603	627.248
584	** (684.766)	604	599.485
585	665.025	605	** (600.391)
WEBBWOOD		BLIND RIVER	
1971	660.370	1970	598.995
1971 Sub	** (653.427)	1970 Sub	** (592.259)
586	643.147	606	** (593.299)
587	666.492	607	598.365
588	617.815	608	606.430
589	613.909		
MASSEY		DEAN LAKE	
590	637.302	609	630.399
591	608.245	610	622.541
592	623.565	611	612.548
WALFORD		DAYTON	
593	678.559	612	609.523
594	599.506	613	632.385
		614	621.955
		615	593.901
		3109*	587.014
SPANISH		THESSALON	
595	604.760	1634	** (582.989)
CUTLER		A.G.	** (581.654)
596	632.698	THES 1/1958*	582.882
597	639.574	THES 2/1959*	587.273
598	599.438	THES 3/1959*	584.713
599	** (587.738)	3110*	591.771
600	** (599.653)	3111	626.337
SPRAGGE		NESTORVILLE	
601	642.698	3112	622.816
602	** (603.186)	3113	660.171
		3114	694.787
		3115	696.516

** () = B.M. Destroyed

* Gaging Site.

C A N A D A

Bench Mark	Elevation	Bench Mark	Elevation
BRUCE MINES			
3116	669.850	3141	597.668
3117	582.683	633	598.422
3118	628.904	632	601.521
3119	588.492	1627*	605.195
3120	664.451	UPSO 1/1958*	608.610
3121	661.625	UPSO 2/1958*	603.941
		UPSO 3/1959*	604.959
		MIDDLE SOO*	611.513
		LOSO 1/1958*	586.141
		LOSO 2/1959*	586.225
		635*	617.805
		C49	606.797
		"MERIDIAN"	606.433
		Q or "Δ"	605.629
		3142	** (609.481)
		3143	610.996
		3144	607.877
		3145	647.201
		1630	638.729
		1630-A	** (632.638)
		3147	698.263
		3146	722.572
		3148*	713.875
		3149*	620.948
DESBARATS			
3122	647.516		
621	590.745		
622	590.157		
3123	** (587.060)		
3124	607.492		
3125	627.995		
3126	657.379		
3127	** (612.562)		
3128	** (691.192)		
BAR RIVER			
3129	** (651.370)		
3130	** (785.419)		
3131	655.031		
3132	589.617		
GROS CAP			
		1632	** (618.012)
		1633	** (607.748)
ECHO BAY			
3133	** (616.384)		
3134	595.017		
627	594.854		
628	584.582		
3135	** (587.391)		
GARDEN RIVER			
3136	605.667		
629	602.288		
3137	599.327		
630	** (605.130)		
MICHIPICOTEN HARBOUR			
		698*	626.329
		MIHA 1/1959*	617.264
		MIHA 2/1959	** (610.342)
		MIHA 3/1958*	607.669
		G.S.C. TABLET	** (621.457)
		697	944.469
JAMESTOWN			
		696	** (960.812)
SAULT STE. MARIE			
3138	** (618.416)		
3139	639.153		
3140	633.547		
HELEN			
		695	1122.008
		694	1076.829

** () = B.M. Destroyed

* Gaging Site.

C A N A D A

Bench Mark	Elevation	Bench Mark	Elevation
MAGPIE		GIRDWOOD	
693	1070.050	714	1410.229
692	1140.900		
HAWK JCN.		TRIPOLI	
691	1191.118	715	1424.685
690	1078.129		
699	1126.405		
ALDEN		AMYOT	
700	1162.492	716	1428.735
701	1179.808	717	1376.469
		718	1369.770
GOUDREAU		O'BRIEN	
702	1216.160	719	1357.073
703	1187.413	720	1382.364
WANDA		WHITE RIVER	
704	1118.403	721	1355.047
705	1139.884	722	1255.384
706	1198.424	723	** (1225.193)
		723-A	** (1222.064)
		724	1225.679
FRANZ		DENISON	
707	1219.777	725	1198.984
708	1219.188	726	1195.423
709	1189.753		
SWANSON		BREMNER	
710	1157.422	727	1145.650
		728	** (1129.622)
GRASSETT		MOBERT	
711	1206.663	729	1108.239
712	1249.983	730	** (1086.839)
		731	1084.314
		732	1076.498
RYERSON			
713	1385.064		

** () = B.M. Destroyed

C A N A D A

Bench Mark	Elevation	Bench Mark	Elevation
TRUDEAU		NEYS	
733	1054.347	750	791.018
734	1053.322		
STRUTHERS		MIDDLETON	
735	1031.451	751	**(692.348)
		752	650.378
HEMLO		RIPPLE	
736	1028.038	753	650.539
737	966.215		
PRINGLE		STEEL	
738	871.004	754	713.592
739	875.564		
MELGUND		SANTOY	
740	801.522	755	**(709.796)
		756	702.009
HERON BAY		JACKFISH	
741	**(794.230)	757	632.768
742	683.709		
742-A	708.641		
743	738.787	NOSLO	
PENINSULA		758	651.194
744	681.455	759	746.131
745	698.473	760	**(885.326)
ANGLER		BLUEJAY	
746	715.252	761	970.164
COLDWELL		SCHREIBER	
747	739.416	762	959.525
748	**(652.796)	763	**(997.880)
749	784.333	764	**(979.935)
		765	955.772

**() = B.M. Destroyed

C A N A D A

Bench Mark	Elevation	Bench Mark	Elevation
SELIM		REDROCK	
766	823.480	787	628.140
767*	698.103		
ROSSPORT		SPRUCEWOOD	
768*	660.380	788	640.899
769*	640.252		
770	631.152		
PAYS PLAT		BLACK STURGEON	
771	612.922	789	661.273
772	648.199		
773	**(635.239)	COUGHLIN	
GRAVEL		790	647.721
774	625.990	791	**(603.846)
775	606.871	792	**(623.028)
GURNEY		DORION	
776	607.083	793	671.582
777	635.961	794	**(736.429)
KAMA		BOWKER	
778	723.029	795	774.637
779	640.162	PEARL	
780	624.504	796	845.140
OZONE		797	**(937.898)
781	631.413	LOON	
FIREHILL		798	**(1047.877)
782	615.548	799	**(993.556)
783	623.424	800	**(956.524)
NIPIGON		MACKENZIE	
784	700.415	801	927.951
785	683.127	PORT ARTHUR	
786	613.126	STEEL RIVET*	614.492
** () = B.M. Destroyed		93-E*	616.338
* Gaging Site.		806*	636.583
		805	**(697.350)
		804*	783.683
		803*	904.854
		802	**(902.259)

C A N A D A

Bench Mark	Elevation	Bench Mark	Elevation
ST. ANNE DE LA PERADE			
MMMCLII*	24.957	729-B	34.104
2676*	29.459	2668	** (29.340)
MMMCXLIX	** (95.239)	2667	24.886
MMCLIV	18.297	MMMLXXIII	** (21.502)
MMCLVII	41.112	2666	27.912
MMCLIX*	41.072	MMMLXXII	21.138
2675	22.094	MMMLXXI	34.251
MMCLXII	23.804	MMMLXX	34.307
MMCLXIV	25.066	MMMLXIX	** (25.480)
2674	28.014	MMMCXXXI	26.914
MMCLXVII	28.253		

DESCHAMBAULT	
MMCLXV	77.697
2673	43.736
MMCLXIX	33.473
2672	** (128.110)

GRONDINES	
MMCLXXII	** (43.096)
MMCLXXIII*	49.532
MMCLXXVII	40.291
MMCLXXV*	17.441
MMCLXXVI*	24.875
MMCLXXIV*	21.669
GRON 1/1958*	14.041
GRON 2/1958*	18.712
GRON 3/1958*	17.644
2671	22.838
MMCLXXVIII	30.765
2670	27.166
2669	34.788

BATISCAN	
\overline{T} *	26.901
725-B*	27.962
BATIS 1/1958*	19.387
BATIS 2/1958*	19.080
BATIS 3/1960*	19.603
MMMLXVIII	** (20.303)
) \overline{T} (31.932
MMMLXVII	28.563
MMMLXVI	24.672
MMMLXV	22.054
MMMLXII	31.693
MMMLXIV	22.061
HS COPPER PLUG	18.706
MMMLXI*	34.696

CHAMPLAIN	
722-B*	39.457
\overline{T} *	37.915
MMMCXXX*	35.839
MMMLX*	19.073
MMMLIX	32.611
MMMLVIII	36.368
MMMLVII	** (26.455)

** () = B.M. Destroyed

* Gaging Site.

