

TP-01087

TP-01087

NOAA FORM 76-35

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY

DESCRIPTIVE REPORT

This Map Edition will not be Field Edited

Type of Survey Shoreline
Job No. CM-8008 Map No. TP-01087
Classification No. III Edition No. ... 1
.....

LOCALITY

State Minn - Wisc
General Locality Fond du Loc
Locality St. Louis River
.....

19 80 TO 19 81

REGISTRY IN ARCHIVES

DATE

MAP NOT INSPECTED BY
QUALITY CONTROL OF PHOTOGRAMMETRY DIVISION
PRIOR TO REGISTRATION

NOAA FORM 76-36A (3-72)		U. S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMIN.		TYPE OF SURVEY		SURVEY TP. 01087	
DESCRIPTIVE REPORT - DATA RECORD				<input checked="" type="checkbox"/> ORIGINAL		MAP EDITION NO. (1)	
				<input type="checkbox"/> RESURVEY		MAP CLASS III	
				<input type="checkbox"/> REVISED		JOB PH. CM-8008	
PHOTOGRAMMETRIC OFFICE				LAST PRECEDING MAP EDITION			
Rockville, MD				TYPE OF SURVEY		JOB PH. _____	
OFFICER-IN-CHARGE				<input type="checkbox"/> ORIGINAL		MAP CLASS _____	
Walter S. Simmons				<input type="checkbox"/> RESURVEY		SURVEY DATES:	
				<input type="checkbox"/> REVISED		19__ TO 19__	
I. INSTRUCTIONS DATED							
1. OFFICE				2. FIELD			
Aerotriangulation October 16, 1980 Refer to: "Vertical Datum Reference for Map Features, Photogrammetric Surveys, Great Lakes" dated July 13, 1976.				Field, April 17, 1981			
II. DATUMS							
1. HORIZONTAL: <input checked="" type="checkbox"/> 1927 NORTH AMERICAN				OTHER (Specify)			
2. VERTICAL: <input type="checkbox"/> MEAN HIGH-WATER <input type="checkbox"/> MEAN LOW-WATER <input type="checkbox"/> MEAN LOWER LOW-WATER <input type="checkbox"/> MEAN SEA LEVEL				OTHER (Specify) International Great Lake Datum 1955			
3. MAP PROJECTION				4. GRID(S)			
Lambert Conformal				STATE Wisc		ZONE North	
5. SCALE 1:5,000				STATE		ZONE	
III. HISTORY OF OFFICE OPERATIONS							
OPERATIONS				NAME		DATE	
1. AEROTRIANGULATION BY				S. Solbeck		12/81	
METHOD: LANDMARKS AND AIDS BY				NA			
2. CONTROL AND BRIDGE POINTS PLOTTED BY				A. Bethea		1/82	
METHOD: Calcomp CHECKED BY				J. Schad		1/82	
				"		"	
3. STEREOSCOPIC INSTRUMENT PLANIMETRY BY				P. Dempsey		"	
COMPILATION B-8 CHECKED BY				NA			
INSTRUMENT: CONTOURS BY				NA			
SCALE: 1:5,000 CHECKED BY				NA			
4. MANUSCRIPT DELINEATION PLANIMETRY BY				J. Schad		1/82	
				P. Dempsey		1/82	
METHOD: Instrument Work Sheet				NA			
				NA			
SCALE: 1:5,000 HYDRO SUPPORT DATA BY				NA			
				NA			
5. OFFICE INSPECTION PRIOR TO FIELD EDIT BY				NA			
6. APPLICATION OF FIELD EDIT DATA BY				NA			
				NA			
7. COMPILATION SECTION REVIEW BY				P. Dempsey		8/82	
8. FINAL REVIEW BY				J. Taylor/J. Schad		10/83	
9. DATA FORWARDED TO PHOTOGRAMMETRIC BRANCH BY				N/A			
10. DATA EXAMINED IN PHOTOGRAMMETRIC BRANCH BY							
11. MAP REGISTERED - COASTAL SURVEY SECTION BY				E. DAUGHERTY		Nov 1984	

