(200)
R290
no. 78-849

USGS LIBRARY-RESTON
3 1818 00075059 4

UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY [Reports - Open file series]

PRINCIPAL FACTS FOR GRAVITY PROFILES AT ORRINGTON AND WATERVILLE, MAINE

By

Robert W. Simpson and Paul LaPierre

Open-File Report 78-849

1978

U.S. GEOLOGICAL SURVEY
SEP 7 1978
LIBRARY

291072

PRINCIPAL FACTS FOR GRAVITY PROFILES AT ORRINGTON AND WATERVILLE, MAINE

By Robert W. Simpson and Paul LaPierre

Explanation of the headings of the accompanying table of principal facts:

STATION IDENTIFICATION	Prefix OR indicates Orrington; W indicates Waterville. The numbers give the distance in feet of a station along a profile from the starting station. (See figs. 1 and 2.) A suffix R indicates a repeat occupation of a given station.
LATITUDE	North latitude in degrees, minutes, and hundredths of minutes.
LONGITUDE	West longitude in degrees, minutes, and hundredths of minutes.
ELE	Elevation in feet (to convert to meters, multiply by 0.3048). Elevations were surveyed relative to an elevation of 60±10 ft at station OR00000, and 120±10 ft at station W00000. Relative precision of elevations is better than ±0.2 ft.
OBSERVED GRAVITY	Relative to a value of 980606.3 milligals at University of Maine gravity base station WU-12, Orono, Maine (Behrendt and Woollard, 1961). From this value, 13.7 milligals was subtracted to adjust to the International Gravity Standardization Net of 1971 (Morelli, 1974). Relative precision of values is estimated to be better than ±0.2 milligals.

THEORETICAL GRAVITY	Calculated using the Geodetic Reference System 1967 (International Association of Geodesy, 1971).
TERRAIN CORRECTION	Not used. Estimated to be 0.1 milligals or less.
BOUGUER CORRECTION	Simple Bouguer slab correction using a density of 2.67 g per cm^3.
CURVATURE CORRECTION	Adjustment to Bouguer slab for curvature of earth (Lambert, 1930).
SPECIAL CORRECTION	Not used.
FREE AIR ANOMALY	Free air anomaly in milligals.
SIMPLE BOUGUER ANOMALY	Simple Bouguer anomaly in milligals calculated using densities of 2.67 g per cm^3 and 2.76 g per cm^3.

REFERENCES

Behrendt, J. C., and Woollard, G. P., 1961, An evaluation of the gravity control network in North America: Geophysics, v. 26, no. 1, p. 57-76.

International Association of Geodesy, 1971, Geodetic reference system 1967: Internat. Assoc. Geodesy Spec. Pub. no. 3, 116 p.

Lambert, W. D., 1930, The reduction of observed values of gravity to sea level: Bulletin géodésique, no. 26, Avril-mai-juin, p. 107-181.

Morelli, C. (Ed.), 1974, The international gravity standardization net 1971: Internat. Assoc. Geodesy Spec. Pub. no. 4, 194 p.

