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Geological Survey

Principal facts for gravity stations in the Big Snowies Wilderness and Contiguous RARE II Study Areas, Fergus, Golden Valley, and Wheatland Counties, Montana

by

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Introduction

During the summer of 1978, a gravity survey was conducted on the Big Snowy Mountains Wilderness Study Area, Montana (fig. 1) These data provided information on the subsurface geology and structural relationships, and how they relate to the oil, gas, and mineral-resource potential of the Big Snowies Wilderness and Contiguous RARE II study areas.

Data Collection

During August 1978, approximately 180 gravity stations were established by motor vehicle and foot traverses. Gravity measurements were made with Worden gravity meter number 521. The stations were referenced to base station ACIC 2017-0 of the International Gravity Standardization Net, 1971 (Defense Mapping Agency Aerospace Center, 1974) at Lewistown, Montana. Three temporary bases were established close to the working area and were tied to the Lewistown base station. Vertical and horizontal positions of the stations north of Latitude 46°45′N. are from control on topographic maps at a scale of 1:24,000. South of Latitude 46°45′N., where maps are of unsuitable scale, vertical and horizontal positions were determined by photogrammetric methods, supplemented whenever possible by topographic surveys.

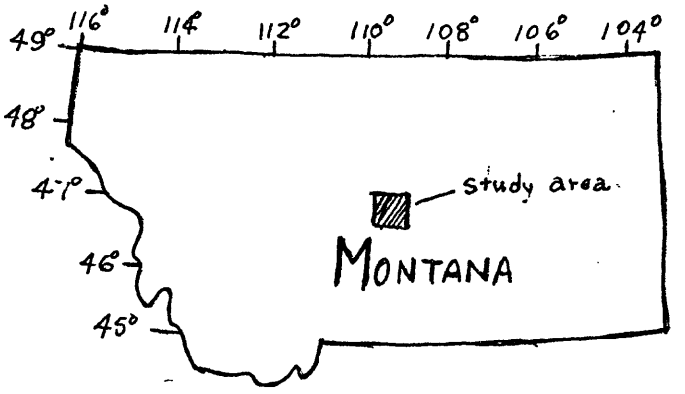

Figure 1. - Area of gravity survey

Data Compilation

The gravity data listed in table 1 were reduced by means of a digital computer program by G. I. Evenden and R. R. Wahl (unpublished). Gravity-meter readings were converted to observed gravity, based on the International Gravity Standardization Net 1971 base values. The Geodetic Reference System 1967 formula (International Association of Geodesy, 1967) was used to compute theoretical gravity. Terrain corrections to 167 km were made for all stations from Zone A by a method described by Plouff (1976). In areas of steep topographic relief, corrections were made by hand through Zone F only (Hammer 1939); these were used in place of A through F zones calculated by the computer. Terrain correction varied from 0.23 milligals (mgal) near the town of Moore to 26.85 mgal on top of Greathouse Peak.

Average rock densities of 2.67 and 2.00 grams per cubic centimeter were assumed for reducing the data to the two complete Bouguer anomalies in table 1.

References

Defense Mapping Agency Aerospace Center, 1974, World relative gravity reference network, North America, Part 2: DMAAC Ref. Pub. no. 25, with supplement updating gravity values to the International Gravity Standardization Net 1971, 1635 p.

Hammer, S. L., 1939, Terrain corrections for gravimeter stations: Geophysics, v. 4, p. 184-194.

International Association of Geodesy, 1967, Geodetic reference system, 1967: International Association of Geodesy Spec. Pub. no. 3, 74 p.

Plouff, D., 1976, Gravity and magnetic field of polygonal prisms and applications to magnetic terrain corrections: Geophysics v. 41, p. 727-741.

Explanation of headings on table 1:

station identification	
proj.	Project name.
sta. id.	Gravity station number.
locations	
latitude	North latitude, in degrees, minutes, and hundreths of minutes.
longitude	West longitude, in degrees, minutes, and hundredths of minutes.
elev	Station elevation.
st	State in which station is located.
gravity	
observed	Observed gravity, in milligals.
theoretical	Theoretical gravity.
corrections	
terrain	Terrain correction, in milligals.
Bouguer	Bouguer correction.
curv	Curvature correction, in milligals.
special	Not used.
anomalies	
free-air	Free-air anomaly, in milligals.
complete Bouguer	Complete Bouguer anomaly, in milligals for assumed average density of 2.67 g/cm^3 and 2.00 g/cm^3.

Table 1. Principal Facts for Gravity Stations in the Big Snowies Wilderness and Contiguous RARE II study areas, Fergus, Golden Valley, and Wheatland Counties, Montana.