NOAA FORM 76-36B
(3-72)U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY

COMPILATION SOURCES

TP-01087

1. COMPILATION PHOTOGRAPHY

CAMERA(S) RC-8 focal length 152.71 mm		TYPES OF PHOTOGRAPHY LEGEND (C) COLOR (P) PANCHROMATIC (I) INFRARED		TIME REFERENCE	
TIDE STAGE REFERENCE <input type="checkbox"/> PREDICTED TIDES <input checked="" type="checkbox"/> REFERENCE STATION RECORDS <input type="checkbox"/> TIDE CONTROLLED PHOTOGRAPHY				ZONE Eastern	<input type="checkbox"/> STANDARD
				MERIDIAN 75 th	<input checked="" type="checkbox"/> DAYLIGHT
NUMBER AND TYPE	DATE	TIME	SCALE	STAGE OF TIDE	
80 E (c) 5777-80	8/31/80	1026	1:15,000	1.0 ft. above Lake Superior Low Water Datum	

REMARKS

Lake Superior Low Water Datum = 600.0 ft.

2. SOURCE OF MEAN HIGH-WATER LINE:

Shoreline was compiled from the above listed photographs and represents the visible line of contact between the water level and land features.

3. SOURCE OF MEAN LOW-WATER OR MEAN LOWER LOW-WATER LINE:

None

4. CONTEMPORARY HYDROGRAPHIC SURVEYS (List only those surveys that are sources for photogrammetric survey information.)

SURVEY NUMBER	DATE(S)	SURVEY COPY USED	SURVEY NUMBER	DATE(S)	SURVEY COPY USED

5. FINAL JUNCTIONS

NORTH N/A	EAST N/A	SOUTH N/A	WEST TP-01088
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REMARKS

NOAA FORM 76-36C
(3-72)U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY

HISTORY OF FIELD OPERATIONS

TP-01087

I. ☒ FIELD INSPECTION OPERATION☐ FIELD EDIT OPERATION

OPERATION	NAME	DATE
1. CHIEF OF FIELD PARTY	R. Tibbetts	5/19/81
2. HORIZONTAL CONTROL	RECOVERED BY NA ESTABLISHED BY J. Dunfries PRE-MARKED OR IDENTIFIED BY NA	5/19/81
3. VERTICAL CONTROL	RECOVERED BY NA ESTABLISHED BY NA PRE-MARKED OR IDENTIFIED BY NA	
4. LANDMARKS AND AIDS TO NAVIGATION	RECOVERED (Triangulation Stations) BY NA LOCATED (Field Methods) BY NA IDENTIFIED BY NA	
5. GEOGRAPHIC NAMES INVESTIGATION	TYPE OF INVESTIGATION <input type="checkbox"/> COMPLETE BY <input type="checkbox"/> SPECIFIC NAMES ONLY <input checked="" type="checkbox"/> NO INVESTIGATION	NA
6. PHOTO INSPECTION	CLARIFICATION OF DETAILS BY NA	
7. BOUNDARIES AND LIMITS	SURVEYED OR IDENTIFIED BY NA	