NEWENGLAND GRAVITY: REDUCED BY USGS DEC. 10, 1971 FORMULA
NO TERRAIN CORRECTIONS
Meter ID: Worden-90 Date: 08/01/78

STATION IDENTIFICATION	LOCATIONS LATITUDE deg min	LONGITUDE deg min	ELE (in ft)	ST	GRAVITY OBSERVED	THEORETICAL	CORRECTIONS TERRAIN	BOUGUER	CURV	SPECIAL	ANOMALIES FREE AIR	SIMPLE-BOUGUER d1=2.67	d2=2.75
OR00000	44 41.61	-68 49.10	60.0	ME	980568.36	980591.30	0.00	-2.05	-0.03	0.00	-17.30	-19.38	-19.44
OR00337	44 41.66	-68 49.13	66.5	ME	980568.12	980591.38	0.00	-2.27	-0.03	0.00	-17.01	-19.31	-19.38
OR00757	44 41.73	-68 49.16	54.4	ME	980568.94	980591.49	0.00	-1.86	-0.02	0.00	-17.44	-19.31	-19.37
OR01175	44 41.79	-68 49.18	45.5	ME	980569.53	980591.58	0.00	-1.55	-0.02	0.00	-17.77	-19.34	-19.39
OR01672	44 41.87	-68 49.22	51.9	ME	980569.49	980591.70	0.00	-1.77	-0.02	0.00	-17.33	-19.12	-19.17
OR02087	44 41.94	-68 49.25	52.8	ME	980569.78	980591.80	0.00	-1.80	-0.02	0.00	-17.06	-18.88	-18.94
OR02501	44 41.99	-68 49.28	58.1	ME	980569.76	980591.88	0.00	-1.98	-0.03	0.00	-16.66	-18.67	-18.73
OR02915	44 42.06	-68 49.30	55.4	ME	980570.33	980591.98	0.00	-1.89	-0.02	0.00	-16.45	-18.36	-18.42
OR02915R	44 42.06	-68 49.30	55.4	ME	980570.32	980591.98	0.00	-1.89	-0.02	0.00	-16.45	-18.37	-18.43
OR03330	44 42.12	-68 49.32	43.4	ME	980570.92	980592.08	0.00	-1.48	-0.02	0.00	-17.07	-18.57	-18.62
OR03330R	44 42.12	-68 49.32	43.4	ME	980570.94	980592.08	0.00	-1.48	-0.02	0.00	-17.06	-18.56	-18.60
OR03740	44 42.19	-68 49.36	51.6	ME	980570.81	980592.18	0.00	-1.76	-0.02	0.00	-16.52	-18.30	-18.35
OR03740R	44 42.19	-68 49.36	51.6	ME	980570.82	980592.18	0.00	-1.76	-0.02	0.00	-16.51	-18.29	-18.34
OR04114	44 42.24	-68 49.38	60.3	ME	980570.95	980592.26	0.00	-2.06	-0.03	0.00	-15.63	-17.72	-17.78
OR04114R	44 42.24	-68 49.38	60.4	ME	980570.90	980592.26	0.00	-2.06	-0.03	0.00	-15.68	-17.76	-17.83
OR04520	44 42.31	-68 49.42	63.9	ME	980571.06	980592.36	0.00	-2.18	-0.03	0.00	-15.29	-17.50	-17.56
OR04922	44 42.37	-68 49.45	64.2	ME	980571.36	980592.45	0.00	-2.19	-0.03	0.00	-15.06	-17.27	-17.34
OR04922R	44 42.37	-68 49.45	64.0	ME	980571.22	980592.45	0.00	-2.18	-0.03	0.00	-15.21	-17.43	-17.49