C A N A D A

Bench Mark Elevation Bench Mark Elevation

POINTE DU LAC

2665 32.889
MMMLV 43.594

MMMXXVII 50.238
+ 53.419
MMMXXVIII 34.280
MMMXXIX 31.105
2658 37.053
MMMXXX 27.954
MMMXXXII 30.829
2657 44.609
2656 42.520
MMMXXXV 33.254

PTE. A BIGOT

☒ 15.468
MMMLIV *(38.521)
MMMLIII *(45.264)
2664 52.587
2663 50.762

YAMACHICHE

708-B *(38.886)
MMMXXVI 28.401
MMMXXVIII 32.458
MMMXXIX 48.514
2655 48.484
MMMXL 48.066
266-R 44.044
MMDCCCCLII *(43.474)

CAP DE LA MADELEINE

MMXLVIII *(43.116)
MMXLVII *(38.788)
MMXLVI *(38.429)
2662 24.623
MMXLIV 58.875
716-B 57.671
MMCLXIV 55.061
MMXV 55.693
714-B 54.193
MMXIV 52.577
2661* 50.923
2661 Sub 43.906
714-B* 54.190
715-B 53.711
T. B. M. 56.204
MMCLXV 45.619
MMCLXVI* 28.860
MMCLXVII* 27.841
MMCLXVIII 17.452

LOUISEVILLE

255-R* 44.152

LAC SAINT-PIERRE

MMDCCCCLIII* 35.230
2654* 23.500
⌒ * 23.474
⌒ * 18.448
3161* 19.171
LASP 1/1960* 23.256

TROIS-RIVIERES

MMCLXX* 24.849
MMCLXIX* 22.286
3 RIV 1/1958* 28.733
3 RIV 2/1958 *(28.929)
3 RIV 3/1958* 25.013
MMMXXVII *(25.209)
MMMXXVIII 25.727
MMMXXIX 26.402
MMMXX *(27.727)
MMMXXI *(28.776)
2660 29.250
MMMXXIII 27.495
2659 34.381
MMMXXIV *(21.915)
MMMXXV 34.811
MMMXXVI 59.932

BOLT

705-B* 43.995
2653 34.540
MMDCCCXLVI 52.877

MASKINONGE

704-B 51.860
MMDCCCXLIX 37.972
MMDCCCXLVII 38.369
MMDCCCXLV 41.979
2652 44.835

*() = B.M. Destroyed

* Gaging Site.

C A N A D A

Bench Mark	Elevation	Bench Mark	Elevation
MMDCCCCXLIV	** (41.936)	2644*	43.212
MMDCCCCXLIII	44.342	2643*	26.579
2651	48.904	LAVA 1/1960*	25.884
MMDCCCCXLII	48.113	2642*	65.855
		2641	35.011

LAVALTRIE

ST. BARTHELEMY

MMDCCCCXL	53.349
2650	49.652
MMDCCCCXXXVII	52.054
MMDCCCCXXXVI	47.735
MMDCCCCXXXV	46.636
2649	53.242
MMDCCCCXXXIII	31.654
2648	31.372

ST. SULPICE

MMDCCCXCIV	38.863
2640	35.118
2639	37.089
MMDCCCXCII	27.466
MMDCCCXCI	** (39.053)
2638	** (35.444)
MMDCCCLXXXIX	39.015
3159	** (34.363)

ST. CUTHBERT

MMDCCCCXXX	21.495
MMDCCCCXXXIX	** (22.526)
MMDCCCLXIV	28.761
MMDCCCLXV	30.221

REPENTIGNY

MMDCCCXXXIII*	41.787
↑ *	33.813
MMDCCCXXXIV	** (23.323)
RETY 1/1960*	33.471
RETY 2/1960*	25.409
MMDCCCXXXII	** (39.739)
MMDCCCXXXI	** (41.237)
MMDCCCXXX	** (41.235)
2637*	39.287
MMDCCCXXIX	** (40.509)
MMDCCCXXVIII	** (41.340)
MMDCCCXXVII	** (37.931)
MMDCCCXXVI	** (32.248)
MMDCCCXXV	46.116

BERTHIERVILLE

260-R	29.134
2646	** (23.376)
2647	30.833
MMDCCCLXVII	32.449
MMDCCCLXVIII	** (30.698)
MMDCCCLXIX	34.957
MMDCCCLXXI	40.561
MMDCCCLXXII	29.110
MMDCCCLXXIII	25.068
2645	32.675
3160*	26.736

RIVIERE DES PRAIRIES

MMDCCCXXIV	** (46.635)
MMDCCCXXIII	50.752
MMDCCCXXII	51.030
2636	44.200
2635	** (35.228)
MMDCCCXX	37.151
MMDCCCXI	** (46.727)

LANORAIE

↑ *	39.186
MMDCCCLXXVI*	42.246
STEEL DOME*	35.272
LANO 1/1958*	23.582
MMDCCCLXXVIII*	47.924
MMDCCCLXXX	35.909
MMDCCCLXXXII	54.858
MMDCCCLXXXIII	71.768
MMDCCCLXXXIV	** (58.495)

POINTE-AUX-TREMBLES

2634*	49.380
MMDCCCXVIII	** (46.332)

** () = B.M. Destroyed

* Gaging Site.

C A N A D A

Bench Mark Elevation

PAUT 1/1960* 43.703
 PAUT 2/1960* 33.626
 PAUT 4/1960 *(35.457)
 PAUT 5/1960* 35.478
 3152 *(43.309)
 T 45.584
 2633* 44.604
 MMDCCXCIV *(43.871)
 MMDCCXCV 44.739
 MMDCCXCVI *(50.733)
 MMDCCXCVII *(40.629)

LONGUE POINTE

MMDCCXCVIII *(43.010)
 MMDCCXCIX *(40.314)
 MMDCCC *(41.869)
 SHIP CANAL 36.729
 LOPT 1/1958 36.743
 LOPT 2/1958 40.417
 MMDCCCI 41.550
 MMDCCCII 51.931
 MMDCCCIII *(35.363)

JETEE LAURIER PIER

MMDCCCIV *(33.197)
 637 36.302
 No. 1 26.976
 No. 2 49.919
 No. 3 26.744
 MMDCCCV *(34.993)
 MMDCCXXXVII *(67.126)
 MMDCCXXXVI *(66.868)

FRONTENAC ST. PIER

3153* 49.739
 MMDCCCVII *(47.630)
 MOFS 1/1958 *(43.481)
 MOFS 2/1958* 49.770
 3155 *(42.160)
 3154 *(42.488)

Bench Mark Elevation

Pointe-aux-Trembles to Longueuil

MMDCCXXXVI *(66.868)
 K 77.765
 2632 76.677
 MMMXII *(40.093)
 MMDCCXL *(30.649)
 O TOPO SURVEY 41.158
 * HYDRO SURVEY 47.312
 MMMVIII 45.491
 MMDCCXXXVI *(66.868)
 MMDCCVIII 46.051
 MMDCCIX 42.688

JETEE KING EDWARD PIER

HARBOUR COMMISSION*(45.581)
 MOKE 1/1958 *(45.637)
 MOKE 2/1958* 46.433
 MOKE 3/1958* 46.183
 "0"* 48.919
 825* 49.824
 MMDCCXXXIX 32.690
 2631 33.066

Montreal to St. Lambert

825 49.824
 DLXXXIV *(67.172)
 DLXXXV *(67.552)
 DLXXXVI 71.986
 597 - B-2 55.496
 MMDCCCXII *(39.440)
 MMDCCCXIII *(39.176)
 MMDCCCXIV *(52.935)
 MMDCCCXVI 50.851
 MMDCCCXVII *(52.681)

VERDUN

DLXXXIV *(67.132)
 MMDCCXXX *(64.551)
 2630 49.799
 3170 55.447
 3171 56.097

*() = B.M. Destroyed

* Gaging Site.