II. SOURCE DATA

1. HORIZONTAL CONTROL IDENTIFIED

Two Stations

2. VERTICAL CONTROL IDENTIFIED

None

PHOTO NUMBER	STATION NAME	PHOTO NUMBER	STATION DESIGNATION
80 EC 5780	Hydro 1981 Ski 1981		

3. PHOTO NUMBERS (Clarification of details)

4. LANDMARKS AND AIDS TO NAVIGATION IDENTIFIED

None

PHOTO NUMBER	OBJECT NAME	PHOTO NUMBER	OBJECT NAME

5. GEOGRAPHIC NAMES: ☐ REPORT ☒ NONE6. BOUNDARY AND LIMITS: ☐ REPORT ☒ NONE

7. SUPPLEMENTAL MAPS AND PLANS

SEE CM-7313-TP-00680

8. OTHER FIELD RECORDS (Sketch books, etc. DO NOT list data submitted to the Geodesy Division)

NOAA Form 76-53(CSI) -1

76-86

-3

75-82A

-3

76-135

-2

76-170

-5

NOAA FORM 76-36D
(3-72)U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

RECORD OF SURVEY USE

TP-01087

I. MANUSCRIPT COPIES

COMPILATION STAGES			DATE MANUSCRIPT FORWARDED	
DATA COMPILED	DATE	REMARKS	MARINE CHARTS	HYDRO SUPPORT
Shoreline and Alongshore detail	1/82	Class III	6-22-84	

II. LANDMARKS AND AIDS TO NAVIGATION None

1. REPORTS TO MARINE CHART DIVISION, NAUTICAL DATA BRANCH

NUMBER	CHART LETTER NUMBER ASSIGNED	DATE FORWARDED	REMARKS

2. ☐ REPORT TO MARINE CHART DIVISION, COAST PILOT BRANCH. DATE FORWARDED: _____3. ☐ REPORT TO AERONAUTICAL CHART DIVISION, AERONAUTICAL DATA SECTION. DATE FORWARDED: _____

III. FEDERAL RECORDS CENTER DATA

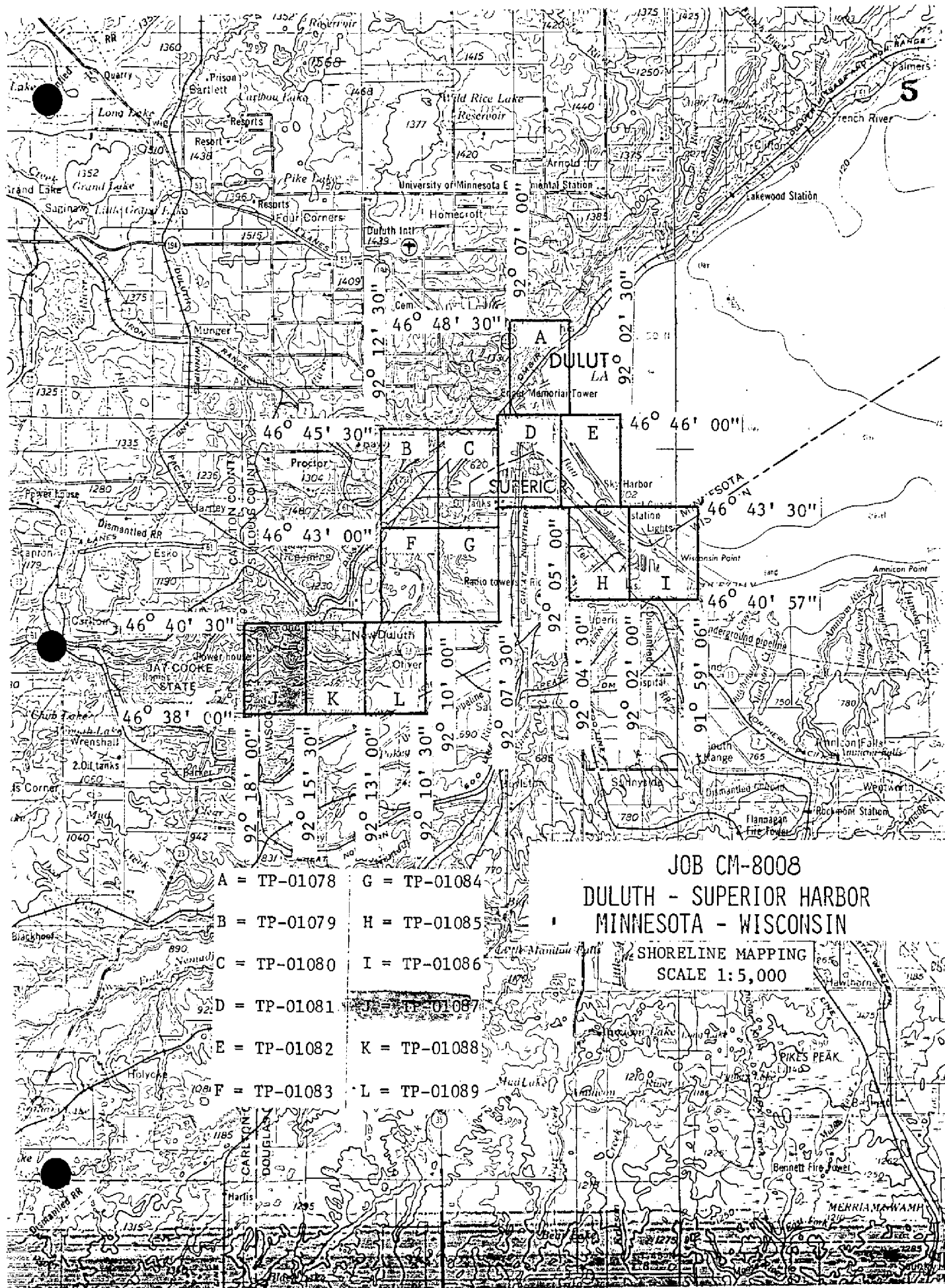
1. ☐ BRIDGING PHOTOGRAPHS; ☐ DUPLICATE BRIDGING REPORT; ☐ COMPUTER READOUTS.
 2. ☐ CONTROL STATION IDENTIFICATION CARDS; ☐ FORM NOS 567 SUBMITTED BY FIELD PARTIES.
 3. ☒ SOURCE DATA (except for Geographic Names Report) AS LISTED IN SECTION II, NOAA FORM 76-36C.
 ACCOUNT FOR EXCEPTIONS:

