

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc. Client: COCORP

DATE 5/25/79	INSTRUMENT MAN G. Cptcamp	ROD MAN R. Hulsey	PARTY NUMBER 6834	NOTES CHECKED BY R. Hulsey	LINE NO. 1	PAGE 1 of 34
AREA MINNESOTA	TOPO MAP Sebeka NW/SW 7.5'	STATE Minnesota	COUNTY Otter Tail	TWP 136 N	RANGE 36 W	PPM
					PARTY MANAGER L.O. DAVIS	

STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y
TP						Take	-off	El.		1426.0	TK			595,760 1,767,485	→ scaled
	2145		354° 15.3' - 180°	+7.7°	+13.5	89° 36'	-15.0	-1.5	1424.5		BS	-2144	-73		T-intersect. El. 1426
	2145				+14.6	89° 34'	-16.2	-1.6			BS				
1	1980		354° 2.5'	+7.7°	12.0	89° 36'	+13.8	+1.8		1426.3		+1979	+60	595,595 1,767,472	paved county road
2	1650		" "	" "	5.8	TH	+8.3	+2.5		1427.0		+1649	+50	595,265 1,767,462	↓
3	1320		" "	" "	2.8	TH	+6.6	+3.8		1428.3		+1319	+40	594,935 1,767,452	
4	990		" "	" "	0.2	TH	+5.0	+4.8		1429.3		+989	+30	594,605 1,767,442	
5	660		" "	" "	0.7	TH	+3.3	+2.6		1427.1		+660	+20	594,276 1,767,432	↑
6	330		" "	" "	1.3	-	-	-1.3		1423.2		-330	-10	593,946 1,767,422	Sebeka NW
7	0		" "	" "	5.4	-	-	-5.4		1419.1	TP	0	0	593,616 1,767,412	Sebeka SW
8	330		173° 45.3'	+7.7°	9.8	-	-	-9.8		1414.7		-330	-8	593,286 1,767,404	↓
9	660		" "	" "	13.2	-	-	-13.2		1411.3		-660	-17	592,956 1,767,395	
10	990		" "	" "	10.3	-	-	-10.3		1414.2		-990	-25	592,626 1,767,387	
11	1320		" "	" "	4.5	-	-	-4.5		1420.0		-1319	-34	592,297 1,767,378	
12	1650		" "	" "	7.0	TH	+8.3	+1.3		1425.8		-1649	-42	591,967 1,767,370	
13	1980		" "	" "	3.1	TH	+9.9	+6.8		1431.3		-1979	-50	591,637 1,767,362	
14	2310		173° 45.3'	+7.7°	0.6	TH	+11.6	+11.0		1435.5	TP	-2309-2	-59	591,305 1,767,353	
14	2310				14.6	89° 22'	+25.5	+10.9			TP				
	1650		353° 54.6' - 180°	+7.7°	-14.7	89° -	-28.8	-14.1	1421.4		BS	-1649-3	-46		
	1650				+12.8	89° 4'	-26.9	-14.1			BS				
15	1320		353° 54.6'	+7.7°	9.7	89° -	+23.0	+13.3		1434.7		+1319	+37	590,972 1,767,344	

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DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE				
5/25/79		G. Cotcamp		R. Hulsey		6834		R. Hulsey		1	2				
AREA		TOPO MAP		STATE	COUNTY		TWP	RANGE	PPM	PARTY MANAGER					
Minnesota		Sebecka SW 7.5'		Minnesota	Otter Tail		36 N	36 W		L.O. Davis					
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS TP	COORDINATES		REMARKS	
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y
									1421.4						
16	990		353° 54.6'	+7.7°	9.4	89°-	+17.3	+7.9		1429.3		+990	+28	590,643	1,767,335
17	790		354° 51'	+7.7°	8.1	89°-	+13.8	+5.7		1427.1		+789	+35	590,442	1,767,342
17	660		353° 54.6'	+7.7°	6.4	89°-	+11.5	+5.1		1426.5		+660	+19	590,313	1,767,326
18	330		" "	"	2.7	89°-	+5.8	+3.1		1424.5		+330	+9	589,983	1,767,316
19	0				5.4	-		-5.4		1416.0	TP	0	0	589,653	1,767,307
20	330		173° 37.1'	+7.7°	12.9	BH	-1.7	-14.6		1406.8		-330	-8	589,323	1,767,299
21	660		" "	"	14.2	BH	-3.3	-17.5		1403.9		-660	-15	588,993	1,767,292
22	990		" "	"	12.9	BH	-5.0	-17.9		1403.5		-990	-23	588,663	1,767,284
23	1320		" "	"	11.1	BH	-6.6	-17.7		1403.7		-1320	-30	588,333	1,767,277
24	1650		173° 37.1'	+7.7°	9.7	BH	-8.3	-18.0		1403.4	TP	-1650-2	-38	588,001	1,767,269
24	1650				14.2	90° 3'	-3.8	-18.0			TP				
	1650		354° 10' -180°	+7.7°	+10.6	91°-	+28.8	+39.4			BS	-1649-3	-54		
	1650				+14.6	90° 52'	+24.9	+39.5	1442.9		BS				
25	1320		354° 10'	+7.7°	11.4	91° 10'	-26.9	-38.3		1404.6		+1319	+43	587,668	1,767,258
26	990		" "	"	12.6	91° 10'	-20.2	-32.8		1410.1		+989	+32	587,338	1,767,247
27	660		" "	"	10.0	91°-	-11.5	-21.5		1421.4		+660	+21	587,009	1,767,236
28	330		" "	"	9.5	-		-9.5		1433.4		+330	+11	586,679	1,767,226
29	0				5.4	-		-5.4		1437.5	TP	0	0	586,349	1,767,215
30	330		173° 51.6'	+7.7°	7.7	-		-7.7		1435.2		-330	-9	586,019	1,767,206
31	660		" "	"	10.3	-		-10.3		1432.6		-660	-18	585,689	1,767,197

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DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE				
5/25/79		G. Lotcamp		R. Hulsey		6834		R. Hulsey		1	3				
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE		PPM		PARTY MANAGER	
Minnesota		Sebeka SW		Minnesota		Otter Tail		136 N		36 W		-		L.O. Davis	
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y
									1442.9						
32	990		173° 51.6'	+7.7°	8.0	-		-8.0		1434.9		-990	-27	585,359	1,767,188
+	1170		173° 22.6'	+7.7°	6.1	-		-6.1		1436.8		-1170	-22	585,179	1,767,193 4-Way Intersect. el. 1437
33	1320		173° 51.6'	+7.7°	6.9	-		-6.9		1436.0		-1319	-36	585,030	1,767,179
34	1650		173° 51.6'	+7.7°	11.9	-		-11.9		1431.0	TP	-1649.2	-45	584,698	1,767,170
34	1650				14.8	89° 54'	+2.9	-11.9			TP				
	2970		353° 5.7' - 180°	+7.7°	11.3	TH	-14.9	-3.6	1427.4		BS	-2970.3	-41		
	2970				+5.1	89° 50'	-8.6	-3.5			BS				
35	2640		353° 5.7'	+7.7°	2.9	-		-2.9		1424.5		+2640	+37	584,365	1,767,166
36	2310		" "	"	5.3	-		-5.3		1422.1		+2310	+32	584,035	1,767,161
37	1980		" "	"	5.8	-		-5.8		1421.6		+1980	+27	583,705	1,767,156
38	1650		" "	"	5.8	-		-5.8		1421.6		+1650	+23	583,375	1,767,152
39	1320		" "	"	6.2	-		-6.2		1421.2		+1320	+18	583,045	1,767,147
40	990		" "	"	6.3	-		-6.3		1421.1		+990	+14	582,715	1,767,143
41	660		" "	"	6.2	-		-6.2		1421.2		+660	+9	582,385	1,767,138
42	330		" "	"	5.9	-		-5.9		1421.5		+330	+5	582,055	1,767,134
43	0				5.4	-		-5.4		1422.0	TP	0	0	581,725	1,767,129
44	330		172° 44.9'	+7.7°	5.0	-		-5.0		1422.4		-330	-3	581,395	1,767,126
45	660		" "	"	4.6	-		-4.6		1422.8		-660	-5	581,065	1,767,124
46	990		" "	"	4.2	-		-4.2		1423.2		-990	-8	580,735	1,767,121
47	1320		" "	"	3.9	-		-3.9		1423.5		-1320	-10	580,405	1,767,119

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DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE					
5-27-79		R. Hulsey		G. Cotcamp		6834		R. Hulsey		1	4					
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE	PPM	PARTY MANAGER				
Minnesota		Sebeka SW 7.5		Minnesota		Otter Tail		136 N		36W		L.O. Davis				
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS		
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y	X
									1427.4							
48	1650		172°44.9'	+7.7°	5.5	-		-5.5		1421.9		-1650	-13	580,075	1,767,116	579,905+1,767,120(s)
47	1815		172°30'	+7.7°	6.5	-		-6.5		1420.9		-1815	-6	579,910	1,767,123	Trd El. 1421
49	1980		172°44.9'	+7.7°	7.9	-		-7.9		1419.5		-1980	-15	579,745	1,767,114	
50	2310		"	"	9.5	-		-9.5		1417.9		-2310	-18	579,415	1,767,111	
51	2640		"	"	10.1	-		-10.1		1417.3		-2640	-21	579,085	1,767,108	
52	2970		172°44.9'	+7.9°	10.2	-		-10.2	-10.1	1417.3	TP	-2970-2	-34	578,753	1,767,095	
52	2970				8.3	90°02'	-1.7	-10.0			TP					
	1650		352°33.2'-180°	+7.9°	+10.3	-		+10.3	1427.6		BS	-1650-3	-13			
	1650				+9.4	90°02'	+1.0	+10.4			BS					
53	1320		352°33.2'	+7.9°	9.6	-		-9.6		1418.0		+1320	+10	578,420	1,767,092	
54	990		"	"	7.9	-		-7.9		1419.7		+990	+8	578,090	1,767,090	
55	660		"	"	3.5	-		-3.5		1424.1		+660	+5	577,760	1,767,087	
56	330		"	"	1.1	-		-1.1		1426.5		+330	+3	577,430	1,767,085	
57	0				5.4	-		-5.4		1422.2	TP	0	0	577,100	1,767,082	
58	330		172°46.9'	+7.9°	8.8	-		-8.8		1418.8		-330	-4	576,770	1,767,078	
59	660		"	"	8.2	-		-8.2		1419.4		-660	-8	576,440	1,767,074	
60	990		"	"	7.7	-		-7.7		1419.9		-990	-12	576,110	1,767,070	
61	1320		"	"	7.0	-		-7.0		1420.6		-1320	-16	575,780	1,767,066	
62	1650		172°46.9'	+7.9°	7.8	-		-7.8		1419.8	TP	-1650-1	-20	575,449	1,767,062	
62	1650				6.8	90°02'	-1.0	-7.8			TP					