C A N A D A

Bench Mark	Elevation	Bench Mark	Elevation
STE. ANNE DE BELLEVUE			
3172	** (43.510)	CCCCXI*	86.602
3173	56.732	CCCCX*	88.653
2629	69.584	541	** (81.371)
MMMDCXXVIII	** (49.031)	STAN 1/1958*	81.383
H.S. "VI"	55.887	STAN 2/1958*	79.173
MMMDCXXXI	** (69.708)	STAN 3/1958	** (79.209)
LA SALLE (OLD AQUEDUCT)			
MMMDCXXXII	75.842	CCCCXII	105.487
MMMDCXXXIII	** (77.658)	CCCCXIII	91.885
H.S. "R"	72.492	CCCCXIV	** (91.818)
MERCIER BRIDGE			
CCCXCIII	93.769	CCCCXV	** (88.182)
MOME 1/1958	97.437	CCCCXVI	84.518
MOME 2/1958	70.053	POINTE-DES-CASCADES	
MOME 3/1958	67.961	CCCCXVII*	80.445
LACHINE			
H.S. 535	** (74.426)	CASC 1/1958*	78.156
H.S. 536*	74.419	CASC 2/1958*	77.933
LACH 1/1958*	76.383	CASC 3/1958*	78.972
LACH 2/1958*	74.284	CCCCXX	** (140.640)
LACH 3/1958*	74.293	CCCCXIX*	119.624
CCCXCV	** (76.250)	CEDARS	
MMMDCLXVII*	79.728	"H.S."*	106.849
MMMDCLXVIII*	75.031	1950	85.533
CCCXCVI	79.132	1949	127.518
CCCXCVII	** (76.572)	1948	126.057
2628	82.823	3156	94.000
CGCXCVIII	93.502	CCCCXXIII	158.399
CGCC	** (82.203)	3157	137.178
CCCCI	73.740	GOTEAU DU LAC	
3151	89.096	CCCCXXVII*	158.347
CCCCV	81.972	544*	155.974
POINTE CLAIRE			
CCCCIII*	83.873	H.S. 30	** (156.668)
PTCL 1/1958*	75.745	COLC 1/1958	** (144.699)
PTCL 2/1958*	73.501	CCCCXXVI	** (157.334)
CCCCIV	** (83.730)	CCCCXXV	** (155.941)
CCCCVI	84.670	CCCCXXIV	** (156.176)
2627	90.502	CCCCXXII	** (156.897)
CGCCVIII*	79.808	DCCXCVII	** (174.077)
2625*	77.012	504-G	171.112
2626*	117.940	503-G	160.919
2626 Sub	111.062	2764	165.109
CGCCIX*	81.761	2763	160.548
** () = B.M. Destroyed			
* Gaging Site.			

INTERNATIONAL GREAT LAKES DATUM (1955)

Tabulation of Bench Mark Elevations

U N I T E D S T A T E S

Bench Mark	Elevation	Bench Mark	Elevation
CORNWALL TO RICHARDS POINT		RICHARDS POINT	
Gut	204.354	CA-2	248.232
Pollys	205.402	CA-1	246.370
CA-1 (H-26)	191.343	Club	257.990
CA-2 (H-26)	185.943		
Cut	** (160.952)		
Stair	** (161.728)		
Section	** (161.390)	RICHARDS POINT TO WADDINGTON	
CA-2 (H-8)	181.784	Tree	260.108
CA-1 (H-8)	184.164	Elm	247.793
Point	187.001	Guard	252.076
Stem	186.706	Rock	267.605
SL-27 C	217.046	Y-211	271.376
SL-27 A	218.027	Baker	253.070
Guide	168.709	Green	267.498
Snell	203.890	Tredo	261.628
Lock	199.563	Utility	245.130
Cover	160.737	Coles	249.721
LS-1	** (162.623)	Pines	243.929
LS-2	** (162.583)	Brandy	253.324
BM 3	203.873	Brook	247.243
Tie	197.057	Sucker	264.402
Box	191.693		
CA-1 (B-3A)	184.006		
CA-2 (B-3A)	189.360		
Rich	201.343		
CA-1 (B-2A)	195.833	WADDINGTON	
CA-2 (B-2A)	191.569	11	277.843
Drain	221.338	B	275.493
IBM 14	266.305	A	272.323
Bank	241.409	CA-2	255.195
28-A	** (224.997)	CA-1	252.928
Stone	238.230	Maple	278.960
Power	190.934		
Units	194.490		
Drive	213.398		
Office	257.427		
Gate	203.801	WADDINGTON TO OGDENSBURG	
LE-1	205.721	Intersection	283.835
LE-2	206.007	Lakeside	292.550
LE-3	205.601	Sweet	306.903
Control	250.442	13	269.301
UE-1	252.424	H-12	254.222
UE-2	252.147	CA-1 (H-12)	249.311
UE-3	252.183	Dam	257.405
SL-25 B	267.304	Iroquois	260.526
SL-25 A	** (275.823)	Bolt	261.262
Plant	253.728	74	254.291
5	246.879	Burns	269.254
South	253.782	Binion	269.918
B 228	262.589	14	272.944
Dike	258.156	Frame	284.132
SL-24	280.447	R-209	274.546
Massena	253.977	15	278.052
Intake	253.961		

** () = B.M. Destroyed

UNITED STATES

Bench Mark	Elevation	Bench Mark	Elevation (1961)	Elevation (1964)
Mills	271.024	374	373.129	
Dawson	307.012	23	259.296	
Med	304.446	Hill	319.763	
Burg	266.919	Wilson	371.056	

OGDENSBURG

16	281.536
CA-2 (Ch. Pt.)	249.077
MMXXXVI	253.160
OG-1	288.373
OG-2	254.666
OG-3	279.093
C	289.219
A	277.234
Books	263.503
Light	249.923
Rock	247.559
Monument	252.468
D	250.363
MMXLIII	250.370

OGDENSBURG TO MORRISTOWN

102	259.248
17	258.736
U-336	258.016
105	260.673
106	** (254.341)
U-327	262.086
108	256.594
Culvert	263.791
19	** (248.674)
Terrace Park	258.403

MORRISTOWN

SL-9	246.405
Ruins	** (252.603)
A	271.965
Corner	276.292
C	257.297

MORRISTOWN TO CHIPPEWA BAY

20	246.060
Park	283.684
120	** (321.679)
Crop	386.112
Ash	339.884
Lilli	** (311.319)
22	338.498
Oak Point	** (337.692)

CHIPPEWA BAY

Chippewa Village	289.950
289 Cape Vincent	287.070
Pump	284.453
24	289.584

CHIPPEWA BAY TO ALEXANDRIA BAY

Cal	** (317.846)
25	366.361
146	339.986
Kring	257.435
Goose	309.858
153	257.283
27	272.708
157	320.299

ALEXANDRIA BAY

SL-8	279.871
B	283.421
Library	256.650
SL-7	253.475
Hotel	263.943

ALEXANDRIA BAY TO CLAYTON

SL-6	291.746
28	288.066
Show	266.399
Bridge	280.013
2712	266.670
2711	279.257
Dairy	274.707
Lloyds	273.319
Motel	274.388
SL-5	271.746
SL-4	249.454
	266.381
	272.949
	274.349
	271.669
	249.354

CLAYTON

A	277.949	277.861
B	263.462	263.377
C	259.767	259.671
Gifford	255.692	255.595

** () = B.M. Destroyed

UNITED STATES

Bench Mark	Elevation (1961)	Elevation (1964)	Bench Mark	Elevation (1961)	Elevation (1964)
CLAYTON TO CAPE VINCENT					
Zenda	284.715	284.630	Coast Guard	**(252.887)	
107 RHP	338.270	338.198	Flagpole	**(249.992)	
31	363.746	363.670	Lake	253.705	
Bend	344.312	344.249	Thorn	**(259.342)	
32	271.995	271.937	Fort	293.025	
Sand	297.362	297.308	Ontario	289.265	
SL-3	**(274.491)	274.450)			
33	**(258.908)	258.868)			
SL-2	**(283.178)	283.137)			
Burnham	**(287.049)	286.995)			
194	**(272.249)	272.198)			
34	259.387	259.338			
SL-1	248.095	248.053			
CAPE VINCENT					
A	253.213	253.169			
Honor	258.032	257.992			
Cape	252.316	252.274			
B	258.481	258.442			
C	271.216	271.180			
CAPE VINCENT TO TIBBETS POINT					
IBC	244.826	244.744			
J-17	257.396	257.314			
35	**(262.903)	262.821)			
194	**(248.188)	248.106)			
SACKETS HARBOR					
WL-138	265.360				
WL-137	261.657				
WL-136	273.496				
Militia	246.528				
Sacket	245.371				
PORT ONTARIO					
Light	248.749				
Culvert	248.921				
Step	252.691				
Goodwin	257.719				
OSWEGO					
A	250.671				
B	251.183				
Rim	250.816				
138	261.267				
Wall	251.274				
Y-Pile	253.762				
Eyebolt	267.282				
LITTLE SODUS BAY					
			WL-132	261.931	
			WL-133	301.771	
			WL-134	299.502	
			WL-135	249.426	
			Tri Aqua	247.926	
			Pole	**(247.827)	
			USEO-8	250.041	
			Grill	**(249.222)	
SODUS BAY					
			WL-131	264.990	
			Point	248.631	
			Second	248.273	
			HLC	253.716	
			L-148	250.588	
			Cross	249.760	
			USEO-2	249.579	
ROCHESTER					
			No. 1	281.725	
			Club	247.551	
			WL-128	249.710	
			Militia	248.059	
			Oil	252.010	
			Station	251.278	
			Bengel	249.289	
			Martin	254.463	
			Light	273.854	
			Track	254.159	
			Coast Survey	257.486	
			WL-129	289.734	
OAK ORCHARD					
			Hotel	254.573	
			Poplar	254.932	
			Garage	256.741	
OLCOTT					
			Hedley	251.184	
			Wall	247.573	
			WL-127	276.167	

