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Computerized Loran C System  
To Control Disposal Operations  
Foul Area, Massachusetts Bay

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# Disposal Area Monitoring System Damos

Contribution 26/

July 11, 1983



**US Army Corps  
of Engineers**

New England Division

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APPLICATION OF A LORAN-C  
CONTROL SYSTEM TO DISPOSAL  
OPERATIONS AT THE  
BOSTON FOUL GROUND  
JANUARY 11 - FEBRUARY 2, 1983

CONTRIBUTION #26

July 11, 1983

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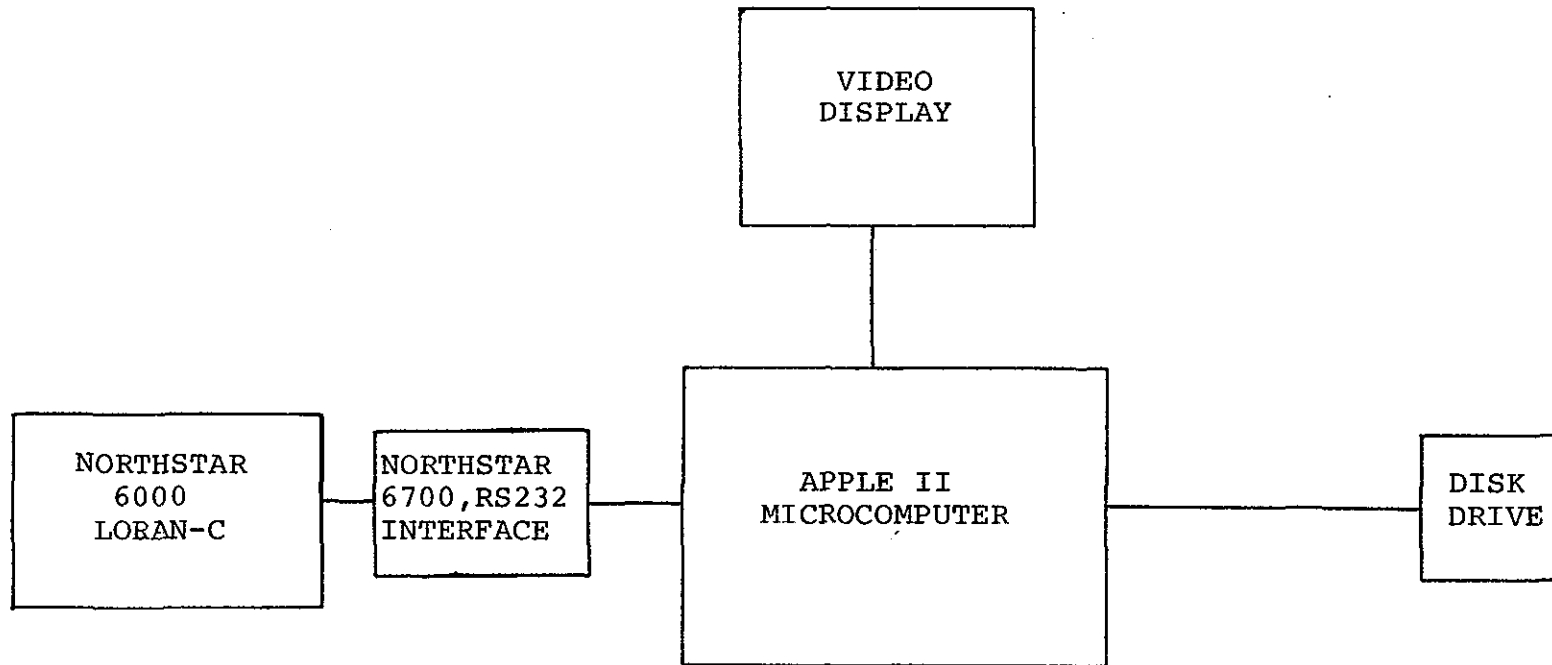
## 1.0 INTRODUCTION

In the New England region, disposal of dredged material in the marine environment is generally controlled by management procedures requiring dumping at a disposal buoy under the supervision of a federal inspector. This procedure is quite expensive, particularly in manpower logistics, and often limited in accuracy and flexibility since buoys typically have a large watch circle and cannot be readily moved from one point to another. A different approach to disposal management, utilizing a computerized navigation system, has recently been employed with excellent results at the Boston Foul Ground in Massachusetts Bay. This report presents a description of the disposal control system installed aboard the 250 foot hopper dredge SUGAR ISLAND and an evaluation of the results attained over a series of 65 separate dumping operations between January 11 and February 1, 1983.

## 2.0 DISPOSAL CONTROL SYSTEM

A prototype version of a computerized disposal control system was installed on the bridge of the SUGAR ISLAND. A block diagram of the system, which closely resembles the unit installed on tugs at New Haven to control capping operations during the Stamford/New Haven project in 1980, is presented in Figure 2.0-1. The system consists of a Northstar 6000 Loran-C receiver interfaced to an Apple II computer through a Northstar 6700, RS-232-C interface unit. Software within the Apple II processes the raw Loran-C time delay data using a Kalman filter algorithm and presents a ship track display on a video monitor (Fig. 2.0-2). This display provides the helmsman with sufficient data

2



SAI

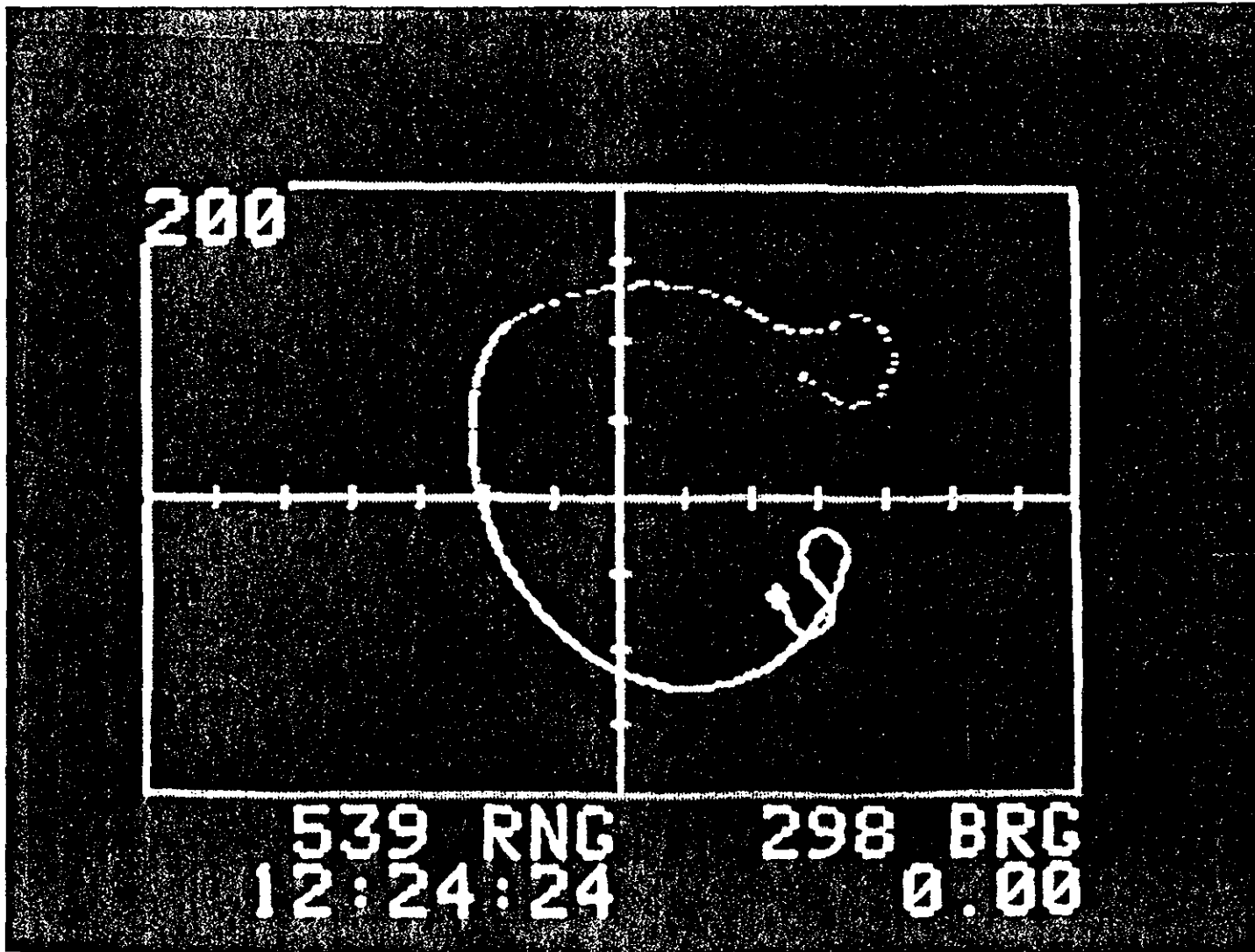
PROTOTYPE DISPOSAL CONTROL SYSTEM

Figure 2.0-1.



# SAI

## NAVIGATION & DATA ACQUISITION SYSTEM



REPRESENTATIVE VIDEO DISPLAY



Figure 2.0-2



to accurately position the ship for point dumping operations.

In addition to ship control, the system continuously records position data at a preset interval (5 min. for this operation) on a magnetic disk to permit later reconstruction of the ships track. When a special function key is initialized indicating disposal is occurring, a flag is set and the system records position continuously for one minute to provide accurate definition of the location and velocity of the ship during disposal. An example of the printout generated by the system is presented in Figure 2.0-3.

An important feature of the system installed on the SUGAR ISLAND was the simplicity of the operating procedures. In order to operate the system, the Corps inspector simply inserted a disk and turned the unit on. As the ship left the harbor a key was pressed when the vessel passed a designated buoy which checked the calibration of the Loran-C receivers. When disposal occurred, the inspector pressed a second key to indicate the event. All recording procedures, graphic display changes and calibration checks were conducted automatically by the computer.

## 2.1 System Software

The program developed for operation of the disposal control system had to perform the following functions:

- initialize the system, including disposal point, calibration point, Loran-C chain, Loran-C slaves, etc.
- acquire Loran-C time delay data from RS-232-C interface
- acquire initial calibration of the Loran-C receiver and maintain calibration through the duration of the disposal trip
- present position and other pertinent data on video display for ship control

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRE	SPD	CRS	ERR 1	ERR 2	FG
01/15 06:20:04	42 20.144	70 56.570	31733	252	8.7	77	991.3	828.0	
01/15 06:25:03	42 20.750	70 55.928	30562	254	8.4	35	991.3	828.0	
01/15 06:30:00	42 21.429	70 55.390	29516	256	28.8	37	991.3	828.0	
01/15 06:35:04	42 22.003	70 54.665	28300	257	9.5	59	991.3	828.0	
01/15 06:40:00	42 22.381	70 53.714	26876	258	10.2	74	0.4	0.0	
01/15 06:45:00	42 22.576	70 52.669	25379	258	10.4	81	0.4	0.0	
01/15 06:50:03	42 22.760	70 51.583	23871	258	10.4	82	0.4	0.0	
01/15 06:55:05	42 22.920	70 50.541	22411	258	9.8	84	0.4	0.0	
01/15 07:00:04	42 23.132	70 49.460	20879	258	10.1	81	0.4	0.0	
01/15 07:05:02	42 23.313	70 48.415	19408	259	9.7	83	0.4	0.0	
01/15 07:10:00	42 23.507	70 47.365	17924	259	10.0	78	0.4	0.0	
01/15 07:15:03	42 23.708	70 46.302	16423	259	10.0	79	0.4	0.0	
01/15 07:20:01	42 23.913	70 45.243	14924	259	10.2	79	0.4	0.0	
01/15 07:25:04	42 24.097	70 44.165	13409	260	10.7	79	0.4	0.0	
01/15 07:30:00	42 24.295	70 43.113	11924	260	10.2	78	0.4	0.0	
01/15 07:35:00	42 24.479	70 42.081	10471	261	9.5	79	0.4	0.0	
01/15 07:40:04	42 24.678	70 40.981	8923	262	9.9	80	0.4	0.0	
01/15 07:45:02	42 24.855	70 39.940	7464	262	9.2	80	0.4	0.0	
01/15 07:50:01	42 25.029	70 38.880	5981	264	10.1	80	0.4	0.0	
01/15 07:55:04	42 25.198	70 37.816	4498	266	9.8	81	0.4	0.0	
01/15 08:00:00	42 25.312	70 36.784	3072	267	9.2	85	0.4	0.0	
01/15 08:05:02	42 25.377	70 35.697	1578	269	9.7	86	0.4	0.0	
01/15 08:10:02	42 25.380	70 34.732	254	267	7.3	83	0.4	0.0	
01/15 08:12:21	42 25.387	70 34.531	22	91	3.6	91	0.4	0.0	DUMP
01/15 08:12:27	42 25.387	70 34.531	22	91	3.5	90	0.4	0.0	DUMP
01/15 08:12:34	42 25.387	70 34.531	22	91	3.3	89	0.4	0.0	DUMP
01/15 08:12:40	42 25.387	70 34.531	22	91	3.1	88	0.4	0.0	DUMP
01/15 08:12:46	42 25.387	70 34.531	22	91	2.9	87	0.4	0.0	DUMP
01/15 08:12:52	42 25.378	70 34.540	19	149	2.5	90	0.4	0.0	DUMP
01/15 08:12:59	42 25.396	70 34.538	20	37	2.1	84	0.4	0.0	DUMP
01/15 08:13:05	42 25.387	70 34.515	44	91	2.1	84	0.4	0.0	DUMP
01/15 08:13:11	42 25.404	70 34.513	56	56	2.1	77	0.4	0.0	DUMP
01/15 11:00:02	42 19.848	70 58.157	33972	252	12.0	89	991.3	828.0	
01/15 11:05:00	42 19.981	70 57.252	32715	252	9.0	88	991.3	828.0	
01/15 11:10:05	42 20.258	70 56.378	31417	252	5.3	68	991.3	828.0	
01/15 11:15:03	42 20.932	70 55.819	30324	254	10.1	37	991.3	828.0	
01/15 11:20:01	42 21.577	70 55.394	29455	256	8.1	36	991.3	828.0	
01/15 11:25:02	42 22.034	70 54.596	28195	257	9.1	64	991.3	828.0	
01/15 11:30:05	42 22.355	70 53.679	26838	258	8.8	71	0.5	-0.1	
01/15 11:35:04	42 22.513	70 52.636	25379	258	10.2	81	0.5	-0.1	
01/15 11:40:03	42 22.649	70 51.622	23966	258	10.3	81	0.5	-0.1	
01/15 11:45:05	42 22.819	70 50.572	22491	258	9.9	83	0.5	-0.1	
01/15 11:50:04	42 22.956	70 49.557	21077	258	9.7	84	0.5	-0.1	
01/15 11:55:04	42 23.129	70 48.506	19600	258	10.3	78	0.5	-0.1	
01/15 12:00:00	42 23.340	70 47.516	18190	258	9.3	78	0.5	-0.1	
01/15 12:05:01	42 23.559	70 46.483	16720	258	9.4	80	0.5	-0.1	
01/15 12:10:03	42 23.783	70 45.454	15254	259	9.9	77	0.5	-0.1	
01/15 12:15:02	42 23.984	70 44.437	13814	259	9.0	80	0.5	-0.1	
01/15 12:20:01	42 24.201	70 43.384	12320	260	10.1	76	0.5	-0.1	
01/15 12:25:02	42 24.483	70 42.399	10900	261	9.7	74	0.5	-0.1	
01/15 12:30:03	42 24.789	70 41.415	9486	263	9.6	66	0.5	-0.1	

- record position data as required on magnetic disk

The software to accomplish these tasks contained several unique features, including a Kalman filter to smooth the Loran-C data prior to display on the video monitor and recording on disk. The Kalman filter reduces the scatter of the Loran data and actually improves the accuracy of navigation through calculation of the best estimate of position using the past history of ship motion as well as current measurements from the Loran-C.

A second feature of the software that is essential to reliable operation is the calibration subroutine. Loran-C receivers have a potential error source, that can occur when the processor "locks" on to the wrong pulse of the Loran signal. This causes a 10  $\mu$ sec shift in the time delay measurement which results in a large position error of several hundred meters to more than a mile depending on the geometry of the Loran net. This error can be detected and removed if a calibration point is established and checked during each transit to the disposal point.

On this project the sea buoy at the mouth of Boston Harbor was designated as the calibration point and the Loran-C time delays observed at the bouy on the first trip to the site were input to the program. On subsequent trips to the disposal area a special function key was pressed as the ship passed the buoy and the observed Loran-C readings were compared with the initial time delays. If the observed values were less than 5 sec from the initial values the system was considered to be calibrated; if not, a flag was set and a warning displayed on the

video monitor to indicate that the receiver should be adjusted to correct the  $10\mu\text{sec}$  jump. Once the Loran receiver was in calibration the system monitored the Loran data and displayed a similar warning should a jump of  $10\mu\text{sec}$  or more occur during transit to the disposal site. With this safeguard, the certainty of position for disposal location was greatly increased and spread of material due to Loran-C errors essentially eliminated.

## 2.2 Video Display

Control of the hopper dredge was maintained through use of graphic displays on a video monitor which provided continuous information to the helmsman in the format shown in Figure 2.0-2. On this display the disposal point is the center of the grid which has an automatically varying scale as designated in the upper left corner of the screen (200m per tick mark as shown in this example). The ships track relative to the disposal point is shown as a continuous line with the latest position indicated as a cross.

Below the graphic display, alphanumeric data are presented indicating the range in meters and the bearing in either true or magnetic degrees to the disposal point. A third quantity, the course made good over the bottom, is presented in the lower right (0.00; since it was not implemented on this example). By steering the ship so that the bearing and course made good values are identical, the helmsman can steer directly to the disposal point.

Finally, the time of day is displayed in the lower left corner as general information to the user and as a continuous indication that the system is operational. If the computer were

to hang, or if data were not properly transmitted from the Loran, then the time of day display will stop updating, thus providing an immediate indication of system malfunction.

### 2.3 Loran-C Navigation

Loran-C was chosen as the positioning system for integration to the disposal control system for several reasons, including:

- Availability - Loran-C chains are operational anywhere along the coast of the U.S.
- Operation Logistics - Loran-C does not require installation of any shore stations
- Precision - Depending on location, the precision of Loran-C is generally on the order of  $\pm 20$  to  $\pm 50$  meters
- Cost - Loran-C receivers are generally available aboard ship or can be installed for less than \$5000

It is important to distinguish between the accuracy and precision of Loran-C data. Although the precision may be less than  $\pm 50$  meters, the accuracy may be on the order of  $\pm 1$  km depending on distortion caused by overland pathlength.

Therefore, the system must be initialized by measuring the Loran-C time delay values at the disposal point prior to any dumping operation. If complete geodetic accuracy is required, this must be done using an accurate positioning system such as a trisponder, mini ranger, or equivalent. If relative positions are adequate, simple designation of observed Loran-C delays observed at a point can be used. It is essential, however, that readings be taken from the designated point since values plotted on a standard nautical chart are not corrected for the overland path and generally do not intersect at sea at the desired

location.