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DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE			
5-27-79		R. Hulsey		G. Cotcamp		6834		R. Hulsey		1	5			
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE	PPM	PARTY MANAGER		
Minnesota		Sebekas W7.5		Minnesota		Otter Tail		136 N		36 W		L.O. Davis		
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.	
62										1419.8				
	1650		352° 31.6' -180	+7.9°	+11.9	-		+11.9	1431.7		BS	-1650	-12	
	1650				+3.6	BH	+8.3	+11.9			BS			
63	1320		352° 31.6'	+7.9°	12.1	-		-12.1		1419.6		+1320	+10	575,119 1,767,060
64	990		" "	"	12.0	-		-12.0		1419.7		+990	+7	574,789 1,767,057
65	660		" "	"										
17	818		353° 18'	+7.9°	11.1	-		-11.1		1420.6		+818	+17	574,617 1,767,067 Trd (east) el. 1418
65	660		352° 31.6'	+7.9°	10.3	-		-10.3		1421.4		+660	+5	574,459 1,767,055
66	330		" "	"	7.2	-		-7.2		1424.5		+330	+2	574,129 1,767,052
67	0				5.4	-		-5.4		1426.3	T	0	0	573,799 1,767,050
68	330		172° 43.1'	+7.9°	6.9	-		-6.9		1424.8		-330	-4	573,469 1,767,046
69	660		" "	"	8.8	-		-8.8		1422.9		-660	-7	573,139 1,767,043
70	990		" "	"	7.8	-		-7.8		1423.9		-990	-11	572,809 1,767,039
71	1320		" "	"	5.2	-		-5.2		1426.5		-1320	-14	572,479 1,767,036
72	1650		" "	"	0.2	-		-0.2		1431.5		-1650	-18	572,149 1,767,032
73	1980		172° 43.1'	+7.9°	10.4	TH	+9.9	-0.5		1431.2	TP	-1980	-21	571,819 1,767,029
73	1980				1.7	89° 58'	+1.1	-0.6			TP			
	2310		352° 52.1' -180	+7.9°	+4.5	BH	+11.6	+16.1	1447.3		BS	-2310	-31	
	2310				+14.7	90° 02'	+1.3	+16.0			BS			
74	1980		352° 52.1'	+7.9°	10.9	BH	-9.9	-20.8		1426.5		+1980	+27	571,489 1,767,025
75	1650		" "	"	13.1	90° 20'	-9.6	-22.7		1424.6		+1650	+22	571,159 1,767,020

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DATE 5/27/79	INSTRUMENT MAN R. Hulsey	ROD MAN G. Cotcamp	PARTY NUMBER 6834	NOTES CHECKED BY R. Hulsey	LINE NO. 1	PAGE 6
AREA Minnesota	TOPO MAP Sebeka SW	STATE Minnesota	COUNTY Otter Tail	TWP 136 N	RANGE 36 W	PPM
					PARTY MANAGER L.O. Davis	

STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS		
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y	X
76	1320		352° 52.1'	+7.9°	11.8	90°30'	-11.5	-23.3		1424.0		+1320	+18	570,829	1,767,016	
77	990		" "	"	11.8	90°40'	-11.5	-23.3		1424.0		+990	+13	576,499	1,767,011	
78	660		" "	"	12.5	90°50'	-9.6	-22.1		1425.2		+660	+9	570,169	1,767,007	
79	330		" "	"	13.6	BH	-1.7	-15.3		1432.0		+330	+4	569,839	1,767,002	
80	0				5.4	-		-5.4		1441.9	TP	0	0	569,509	1,766,998	569,335+1,767,005(s)
7±	170		169° 43'	+7.9°	2.3	-		-2.3		1445.0		-170	+7	569,339	1,767,005	4-way el. 1445
81	330		173° 22.8'	+7.9°	1.5	-		-1.5		1445.8		-330	-7	569,179	1,766,991	
82	660		" "	"	4.4	-		-4.4		1442.9		-660	-15	568,849	1,766,983	
83	990		" "	"	8.9	-		-8.9		1438.4		-990	-22	568,519	1,766,976	
84	1320		" "	"	10.1	-		-10.1		1437.2		-1320	-29	568,189	1,766,969	
85	1650		" "	"	7.9	-		-7.9		1439.4		-1650	-37	567,859	1,766,961	
86	1980		" "	"	1.3	-		-1.3		1446.0		-1979	-44	567,530	1,766,954	
87	2310		" "	"	3.6	TH	+11.6	+8.0		1455.3		-2309	-52	567,200	1,766,946	
88	2640		173° 22.8'	+7.9°	6.0	89°36'	+23.0	+17.0		1464.3	TP	-2639	-59	566,870	1,766,939	
88	2640				4.5	89°32'	+21.5	+17.0			TP					
	990		35° 49' ± 180°	+7.9°	+9.8	TH	-5.0	+4.8	1469.2	+4.9	BS	-990	+5			
	990				+7.9	89°50'	-2.9	+5.0			BS					
89	660		35° 49'	+7.9°	2.3	TH	+3.3	+1.0		1470.2		+660	-3	566,540	1,766,941	
90	330		" "	"	1.0	-		-1.0		1468.2		+330	-2	566,216	1,766,942	
91	0				5.4	-		-5.4		1463.8	TP	0	0	565,880	1,766,944	

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DATE 5-27-79	INSTRUMENT MAN R. Hulsey	ROD MAN G. Cotcamp	PARTY NUMBER 6834	NOTES CHECKED BY R. Hulsey	LINE NO. 1	PAGE 7
AREA Minnesota	TOPO MAP Sebeka SW 7.5'	STATE Minnesota	COUNTY Otter Tail	TWP 136/135 N	RANGE 36 W	PARTY MANAGER L. O. Davis

STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y
									149.2						
92	330		171° 53.1'	+7.9°	10.4	-		-10.4		1458.8		-330	+1	565,550	1,766,945
93	660		" "	"	11.6	BH	-3.3	-14.9		1454.3		-660	+2	565,220	1,766,946
94	990		" "	"	13.8	90° 20'	-5.8	-19.6		1449.6		-990	+4	564,890	1,766,948
95	1320		" "	"	13.5	90° 30'	-11.5	-25.0		1444.2		-1320	+5	564,560	1,766,949
96	1650		" "	"	11.2	90° 40'	-19.2	-30.4		1438.8		-1650	+6	564,230	1,766,950
-11-	1850		171° 29'	+7.9°	10.4	90° 40'	-21.5	-31.9		1437.3		-1850	+20	564,030	1,766,964
97	1980		171° 53.1'	+7.6°	9.1	90° 40'	-23.0	-32.1		1437.1	TP	-1980	+18	563,900	1,766,962
97	1980				10.2	90° 38'	-21.9	-32.1			TP				
	990		353° 48.2' - 180°	+7.6°	+11.4	89° 20'	-11.5	-0.1	1437.0		BS	-990	-24		
	990				+14.3	89° 10'	-14.4	-0.1			BS				
98	660		353° 48.2'	+7.6°	5.2	89° 20'	+7.7	+2.5		1439.5		+660	+16	563,570	1,766,954
99	330		" "	"	3.3	89° -	+5.8	+2.5		1439.5		+330	+8	563,240	1,766,946
100	0				5.4	-		-5.4		1431.6	TP	0	0	562,910	1,766,938
101	330		173° 39.1'	+7.6°	12.7	BH	-1.7	-14.4		1422.6		-330	-7	562,580	1,766,931
102	660		" "	"	12.2	91° -	-11.5	-23.7		1413.3		-660	-14	562,250	1,766,924
103	990		" "	"	13.6	91° -	-17.3	-30.9		1406.1		-990	-22	561,920	1,766,916
104	1320		173° 39.1'	+7.6°	9.1	91° -	-23.0	-32.1	-32.2	1404.8	TP	-1320	-29	561,590	1,766,909
104	1320				13.1	90° 50'	-19.2	-32.3			TP				
	2640		351° 46.9' - 180°	+7.5°	+13.7	TH	-13.2	+0.5	1405.4	+0.6	BS	-2640	+33		
	2640				+14.5	89° 42'	-13.8	+0.7			BS				

↑
y = -2'
horizontal correct x = 0'
T 136 N
564,030 + 1,766,965(s)
Sec. corner el.
1437
↓

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE 5/29/79	INSTRUMENT MAN G Cotcamp	ROD MAN R. Hulsey	PARTY NUMBER 6834	NOTES CHECKED BY R. Hulsey	LINE NO. 1	PAGE 8
AREA Minnesota	TOPO MAP Sebeka SW	STATE Minnesota	COUNTY Otter Tail	TWP 135 N	RANGE 36 W	PARTY MANAGER L.O. Davis

STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	NORTH + SOUTH -		EAST + WEST -		COORDINATES		REMARKS	
												LAT.	DEP.	Y	X				
									1405.4										
105	2360		351° 56'	+7.5°	11.8	TH	+11.8	-0.0		1405.4		+2360	-23	561,310	1,766,919			561,305+1,766,925(s) 4-Way Intersect. El. 1405	
106	2310		351° 46.9'	+7.5°	11.8	TH	+11.6	-0.2		1405.2		+2310	-29	561,260	1,766,913				
107	1980		" "	"	1.1	-		-1.1		1404.3		+1980	-25	560,930	1,766,917				
108	1650		" "	"	10.9	TH	+8.3	-2.6		1402.8		+1650	-21	560,600	1,766,921				
109	1320		" "	"	10.3	TH	+6.6	-3.7		1401.7		+1320	-17	560,270	1,766,925				
110	990		" "	"	8.0	TH	+5.0	-3.0		1402.4		+990	-12	559,940	1,766,930				
111	660		" "	"	1.3	-		-1.3		1404.1		+660	-8	559,610	1,766,934				
112	330		" "	"	1.7	TH	+1.7	0.0		1405.4		+330	-4	559,280	1,766,938				
113	0				5.4	-		-5.4		1400.0	X	0	0	558,950	1,766,942				
114	330		173° 1.7'	+7.5°	12.7	-		-12.7		1392.7		-330	-3	558,620	1,766,939			558,590+1,766,960(s)	
115	360		169° 47'	+7.5°	12.9	-		-12.9		1392.5		-360	+17	558,590	1,766,959			E-W fence line El. 1393	
116	660		173° 1.7'	+7.5°	12.1	BH	-3.3	-15.4		1390.0		-660	-6	558,290	1,766,936				
117	990		" "	"	10.3	BH	-5.0	-15.3		1390.1		-990	-9	557,960	1,766,933				
118	1320		" "	"	9.7	BH	-6.6	-16.3		1389.1		-1320	-12	557,630	1,766,930				
119	1650		" "	"	9.1	BH	-8.3	-17.4		1388.0		-1650	-15	557,300	1,766,927				
120	1980		" "	"	9.1	BH	-9.9	-19.0		1386.4		-1980	-18	556,970	1,766,924				
121	2310		" "	"	7.0	BH	-11.6	-18.6		1386.8		-2310	-21	556,640	1,766,921				
122	2640		" "	"	13.5	-		-13.5		1391.9		-2640	-24	556,310	1,766,918				
123	2970		173° 1.7'	+7.5°	9.2	-		-9.2	-9.3	1396.1	TP	-2970	-27	555,980	1,766,915				
124	2970		" "	"	14.6	89° 54'	+5.2	-9.4			TP								

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE 5/29/79	INSTRUMENT MAN G. Cotcamp	ROD MAN R. Hulsey	PARTY NUMBER 6834	NOTES CHECKED BY R. Hulsey	LINE NO. 1	PAGE 9
AREA Minnesota	TOPO MAP Sobeka SW	STATE Minnesota	COUNTY Otter Tail	TWP 135 N	RANGE 36 W	PARTY MANAGER L.O. Davis

STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	NORTH + SOUTH -		EAST + WEST -		COORDINATES		REMARKS
												LAT.	DEP.	Y	X			
121										1396.1								
	2976		353° 22.7' - 180°	+7.4°	+14.5	89° 44'	-13.8	+0.7	1396.8		BS	-2969	-40					
	2970				+11.1	89° 48'	-10.4	+0.7			BS							
122	2640		353° 22.7'	+7.4°	11.0	TH	+13.2	+2.2		1399.0		+2640	+36	555,651	1,766,911			
123	2310		" "	"	10.8	TH	+11.6	+0.8		1397.6		+2310	+31	555,321	1,766,906			
124	1980		" "	"	2.3	I-		-2.3		1394.5		+1980	+27	554,991	1,766,902			
125	1650		" "	"	5.3	-		-5.3		1391.5		+1650	+22	554,661	1,766,897			
126	1320		" "	"	8.5	-		-8.5		1388.3		+1320	+18	554,331	1,766,893			
127	990		" "	"	9.1	-		-9.1		1387.7		+990	+13	554,001	1,766,888			
128	660		" "	"	7.1	-		-7.1		1389.7		+660	+9	553,671	1,766,884			
129	330		" "	"	5.2	-		-5.2		1391.6		+330	+4	553,341	1,766,879			
--1--	290		356° 2.5'	+7.4°	5.0	-		-5.0		1391.8		+289	+17	553,300	1,766,892		553,295 + 1,766,895(s) E-W fence line EL. 1392	
130	0				5.4	-		-5.4		1391.4	π	0	0	553,011	1,766,875			
131	330		173° 24.2'	+7.4°	5.8	-		-5.8		1391.0		-330	-5	552,681	1,766,870			
132	660		" "	"	6.4	-		-6.4		1390.4		-660	-9	552,351	1,766,866			
133	990		" "	"	6.9	-		-6.9		1389.9		-990	-14	552,021	1,766,861			
134	1320		" "	"	6.9	-		-6.9		1389.9		-1320	-19	551,691	1,766,856			
135	1650		" "	"	6.0	-		-6.0		1390.8		-1650	-23	551,361	1,766,852			
136	1980		" "	"	4.5	-		-4.5		1392.3		-1980	-28	551,031	1,766,847			
137	2310		" "	"	4.2	-		-4.2		1392.6		-2310	-32	550,701	1,766,843			
138	2640		" "	"	4.5	-		-4.5		1392.3		-2640	-37	550,371	1,766,838			

SURVEY NOTES-HIGH RESOLUTION DATA

Geosource Inc.

GEO-445

DATE 5/29/79	INSTRUMENT MAN G. Cottramp	ROD MAN R. Hulsey	PARTY NUMBER 6834	NOTES CHECKED BY R. Hulsey	LINE NO. 1	PAGE 10
AREA Minnesota	TOPO MAP Sebek SW/Wadena	STATE Minnesota	COUNTY Otter Tail	TWP 135 N	RANGE 36 W	PPM
				PARTY MANAGER L.O. Davis		

STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS TP	COORDINATES		REMARKS	
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y
									1396.8						
139	2970		173°24.2'	+7.4°	4.4	-		-4.4	-4.5	1492.3	TP	-2969	-42	550,042	1,766,833
139	2970				15.0	89°48'	+10.4	-4.6			TP				
	990		353°54'→180°	+7.4°	+6.5	-		+6.5	1398.8		BS	-990	-22		
	990		"		+11.5	TH	-5.0	+6.5			BS				
140	660		353°54'	+7.4°	5.7	-		-5.7		1393.1		+660	+15	549,712	1,766,826
141	330		"	"	4.8	-		-4.8		1394.0		+330	+7	549,382	1,766,818
142	0		"	"	5.4	-		-5.4		1393.4	TP	0	0	549,052	1,766,811
143	330		173°34.7'	-7.4°	7.4	-		-7.4		1391.4		-330	-6	548,722	1,766,805
144	660		"	"	9.8	-		-9.8		1389.0		-660	-11	548,392	1,766,800
145	990		"	"	12.4	-		-12.4		1386.4		-990	-17	548,062	1,766,794
145	994		172°57'	+7.4°	12.5	-		-12.5		1386.3		-994	-6	548,058	1,766,805
146	1320		173°34.7'	+7.6°	14.5	-		-14.5		1384.3	TP	-1320+3	-27	547,735	1,766,784
146	1320				7.9	BH	-6.6	-14.5			TP				
	2310		353°23.8'→180°	+7.6°	+14.1	-		+14.1	1398.4		BS	-2310+3	-40		
	2310				+2.5	BH	+11.6	+14.1			BS				
147	1980		353°23.8'	+7.6°	6.1	BH	-9.9	-16.0		1382.4		+1980	+34	547,408	1,766,7
148	1650		"	"	9.3	BH	-8.3	-17.6		1380.8		+1650	+29	547,078	1,766,7
149	1320		"	"	12.6	BH	-6.6	-19.2		1379.2		+1320	+23	546,748	1,766,7
150	990		"	"	14.9	90°20'	-5.8	-20.7		1377.7		+990	+17	546,418	1,766,76
151	660		"	"	13.3	90°30'	-5.8	-19.1		1379.3		+660	+11	546,088	1,766,7

Sebek SW
Wadena
548,050 + 1,766,800
4-Way Intersect. El. 1386

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE 5-30-79	INSTRUMENT MAN R. Hulsey	ROD MAN G. Catcamp	PARTY NUMBER 6834	NOTES CHECKED BY R. Hulsey	LINE NO. 1	PAGE 11
AREA Minnesota	TOPO MAP Wadena 7.5	STATE Minnesota	COUNTY Otter Tail	TWP 135 N	RANGE 36 W	PARTY MANAGER L.O. Davis

STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.	
									1398.4					
152	330		353° 23.8'	+7.6°	12.3	-		-12.3		1386.1		+330	+6	545,758 1,766,750
153	0				5.4	-		-5.4		1393.0	TP	0	0	545,428 1,766,744
154	330		173° 19.8'	+7.6°	7.2	-		-7.2		1391.2		-330	-5	545,098 1,766,739
155	660		" "	" "	13.0	BH	-3.3	-16.3		1382.1		-660	-11	544,768 1,766,733
156	990		" "	" "	13.6	90°30'	-8.6	-22.2		1376.2		-990	-16	544,438 1,766,728
157	1320		" "	" "	11.2	90°30'	-11.5	-22.7		1375.7		-1320	-21	544,108 1,766,723
158	1650		" "	" "	14.7	BH	-8.3	-23.0		1375.4		-1650	-27	543,778 1,766,717
159	1980		173° 19.8'	+7.6°	10.9	90°30'	-17.3	-28.2		1370.2	TP	-1980+3	-32	543,451 1,766,712
159	1980				5.2	90°40'	-23.0	-28.2			TP			
	2970		352° 20.8'-180°	+7.6°	+12.6	89°-	-51.8	-39.2	1330.9	-39.3	BS	-2970+3	+3	
	2970				+10.7	89°02'	-50.1	-39.4			BS			
160	2640		352° 20.8'	+7.6°	7.0	89°20'	+30.7	+23.7		1354.6		+2640	-2	543,124 1,766,713
161	2310		" "	" "										
161	2385		352° 28'	+7.6°	10.4	89°30'	+20.8	+10.4		1341.3		+2385	+3	542,869 1,766,718 T-rd (east) El. 13+1
161	2310		352° 20.8'	+7.6°	9.8	89°30'	+20.2	+10.4		1341.3		+2310	-2	542,799 1,766,713
162	1980		" "	" "	4.0	TH	+9.9	+5.9		1336.8		+1980	-2	542,464 1,766,713
163	1650		" "	" "	1.2	89°46'	+9.6	+8.4		1339.3		+1650	-2	542,134 1,766,713
164	1320		" "	" "	4.4	TH	+6.6	+2.2		1333.1		+1320	-1	541,804 1,766,714
165	990		" "	" "	7.8	-		-7.8		1323.1		+990	-1	541,474 1,766,714
166	660		" "	" "	8.2	-		-8.2		1322.7		+660	-1	541,144 1,766,714

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE			
5-30-79		R. Hulsey		W. Krol		6834		R. Hulsey		1	12			
AREA		TOPO MAP		STATE		COUNTY		TWP		PARTY MANAGER				
Minnesota		Wadena 7.5'		Minnesota		Otter Tail		135 W		L.O. Davis				
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.	
									1330.9					
167	330		352° 20.8'	+7.6°	6.2	-		-6.2		1324.7		+330	0	540,814 1,766,715
168	0				5.4	-		-5.4		1325.5	TP	0	0	540,484 1,766,715
169	330		172° 33.6'	+7.6°	9.3	-		-9.3		1321.6		-330	-1	540,154 1,766,714
170	660		" "	+7.6°	13.0	-		-13.0		1317.9		-660	-2	539,824 1,766,713
171	990		" "	+7.6°	12.0	BH	-5.0	-17.0		1313.9		-990	-3	539,494 1,766,712
172	1320		" "	" "	13.2	BH	-6.6	-19.8		1311.1		-1320	-4	539,164 1,766,711
173	1650		" "	" "	12.2	BH	-8.3	-20.5		1310.4		-1650	-5	538,834 1,766,710
174	1980		" "	" "	11.1	BH	-9.9	-21.0		1309.9		-1980	-6	538,504 1,766,709
175	2310		" "	" "	10.1	BH	-11.6	-21.7		1309.2		-2310	-6	538,174 1,766,709
176	2640		" "	" "	8.7	BH	-13.2	-21.9		1309.0		-2640	-7	537,844 1,766,708
177	2970		172° 33.6'	+7.7°	7.4	BH	-14.9	-22.3		1308.6	TP	-2970+1	-13	537,515 1,766,702
177	2970				13.6	90°10'	-8.6	-22.2			TP			
	2310		352° 41.1-100°	+7.7°	+8.5	91°10'	+47.0	+55.5	1364.1		BS	-2310	-16	
	2310				+9.9	91°08'	+45.7	+55.6			BS			
178	1980	1979	352° 41.1'	+7.7°	9.8	91°20'	-46.1	-55.9		1308.2		+1979	+13	537,184 1,766,699
178	1840		353° 3'	+7.7°	12.2	91°20'	-42.8	-55.0		1309.1		+1840	+24	537,045 1,766,710
179	1650		352° 41.1'	+7.7°	12.5	91°30'	-43.2	-55.7		1308.4		+1650	+11	536,855 1,766,697
180	1320	1319	" "	" "	13.4	91°50'	-42.2	-55.6		1308.5		+1319	+9	536,524 1,766,695
181	990	989	" "	" "	11.5	92°20'	-40.3	-51.8		1312.3		+989	+7	536,194 1,766,693
182	660		" "	" "	14.2	91°50'	-21.1	-35.3		1328.8		+660	+4	535,865 1,766,690

537,050 + 1,766,700(s)
Bridge El. 1309

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE 5-30-79	INSTRUMENT MAN R. Hulsey	ROD MAN G. Cotcamp	PARTY NUMBER 6834	NOTES CHECKED BY R. Hulsey	LINE NO. 1	PAGE 13
AREA Minnesota	TOPO MAP Wadena 7.5'	STATE Minnesota	COUNTY Otter Tail	TWP 135N	RANGE 36W	PARTY MANAGER L.O. Davis

STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	NORTH + SOUTH -		EAST + WEST -		COORDINATES		REMARKS
												LAT.	DEP.	Y	X			
									1364.1									
183	330		352° 41.1'	+7.7°	14.9	-		-14.9		1349.2		+330	+2	535,535	1,766,688			
184	0				5.4	-		-5.4		1358.7	TP	0	0	535,205	1,766,686			
185	330		173° 48.2'	+7.7°	6.8	-		-6.8		1357.3		-330	-9	534,875	1,766,677			
186	660		" "	" "	10.6	-		-10.6		1353.5		-660	-17	534,545	1,766,669			
187	990		" "	" "	11.6	-		-11.6		1352.5		-990	-26	534,215	1,766,660			
188	1320		" "	" "	12.4	-		-12.4		1351.7		-1320	-35	533,885	1,766,651			
189	1650		" "	" "	13.3	-		-13.3		1350.8		-1649	-43	533,556	1,766,643			
190	1980		" "	" "	12.0	-		-12.0		1352.1		-1979	-52	533,226	1,766,634			
191	2310		173° 48.2'	+7.7°	9.2	-		-9.2		1354.9	TP	-2309	-61	532,946	1,766,625			
191	2310				7.9	90° 02'	-1.3	-9.2			TP							
	1650		354° 32.4' - 180°	+7.7°	+4.7	-		+4.7	1359.6		BS	-1649	-64					
	1650				+3.7	90° 02'	+1.0	+4.7			BS							
192	1320		354° 32.4'	+7.7°	3.2	-		-3.2		1356.4		+1319	+52	532,566	1,766,613			
#	1220		355° 17'	+7.7°	3.2	-		-3.2		1356.4		+1218	+63	532,465	1,766,624			532,465 = 1,766,620 4-way (U.S. 10) Et. 1356
#	990																	
#	1030		355° 28'	+7.7°	3.0	-		-3.0		1356.6		+1028	+57	532,275	1,766,618			
193	990		354° 32.4'	+7.7°	3.1	-		-3.1		1356.5		+989	+39	532,236	1,766,600			
194	660		" "	" "	6.6	-		-6.6		1353.0		+659	+26	531,906	1,766,587			
195	330		" "	" "	9.0	-		-9.0		1350.6		+330	+13	531,577	1,766,574			
196	0				5.4	-		-5.4		1354.2	TP	0	0	531,247	1,766,561			

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE			
5-30-79		R. Hulsey		W. Krol		6834		R. Hulsey		1	14			
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE	PPM	PARTY MANAGER		
Minnesota		Wadena 7.5'		Minnesota		Otter Tail		134 N		36 W		L.O. Davis		
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.	
									1359.6					
197	330		174° 29.7'	+7.7°	3.3	-		-3.3		1356.3		-330	-13	530,917 1,766,548
198	660		" "	" "	3.6	-		-3.6		1356.0		-660	-25	530,587 1,766,536
199	990		" "	" "	5.4	-		-5.4		1354.2		-989	-38	530,258 1,766,523
200	1320		" "	" "	7.1	-		-7.1		1352.5		-1319	-51	529,928 1,766,510
201	1650		174° 29.7'	+7.7°	8.3	-		-8.3			TP	-1649+2	-63	529,600 1,766,498
201	1650				7.4	90°02'	-1.0	-8.4		1351.2	TP			
	20		352° 44.5' -180°	+7.7°	+9.9	-		+9.9	1361.1		BS	-1980+2	-15	
	1980				+14.6	89°52'	-4.6	+10.0			BS			
202	1650		352° 44.5'	+7.7°	8.0	-		-8.0		1353.1		+1650	+13	529,272 1,766,496
203	1320		" "	" "	5.7	-		-5.7		1355.4		+1320	+10	528,942 1,766,493
204	990		" "	" "	4.9	-		-4.9		1356.2		+990	+8	528,612 1,766,491
205	660		" "	" "	4.6	-		-4.6		1356.5		+660	+5	528,282 1,766,488
206	330		" "	" "	4.5	-		-4.5		1356.6		+330	+3	527,952 1,766,486
207	0				5.4	-		-5.4		1355.7	X	0	0	527,622 1,766,483
208	330		173° 1.5'	+7.7°	5.2	-		-5.2		1355.9		-330	-4	527,292 1,766,479
208	530		171° 4'	+7.7°	3.9	-		-3.9		1357.2		-530	+11	527,092 1,766,494
209	660		173° 1.5'	+7.7°	2.5	-		-2.5		1358.6		-660	-8	526,962 1,766,475
210	990		" "	" "	5.0	TH	+5.0	0.0		1361.1		-990	-13	526,632 1,766,470
211	1320		" "	" "	1.1	-		-1.1		1360.0		-1320	-17	526,302 1,766,466
212	1650		" "	" "	7.9	TH	+8.3	+0.4		1361.5		-1650	-21	525,972 1,766,462

527,095 + 1,766,505(s)
4-Way Intersect. El. 1357

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE						
5/31/79		G. Cotcamp		R. Hulsey		6834		R. Hulsey		1	15						
AREA		TOPO MAP		STATE	COUNTY	TWP	RANGE	PPM	PARTY MANAGER								
Minnesota		Wadena		Minnesota	Otter Tail	134 N	36 W		L.O. Davis								
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	NORTH + SOUTH -	EAST + WEST -	COORDINATES		REMARKS	
												LAT.	DEP.	Y	X		
									1361.1								
213	1980		173° 1.5'	+7.6°	8.0	TH	+9.9	+1.9		1363.0	TP	-1980+2	-2.2	525,644	1,766,461		
213	1980				14.2	89° 32'	+16.1	+1.9			TP						
76	2310		352° 59.3-180°	+7.6°	+11.9	TH	-11.6	+0.3	1363.3		BS	-2310+1	-2.4				
	2310				+13.7	89° 40'	-13.4	+0.3			BS						
214	1980		352° 59.3'	+7.6°	7.5	TH	+9.9	+2.4		1365.7		+1980	+2.0	525,315	1,766,457		
215	1650		" "	" "	4.1	TH	+8.3	+4.2		1367.5		+1650	+17	524,985	1,766,454		
216	1320		" "	" "	3.8	TH	+6.6	+2.8		1366.1		+1320	+14	524,655	1,766,451		
217	990		" "	" "	4.8	TH	+5.0	+0.2		1363.5		+990	+10	524,325	1,766,447		
218	660		" "	" "	4.0	-		-4.0		1359.3		+660	+7	523,995	1,766,444		
219	330		" "	" "	4.8	-		-4.8		1358.5		+330	+3	523,665	1,766,440		
220	0				5.4	-		-5.4		1357.9	X	0	0	523,335	1,766,437		
221	330		172° 57.8'	+7.6°	4.3	-		-4.3		1359.0		-330	-3	523,005	1,766,434		
222	660		" "	" "	4.4	-		-4.4		1358.9		-660	-6	522,675	1,766,431		
223	990		" "	" "	4.4	-		-4.4		1358.9		-990	-10	522,345	1,766,427		
224	1320		" "	" "	4.1	-		-4.1		1359.2		-1320	-13	522,015	1,766,424		
TL TF	1575		172° 29.6'	+7.6°	3.8	-		-3.8		1359.5		-1575	-3	521,760	1,766,434	Horiz. corr. 4-7' 521,760 + 1,766,430(s) 4-Way Intersect. El. 1360	
225	1650		172° 57.8'	+7.6°	3.9	-		-3.9		1359.4		-1650	-16	521,685	1,766,421		
226	1980		" "	" "	3.9	-		-3.9		1359.4		-1980	-19	521,355	1,766,418		
227	2310		172° 57.8'	+7.9°	4.1	-		-4.1		1359.2	TP	-2310+5	-35	521,030	1,766,402		
227	2310				14.9	89° 44'	+10.7	-4.2			TP						

SURVEY NOTES-HIGH RESOLUTION DATA
GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE						
5/31/79		G. Cotcamp		W. Krol		6834		R. Hulsey		1	16						
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE	PPM	PARTY MANAGER					
Minnesota		Wadena		Minnesota		Otter Tail		134 N		36 W		L. O. Davis					
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	NORTH + SOUTH -	EAST + WEST -	COORDINATES		REMARKS	
												LAT.	DEP.	Y	X		
227										1359.2							
	2310		353° 3' -180°	+7.9°	+10.4	-		+10.4			BS	-2310+5	-38				
	2310				+14.5	89° 34'	-4.0	+10.5	1369.7		BS						
228	1980		353° 3'	+7.9°	9.5	-		-9.5		1360.2		+1980	+33	520,705	1,766,397		
229	1650		" "	"	9.2	-		-9.2		1360.5		+1650	+27	520,375	1,766,391		
230	1320		" "	"	9.0	-		-9.0		1360.7		+1320	+22	520,045	1,766,386		
231	990		" "	"	8.2	-		-8.2		1361.5		+990	+16	519,715	1,766,380		
232	660		" "	"	7.1	-		-7.1		1362.6		+660	+11	519,385	1,766,375		
233	330		" "	"	6.2	-		-6.2		1363.5		+330	+5	519,055	1,766,369		
234	0				5.4	-		-5.4		1364.3	TP	0	0	518,725	1,766,364		
235	330		172° 56.6'	+7.9°	3.2	-		-3.2		1366.5		-330	-5	518,395	1,766,359		
236	660		" "	"	2.4	-		-2.4		1367.3		-660	-9	518,065	1,766,355		
237	990		" "	"	0.3	-		-0.3		1369.4		-990	-15	517,735	1,766,349		
238	1320		" "	"	4.4	TH	+6.6	+2.2		1371.9		-1320	-19	517,405	1,766,345		
239	1650		" "	"	2.9	TH	+8.3	+5.4		1375.1		-1650	-24	517,075	1,766,340		
240	1980		" "	"	4.0	TH	+9.9	+5.9		1375.6		-1980	-29	516,745	1,766,335		
--11--	2270		172° 40'	+7.9°	10.2	TH	+11.4	+1.2		1370.9		-2270	-22	516,455	1,766,342		516,475+1,766,335(s) E-W fence line. EL. 1371
241	2310		172° 56.6'	+8.0°	13.1	89° 40'	+13.4	+0.3		1370.0	TP	-2310+2	-38	516,417	1,766,326		
241	2310				11.2	TH	+11.6	+0.4			TP						
	2640		352° 21.4' -180°	+8.0°	+13.5	-		+13.5	1383.5		BS	-2640+3	-16				
	2640				+0.3	BH	+13.2	+13.5			BS						

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE 6/1/79	INSTRUMENT MAN R. Hulsey	ROD MAN G. Cotcamp	PARTY NUMBER 6834	NOTES CHECKED BY R. Hulsey	LINE NO. 1	PAGE 17
AREA Minnesota	TOPO MAP Wadena 7.5'	STATE Minnesota	COUNTY Otter Tail	TWP 134N	RANGE 36W	PPM
					PARTY MANAGER L.O. Davis	

STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.	
									1383.5					
242	2310		352° 21.4'	+8.0°	6.5	BH	-11.6	-18.1		1365.4		+2310	+14	516,090 1,766,324
243	1980		" "	"	8.9	BH	-9.9	-18.8		1364.7		+1980	+12	515,760 1,766,322
244	1650		" "	"	8.4	BH	-8.3	-16.7		1366.8		+1650	+10	515,430 1,766,320
245	1320		" "	"	11.1	-		-11.1		1372.4		+1320	+8	515,100 1,766,318
246	990		" "	"	8.6	-		-8.6		1374.9		+990	+6	514,770 1,766,316
247	660		" "	"	7.7	-		-7.7		1375.8		+660	+4	514,440 1,766,314
248	330		" "	"	5.6	-		-5.6		1377.9		+330	+2	514,110 1,766,312
249	0				5.4	-		-5.4		1378.1	TP	0	0	513,780 1,766,310
250	330		172° 18.2'	+8.0°	6.0	-		-6.0		1377.5		-330	-2	513,450 1,766,308
251	660		" "	"	6.1	-		-6.1		1377.4		-660	-3	513,120 1,766,307
252	990		" "	"	6.7	-		-6.7		1376.8		-990	-5	512,790 1,766,305
253	1320		" "	"	6.3	-		-6.3		1377.2		-1320	-7	512,460 1,766,303
254	1650		" "	"	7.1	-		-7.1		1376.4		-1650	-9	512,130 1,766,301
255	1980		" "	"	8.6	-		-8.6		1374.9		-1980	-10	511,800 1,766,300
256	2310		" "	"	10.0	-		-10.0		1373.5		-2310	-12	511,470 1,766,298
257	2605		172° 8'	+8.0°	11.0	-		-11.0		1372.5		-2605	-6	511,175 1,766,304
257	2640		172° 18.2'	+8.1°	11.3	-		-11.3		1372.2	TP	-2640	+2	-19 511,142 1,766,291
257	2640				9.7	90°02'	-1.5	-11.2			TP			
	2640		352° 22.2'-180°	+8.1°	+2.3	BH	+13.2	+15.5			BS	-2640	.3	-22
	2640				+13.9	90°02'	+1.5	+15.4	1387.6		BS			

511,185 +1,766,305(s)
T-rd (east) El. 1372

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc. Rerun 6-1-79 R.J.H.

DATE 6/1/79	INSTRUMENT MAN R. Hulsey	ROB MAN G. Cotcamp	PARTY NUMBER 6834	NOTES CHECKED BY R. Hulsey	LINE NO. 1	PAGE 18
AREA Minnesota	TOPO MAP Wadena 7.5'	STATE Minnesota	COUNTY Ottawa!	TWP 134 N	RANGE 36 W	PARTY MANAGER L. O. Davis

STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.	
									1387.6					
258	2310		352° 22.2'	+8.1°	3.5	BH	-11.6	-15.1		1372.5		+2310	+19	510,815 1,766,288
259	1980		" "	"	4.3	BH	-9.9	-14.2		1373.4		+1980	+16	510,485 1,766,285
260	1650		" "	"	13.3	-		-13.3		1374.3		+1650	+14	510,155 1,766,283
261	1320		" "	"	13.0	-		-13.0		1374.6		+1320	+11	509,825 1,766,280
262	990		" "	"	11.2	-		-11.2		1376.4		+990	+8	509,495 1,766,277
263	660		" "	"	8.3	-		-8.3		1379.3		+660	+5	509,165 1,766,274
264	330		" "	"	6.0	-		-6.0		1381.6		+330	+3	508,835 1,766,272
265	0				5.4	-		-5.4		1382.2	A	0	0	508,505 1,766,269
266	330		172° 29.5'	+8.1°	5.1	-		-5.1		1382.5		-330	-3	508,175 1,766,266
267	660		" "	"	5.8	-		-5.8		1381.8		-660	-7	507,845 1,766,262
268	990		" "	"	6.2	-		-6.2		1381.4		-990	-10	507,515 1,766,259
269	1320		" "	"	7.0	-		-7.0		1380.6		-1320	-14	507,185 1,766,255
270	1650		" "	"	7.5	-		-7.5		1380.1		-1650	-17	506,855 1,766,252
271	1980		" "	"	8.0	-		-8.0		1379.6		-1980	-20	506,525 1,766,249
272	2310		" "	"	7.1	-		-7.1		1380.5		-2310	-24	506,195 1,766,245
273	2640		172° 29.5'	+8.1°	4.7	-		-4.7			TP	-2640 +2	-27	505,867 1,766,242
273	2640				3.3	90° 02'	-1.5	-4.8		1382.8	TP			
	1320		353° 22'-18"	+8.1°	+14.0	TH	-6.6	+7.4	1390.2		BS	-1320 +2	-34	
274	1300		354° 0.7'	+8.1°	7.0	-		-7.0		1383.2		+1299	+48	505,848 1,766,256
274	990		353° 22'	+8.1°	5.2	-		-5.2		1385.0		+990	+25	505,539 1,766,233

505,850 + 1,766,235(s)
4-way int. El. 1383

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE 6-1-79	INSTRUMENT MAN R. Hulsey	ROD MAN G. Cotcamp	PARTY NUMBER 6834	NOTES CHECKED BY R. Hulsey	LINE NO. 1	PAGE 20
AREA Minnesota	TOPO MAP Wrightstown	STATE Minnesota	COUNTY Otter Tail	TWP 133N	RANGE 36W	PPM
					PARTY MANAGER L. O. Davis	

STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.	
290										1383.3				
	1980		353° 15' - 180°	+6.2°	+12.0	-		+12.0	1395.3		BS	-1980	+19	
	1980				+2.1	13H	+9.9	+12.0			BS			
291	1650		353° 00'	+6.2°	12.0	-		-12.0		1383.3		+1650	-23	499,931 1,766,256 S-curves
292	1320		352° 33'	+6.2°	10.9	-		-10.9		1384.4		+1320	-29	499,601 1,766,250
293	990		352° 5'	+6.2°	9.1	-		-9.1		1386.2		+990	-30	499,271 1,766,249
294	660		353° 1'	+6.2°	8.3	-		-8.3		1387.0		+660	-9	498,941 1,766,270
295	330		355° 58'	+6.2°	6.2	-		-6.2		1389.1		+330	+12	498,611 1,766,291
296	0				5.4	-		-5.4		1389.9	TP	0	0	498,281 1,766,279
297	330		181° 54'	+6.2°	3.9	-		-3.9		1391.4		-327	-46	497,954 1,766,233
298	660		" "	"	3.4	-		-3.4		1391.9		-653	-93	497,628 1,766,186
299	990		" "	"	3.2	-		-3.2		1392.1		-980	-139	497,301 1,766,140
300	1320		181° 5.7'	+6.2°	3.5	-		-3.5		1391.8	TP	-1309	-168	496,972 1,766,111
300	1320				10.1	TH	+6.6	-3.5			TP			
	1650		350° 34.7' - 180°	+6.2°	+6.8	-		+6.8	1398.6		BS	-1647	+93	
	1650				+15.0	TH	-8.3	+6.7			BS			
301	1320		350° 34.7'	+6.2°	7.1	-		-7.1		1391.5		+1318	-74	496,643 1,766,130
302	990		" "	"	7.1	-		-7.1		1391.5		+988	-56	496,313 1,766,148
303	660		" "	"	6.4	-		-6.4		1392.2		+659	-37	495,984 1,766,167
304	330		" "	"	5.9	-		-5.9		1392.7		+329	-19	495,654 1,766,185
#	92		0° 21'	+6.2°	5.4	-		-5.4		1393.2		+91	+10	495,416 1,766,214 4-way int. El. 1394

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.		PAGE			
6/1/79		R. Hulsey		G. Cotcamp		6834		R. Hulsey		1		21			
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE		PPM		PARTY MANAGER	
Minnesota		Wrightstown 7.5		Minnesota		Otter Tail		133N		# 36N				L.O. Davis	
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y
									1398.6						
305	0				5.4	-		-5.4		1393.2	TP	0	0	495,325	1,766,204
306	330		172° 58.8'	+6.9°	4.6	-		-4.6		1394.0		-330	+1	494,995	1,766,205
307	660		" "	"	3.7	-		-3.7		1394.9		-660	+1	494,665	1,766,205
308	990		" "	"	3.1	-		-3.1		1395.5		-990	+2	494,335	1,766,206
309	1320		" "	"	2.1	-		-2.1		1396.5		-1320	+3	494,005	1,766,207
310	1650		172° 58.8'	+6.9°	1.8	-		-1.8			TP	-1650	+3	493,675	1,766,207
310	1650				10.0	TH	+8.3	-1.7		1396.9	TP				
	1650		353° 15.0' -180°	+6.9°	+5.2	-		+5.2	1402.1		BS	-1650	-4		
	1650				+13.4	TH	-8.3	+5.1			BS				
311	1320		353° 15'	+6.9°	5.6	-		-5.6		1396.5		+1320	+3	493,395	1,766,206
312	990		" "	"	6.3	-		-6.3		1395.8		+990	+3	493,015	1,766,206
313	660		" "	"	6.5	-		-6.5		1395.6		+660	+2	492,685	1,766,205
314	330		" "	"	6.0	-		-6.0		1396.1		+330	+1	492,355	1,766,204
315	0				5.4	-		-5.4		1396.7	TP	0	0	492,025	1,766,203
316	330		173° 8.4'	+6.9°	5.1	-		-5.1		1397.0		-330	0	491,695	1,766,203
317	660		" "	"	5.6	-		-5.6		1396.5		-660	0	491,365	1,766,203
318	990		" "	"	6.7	-		-6.7		1395.4		-990	-1	491,035	1,766,202
319	1320		" "	"	6.3	-		-6.3		1395.8		-1320	-1	490,705	1,766,202
320	1650		173° 8.4'	+6.9°	5.4	-		-5.4		1396.7	TP	-1650	-1	490,375	1,766,202
320	1650				13.7	TH					TP				

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE					
6/1/79		R. Hulsey		G. Cotcamp		6834		R. Hulsey		7	22					
AREA		TOPO MAP	STATE	COUNTY		TWP	RANGE	PPM	PARTY MANAGER							
Minnesota		Wrightstown	Minnesota	Otter tail/Todd		133N	36/35N		L. O. Davis							
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS		
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y	X
320									1402.1							
#	1913		172° 48.8'	+6.9°	4.8	-		-4.8			TP	-1913	+10	490,112	1,766,213	490,105+1,766,205(s) 4-way int. El. 1398
#	1913				14.3	TH	+9.6	-4.7		1397.4	TP					
	1540		263° 54.8'-180°	+7.1°	+8.7	BH	+7.7	+16.4			BS	-27	+1540			Traverse east
	1540				+13.6	90° 06'	+2.7	+16.3	1413.7		BS					to line
π	0				5.4	-		-5.4		1408.3	π	0	0	490,085	1,767,753	
TP	1310		85° 10.6'	+7.1°	11.5	90° 30'	-11.4	-22.9		1390.8	TP	-52	+1309	490,033	1,769,062	
TP	1310				7.7	90° 40'	-15.2	-22.9			TP					
	1360		265° 16.2'-180°	+7.1°	+5.9	-		+5.9	1396.7		BS	-56	+1359			↑
	1360				+12.8	TH	-6.8	+6.0			BS					↑ Otter tail Co.
π	0				5.4	-		-5.4		1391.3	π	0	0	489,977	1,770,421	R 36 N
π	990		85° 20.2'	+7.1°	4.6	-		-4.6		1392.1	TP	-42	+989	489,935	1,771,410	489,910+1,771,425(s) 4-way int. El. 1392
π	990				9.6	TH	+5.0	-4.6			TP					
	2707		352° 54.2'-180°	+7.3°	+14.2	-		+14.2	1406.3		BS	-2707+5	-10			Line goes down
	2707				+0.8	BH	+13.5	+14.3			BS					county & range
321	2640		352° 45'	+7.3°	14.3	-		-14.3		1392.0		+2640	+2	489,873	1,771,402	boundary
322	2310		" "	"	13.0	-		-13.0		1393.3		+2310	+2	489,543	1,771,402	Otter tail & Todd Co.
323	1980		" "	"	12.4	-		-12.4		1393.9		+1980	+2	489,213	1,771,402	R 36 E 35 N
324	1650		" "	"	10.9	-		-10.9		1395.4		+1650	+1	488,883	1,771,401	↓
325	1320		" "	"	9.0	-		-9.0		1397.3		+1320	+1	488,553	1,771,401	
326	990		" "	"	8.5	-		-8.5		1397.8		+990	+1	488,223	1,771,401	

SURVEY NOTES-HIGH RESOLUTION DATA
GEO-445

Geosource Inc.