OR04922RR	44 42.37	-68 49.45	64.0	ME	980571.31	980592.45	0.00	-2.18	-0.03	0.00	-15.12	-17.33	-17.40
OR05324	44 42.43	-68 49.47	61.9	ME	980571.55	980592.55	0.00	-2.11	-0.03	0.00	-15.17	-17.31	-17.38
OR05324R	44 42.43	-68 49.47	61.9	ME	980571.55	980592.55	0.00	-2.11	-0.03	0.00	-15.17	-17.31	-17.38
OR05729	44 42.49	-68 49.51	61.7	ME	980572.04	980592.63	0.00	-2.10	-0.03	0.00	-14.79	-16.92	-16.99
OR05729R	44 42.49	-68 49.51	61.9	ME	980571.97	980592.63	0.00	-2.11	-0.03	0.00	-14.84	-16.98	-17.05
OR06125	44 42.55	-68 49.53	68.4	ME	980572.00	980592.73	0.00	-2.33	-0.03	0.00	-14.29	-16.65	-16.73
OR06514	44 42.61	-68 49.55	75.9	ME	980572.15	980592.81	0.00	-2.59	-0.03	0.00	-13.53	-16.15	-16.23
OR06514R	44 42.61	-68 49.55	75.9	ME	980572.15	980592.81	0.00	-2.59	-0.03	0.00	-13.53	-16.15	-16.23
OR06919	44 42.68	-68 49.59	92.1	ME	980571.81	980592.92	0.00	-3.14	-0.04	0.00	-12.45	-15.63	-15.72
OR06919R	44 42.68	-68 49.59	92.1	ME	980571.73	980592.92	0.00	-3.14	-0.04	0.00	-12.53	-15.71	-15.80
OR07306	44 42.73	-68 49.61	93.4	ME	980571.88	980593.00	0.00	-3.19	-0.04	0.00	-12.33	-15.56	-15.65
OR07706	44 42.80	-68 49.64	95.6	ME	980572.05	980593.10	0.00	-3.26	-0.04	0.00	-12.06	-15.37	-15.47
OR08088	44 42.86	-68 49.66	99.3	ME	980572.02	980593.20	0.00	-3.39	-0.04	0.00	-11.83	-15.26	-15.36
OR08485	44 42.93	-68 49.66	91.6	ME	980572.95	980593.30	0.00	-3.12	-0.04	0.00	-11.73	-14.89	-14.99
OR08864	44 42.98	-68 49.66	73.6	ME	980574.25	980593.38	0.00	-2.51	-0.03	0.00	-12.20	-14.74	-14.82
OR08864R	44 42.98	-68 49.66	73.6	ME	980574.24	980593.38	0.00	-2.51	-0.03	0.00	-12.21	-14.75	-14.83
OR09264	44 43.05	-68 49.66	64.5	ME	980575.42	980593.48	0.00	-2.20	-0.03	0.00	-11.99	-14.22	-14.29
OR09264R	44 43.05	-68 49.66	64.5	ME	980575.31	980593.48	0.00	-2.20	-0.03	0.00	-12.10	-14.33	-14.40
OR09647	44 43.12	-68 49.64	78.5	ME	980574.93	980593.59	0.00	-2.68	-0.03	0.00	-11.27	-13.98	-14.07
OR10029	44 43.18	-68 49.64	84.1	ME	980574.86	980593.67	0.00	-2.87	-0.04	0.00	-10.91	-13.81	-13.90
OR10413	44 43.23	-68 49.63	93.9	ME	980574.66	980593.75	0.00	-3.20	-0.04	0.00	-10.26	-13.50	-13.60
OR10819	44 43.31	-68 49.61	111.0	ME	980573.99	980593.88	0.00	-3.79	-0.05	0.00	-9.44	-13.28	-13.39