BOUGUER GRAVITY DATA

big snowy mountains wilderness area
Meter ID: w-521 Date: 07/18/79

STATION IDENTIFICATION		LOCATIONS					GRAVITY		CORRECTIONS				ANOMALIES		
		LATITUDE		LONGITUDE		ELE ST	OBSERVED	THEORETICAL	TERRAIN	BOUGUER	CURV	SPECIAL	FREE AIR	COMPLETE-BOUGUER d1=2.67	d2=2.00
proj	sta-id	deg	min	deg	min	(in ft)									
bsmwil:	bsmbs1	46	47.70	-109	30.54	6028.0 mt	980299.78	980781.43	7.33	-205.60	-1.50	0.00	84.99	-114.77	-64.65
bsmwil:	bsm001	46	49.80	-109	29.77	5448.0 mt	980333.04	980784.59	7.13	-185.82	-1.46	0.00	60.59	-119.55	-74.35
bsmwil:	bsm003	46	52.47	-109	31.44	5007.0 mt	980368.10	980788.61	1.79	-170.77	-1.41	0.00	50.19	-120.21	-77.45
bsmwil:	bsm004	46	53.07	-109	34.97	4740.0 mt	980381.39	980789.52	1.82	-161.67	-1.38	0.00	37.48	-123.74	-83.29
bsmwil:	bsm005	46	53.79	-109	35.40	4665.0 mt	980385.61	980790.60	1.65	-159.11	-1.37	0.00	33.57	-125.26	-85.40
bsmwil:	bsm006	46	54.65	-109	35.33	4655.0 mt	980387.21	980791.90	1.89	-158.77	-1.37	0.00	32.93	-125.31	-85.60
bsmwil:	bsm007	46	53.09	-109	34.30	4790.0 mt	980378.53	980789.55	1.40	-163.37	-1.38	0.00	39.29	-124.07	-83.07
bsmwil:	bsm008	46	52.93	-109	32.88	4901.0 mt	980374.72	980789.30	2.23	-167.16	-1.40	0.00	46.15	-120.18	-78.44
bsmwil:	bsmbs1	46	47.70	-109	30.54	6028.0 mt	980299.78	980781.43	7.33	-205.60	-1.50	0.00	84.99	-114.77	-64.65
bsmwil:	bsmbs1	46	47.70	-109	30.54	6028.0 mt	980299.78	980781.43	7.33	-205.60	-1.50	0.00	84.99	-114.77	-64.65
bsmwil:	bsm009	46	54.65	-109	36.38	4609.0 mt	980390.80	980791.90	0.75	-157.20	-1.36	0.00	32.20	-125.61	-86.01
bsmwil:	bsm010	46	54.65	-109	37.66	4536.0 mt	980392.72	980791.90	0.66	-154.71	-1.35	0.00	27.26	-128.14	-89.14
bsmwil:	bsm011	46	53.78	-109	38.30	4497.0 mt	980393.91	980790.59	0.75	-153.38	-1.34	0.00	26.10	-127.87	-89.24
bsmwil:	bsm012	46	53.79	-109	40.20	4377.0 mt	980399.43	980790.60	0.59	-149.29	-1.32	0.00	20.32	-129.70	-92.05
bsmwil:	bsm013	46	55.50	-109	40.19	4371.0 mt	980400.42	980793.17	0.47	-149.08	-1.32	0.00	18.18	-131.76	-94.14
bsmwil:	bsm014	46	55.52	-109	41.44	4296.0 mt	980404.18	980793.20	0.41	-146.52	-1.31	0.00	14.85	-132.57	-95.58
bsmwil:	bsm015	46	56.38	-109	41.44	4272.0 mt	980406.46	980794.50	0.38	-145.71	-1.31	0.00	13.59	-133.05	-96.25
bsmwil:	bsm016	46	57.25	-109	41.44	4234.0 mt	980409.84	980795.81	0.34	-144.41	-1.30	0.00	12.09	-133.28	-96.81
bsmwil:	bsm017	46	58.12	-109	41.44	4194.0 mt	980414.00	980797.12	0.32	-143.05	-1.29	0.00	11.17	-132.85	-96.71
bsmwil:	bsm018	46	58.11	-109	40.19	4241.0 mt	980412.00	980797.10	0.35	-144.65	-1.30	0.00	13.61	-131.99	-95.46
bsmwil:	bsm019	46	58.11	-109	38.96	4284.0 mt	980410.27	980797.10	0.38	-146.11	-1.31	0.00	15.92	-131.12	-94.23
bsmwil:	bsm020	46	58.10	-109	37.68	4299.0 mt	980410.61	980797.09	0.40	-146.63	-1.31	0.00	17.68	-129.86	-92.83
bsmwil:	bsmtwn	47	3.68	-109	25.75	3963.0 mt	980449.32	980805.48	0.41	-135.17	-1.25	0.00	16.41	-119.60	-85.47
bsmwil:	bsmbs1	46	47.70	-109	30.54	6028.0 mt	980299.78	980781.43	7.33	-205.60	-1.50	0.00	84.99	-114.77	-64.65
bsmwil:	bsmbs1	46	47.70	-109	30.54	6028.0 mt	980299.78	980781.43	7.33	-205.60	-1.50	0.00	84.99	-114.77	-64.65
bsmwil:	bsm022	46	59.59	-109	36.43	4201.0 mt	980420.57	980799.33	0.38	-143.28	-1.30	0.00	16.19	-128.01	-91.83
bsmwil:	bsm023	46	58.96	-109	36.44	4260.0 mt	980415.85	980798.38	0.40	-145.30	-1.31	0.00	17.96	-128.24	-91.55
bsmwil:	bsm024	46	58.98	-109	37.69	4244.0 mt	980416.00	980798.41	0.37	-144.75	-1.30	0.00	16.58	-129.11	-92.55
bsmwil:	bsm025	46	58.98	-109	38.97	4210.0 mt	980417.11	980798.41	0.34	-143.59	-1.30	0.00	14.49	-130.06	-93.78
bsmwil:	bsm026	46	58.97	-109	40.22	4179.0 mt	980418.03	980798.40	0.32	-142.53	-1.29	0.00	12.52	-130.99	-94.98
bsmwil:	bsm027	46	58.98	-109	41.48	4143.0 mt	980419.47	980798.41	0.29	-141.31	-1.29	0.00	10.56	-131.75	-96.04
bsmwil:	bsm028	46	58.99	-109	43.41	4085.0 mt	980421.58	980798.43	0.27	-139.33	-1.28	0.00	7.20	-133.13	-97.92
bsmwil:	bsm029	46	59.00	-109	44.67	4006.0 mt	980425.62	980798.45	0.23	-136.63	-1.26	0.00	3.80	-133.87	-99.32
bsmwil:	bsm030	46	58.12	-109	44.65	4057.0 mt	980420.21	980797.12	0.26	-138.37	-1.27	0.00	4.51	-134.87	-99.90
bsmwil:	bsm031	46	58.12	-109	43.51	4110.0 mt	980417.84	980797.12	0.28	-140.18	-1.28	0.00	7.12	-134.06	-98.63
bsmwil:	bsm032	46	57.24	-109	42.73	4167.0 mt	980413.20	980795.80	0.31	-142.12	-1.29	0.00	9.16	-133.94	-98.03
bsmwil:	bsm033	46	56.39	-109	42.72	4197.0 mt	980409.98	980794.52	0.33	-143.15	-1.29	0.00	10.05	-134.07	-97.90
bsmwil:	bsm034	46	55.52	-109	42.72	4232.0 mt	980406.75	980793.20	0.37	-144.34	-1.30	0.00	11.41	-133.86	-97.41
bsmwil:	bsm035	46	54.64	-109	42.72	4244.0 mt	980405.71	980791.88	0.40	-144.75	-1.30	0.00	12.82	-132.83	-96.28
bsmwil:	bsm036	46	53.77	-109	42.73	4254.0 mt	980404.62	980790.57	0.46	-145.09	-1.30	0.00	13.98	-131.96	-95.34