4. ☐ DATA TO FEDERAL RECORDS CENTER. DATE FORWARDED: _____

IV. SURVEY EDITIONS (This section shall be completed each time a new map edition is registered)

SECOND EDITION	SURVEY NUMBER TP - _____ (2)	JOB NUMBER PH - _____	TYPE OF SURVEY <input type="checkbox"/> REVISED <input type="checkbox"/> RESURVEY MAP CLASS <input type="checkbox"/> II. <input type="checkbox"/> III. <input type="checkbox"/> IV. <input type="checkbox"/> V. <input type="checkbox"/> FINAL
	DATE OF PHOTOGRAPHY	DATE OF FIELD EDIT	
THIRD EDITION	SURVEY NUMBER TP - _____ (3)	JOB NUMBER PH - _____	TYPE OF SURVEY <input type="checkbox"/> REVISED <input type="checkbox"/> RESURVEY MAP CLASS <input type="checkbox"/> II. <input type="checkbox"/> III. <input type="checkbox"/> IV. <input type="checkbox"/> V. <input type="checkbox"/> FINAL
	DATE OF PHOTOGRAPHY	DATE OF FIELD EDIT	
FOURTH EDITION	SURVEY NUMBER TP - _____ (4)	JOB NUMBER PH - _____	TYPE OF SURVEY <input type="checkbox"/> REVISED <input type="checkbox"/> RESURVEY MAP CLASS <input type="checkbox"/> II. <input type="checkbox"/> III. <input type="checkbox"/> IV. <input type="checkbox"/> V. <input type="checkbox"/> FINAL
	DATE OF PHOTOGRAPHY	DATE OF FIELD EDIT	

NOAA FORM 76-36D



SUMMARY
TP-01087

This map is one of five 1:5,000-scale shoreline maps that comprise Part II of Project CM-8008. There are twelve shoreline maps in this project. The purpose of this job is to provide contemporary shoreline data and alongshore detail for nautical chart revision.

This map portrays the shoreline and alongshore detail of the St. Louis River, Minnesota-Wisconsin from the Minnesota Power and Light Company to Perch Lake.