** () = B.M. Destroyed

UNITED STATES

Bench Mark	Elevation (1961)	Elevation (1964)	Bench Mark	Elevation (1961)	Elevation (1964)
g	276.571		N-36 A	**(314.028	313.992)
4	257.923		N-36	325.650	325.612
			Intake	**(262.245	262.207)
			Willow	274.098	274.060
			Statue	318.998	318.960
			N-35	336.151	336.111
OLCOTT TO WILSON					
N-54	282.744				
N-53	288.947				
N-52	290.235				
N-51	265.542				
WILSON					
Garage	**(260.800)				
Harbor	263.264				
Hedge	262.013				
Road	**(261.204)				
N-50	270.922				
Wilson	288.517				
WILSON TO FORT NIAGARA					
N-49	284.045	284.043			
N-48	278.229	278.225			
N-47	273.163	273.157			
N-46	272.760	272.753			
N-45	269.840	269.830			
N-44	262.908	262.895			
N-43	272.404	272.386			
N-42	**(287.147	287.127)			
N-41	279.019	278.996			
N-40	**(280.844	280.819)			
N-39	291.934	291.906			
FORT NIAGARA					
WL-121	**(253.870	253.841)			
Rivet	248.159	248.130			
S.W. Gate	271.685	271.656			
WL-122 A	283.133	283.104			
FORT NIAGARA TO LEWISTON					
WL-123	296.806	296.776			
WL-124	296.180	296.150			
N-38 A	300.319	300.288			
IBM No. 2	294.747	294.715			
N-38	295.109	295.077			
N-37	**(313.267	313.233)			
LEWISTON					
			N-34	352.245	352.203
			N-31	373.862	373.819
			N-30	382.548	382.504
			L.H. No. 2	**(504.960	504.914)
LEWISTON TO NIAGARA FALLS					
			IBM No. 10	**(574.351	574.302)
			N-29	588.859	588.808
			Suspension Bridge	582.928	582.871
			N-28	**(591.287	591.229)
NIAGARA FALLS					
			N-32 A	**(369.532	369.474)
			Sill	**(371.666	371.608)
			Curb	**(370.545	370.487)
			Pool	365.110	365.053
			N-32	577.540	577.482
			N-27	**(573.819	573.759)
			Park	554.889	554.828
			Lamp	**(565.382	565.320)
			Grate	562.360	562.298
			Falls	**(563.354	563.292)
			Niagara No. 1	565.077	565.013
			Niagara No. 2	570.345	570.281
NIAGARA FALLS TO NORTH TONAWANDA					
			J-20	570.374	570.307
			Ajax	567.672	567.604
			WL-139	572.374	572.306
			Alka	571.598	571.530
			N.W. Bolt	570.626	570.558
			Tower	570.177	570.109
			Schlosser	**(567.842	567.774)
			N-24	574.295	574.225
			N-23	578.782	578.709
			N-22	576.412	576.335
			N-21	575.213	575.133
			Wheatfield	575.022	574.940
			H-20	571.792	571.708
			I-20	570.374	570.299

** () = B.M. Destroyed

UNITED STATES

Bench Mark	Elevation (1961)	Elevation (1964)	Bench Mark	Elevation (1961)	Elevation (1964)
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NORTH TONAWANDA

No. 2	577.278	577.191
N-20	576.230	576.143
No. 1	578.227	578.138

BARCELONA

Disk No. 1	** (579.988)
Kay	577.129
Monroe A	586.215
Inn	** (602.025)

NORTH TONAWANDA TO BUFFALO

N-18	578.630	578.539
N-16	573.307	573.210
N-15	575.085	574.982
L-12, T 101	575.357	575.254
N-12	571.325	571.214
Grill	591.408	591.297
S.W. Corner	581.944	581.833
N-9	579.129	579.018
Section	579.043	578.932
Pumping Station**	(581.248)	581.137)
Skyway	578.987	578.876

ERIE

Cross	577.717
USE No. 1	** (575.698)
Garage	** (574.001)
Gage	** (574.823)
Y-13	575.062
Range	573.319
Bolt	** (575.150)
Marker	** (581.303)
Cut	602.158
Nurse	629.340

BUFFALO

USEO-25	582.816	582.705
Buffalo LH	588.486	588.375
A-25	588.061	587.950
Base	578.392	578.281
Pier	585.051	584.940
Rivet	578.584	578.473
Buffalo Gage	577.818	577.707

CONNEAUT

WL 116A	581.272
WL 117	630.778
Day	626.736
Dean	** (636.978)
Boathouse	579.641
USEO 26	576.957
Control	577.029
Haulage	580.992

LACKAWANA

GLPC	584.696	584.585
Furnace	585.817	585.706
Pump	582.029	581.918
Tank	582.310	582.199
SBR	583.961	583.850

ASHTABULA

Slip	576.246
CGS	576.050
McKinnon	** (580.605)
Brass Disk	570.853
Franklin	591.396
WL 115	613.348
Brick	581.941
WL 114	585.637
Ashtabula	581.971
Angle	585.431

DUNKIRK

Bridge	592.349
WL 119	600.717
Dunkirk	596.804
WL 120	616.814
City Dock	576.693
Fish	** (584.673)
WL 118	578.705
Flume	576.119
Yew	579.792
Trough	579.896
Power	583.858

FAIRPORT

East Pier	576.403
Gate	576.171
Works	576.195
West	576.570

** () = B.M. Destroyed

UNITED STATES

Bench Mark	Elevation (1961)	Elevation (1964)	Bench Mark	Elevation (1961)	Elevation (1964)
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HURON

Flag	576.585		Signal	** (579.200)	
Fence	576.497		Power	578.339	
Lighthouse	612.781		Pump	** (578.974)	
WL 111	615.187		Lais	** (586.451)	
WL 113	617.854		WL 108	575.385	
			Henes	** (589.194)	
			Town Hall	592.848	

CLEVELAND

Harbor Line	575.118	
Disk 51	575.106	
Pole	573.558	
Hess	** (576.338)	
City No. 1	568.855	
Stair	579.351	
Doorstep	580.494	
C-2	582.106	
C-6	589.668	
C-7	587.016	
C-5	** (594.246)	
C-3	649.946	
C-4	653.923	

SANDUSKY

Conservation	** (574.714)
Wine	581.947
Lake House	585.129
Express	583.325
P.O.	** (600.230)
S-3	602.723
S-2	590.311
Bolt	582.393
Point	577.444
Main	580.359
Gate	576.059
Jack	** (584.281)

ROCKY RIVER

Rear Range	576.254
Cod	575.139
Rocky	577.523
Court	576.729

PUT-IN-BAY

Cannon	580.278
WL 102	** (583.581)
Monument	579.022
La March	575.446
OSFH	579.450
Bridge	579.250

LORAIN

Bridge	578.221
Erie	578.229
Bent	584.680
WL 110	599.763
Hotel	596.853
L-2	602.389

PORT CLINTON

Stack	575.279
Island House	577.384
WL 106	579.589
WL 107	576.706
Port Clinton	576.220
Lake House	** (577.215)
Arms	579.309

VERMILION

Waterworks	579.648
Kishman	580.948
Wall	593.126
597 Toledo	595.460
Bank	598.325
Town Hall	600.049
Vermilion	605.457

TOLEDO

A	576.528
B	576.784
WL 101	582.554
Corner	575.540
Guard	576.540
Steel Pile	575.818