For this operation, the disposal point was designated at 42°25.399'N, 70°34.549'W as determined by measuring Loran-C time delays at a taut-wire moored buoy used for disposal of Boston Harbor sediment. When this buoy was re-located to control additional disposal, the Loran-C system was installed aboard the SUGAR ISLAND. Table 2.3-1 presents the parameters of the Loran-C network at the disposal point. At this location the W (Caribou, ME) and X (Nantucket, MA) slaves of the 9960 chain provide the best resolution or precision for disposal control. The effective resolution of a Loran receiver is .1  $\mu$ sec which results in a spatial resolution of 27.5 m. Should the 10  $\mu$ sec jump occur, then the error in position could be as much as 2 km.

### 3.0 RESULTS

The location of the SUGAR ISLAND was recorded on disk at five minute intervals during transit to the site and continuously for one minute following initiation of the disposal operation. Printouts of all data obtained during the operation are included as Appendix I to this report. The transit routes followed by the dredge are presented in Figures 3.0-1 through 4. From these plots it is apparent that the vessel followed a consistent course to the site, generally staying within one half mile of the direct course. As the ship neared the disposal point, she frequently swung to the north to make her approach heading southeast into the prevailing wind and sea.

Figure 3.0-5 shows the location of the ship at initiation of each disposal operation, relative to the designated

SCIENCE APPLICATIONS, INC.

LATITUDE = 42 25.399N  
LONGITUDE = 70 34.549W

LORAN C TIMES FOR GRI 9960:  
CARIBOU; ME: 13852.1114  
NANTUCKET; MA: 25718.9197

XFORM MATRIX (MICROSEC/MI):  
-8.53039953      -5.10768205  
-8.3995764      6.39141493

INVERSE XFORM MATRIX (METERS/MICROSEC):  
-121.499202      -97.0957609  
-159.673851      162.160766

LOP VECTORS:  
186 METERS/MICROSEC @ 239 DEG. TRUE  
175 METERS/MICROSEC @ 307 DEG. TRUE

LOP CROSSING ANGLE: 68 DEG.

GDOP POSITIONAL ERROR ELLIPSE  
(METERS/0.1 MICROSEC):

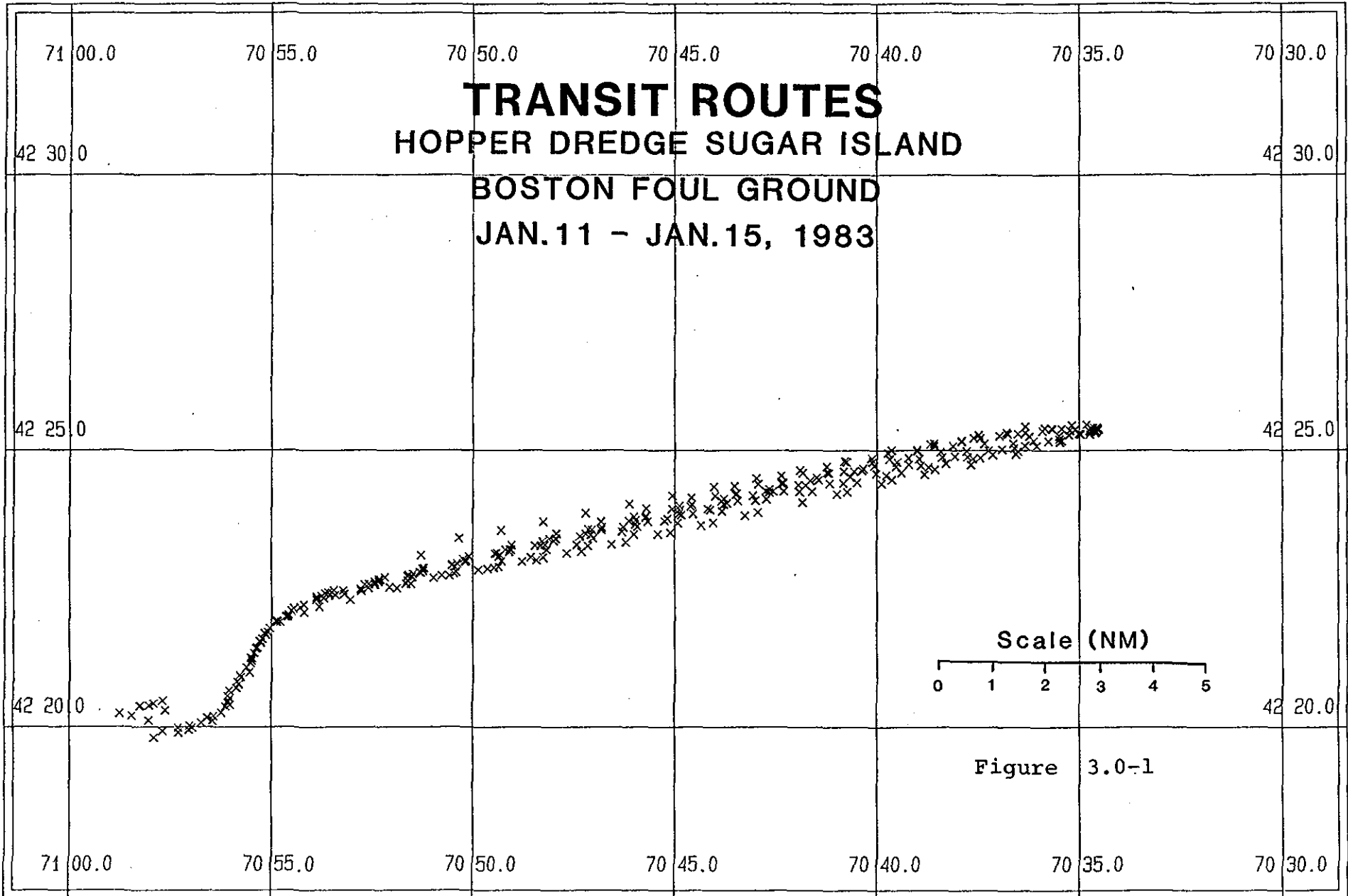
SEMI-MAJOR AXIS: 22.862123  
SEMI-MINOR AXIS: 15.399295  
BEARING: 97.4169107  
RESULTANT ERROR  
(METERS/0.1 MICROSEC) = 27.5647412

10 MICROSEC. JUMP:  
T1: 2006.43452 METERS  
T2: 1890.07145 METERS

LORAN-C. RESOLUTION PARAMETERS  
BOSTON FOUL GROUND  
9960 GRI CHAIN

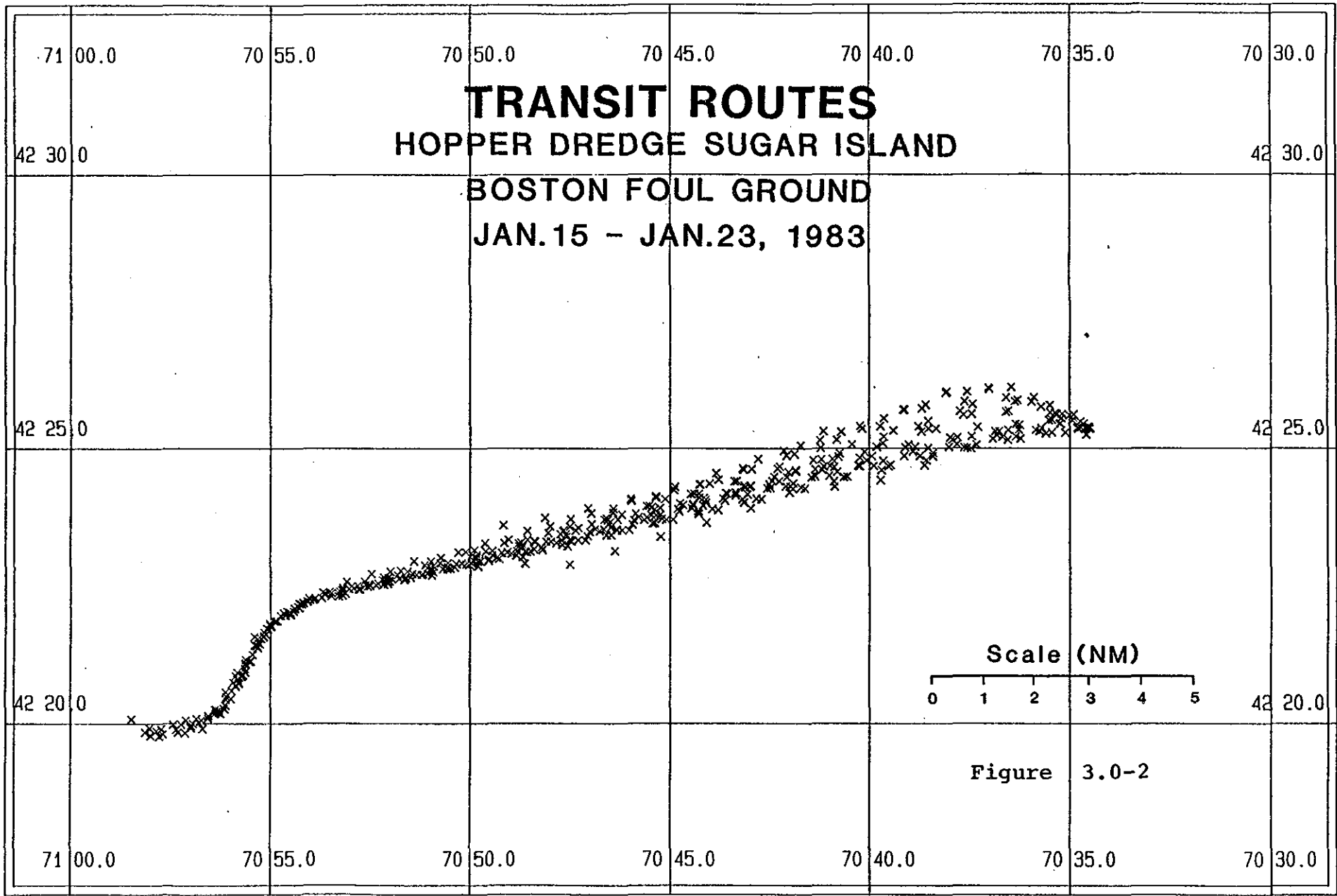
Table 2.3-1

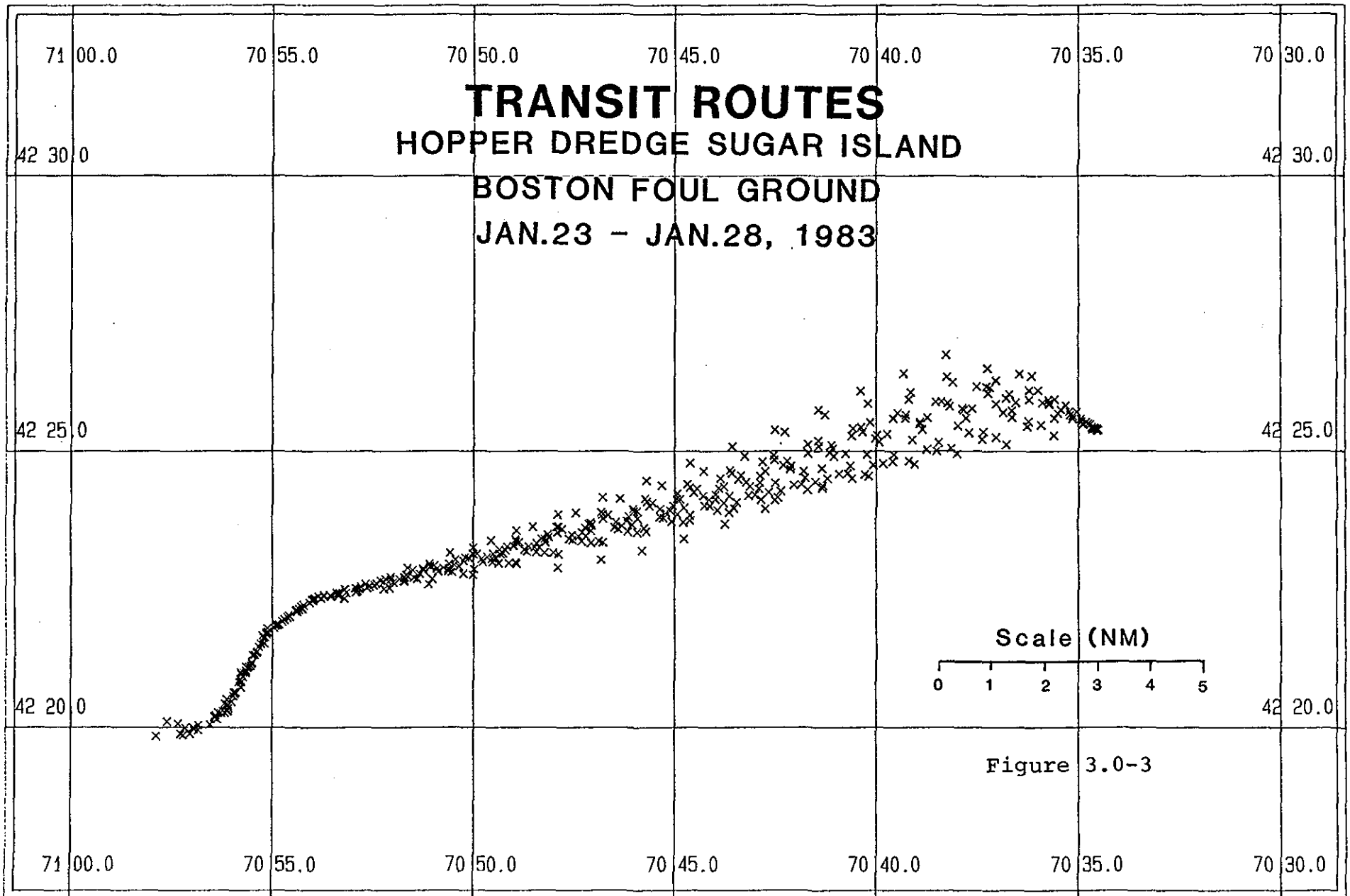


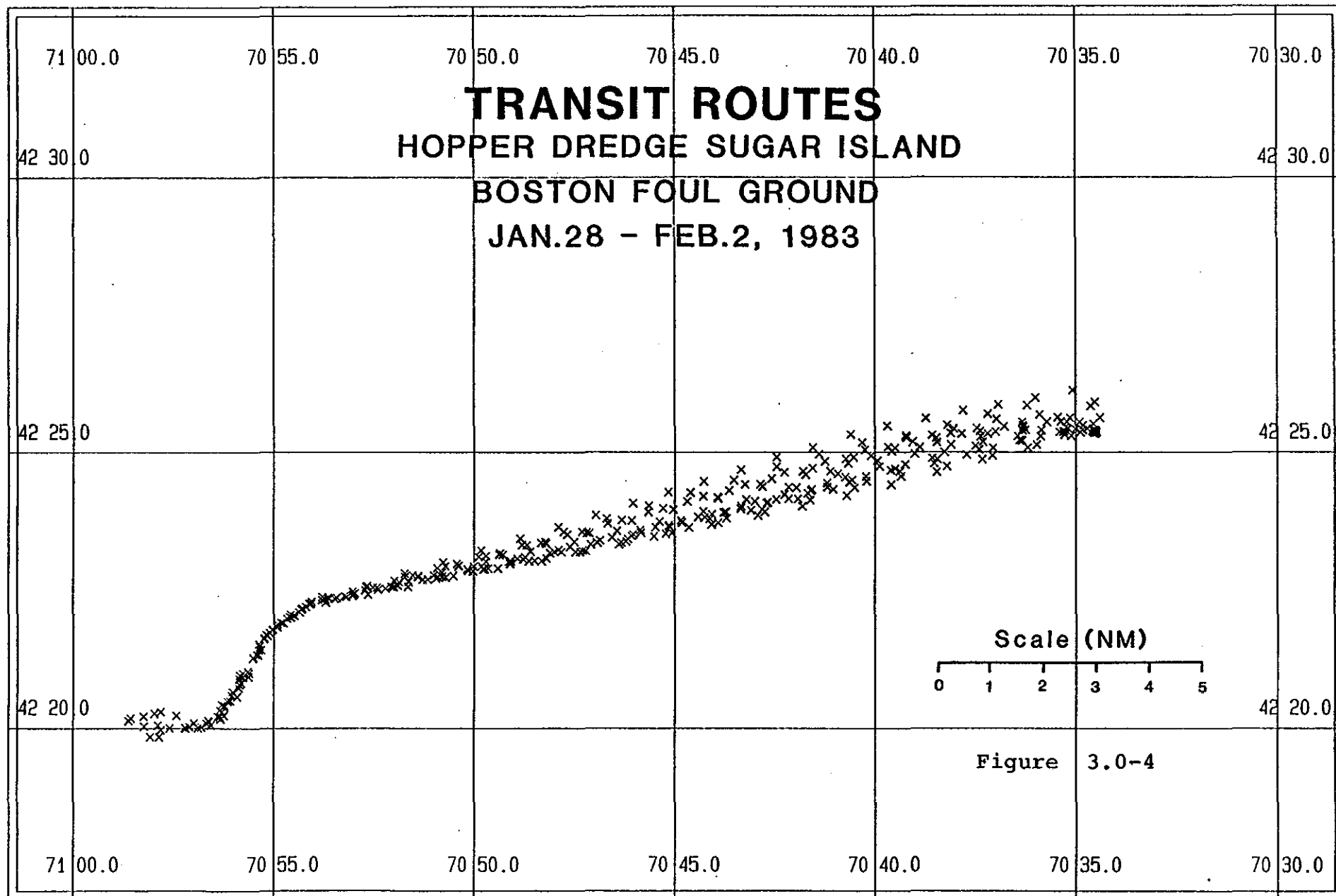


11



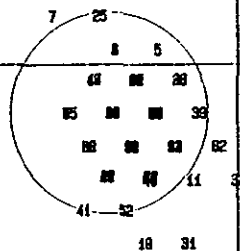






# DISTRIBUTION OF HOPPER DREDGE DISPOSAL LOCATIONS

BOSTON FOUL GROUND  
 JAN. 11 - FEB. 1, 1983



# REPRESENT SPECIFIC  
 DISPOSAL OPERATIONS  
 OVERWRITES INDICATE  
 MULTIPLE DISPOSALS

SCALE (m)

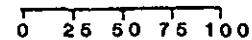


Figure 3.0-5

70 34.8

70 34.7

70 34.6

70 34.5

70 34.4

70 34.3

42 25.4

42 25.4

42 25.3

42 25.3

70 34.8

70 34.7

70 34.6

70 34.5

70 34.4

70 34.3

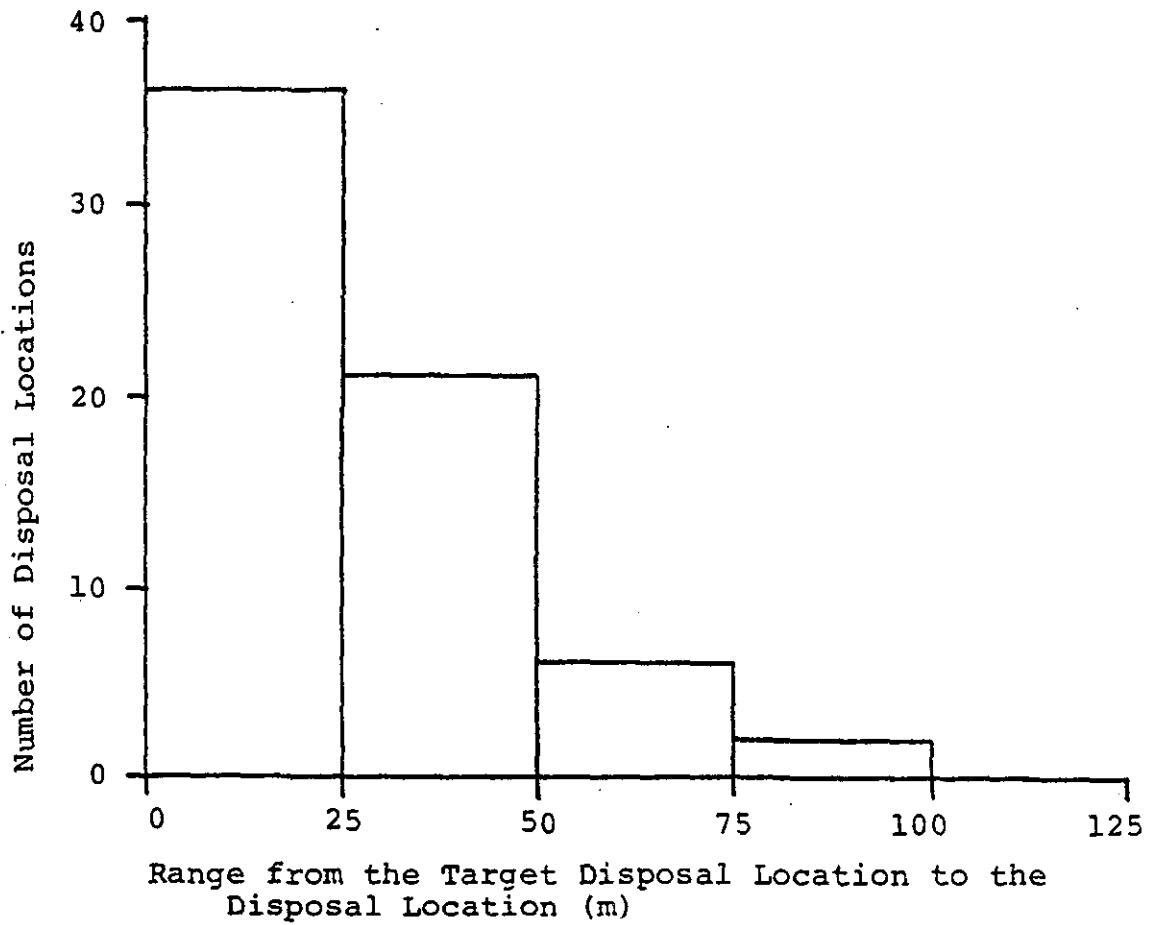
point and a circle of 50m radius. It is important to note that all but 7 of the 65 dumps fell within the 50m radius, in fact, as shown in Figure 3.0-6, more than half were within 25m of the designated point. Because of the large scale of Figure 3.0-5, the resolution of the Loran-C grid is apparent from the linear distribution of points in a southeast orientation. The constant separation represents a change of 1  $\mu$ sec on the Loran-C receiver.