In May 1981, field operations provided horizontal control for the Aero-triangulation Unit for TP-01083, TP-01084, TP-01087, TP-01088, and TP-01089. The field information consisted of the provision of aerial photographs annotated with location of horizontal control station and supplemented with field data records.

Natural color photographs were taken August 31, 1980, with the Wild RC-8(E) camera at 1:15,000 scale which were provided to aerotriangulation and compilation.

Aerotriangulation was performed at the Washington Science Center, Rockville, Maryland. The 1:15,000 natural color photographs were bridged using analytic aerotriangulation methods.

Compilation was performed at the Washington Science Center, Rockville, Maryland, by the Coastal Mapping Section. The interior compilation was limited to detail to the first road adjacent to the shoreline. Detail within this area was kept to a minimum. (See Compilation Report.)

Final Review for this map was performed at the Washington Science Center, Rockville, Maryland, in November 1983. This map complies with the National Standards of Map Accuracy.

A Chart Maintenance Print was prepared during the final review and forwarded to the Marine Chart Branch. Accompanying the above forwarded print are 76-40 forms, listing of landmarks and nonfloating aids to navigation.

The context of this Descriptive Report contains all pertinent reports and listings of data used to compile this final map.

A stable base positive copy of this final map and the Descriptive Report will be registered in the NOS Archives.

PHOTOGRAMMETRIC PLOT REPORT
Duluth-Superior Harbor
Minnesota-Wisconsin
CM-8008
December 1981

21. Area Covered

The area covered by this report is the shoreline of the St. Louis River from Fond Du Lac, Minnesota, northeast to where the river enters St. Louis Bay at Duluth, Minnesota. The river provides the boundary between Minnesota and Wisconsin. The project is covered by five (5) 1:5,000 scale manuscripts: TP's 01083, 01084, 01087, 01088, and 01089. TP-01081 will also be included in this project.

22. Method

Three strips of 1:15,000 scale color photography were bridged by standard analytic aerotriangulation methods. Strips 1A and 2A were each extended to include that portion of their respective strips which were bridged in December 1980. Strip 1 consisted of photographs 80E(C) 5795 through 5799, and Strip 1A was 80E(C) 5787 through 5796. Strip 2 was 80E(C) 5729 through 5739, and 2A was 80E(C) 5723 through 5731.

Field identified control was provided and supplemented by office identified control. Tie points were used to ensure an adequate junction between the strips and to control Strip 2. The State Plane Coordinates for this project were based on the Wisconsin North Zone.

Ratio values were determined from the bridging photography, which is also to be used for compilation purposes.

23. Adequacy of Control

In May 1981, a field party established five 3rd order control stations to be used to control Strips 1A, 2A, and 5. This photography covers TP-01083, TP-01084, TP-01087, TP-01088, and TP-01089. This control meets the National Standards of Map Accuracy.

Oliver 1981, sub point two, is the centerline end of a pier. It would not fit the other control by 1 foot in X and 10 feet in Y. Jim Shea, Coastal Survey Section, AMC, believes that the pier was rebuilt after the photography was taken. This point was not used in the adjustment.

Photos 7595 and 7596 were used in the adjustment of Strip 2, as well as in the adjustment of Strip 2A. Points on these photos differed by up to 10 feet in the two adjustments. The discrepancy was probably due to the quality of the control (which had an accuracy of 1.0 to 2.0 meters) and the inability to determine the exact image of the photo control point during mensuration of Strip 2.

It was decided to readjust Strips 1 and 1A as one continuous strip, as followed by readjusting Strips 2 and 2A as one continuous strip using tie points from 1 and 1A.

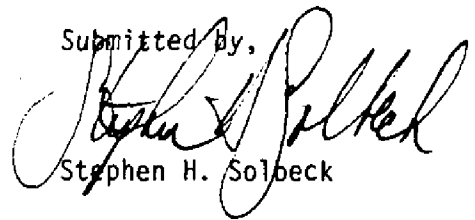
24. Supplemental Data

USGS quads were used to provide vertical control for the adjustments. Nautical Charts were used to locate aids and landmarks.