** () = B.M. Destroyed

UNITED STATES

Bench Mark	Elevation (1961)	Elevation (1964)	Bench Mark	Elevation (1961)	Elevation (1964)
Flag	** (575.373)		5-T	583.936	
Armory	575.897		H-180	578.230	
WL 104	576.778				
Grove	574.989				
WL 105	577.698				
Suder	588.215				
1206	593.861				
Craig	593.084				
1114	604.880				
V	586.976				
Q-182	582.411				
Dorf	586.914				
Post Office	600.615				
W	601.942				
City	581.756				
TO-1	580.052				
R 182	579.568				
Cross	580.628				

GIBRALTER

Gibraltar	** (580.718)
D-54	582.793
No. 2	** (583.244)
Lowell	579.076
No. 1	585.771
Fettig	582.648
Reynolds	577.374
J-180	581.187

GIBRALTER TO WYANDOTTE

D-53	582.837
D-51 A	580.114
N-180	576.517
R-180	582.885
Parkway	583.271
Q-180	591.586
Trenton	601.666
T-3	602.242
D-49	590.836
S-180	581.271
D-48	** (588.706)
No. 3	** (591.634)
H.L. Mon. 100	584.867
D-47 A	578.967
Firestone	576.191
U-180	575.890
D-46	579.834
D-45	583.310
West Channel	596.336
Hal	584.022
H.L. Mon. 16 G.I.	586.542
P-180	593.922
Mer	594.873
East Channel	583.865
H.L. Mon. 26 G.I.	591.855
H.L. Mon. 27 G.I.	581.292
Swales	576.295
Turn	581.920
Herm	581.369
End	577.238
Stony	577.778
Monument	575.656
USBM	574.948
Ref. 26	578.774
Pier 10	578.506

MONROE

WL 103	575.111
Rear Range	578.099
Terminal	577.134
Harbor	** (575.484)
Willow	** (576.862)
Halfway	** (574.821)
Old Channel	** (578.492)

MONROE TO GIBRALTER

J	578.273	
Z-114	578.340	587.337
D-71	587.846	
K	587.594	
Shore Line Bridge	589.056	
D	590.417	
D-73	589.824	
D-70	590.894	
D-69	593.421	
Sandy Creek	279.122	
D-67	588.395	
D-66	589.396	
Stony Creek	580.499	
D-65	590.848	
D-64	591.717	
D-63	588.644	
D-62	585.185	
Sterling	585.821	
D-61	588.306	
D-60	584.255	
D-59	578.934	
D-58	584.773	

** () B.M. Destroyed

UNITED STATES

Bench Mark	Elevation (1961)	Elevation (1964)	Bench Mark	Elevation (1961)	Elevation (1964)
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WYANDOTTE

Cadillac	**	(578.563)
Meyers	**	(575.609)
H.L. Mon. 91	**	(576.250)
H.L. Mon. 90		576.182
D-44		586.589
D-43		583.919
H.L. Mon. 89	**	(575.621)

D-5		590.786	
46-254		591.182	
54-251	**	(585.028)	
54-251 A		583.138	
54-252		580.594	
Park	**	(586.240)	
Screenhouse		577.112	581.402
54-253		576.268	
54-254		577.505	
54-254 B		578.940	
D-4		579.893	
62-251		572.314	
62-251 A		572.758	
62-252		571.749	
H.L. Mon. 7		575.014	
61-252		574.801	
D-3		577.586	
Lot		576.098	
D-2		582.652	
D-1		582.889	
H.L. Mon. 1		576.178	

WYANDOTTE TO DETROIT

D-42		587.074
WBM-3		588.548
Emmons		577.424
T-180		583.232
H.L. Mon. 74		579.111
Roll		577.325
National		577.594
H.L. Mon. 70		576.869
W-180		581.185
D-11		585.259
X-180		582.786
Y-180		579.863
D-10		576.782
D-9		590.079
Semet		588.664

DETROIT TO GROSSE
POINTE YACHT CLUB

H.L. Mon. A-1		576.979
SC-1		576.534
SC-2		588.210
SC-3		604.209
No. 36		604.294
No. 35		603.100
H.L. Mon. B-1		583.937
SC-4		590.657
SC-5		594.011
H.L. Mon. B-3		581.916

DETROIT

A-181		591.346	
W-62		588.193	
10-252		585.531	
10-252 A		584.672	
D-75		592.318	
Liby		594.571	
D-74		599.031	
Fort		586.636	
Carpenter		581.472	
BM-8		599.643	
Boatyard		586.787	
Garage		585.836	
D-8		583.085	
18-250		580.356	
Grand		580.132	
D-7		586.049	
H.L. Mon. 43		578.149	
H.L. Mon. 41		578.541	
Huron	**	(578.666)	
BM-10	**	(590.956)	
Detroit		583.956	583.016
R-32		586.882	
46-250		596.571	
H.L. Mon. 24		599.173	
46-253		596.327	
46-253 A		595.677	

GROSSE POINTE YACHT CLUB

Shelter		579.448	
Entrance		576.804	
Yacht Club	**	(578.020)	
School		587.334	
SC-33		584.301	
Bridge		583.890	582.068

GROSSE POINTE YACHT CLUB
TO CLINTON RIVER

SC-32		583.904
SC-31		580.682
SC-30		584.363
SC-29		580.680
SC-28		583.492

** () = B.M. Destroyed

UNITED STATES

Bench Mark	Elevation (1961)	Elevation (1964)	Bench Mark	Elevation (1961)	Elevation (1964)
39	579.169		Marina	578.106	
SC-26	**(584.453)		Adams	582.921	
SC-25	583.515		Guard	576.907	
SC-24	583.632		U	**(576.751)	
SC-23	582.352		Bolt	578.228	
			Beyster	575.482	
			Old Club No. 2	581.377	

CLINTON RIVER

SC-22	582.580
SC-21	582.335

CLINTON RIVER TO
NEW BALTIMORE

SC-20	578.277
SC-20 A	579.735
Vaise River	581.497
Salt Creek	581.162

NEW BALTIMORE

Cripple Creek	577.256
SC-18	591.075
32	598.339

NEW BALTIMORE TO ALGONAC

SC-16 A	589.380
31	582.230
SC-14	581.882
Anchor Bay	578.628
SC-13	579.334
SC-12	579.658
SC-11	580.443
SC-10	579.899
Paul	**(578.951)

ALGONAC TO ST. CLAIR
FLATS CANAL

Crossing Disk	**(577.096)
Cut	576.399
Mac	577.731
Church	583.932
Smith	**(582.607)
IBM 31	580.112
St. Marks	578.869
Muir	574.116
Light No. 6	**(577.774)
Road	576.456

ALGONAC

New School	584.167
Zieske	581.216
C-50	580.434
Orchard	580.272
Hydrant	580.445
Rim	578.418
Caution	580.890
Tom	**(576.330)

ALGONAC TO
ROBERTS LANDING

Fisher	579.407
IBM 34	582.755
O'Leary	576.871

ROBERTS LANDING

Flagpole	580.964
Bar A	**(581.495)
Hick A	580.834
C-49	583.768
Porch	578.747
C-48	579.351
C-47	580.744
Landing	580.965

ROBERTS LANDING TO
MARINE CITY

C-46	580.858
Klinger	581.297
C-44	582.230

MARINE CITY

C-42 A	585.434
Belle	582.426
Union	582.455
High	589.911

** () = B.M. Destroyed

UNITED STATES

Bench Mark	Elevation (1961)	Elevation (1964)	Bench Mark	Elevation (1961)	Elevation (1964)
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MARYSVILLE TO PORT HURON

Bank	585.689		Herb	592.283	
25	586.316		IBM 49	600.454	
Baugh	**(588.858)		Cady	597.494	
Alger	**(582.444)		Ravenswood	594.415	
			C-19	597.620	

MARINE CITY TO ST. CLAIR

IBM 38	585.917
Haun	582.912
IBM 40	590.599
Sal	590.030
Nora	597.906
Russ	584.969
C-36	593.247
C-35	598.106
C-34	584.228
C-33	593.044