Table 3.0-1 presents the exact location of each disposal operation conducted with the system along with a range and bearing to the designated point and the ships course and speed at the time of disposal. The ship was generally travelling at five knots or less in a southeasterly direction, which substantiates the southeasterly bias of disposal points seen in Figure 3.0-5.

#### 4.0 SUMMARY

In general, the disposal control system for the SUGAR ISLAND was a success. After becoming familiar with the unit, both the inspectors and crew of the ship were able to operate the system and utilize the output. Some problems were experienced due to changing scales on the video display, however, these were corrected after the first several trips and no further complications were observed. The Loran-C receiver performed flawlessly and no calibration problems were encountered during the entire operation.

Probably the most significant aspect of this project, however, is the overall precision of the disposal control. The ability to restrict 90% of the dumps to within a 50m radius using



FREQUENCY DISTRIBUTION OF RANGE TO THE DESIGNATED DISPOSAL POINT AT INITIATION OF DISPOSAL

Figure 3.0-6



Table 3.0-1  
Hopper Dredge Disposal Locations

No.	Date	Time	Latitude ( <sup>o</sup> min.)	Longitude ( <sup>o</sup> min.)	Range (m)	Bearing (deg.)	Speed (kts)	Course (deg.)
1	1/11	22:00:15	42 <sup>o</sup> 25.404	70 <sup>o</sup> 34.545	32	4	5.7	70
2	1/12	03:08:18	42 <sup>o</sup> 25.396	70 <sup>o</sup> 34.538	20	37	5.7	69
3	1/12	08:38:23	42 <sup>o</sup> 25.378	70 <sup>o</sup> 34.540	19	149	5.2	112
4	1/12	13:30:10	42 <sup>o</sup> 25.387	70 <sup>o</sup> 34.547	0	90	5.6	85
5	1/12	20:43:12	42 <sup>o</sup> 25.404	70 <sup>o</sup> 34.529	40	37	3.3	296
6	1/13	01:13:29	42 <sup>o</sup> 25.404	70 <sup>o</sup> 34.545	32	4	5.0	70
7	1/13	05:32:10	42 <sup>o</sup> 25.413	70 <sup>o</sup> 34.568	57	329	4.0	60
8	1/13	10:22:27	42 <sup>o</sup> 25.396	70 <sup>o</sup> 34.538	20	37	8.1	74
9	1/13	16:08:28	42 <sup>o</sup> 25.378	70 <sup>o</sup> 34.524	36	118	7.5	76
10	1/13	21:59:16	42 <sup>o</sup> 25.387	70 <sup>o</sup> 34.547	0	0	2.2	57
11	1/14	03:56:26	42 <sup>o</sup> 25.369	70 <sup>o</sup> 34.517	53	128	7.7	90
12	1/14	09:47:13	42 <sup>o</sup> 25.378	70 <sup>o</sup> 34.524	36	117	0.8	329
13	1/14	15:41:18	42 <sup>o</sup> 25.370	70 <sup>o</sup> 34.549	32	184	5.6	109
14	1/14	21:16:46	42 <sup>o</sup> 25.396	70 <sup>o</sup> 34.538	20	37	2.0	63
15	1/15	02:36:19	42 <sup>o</sup> 25.378	70 <sup>o</sup> 34.540	19	149	5.8	104
16	1/15	08:12:21	42 <sup>o</sup> 25.387	70 <sup>o</sup> 34.531	22	91	3.6	91
17	1/15	13:04:52	42 <sup>o</sup> 25.396	70 <sup>o</sup> 34.554	19	329	4.7	99
18	1/16	18:34:38	42 <sup>o</sup> 25.396	70 <sup>o</sup> 34.538	20	37	3.3	66
19	1/17	00:08:11	42 <sup>o</sup> 25.352	70 <sup>o</sup> 34.535	67	165	3.4	109
20	1/17	05:35:26	42 <sup>o</sup> 25.370	70 <sup>o</sup> 34.533	38	149	5.8	113
21	1/17	11:05:43	42 <sup>o</sup> 25.387	70 <sup>o</sup> 34.547	0	141	8.0	69
22	1/17	17:37:07	42 <sup>o</sup> 25.378	70 <sup>o</sup> 34.556	20	217	5.4	115
23	1/18	10:11:05	42 <sup>o</sup> 25.370	70 <sup>o</sup> 34.549	32	184	3.8	105
24	1/18	16:14:48	42 <sup>o</sup> 25.387	70 <sup>o</sup> 34.547	0	47	5.3	121
25	1/18	22:26:13	42 <sup>o</sup> 25.413	70 <sup>o</sup> 34.552	49	351	4.4	59
26	1/19	03:58:12	42 <sup>o</sup> 25.387	70 <sup>o</sup> 34.547	0	322	5.2	108
27	1/19	10:18:58	42 <sup>o</sup> 25.396	70 <sup>o</sup> 34.538	20	37	2.7	29
28	1/19	16:22:13	42 <sup>o</sup> 25.396	70 <sup>o</sup> 34.522	38	65	3.8	118
29	1/19	23:03:02	42 <sup>o</sup> 25.378	70 <sup>o</sup> 34.540	19	149	2.1	81
30	1/21	15:51:14	42 <sup>o</sup> 25.378	70 <sup>o</sup> 34.556	20	217	4.8	137
31	1/21	21:29:58	42 <sup>o</sup> 25.352	70 <sup>o</sup> 34.519	76	149	6.6	152
32	1/22	03:08:35	42 <sup>o</sup> 25.369	70 <sup>o</sup> 34.501	71	118	4.1	136
33	1/22	08:30:10	42 <sup>o</sup> 25.378	70 <sup>o</sup> 34.524	36	118	5.2	132
34	1/22	20:10:01	42 <sup>o</sup> 25.387	70 <sup>o</sup> 34.531	22	91	4.5	119
35	1/23	01:49:31	42 <sup>o</sup> 25.387	70 <sup>o</sup> 34.531	22	91	5.6	131
36	1/23	12:48:51	42 <sup>o</sup> 25.387	70 <sup>o</sup> 34.531	22	91	6.7	115
37	1/23	18:20:12	42 <sup>o</sup> 25.387	70 <sup>o</sup> 34.531	22	91	4.6	108
38	1/23	23:37:59	42 <sup>o</sup> 25.396	70 <sup>o</sup> 34.522	38	65	3.9	135
39	1/24	12:20:25	42 <sup>o</sup> 25.387	70 <sup>o</sup> 34.515	44	91	8.4	97
40	1/24	18:05:48	42 <sup>o</sup> 25.369	70 <sup>o</sup> 34.533	38	149	6.0	131
41	1/25	04:32:22	42 <sup>o</sup> 25.361	70 <sup>o</sup> 34.558	50	197	5.2	155
42	1/25	09:09:54	42 <sup>o</sup> 25.396	70 <sup>o</sup> 34.538	20	37	3.5	103
43	1/25	14:30:53	42 <sup>o</sup> 25.378	70 <sup>o</sup> 34.540	19	149	3.9	150
44	1/25	20:01:34	42 <sup>o</sup> 25.378	70 <sup>o</sup> 34.524	36	118	4.6	122
45	1/26	01:21:27	42 <sup>o</sup> 25.387	70 <sup>o</sup> 34.563	22	271	3.5	129
46	1/26	07:03:17	42 <sup>o</sup> 25.370	70 <sup>o</sup> 34.533	38	149	3.7	120
47	1/26	12:33:41	42 <sup>o</sup> 25.370	70 <sup>o</sup> 34.549	32	184	6.6	133
48	1/26	18:13:22	42 <sup>o</sup> 25.396	70 <sup>o</sup> 34.554	19	329	4.0	92
49	1/27	04:30:18	42 <sup>o</sup> 25.396	70 <sup>o</sup> 34.538	20	37	3.9	124
50	1/27	09:49:53	42 <sup>o</sup> 25.387	70 <sup>o</sup> 34.531	22	91	4.9	113

Table 3.0-1 (cont.)  
Hopper Dredge Disposal Locations

No.	Date	Time	Latitude ( <sup>o</sup> min.)	Longitude ( <sup>o</sup> min.)	Range (m)	Bearing (deg.)	Speed (kts)	Course (deg.)
51	1/27	15:01:32	42 <sup>o</sup> 25.387	70 <sup>o</sup> 34.547	0	335	1.6	99
52	1/28	18:31:53	42 <sup>o</sup> 25.361	70 <sup>o</sup> 34.542	49	171	5.3	130
53	1/29	00:22:15	42 <sup>o</sup> 25.378	70 <sup>o</sup> 34.540	19	149	4.3	184
54	1/29	06:09:22	42 <sup>o</sup> 25.396	70 <sup>o</sup> 34.602	77	283	1.4	220
55	1/29	11:34:56	42 <sup>o</sup> 25.387	70 <sup>o</sup> 34.563	22	271	1.6	123
56	1/29	17:35:14	42 <sup>o</sup> 25.387	70 <sup>o</sup> 34.531	22	91	3.0	75
57	1/30	00:19:52	42 <sup>o</sup> 25.370	70 <sup>o</sup> 34.549	32	184	1.9	217
58	1/30	06:53:26	42 <sup>o</sup> 25.378	70 <sup>o</sup> 34.556	20	217	2.6	161
59	1/30	18:38:59	42 <sup>o</sup> 25.387	70 <sup>o</sup> 34.547	0	162	2.6	147
60	1/31	00:09:58	42 <sup>o</sup> 25.378	70 <sup>o</sup> 34.540	19	149	2.5	102
61	1/31	17:04:43	42 <sup>o</sup> 25.370	70 <sup>o</sup> 34.533	38	149	3.6	111
62	1/31	22:34:20	42 <sup>o</sup> 25.378	70 <sup>o</sup> 34.508	56	107	6.4	118
63	2/01	04:08:28	42 <sup>o</sup> 25.378	70 <sup>o</sup> 34.540	19	149	1.7	42
64	2/01	09:34:57	42 <sup>o</sup> 25.378	70 <sup>o</sup> 34.540	19	149	2.9	82
65	2/01	16:07:06	42 <sup>o</sup> 25.370	70 <sup>o</sup> 34.549	32	184	4.8	200



a large ship such as the SUGAR ISLAND means that procedures such as point dumping or capping are feasible at relatively low cost even at some distance from shore. Furthermore, with slight modifications to make this system automatic, the potential exists for reducing the large labor costs associated with Corps inspectors, since the recording of transit routes and disposal locations provides an automatic surveillance capability.

RESULTS OF LORAN-C  
CONTROL OF DISPOSAL  
OPERATIONS AT THE  
BOSTON FOUL GROUND  
JANUARY 11 - FEBRUARY 2, 1983

APPENDIX I

CONTRIBUTION #26

July 11, 1983

DACW33-83-M-0212



## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/11 16:50:03	42 25.352	70 35.915	1877	268	9.9	84	991.3	828.0	
01/11 16:55:04	42 25.468	70 34.819	401	292	10.0	83	991.3	828.0	
01/11 16:58:02	42 25.335	70 34.568	101	197	4.5	125	991.3	828.0	DUMP
01/11 16:58:08	42 25.344	70 34.560	82	192	4.3	126	991.3	828.0	DUMP
01/11 16:58:14	42 25.335	70 34.552	97	184	4.3	126	991.3	828.0	DUMP
01/11 16:58:20	42 25.326	70 34.561	114	190	4.2	123	991.3	828.0	DUMP
01/11 16:58:26	42 25.335	70 34.552	97	184	3.9	124	991.3	828.0	DUMP
01/11 16:58:32	42 25.335	70 34.536	98	171	3.8	127	991.3	828.0	DUMP
01/11 16:58:38	42 25.326	70 34.529	116	168	3.7	129	991.3	828.0	DUMP
01/11 16:58:44	42 25.335	70 34.520	104	159	3.5	134	991.3	828.0	DUMP
01/11 16:58:51	42 25.334	70 34.504	114	149	3.5	140	991.3	828.0	DUMP
01/11 16:58:57	42 25.326	70 34.513	123	158	3.4	141	991.3	828.0	DUMP
01/11 16:59:03	42 25.334	70 34.504	114	149	3.2	146	991.3	828.0	DUMP
01/11 16:59:09	42 25.334	70 34.504	114	149	3.0	150	991.3	828.0	DUMP
01/11 16:59:16	42 25.326	70 34.513	123	158	2.7	149	991.3	828.0	DUMP
01/11 16:59:22	42 25.334	70 34.504	114	149	2.5	153	991.3	828.0	DUMP
01/11 16:59:42	42 25.360	70 34.478	107	118	60.0	18	991.3	828.0	DUMP
01/11 16:59:47	42 25.352	70 34.471	124	122	6.5	118	991.3	828.0	DUMP
01/11 16:59:53	42 25.352	70 34.471	124	122	3.2	118	991.3	828.0	DUMP
01/11 16:59:59	42 25.343	70 34.464	141	126	3.8	118	991.3	828.0	DUMP
01/11 17:00:05	42 25.343	70 34.464	141	126	3.1	118	991.3	828.0	DUMP
01/11 17:00:11	42 25.351	70 34.439	163	114	3.2	151	991.3	828.0	DUMP
01/11 16:58:26	42 25.335	70 34.552	97	184	3.9	124	991.3	828.0	DUMP
01/11 16:58:32	42 25.335	70 34.536	98	171	3.8	127	991.3	828.0	DUMP
01/11 16:58:38	42 25.326	70 34.529	116	168	3.7	129	991.3	828.0	DUMP
01/11 16:58:44	42 25.335	70 34.520	104	159	3.5	134	991.3	828.0	DUMP
01/11 16:58:51	42 25.334	70 34.504	114	149	3.5	140	991.3	828.0	DUMP
01/11 16:58:57	42 25.326	70 34.513	123	158	3.4	141	991.3	828.0	DUMP
01/11 16:59:03	42 25.334	70 34.504	114	149	3.2	146	991.3	828.0	DUMP
01/11 16:59:09	42 25.334	70 34.504	114	149	3.0	150	991.3	828.0	DUMP
01/11 16:59:16	42 25.326	70 34.513	122	158	2.7	149	991.3	828.0	DUMP
01/11 16:59:22	42 25.334	70 34.504	114	149	2.5	153	991.3	828.0	DUMP
01/11 19:40:00	42 20.477	70 57.686	33018	254	1.1	353	991.3	828.0	
01/11 19:45:02	42 20.426	70 57.895	33320	254	1.7	251	991.3	828.0	
01/11 19:50:00	42 20.377	70 58.229	33785	254	3.0	260	991.3	828.0	
01/11 19:55:01	42 20.206	70 58.424	34131	254	5.0	189	991.3	828.0	
01/11 20:00:02	42 19.925	70 57.689	33318	252	7.6	117	991.3	828.0	
01/11 20:05:00	42 20.078	70 56.737	31988	252	9.3	82	991.3	828.0	
01/11 20:10:01	42 20.520	70 56.034	30822	253	7.5	42	991.3	828.0	
01/11 20:15:04	42 21.153	70 55.521	29821	255	11.6	34	991.3	828.0	
01/11 20:20:02	42 21.781	70 55.038	28891	257	8.7	47	991.3	828.0	
01/11 20:25:03	42 22.211	70 54.188	27578	258	10.9	63	991.3	828.0	
01/11 20:30:03	42 22.460	70 53.201	26157	258	11.7	68	0.4	0.0	
01/11 20:35:05	42 22.698	70 52.188	24707	258	11.1	68	0.4	0.0	
01/11 20:40:00	42 23.101	70 51.286	23350	260	11.5	57	0.4	0.0	
01/11 20:45:02	42 23.410	70 50.343	21976	260	9.5	84	0.4	0.0	
01/11 20:50:03	42 23.556	70 49.289	20505	260	9.7	85	0.4	0.0	
01/11 20:55:04	42 23.708	70 48.223	19016	261	9.6	85	0.4	0.0	
01/11 21:00:02	42 23.864	70 47.190	17571	261	10.0	81	0.4	0.0	
01/11 21:05:01	42 24.027	70 46.129	16087	261	10.0	82	0.4	0.0	
01/11 21:10:04	42 24.177	70 45.058	14592	261	10.4	82	0.4	0.0	