DATE 6/1/79	INSTRUMENT MAN R. Hulsey	ROD MAN G. Cotcamp	PARTY NUMBER 6834	NOTES CHECKED BY R. Hulsey	LINE NO. 7	PAGE 23
AREA Minnesota	TOPO MAP Wrightstown 7.5'	STATE Minnesota	COUNTY Oter tail/Todd	TWP 133 N	RANGE 36/35 N	PPM
					PARTY MANAGER L. O. Davis	

STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y
									1406.3			1			
327	660		352°45'	+7.3°	9.2	-		-9.2		1397.1		+660	+1	487,893	1,771,401
328	330		" "	"	7.6	-		-7.6		1398.7		+330	0	487,563	1,771,400
329	0				5.4	-		-5.4		1400.9	TP	0	0	487,233	1,771,400
330	330		172°39.3'	+7.3°	5.1	-		-5.1		1401.2		-330	0	486,903	1,771,400
331	660		" "	"	6.5	-		-6.5		1399.8		-660	+1	486,573	1,771,401
332	990		" "	"	7.3	-		-7.3		1399.0		-990	+1	486,243	1,771,401
333	1320		" "	"	6.9	-		-6.9		1399.4		-1320	+1	485,913	1,771,401
334	1650		" "	"	6.4	-		-6.4		1399.9		-1650	+1	485,583	1,771,401
335	1980		" "	"	6.1	-		-6.1		1400.2		-1980	+2	485,253	1,771,402
336	2310		" "	"	5.1	-		-5.1		1401.2		-2310	+2	484,923	1,771,402
4/4	2520		172°29'	+7.3°	14.9	TH	+12.6	-2.3		1404.0		-2520	+10	484,713	1,771,410
337	2640		172°39.3'	+7.3°	4.4	-		-4.4	-4.5	1401.8	TP	-2640	+2-4	484,592	1,771,398
337	2640				12.3	89°56'	+7.7	-4.6			TP				
	2310		352°38.6-180°	+7.3°	+14.7	-		+14.7			BS	-2310-1	+2-4		
	2310				+3.2	BH	+11.6	+14.8	1416.6		BS				
338	1980		352°38.6'	+7.3°	14.3	-		-14.3		1402.3		+1980	-2	484,261	1,771,394
339	1650		" "	" "	13.7	-		-13.7		1402.9		+1650	-2	483,931	1,771,394
340	1320		" "	" "	12.7	-		-12.7		1403.9		+1320	-1	483,601	1,771,395
341	990		" "	" "	11.3	-		-11.3		1405.3		+990	-1	483,271	1,771,395
342	660		" "	" "	8.2	-		-8.2		1408.4		+660	-1	482,941	1,771,395

horiz. correct. $y=+3'$
 $y=0'$
484,715+1,771,410(s)
4-way int. E1.1404

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.		PAGE			
6/2/79		G. Cottramp		R. Hulsey		6834		R. Hulsey		1		24			
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE		PPM		PARTY MANAGER	
Minnesota		Wrightstown 7.5		Minnesota		Ottawa/Tail/Todd		133 N		36/35 N				L.O. Davis	
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y
									1416.6						
343	330		352° 38.6'	+7.3°	5.7	-		-5.7		1410.9		+330	0	482,611	1,771,396
344	0				5.4	-		-5.4		1411.2	π	0	0	482,281	1,771,396
345	330		172° 44.8'	+7.3°	3.0	-		-3.0		1413.6		-330	0	481,951	1,771,396
346	660		" "	" "	3.1	TH	+3.3	+0.2		1416.8		-660	-1	481,621	1,771,395
347	990		" "	" "	10.8	89°-	+17.3	+6.5		1423.1		-990	-1	481,291	1,771,395
348	1320		" "	" "	5.1	89°-	+23.0	+17.9		1434.5		-1320	-1	480,961	1,771,395
349	1650		" "	" "	1.6	89°-	+28.8	+27.2		1443.8		-1650	-1	480,631	1,771,395
350	1980		172° 44.8'	+7.3°	3.1	89°-	+34.6	+31.5	+31.4	1448.0	TP	-1980-1	-2-5	480,300	1,771,389
350	1980				5.6	88°56'	+36.8	+31.2			TP				
	2310		352° 23.7'-180°	+7.3°	+2.7	BH	+11.6	+14.3			BS	-2310-1	+12-5		
	2310				+5.0	90°14'	+9.4	+14.4	+1462.4		BS				
351	1980		352° 23.7'	+7.3°	14.0	-		-14.0		1448.4		+1980	-11	479,969	1,771,385
352	1650		" "	" "	7.8	BH	-8.3	-16.1		1446.3		+1650	-9	479,639	1,771,387
FF	1365		352° 39'	+7.3°	9.3	BH	-6.8	-16.1		1446.3		+1365	-1	479,354	1,771,395
353	1320		352° 23.7'	+7.3°	10.1	BH	-6.6	-16.7		1445.7		+1320	-7	479,309	1,771,389
354	990		" "	" "	8.6	-		-8.6		1453.8		+990	-5	478,979	1,771,391
355	660		" "	" "	5.5	-		-5.5		1456.9		+660	-4	478,649	1,771,392
356	330		" "	" "	5.2	-		-5.2		1457.2		+330	-2	478,319	1,771,394
357	0				5.4	-		-5.4		1457.0	π	0	0	477,989	1,771,396
358	330		171° 52.4'	+7.3°	5.4	-		-5.4		1457.0		-330	+5	477,659	1,771,401

479,350 + 1,771,410(S)
4-way int. El. 1447

SURVEY NOTES-HIGH RESOLUTION DATA
GEO-445

Geosource Inc.

DATE 6/2/79	INSTRUMENT MAN G. Cotcomp	ROD MAN R. Hulsey	PARTY NUMBER 6834	NOTES CHECKED BY R. Hulsey	LINE NO. 1	PAGE 25
AREA Minnesota	TOPO MAP Wrightstown 7.5'	STATE Minnesota	COUNTY Otter Tail/Todd	TWP 133 N	RANGE 36/35 W	PARTY MANAGER L.O. Davis

STATION NO.	SLOPE DISTANCE	PLOT DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y
									1462.4						
359	660		171°524'	+7.3°	1.0	-		-1.0		1461.4		-660	+10	477,329	1,771,406
360	990		" "	" "	4.8	TH	+5.0	+0.2		1462.6		-990	+14	476,999	1,771,910
361	1320		" "	" "	4.5	TH	+6.6	+2.1		1464.5		-1320	+19	476,669	1,771,915
362	1650		" "	" "	6.0	TH	+8.3	+2.3		1464.7		-1650	+24	476,339	1,771,420
363	1980		" "	" "	1.7	TH	+9.9	+8.2		1470.6		-1980	+29	476,009	1,771,425
364	2310		171°524'	+7.5°	6.7	89°30'	+20.2	+13.5		1475.9	TP	-2310	+25	475,679	1,771,421
364	2310				2.6	89°36'	+16.1	+13.5			TP				
	1455		351°42.2'-180°	+7.5°	+4.7	-		+4.7	1480.6		BS	-1455	+20		
	1455				+11.9 +16.4	TH	-7.3	+4.6			BS				v recheck 6/2/79 GWC
365	1125		351°42.2'	+7.5°	3.5	-		-3.5		1477.1		+1125	-16	475,349	1,771,425
366	795		" "	" "	4.3	-		-4.3		1476.3		+795	-11	475,019	1,771,430
367	465		" "	" "	5.1	-		-5.1		1475.5		+465	-6	474,689	1,771,435
368	135		" "	" "	5.7	-		-5.7		1474.9		+135	-2	474,359	1,771,439
TL	0				5.4	-		-5.4		1475.2	X	0	0	474,224	1,771,441
TL	1340		87°35'	+7.5°	8.1	-		-8.1		1472.5	TP	-119	+1335	474,105	1,772,776
TL	1340				148	TH	+6.7	-8.1			TP				(1340 offset east)
	1387		353°20.6'-180°	+7.6°	+10.8	-		+10.8	1483.3		BS	-1387	-23		Todd Co.
	1387				+6.7	90°10'	+4.0	+10.7			BS				R35W ↓
369	1320		353°9'	+7.6°	9.0	-		-9.0		1474.3		+1320	+17	474,038	1,772,770
370	990		" "	" "	4.7	-		-4.7		1478.6		+990	+13	473,708	1,772,766

↑
Otter Tail & Todd Counties R36/35W
474,210 + 1,771,425 (S)
T-intersect. El. 1476
474,090 + 1,772,790 (S)
T-intersect.
(1340 offset east)
Todd Co.
R35W
↓

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE 6/2/79	INSTRUMENT MAN G. Cotcamp	ROD MAN R. Hulsey	PARTY NUMBER 6834	NOTES CHECKED BY R. Hulsey	LINE NO. 1	PAGE 26
AREA Minnesota	TOPO MAP Wrightstown 7 1/2'	STATE Minnesota	COUNTY Otter Tail / Todd	TWP 133/132 N	RANGE 35/36 W	PARTY MANAGER L.O. Davis

STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y
									1483.3						
371	660		353° 9'	+7.6°	4.7	-		-4.7		1478.6		+660	+9	473,378	1,772,762
372	330		" "	" "	3.7	-		-3.7		1479.6		+330	+4	473,048	1,772,757
373	0				5.4	-		-5.4		1477.9	π	○	○	472,718	1,772,753
374	330		173° 39'	+7.6°	8.6	-		-8.6		1474.7		-330	-7	472,388	1,772,746
375	660		" "	" "	13.5	-		-13.5		1469.8		-660	-14	472,058	1,772,739
376	990		" "	" "	9.2	BH	-5.0	-14.2		1469.1		-990	-22	471,728	1,772,731
377	1317		171° 46'	+7.6°	10.3	BH	-6.6	-16.9		1466.4	TP	-1317	+15	471,401	1,772,768 curve
377	1317				5.4	90° 30'	-11.5	-16.9			TP				
	2640		334° 19.7'-180°	+7.6°	+12.1	89° 10'	-38.4	-26.3	1440.1		BS	-2510	+819		
	2640				+13.6	89° 8'	-39.9	-26.3			BS				
378	2310		334° 19.7'	+7.6°	8.0	89° 10'	+33.6	+25.6		1465.7		+2196	-717	471,087	1,772,870
379	1980		" "	" "	4.8	89° 10'	+28.8	+24.0		1464.1		+1882	-614	470,773	1,772,973
380	1650		" "	" "	7.9	89° 10'	+24.0	+16.1		1456.2		+1569	-512	470,460	1,773,075
381	1320		" "	" "	2.8	89° 30'	+11.5	+8.7		1448.8		+1255	-409	470,146	1,773,178
382	990		" "	" "	3.1	TH	+5.0	+1.9		1442.0		+941	-307	469,832	1,773,280
383	660		" "	" "	3.8	-		-3.8		1436.3		+627	-205	469,518	1,773,382
384	330		" "	" "	7.0	-		-7.0		1433.1		+314	-102	469,205	1,773,485
384	27		7° 14'	+7.6°	5.9	-		-5.9		1434.2		+26	+7	468,917	1,773,594
385	0				5.4	-		-5.4		1434.7	π	○	○	468,891	1,773,587
386	330		172° 30.2'	+7.6°	5.8	-		-5.8		1434.3		-330	-1	468,561	1,773,586

↑ R35W
Todd Co. T133N
468,920+1,773,610(S)
Way Intersect. E1.1435
Ottertail & Todd
County line. T 132N
↓ R35/36 W

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE 6/2/79	INSTRUMENT MAN G. Cotcamp	ROD MAN R. Hulsey	PARTY NUMBER 6834	NOTES CHECKED BY R. Hulsey	LINE NO. 1	PAGE 27
AREA Minnesota	TOPO MAP Wrightstown 7.5'	STATE Minnesota	COUNTY Ottertail/Todd	TWP 132 N	RANGE 36/35W	PPM
					PARTY MANAGER L.O Davis	

STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.	
									1440.1					
387	660		172°30.2'	+7.6°	6.7	-		-6.7		1433.4		-660	-1	468,231 1,773,586
388	990		" "	" "	4.4	-		-4.4		1435.7		-990	-2	467,901 1,773,585
389	1320		" "	" "	2.6	-		-2.6		1437.5		-1320	-2	467,571 1,773,585
390	1650		" "	" "	8.2	TH	+8.3	+0.1		1440.2		-1650	-3	467,241 1,773,584
391	1980		" "	" "	6.4	TH	+9.9	+3.5		1443.6		-1980	-4	466,911 1,773,583
392	2310		" "	" "	5.5	TH	+11.6	+6.1		1446.2		-2310	-4	466,581 1,773,583
393	2640		172°30.2'	+7.6°	6.4	TH	+13.2	+6.8	+6.7	1446.8	TP	-2640	-5	466,251 1,773,582
393	2640				5.7	89°49'	+12.3	+6.6			TP			
	2310		352°56.4' -180°	+7.6°	+10.2	89°24'	-24.2	-14.0	1432.8		BS	-2310	-22	
	2310				+14.1	89°18'	-28.2	-14.1			BS			
394	1980		352°56.4'	+7.6°	8.5	89°20'	+23.0	+14.5		1447.3		+1980	+19	465,921 1,773,579
395	1650		" "	" "	6.0	89°20'	+19.2	+13.2		1446.0		+1650	+16	465,591 1,773,576
396	1320		" "	" "	6.1	89°20'	+15.4	+9.3		1442.1		+1320	+12	465,261 1,773,572
397	990		" "	" "	8.8	89°20'	+11.5	+2.7		1435.5		+990	+9	464,931 1,773,569
398	660		" "	" "	3.4	-		-3.4		1429.4		+660	+6	464,601 1,773,566
399	330		" "	" "	6.2	-		-6.2		1426.6		+330	+3	464,271 1,773,563
400	0				5.4	-		-5.4		1427.4	TP	0	0	463,941 1,773,560
401	330		172°41'	+7.6°	2.7	89°	+5.8	+3.1		1435.9		-330	-7	463,611 1,773,553
402	660		" "	" "	8.8	88°	+23.0	+14.2		1447.0		-660	-15	463,281 1,773,545
402	716		172°46'	+7.6°	9.5	84°	+25.0	+15.5		1448.3		-716	-5	463,225 1,773,555

Horiz corr y=4'
x=-18'
463,225 + 1,773,555 (S)
Elev. Intersect. EL. 1449'

SURVEY NOTES-HIGH RESOLUTION DATA
GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE						
6-4-79		R. Hulsey		G. Cotcamp		6834		R. Hulsey		1	28						
AREA		TOPO MAP		STATE	COUNTY	TWP	RANGE	PPM	PARTY MANAGER								
Minnesota		Wrightstown 7.5'		Minnesota	Otertail/Todd	132 N	36/35 W		L. O. Davis								
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	NORTH + SOUTH -	EAST + WEST -	COORDINATES		REMARKS	
												LAT.	DEP.	Y	X		
									1432.8								
403	990		172°41'	+79°	8.7	88°30'	+25.9	+17.2		1450.0	TP	-990	-27	462,951	1,773,533		
403	990				5.8	88°30'	+23.0	+17.2			TP						
	2310		353°52.2'-180°	+79°	3.7	-		+13.7	1463.7		BS	-2309	-71				
	2310				2.1	BH	+11.6	+13.7			BS						
404	1980		353°52.2'	+79°	12.3	-		-12.3		1451.4		+1979	+61	462,621	1,773,523		
405	1650		" "	"	11.6	-		-11.6		1452.1		+1649	+51	462,291	1,773,513		
406	1320		" "	"	11.0	-		-11.0		1452.7		+1319	+41	461,961	1,773,503		
407	990		" "	"	9.7	-		-9.7		1454.0		+990	+31	461,632	1,773,493		
408	660		" "	"	6.9	-		-6.9		1456.8		+660	+21	461,302	1,773,483		
409	330		" "	"	3.9	-		-3.9		1459.8		+330	+10	460,972	1,773,472		
410	0				5.4	-		-5.4		1458.3	T	0	0	460,642	1,773,462		
411	330		173°29.6'	+79°	10.2	-		-10.2		1453.5		-330	-8	460,312	1,773,454		
412	660		" "	"	12.8	BH	-3.3	-16.1		1447.6		-660	-16	459,982	1,773,446		
413	990		" "	"	12.4	90°30'	-8.6	-21.0		1442.7		-990	-24	459,652	1,773,438		
414	1320		" "	"	13.3	90°30'	-11.5	-24.8		1438.9		-1320	-32	459,322	1,773,430		
415	1650		" "	"	11.3	90°30'	-14.4	-25.7		1438.0		-1650	-40	458,992	1,773,422		
416	1980		" "	"	7.5	90°30'	-17.3	-24.8		1438.9		-1979	-48	458,663	1,773,414		
417	2310		173°29.6'	+79°	11.0	BH	-11.6	-22.6			TP	-2309	-56	458,333	1,773,406		
417	2310				9.1	90°20'	-13.4	-22.5		1441.2	TP						

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE				
6-4-79		R. Hulsey		G. Cotcamp		6834		R. Hulsey		1	29				
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE		PPM		PARTY MANAGER	
Minnesota		Wrightstown/Eagle		Minnesota		Otertail/Todd		132 N		36/35 W				L.O. Davis	
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	Bend DEC	NW 7.5' ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y
417										1441.2					
	2310		353°40.9' -180'	+7.9°	+11.3	TH	-11.6	-0.3			BS	-2309	-64		
	2310				+13.2	89°40'	-13.4	-0.2	1441.0		BS				
418	1980		353°40.9'	+7.9°	7.4	TH	+9.9	+2.5		1443.5		+1979	+55	458,003	1,773,397
419	1650		"	"											
419	1885		354°00'	+7.9°	5.6	TH	+9.4	+3.8		1444.8		+1884	+62	457,908	1,773,404
419	1650		353°40.9'	+7.9°	3.8	TH	+8.3	+4.5		1445.5		+1649	+46	457,673	1,773,388
420	1320		"	"	1.9	TH	+6.6	+4.7		1445.7		+1319	+36	457,343	1,773,378
421	990		"	"	0.3	TH	+5.0	+4.7		1445.7		+990	+27	457,014	1,773,369
422	660		"	"	2.2	TH	+3.3	+1.1		1442.1		+660	+18	456,684	1,773,360
423	330		"	"	2.5	-		-2.5		1438.5		+330	+9	456,354	1,773,351
424	0				5.4	-		-5.4		1435.6	TP	0	0	456,024	1,773,342
425	330		173°13'	+8.2°	10.8	-		-10.8		1430.2		-330	-8	455,694	1,773,334
426	660		"	"	13.1	-		-13.1		1427.9		-660	-16	455,364	1,773,326
427	990		"	"	11.0	90°40'	-11.5	-22.5		1418.5		-990	-24	455,034	1,773,318
428	1320		"	"	11.0	90°30'	-11.5	-22.5		1418.5		-1320	-33	454,704	1,773,309
429	1650		"	"	8.8	-		-8.8		1432.2		-1649	-41	454,375	1,773,301
430	1980		"	"	3.4	TH	+9.9	+6.5		1447.5		-1979	-49	454,045	1,773,293
431	2310		"	"	8.4	89°30'	+20.2	+11.8		1452.8		-2309	-57	453,715	1,773,285
432	2646		173°13'	+8.2°	8.7	89°30'	+23.0	+14.3			TP	-2639-2	-65	453,383	1,773,277
432	2640				1.0	89°40'	+15.4	+14.4		1455.4	TP				

457,910 + 1,773,400(s)

4-way int. El. 1445

↑

Wrightstown Quad.

Eagle Bend Quad.