Table 1. Principal Facts for Gravity Stations in the Big Snowies Wilderness and Contiguous RARE II study areas, Fergus, Golden Valley, and Wheatland Counties, Montana (Continued)

big snowy mountains wilderness area
Meter ID: w-521 Date: 07/18/79

STATION IDENTIFICATION		LOCATIONS						GRAVITY		CORRECTIONS				ANOMALIES		
		LATITUDE		LONGITUDE		ELE	ST							FREE	COMPLETE-BOUGUER	
proj	sta-id	deg	min	deg	min	(in ft)		OBSERVED	THEURETICAL	TERRAIN	BOUGUER	CURV	SPECIAL	AIR	d1=2.67	d2=2.00
bsmwil:	bsm037	46	53.55	-109	43.95	4243.0	mt	980403.58	980790.24	0.41	-144.72	-1.30	0.00	12.24	-133.37	-96.83
bsmwil:	bsm038	46	52.90	-109	44.00	4303.0	mt	980398.98	980789.26	0.44	-146.76	-1.31	0.00	14.26	-133.37	-96.33
bsmwil:	bsm039	46	51.18	-109	44.98	4424.0	mt	980389.41	980786.67	0.48	-150.89	-1.33	0.00	18.66	-133.09	-95.01
bsmwil:	bsm040	46	51.60	-109	42.52	4349.0	mt	980396.72	980787.30	0.67	-148.33	-1.32	0.00	18.28	-130.70	-93.32
bsmwil:	bsm041	46	52.04	-109	41.77	4418.0	mt	980393.92	980787.97	0.65	-150.69	-1.33	0.00	21 30	-130.06	-92.08
bsmwil:	bsm042	46	52.03	-109	39.89	4547.0	mt	980388.95	980787.95	0.93	-155.09	-1.35	0.00	28.47	-127.03	-88.01
bsmwil:	bsm043	46	52.98	-109	40.19	4376.0	mt	980399.39	980789.38	0.72	-149.25	-1.32	0.00	21.41	-128.45	-90.84
bsmwil:	bsm044	46	51.43	-109	39.82	4651.0	mt	980382.46	980787.05	1.09	-158.63	-1.37	0.00	32.66	-126.25	-86.37
bsmwil:	bsm045	46	50.65	-109	38.67	5249.0	mt	980345.89	980785.88	1.73	-179.03	-1.44	0.00	53.46	-125.28	-80.42
bsmwil:	bsm046	46	50.30	-109	36.77	5668.0	mt	980322.70	980785.34	2.20	-193.32	-1.47	0.00	70.17	-122.42	-74.09
bsmwil:	bsm047	46	50.73	-109	35.82	5375.0	mt	980342.30	980785.99	1.71	-183.33	-1.45	0.00	61.59	-121.48	-75.54
bsmwil:	bsmbs1	46	47.70	-109	30.54	6028.0	mt	980299.78	980781.43	7.33	-205.60	-1.50	0.00	84.99	-114.77	-64.65
bsmwil:	bsmbs1	46	47.70	-109	30.54	6028.0	mt	980299.78	980781.43	7.33	-205.60	-1.50	0.00	84.99	-114.77	-64.65
bsmwil:	bsm048	46	55.52	-109	37.67	4504.0	mt	980394.81	980793.20	0.59	-153.62	-1.34	0.00	25.04	-129.34	-90.60
bsmwil:	bsm049	46	56.39	-109	37.67	4445.0	mt	980399.36	980794.52	0.52	-151.61	-1.34	0.00	22.73	-129.69	-91.44
bsmwil:	bsm050	46	56.38	-109	38.94	4393.0	mt	980401.14	980794.50	0.48	-149.83	-1.33	0.00	19.64	-131.04	-93.23
bsmwil:	bsm051	46	57.25	-109	38.94	4346.0	mt	980405.18	980795.81	0.43	-148.23	-1.32	0.00	17.95	-131.17	-93.75
bsmwil:	bsm052	46	58.97	-109	34.56	4287.0	mt	980415.36	980798.40	0.44	-146.22	-1.31	0.00	19.99	-127.09	-90.18
bsmwil:	bsm053	46	58.95	-109	33.19	4180.0	mt	980423.29	980798.37	0.50	-142.57	-1.29	0.00	17.90	-125.46	-89.49
bsmwil:	bsm054	46	58.11	-109	32.62	4243.0	mt	980418.57	980797.10	0.61	-144.72	-1.30	0.00	20.37	-125.04	-88.56
bsmwil:	bsm055	46	57.22	-109	32.26	4311.0	mt	980413.97	980795.77	0.75	-147.04	-1.31	0.00	23.49	-124.11	-87.07
bsmwil:	bsm056	46	56.00	-109	30.67	4492.0	mt	980404.15	980793.93	1.37	-153.21	-1.34	0.00	32.52	-120.66	-82.22
bsmwil:	bsm057	46	54.95	-109	32.16	4573.0	mt	980395.34	980792.34	2.12	-155.97	-1.35	0.00	32.91	-122.30	-83.35
bsmwil:	bsm058	46	55.64	-109	32.14	4447.0	mt	980403.93	980793.38	2.18	-151.67	-1.34	0.00	28.62	-122.21	-84.36
bsmwil:	bsm059	46	56.37	-109	32.79	4346.0	mt	980410.12	980794.48	1.25	-146.30	-1.32	0.00	24.40	-123.97	-86.74
bsmwil:	bsm060	46	56.15	-109	34.50	4514.0	mt	980398.39	980794.16	0.65	-153.96	-1.35	0.00	28.61	-126.05	-87.24
bsmwil:	bsm061	46	57.03	-109	36.51	4425.0	mt	980402.38	980795.48	0.50	-150.92	-1.33	0.00	22.91	-128.85	-90.77
bsmwil:	bsm062	46	57.00	-109	35.13	4433.0	mt	980403.07	980795.43	0.54	-151.20	-1.33	0.00	24.39	-127.60	-89.46
bsmwil:	bsm063	46	55.51	-109	35.13	4575.0	mt	980393.41	980793.19	0.71	-156.04	-1.35	0.00	30.32	-126.36	-87.04
bsmwil:	bsmbs1	46	47.70	-109	30.54	6028.0	mt	980299.78	980781.43	7.33	-205.60	-1.50	0.00	84.99	-114.77	-64.65
bsmwil:	bsmbs1	46	47.70	-109	30.54	6028.0	mt	980299.78	980781.43	7.33	-205.60	-1.50	0.00	84.99	-114.77	-64.65
bsmwil:	bsm064	46	55.18	-109	33.85	4529.0	mt	980397.01	980792.70	8.29	-154.47	-1.35	0.00	30.09	-117.44	-80.42
bsmwil:	bsm065	46	54.92	-109	29.49	4595.0	mt	980397.13	980792.30	1.64	-156.72	-1.36	0.00	36.81	-119.63	-80.37
bsmwil:	bsm066	46	54.15	-109	29.17	4742.0	mt	980387.75	980791.14	1.53	-161.74	-1.38	0.00	42.40	-119.18	-78.63
bsmwil:	bsm067	46	53.58	-109	28.95	4982.0	mt	980373.13	980790.28	1.57	-169.92	-1.41	0.00	51.20	-118.56	-75.96
bsmwil:	bsm068	46	52.88	-109	28.19	5258.0	mt	980355.85	980789.23	1.52	-179.34	-1.44	0.00	60.91	-118.35	-73.36
bsmwil:	bsm069	46	52.86	-109	29.13	5219.0	mt	980357.64	980789.20	1.67	-178.00	-1.43	0.00	59.06	-118.71	-74.10
bsmwil:	bsm070	46	52.00	-109	29.17	5571.0	mt	980334.43	980787.91	2.04	-190.01	-1.47	0.00	70.22	-119.21	-71.68
bsmwil:	bsm071	46	52.87	-109	26.30	5420.0	mt	980347.34	980789.22	1.72	-184.86	-1.45	0.00	67.64	-116.96	-70.63
bsmwil:	bsm072	46	53.40	-109	36.41	4813.0	mt	980376.05	980790.02	0.98	-164.16	-1.39	0.00	38.50	-126.06	-84.77