NEWENGLAND GRAVITY: REDUCED BY USGS DEC. 10, 1971 FORMULA
NO TERRAIN CORRECTIONS
Meter ID: Worden-90 Date: 08/01/78

STATION IDENTIFICATION	LOCATIONS LATITUDE deg min	LONGITUDE deg min	ELE (in ft)	ST	GRAVITY OBSERVED	THEORETICAL	CORRECTIONS TERRAIN	BOUGUER	CURV	SPECIAL	ANOMALIES FREE AIR	SIMPLE-BOUGUER d1=2.67	d2=2.75
OP11241	44 43.38	-68 49.61	127.5	ME	980573.05	980593.98	0.00	-4.35	-0.06	0.00	-8.94	-13.34	-13.48
OP11638	44 43.44	-68 49.63	116.9	ME	980573.88	980594.07	0.00	-3.99	-0.05	0.00	-9.19	-13.23	-13.35
OP11638R	44 43.44	-68 49.63	116.9	ME	980573.87	980594.07	0.00	-3.99	-0.05	0.00	-9.21	-13.25	-13.37
OP12603	44 43.49	-68 49.64	119.9	ME	980574.04	980594.14	0.00	-4.09	-0.05	0.00	-8.83	-12.97	-13.09
OP12388	44 43.57	-68 49.66	132.6	ME	980573.17	980594.27	0.00	-4.52	-0.06	0.00	-8.62	-13.20	-13.34
OP12806	44 43.63	-68 49.67	141.8	ME	980572.64	980594.35	0.00	-4.84	-0.06	0.00	-8.38	-13.28	-13.42
W00000	44 31.78	-69 37.28	120.0	ME	980553.44	980576.48	0.00	-4.09	-0.05	0.00	-11.76	-15.90	-16.03
W00356	44 31.74	-69 37.22	116.6	ME	980553.66	980576.42	0.00	-3.98	-0.05	0.00	-11.79	-15.82	-15.94
W00834	44 31.68	-69 37.14	110.6	ME	980553.79	980576.33	0.00	-3.77	-0.05	0.00	-12.14	-15.96	-16.08
W01285	44 31.63	-69 37.05	106.2	ME	980554.12	980576.26	0.00	-3.62	-0.05	0.00	-12.15	-15.82	-15.93
W01730	44 31.59	-69 36.99	99.9	ME	980554.22	980576.20	0.00	-3.41	-0.04	0.00	-12.58	-16.03	-16.14
W02192	44 31.55	-69 36.89	74.4	ME	980555.53	980576.13	0.00	-2.54	-0.03	0.00	-13.60	-16.18	-16.25
W02658	44 31.55	-69 36.77	69.5	ME	980555.80	980576.13	0.00	-2.37	-0.03	0.00	-13.80	-16.20	-16.27
W03121	44 31.53	-69 36.67	94.7	ME	980554.38	980576.10	0.00	-3.23	-0.04	0.00	-12.82	-16.09	-16.19
W03571	44 31.51	-69 36.58	120.8	ME	980552.96	980576.07	0.00	-4.12	-0.05	0.00	-11.75	-15.93	-16.05
W04031	44 31.50	-69 36.48	142.0	ME	980551.78	980576.06	0.00	-4.84	-0.06	0.00	-10.92	-15.83	-15.98
W04500	44 31.49	-69 36.48	150.5	ME	980551.11	980576.05	0.00	-5.13	-0.07	0.00	-10.78	-15.98	-16.14
W04966	44 31.47	-69 36.27	168.1	ME	980549.79	980576.02	0.00	-5.73	-0.07	0.00	-10.41	-16.22	-16.40
W05414	44 31.46	-69 36.16	185.7	ME	980548.55	980576.00	0.00	-6.33	-0.08	0.00	-9.99	-16.40	-16.59
W05842	44 31.44	-69 36.06	216.6	ME	980546.47	980575.97	0.00	-7.39	-0.10	0.00	-9.13	-16.61	-16.84
W06221	44 31.43	-69 35.98	245.9	ME	980544.62	980575.95	0.00	-8.39	-0.11	0.00	-8.21	-16.70	-16.96
W06741	44 31.42	-69 35.86	254.3	ME	980543.89	980575.94	0.00	-8.67	-0.11	0.00	-8.13	-16.92	-17.18
W07174	44 31.42	-69 35.77	236.2	ME	980544.91	980575.94	0.00	-8.06	-0.10	0.00	-8.81	-16.97	-17.21
W07629	44 31.42	-69 35.66	236.6	ME	980544.95	980575.94	0.00	-8.07	-0.10	0.00	-8.73	-16.91	-17.15
W08110	44 31.42	-69 35.55	247.5	ME	980544.21	980575.94	0.00	-8.44	-0.11	0.00	-8.45	-17.00	-17.26
W08561	44 31.42	-69 35.44	238.2	ME	980544.72	980575.94	0.00	-8.12	-0.10	0.00	-8.82	-17.05	-17.29
W09066	44 31.42	-69 35.33	218.7	ME	980545.85	980575.94	0.00	-7.46	-0.10	0.00	-9.52	-17.07	-17.30
W09522	44 31.42	-69 35.23	207.4	ME	980546.40	980575.94	0.00	-7.07	-0.09	0.00	-10.03	-17.20	-17.41
W10046	44 31.42	-69 35.11	217.6	ME	980545.70	980575.94	0.00	-7.42	-0.10	0.00	-9.77	-17.29	-17.51
W10493	44 31.42	-69 35.01	222.7	ME	980545.33	980575.94	0.00	-7.60	-0.10	0.00	-9.67	-17.36	-17.59
W10943	44 31.37	-69 34.95	238.2	ME	980544.10	980575.86	0.00	-8.12	-0.10	0.00	-9.36	-17.59	-17.84
W11398	44 31.31	-69 34.89	245.5	ME	980543.53	980575.77	0.00	-8.37	-0.11	0.00	-9.15	-17.63	-17.89
W11853	44 31.25	-69 34.84	236.0	ME	980543.89	980575.68	0.00	-8.05	-0.10	0.00	-9.60	-17.75	-17.99
W12324	44 31.18	-69 34.80	224.6	ME	980544.20	980575.58	0.00	-7.66	-0.10	0.00	-10.25	-18.01	-18.24
W12763	44 31.12	-69 34.76	192.1	ME	980545.87	980575.48	0.00	-6.55	-0.08	0.00	-11.55	-18.19	-18.39