PORT HURON

Bedford	**(582.944)
Grate Bar A	595.118
Hunt	**(596.258)
Oak	**(602.396)
16th Street	596.467
School	606.502
C-17	596.139
Wall	596.740
C-15	599.640
C-14	608.539
Viaduct	**(608.327)
C-13	607.620
Doorsill	584.322
Signal	**(584.556)
PHSTP	**(587.827)
Gulf	585.070
Sears	588.510
Baird	**(593.789)
Stanton	596.237
IBM 54	595.553
14	598.474
Park	581.536
Works	581.997
Vroman	597.701
Blue	581.759
Fork	589.520
GTR	586.169
Cement	587.136
IBM 56	587.804
3060	587.062
Garden	586.018
Cold	586.462
Retaining Wall	588.490
Fort Gratiot	
Lighthouse	588.684
MMMCCXLIX	586.300

ST. CLAIR

IBM 43	586.409
C-32-A	601.714
Pine	586.584
Kemp	587.199
Shed	**(580.572)
Market	**(588.299)
C-31	**(591.316)
Clair	**(587.194)
51	**(585.676)
Church	590.502
Gage-M	**(587.040)
21	587.074
C-30	593.142
20	625.602

ST. CLAIR TO MARYSVILLE

C-29	**(612.423)
IBM 45	585.958
Larchwood	619.023
Stephenson	626.494
C-26	601.779
C-24	600.498

PORT HURON TO LAKEPORT

	MARYSVILLE		
Stand	588.908	H-17	589.711
CH	595.768	IBM 58	590.810
FS	596.460	H-16	594.588
Creek	**(584.495)	Pointe	590.101
C-20	**(583.666)	Kelly	588.949
Ramp	581.560	H-14	593.584
		H-13	589.215
		H-12	590.171
		H-11	596.530
			589.691
			590.789
			594.557
			590.059
			588.896
			593.521
			589.138
			590.084
			596.429

**() = B.M. Destroyed

UNITED STATES

Bench Mark	Elevation (1961)	Elevation (1964)	Bench Mark	Elevation (1961)	Elevation (1964)
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SAGINAW

Stack	590.565
SR-19	594.121
SR-22	593.122
U-39	595.643
H.L. Mon. 116	589.094
Genessee A	597.696
Plug B	596.750
Plug A	593.771
H.L. Mon. 120	593.792
SR-20	606.643
SR-21	600.935

CALCITE

Power	590.140
Conveyor	587.201
Loader	585.890
Tower	**(587.358)

HAMMOND BAY

Lookout	581.324	581.824
Building	581.504	
Cistern	585.591	
Fence A	583.222	

POINT LOOKOUT

Sims	589.956
Gate No. 4	588.630
Ranch	587.688
Stiehl	589.638

CHEBOYGAN

Gage	583.064
Range	586.598
WL 263	589.759
Texaco	583.855
City Hall	590.763
Medic	593.216
A-12	**(606.516)
M.P.S. Co.	596.440
Lock	594.093

OSCODA

Light	584.208
North	**(583.895)
Bridge	**(583.986)
Slope	583.301
Marina	581.648

CHEBOYGAN TO TOPINABEE

IR-1	625.905
IR-2	**(632.860)
IR-3	623.785
IR-4	599.141
T-37	619.773
IR-5	613.027
IR-6	**(614.524)
IR-7	600.507
IR-8	639.816
IR-9	596.090
IR-10	606.209
IR-11	**(604.508)
E-12	620.667

HARRISVILLE

Main	592.331
Curtis	585.851
Creek	605.970
H-82	608.972
Alcona	613.824

ALPENA

Fire	591.231
Alpena	585.809
Mc Lellan's	587.747
Bridge	**(589.033)
Post Office	590.350
City Hall	592.050

TOPINABEE

IR-12	**(594.827)
F-12	610.365
Fire	617.551

PRESQUE ISLE

PI 1	583.635
PI 2	589.526
Presque Isle	587.607
Trail	583.046
Bay	582.958

GRAND BEACH

G-12	**(613.771)
IR-13	**(598.531)

**() = B.M. Destroyed

UNITED STATES

Bench Mark	Elevation (1961)	Elevation (1964)	Bench Mark	Elevation (1961)	Elevation (1964)
GRAND BEACH TO INDIAN RIVER			PETOSKEY		
IR-14	** (607.156)		Gas	589.771	
IR-15	605.150		D	587.952	
			Depot	592.185	
			WL 220	617.800	
			Diamond	585.271	
INDIAN RIVER			BEAVER ISLAND		
H-12	615.269		P.O. Foundation	590.308	
Burt	596.648		Booth	588.583	
Wall	596.332		McCann	584.934	
IR-16	608.236		BI-1	586.241	
INDIAN RIVER TO ALANSON			Black Boulder	581.381	
IR-17	686.351		White Boulder	582.016	
IR-18	653.802		Fog Signal	588.380	
IR-19	700.915		Sill	585.972	
IR-20	739.972		Bolt	583.452	
IR-21	692.951		BI-2	587.873	
IR-22	703.257		Boulder	584.394	
ALANSON			CHARLEVOIX		
IR-23	616.207		8	** (586.475)	
N-76	614.421		WL 218	588.244	
IR-24	612.431		City	592.375	
			Park	622.241	
			WL 219	** (609.812)	
ODEN			ELK RAPIDS		
Oden	595.826		Power	593.475	593.469
612	** (611.230)		Gulf	595.949	593.943
P-76	** (611.869)		Lelone	594.039	594.033
CONWAY			TRAVERSE CITY		
IR-25	605.508		Greilick	** (586.192)	
Conway	597.062		Grand	** (584.232)	
Q-76	605.504		Darrow	581.539	
			Bay	** (601.903)	
CONWAY TO PETOSKEY			Cedar Creek	599.306	
IR-26	** (617.840)		Shop	** (585.930)	
IR-27	** (612.842)		Museum	591.448	
IR-28	** (613.075)		Bridge	** (583.818)	
IR-29	593.631		Lyric	** (583.187)	
S-76	604.611		SUTTONS BAY		
T-76	** (608.011)		Burke	582.186	
IR-30	609.420		Bonek	** (598.290)	
			Post	598.162	

** () = B.M. Destroyed

UNITED STATES

Bench Mark	Elevation (1961)	Elevation (1964)	Bench Mark	Elevation (1961)	Elevation (1964)
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NORTHPORT

Cherry	** (586.755)	
Culvert	584.023	
Z-87	583.785	

LELAND

36 K	** (590.552)	
Flagpole	** (586.107)	
Cordes	600.296	
Gain	599.012	
E 88	600.684	
Slag	** (587.288)	

SOUTH MANITOU ISLAND

Pump	583.292	
Shed	582.145	
Manitou	** (596.212)	

FRANKFORT

WL 215	592.816	
WL 216	593.997	
Gate	590.493	
Villa	590.232	
WL 217	597.545	
Cannon	603.414	

PORTAGE LAKE

Pier	582.739	
Sunken	582.695	
Walk	584.791	
Pump	582.702	
Grill	** (589.837)	
Wall	606.035	
WL 214	595.632	

MANISTEE

WL 212	** (585.903)	
Mast	** (582.700)	
Exit	** (583.700)	
Park	586.689	
WL 213	** (587.779)	
Pipe	** (583.450)	

LUDINGTON

Flagpole	** (583.346)
2	** (583.848)
WL 211	587.155
Lark	582.766
Lavinia	594.048
Window	619.299
Larson	590.154
1	588.409
Walbar	582.210
Pipe	** (582.898)
LSTP	586.332
Oil	586.437

PENTWATER

Pipe	** (583.818)
Lawn	584.511
Herline	591.280
Nick	598.662
Walks	592.201
WL 210	606.097

WHITE LAKE

Flagpole	** (584.333)
Grover	581.001
Wires	582.931
Bridge	585.731
USM 36-1	595.852
Sill	600.661
Pipe	596.752
WL 209	587.037

MUSKEGON

Coast Guard A	586.647
Flagpole	584.281
Step	** (588.975)
WL 208	** (592.329)
Yard	588.676
Trailers	588.446
Buck	587.391
60	592.114
Gage	580.494
MU-1	589.508
MU-2	591.122
S-25	592.758

** () = B.M. Destroyed

UNITED STATES

Bench Mark	Elevation (1961)	Elevation (1964)	Bench Mark	Elevation (1961)	Elevation (1964)
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GRAND HAVEN

WL 205	** (587.398)	
10	** (589.550)	
A-7	591.530	
Station	** (601.401)	
Shop	** (597.693)	
WL 206	600.514	
WL 207	** (611.984)	

MICHIGAN CITY

Freight	** (599.622)	
Depot	602.382	
USEO 2	** (584.540)	
WL 238	594.267	
No. 1	598.223	
G.A.R.	592.666	
Intake	585.661	
Wall	599.566	
Nips A	591.125	
Breaker	607.949	