Table 1. Principal Facts for Gravity Stations in the Big Snowies Wilderness and Contiguous RARE II Study Areas, Fergus, Golden Valley, and Wheatland Counties, Montana (Continued)

big snowy mountains wilderness area
Meter ID: w-521 Date: 07/18/79

STATION IDENTIFICATION		LOCATION LATITUDE		LONGITUDE		ELE	ST	GRAVITY OBSERVED	GRAVITY THEORETICAL	CORRECTIONS TERRAIN	BOUGUER	CURV	SPECIAL	ANOMALIES FREE AIR	COMPLETE-BOUGUER d1=2.67	d2=2.00
proj	sta-id	deg	min	deg	min	(in ft)										
bsmwil:	bsmbs1	46	47.70	-109	30.54	6028.0	mt	980299.78	980781.43	7.33	-205.60	-1.50	0.00	84.99	-114.77	-64.65
bsmwil:	bsmbs1	46	47.70	-109	30.54	6028.0	mt	980299.78	980781.43	7.33	-205.60	-1.50	0.00	84.99	-114.77	-64.65
bsmwil:	bsm073	46	45.96	-109	30.85	8213.0	mt	980156.68	980778.81	18.22	-280.12	-1.45	0.00	149.79	-113.57	-47.48
bsmwil:	bsm074	46	46.34	-109	31.59	8170.0	mt	980159.22	980779.38	19.34	-278.66	-1.46	0.00	147.71	-113.06	-47.62
bsmwil:	bsm075	46	46.76	-109	32.15	8211.0	mt	980155.60	980780.02	21.17	-280.05	-1.45	0.00	147.31	-113.02	-47.69
bsmwil:	bsm076	46	47.52	-109	31.59	7568.0	mt	980196.17	980781.16	19.22	-258.12	-1.50	0.00	126.34	-114.06	-53.74
bsmwil:	bsmbs1	46	47.70	-109	30.54	6028.0	mt	980299.78	980781.43	7.33	-205.60	-1.50	0.00	84.99	-114.77	-64.65
bsmwil:	bsmbs1	46	47.70	-109	30.54	6028.0	mt	980299.78	980781.43	7.33	-205.60	-1.50	0.00	84.99	-114.77	-64.65
bsmwil:	bsm077	46	50.40	-109	44.75	4482.0	mt	980385.68	980785.49	0.53	-152.87	-1.34	0.00	21.54	-132.13	-93.57
bsmwil:	bsm078	46	49.54	-109	41.82	4607.0	mt	980381.46	980784.20	1.00	-157.13	-1.36	0.00	30.37	-127.12	-87.60
bsmwil:	bsm079	46	48.75	-109	41.14	4735.0	mt	980374.40	980783.01	1.20	-161.50	-1.38	0.00	36.53	-125.15	-84.58
bsmwil:	bsm080	46	48.45	-109	38.62	4996.0	mt	980361.64	980782.56	2.50	-170.40	-1.41	0.00	48.75	-120.56	-78.08
bsmwil:	bsm081	46	47.40	-109	37.77	5609.0	mt	980323.29	980780.98	2.90	-191.31	-1.47	0.00	69.58	-120.30	-72.65
bsmwil:	bsm082	46	46.21	-109	37.98	5122.0	mt	980349.92	980779.19	2.51	-174.70	-1.42	0.00	52.24	-121.37	-77.80
bsmwil:	bsm083	46	45.37	-109	39.62	4837.0	mt	980360.02	980777.92	1.07	-164.98	-1.39	0.00	36.83	-128.47	-86.99
bsmwil:	bsmbs1	46	47.70	-109	30.54	6028.0	mt	980299.78	980781.43	7.33	-205.60	-1.50	0.00	84.99	-114.77	-64.65
bsmwil:	bsmbs1	46	47.70	-109	30.54	6028.0	mt	980299.78	980781.43	7.33	-205.60	-1.50	0.00	84.99	-114.77	-64.65
bsmwil:	bsm085	46	51.33	-109	27.33	5757.0	mt	980325.04	980786.90	2.33	-196.35	-1.48	0.00	79.32	-116.19	-67.13