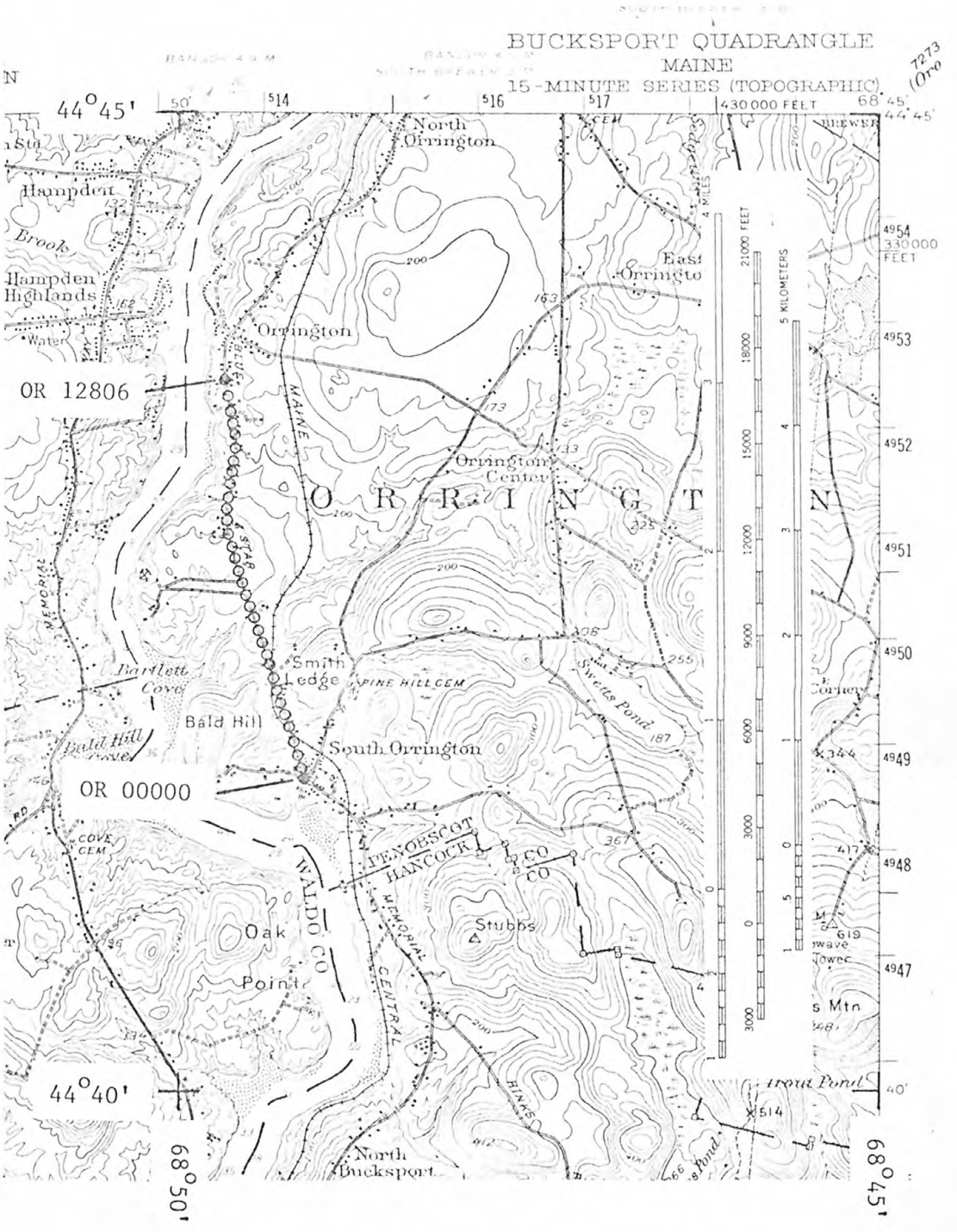

Figure 1.--Location of endpoints of Orrington profile.