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/11 21:15:02	42 24.341	70 44.012	13128	262	10.0	83	0.4	0.0	
01/11 21:20:05	42 24.493	70 42.956	11653	262	9.5	80	0.4	0.0	
01/11 21:25:00	42 24.641	70 41.895	10174	262	9.5	82	0.4	0.0	
01/11 21:30:03	42 24.804	70 40.797	8642	263	10.3	80	0.4	0.0	
01/11 21:35:00	42 24.954	70 39.735	7162	264	9.8	81	0.4	0.0	
01/11 21:40:01	42 25.109	70 38.660	5666	265	10.7	79	0.4	0.0	
01/11 21:45:02	42 25.225	70 37.600	4199	266	9.7	87	0.4	0.0	
01/11 21:50:00	42 25.302	70 36.523	2716	267	10.4	83	0.4	0.0	
01/11 21:55:04	42 25.393	70 35.441	1226	271	9.8	83	0.4	0.0	
01/11 22:00:03	42 25.405	70 34.545	32	4	6.0	74	0.4	0.0	
01/11 22:00:15	42 25.404	70 34.545	32	4	5.7	70	0.4	0.0	DUMP
01/11 22:00:24	42 25.413	70 34.552	49	351	29.2	304	0.4	0.0	DUMP
01/11 22:00:30	42 25.431	70 34.535	82	12	12.4	37	0.4	0.0	DUMP
01/11 22:00:45	42 25.422	70 34.512	80	37	4.9	81	0.4	0.0	DUMP
01/11 22:00:51	42 25.430	70 34.503	101	37	4.8	75	0.4	0.0	DUMP
01/11 22:00:57	42 25.430	70 34.503	101	37	4.3	74	0.4	0.0	DUMP
01/11 22:01:02	42 25.430	70 34.487	115	46	4.3	75	0.4	0.0	DUMP
01/11 22:01:09	42 25.430	70 34.487	115	46	4.0	76	0.4	0.0	DUMP
01/11 22:01:15	42 25.439	70 34.478	135	45	3.9	73	0.4	0.0	DUMP
01/11 22:01:21	42 25.439	70 34.462	151	51	4.0	73	0.4	0.0	DUMP
01/11 22:01:27	42 25.439	70 34.462	151	51	3.9	73	0.4	0.0	DUMP
01/11 22:01:33	42 25.430	70 34.455	149	58	3.7	77	0.4	0.0	DUMP
01/11 22:01:39	42 25.430	70 34.455	149	58	3.5	79	0.4	0.0	DUMP
01/11 22:01:45	42 25.430	70 34.439	168	62	3.4	82	0.4	0.0	DUMP
01/11 22:01:51	42 25.438	70 34.414	206	63	3.7	82	0.4	0.0	DUMP
01/11 22:01:58	42 25.429	70 34.407	208	68	3.8	85	0.4	0.0	DUMP
01/11 22:02:05	42 25.421	70 34.400	212	73	3.8	89	0.4	0.0	DUMP
01/11 22:02:12	42 25.421	70 34.400	212	73	3.8	92	0.4	0.0	DUMP
01/11 22:02:18	42 25.421	70 34.384	233	75	3.8	94	0.4	0.0	DUMP
01/11 22:02:35	42 25.411	70 34.345	281	81	4.1	98	0.4	0.0	DUMP
01/11 22:00:51	42 25.430	70 34.503	101	37	4.8	75	0.4	0.0	DUMP
01/11 22:00:57	42 25.430	70 34.503	101	37	4.3	74	0.4	0.0	DUMP
01/11 22:01:02	42 25.430	70 34.487	115	46	4.3	75	0.4	0.0	DUMP
01/11 22:01:09	42 25.430	70 34.487	115	46	4.0	76	0.4	0.0	DUMP
01/11 22:01:15	42 25.439	70 34.478	135	45	3.9	73	0.4	0.0	DUMP
01/11 22:01:21	42 25.439	70 34.462	151	51	4.0	73	0.4	0.0	DUMP
01/11 22:01:27	42 25.439	70 34.462	151	51	3.9	73	0.4	0.0	DUMP
01/11 22:01:33	42 25.430	70 34.455	149	58	3.7	77	0.4	0.0	DUMP
01/11 22:01:39	42 25.430	70 34.455	149	58	3.5	79	0.4	0.0	DUMP
01/11 22:01:45	42 25.430	70 34.439	168	62	3.4	82	0.4	0.0	DUMP
01/11 22:01:51	42 25.438	70 34.414	206	63	3.7	82	0.4	0.0	DUMP
01/11 22:01:58	42 25.429	70 34.407	208	68	3.8	85	0.4	0.0	DUMP
01/11 22:02:05	42 25.421	70 34.400	212	73	3.8	89	0.4	0.0	DUMP
01/11 22:02:12	42 25.421	70 34.400	212	73	3.8	92	0.4	0.0	DUMP
01/11 22:02:18	42 25.421	70 34.384	233	75	3.8	94	0.4	0.0	DUMP
01/12 01:05:00	42 20.388	70 58.206	33749	254	9.6	68	991.3	828.0	
01/12 01:10:02	42 20.392	70 57.993	33466	254	3.0	105	991.3	828.0	
01/12 01:15:01	42 20.304	70 57.618	33018	253	4.7	129	991.3	828.0	
01/12 01:20:03	42 19.989	70 56.964	32335	252	7.9	91	991.3	828.0	
01/12 01:25:03	42 20.444	70 56.069	30910	253	10.2	61	991.3	828.0	
01/12 01:30:03	42 21.239	70 55.478	29722	255	12.6	47	991.3	828.0	

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/12 01:35:01	42 21.892	70 54.844	28585	257	8.9	64	991.3	828.0	
01/12 01:40:02	42 22.356	70 53.865	27088	258	11.2	70	0.3	0.1	
01/12 01:50:05	42 22.639	70 51.631	23981	258	10.9	86	0.3	0.1	
01/12 01:55:04	42 22.768	70 50.470	22375	257	10.8	87	0.3	0.1	
01/12 02:00:03	42 22.891	70 49.351	20827	257	10.8	85	0.3	0.1	
01/12 02:05:00	42 23.065	70 48.223	19247	257	10.7	78	0.3	0.1	
01/12 02:10:01	42 23.271	70 47.134	17705	257	10.4	78	0.3	0.1	
01/12 02:15:03	42 23.481	70 46.016	16124	257	10.1	80	0.3	0.1	
01/12 02:20:02	42 23.687	70 44.925	14580	258	10.0	78	0.3	0.1	
01/12 02:25:00	42 23.898	70 43.821	13017	258	10.7	79	0.3	0.1	
01/12 02:30:02	42 24.114	70 42.719	11456	258	10.4	72	0.3	0.1	
01/12 02:35:02	42 24.254	70 41.604	9906	258	10.8	82	0.3	0.1	
01/12 02:40:03	42 24.418	70 40.490	8348	258	9.9	82	0.3	0.1	
01/12 02:45:01	42 24.594	70 39.385	6798	258	10.1	81	0.3	0.1	
01/12 02:50:02	42 24.758	70 38.269	5237	257	10.4	80	0.3	0.1	
01/12 02:55:04	42 24.917	70 37.148	3672	256	10.1	78	0.3	0.1	
01/12 03:00:00	42 25.082	70 36.061	2152	255	9.4	79	0.3	0.1	
01/12 03:05:02	42 25.294	70 34.964	597	253	9.8	79	0.3	0.1	
01/12 03:08:18	42 25.396	70 34.538	20	37	5.7	69	0.3	0.1	DUMP
01/12 03:08:24	42 25.396	70 34.522	38	65	5.8	70	0.3	0.1	DUMP
01/12 03:08:31	42 25.396	70 34.522	38	65	5.6	71	0.3	0.1	DUMP
01/12 03:08:37	42 25.404	70 34.513	56	56	5.5	70	0.3	0.1	DUMP
01/12 03:08:43	42 25.413	70 34.504	76	51	5.4	69	0.3	0.1	DUMP
01/12 03:08:49	42 25.413	70 34.488	93	59	5.3	69	0.3	0.1	DUMP
01/12 03:08:56	42 25.421	70 34.480	112	56	5.3	67	0.3	0.1	DUMP
01/12 03:09:02	42 25.421	70 34.480	112	56	5.1	66	0.3	0.1	DUMP
01/12 03:09:18	42 25.430	70 34.471	132	53	4.7	64	0.3	0.1	DUMP
01/12 03:09:24	42 25.421	70 34.464	131	61	4.3	65	0.3	0.1	DUMP
01/12 03:09:29	42 25.421	70 34.464	131	61	4.0	65	0.3	0.1	DUMP
01/12 03:09:37	42 25.430	70 34.471	132	53	28.5	270	0.3	0.1	DUMP
01/12 03:09:43	42 25.430	70 34.455	149	58	7.1	91	0.3	0.1	DUMP
01/12 03:09:49	42 25.421	70 34.448	150	65	5.7	117	0.3	0.1	DUMP
01/12 03:09:56	42 25.421	70 34.448	150	65	3.8	122	0.3	0.1	DUMP
01/12 03:10:02	42 25.421	70 34.432	170	68	3.9	113	0.3	0.1	DUMP
01/12 03:10:10	42 25.430	70 34.439	168	62	2.6	98	0.3	0.1	DUMP
01/12 03:10:16	42 25.421	70 34.448	150	65	1.7	107	0.3	0.1	DUMP
01/12 03:10:23	42 25.421	70 34.448	150	65	1.2	114	0.3	0.1	DUMP
01/12 03:10:29	42 25.421	70 34.448	150	65	0.9	121	0.3	0.1	DUMP
01/12 03:08:43	42 25.413	70 34.504	76	51	5.4	69	0.3	0.1	DUMP
01/12 03:08:49	42 25.413	70 34.488	93	59	5.3	69	0.3	0.1	DUMP
01/12 03:08:56	42 25.421	70 34.480	112	56	5.3	67	0.3	0.1	DUMP
01/12 03:09:02	42 25.421	70 34.480	112	56	5.1	66	0.3	0.1	DUMP
01/12 06:40:03	42 19.809	70 57.895	33653	252	19.5	89	991.3	828.0	
01/12 06:45:01	42 20.023	70 57.021	32389	252	9.8	96	991.3	828.0	
01/12 06:50:05	42 20.376	70 56.126	31022	253	12.6	46	991.3	828.0	
01/12 06:55:03	42 20.985	70 55.549	29941	254	37.5	51	991.3	828.0	
01/12 07:00:05	42 21.656	70 55.129	29067	256	10.8	35	991.3	828.0	
01/12 07:10:04	42 22.468	70 53.424	26453	258	9.6	86	0.2	-0.2	
01/12 07:15:03	42 22.655	70 52.341	24929	258	15.0	65	0.2	-0.2	
01/12 07:20:04	42 22.855	70 51.253	23392	258	11.8	78	0.2	-0.2	
01/12 07:25:03	42 23.023	70 50.231	21956	258	9.5	86	0.2	-0.2	

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/12 07:30:00	42 23.206	70 49.174	20467	259	10.7	87	0.2	-0.2	
01/12 07:35:00	42 23.405	70 48.081	18925	259	7.9	85	0.2	-0.2	
01/12 07:40:01	42 23.562	70 47.048	17478	259	9.7	81	0.2	-0.2	
01/12 07:45:01	42 23.734	70 45.963	15957	259	9.4	81	0.2	-0.2	
01/12 07:50:04	42 23.921	70 44.873	14423	259	10.9	78	0.2	-0.2	
01/12 07:55:02	42 24.086	70 43.827	12956	259	8.8	88	0.2	-0.2	
01/12 08:00:01	42 24.265	70 42.729	11414	260	10.3	80	0.2	-0.2	
01/12 08:05:05	42 24.449	70 41.648	9895	260	9.6	84	0.2	-0.2	
01/12 08:10:03	42 24.620	70 40.557	8366	260	10.1	79	0.2	-0.2	
01/12 08:15:03	42 24.788	70 39.492	6874	261	9.8	82	0.2	-0.2	
01/12 08:20:02	42 24.969	70 38.406	5350	262	10.6	76	0.2	-0.2	
01/12 08:25:00	42 25.119	70 37.342	3866	263	10.3	81	0.2	-0.2	
01/12 08:30:00	42 25.257	70 36.234	2327	264	10.3	85	0.2	-0.2	
01/12 08:35:05	42 25.374	70 35.108	769	268	10.0	82	0.2	-0.2	
01/12 08:38:23	42 25.378	70 34.540	19	149	5.2	112	0.2	-0.2	DUMP
01/12 08:38:29	42 25.370	70 34.549	32	184	4.8	116	0.2	-0.2	DUMP
01/12 08:38:35	42 25.361	70 34.542	49	171	4.6	120	0.2	-0.2	DUMP
01/12 08:38:41	42 25.361	70 34.526	57	149	4.5	122	0.2	-0.2	DUMP
01/12 08:38:47	42 25.361	70 34.526	57	149	4.3	123	0.2	-0.2	DUMP
01/12 08:38:56	42 25.352	70 34.551	65	184	40.1	255	0.2	-0.2	DUMP
01/12 08:39:02	42 25.343	70 34.528	85	162	11.1	117	0.2	-0.2	DUMP
01/12 08:39:08	42 25.343	70 34.528	85	162	5.5	117	0.2	-0.2	DUMP
01/12 08:39:15	42 25.343	70 34.512	95	149	5.2	107	0.2	-0.2	DUMP
01/12 08:39:31	42 25.352	70 34.487	106	128	4.5	87	0.2	-0.2	DUMP
01/12 08:39:37	42 25.343	70 34.480	123	131	4.3	91	0.2	-0.2	DUMP
01/12 08:39:43	42 25.334	70 34.488	126	141	3.7	99	0.2	-0.2	DUMP
01/12 08:39:48	42 25.334	70 34.473	142	134	3.7	102	0.2	-0.2	DUMP
01/12 08:39:55	42 25.325	70 34.465	160	136	3.7	107	0.2	-0.2	DUMP
01/12 08:40:01	42 25.325	70 34.465	160	136	3.6	110	0.2	-0.2	DUMP
01/12 08:40:07	42 25.317	70 34.474	164	143	3.3	117	0.2	-0.2	DUMP
01/12 08:40:15	42 25.291	70 34.501	189	160	66.0	224	0.2	-0.2	DUMP
01/12 08:40:21	42 25.282	70 34.494	208	159	6.0	149	0.2	-0.2	DUMP
01/12 08:40:28	42 25.282	70 34.494	208	159	2.6	149	0.2	-0.2	DUMP
01/12 08:40:35	42 25.273	70 34.487	226	159	3.2	149	0.2	-0.2	DUMP
01/12 08:38:47	42 25.361	70 34.526	57	149	4.3	123	0.2	-0.2	DUMP
01/12 08:38:56	42 25.352	70 34.551	65	184	40.1	255	0.2	-0.2	DUMP
01/12 08:39:02	42 25.343	70 34.528	85	162	11.1	117	0.2	-0.2	DUMP
01/12 08:39:08	42 25.343	70 34.528	85	162	5.5	117	0.2	-0.2	DUMP
01/12 08:39:15	42 25.343	70 34.512	95	149	5.2	107	0.2	-0.2	DUMP
01/12 11:45:00	42 20.171	70 56.591	31744	252	9.6	117	991.3	828.0	
01/12 11:50:02	42 20.775	70 55.808	30390	254	13.5	37	991.3	828.0	
01/12 11:55:00	42 21.519	70 55.257	29299	256	8.7	32	991.3	828.0	
01/12 12:00:02	42 22.094	70 54.502	28045	257	6.0	45	991.3	828.0	
01/12 12:05:03	42 22.429	70 53.472	26532	258	16.3	70	0.4	0.2	
01/12 12:10:02	42 22.618	70 52.344	24946	258	11.3	79	0.4	0.2	
01/12 12:15:00	42 22.811	70 51.234	23383	258	11.1	81	0.4	0.2	
01/12 12:20:00	42 22.998	70 50.150	21856	258	9.7	84	0.4	0.2	
01/12 12:25:00	42 23.202	70 49.015	20255	258	11.2	81	0.4	0.2	
01/12 12:30:02	42 23.401	70 47.906	18691	259	8.8	81	0.4	0.2	
01/12 12:35:01	42 23.604	70 46.800	17129	259	10.6	81	0.4	0.2	
01/12 12:40:00	42 23.804	70 45.705	15584	259	10.2	79	0.4	0.2	

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/12 12:45:00	42 24.017	70 44.573	13985	260	10.4	81	0.4	0.2	
01/12 12:50:02	42 24.218	70 43.445	12396	260	10.3	81	0.4	0.2	
01/12 12:55:04	42 24.405	70 42.305	10797	260	11.1	80	0.4	0.2	
01/12 13:00:03	42 24.579	70 41.185	9228	261	10.2	82	0.4	0.2	
01/12 13:05:00	42 24.722	70 40.055	7655	261	10.3	78	0.4	0.2	
01/12 13:10:01	42 24.843	70 38.937	6106	261	10.3	81	0.4	0.2	
01/12 13:15:00	42 24.987	70 37.773	4487	261	10.6	80	0.4	0.2	
01/12 13:20:02	42 25.127	70 36.636	2906	260	10.5	79	0.4	0.2	
01/12 13:25:04	42 25.263	70 35.494	1319	260	9.9	80	0.4	0.2	
01/12 13:30:03	42 25.387	70 34.547	0	100	5.9	85	0.4	0.2	
01/12 13:30:10	42 25.387	70 34.547	0	90	5.6	85	0.4	0.2	DUMP
01/12 13:30:16	42 25.387	70 34.531	22	91	5.5	86	0.4	0.2	DUMP
01/12 13:30:24	42 25.387	70 34.547	0	41	27.0	261	0.4	0.2	DUMP
01/12 13:30:31	42 25.396	70 34.522	38	65	11.9	65	0.4	0.2	DUMP
01/12 13:30:37	42 25.395	70 34.506	58	75	9.2	75	0.4	0.2	DUMP
01/12 13:30:43	42 25.404	70 34.497	75	65	7.7	67	0.4	0.2	DUMP
01/12 13:30:49	42 25.404	70 34.497	75	65	5.9	65	0.4	0.2	DUMP
01/12 13:30:56	42 25.404	70 34.497	75	65	4.5	64	0.4	0.2	DUMP
01/12 13:31:02	42 25.404	70 34.497	75	65	3.5	64	0.4	0.2	DUMP
01/12 13:31:08	42 25.395	70 34.490	79	79	2.9	73	0.4	0.2	DUMP
01/12 18:40:02	42 19.903	70 57.302	32824	252	11.6	57	991.3	828.0	
01/12 18:45:02	42 20.199	70 56.426	31513	252	9.3	37	991.3	828.0	
01/12 18:50:05	42 20.819	70 55.857	30431	254	8.4	37	991.3	828.0	
01/12 18:55:03	42 21.430	70 55.360	29476	254	8.0	37	991.3	828.0	
01/12 19:00:01	42 21.986	70 54.636	28269	257	11.3	57	991.3	828.0	
01/12 19:05:02	42 22.371	70 53.737	26911	258	10.3	86	0.2	0.0	
01/12 19:10:01	42 22.567	70 52.677	25413	258	10.6	82	0.2	0.0	
01/12 19:15:00	42 22.741	70 51.600	23901	258	10.8	82	0.2	0.0	
01/12 19:20:01	42 22.912	70 50.519	22384	258	10.2	84	0.2	0.0	
01/12 19:25:03	42 23.133	70 49.445	20858	258	11.9	77	0.2	0.0	
01/12 19:30:00	42 23.276	70 48.418	19425	258	9.0	87	0.2	0.0	
01/12 19:35:05	42 23.445	70 47.332	17903	258	10.3	82	0.2	0.0	
01/12 19:40:01	42 23.610	70 46.273	16418	258	9.1	83	0.2	0.0	
01/12 19:45:02	42 23.762	70 45.172	14882	258	9.4	86	0.2	0.0	
01/12 19:50:01	42 23.929	70 44.096	13374	258	10.1	81	0.2	0.0	
01/12 19:55:04	42 24.092	70 42.985	11820	258	10.0	82	0.2	0.0	
01/12 20:00:01	42 24.250	70 41.916	10325	258	10.4	81	0.2	0.0	
01/12 20:05:02	42 24.405	70 40.827	8804	258	10.0	80	0.2	0.0	
01/12 20:10:02	42 24.547	70 39.758	7316	258	10.0	84	0.2	0.0	
01/12 20:15:04	42 24.695	70 38.692	5829	257	9.9	81	0.2	0.0	
01/12 20:20:02	42 24.847	70 37.613	4324	257	10.1	81	0.2	0.0	
01/12 20:25:01	42 24.987	70 36.523	2810	255	9.6	83	0.2	0.0	
01/12 20:30:03	42 25.175	70 35.439	1285	252	10.0	73	0.2	0.0	
01/12 20:35:01	42 25.413	70 34.568	57	329	6.5	72	0.2	0.0	
01/12 20:40:03	42 25.318	70 34.602	149	211	1.7	231	0.2	0.0	
01/12 20:43:12	42 25.404	70 34.529	40	37	3.3	296	0.2	0.0	DUMP
01/12 20:43:18	42 25.404	70 34.545	32	4	4.2	283	0.2	0.0	DUMP
01/12 20:43:24	42 25.404	70 34.545	32	4	3.9	280	0.2	0.0	DUMP
01/12 20:43:30	42 25.396	70 34.538	20	37	3.0	269	0.2	0.0	DUMP
01/12 20:43:37	42 25.404	70 34.529	40	37	2.1	272	0.2	0.0	DUMP
01/12 20:43:43	42 25.404	70 34.529	40	37	1.5	275	0.2	0.0	DUMP