bsmwil:	bsm086	46	50.23	-109	26.71	6504.0	mt	980278.36	980785.24	4.90	-221.83	-1.51	0.00	104.48	-113.96	-59.15
bsmwil:	bsmbs1	46	47.70	-109	30.54	6028.0	mt	980299.78	980781.43	7.33	-205.60	-1.50	0.00	84.99	-114.77	-64.65
bsmwil:	bsmbs1	46	47.70	-109	30.54	6028.0	mt	980299.78	980781.43	7.33	-205.60	-1.50	0.00	84.99	-114.77	-64.65
bsmwil:	bsm087	46	59.27	-109	30.40	4314.0	mt	980418.23	980798.85	0.51	-147.14	-1.31	0.00	24.96	-122.99	-85.86
bsmwil:	bsm088	46	57.76	-109	29.04	4454.0	mt	980409.74	980796.58	0.97	-151.91	-1.34	0.00	31.89	-120.39	-82.17
bsmwil:	bsm089	46	56.60	-109	27.05	4636.0	mt	980398.95	980794.83	1.00	-158.12	-1.36	0.00	39.95	-118.53	-78.76
bsmwil:	bsm090	46	55.93	-109	25.92	4729.0	mt	980392.46	980793.82	1.09	-161.29	-1.38	0.00	43.21	-118.37	-77.82
bsmwil:	bsmbs1	46	47.70	-109	30.54	6028.0	mt	980299.78	980781.43	7.33	-205.60	-1.50	0.00	84.99	-114.77	-64.65
bsmwil:	bsmbs1	46	47.70	-109	30.54	6028.0	mt	980299.78	980781.43	7.33	-205.60	-1.50	0.00	84.99	-114.77	-64.65
bsmwil:	bsm091	46	49.48	-109	44.70	4347.0	mt	980392.22	980784.11	0.54	-148.26	-1.32	0.00	16.78	-132.26	-94.86
bsmwil:	bsm092	46	47.95	-109	44.06	4419.0	mt	980387.31	980781.80	0.61	-150.72	-1.33	0.00	20.95	-130.49	-92.49
bsmwil:	bsm093	46	47.73	-109	42.77	4502.0	mt	980384.45	980781.48	0.79	-153.55	-1.34	0.00	26.22	-127.88	-89.21
bsmwil:	bsm094	46	46.63	-109	43.74	4473.0	mt	980382.83	980779.82	0.60	-152.56	-1.34	0.00	23.53	-129.77	-91.31
bsmwil:	bsm095	46	45.53	-109	44.70	4430.0	mt	980383.88	980778.16	0.52	-151.09	-1.33	0.00	22.19	-129.71	-91.59
bsmwil:	bsm098	46	42.70	-109	35.45	5222.0	mt	980329.41	980773.90	1.16	-178.11	-1.44	0.00	46.42	-131.96	-87.20
bsmwil:	bsm099	46	41.62	-109	33.90	5128.0	mt	980334.75	980772.27	1.10	-174.90	-1.43	0.00	44.55	-130.68	-86.71
bsmwil:	bsm100	46	39.90	-109	35.12	4964.0	mt	980341.73	980769.68	0.73	-169.31	-1.41	0.00	38.71	-131.27	-88.62
bsmwil:	bsm102	46	43.78	-109	28.75	5798.0	mt	980301.76	980775.52	3.34	-197.75	-1.48	0.00	71.26	-124.63	-75.48
bsmwil:	bsmbs2	46	43.35	-109	30.65	5702.0	mt	980303.73	980774.88	2.22	-194.48	-1.48	0.00	64.87	-128.87	-80.25
bsmwil:	bsm103	46	40.72	-109	38.35	4880.0	mt	980346.84	980770.91	0.63	-166.44	-1.40	0.00	34.69	-132.52	-90.56
bsmwil:	bsmbs1	46	47.70	-109	30.54	6028.0	mt	980299.78	980781.43	7.33	-205.60	-1.50	0.00	84.99	-114.77	-64.65
bsmwil:	bsmbs2	46	43.35	-109	30.65	5702.0	mt	980303.73	980774.88	2.22	-194.48	-1.48	0.00	64.87	-128.87	-80.25