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SURVEY NOTES-HIGH RESOLUTION DATA
GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE			
6-4-79		R. Hulsey		G. Cotcamp		6834		R. Hulsey		1	30			
AREA		TOPO MAP		STATE	COUNTY		TWP	RANGE	PPM	PARTY MANAGER				
Minnesota		Eagle Bend NW 7.5		Minnesota	Otertail/Todd		132 N	36/35 W		L. O. Davis				
STATION NO.	SLOPE DISTANCE	PLOT DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.	
432										1455.4				
	660		352° 39.2' - 180°	+8.2°	+4.5	-		+4.5	1459.9		BS	-660-3	-10	
	660				+7.8	TH	-3.3	+4.5			BS			
433	330		352° 39.2'	+8.2°	0.2	-		-0.2		1459.7		+330	+5	453,050 1,773,272
434	0				5.4	-		-5.4		1454.5	TP	0	0	452,720 1,773,267
BM	275		268° 44'	+8.2°	11.1	87° 10'	+13.6	+2.5		1462.4		+33	-273	452,753 1,772,994
FF	128		170° 1'	+8.2°	11.1	-		-11.1		1448.8		-128	+4	452,590 1,773,271
435	330		171° 29.1'	+8.2°	13.5	91° -	-5.8	-19.3		1440.6		-330	+2	452,390 1,773,269
436	660		" "	"	10.3	92° -	-23.0	-33.3		1426.6		-660	+4	452,060 1,773,271
437	990		171° 29.1'	+8.2°	13.3	91° 30'	-25.9	-39.2			TP	-990-2	+5	451,730 1,773,272
437	990				10.5	91° 40'	-28.8	-39.3		1420.6	TP			
	2640		351° 7.6' - 180°	+8.2°	+5.3	TH	-13.2	-7.9	1412.7		BS	-2639-3	+31	
	2640				+7.6	89° 40'	-15.4	-7.8			BS			
438	2310		351° 7.6'	+8.2°	4.7	TH	+11.6	+6.9		1419.6		+2310	-27	451,398 1,773,271
439	1980		" "	"	5.6	TH	+9.9	+4.3		1417.0		+1980	-23	451,068 1,773,275
440	1650		" "	"	6.8	TH	+8.3	+1.5		1414.2		+1650	-19	450,738 1,773,279
441	1320		" "	"	1.2	-		-1.2		1411.5		+1320	-16	450,408 1,773,282
442	990		" "	"	3.4	-		-3.4		1409.3		+990	-12	450,078 1,773,286
443	660		" "	"	5.3	-		-5.3		1407.4		+660	-8	449,748 1,773,290
444	330		" "	"	5.5	-		-5.5		1407.2		+330	-4	449,418 1,773,294
445	0				5.4	-		-5.4		1407.3	TP	0	0	449,088 1,773,298

U.S.G.S.
"24 LNB 1967" E1. 1462.7
452,590 + 1,773,260(s)
4-way int.

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE 6-4-79	INSTRUMENT MAN R. Hulsey	ROD MAN G. Cotcamp	PARTY NUMBER 6834	NOTES CHECKED BY R. Hulsey	LINE NO. 1	PAGE 31
AREA Minnesota	TOPO MAP Eagle Bend N7.5	STATE Minnesota	COUNTY Otter tail	TWP 132 N	RANGE 36/35 W	PARTY MANAGER L. O. Davis

STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.	
									1412.7					
446	330		171° 14'	+8.2°	5.6	-		-5.6		1407.1		-330	+3	448,758 1,773,301
447	660		" "	"	5.3	-		-5.3		1407.4		-660	+7	448,428 1,773,305
448	990		" "	"	4.7	-		-4.7		1408.0		-990	+10	448,098 1,773,308
449	1320		" "	"	4.0	-		-4.0		1408.7		-1320	+13	447,768 1,773,311
450	1650		" "	"	2.5	-		-2.5		1410.2		-1650	+16	447,438 1,773,314
451	1780		170° 58'	+8.2°	1.5	-		-1.5		1411.2		-1779	+26	447,309 1,773,324 4-way int. El. 1411
452	1980		171° 55.8'	+8.2°	2.6	-		-2.6		1410.1		-1980	-4	447,108 1,773,294
453	2310		" "	"	2.6	-		-2.6		1410.1		-2310	-5	446,778 1,773,293
453	2640		171° 55.8'	+8.2°	2.2	-		-2.2			TP	-2640-3	-6	446,445 1,773,292
453	2640				10.0	89° 50'	+7.7	-2.3		1410.4	TP			
	2310		353° 43.8' - 180°	+8.2°	+5.8	-		+5.8			BS	-2309-2	-78	
	2310				+4.4	90° 02'	+1.3	+5.7	1416.1		BS			
454	1980		353° 43.8'	+8.2°	4.9	-		-4.9		1411.2		+1979	+67	446,113 1,773,281
455	1650		" "	"	4.3	-		-4.3		1411.8		+1649	+56	445,783 1,773,270
456	1320		" "	"	5.1	-		-5.1		1411.0		+1319	+44	445,453 1,773,258
457	990		" "	"	5.9	-		-5.9		1410.2		+989	+33	445,123 1,773,247
458	660		" "	"	7.5	-		-7.5		1408.6		+660	+22	444,794 1,773,236
459	330		" "	"	6.7	-		-6.7		1409.4		+330	+11	444,464 1,773,225
460	0				5.4	-		-5.4		1410.7	TP	0	0	444,134 1,773,214
461	330		173° 58.9'	+8.2°	6.7	-		-6.7		1409.4		-330	-13	443,804 1,773,201

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE 6-4-79	INSTRUMENT MAN R. Hulsey	ROD MAN G. Catcamp	PARTY NUMBER 6834	NOTES CHECKED BY Walt Krol	LINE NO. 1	PAGE 32
AREA Minnesota	TOPO MAP Eagle Bend NW	STATE Minnesota	COUNTY Otter Tail	TWP 132 N	RANGE 36W/35W	PPM
PARTY MANAGER L. O. Davis						

STATION NO.	SLOPE DISTANCE	PLOT DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.	
									1416.1					
462	660		173° 58.9'	+8.2°	6.0	-		-6.0		1410.1		-660	-25	443,474 1,773,189
463	990		" "	"	5.1	-		-5.1		1411.0		-989	-38	443,145 1,773,176
464	1320		" "	"	5.0	-		-5.0		1411.1		-1319	-50	442,815 1,773,164
465	1650		" "	"	4.2	-		-4.2		1411.9		-1649	-63	442,485 1,773,151
466	1980		" "	"	4.5	-		-4.5		1411.6		-1979	-75	442,155 1,773,139
467	2310													
467	2130		173° 52'	+8.2°	5.1	-		-5.1		1411.0		-2129	-77	442,005 1,773,137
467	2310		173° 58.9'	+7.9°	5.7	-		-5.7		1,410.4	TP	-2309	-76	441,825 1,773,138
467	2310				4.3	90° 02'	-1.3	-5.6			TP			
	1980		352° 41.3'-180°	+7.9°	+12.8	-		+12.8	1,423.2		BS	-1980	-20	
	1980				+2.9	BH	+9.9	+12.8			BS			
468	1650		352° 41.3'	+7.9°	11.5	-		-11.5		1,411.7		+1650	+17	441,495 1,773,135
469	1320		" "	"	10.4	-		-10.4		1,412.8		+1320	+14	441,165 1,773,132
470	990		" "	"	10.0	-		-10.0		1,413.2		+990	+10	440,835 1,773,128
471	660		" "	"	9.3	-		-9.3		1,413.9		+660	+7	440,505 1,773,125
472	330		" "	"	8.2	-		-8.2		1,415.0		+330	+3	440,175 1,773,121
473	0				5.4	-		-5.4		1,417.8	TP	0	0	439,845 1,773,118
474	330		172° 53.5'	+7.9°	-1.4	+TH	+1.7	+0.3		1,423.5		-330	-5	439,515 1,773,115
475	660		" "	"	-2.8	89° -	+11.5	+8.7		1,431.9		-660	-9	439,185 1,773,109
476	990		" "	"	-5.2	88° 30'	+25.9	+20.7		1,443.9		-990	-14	438,855 1,773,104

442,000 + 1,773,1456
(E)
T-rd. E1. 1411

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.		PAGE			
6/6/79		G. Cotcamp		W. Krol		6834		W. Krol		1		33			
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE		PPM		PARTY MANAGER	
Minnesota		Eagle Bend NW		Minnesota		Otter Tail		131N, 132N		136W/135W				L.O. Davis	
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y
									1.4232						
477	1320	1319	172° 53.5'	+7.9°	74	88° -	+46.0	+38.6		1.461.8		-1319	-18	438.526	1.773.100
478	1650	1649	172° 53.5'	+7.9°	12.7	88° -	+57.5	+44.8		1.468.0	TP	-1649	-23-2	438.196	1.773.093
478	1650				7.9	88° 10'	+52.8	+44.9			TP				
	1650		352° 31.7' -180°	+7.9°	+13.9	89° 34'	-12.5	+1.4	1.469.4		BS	-1650	-12-2		
	1650				+13.0	89° 36'	-11.5	+1.5			BS				
479	1320		352° 31.7'	+7.9°	12.0	89° 30'	+11.5	-0.5		1.468.9		+1320	+10	437.866	1.773.089
480	990		" "	"	6.0	89° 30'	+8.6	+2.6		1.472.0		+990	+7	437.536	1.773.086
481	660		" "	"	2.7	89° 30'	+5.8	+3.1		1.472.5		+660	+5	437.206	1.773.084
482	330		" "	"	1.8	89° 30'	+2.9	+1.1		1.470.5		+330	+2	436.876	1.773.081
482	200		354° 5.6'	+7.9°	1.4	-		-1.4		1.468.0		+200	+7	436.746	1.773.086
483	0				5.4	-		-5.4		1.464.0	X	0	0	436.546	1.773.079
484	330		172° 51.1'	+7.9°	2.4	-		-2.4		1.467.0		-330	-4	436.216	1.773.075
485	660		" "	"	3.2	-		-3.2		1.466.2		-660	-9	435.886	1.773.070
486	990		" "	"	4.4	-		-4.4		1.465.0		-990	-13	435.556	1.773.066
487	1320		" "	"	3.5	-		-3.5		1.465.9		-1320	-17	435.226	1.773.062
488	1650		172° 51.1'	+7.9°	4.1	-		-4.1		1.465.3	TP	-1650	-22-2	434.896	1.773.055
488	1650				12.4	TH	+8.3	-4.1			TP				
	1650		352° 20' -180°	+7.9°	+4.8	-		+4.8	1.470.1		BS	-1650	-7-2		
	1650				+13.0	TH	-8.3	+4.7			BS				
489	1320		352° 20'	+7.9°	2.9	-						+1320	+5	434.566	1.773.051

436,745 + 1,773,090 (s)
fence line east, 1468.

SURVEY HIGH RESOLUTION DATA

Geosource Inc.

DATE 6/6/79	INSTRUMENT MAN G. Cotcamp	ROD MAN W. Krol	PARTY NUMBER 6834	NOTES CHECKED BY W. Krol	LINE NO. 1	PAGE 34 of 35
AREA MINNESOTA	TOPO MAP Eagle Bend NW	STATE Minnesota	COUNTY Otter Tail	TWP 131N	RANGE 36W/35W	PPM
PARTY MANAGER L.O. Davis						

STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y
									1470.1						
490	990		352° 20'	+7.9°	6.7	-		-6.7		1.4634		+990	+4	434.236	1.773.050
491	660		" "	"	7.4	-		-7.4		1.4627		+660	+3	433.906	1.773.049
492	330		" "	"	6.8	-		-6.8		1.4633		+330	+1	433.576	1.773.047
493	0				5.4	-		-5.4		1.4647	π	0	0	433.246	1.773.046
494	330		172° 44'	+7.9°	1.5	-		-1.5		1.4686		-330	-4	432.916	1.773.042
495	660		" "	"	1.0	TH	+3.3	+2.3		1.472.4		-660	-7	432.586	1.773.039
496	990		" "	"	3.9	TH	+4.5	+0.6		1.470.7		-990	-11	432.256	1.773.035
497	1320		" "	"	6.2	TH	+6.6	+0.4		1.470.5		-1320	-15	431.926	1.773.031
498	1650		172° 44'	+7.9°	8.5	TH	+8.3	-0.2		1.469.9		-1650	-18	431.596	1.773.028
<u>TL</u>	1830		172° 26'	+7.9°	8.2	TH	+9.2	+1.0		1.471.1		-1830	-11	431.416	1.773.035
															Intersect. elev. 1473' 431,415+1,773,035(s)

EOL # 1