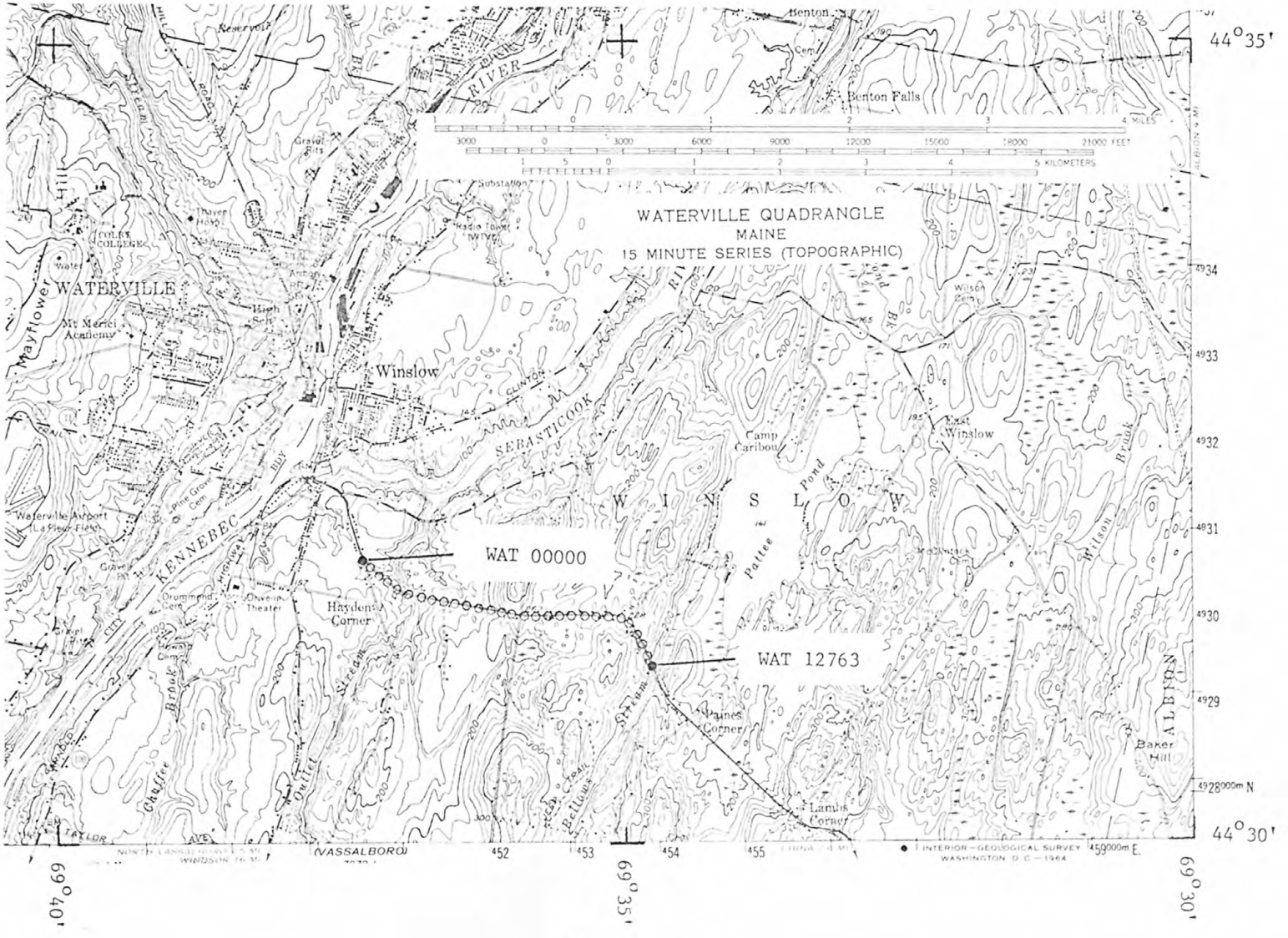

Figure 2.--Location of endpoints of Waterville profiles.

USGS LIBRARY-RESTON
3 1818 00075059 4