LAKE MACATAWA

Park	586.384	
I	588.134	
Macatawa	** (587.898)	
Lawn	** (583.933)	
Lily	** (583.617)	
Lunch	585.592	
Jesiek	** (580.857)	
Lamp	582.308	

GARY

Cap Plate	588.120	
1	588.047	
31 Gary	598.287	
B & O	589.179	

SAUGATUCK

Hill	598.734	
Halfway	** (633.537)	
WL 203	651.795	
24-1/2	582.889	
12	583.913	
Rod No. 3	583.933	
Oval	582.727	
House	584.582	
Pumphouse	595.810	
Baldhead	** (582.170)	
Ferry	** (585.737)	
Anchor	** (580.762)	
Koning	592.958	

INDIANA HARBOR

Bin	** (593.100)	
1	589.086	
H-18	589.915	
WL 240	591.657	
Track	** (591.483)	
Plant No. 1	583.956	

CALUMET HARBOR

Eng	** (586.461)	
Cal	** (590.393)	
LKD	** (587.240)	
COM	583.318	
WL 241	596.681	
Pier Light	583.334	
5	584.055	
4	588.653	
6	590.994	
Drug	592.717	

SOUTH HAVEN

WL 202	625.925	
Bank	618.777	
Post	584.585	
WL 201	591.297	
Power	589.352	
2	** (620.699)	

CHICAGO

Pumphouse	589.703	
Lamp	584.441	
N. Pier	587.155	
Sanitary	584.949	
5	** (581.636)	
Davit	583.543	
WL 242	585.276	
Inner	585.275	
7	587.330	
99	** (589.604)	

ST. JOSEPH

Pipe	** (583.470)	
WL 236	586.977	
Duplex	590.685	
WL 237	589.211	

** () = B.M. Destroyed

U N I T E D S T A T E S

Bench Mark	Elevation (1961)	Elevation (1964)	Bench Mark	Elevation (1961)	Elevation (1964)
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GREAT LAKES

Cleat	583.156	
Wall	587.722	
Paint	585.763	
Aerial	586.529	
Bent	** (593.416)	

Coran	** (585.124)	
Printing	591.832	
Flushing	586.540	
Doorstep	586.712	
B	594.927	
W-1	619.033	
W-5	634.644	
City Hall	593.185	
City BM No. 5	513.152	613.152
Chestnut		
Street No. 2	588.960	
Signal Bridge		
1493	592.377	
W-3	593.065	
W-8	595.475	
W-6	522.237	622.237
N. Breakwater 1	584.094	
N. Breakwater 2	584.584	
W-7	** (596.517)	
C	587.512	

WAUKEGAN

P.S. Co. A	583.098
Park	584.950
l	587.355
B.C.M. Co.	587.666
WL 244	** (600.290)
Liberty	616.245
Clayton	** (635.305)

KENOSHA

Cross	582.355
WL 245	586.872
Stairs	** (585.712)
Hill	** (590.917)
Park	600.305
Kenosha Light	603.185
Water	588.263
Tank	** (585.327)

PORT WASHINGTON

Light	586.432	
Turner	** (585.882)	
Fish	** (590.688)	
Mold	** (584.962)	
Chair	** (595.339)	
Works	587.930	
WL 249	** (595.961)	
C-87	** (517.758)	617.758)

RACINE

Shop	590.864
Pugh W	** (590.043)
Bohn	** (589.367)
North	584.782
USEO 4	584.092
WL 247	589.962
Root	588.955
Pugh E	590.320
Pile	** (582.543)
WL 246	593.587
Western	** (588.190)

SHEBOYGAN

41 B	583.331
WL 250	587.908
No. 1	585.640
Window	591.151
Apt.	588.871
Fog Station	** (585.805)
Court House	625.489

MANITOWOC

Cap	** (582.797)
Sears	595.473
York	** (602.300)
Rivet N	595.959
Rivet S	595.949
WL 251	586.403
Arcade	591.948
WL 252	** (598.775)

MILWAUKEE

North Breakwater	
Light	584.024
North	584.680
Nent	585.439
Garbage	588.018
Hansen	589.430
Shop	** (584.873)

** () = B.M. Destroyed

U N I T E D S T A T E S

Bench Mark	Elevation (1961)	Elevation (1964)	Bench Mark	Elevation (1961)	Elevation (1964)
TWO RIVERS			JACKSON HARBOR		
Pier	** (579.887)		Ice	582.747	
Reiss	591.220		Home	584.549	
WL 253	590.355		Meter	584.202	
Office	584.148		No. 2	585.502	
Garage	584.945		Shed	584.666	
Fog	584.359		Cinder	581.733	
Hotel	** (596.154)		Hip	** (580.647)	
Saloon	603.087				
WL 254	599.481				
KEWAUNEE			DETROIT HARBOR		
Pier	582.562		Ferry A	582.251	
Gage	582.636		Tank	586.288	
Building C	** (580.767)		No. 1	583.666	
WL 255	** (585.448)		Road	** (581.010)	
Bridge N	** (584.722)				
Bridge S	585.369		GRASSY ISLAND		
Hamachek	597.702		No. 1	582.969	
Church	592.760		Eyebolt	583.153	
			Bolt Head	578.791	
ALGOMA			No. 2	** (582.821)	
Light	587.434		GB-1	585.305	
Algoma	589.675				
Tretsen	** (599.359)		GREEN BAY		
No. 3	583.561		No. 4	588.392	
WL 256	583.558		P 2	590.068	
Coal Dock	** (585.132)		GB-2	589.389	
			02	** (590.908)	
STURGEON BAY CANAL			Prange	583.692	
No. 1	598.023		WL 257	** (587.788)	
Base Plate	596.916		WL 258	591.720	
Mast	600.876		Astor	** (590.093)	
Garage	595.696		Leg	585.654	
Flag A	584.330		Wis	588.404	
Dwelling A	584.930		Coal A	587.640	
Monument	** (595.631)		Scale	583.195	
No. 2	598.590				
No. 10	** (598.488)		GREEN BAY TO DePERE		
No. 20	638.270		GB-6	591.594	
Canal	587.772		Dousman	596.363	
			WL 259	596.112	
STURGEON BAY			No. 3	591.552	
SB-1	585.118		X 5	605.503	
SB-2	** (592.316)		P89	610.316	
Vocay	** (602.564)		GB-3	609.165	
Ace	603.326		GB-4	612.245	
Barker A	586.576		GB-5	611.144	

** () = B.M. Destroyed

UNITED STATES

Bench Mark	Elevation (1961)	Elevation (1964)	Bench Mark	Elevation (1961)	Elevation (1964)
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BIG SUAMICO RIVER

Suamico	580.860
Font	580.126
Curve	580.854
Farm	583.873

PENSAUKEE

Gruble	581.722
Van Zoonan	** (580.109)
No. 4	** (581.633)
Pensaukee	581.925
Nets	** (579.724)
Swaer	584.896
Garage	581.299
Carp	579.907

OCONTO

Corner	582.612
Reed	** (582.305)
Buck	** (581.204)
Vandenbush	580.972
Blazes	579.834
Tourt	580.941
N.E. Bridge	** (583.703)
S.W. Bridge	** (583.752)

MENOMINEE

C.C.C.	587.473
Marathon	587.977
Tank	584.850
Wall	585.631
WL 260	** (587.127)
No. 4	** (587.105)
Ann Arbor	** (580.284)
Menominee	** (582.637)
No. 2	** (582.622)

ESCANABA

Nut	590.479
Yacht	582.736
Owen	591.557
Courthouse	** (592.118)
WL 261	** (591.810)
Pile E	** (578.425)
Pile W	** (580.001)
Ore	** (581.692)
Pumphouse	586.110
Depot	** (616.636)

MANISTIQUE

WL 262	583.779
East Breakwater	583.736
Pole	** (583.367)
L.K.D.	592.520
Inland	595.119
S.P.	590.866
N 55	** (592.792)
P.O.	596.715

NAUBINWAY

Outcrop	585.149
Dock	589.681

MACKINAW CITY

State Dock	583.526
Mackinaw	585.154
SPB	588.983
Ferry	** (589.660)
No. 3	585.324
R	588.333
No. 1	589.309

ST. IGNACE

Turn	586.228
Arnold A	** (590.099)
Mulcrone	600.680
Ignatius	621.610
School	623.437