Table 1. Principal Facts for Gravity Stations in the Big Snowies Wilderness and Contiguous RARE II study areas, Fergus, Golden Valley, and Wheatland Counties, Montana (Continued)

big snowy mountains wilderness area
Meter ID: w-521 Date: 07/18/79

STATION IDENTIFICATION		LOCATIONS					GRAVITY		CORRECTIONS				ANOMALIES		
		LATITUDE		LONGITUDE		ELE ST	OBSERVED	THEORETICAL	TERRAIN	BOUGUER	CURV	SPECIAL	FREE AIR	COMPLETE-BOUGUER	
proj	sta-id	deg	min	deg	min	(in ft)								d1=2.67	d2=2.00
bsmwil:	bsm104	46	39.05	-109	30.72	5076.0 mt	980335.00	980768.40	0.91	-173.13	-1.42	0.00	43.78	-129.85	-86.28
bsmwil:	bsm105	46	39.05	-109	28.25	4982.0 mt	980339.88	980768.40	0.96	-169.92	-1.41	0.00	39.83	-130.54	-87.78
bsmwil:	bsmbs2	46	43.35	-109	30.65	5702.0 mt	980303.73	980774.88	2.22	-194.48	-1.48	0.00	64.87	-128.87	-80.25
bsmwil:	bsmbs2	46	43.35	-109	30.65	5702.0 mt	980303.73	980774.88	2.22	-194.48	-1.48	0.00	64.87	-128.87	-80.25
bsmwil:	bsm107	46	36.42	-109	32.00	4702.0 mt	980352.80	980764.44	0.53	-160.37	-1.37	0.00	30.40	-130.82	-90.36
bsmwil:	bsm108	46	36.40	-109	38.32	4522.0 mt	980360.81	980764.41	0.36	-154.23	-1.35	0.00	21.53	-133.69	-94.74
bsmwil:	bsm109	46	36.40	-109	41.92	4445.0 mt	980365.16	980764.41	0.31	-151.61	-1.34	0.00	18.64	-133.99	-95.69
bsmwil:	bsm110	46	38.10	-109	42.98	4496.0 mt	980366.36	980766.97	0.34	-153.35	-1.34	0.00	22.07	-132.28	-93.55
bsmwil:	bsm111	46	40.72	-109	43.40	4640.0 mt	980361.84	980770.91	0.40	-158.26	-1.36	0.00	27.14	-132.08	-92.13
bsmwil:	bsm113	46	43.55	-109	41.80	4656.0 mt	980366.25	980775.18	0.59	-158.80	-1.37	0.00	28.79	-130.79	-90.75
bsmwil:	bsm114	46	44.20	-109	33.01	5778.0 mt	980301.01	980776.16	2.31	-197.07	-1.48	0.00	68.00	-128.24	-79.00
bsmwil:	bsmbs2	46	43.35	-109	30.65	5702.0 mt	980303.73	980774.88	2.22	-194.48	-1.48	0.00	64.87	-128.87	-80.25
bsmwil:	bsmbs2	46	43.35	-109	30.65	5702.0 mt	980303.73	980774.88	2.22	-194.48	-1.48	0.00	64.87	-128.87	-80.25
bsmwil:	bsm115	46	41.63	-109	38.03	4960.0 mt	980342.68	980772.29	0.72	-169.17	-1.41	0.00	36.68	-133.18	-90.56
bsmwil:	bsm116	46	39.90	-109	38.32	4750.0 mt	980353.10	980769.68	0.60	-162.01	-1.38	0.00	29.97	-132.82	-91.97
bsmwil:	bsm117	46	38.13	-109	37.15	4700.0 mt	980353.65	980767.02	0.49	-160.30	-1.37	0.00	28.48	-132.70	-92.25
bsmwil:	bsm118	46	36.40	-109	34.86	4610.0 mt	980357.14	980764.41	0.44	-157.23	-1.36	0.00	26.13	-132.03	-92.34
bsmwil:	bsm119	46	36.42	-109	28.25	4726.0 mt	980351.84	980764.44	0.62	-161.19	-1.38	0.00	31.70	-130.25	-89.61
bsmwil:	bsm122	46	39.48	-109	26.00	5064.0 mt	980334.81	980769.05	1.23	-172.72	-1.42	0.00	41.82	-131.08	-87.70
bsmwil:	bsm125	46	42.51	-109	25.50	5850.0 mt	980292.17	980773.61	2.43	-199.53	-1.49	0.00	68.48	-130.11	-80.28
bsmwil:	bsm124	46	41.60	-109	26.00	5430.0 mt	980313.86	980772.24	1.84	-185.20	-1.46	0.00	52.07	-132.75	-86.37
bsmwil:	bsm123	46	40.60	-109	27.00	5167.0 mt	980329.92	980770.73	1.46	-176.23	-1.43	0.00	44.92	-131.28	-87.06
bsmwil:	bsmbs2	46	43.35	-109	30.65	5702.0 mt	980303.73	980774.88	2.22	-194.48	-1.48	0.00	64.87	-128.87	-80.25
bsmwil:	bsmbs2	46	43.35	-109	30.65	5702.0 mt	980303.73	980774.88	2.22	-194.48	-1.48	0.00	64.87	-128.87	-80.25
bsmwil:	bsm128	46	36.40	-109	13.12	4700.0 mt	980359.02	980764.41	0.81	-160.30	-1.37	0.00	36.47	-124.40	-84.03
bsmwil:	bsm129	46	36.40	-109	10.58	4574.0 mt	980369.89	980764.41	0.70	-156.01	-1.35	0.00	35.49	-121.17	-81.86
bsmwil:	bsm130	46	38.12	-109	9.41	4700.0 mt	980362.94	980767.00	0.91	-160.30	-1.37	0.00	37.79	-122.98	-82.64
bsmwil:	bsm132	46	43.80	-109	11.25	6038.0 mt	980306.46	980775.55	2.82	-205.94	-1.50	0.00	98.49	-106.13	-54.78
bsmwil:	bsmtwn	47	3.68	-109	25.75	3963.0 mt	980449.32	980805.48	0.41	-135.17	-1.25	0.00	16.41	-119.60	-85.47
bsmwil:	bsmbs2	46	43.35	-109	30.65	5702.0 mt	980303.73	980774.88	2.22	-194.48	-1.48	0.00	64.87	-128.87	-80.25
bsmwil:	bsmbs2	46	43.35	-109	30.65	5702.0 mt	980303.73	980774.88	2.22	-194.48	-1.48	0.00	64.87	-128.87	-80.25
bsmwil:	bsm133	46	47.78	-109	35.85	6902.0 mt	980248.70	980781.55	8.98	-235.41	-1.52	0.00	115.91	-112.03	-54.83
bsmwil:	bsm134	46	47.21	-109	34.38	7780.0 mt	980182.62	980780.70	16.87	-265.35	-1.49	0.00	133.17	-116.80	-54.08
bsmwil:	bsm135	46	48.44	-109	34.92	6852.0 mt	980247.20	980782.55	9.71	-233.70	-1.52	0.00	108.72	-116.79	-60.20
bsmwil:	bsm136	46	48.79	-109	34.25	6674.0 mt	980258.63	980783.07	9.40	-227.63	-1.52	0.00	102.90	-116.85	-61.70
bsmwil:	bsm137	46	49.17	-109	33.32	6412.0 mt	980276.74	980783.64	3.81	-218.70	-1.51	0.00	95.82	-120.58	-66.27
bsmwil:	bsm138	46	50.32	-109	33.24	5733.0 mt	980322.83	980785.38	2.21	-195.54	-1.48	0.00	76.38	-118.43	-69.55
bsmwil:	bsm139	46	51.08	-109	31.78	5207.0 mt	980355.45	980786.52	2.31	-177.60	-1.43	0.00	58.43	-118.29	-73.95
bsmwil:	bsmbs2	46	43.35	-109	30.65	5702.0 mt	980303.73	980774.88	2.22	-194.48	-1.48	0.00	64.87	-128.87	-80.25
bsmwil:	bsmbs2	46	43.35	-109	30.65	5702.0 mt	980303.73	980774.88	2.22	-194.48	-1.48	0.00	64.87	-128.87	-80.25