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SFD	CRS	ERR 1	ERR 2	FG
01/12 20:43:49	42 25.404	70 34.529	40	37	1.1	277	0.2	0.0	DUMP
01/12 20:44:05	42 25.413	70 34.536	50	17	1.0	294	0.2	0.0	DUMP
01/12 20:44:11	42 25.413	70 34.536	50	17	0.9	304	0.2	0.0	DUMP
01/12 20:44:17	42 25.422	70 34.543	65	4	1.1	314	0.2	0.0	DUMP
01/12 20:44:22	42 25.431	70 34.535	82	12	1.2	328	0.2	0.0	DUMP
01/12 20:44:28	42 25.430	70 34.519	89	26	1.2	344	0.2	0.0	DUMP
01/12 20:44:36	42 25.430	70 34.503	101	37	38.2	75	0.2	0.0	DUMP
01/12 20:44:43	42 25.439	70 34.494	121	37	6.4	37	0.2	0.0	DUMP
01/12 20:44:49	42 25.448	70 34.485	141	37	6.4	37	0.2	0.0	DUMP
01/12 20:44:55	42 25.465	70 34.467	181	37	8.3	37	0.2	0.0	DUMP
01/12 20:45:01	42 25.473	70 34.458	201	37	8.3	37	0.2	0.0	DUMP
01/12 20:45:08	42 25.482	70 34.449	221	37	7.7	37	0.2	0.0	DUMP
01/12 20:45:15	42 25.491	70 34.440	241	37	7.4	37	0.2	0.0	DUMP
01/12 20:45:21	42 25.500	70 34.448	249	33	6.9	34	0.2	0.0	DUMP
01/12 20:43:37	42 25.404	70 34.529	40	37	2.1	272	0.2	0.0	DUMP
01/12 20:43:43	42 25.404	70 34.529	40	37	1.5	275	0.2	0.0	DUMP
01/12 20:43:49	42 25.404	70 34.529	40	37	1.1	277	0.2	0.0	DUMP
01/12 23:30:00	42 20.564	70 56.082	30862	253	8.2	6	991.3	828.0	
01/12 23:35:00	42 21.246	70 55.514	29767	255	27.8	37	991.3	828.0	
01/12 23:40:01	42 21.919	70 54.864	28601	257	12.2	48	991.3	828.0	
01/12 23:45:03	42 22.300	70 53.869	27115	258	14.7	107	0.1	-0.1	
01/12 23:50:01	42 22.489	70 52.773	25572	258	9.3	104	0.1	-0.1	
01/12 23:55:03	42 22.712	70 51.625	23945	258	14.4	73	0.1	-0.1	
01/13 00:00:01	42 22.921	70 50.511	22370	258	10.8	81	0.1	-0.1	
01/13 00:05:03	42 23.144	70 49.391	20782	258	10.0	81	0.1	-0.1	
01/13 00:10:03	42 23.354	70 48.244	19163	259	10.8	78	0.1	-0.1	
01/13 00:15:04	42 23.568	70 47.131	17588	259	10.3	81	0.1	-0.1	
01/13 00:20:03	42 23.796	70 45.996	15980	259	10.8	77	0.1	-0.1	
01/13 00:25:03	42 23.993	70 44.882	14411	260	16.5	64	0.1	-0.1	
01/13 00:30:00	42 24.123	70 43.762	12856	260	11.7	72	0.1	-0.1	
01/13 00:35:02	42 24.293	70 42.641	11286	260	10.2	81	0.1	-0.1	
01/13 00:40:03	42 24.504	70 41.488	9660	260	10.9	79	0.1	-0.1	
01/13 00:45:00	42 24.631	70 40.361	8097	260	10.8	85	0.1	-0.1	
01/13 00:50:02	42 24.745	70 39.190	6480	259	10.6	84	0.1	-0.1	
01/13 00:55:00	42 24.890	70 38.059	4905	259	10.7	80	0.1	-0.1	
01/13 01:00:04	42 25.022	70 36.916	3319	258	10.4	80	0.1	-0.1	
01/13 01:05:03	42 25.168	70 35.766	1721	256	11.3	79	0.1	-0.1	
01/13 01:10:01	42 25.303	70 34.987	623	256	7.3	77	0.1	-0.1	
01/13 01:13:29	42 25.404	70 34.545	32	4	5.0	70	0.1	-0.1	DUMP
01/13 01:13:35	42 25.404	70 34.545	32	4	4.9	69	0.1	-0.1	DUMP
01/13 01:13:41	42 25.404	70 34.545	32	4	4.7	68	0.1	-0.1	DUMP
01/13 01:13:47	42 25.413	70 34.520	60	37	4.7	67	0.1	-0.1	DUMP
01/13 01:13:53	42 25.413	70 34.520	60	37	4.6	66	0.1	-0.1	DUMP
01/13 01:13:59	42 25.422	70 34.512	80	37	4.6	64	0.1	-0.1	DUMP
01/13 01:14:06	42 25.422	70 34.512	80	37	4.4	63	0.1	-0.1	DUMP
01/13 01:14:14	42 25.422	70 34.528	70	23	29.4	273	0.1	-0.1	DUMP
01/13 01:14:20	42 25.422	70 34.512	80	37	6.8	91	0.1	-0.1	DUMP
01/13 01:14:26	42 25.422	70 34.512	80	37	3.4	91	0.1	-0.1	DUMP
01/13 01:14:33	42 25.422	70 34.512	80	37	2.0	91	0.1	-0.1	DUMP
01/13 03:50:01	42 20.659	70 56.046	30763	253	10.2	30	991.3	828.0	
01/13 03:55:03	42 21.411	70 55.376	29507	256	14.4	297	991.3	828.0	



## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/13 04:00:00	42 21.996	70 54.628	28254	257	2.5	86	991.3	828.0	
01/13 04:05:01	42 22.425	70 53.562	26654	258	12.6	75	0.1	0.0	
01/13 04:10:03	42 22.614	70 52.434	25069	258	10.7	81	0.1	0.0	
01/13 04:15:01	42 22.789	70 51.326	23515	258	10.9	91	0.1	0.0	
01/13 04:20:02	42 22.997	70 50.180	21897	258	16.0	69	0.1	0.0	
01/13 04:25:02	42 23.210	70 49.052	20303	259	11.0	78	0.1	0.0	
01/13 04:30:03	42 23.400	70 47.922	18712	259	11.7	81	0.1	0.0	
01/13 04:35:00	42 23.559	70 46.811	17161	259	8.5	90	0.1	0.0	
01/13 04:40:00	42 23.706	70 45.660	15559	258	10.3	87	0.1	0.0	
01/13 04:45:01	42 23.848	70 44.534	13993	258	10.3	82	0.1	0.0	
01/13 04:50:02	42 24.084	70 43.418	12406	259	11.7	79	0.1	0.0	
01/13 04:55:01	42 24.254	70 42.296	10835	259	10.7	82	0.1	0.0	
01/13 05:00:00	42 24.402	70 41.170	9267	259	10.7	82	0.1	0.0	
01/13 05:05:05	42 24.581	70 40.006	7635	259	10.8	81	0.1	0.0	
01/13 05:10:00	42 24.720	70 38.886	6079	258	10.1	84	0.1	0.0	
01/13 05:15:05	42 24.882	70 37.752	4495	258	9.8	82	0.1	0.0	
01/13 05:20:03	42 25.040	70 36.613	2906	257	10.4	80	0.1	0.0	
01/13 05:25:02	42 25.202	70 35.492	1341	255	9.3	79	0.1	0.0	
01/13 05:30:03	42 25.336	70 34.728	266	249	5.0	76	0.1	0.0	
01/13 05:32:10	42 25.413	70 34.568	57	329	4.0	60	0.1	0.0	DUMP
01/13 05:32:16	42 25.413	70 34.568	57	329	3.8	61	0.1	0.0	DUMP
01/13 05:32:22	42 25.413	70 34.568	57	329	3.5	62	0.1	0.0	DUMP
01/13 05:32:28	42 25.422	70 34.575	76	329	3.2	59	0.1	0.0	DUMP
01/13 05:32:34	42 25.431	70 34.567	85	342	3.0	56	0.1	0.0	DUMP
01/13 05:32:40	42 25.431	70 34.567	85	342	2.8	53	0.1	0.0	DUMP
01/13 05:32:46	42 25.431	70 34.551	81	357	2.7	53	0.1	0.0	DUMP
01/13 05:32:53	42 25.422	70 34.543	65	4	2.6	56	0.1	0.0	DUMP
01/13 05:32:59	42 25.422	70 34.543	65	4	2.4	60	0.1	0.0	DUMP
01/13 05:33:05	42 25.422	70 34.528	70	23	2.4	65	0.1	0.0	DUMP
01/13 05:33:11	42 25.422	70 34.528	70	23	2.3	69	0.1	0.0	DUMP
01/13 05:33:28	42 25.422	70 34.528	70	23	2.0	73	0.1	0.0	DUMP
01/13 05:33:33	42 25.422	70 34.528	70	23	1.8	77	0.1	0.0	DUMP
01/13 05:33:39	42 25.431	70 34.535	82	12	1.6	74	0.1	0.0	DUMP
01/13 05:33:45	42 25.431	70 34.535	82	12	1.4	72	0.1	0.0	DUMP
01/13 05:33:51	42 25.430	70 34.519	89	26	1.4	72	0.1	0.0	DUMP
01/13 05:33:57	42 25.430	70 34.519	89	26	1.3	73	0.1	0.0	DUMP
01/13 05:34:03	42 25.422	70 34.512	80	37	1.3	79	0.1	0.0	DUMP
01/13 05:34:09	42 25.430	70 34.519	89	26	1.2	78	0.1	0.0	DUMP
01/13 05:34:15	42 25.422	70 34.527	70	23	1.0	83	0.1	0.0	DUMP
01/13 05:32:34	42 25.431	70 34.567	85	342	3.0	56	0.1	0.0	DUMP
01/13 05:32:40	42 25.431	70 34.567	85	342	2.8	53	0.1	0.0	DUMP
01/13 05:32:46	42 25.431	70 34.551	81	357	2.7	53	0.1	0.0	DUMP
01/13 05:32:53	42 25.422	70 34.543	65	4	2.6	56	0.1	0.0	DUMP
01/13 05:32:59	42 25.422	70 34.543	65	4	2.4	60	0.1	0.0	DUMP
01/13 05:33:05	42 25.422	70 34.527	70	23	2.4	65	0.1	0.0	DUMP
01/13 05:33:11	42 25.422	70 34.528	70	23	2.3	69	0.1	0.0	DUMP
01/13 08:35:05	42 20.267	70 56.230	31218	252	13.2	55	991.3	828.0	
01/13 08:40:03	42 20.898	70 55.762	30266	254	28.4	37	991.3	828.0	
01/13 08:45:01	42 21.546	70 55.277	29314	256	10.2	37	991.3	828.0	
01/13 08:50:00	42 21.989	70 54.577	28188	257	8.5	63	991.3	828.0	
01/13 08:55:01	42 22.412	70 53.645	26771	258	10.2	88	0.2	-0.2	

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/13 09:00:03	42 22.571	70 52.572	25270	258	10.3	83	0.2	-0.2	
01/13 09:05:00	42 22.755	70 51.486	23743	258	9.8	84	0.2	-0.2	
01/13 09:10:02	42 22.944	70 50.388	22197	258	10.9	78	0.2	-0.2	
01/13 09:15:02	42 23.102	70 49.296	20670	258	9.8	83	0.2	-0.2	
01/13 09:20:02	42 23.293	70 48.166	19080	258	10.3	83	0.2	-0.2	
01/13 09:25:05	42 23.471	70 47.071	17542	258	10.1	81	0.2	-0.2	
01/13 09:30:02	42 23.662	70 45.970	15992	258	11.2	76	0.2	-0.2	
01/13 09:35:01	42 23.850	70 44.880	14457	259	9.7	84	0.2	-0.2	
01/13 09:40:01	42 24.024	70 43.763	12892	259	10.3	83	0.2	-0.2	
01/13 09:45:03	42 24.240	70 42.646	11311	259	10.6	76	0.2	-0.2	
01/13 09:50:00	42 24.368	70 41.757	10069	259	8.7	80	0.2	-0.2	
01/13 09:55:02	42 24.522	70 40.652	8527	259	10.1	80	0.2	-0.2	
01/13 10:00:02	42 24.708	70 39.508	6920	260	10.4	83	0.2	-0.2	
01/13 10:05:02	42 24.872	70 38.360	5317	260	11.1	81	0.2	-0.2	
01/13 10:10:04	42 24.996	70 37.243	3768	259	10.4	82	0.2	-0.2	
01/13 10:15:02	42 25.169	70 36.132	2211	260	10.3	79	0.2	-0.2	
01/13 10:20:01	42 25.303	70 35.003	644	256	10.0	84	0.2	-0.2	
01/13 10:22:27	42 25.396	70 34.538	20	37	8.1	74	0.2	-0.2	DUMP
01/13 10:22:34	42 25.404	70 34.529	40	37	7.8	74	0.2	-0.2	DUMP
01/13 10:22:40	42 25.404	70 34.513	56	56	7.5	74	0.2	-0.2	DUMP
01/13 10:22:46	42 25.404	70 34.497	75	65	7.2	75	0.2	-0.2	DUMP
01/13 10:22:52	42 25.413	70 34.488	93	59	6.9	75	0.2	-0.2	DUMP
01/13 10:22:58	42 25.404	70 34.481	95	71	6.6	76	0.2	-0.2	DUMP
01/13 10:23:05	42 25.412	70 34.456	133	69	6.5	76	0.2	-0.2	DUMP
01/13 10:23:13	42 25.404	70 34.465	116	75	23.7	224	0.2	-0.2	DUMP
01/13 10:23:19	42 25.404	70 34.449	137	77	6.8	91	0.2	-0.2	DUMP
01/13 10:23:26	42 25.404	70 34.433	159	79	6.7	91	0.2	-0.2	DUMP
01/13 14:25:01	42 20.172	70 56.576	31724	252	29.5	52	991.3	828.0	
01/13 14:30:02	42 20.934	70 55.789	30284	254	20.1	37	991.3	828.0	
01/13 14:35:02	42 21.691	70 55.156	29087	256	7.3	34	991.3	828.0	
01/13 14:40:04	42 22.074	70 54.177	27618	257	8.1	122	991.3	828.0	
01/13 14:45:02	42 22.294	70 53.027	25990	257	10.6	81	1.2	-0.9	
01/13 14:50:02	42 22.500	70 51.881	24372	257	10.8	81	1.2	-0.9	
01/13 14:55:01	42 22.729	70 50.767	22788	258	10.7	78	1.2	-0.9	
01/13 15:00:03	42 22.854	70 49.634	21221	257	10.7	85	1.2	-0.9	
01/13 15:05:00	42 23.065	70 48.519	19643	257	10.9	79	1.2	-0.9	
01/13 15:10:02	42 23.290	70 47.398	18052	258	9.9	81	1.2	-0.9	
01/13 15:15:03	42 23.528	70 46.303	16489	258	10.3	75	1.2	-0.9	
01/13 15:20:01	42 23.725	70 45.236	14983	258	10.4	78	1.2	-0.9	
01/13 15:25:02	42 23.945	70 44.156	13449	259	10.3	78	1.2	-0.9	
01/13 15:30:00	42 24.180	70 43.038	11861	259	11.0	76	1.2	-0.9	
01/13 15:35:01	42 24.374	70 41.935	10307	260	12.7	84	1.2	-0.9	
01/13 15:40:00	42 24.618	70 40.807	8705	261	10.9	75	1.2	-0.9	
01/13 15:45:03	42 24.839	70 39.676	7108	262	10.8	74	1.2	-0.9	
01/13 15:50:02	42 25.074	70 38.553	5526	264	10.7	72	1.2	-0.9	
01/13 15:55:01	42 25.277	70 37.468	4013	267	9.9	79	1.2	-0.9	
01/13 16:00:03	42 25.433	70 36.328	2444	272	10.9	86	1.2	-0.9	
01/13 16:05:03	42 25.462	70 35.179	877	279	10.1	89	1.2	-0.9	
01/13 16:08:28	42 25.378	70 34.524	36	118	7.5	76	1.2	-0.9	DUMP
01/13 16:08:34	42 25.370	70 34.533	38	149	5.4	84	1.2	-0.9	DUMP
01/13 16:08:40	42 25.378	70 34.508	56	107	5.5	83	1.2	-0.9	DUMP