MACKINAW ISLAND

N-85-W	587.191
S-11-E	587.852
Fort	595.347
Perry	587.463
State	582.801

DE TOUR

SM-36	605.708
SM-35	599.207
SM-34	612.619
SM-33	622.611
Store	611.956
Stosig	597.349
Terrett	** (598.130)

** () = B.M. Destroyed

UNITED STATES

Bench Mark	Elevation (1961)	Elevation (1964)	Bench Mark	Elevation (1961)	Elevation (1964)
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MARQUETTE

SM-2	654.460	
Midway	623.709	
Bar	619.047	
Bridge	615.778	
Station	619.307	

No. 11	618.805
R-21	623.019
Lighthouse N	643.368
Gun	**(605.246)
Gage	605.879
Stairs	609.548
Rivet	623.421
No. 6	626.554
S-21	650.066

BRIMLEY TO PT. IROQUOIS

Lakeshore	605.903
Taylor	633.114
SM-1	621.990
Wild	640.254

PRESQUE ISLE

No. 15	625.369
Spike Head	608.362
Square	606.760
Anchor Nut	606.703
WL 302	609.796

POINT IROQUOIS

Shaft No. 1	**(604.256)
Gage	**(603.846)
Clark	**(609.196)
Old BM	621.284
Iroquois	
Lighthouse	620.623
Iroquois No. 1	613.673

BIG BAY

BD-1	**(613.028)
Well	612.755
Big Bay	**(604.158)
Marble	614.107

WHITEFISH POINT

3 A	607.187
Door	608.595
Shed	607.668
Cabin	608.595

GRAND TRAVERSE BAY

Lasanen	606.430
East	605.626
Traverse	606.004
West	608.424

GRAND MARAIS

Sill	610.263
Table	612.468
WL 301	608.890
Flag	605.744
Door	606.012
No. 3	604.329

LAC LA BELLE

Old Light	608.005
Mendota	605.779
La Belle	603.009

COPPER HARBOR

Outcrop	605.858
Light	623.342
Copper Harbor	625.912
Ladder	608.928
WL 304	**(616.958)
J-66	620.814
Hip	602.126
Rock	**(608.264)
Chimney	**(614.125)

MUNISING

Hex Nut	605.999
Beach	615.731
Shelter	604.498
Alger	632.858
Front	629.282
Wall	**(617.163)
Boiler House	**(612.314)

**() = B.M. Destroyed

UNITED STATES

Bench Mark	Elevation (1961)	Elevation (1964)	Bench Mark	Elevation (1961)	Elevation (1964)
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EAGLE HARBOR

Guy	** (604.132)	
Pine	605.956	
Eagle	603.654	
No. 2	604.742	

ASHLAND

Briquet	** (608.590)
Bolt	** (605.246)
Sump	619.976
Reiss	633.757
650	648.022
WL 306	631.167

KEWEENAW WATERWAY

F-62	603.727
No. 15	605.843
WL 311	607.096
Pump B	605.111
Garage A	602.968
No. 2	607.919
612	609.555
Depot	610.015
No. 3	621.954
WL 303	** (636.295)
No. 4	628.151
Houghton	650.219
Coast Guard	605.357
Steel	614.862
Garage	621.970
Mast	** (620.186)
Geological	621.006
Septic	621.427
Flagpole	631.944
WL 310	609.126
Base	608.666
Pier	604.444
Bit 13	603.430
Lily	602.440

BAYFIELD

Fence	** (604.806)
Northern	609.535
Dugie 2	619.622
Alley	632.165
Inn	** (620.914)

CORNUCOPIA

Pier	** (603.072)
Harbor	603.656
Bremel	610.393
Ditch	607.082
Martens	617.732
Store	622.228
Church	623.211

PORT WING

CP-2	602.078
Pipe	606.956
Anderson	604.661
Wing	605.994
Garage	605.940
Tile	604.274
No. 3	614.405
No. 2	616.182

ONTONAGON

Duluth	601.568
2	607.188
Huuki	603.219
Oil	605.291
Potato	607.181
4	609.166
WL-305 A	605.756

DULUTH

60	605.370
Bar	603.897
Lake	** (606.851)
28-A	605.333
56	609.224
57	609.077
Aerial Bridge	608.871
Ring	** (608.345)

BLACK RIVER

A-133	620.602
No. 2	611.153
Conglomerate	601.903
Boulder	** (609.572)

** () = B.M. Destroyed

U N I T E D S T A T E S

Bench Mark	Elevation (1961)	Elevation (1964)	Bench Mark	Elevation (1961)	Elevation (1964)
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LUTSEN

26-C	** (608.322)
23	** (607.487)
6th Ave. W.	** (615.062)
Bit	606.543
Middle	602.388
Peavey	601.348
Post	604.562
Gate	601.959
E-19	608.756

No. 1	604.277
Fish Shed	** (608.338)
Granite	** (609.364)
Porch	624.689
Court	622.810

GRAND MARAIS

KNIFE RIVER

No. 1	604.409
Ledge Rock	603.933
Birch	608.341
Wall	608.470
Knife	620.000

WL 308	** (609.571)
Bolt Circle	607.244
Bolt Square	604.938
No. 2	** (601.477)
Eyelink	** (605.211)
No. 1	** (601.222)
Break	607.072

ISLE ROYALE

TWO HARBORS

Waits	612.285
U. S. E.	** (611.923)
Ore Dock	611.951
Walk	** (608.304)
Dock Office	630.148
WL 307	641.756
Engine	646.426
Rock	** (606.040)

Royale	613.327
Disk	612.857
Singer	612.651
Rock	624.667
WL 309	637.693
Door	606.215
Mott	609.023
Ledge	609.412
Bollard	613.471

BEAVER BAY

No. 2	604.664
Mattson	609.539
Log Cabin	** (608.368)
Boulder	621.242
Drive	609.730

** () = B.M. Destroyed

NOTES ON CORRECTIONS TO APPENDIX "A"

ESTABLISHMENT OF INTERNATIONAL

GREAT LAKES DATUM (1955)

December 1976

Soon after converting Lake Survey (now National Ocean Survey) gages to International Great Lakes Datum (1955) on January 1, 1962, it was observed that Cape Vincent, Buffalo, and Lakeport were giving elevations above the other gages on their respective lakes. Differences were in the magnitude of +0.05, +0.10, and +0.14 feet, respectively, for the three sites.

I.G.L.D. (1955) was established at Cape Vincent by a first-order level line along the St. Lawrence River. Water transfer to Cape Vincent from Kingston gave a correction of -0.042 foot, and changed the elevation of B.M. CAPE to 252.274 feet. The first-order leveling had given values at Clayton that showed higher river levels there than at Cape Vincent. In 1962 the level line was re-run from Cape Vincent to the loop at the Thousand Islands Bridge. This line showed a normal slope in the river and was used to adjust elevations of the marks between Cape Vincent and the loop at Thousand Islands Bridge. The old line was used to adjust elevations of the marks between Cape Vincent and Tibbetts Point.

I.G.L.D. (1955) was established at Wilson Harbor by water transfers from Oswego and Toronto, where I.G.L.D. (1955) had been established by water transfer from Kingston. A first-order level line was run along the Niagara River from Wilson Harbor to Buffalo and Lackawanna. Water transfer to Buffalo from Port Colborne gave a correction of -0.111 foot, and changed the elevation of B.M. BUFFALO LIGHTHOUSE to 588.375 feet. The slope in the Niagara River between Buffalo and Black Rock was held as given by the levels and the -0.111 foot discrepancy was adjusted into the level line for elevations between Black Rock and Wilson Harbor.

I.G.L.D. (1955) was established at Lakeport by a first-order level line run along the Detroit-St. Clair Rivers system. Water transfer to Lakeport from Goderich gave a correction of -0.133 foot, and changed the elevation of B.M. H6 to 601.036 feet. The -0.133 foot discrepancy was adjusted into the level line for bench mark elevations between Lakeport and the closed loop on the St. Clair River at Port Huron.

APPENDIX B

SOURCES OF BENCH MARK DESCRIPTIONS

APPENDIX B

BENCH MARK DESCRIPTIONS

To obtain descriptions of bench marks in Canada write to the:

Regional Tidal Officer
Canadian Hydrographic Service
Environment Canada, Central Region
P.O. Box 5050
Burlington, Ontario L7R 4A6

To obtain descriptions of bench marks in the United States write to:

Office of Oceanography
Tides and Water Levels
National Ocean Survey
National Oceanic and Atmospheric Administration
Rockville, Maryland 20852