Table 1. Principal Facts for Gravity Stations in the Big Snowies Wilderness and Contiguous RARE II study areas, Fergus, Golden Valley, and Wheatland Counties, Montana (Continued)

big snowy mountains wilderness area
Meter ID: w-521 Date: 07/18/79

STATION IDENTIFICATION		LOCATIONS					GRAVITY		CORRECTIONS				ANOMALIES	
		LATITUDE		LONGITUDE		ELE ST	OBSERVED	THEORETICAL	TERRAIN	BOUGUER	CURV	SPECIAL	FREE AIR	COMPLETE-BOUGUER d1=2.67 d2=2.00
proj	sta-id	deg	min	deg	min	(in ft)								
bsmwil:	bsm140	46	44.05	-109	30.00	6200.0 mt	980280.48	980775.93	3.17	-211.46	-1.51	0.00	87.36	-122.44 -69.80
bsmwil:	bsm141	46	42.10	-109	28.35	5816.0 mt	980286.51	980772.99	2.18	-198.37	-1.49	0.00	60.24	-137.44 -87.83
bsmwil:	bsm142	46	42.35	-109	26.60	5478.0 mt	980307.41	980773.38	2.38	-186.84	-1.46	0.00	49.00	-136.92 -90.26
bsmwil:	bsmbs2	46	43.35	-109	30.65	5702.0 mt	980303.73	980774.88	2.22	-194.48	-1.48	0.00	64.87	-128.87 -80.25
bsmwil:	bsmbs2	46	43.35	-109	30.65	5702.0 mt	980303.73	980774.88	2.22	-194.48	-1.48	0.00	64.87	-128.87 -80.25
bsmwil:	bsm144	46	44.87	-109	26.32	8322.0 mt	980140.32	980777.16	16.90	-283.84	-1.44	0.00	145.31	-123.07 -55.73
bsmwil:	bsm145	46	45.91	-109	26.94	8374.0 mt	980146.50	980778.73	18.55	-285.61	-1.44	0.00	154.81	-113.69 -46.32
bsmwil:	bsm146	46	45.97	-109	27.57	8376.0 mt	980145.50	980778.83	18.54	-285.75	-1.44	0.00	154.09	-114.56 -47.14
bsmwil:	bsm147	46	46.24	-109	29.75	8250.0 mt	980155.42	980779.23	15.82	-281.38	-1.45	0.00	151.58	-115.43 -48.43
bsmwil:	bsm148	46	46.14	-109	29.05	8313.0 mt	980149.21	980779.08	17.39	-283.53	-1.44	0.00	151.44	-116.15 -49.00
bsmwil:	bsm149	46	45.40	-109	25.68	8520.0 mt	980139.19	980777.97	17.75	-290.59	-1.42	0.00	161.97	-112.29 -43.47
bsmwil:	bsm150	46	46.04	-109	25.12	8440.0 mt	980148.98	980778.93	14.45	-287.86	-1.43	0.00	163.29	-111.55 -42.58
bsmwil:	bsm151	46	46.40	-109	23.95	8455.0 mt	980145.26	980779.47	16.41	-288.38	-1.43	0.00	160.43	-112.96 -44.36
bsmwil:	bsm152	46	46.86	-109	24.27	8211.0 mt	980159.97	980780.16	15.17	-280.05	-1.45	0.00	151.53	-114.80 -47.97
bsmwil:	bsm153	46	47.32	-109	24.52	8051.0 mt	980167.63	980780.86	17.46	-274.60	-1.47	0.00	143.47	-115.13 -50.24
bsmwil:	bsmbs2	46	43.35	-109	30.65	5702.0 mt	980303.73	980774.88	2.22	-194.48	-1.48	0.00	64.87	-128.87 -80.25
bsmwil:	bsmbs2	46	43.35	-109	30.65	5702.0 mt	980303.73	980774.88	2.22	-194.48	-1.48	0.00	64.87	-128.87 -80.25
bsmwil:	bsm158	46	43.20	-109	20.44	5696.0 mt	980302.31	980774.66	5.82	-194.27	-1.48	0.00	63.11	-126.82 -79.16
bsmwil:	bsm159	46	46.10	-109	21.34	8681.0 mt	980124.21	980779.02	26.85	-296.08	-1.40	0.00	161.07	-109.57 -41.66
bsmwil:	bsm160	46	46.80	-109	21.71	8464.0 mt	980141.40	980780.08	21.10	-288.68	-1.43	0.00	156.82	-112.19 -44.69
bsmwil:	bsm161	46	47.58	-109	21.88	8220.0 mt	980160.11	980781.25	19.25	-280.36	-1.45	0.00	151.45	-111.13 -45.24
bsmwil:	bsm162	46	48.35	-109	21.45	7956.0 mt	980177.10	980782.41	18.97	-271.36	-1.47	0.00	142.47	-111.39 -47.69
bsmwil:	bsm163	46	49.66	-109	21.02	7270.0 mt	980225.66	980784.38	12.18	-247.96	-1.51	0.00	124.61	-112.67 -53.13