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/13 16:08:46	42 25.378	70 34.492	77	103	5.7	83	1.2	-0.9	DUMP
01/13 16:08:52	42 25.378	70 34.492	77	103	5.3	83	1.2	-0.9	DUMP
01/13 16:08:58	42 25.369	70 34.485	91	111	5.0	87	1.2	-0.9	DUMP
01/13 16:09:05	42 25.369	70 34.485	92	111	4.6	90	1.2	-0.9	DUMP
01/13 16:09:11	42 25.386	70 34.467	110	91	4.5	85	1.2	-0.9	DUMP
01/13 16:09:17	42 25.386	70 34.451	132	91	4.5	83	1.2	-0.9	DUMP
01/13 16:09:23	42 25.395	70 34.442	144	84	4.6	80	1.2	-0.9	DUMP
01/13 16:09:30	42 25.386	70 34.451	132	91	4.3	79	1.2	-0.9	DUMP
01/13 16:09:46	42 25.395	70 34.426	166	85	4.0	77	1.2	-0.9	DUMP
01/13 16:09:52	42 25.395	70 34.426	166	85	3.8	76	1.2	-0.9	DUMP
01/13 16:09:58	42 25.395	70 34.426	166	85	3.5	75	1.2	-0.9	DUMP
01/13 16:10:03	42 25.395	70 34.410	188	86	3.5	75	1.2	-0.9	DUMP
01/13 16:10:09	42 25.386	70 34.403	197	91	3.4	78	1.2	-0.9	DUMP
01/13 16:10:17	42 25.386	70 34.419	175	91	3.0	79	1.2	-0.9	DUMP
01/13 16:10:23	42 25.386	70 34.403	197	91	2.8	81	1.2	-0.9	DUMP
01/13 16:10:29	42 25.377	70 34.396	208	95	2.7	86	1.2	-0.9	DUMP
01/13 16:10:35	42 25.368	70 34.389	220	99	2.6	93	1.2	-0.9	DUMP
01/13 16:08:52	42 25.378	70 34.492	77	103	5.3	83	1.2	-0.9	DUMP
01/13 16:08:58	42 25.369	70 34.485	92	111	5.0	87	1.2	-0.9	DUMP
01/13 16:09:05	42 25.369	70 34.485	92	111	4.6	90	1.2	-0.9	DUMP
01/13 16:09:11	42 25.386	70 34.467	110	91	4.5	85	1.2	-0.9	DUMP
01/13 16:09:17	42 25.386	70 34.451	132	91	4.5	83	1.2	-0.9	DUMP
01/13 16:09:23	42 25.395	70 34.442	144	84	4.6	80	1.2	-0.9	DUMP
01/13 16:09:30	42 25.386	70 34.451	132	91	4.3	79	1.2	-0.9	DUMP
01/13 20:10:02	42 20.472	70 56.060	30882	253	17.8	51	991.3	828.0	
01/13 20:15:01	42 21.073	70 55.616	29985	255	8.5	41	991.3	828.0	
01/13 20:20:03	42 21.714	70 55.080	28976	256	8.7	149	991.3	828.0	
01/13 20:25:04	42 22.161	70 54.274	27713	258	8.5	61	991.3	828.0	
01/13 20:30:00	42 22.398	70 53.168	26137	258	11.0	83	0.2	-0.3	
01/13 20:35:02	42 22.520	70 52.067	24613	258	9.5	86	0.2	-0.3	
01/13 20:40:00	42 22.685	70 50.966	23073	257	10.2	83	0.2	-0.3	
01/13 20:45:02	42 22.837	70 49.854	21522	257	11.0	81	0.2	-0.3	
01/13 20:50:02	42 22.985	70 48.738	19968	257	10.7	82	0.2	-0.3	
01/13 20:55:03	42 23.138	70 47.640	18437	257	10.4	83	0.2	-0.3	
01/13 21:00:00	42 23.296	70 46.544	16907	257	9.8	85	0.2	-0.3	
01/13 21:05:03	42 23.488	70 45.411	15312	257	13.4	74	0.2	-0.3	
01/13 21:10:02	42 23.647	70 44.329	13800	256	10.2	78	0.2	-0.3	
01/13 21:15:01	42 23.820	70 43.226	12254	256	11.4	77	0.2	-0.3	
01/13 21:25:03	42 24.209	70 40.986	9098	256	10.5	79	0.2	-0.3	
01/13 21:30:02	42 24.396	70 39.875	7535	256	11.4	77	0.2	-0.3	
01/13 21:35:02	42 24.562	70 38.792	6020	255	9.6	80	0.2	-0.3	
01/13 21:40:05	42 24.742	70 37.656	4428	254	10.4	78	0.2	-0.3	
01/13 21:45:00	42 24.934	70 36.576	2907	253	10.1	79	0.2	-0.3	
01/13 21:50:01	42 25.149	70 35.481	1355	251	9.3	74	0.2	-0.3	
01/13 21:55:02	42 25.293	70 34.741	318	237	3.5	81	0.2	-0.3	
01/13 21:59:10	42 25.387	70 34.563	22	271	2.2	59	0.2	-0.3	DUMP
01/13 21:59:16	42 25.387	70 34.547	0	0	2.2	57	0.2	-0.3	DUMP
01/13 21:59:22	42 25.387	70 34.547	0	154	2.2	55	0.2	-0.3	DUMP
01/13 21:59:29	42 25.387	70 34.547	0	286	2.0	53	0.2	-0.3	DUMP
01/13 21:59:35	42 25.378	70 34.556	20	217	1.7	54	0.2	-0.3	DUMP
01/13 21:59:41	42 25.387	70 34.547	0	356	1.6	52	0.2	-0.3	DUMP

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/13 21:59:47	42 25.396	70 34.554	19	329	1.5	44	0.2	-0.3	DUMP
01/13 21:59:53	42 25.387	70 34.547	0	325	1.3	43	0.2	-0.3	DUMP
01/13 22:00:00	42 25.396	70 34.554	19	329	1.2	36	0.2	-0.3	DUMP
01/13 22:00:06	42 25.404	70 34.545	32	4	1.3	30	0.2	-0.3	DUMP
01/13 22:00:12	42 25.404	70 34.545	32	4	1.3	26	0.2	-0.3	DUMP
01/13 22:00:30	42 25.404	70 34.545	32	4	1.2	22	0.2	-0.3	DUMP
01/13 22:00:35	42 25.404	70 34.529	40	37	1.2	28	0.2	-0.3	DUMP
01/13 22:00:41	42 25.413	70 34.536	50	17	1.3	26	0.2	-0.3	DUMP
01/13 22:00:47	42 25.422	70 34.512	80	37	1.5	31	0.2	-0.3	DUMP
01/13 22:00:53	42 25.422	70 34.512	80	37	1.7	35	0.2	-0.3	DUMP
01/13 22:00:59	42 25.413	70 34.520	60	37	1.6	37	0.2	-0.3	DUMP
01/13 22:01:05	42 25.422	70 34.496	95	48	1.8	43	0.2	-0.3	DUMP
01/13 22:01:11	42 25.413	70 34.488	93	59	1.9	52	0.2	-0.3	DUMP
01/13 22:01:17	42 25.421	70 34.480	112	56	2.1	57	0.2	-0.3	DUMP
01/13 21:59:35	42 25.378	70 34.556	20	217	1.7	54	0.2	-0.3	DUMP
01/13 21:59:41	42 25.387	70 34.547	0	112	1.6	52	0.2	-0.3	DUMP
01/13 21:59:47	42 25.396	70 34.554	19	329	1.5	44	0.2	-0.3	DUMP
01/13 21:59:53	42 25.387	70 34.547	0	251	1.3	43	0.2	-0.3	DUMP
01/13 22:00:00	42 25.396	70 34.554	19	329	1.2	36	0.2	-0.3	DUMP
01/13 22:00:06	42 25.405	70 34.545	32	4	1.3	30	0.2	-0.3	DUMP
01/13 22:00:12	42 25.404	70 34.545	32	4	1.3	26	0.2	-0.3	DUMP
01/14 02:00:02	42 20.243	70 58.715	34494	254	4.5	149	991.3	828.0	
01/14 02:05:01	42 20.120	70 58.005	33625	253	13.3	95	991.3	828.0	
01/14 02:10:03	42 19.947	70 57.041	32459	252	11.1	109	991.3	828.0	
01/14 02:15:04	42 20.401	70 56.006	30850	253	16.7	65	991.3	828.0	
01/14 02:20:05	42 21.192	70 55.489	29759	255	12.2	35	991.3	828.0	
01/14 02:25:02	42 21.892	70 54.859	28605	257	10.3	74	991.3	828.0	
01/14 02:30:03	42 22.175	70 53.789	27058	257	11.4	81	0.6	-1.1	
01/14 02:40:02	42 22.579	70 51.538	23881	257	13.0	82	0.6	-1.1	
01/14 02:45:01	42 22.788	70 50.408	22284	258	11.0	80	0.6	-1.1	
01/14 02:50:05	42 22.994	70 49.259	20663	258	10.3	82	0.6	-1.1	
01/14 02:55:05	42 23.204	70 48.128	19064	258	11.1	80	0.6	-1.1	
01/14 03:00:05	42 23.409	70 47.007	17481	258	10.9	80	0.6	-1.1	
01/14 03:05:00	42 23.619	70 45.920	15941	258	11.0	77	0.6	-1.1	
01/14 03:10:00	42 23.833	70 44.820	14383	258	10.9	91	0.6	-1.1	
01/14 03:15:02	42 24.044	70 43.684	12779	259	11.1	78	0.6	-1.1	
01/14 03:20:03	42 24.259	70 42.551	11177	259	10.8	76	0.6	-1.1	
01/14 03:25:01	42 24.461	70 41.437	9606	260	10.5	78	0.6	-1.1	
01/14 03:30:02	42 24.667	70 40.326	8039	260	10.1	79	0.6	-1.1	
01/14 03:35:02	42 24.860	70 39.203	6461	261	9.8	82	0.6	-1.1	
01/14 03:40:03	42 25.075	70 38.096	4903	263	10.1	75	0.6	-1.1	
01/14 03:45:03	42 25.268	70 36.971	3332	266	10.0	79	0.6	-1.1	
01/14 03:50:02	42 25.404	70 35.846	1782	271	10.4	82	0.6	-1.1	
01/14 03:55:02	42 25.363	70 34.749	281	261	9.3	94	0.6	-1.1	
01/14 03:56:26	42 25.369	70 34.517	53	128	7.7	90	0.6	-1.1	DUMP
01/14 03:56:35	42 25.369	70 34.517	53	128	17.6	277	0.6	-1.1	DUMP
01/14 03:56:41	42 25.378	70 34.492	77	103	11.9	65	0.6	-1.1	DUMP
01/14 03:56:47	42 25.378	70 34.476	99	100	9.2	75	0.6	-1.1	DUMP
01/14 03:56:53	42 25.386	70 34.467	110	91	7.7	67	0.6	-1.1	DUMP
01/14 03:56:59	42 25.395	70 34.458	123	83	7.1	60	0.6	-1.1	DUMP
01/14 03:57:06	42 25.395	70 34.458	123	83	5.9	58	0.6	-1.1	DUMP

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/14 03:57:12	42 25.412	70 34.440	153	72	6.1	52	0.6	-1.1	DUMP
01/14 03:57:18	42 25.412	70 34.424	174	75	6.1	53	0.6	-1.1	DUMP
01/14 07:50:02	42 19.987	70 57.303	32778	252	7.2	103	991.3	828.0	
01/14 07:55:00	42 20.115	70 56.440	31579	252	8.7	75	991.3	828.0	
01/14 08:00:03	42 20.707	70 55.865	30501	253	8.8	36	991.3	828.0	
01/14 08:05:00	42 21.334	70 55.426	29609	255	8.1	30	991.3	828.0	
01/14 08:10:01	42 21.896	70 54.769	28484	257	8.7	64	991.3	828.0	
01/14 08:15:03	42 22.328	70 53.860	27091	258	9.7	71	0.1	-0.3	
01/14 08:20:01	42 22.453	70 52.761	25569	258	12.1	83	0.1	-0.3	
01/14 08:25:03	42 22.583	70 51.665	24049	258	10.5	86	0.1	-0.3	
01/14 08:30:01	42 22.727	70 50.579	22537	257	10.5	85	0.1	-0.3	
01/14 08:35:02	42 22.878	70 49.465	20986	257	10.6	84	0.1	-0.3	
01/14 08:40:03	42 23.006	70 48.380	19481	257	10.2	84	0.1	-0.3	
01/14 08:45:02	42 23.167	70 47.287	17954	257	10.3	83	0.1	-0.3	
01/14 08:50:03	42 23.333	70 46.197	16428	257	10.1	83	0.1	-0.3	
01/14 08:55:02	42 23.513	70 45.102	14889	257	10.9	80	0.1	-0.3	
01/14 09:00:01	42 23.698	70 44.024	13371	256	10.5	79	0.1	-0.3	
01/14 09:05:03	42 23.879	70 42.911	11809	256	10.4	80	0.1	-0.3	
01/14 09:10:00	42 24.056	70 41.841	10304	256	10.0	81	0.1	-0.3	
01/14 09:15:03	42 24.247	70 40.733	8744	256	9.7	81	0.1	-0.3	
01/14 09:20:02	42 24.469	70 39.617	7160	256	10.7	77	0.1	-0.3	
01/14 09:25:00	42 24.651	70 38.531	5633	256	9.5	77	0.1	-0.3	
01/14 09:30:00	42 24.865	70 37.438	4082	256	10.1	82	0.1	-0.3	
01/14 09:35:00	42 25.083	70 36.347	2532	257	11.0	71	0.1	-0.3	
01/14 09:40:02	42 25.279	70 35.253	989	258	10.3	77	0.1	-0.3	
01/14 09:45:00	42 25.344	70 34.575	89	206	3.5	131	0.1	-0.3	
01/14 09:47:13	42 25.378	70 34.524	36	117	0.8	329	0.1	-0.3	DUMP
01/14 09:47:20	42 25.369	70 34.517	53	128	0.1	149	0.1	-0.3	DUMP
01/14 09:47:26	42 25.378	70 34.524	36	118	0.1	329	0.1	-0.3	DUMP
01/14 09:47:32	42 25.378	70 34.524	36	118	0.1	329	0.1	-0.3	DUMP
01/14 09:47:38	42 25.387	70 34.531	22	91	0.5	329	0.1	-0.3	DUMP
01/14 09:47:45	42 25.387	70 34.531	22	91	0.7	329	0.1	-0.3	DUMP
01/14 09:47:51	42 25.396	70 34.522	38	65	0.9	345	0.1	-0.3	DUMP
01/14 09:47:57	42 25.396	70 34.522	38	65	1.0	352	0.1	-0.3	DUMP
01/14 14:05:00	42 21.431	70 55.345	29456	256	11.5	7	991.3	828.0	
01/14 14:10:01	42 22.026	70 54.574	28169	257	7.3	65	991.3	828.0	
01/14 14:15:03	42 22.381	70 53.528	26626	258	11.3	81	0.3	0.0	
01/14 14:20:00	42 22.568	70 52.430	25081	258	10.1	86	0.3	0.0	
01/14 14:25:03	42 22.781	70 51.289	23468	258	11.3	80	0.3	0.0	
01/14 14:30:02	42 22.979	70 50.182	21906	258	9.6	85	0.3	0.0	
01/14 14:35:03	42 23.164	70 49.064	20335	258	10.3	81	0.3	0.0	
01/14 14:40:01	42 23.363	70 47.955	18771	258	9.6	87	0.3	0.0	
01/14 14:45:03	42 23.568	70 46.818	17167	259	10.5	80	0.3	0.0	
01/14 14:50:01	42 23.776	70 45.715	15607	259	10.3	80	0.3	0.0	
01/14 14:55:01	42 23.981	70 44.607	14043	259	10.0	81	0.3	0.0	
01/14 15:00:08	42 24.199	70 43.462	12425	260	10.1	80	0.3	0.0	
01/14 15:05:02	42 24.395	70 42.345	10853	260	11.7	72	0.3	0.0	
01/14 15:10:04	42 24.587	70 41.223	9277	261	9.5	78	0.3	0.0	
01/14 15:15:00	42 24.783	70 40.104	7704	262	10.5	75	0.3	0.0	
01/14 15:20:02	42 24.984	70 38.987	6136	263	10.4	79	0.3	0.0	
01/14 15:25:00	42 25.172	70 37.890	4603	265	10.8	79	0.3	0.0	

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/14 15:30:01	42 25.294	70 36.770	3054	267	9.9	83	0.3	0.0	
01/14 15:35:03	42 25.386	70 35.656	1522	270	10.2	83	0.3	0.0	
01/14 15:40:03	42 25.414	70 34.632	127	293	5.3	111	0.3	0.0	
01/14 15:41:18	42 25.370	70 34.549	32	184	5.6	109	0.3	0.0	DUMP
01/14 15:41:24	42 25.370	70 34.549	32	184	4.9	112	0.3	0.0	DUMP
01/14 15:41:30	42 25.352	70 34.551	65	184	4.5	123	0.3	0.0	DUMP
01/14 15:41:36	42 25.361	70 34.542	49	171	4.1	124	0.3	0.0	DUMP
01/14 15:41:42	42 25.352	70 34.535	67	165	4.0	127	0.3	0.0	DUMP
01/14 15:41:48	42 25.352	70 34.535	67	165	3.7	128	0.3	0.0	DUMP
01/14 15:41:55	42 25.361	70 34.526	57	149	3.4	125	0.3	0.0	DUMP
01/14 15:42:01	42 25.361	70 34.526	57	149	3.1	123	0.3	0.0	DUMP
01/14 15:42:07	42 25.352	70 34.519	76	149	3.0	122	0.3	0.0	DUMP
01/14 15:42:13	42 25.361	70 34.510	71	134	2.8	118	0.3	0.0	DUMP
01/14 15:42:20	42 25.361	70 34.510	71	134	2.6	115	0.3	0.0	DUMP
01/14 15:42:26	42 25.361	70 34.510	71	134	2.4	112	0.3	0.0	DUMP
01/14 15:42:42	42 25.352	70 34.503	89	137	2.2	112	0.3	0.0	DUMP
01/14 15:42:48	42 25.352	70 34.503	89	137	2.0	112	0.3	0.0	DUMP
01/14 15:42:53	42 25.343	70 34.496	108	139	1.9	115	0.3	0.0	DUMP
01/14 15:42:59	42 25.352	70 34.487	106	128	1.9	113	0.3	0.0	DUMP
01/14 15:43:05	42 25.343	70 34.496	108	139	1.8	115	0.3	0.0	DUMP
01/14 15:43:11	42 25.343	70 34.496	108	139	1.6	118	0.3	0.0	DUMP
01/14 15:43:17	42 25.334	70 34.504	114	149	1.5	126	0.3	0.0	DUMP
01/14 15:43:23	42 25.343	70 34.496	108	139	1.3	128	0.3	0.0	DUMP
01/14 15:41:42	42 25.352	70 34.535	67	165	4.0	127	0.3	0.0	DUMP
01/14 15:41:48	42 25.352	70 34.535	67	165	3.7	128	0.3	0.0	DUMP
01/14 15:41:55	42 25.361	70 34.526	57	149	3.4	125	0.3	0.0	DUMP
01/14 15:42:01	42 25.361	70 34.526	57	149	3.1	123	0.3	0.0	DUMP
01/14 15:42:07	42 25.352	70 34.519	76	149	3.0	122	0.3	0.0	DUMP
01/14 15:42:13	42 25.361	70 34.510	71	134	2.8	118	0.3	0.0	DUMP
01/14 15:42:20	42 25.361	70 34.510	71	134	2.6	115	0.3	0.0	DUMP
01/14 15:42:26	42 25.361	70 34.510	71	134	2.4	112	0.3	0.0	DUMP
01/14 19:45:03	42 22.328	70 53.673	26842	258	9.4	87	991.3	828.0	
01/14 19:50:01	42 22.506	70 52.585	25312	258	10.8	83	991.3	828.0	
01/14 19:55:01	42 22.699	70 51.506	23790	258	11.0	79	991.3	828.0	
01/14 20:00:02	42 22.879	70 50.431	22279	258	10.3	80	991.3	828.0	
01/14 20:05:02	42 23.082	70 49.343	20741	258	10.4	79	991.3	828.0	
01/14 20:10:00	42 23.272	70 48.274	19234	258	10.0	80	991.3	828.0	
01/14 20:15:02	42 23.485	70 47.191	17699	259	10.0	76	991.3	828.0	
01/14 20:20:04	42 23.721	70 46.125	16180	259	9.6	77	991.3	828.0	
01/14 20:25:01	42 23.935	70 45.057	14665	259	9.7	80	991.3	828.0	
01/14 20:30:03	42 24.172	70 43.974	13125	260	10.2	79	991.3	828.0	
01/14 20:35:01	42 24.387	70 42.903	11612	261	10.8	78	991.3	828.0	
01/14 20:40:02	42 24.589	70 41.822	10089	262	9.8	81	991.3	828.0	
01/14 20:45:01	42 24.787	70 40.736	8563	263	9.8	80	991.3	828.0	
01/14 20:50:05	42 24.999	70 39.629	7008	264	10.5	76	991.3	828.0	
01/14 20:55:01	42 25.118	70 38.557	5523	265	9.8	85	991.3	828.0	
01/14 21:00:02	42 25.216	70 37.435	3974	265	10.0	85	991.3	828.0	
01/14 21:05:00	42 25.319	70 36.331	2451	267	9.9	81	991.3	828.0	
01/14 21:10:04	42 25.366	70 35.228	935	268	9.6	90	991.3	828.0	
01/14 21:15:00	42 25.362	70 34.622	113	245	2.0	98	991.3	828.0	
01/14 21:16:46	42 25.396	70 34.538	20	37	2.0	63	991.3	828.0	DUMP