25. Photography

The coverage, overlap, and quality of the photographs proved adequate for the job.

Submitted by,



Stephen H. Solbeck

Approved and Forwarded:



Don O. Norman
Chief, Aerotriangulation Unit

CM-8008
FIT TO CONTROL
(in feet)

STRIP 1 and 1A (combined)

	<u>X</u>	<u>Y</u>
▲ 780101	-1.077	- .779
780102	- .095	-1.680
723801	1.249	-1.233
723802	1.013	-1.799
723803	.990	-1.527
724801	.873	- .963
724802	.457	- .560
724803	.822	- .283
▲ 778101	1.593	.835
▲ 778102	.519	.195
727101	-1.751	.538
▲ 727102	-1.681	- .108
729869	-3.832	3.134
729870	- .444	2.141
730101	-1.598	.426
▲ 730102	- .623	1.506
731867 (plotted 731467)	2.103	6.988
731868 (plotted 731468)	- .091	2.565
▲ 733124	1.513	-1.115
▲ 733862	.447	-1.298
735855	4.411	5.460
735856	1.109	1.518
736110	.482	2.310
736805	- .310	2.992
738103	-1.406	.891
738801 (plotted 738501)	-9.282	-7.111
▲ 738802 (plotted 738502)	- .690	.764

STRIP 2 and 2A (combined)

724804	1.276	-1.292
▲ 724805	.728	- .749
▲ 725802	- .682	.636
726801	.026	.416
726802	.263	- .041
774101	.578	.936
774102	1.068	-9.104
727801	.840	.606
727802	.053	1.233
▲ 728801	- .398	.862
728802	.610	.162

FIT TO CONTROL
(continued)

STRIP 2 and 2A (cont)

	<u>X</u>	<u>Y</u>
729801	- .134	.429
729802	- .372	- .505
▲ 730801	.405	- .776
730802	- .206	- .811
731801	- .883	- .503
▲ 732801	- .123	- .435
732802	- .359	.570
733801	.396	-1.004
733802	-1.322	-1.376
797849	-1.899	4.628
756801	-1.359	3.288
▲ 756802	-1.183	2.708
798801	.128	- .784
▲ 798802	.679	- .627
▲ 799801	.579	-1.616

STRIP 5

▲ 774101	- .005	.001
774102	.085	-11.028
778101	.705	-2.271
▲ 778102	.024	- .011
▲ 780101	- .454	.740
▲ 780102	.435	- .730

▲ Stations held during bridging

DESCRIPTIVE REPORT CONTROL RECORD

MAP NO. TP-01087		JOB NO. CM-8008		GEODEIC DATUM NA 1927		ORIGINATING ACTIVITY ROCKVILLE	
STATION NAME	SOURCE OF INFORMATION (index)	AEROTRIANGULATION POINT NUMBER	COORDINATES IN FEET		GEOGRAPHIC POSITION		REMARKS
			STATE WISC	North	ϕ LATITUDE	λ LONGITUDE	
Hydro 1981	AMC Comp	780100	x=	1422881.207	ϕ	46°40'08.487"	
			y=	556195.521	λ	92°17'56.337"	
SKI 1981		45	x=	1426871.766	ϕ	46°38'59.066"	
			y=	549044.687	λ	92°16'56.195"	
			x=		ϕ		
			y=		λ		
			x=		ϕ		
			y=		λ		
			x=		ϕ		
			y=		λ		
			x=		ϕ		
			y=		λ		
			x=		ϕ		
			y=		λ		
			x=		ϕ		
			y=		λ		
			x=		ϕ		
			y=		λ		
			x=		ϕ		
			y=		λ		
			x=		ϕ		
			y=		λ		
COMPUTED BY		DATE	COMPUTATION CHECKED BY				DATE
LISTED BY J. Schad		DATE 1/82	LISTING CHECKED BY P. Dempsey				DATE 5/82
HAND PLOTTING BY		DATE	HAND PLOTTING CHECKED BY				DATE

COMPILATION REPORT

TP-01087

31. Delineation

This map manuscript was compiled using the Wild B-8 stereoplotter and holding to pass points established by the Aerotriangulation Unit. The limits of detail shown is to the first main road adjacent to the shoreline. Detail within this area was kept to a minimum (refer to Item 46).