bsmwil:	bsmbs2	46	43.35	-109	30.65	5702.0 mt	980303.73	980774.88	2.22	-194.48	-1.48	0.00	64.87	-128.87 -80.25
bsmwil:	bsmbs2	46	43.35	-109	30.65	5702.0 mt	980303.73	980774.88	2.22	-194.48	-1.48	0.00	64.87	-128.87 -80.25
bsmwil:	bsm164	46	43.88	-109	12.60	6638.0 mt	980267.41	980775.68	4.70	-226.40	-1.52	0.00	115.69	-107.53 -51.51
bsmwil:	bsmbs2	46	43.35	-109	30.65	5702.0 mt	980303.73	980774.88	2.22	-194.48	-1.48	0.00	64.87	-128.87 -80.25
bsmwil:	bsmbs2	46	43.35	-109	30.65	5702.0 mt	980303.73	980774.88	2.22	-194.48	-1.48	0.00	64.87	-128.87 -80.25
bsmwil:	bsm165	46	40.80	-109	19.25	5720.0 mt	980296.13	980771.04	2.23	-195.09	-1.48	0.00	62.80	-131.54 -82.78
bsmwil:	bsm166	46	41.88	-109	19.45	6184.0 mt	980272.46	980772.66	3.20	-210.92	-1.50	0.00	81.10	-128.13 -75.62
bsmwil:	bsmbs2	46	43.35	-109	30.65	5702.0 mt	980303.73	980774.88	2.22	-194.48	-1.48	0.00	64.87	-128.87 -80.25
bsmwil:	bsmbs2	46	43.35	-109	30.65	5702.0 mt	980303.73	980774.88	2.22	-194.48	-1.48	0.00	64.87	-128.87 -80.25
bsmwil:	bsm167	46	40.98	-109	14.12	6320.0 mt	980292.72	980780.34	3.84	-215.56	-1.51	0.00	106.45	-106.77 -53.27
bsmwil:	bsm168	46	46.61	-109	16.88	7618.0 mt	980207.33	980780.09	9.72	-259.83	-1.50	0.00	143.26	-108.34 -45.20
bsmwil:	bsm169	46	46.19	-109	17.46	8111.0 mt	980171.05	980779.16	15.49	-276.64	-1.46	0.00	154.22	-108.39 -42.49
bsmwil:	bsm170	46	45.12	-109	18.79	8678.0 mt	980124.00	980777.55	18.86	-295.98	-1.40	0.00	162.05	-116.48 -46.58
bsmwil:	bsm172	46	43.75	-109	15.55	8244.0 mt	980151.91	980775.48	14.11	-281.18	-1.45	0.00	151.26	-117.26 -49.88
bsmwil:	bsm173	46	44.08	-109	14.75	7862.0 mt	980181.86	980775.98	10.84	-268.15	-1.48	0.00	144.83	-113.96 -49.02
bsmwil:	bsmbs2	46	43.35	-109	30.65	5702.0 mt	980303.73	980774.88	2.22	-194.48	-1.48	0.00	64.87	-128.87 -80.25
bsmwil:	bsmbs2	46	43.35	-109	30.65	5702.0 mt	980303.73	980774.88	2.22	-194.48	-1.48	0.00	64.87	-128.87 -80.25

Table 1. Principal Facts for Gravity Stations in the Big Snowies Wilderness and Contiguous RARE II study areas, Fergus, Golden Valley, and Wheatland Counties, Montana (Continued)

big snowy mountains wilderness area
Meter ID: w-521 Date: 07/18/79

STATION IDENTIFICATION		L O C A T I O N S						G R A V I T Y		C O R R E C T I O N S				A N O M A L I E S		
		LATITUDE		LONGITUDE		ELE	ST	OBSERVED	THEORETICAL	TERRAIN	BOUGUER	CURV	SPECIAL	FREE AIR	COMPLETE-BOUGUER d1=2.67	d2=2.00
proj	sta-id	deg	min	deg	min	(in ft)										
bsmwil:	bsm174	46	38.96	-109	13.13	5124.0	mt	980339.50	980768.27	1.49	-174.77	-1.42	0.00	52.93	-121.77	-77.93
bsmwil:	bsm175	46	38.10	-109	13.13	4976.0	mt	980346.24	980766.97	1.21	-169.72	-1.41	0.00	47.06	-122.85	-80.22
bsmwil:	bsm176	46	37.28	-109	13.13	4800.0	mt	980355.85	980765.73	0.97	-163.71	-1.39	0.00	41.37	-122.76	-81.58
bsmwil:	bsm177	46	36.44	-109	15.62	4784.0	mt	980354.60	980764.47	0.87	-163.17	-1.38	0.00	39.88	-123.80	-82.73
bsmwil:	bsmbs2	46	43.35	-109	30.65	5702.0	mt	980303.73	980774.88	2.22	-194.48	-1.48	0.00	64.87	-128.87	-80.25