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/14 21:16:52	42 25.396	70 34.538	20	37	2.1	62	991.3	828.0	DUMP
01/14 21:16:58	42 25.396	70 34.538	20	37	2.2	61	991.3	828.0	DUMP
01/14 21:17:04	42 25.396	70 34.522	38	65	2.3	62	991.3	828.0	DUMP
01/14 21:17:10	42 25.404	70 34.529	40	37	2.3	59	991.3	828.0	DUMP
01/14 21:17:16	42 25.404	70 34.513	56	56	2.4	59	991.3	828.0	DUMP
01/14 21:17:23	42 25.404	70 34.513	56	55	2.5	60	991.3	828.0	DUMP
01/14 21:17:29	42 25.404	70 34.513	56	56	2.4	60	991.3	828.0	DUMP
01/14 21:17:35	42 25.404	70 34.513	56	56	2.3	60	991.3	828.0	DUMP
01/14 21:17:41	42 25.396	70 34.522	38	65	2.0	62	991.3	828.0	DUMP
01/14 21:17:47	42 25.413	70 34.504	76	51	2.0	59	991.3	828.0	DUMP
01/14 21:17:54	42 25.413	70 34.504	76	51	2.0	58	991.3	828.0	DUMP
01/14 21:18:00	42 25.413	70 34.504	75	51	1.9	56	991.3	828.0	DUMP
01/14 21:18:17	42 25.421	70 34.480	112	56	2.1	57	991.3	828.0	DUMP
01/14 21:18:23	42 25.421	70 34.480	112	56	2.1	57	991.3	828.0	DUMP
01/14 21:18:28	42 25.422	70 34.496	95	48	1.9	54	991.3	828.0	DUMP
01/14 21:18:34	42 25.430	70 34.487	115	46	1.9	50	991.3	828.0	DUMP
01/14 21:18:40	42 25.421	70 34.480	112	56	1.8	52	991.3	828.0	DUMP
01/14 21:18:46	42 25.421	70 34.464	131	61	1.9	57	991.3	828.0	DUMP
01/14 21:18:52	42 25.413	70 34.472	113	65	1.7	62	991.3	828.0	DUMP
01/14 21:17:10	42 25.404	70 34.529	40	37	2.3	59	991.3	828.0	DUMP
01/14 21:17:16	42 25.404	70 34.513	56	56	2.4	59	991.3	828.0	DUMP
01/14 21:17:23	42 25.404	70 34.513	56	55	2.5	60	991.3	828.0	DUMP
01/14 21:17:29	42 25.404	70 34.513	56	56	2.4	60	991.3	828.0	DUMP
01/14 21:17:35	42 25.404	70 34.513	56	56	2.3	60	991.3	828.0	DUMP
01/14 21:17:41	42 25.396	70 34.522	38	65	2.0	62	991.3	828.0	DUMP
01/14 21:17:47	42 25.413	70 34.504	76	51	2.0	59	991.3	828.0	DUMP
01/14 21:17:54	42 25.413	70 34.504	76	51	2.0	58	991.3	828.0	DUMP
01/14 21:18:00	42 25.413	70 34.504	75	51	1.9	56	991.3	828.0	DUMP
01/15 01:00:04	42 21.586	70 55.215	29213	256	10.7	37	991.3	828.0	
01/15 01:05:02	42 22.134	70 54.440	27945	258	10.2	67	991.3	828.0	
01/15 01:10:00	42 22.378	70 53.386	26437	258	10.5	83	991.3	828.0	
01/15 01:15:04	42 22.657	70 52.296	24867	258	10.6	75	991.3	828.0	
01/15 01:20:01	42 22.857	70 51.208	23330	258	10.7	80	991.3	828.0	
01/15 01:25:04	42 23.074	70 50.084	21739	259	11.3	78	991.3	828.0	
01/15 01:30:02	42 23.284	70 49.001	20206	259	10.6	80	991.3	828.0	
01/15 01:35:00	42 23.491	70 47.899	18649	259	10.7	79	991.3	828.0	
01/15 01:40:02	42 23.703	70 46.814	17115	260	10.1	80	991.3	828.0	
01/15 01:45:02	42 23.939	70 45.685	15513	260	10.6	79	991.3	828.0	
01/15 01:50:01	42 24.142	70 44.577	13951	260	10.8	79	991.3	828.0	
01/15 01:55:01	42 24.351	70 43.487	12413	261	9.7	77	991.3	828.0	
01/15 02:00:03	42 24.538	70 42.347	10815	262	10.4	80	991.3	828.0	
01/15 02:05:01	42 24.693	70 41.229	9255	262	10.4	80	991.3	828.0	
01/15 02:10:01	42 24.845	70 40.121	7712	263	10.5	79	991.3	828.0	
01/15 02:15:02	42 25.002	70 38.985	6130	263	10.6	80	991.3	828.0	
01/15 02:20:06	42 25.154	70 37.891	4608	265	9.5	81	991.3	828.0	
01/15 02:25:02	42 25.320	70 36.791	3081	268	9.8	82	991.3	828.0	
01/15 02:30:00	42 25.395	70 35.679	1553	271	10.0	90	991.3	828.0	
01/15 02:35:01	42 25.406	70 34.705	219	279	6.3	99	991.3	828.0	
01/15 02:36:19	42 25.378	70 34.540	19	149	5.8	104	991.3	828.0	DUMP
01/15 02:36:25	42 25.370	70 34.533	38	149	5.7	106	991.3	828.0	DUMP
01/15 02:36:31	42 25.378	70 34.524	36	117	5.6	106	991.3	828.0	DUMP

### HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FB
01/15 02:36:37	42 25.387	70 34.515	44	91	5.4	103	991.3	828.0	DUMP
01/15 02:36:43	42 25.387	70 34.499	66	91	5.3	101	991.3	828.0	DUMP
01/15 02:36:50	42 25.387	70 34.499	66	91	5.1	100	991.3	828.0	DUMP
01/15 02:36:56	42 25.387	70 34.483	88	91	5.0	98	991.3	828.0	DUMP
01/15 02:37:02	42 25.378	70 34.476	99	100	4.9	98	991.3	828.0	DUMP
01/15 02:37:08	42 25.378	70 34.476	99	100	4.7	98	991.3	828.0	DUMP
01/15 02:37:14	42 25.378	70 34.460	121	98	4.6	98	991.3	828.0	DUMP
01/15 02:37:21	42 25.377	70 34.444	142	97	4.5	97	991.3	828.0	DUMP
01/15 02:37:27	42 25.369	70 34.437	155	103	4.5	98	991.3	828.0	DUMP



## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/15 06:20:04	42 20.144	70 56.570	31733	252	8.7	77	991.3	828.0	
01/15 06:25:03	42 20.750	70 55.928	30562	254	8.4	35	991.3	828.0	
01/15 06:30:00	42 21.429	70 55.390	29516	256	28.8	37	991.3	828.0	
01/15 06:35:04	42 22.003	70 54.665	28300	257	9.5	59	991.3	828.0	
01/15 06:40:00	42 22.381	70 53.714	26876	258	10.2	74	0.4	0.0	
01/15 06:45:00	42 22.576	70 52.669	25399	258	10.4	81	0.4	0.0	
01/15 06:50:03	42 22.760	70 51.583	23871	258	10.4	82	0.4	0.0	
01/15 06:55:05	42 22.920	70 50.541	22411	258	9.8	84	0.4	0.0	
01/15 07:00:04	42 23.132	70 49.460	20879	258	10.1	81	0.4	0.0	
01/15 07:05:02	42 23.313	70 48.415	19408	259	9.7	83	0.4	0.0	
01/15 07:10:00	42 23.507	70 47.365	17924	259	10.0	78	0.4	0.0	
01/15 07:15:03	42 23.708	70 46.302	16423	259	10.0	79	0.4	0.0	
01/15 07:20:01	42 23.913	70 45.243	14924	259	10.2	79	0.4	0.0	
01/15 07:25:04	42 24.097	70 44.165	13409	260	10.7	79	0.4	0.0	
01/15 07:30:00	42 24.295	70 43.113	11924	260	10.2	78	0.4	0.0	
01/15 07:35:00	42 24.479	70 42.081	10471	261	9.5	79	0.4	0.0	
01/15 07:40:04	42 24.678	70 40.981	8923	262	9.9	80	0.4	0.0	
01/15 07:45:02	42 24.855	70 39.940	7464	262	9.2	80	0.4	0.0	
01/15 07:50:01	42 25.029	70 38.880	5981	264	10.1	80	0.4	0.0	
01/15 07:55:04	42 25.198	70 37.816	4498	266	9.8	81	0.4	0.0	
01/15 08:00:00	42 25.312	70 36.784	3072	267	9.2	85	0.4	0.0	
01/15 08:05:02	42 25.377	70 35.697	1578	269	9.7	86	0.4	0.0	
01/15 08:10:02	42 25.380	70 34.732	254	267	7.3	83	0.4	0.0	
01/15 08:12:21	42 25.387	70 34.531	22	91	3.6	91	0.4	0.0	DUMP
01/15 08:12:27	42 25.387	70 34.531	22	91	3.5	90	0.4	0.0	DUMP
01/15 08:12:34	42 25.387	70 34.531	22	91	3.3	89	0.4	0.0	DUMP
01/15 08:12:40	42 25.387	70 34.531	22	91	3.1	88	0.4	0.0	DUMP
01/15 08:12:46	42 25.387	70 34.531	22	91	2.9	87	0.4	0.0	DUMP
01/15 08:12:52	42 25.378	70 34.540	19	149	2.5	90	0.4	0.0	DUMP
01/15 08:12:59	42 25.396	70 34.538	20	37	2.1	84	0.4	0.0	DUMP
01/15 08:13:05	42 25.387	70 34.515	44	91	2.1	84	0.4	0.0	DUMP
01/15 08:13:11	42 25.404	70 34.513	56	56	2.1	77	0.4	0.0	DUMP
01/15 11:00:02	42 19.848	70 58.157	33972	252	12.0	89	991.3	828.0	
01/15 11:05:00	42 19.981	70 57.252	32715	252	9.0	88	991.3	828.0	
01/15 11:10:05	42 20.258	70 56.378	31417	252	5.3	68	991.3	828.0	
01/15 11:15:03	42 20.932	70 55.819	30324	254	10.1	37	991.3	828.0	
01/15 11:20:01	42 21.577	70 55.394	29455	256	8.1	36	991.3	828.0	
01/15 11:25:02	42 22.034	70 54.596	28195	257	9.1	64	991.3	828.0	
01/15 11:30:05	42 22.355	70 53.679	26838	258	8.8	71	0.5	-0.1	
01/15 11:35:04	42 22.513	70 52.636	25379	258	10.2	81	0.5	-0.1	
01/15 11:40:03	42 22.649	70 51.622	23966	258	10.3	81	0.5	-0.1	
01/15 11:45:05	42 22.819	70 50.572	22491	258	9.9	83	0.5	-0.1	
01/15 11:50:04	42 22.956	70 49.557	21077	258	9.7	84	0.5	-0.1	
01/15 11:55:04	42 23.129	70 48.506	19600	258	10.3	78	0.5	-0.1	
01/15 12:00:00	42 23.340	70 47.516	18190	258	9.3	78	0.5	-0.1	
01/15 12:05:01	42 23.559	70 46.483	16720	258	9.4	80	0.5	-0.1	
01/15 12:10:03	42 23.783	70 45.454	15254	259	9.9	77	0.5	-0.1	
01/15 12:15:02	42 23.984	70 44.437	13814	259	9.0	80	0.5	-0.1	
01/15 12:20:01	42 24.201	70 43.384	12320	260	10.1	76	0.5	-0.1	
01/15 12:25:02	42 24.483	70 42.399	10900	261	9.7	74	0.5	-0.1	
01/15 12:30:03	42 24.789	70 41.415	9486	263	9.6	66	0.5	-0.1	

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FB
01/15 12:35:02	42 25.073	70 40.428	8089	266	9.7	69	0.5	-0.1	
01/15 12:40:02	42 25.326	70 39.418	6682	269	10.1	75	0.5	-0.1	
01/15 12:45:01	42 25.365	70 38.360	5231	270	10.1	88	0.5	-0.1	
01/15 12:50:05	42 25.391	70 37.307	3786	270	9.4	90	0.5	-0.1	
01/15 12:55:05	42 25.432	70 36.248	2335	272	9.6	85	0.5	-0.1	
01/15 13:00:04	42 25.445	70 35.244	962	276	7.7	93	0.5	-0.1	
01/15 13:04:52	42 25.396	70 34.554	19	329	4.7	99	0.5	-0.1	DUMP
01/15 13:04:59	42 25.396	70 34.554	19	329	4.4	100	0.5	-0.1	DUMP
01/15 13:05:05	42 25.396	70 34.538	20	37	4.2	100	0.5	-0.1	DUMP
01/15 13:05:11	42 25.387	70 34.531	22	91	4.1	101	0.5	-0.1	DUMP
01/15 13:05:18	42 25.387	70 34.531	22	91	3.9	103	0.5	-0.1	DUMP
01/15 13:05:24	42 25.396	70 34.522	38	65	3.7	102	0.5	-0.1	DUMP
01/15 13:05:32	42 25.396	70 34.538	20	37	28.5	287	0.5	-0.1	DUMP
01/15 13:05:48	42 25.396	70 34.538	20	37	0.0	287	0.5	-0.1	DUMP
01/15 13:05:54	42 25.396	70 34.538	20	37	0.0	288	0.5	-0.1	DUMP
01/15 13:06:00	42 25.387	70 34.531	22	91	1.0	149	0.5	-0.1	DUMP
01/15 13:06:06	42 25.387	70 34.531	22	90	1.2	149	0.5	-0.1	DUMP
01/15 13:06:12	42 25.378	70 34.524	36	118	1.8	149	0.5	-0.1	DUMP
01/15 13:06:18	42 25.378	70 34.508	56	107	2.3	136	0.5	-0.1	DUMP
01/15 13:06:24	42 25.369	70 34.517	53	128	2.5	142	0.5	-0.1	DUMP
01/15 13:06:30	42 25.378	70 34.492	77	103	2.7	129	0.5	-0.1	DUMP
01/15 13:06:36	42 25.369	70 34.501	71	118	2.7	130	0.5	-0.1	DUMP
01/15 13:06:42	42 25.369	70 34.501	71	118	2.6	131	0.5	-0.1	DUMP
01/15 13:06:49	42 25.369	70 34.485	92	111	2.6	127	0.5	-0.1	DUMP
01/15 13:06:55	42 25.369	70 34.469	112	107	2.8	121	0.5	-0.1	DUMP
01/15 13:07:01	42 25.369	70 34.453	133	105	3.0	116	0.5	-0.1	DUMP
01/15 13:05:18	42 25.387	70 34.531	22	91	3.9	103	0.5	-0.1	DUMP
01/15 13:05:24	42 25.396	70 34.522	38	65	3.7	102	0.5	-0.1	DUMP
01/15 13:05:32	42 25.396	70 34.538	20	37	28.5	287	0.5	-0.1	DUMP
01/16 16:40:00	42 19.999	70 56.956	32319	252	6.2	84	991.3	828.0	
01/16 16:45:02	42 20.280	70 56.177	31142	252	7.7	61	991.3	828.0	
01/16 16:50:00	42 20.842	70 55.766	30300	254	9.8	30	991.3	828.0	
01/16 16:55:02	42 21.413	70 55.347	29466	256	7.1	31	991.3	828.0	
01/16 17:00:03	42 21.961	70 54.757	28440	257	9.9	62	991.3	828.0	
01/16 17:05:01	42 22.279	70 53.744	26956	258	10.5	84	0.5	-0.1	
01/16 17:10:03	42 22.488	70 52.586	25321	258	11.0	81	0.5	-0.1	
01/16 17:15:00	42 22.654	70 51.502	23803	258	10.3	84	0.5	-0.1	
01/16 17:20:03	42 22.844	70 50.389	22236	258	10.7	82	0.5	-0.1	
01/16 17:25:00	42 22.993	70 49.290	20704	258	10.9	84	0.5	-0.1	
01/16 17:30:02	42 23.157	70 48.200	19179	258	10.2	84	0.5	-0.1	
01/16 17:35:01	42 23.334	70 47.120	17662	258	10.2	81	0.5	-0.1	
01/16 17:40:01	42 23.517	70 46.013	16105	258	10.4	80	0.5	-0.1	
01/16 17:45:02	42 23.705	70 44.923	14571	258	10.4	79	0.5	-0.1	
01/16 17:50:04	42 23.881	70 43.807	13005	258	10.0	82	0.5	-0.1	
01/16 17:55:01	42 24.078	70 42.723	11474	258	10.5	78	0.5	-0.1	
01/16 18:00:01	42 24.272	70 41.634	9939	258	9.8	80	0.5	-0.1	
01/16 18:05:01	42 24.488	70 40.546	8396	259	10.8	78	0.5	-0.1	
01/16 18:10:03	42 24.699	70 39.485	6893	259	10.1	76	0.5	-0.1	
01/16 18:15:05	42 24.916	70 38.427	5393	261	9.6	74	0.5	-0.1	
01/16 18:20:01	42 25.067	70 37.347	3886	261	9.9	83	0.5	-0.1	
01/16 18:25:02	42 25.179	70 36.234	2346	261	10.3	81	0.5	-0.1	