32. Control

See the Photogrammetric Plot Report for the adequacy of horizontal control. Vertical control taken from USGS quads was used in the leveling of the stereomodels.

33. Supplemental Data - None34. Contour and Drainage

Contours are not applicable. Drainage was compiled from office interpretation of the photos.

35. Shoreline and Alongshore Details

The shoreline and alongshore details shown on this manuscript represent the lake level at the time of photography. The lake level at the time of the photography was 1-foot above the Lake Superior Low Water Datum. All shoreline and alongshore features are from office interpretation of these photographs. There was no field inspection prior to compilation.

36. Offshore Details

Offshore details compiled were of grass in water, rapids, rocks and trees in water marsh areas and piling.

37. Landmarks and Aids

No landmarks or aids exist on this map manuscript.

38. Control for Future Surveys - None39. Junctions

TP-01087 junction with TP-01088 to the east and none to the north, south or west.

40 thru 45. Inapplicable

46. Comparison with Existing Maps

During compilation a continuous comparison was made with TP-00680. This survey was compiled at a scale of 1:15,000 using the format for chart 14975 and is intended as a new base for this chart, but has yet to be applied. Although, some duplication of features exist, the interior detail shown on TP-01085 consists mainly of features that have been constructed or changed since TP-00680 was compiled. This survey is not intended to supercede the interior portion of TP-00680, but should be used only to add those new features compiled. Comparison was made to the 7.5 minute quad Esko Minn-Wisc 1954, photorevised 1969 and 1975, scale 1:24,000.

47. Comparison with Nautical Charts

Comparison was made with Nautical Chart 14975, scale 1:30,000, 26th Edition, April 26, 1980.

Submitted by,

James Schad

James Schad

Approved and Forwarded:

Patrick J. Dwyer

For: Frank Wright
Chief, Coastal Mapping Section

REVIEW REPORT
SHORELINE SURVEY
TP-01087

GENERAL STATEMENT

A final review was performed for this shoreline map and no major discrepancies were encountered. This map is registered as a Class III map. For a complete analysis of the compilation, refer to the Compilation Report bound with this Descriptive Report.

62. COMPARISON WITH REGISTERED TOPOGRAPHIC SURVEYS

None

63. COMPARISON WITH MAPS OF OTHER AGENCIES

Refer to paragraph 46 of the Compilation Report, bound with this Descriptive Report.

64. COMPARISON WITH CONTEMPORARY HYDROGRAPHIC SURVEYS

None

65. COMPARISON WITH NAUTICAL CHARTS

Refer to paragraph 47 of the Compilation Report, bound with this Descriptive Report.

66. ADEQUACY OF RESULTS AND FUTURE SURVEYS

This map complies with photogrammetric instructions for shoreline mapping and meets accuracy required by National Standards of Map Accuracy.

Submitted by:

James Taylor / James Schad
James Taylor/James Schad

Approved:

George M. Ball
Chief, Photogrammetric Section

Lawrence W. Fritz
Chief, Photogrammetry Branch

June 27, 1983

GEOGRAPHIC NAMES

FINAL NAME SHEET

CM-8008 (Duluth-Superior Harbor, Minn.-Wis.)

TP-01087

Amik Island

Fond du Lac

Mission Creek

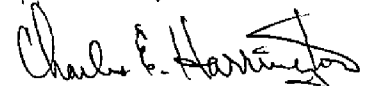
Nekuk Island

Ondaig Island

St. Louis River

Wahbegon Island

Approved by:



Charles E. Harrington
Chief Geographer, N/CG2x5