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/16 18:30:02	42 25.287	70 35.116	803	257	9.9	82	0.5	-0.1	
01/16 18:34:38	42 25.396	70 34.538	20	37	3.3	66	0.5	-0.1	DUMP
01/16 18:34:44	42 25.387	70 34.531	22	91	3.2	71	0.5	-0.1	DUMP
01/16 18:34:50	42 25.396	70 34.522	38	65	3.2	73	0.5	-0.1	DUMP
01/16 18:34:56	42 25.387	70 34.515	44	91	3.1	77	0.5	-0.1	DUMP
01/16 18:35:02	42 25.387	70 34.515	44	91	3.0	81	0.5	-0.1	DUMP
01/16 18:35:09	42 25.395	70 34.506	58	75	3.0	82	0.5	-0.1	DUMP
01/16 18:35:15	42 25.387	70 34.499	66	91	2.9	85	0.5	-0.1	DUMP
01/16 18:35:21	42 25.395	70 34.490	79	79	2.9	85	0.5	-0.1	DUMP
01/16 18:35:28	42 25.395	70 34.474	101	81	3.0	86	0.5	-0.1	DUMP
01/16 18:35:46	42 25.412	70 34.456	133	69	3.1	80	0.5	-0.1	DUMP
01/16 18:35:52	42 25.412	70 34.440	154	72	3.3	78	0.5	-0.1	DUMP
01/16 18:35:57	42 25.421	70 34.432	170	68	3.5	75	0.5	-0.1	DUMP
01/16 18:36:03	42 25.421	70 34.432	170	68	3.5	73	0.5	-0.1	DUMP
01/16 18:36:09	42 25.412	70 34.424	174	75	3.5	73	0.5	-0.1	DUMP
01/16 18:36:15	42 25.421	70 34.416	191	71	3.6	72	0.5	-0.1	DUMP
01/16 18:36:21	42 25.412	70 34.408	196	76	3.5	74	0.5	-0.1	DUMP
01/16 18:36:27	42 25.412	70 34.408	196	76	3.4	75	0.5	-0.1	DUMP
01/16 18:36:34	42 25.403	70 34.401	202	81	3.3	79	0.5	-0.1	DUMP
01/16 18:36:41	42 25.403	70 34.369	245	83	3.5	83	0.5	-0.1	DUMP
01/16 18:36:47	42 25.394	70 34.378	232	87	3.4	89	0.5	-0.1	DUMP
01/16 18:35:02	42 25.387	70 34.515	44	91	3.0	81	0.5	-0.1	DUMP
01/16 18:35:09	42 25.395	70 34.506	58	75	3.0	82	0.5	-0.1	DUMP
01/16 18:35:15	42 25.387	70 34.499	66	91	2.9	85	0.5	-0.1	DUMP
01/16 18:35:21	42 25.395	70 34.490	79	79	2.9	85	0.5	-0.1	DUMP
01/16 18:35:28	42 25.395	70 34.474	101	81	3.0	86	0.5	-0.1	DUMP
01/16 22:20:01	42 20.441	70 56.114	30969	253	8.5	41	991.3	828.0	
01/16 22:25:01	42 21.073	70 55.616	29985	255	7.9	33	991.3	828.0	
01/16 22:30:05	42 21.731	70 55.093	28986	256	8.9	37	991.3	828.0	
01/16 22:35:06	42 22.183	70 54.198	27602	258	10.3	66	991.3	828.0	
01/16 22:40:02	42 22.362	70 53.141	26115	258	9.6	87	0.0	-0.4	
01/16 22:45:03	42 22.585	70 52.040	24551	258	11.2	77	0.0	-0.4	
01/16 22:50:03	42 22.785	70 50.966	23032	258	10.6	79	0.0	-0.4	
01/16 22:55:00	42 22.962	70 49.904	21540	258	9.6	80	0.0	-0.4	
01/16 23:00:05	42 23.219	70 48.794	19952	258	10.5	76	0.0	-0.4	
01/16 23:05:01	42 23.442	70 47.751	18467	259	10.0	78	0.0	-0.4	
01/16 23:10:04	42 23.708	70 46.646	16886	259	10.6	74	0.0	-0.4	
01/16 23:15:02	42 23.950	70 45.569	15352	260	10.9	74	0.0	-0.4	
01/16 23:20:02	42 24.171	70 44.490	13824	261	10.7	77	0.0	-0.4	
01/16 23:25:02	42 24.405	70 43.405	12286	261	11.1	71	0.0	-0.4	
01/16 23:30:00	42 24.636	70 42.315	10746	263	10.4	77	0.0	-0.4	
01/16 23:35:02	42 24.800	70 41.203	9195	263	10.8	81	0.0	-0.4	
01/16 23:40:05	42 24.934	70 40.113	7681	264	9.7	83	0.0	-0.4	
01/16 23:45:04	42 25.072	70 39.041	6193	265	9.6	82	0.0	-0.4	
01/16 23:50:00	42 25.163	70 37.946	4681	265	9.8	84	0.0	-0.4	
01/16 23:55:03	42 25.241	70 36.839	3155	265	10.1	83	0.0	-0.4	
01/17 00:00:00	42 25.317	70 35.759	1668	266	9.5	84	0.0	-0.4	
01/17 00:05:01	42 25.380	70 34.812	363	268	6.4	85	0.0	-0.4	
01/17 00:08:11	42 25.352	70 34.535	67	165	3.4	109	0.0	-0.4	DUMP
01/17 00:08:18	42 25.352	70 34.535	67	165	3.3	110	0.0	-0.4	DUMP
01/17 00:08:24	42 25.361	70 34.526	57	149	3.1	107	0.0	-0.4	DUMP

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/17 00:08:30	42 25.361	70 34.510	71	134	3.1	104	0.0	-0.4	DUMP
01/17 00:08:36	42 25.369	70 34.501	71	118	3.1	98	0.0	-0.4	DUMP
01/17 00:08:42	42 25.369	70 34.485	91	111	3.3	93	0.0	-0.4	DUMP
01/17 00:08:49	42 25.360	70 34.478	107	118	3.4	93	0.0	-0.4	DUMP
01/17 00:08:55	42 25.369	70 34.469	112	107	3.5	90	0.0	-0.4	DUMP
01/17 00:09:01	42 25.360	70 34.462	127	113	3.5	90	0.0	-0.4	DUMP
01/17 00:09:08	42 25.360	70 34.462	127	113	3.5	90	0.0	-0.4	DUMP
01/17 00:09:24	42 25.360	70 34.430	168	107	3.6	90	0.0	-0.4	DUMP
01/17 00:09:30	42 25.369	70 34.421	176	101	3.7	88	0.0	-0.4	DUMP
01/17 00:09:35	42 25.368	70 34.405	198	100	3.8	87	0.0	-0.4	DUMP
01/17 00:09:41	42 25.368	70 34.405	198	100	3.8	86	0.0	-0.4	DUMP
01/17 00:09:47	42 25.377	70 34.396	208	95	3.9	83	0.0	-0.4	DUMP
01/17 00:09:53	42 25.377	70 34.396	208	95	3.8	82	0.0	-0.4	DUMP
01/17 00:10:03	42 25.403	70 34.385	224	82	46.8	7	0.0	-0.4	DUMP
01/17 00:10:09	42 25.403	70 34.369	245	83	6.9	91	0.0	-0.4	DUMP
01/17 00:10:15	42 25.412	70 34.377	238	79	3.2	37	0.0	-0.4	DUMP
01/17 00:10:21	42 25.420	70 34.368	254	76	4.0	29	0.0	-0.4	DUMP
01/17 00:08:36	42 25.369	70 34.501	71	118	3.1	98	0.0	-0.4	DUMP
01/17 00:08:42	42 25.369	70 34.485	92	111	3.3	93	0.0	-0.4	DUMP
01/17 00:08:49	42 25.360	70 34.478	107	117	3.4	93	0.0	-0.4	DUMP
01/17 00:08:55	42 25.369	70 34.469	112	107	3.5	90	0.0	-0.4	DUMP
01/17 00:09:01	42 25.360	70 34.462	127	113	3.5	90	0.0	-0.4	DUMP
01/17 00:09:08	42 25.360	70 34.462	127	113	3.5	90	0.0	-0.4	DUMP
01/17 03:55:03	42 20.698	70 55.858	30496	253	9.6	38	991.3	828.0	
01/17 04:05:01	42 22.089	70 54.421	27938	257	11.7	62	991.3	828.0	
01/17 04:10:05	42 22.372	70 53.335	26370	258	10.3	81	0.7	-0.2	
01/17 04:15:02	42 22.605	70 52.210	24772	258	10.4	79	0.7	-0.2	
01/17 04:20:01	42 22.826	70 51.075	23163	258	11.6	81	0.7	-0.2	
01/17 04:25:01	42 23.070	70 49.941	21548	259	11.4	77	0.7	-0.2	
01/17 04:30:04	42 23.273	70 48.805	19947	259	11.3	77	0.7	-0.2	
01/17 04:35:01	42 23.498	70 47.685	18359	259	11.3	76	0.7	-0.2	
01/17 04:40:04	42 23.701	70 46.563	16776	259	10.6	81	0.7	-0.2	
01/17 04:45:00	42 23.936	70 45.433	15173	260	11.2	77	0.7	-0.2	
01/17 04:50:02	42 24.175	70 44.289	13551	260	11.3	77	0.7	-0.2	
01/17 04:55:03	42 24.294	70 43.144	11966	260	14.2	74	0.7	-0.2	
01/17 05:00:01	42 24.311	70 41.995	10410	259	11.1	88	0.7	-0.2	
01/17 05:05:02	42 24.308	70 40.860	8887	257	10.4	90	0.7	-0.2	
01/17 05:10:01	42 24.424	70 39.723	7321	256	10.2	77	0.7	-0.2	
01/17 05:15:03	42 24.695	70 38.645	5766	257	10.0	69	0.7	-0.2	
01/17 05:20:04	42 25.014	70 37.573	4209	261	10.5	68	0.7	-0.2	
01/17 05:25:00	42 25.337	70 36.552	2751	268	10.2	67	0.7	-0.2	
01/17 05:30:04	42 25.516	70 35.508	1340	280	8.8	104	0.7	-0.2	
01/17 05:35:01	42 25.387	70 34.579	44	271	6.0	114	0.7	-0.2	
01/17 05:35:26	42 25.370	70 34.533	38	149	5.8	113	0.7	-0.2	DUMP
01/17 05:35:32	42 25.370	70 34.533	38	149	5.6	114	0.7	-0.2	DUMP
01/17 05:35:38	42 25.369	70 34.517	53	128	5.5	113	0.7	-0.2	DUMP
01/17 05:35:44	42 25.361	70 34.510	71	134	5.4	114	0.7	-0.2	DUMP
01/17 05:35:50	42 25.360	70 34.494	88	124	5.4	114	0.7	-0.2	DUMP
01/17 05:35:57	42 25.369	70 34.485	91	111	5.2	111	0.7	-0.2	DUMP
01/17 05:36:03	42 25.369	70 34.485	91	111	4.9	110	0.7	-0.2	DUMP
01/17 05:36:09	42 25.369	70 34.469	112	107	4.8	107	0.7	-0.2	DUMP

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/17 05:36:15	42 25.369	70 34.453	133	105	4.7	105	0.7	-0.2	DUMP
01/17 05:36:22	42 25.377	70 34.444	142	97	4.6	101	0.7	-0.2	DUMP
01/17 05:36:28	42 25.369	70 34.437	155	103	4.6	99	0.7	-0.2	DUMP
01/17 05:36:35	42 25.369	70 34.437	155	103	4.4	98	0.7	-0.2	DUMP
01/17 09:15:03	42 19.889	70 57.369	32920	252	9.5	93	991.3	828.0	
01/17 09:25:05	42 20.748	70 55.788	30378	254	8.9	33	991.3	828.0	
01/17 09:30:03	42 21.378	70 55.305	29427	255	8.0	31	991.3	828.0	
01/17 09:35:00	42 21.967	70 54.638	28278	257	9.1	62	991.3	828.0	
01/17 09:40:02	42 22.348	70 53.642	26792	258	10.4	81	0.3	-0.3	
01/17 09:45:04	42 22.500	70 52.518	25225	258	10.5	88	0.3	-0.3	
01/17 09:50:03	42 22.705	70 51.355	23586	258	10.9	82	0.3	-0.3	
01/17 09:55:02	42 22.915	70 50.195	21948	258	12.7	77	0.3	-0.3	
01/17 10:00:01	42 23.109	70 49.083	20382	258	10.5	81	0.3	-0.3	
01/17 10:05:00	42 23.308	70 47.990	18839	258	10.0	81	0.3	-0.3	
01/17 10:10:00	42 23.539	70 46.874	17253	259	10.8	77	0.3	-0.3	
01/17 10:15:02	42 23.748	70 45.771	15693	259	11.0	76	0.3	-0.3	
01/17 10:20:00	42 23.970	70 44.677	14141	259	10.9	77	0.3	-0.3	
01/17 10:25:00	42 24.179	70 43.587	12601	260	10.7	77	0.3	-0.3	
01/17 10:30:01	42 24.412	70 42.452	10993	261	10.7	76	0.3	-0.3	
01/17 10:35:04	42 24.621	70 41.360	9453	261	10.3	77	0.3	-0.3	
01/17 10:40:01	42 24.827	70 40.233	7868	262	10.3	79	0.3	-0.3	
01/17 10:45:00	42 25.019	70 39.125	6317	264	10.5	78	0.3	-0.3	
01/17 10:50:05	42 25.198	70 38.005	4757	266	9.7	79	0.3	-0.3	
01/17 10:55:00	42 25.312	70 36.879	3202	268	10.2	88	0.3	-0.3	
01/17 11:00:03	42 25.316	70 35.743	1646	265	12.1	85	0.3	-0.3	
01/17 11:05:43	42 25.387	70 34.547	0	141	8.0	69	0.3	-0.3	DUMP
01/17 11:05:49	42 25.387	70 34.547	0	164	7.3	70	0.3	-0.3	DUMP
01/17 11:05:56	42 25.387	70 34.531	22	91	6.8	72	0.3	-0.3	DUMP
01/17 11:06:02	42 25.404	70 34.513	56	56	6.7	70	0.3	-0.3	DUMP
01/17 11:06:08	42 25.395	70 34.506	58	75	6.4	71	0.3	-0.3	DUMP
01/17 11:06:14	42 25.395	70 34.506	58	75	6.0	72	0.3	-0.3	DUMP
01/17 11:06:23	42 25.387	70 34.515	44	91	32.9	230	0.3	-0.3	DUMP
01/17 11:06:29	42 25.396	70 34.522	38	65	5.8	329	0.3	-0.3	DUMP
01/17 11:06:35	42 25.396	70 34.522	38	65	2.9	329	0.3	-0.3	DUMP
01/17 11:06:42	42 25.404	70 34.513	56	56	3.0	4	0.3	-0.3	DUMP
01/17 11:06:48	42 25.404	70 34.497	75	65	3.1	38	0.3	-0.3	DUMP
01/17 11:07:04	42 25.413	70 34.472	113	65	3.8	56	0.3	-0.3	DUMP
01/17 11:07:10	42 25.404	70 34.465	116	75	3.7	67	0.3	-0.3	DUMP
01/17 11:07:16	42 25.404	70 34.449	138	77	3.9	74	0.3	-0.3	DUMP
01/17 11:07:21	42 25.412	70 34.440	153	72	4.1	74	0.3	-0.3	DUMP
01/17 11:07:27	42 25.403	70 34.417	180	80	4.4	78	0.3	-0.3	DUMP
01/17 11:07:33	42 25.403	70 34.401	202	81	4.7	82	0.3	-0.3	DUMP
01/17 11:07:39	42 25.403	70 34.385	224	82	5.0	84	0.3	-0.3	DUMP
01/17 11:07:46	42 25.394	70 34.378	232	87	5.1	87	0.3	-0.3	DUMP
01/17 11:07:53	42 25.386	70 34.371	241	91	5.1	92	0.3	-0.3	DUMP
01/17 11:06:08	42 25.395	70 34.506	58	75	6.4	71	0.3	-0.3	DUMP
01/17 11:06:14	42 25.395	70 34.506	58	75	6.0	72	0.3	-0.3	DUMP
01/17 11:06:23	42 25.387	70 34.515	44	91	32.9	230	0.3	-0.3	DUMP
01/17 11:06:29	42 25.396	70 34.522	38	65	5.8	329	0.3	-0.3	DUMP
01/17 11:06:35	42 25.396	70 34.522	38	65	2.9	329	0.3	-0.3	DUMP
01/17 11:06:42	42 25.404	70 34.513	56	56	3.0	4	0.3	-0.3	DUMP

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SFD	CRS	ERR 1	ERR 2	FG
01/17 11:06:48	42 25.404	70 34.497	75	65	3.1	38	0.3	-0.3	DUMP
01/17 15:45:02	42 19.769	70 57.788	33536	252	9.8	95	991.3	828.0	
01/17 15:50:02	42 20.097	70 56.581	31774	252	12.5	73	991.3	828.0	
01/17 15:55:03	42 20.730	70 55.775	30369	254	9.7	39	991.3	828.0	
01/17 16:00:00	42 21.539	70 55.226	29248	256	13.6	37	991.3	828.0	
01/17 16:05:03	42 22.099	70 54.413	27923	257	10.0	63	991.3	828.0	
01/17 16:10:03	42 22.401	70 53.295	26306	258	11.9	79	0.1	-0.1	
01/17 16:15:04	42 22.590	70 52.137	24679	258	10.9	83	0.1	-0.1	
01/17 16:20:02	42 22.784	70 50.996	23073	258	11.3	82	0.1	-0.1	
01/17 16:25:03	42 22.947	70 49.815	21426	258	10.5	90	0.1	-0.1	
01/17 16:30:00	42 22.907	70 48.646	19879	257	10.8	97	0.1	-0.1	
01/17 16:35:00	42 22.889	70 47.509	18372	255	10.1	88	0.1	-0.1	
01/17 16:40:00	42 23.139	70 46.375	16750	256	10.8	77	0.1	-0.1	
01/17 16:45:04	42 23.393	70 45.227	15109	256	10.6	75	0.1	-0.1	
01/17 16:50:02	42 23.652	70 44.097	13489	256	11.0	76	0.1	-0.1	
01/17 16:55:03	42 23.914	70 42.985	11893	257	10.4	75	0.1	-0.1	
01/17 17:00:01	42 24.268	70 41.930	10337	258	10.4	65	0.1	-0.1	
01/17 17:05:02	42 24.662	70 40.873	8781	261	10.4	65	0.1	-0.1	
01/17 17:10:03	42 25.033	70 39.830	7276	265	10.3	66	0.1	-0.1	
01/17 17:15:00	42 25.408	70 38.789	5819	270	10.5	65	0.1	-0.1	
01/17 17:20:00	42 25.681	70 37.745	4421	277	9.0	95	0.1	-0.1	
01/17 17:25:03	42 25.670	70 36.598	2862	281	10.6	91	0.1	-0.1	
01/17 17:30:00	42 25.656	70 35.478	1370	291	10.0	90	0.1	-0.1	
01/17 17:35:02	42 25.467	70 34.787	361	294	6.3	112	0.1	-0.1	
01/17 17:37:07	42 25.378	70 34.556	20	217	5.4	115	0.1	-0.1	DUMP
01/17 17:37:13	42 25.378	70 34.556	20	217	5.2	117	0.1	-0.1	DUMP
01/17 17:37:19	42 25.370	70 34.549	32	184	5.1	119	0.1	-0.1	DUMP
01/17 17:37:26	42 25.387	70 34.547	0	6	4.7	117	0.1	-0.1	DUMP
01/17 17:37:32	42 25.378	70 34.540	19	149	4.4	117	0.1	-0.1	DUMP
01/17 17:37:38	42 25.378	70 34.540	19	149	4.1	117	0.1	-0.1	DUMP
01/17 17:37:45	42 25.378	70 34.524	36	117	3.9	115	0.1	-0.1	DUMP
01/17 17:37:51	42 25.369	70 34.517	53	128	3.8	116	0.1	-0.1	DUMP
01/17 17:37:57	42 25.369	70 34.501	71	118	3.7	115	0.1	-0.1	DUMP
01/17 17:38:13	42 25.360	70 34.494	88	124	3.6	115	0.1	-0.1	DUMP
01/17 17:38:18	42 25.352	70 34.487	106	128	3.5	118	0.1	-0.1	DUMP
01/17 17:38:24	42 25.352	70 34.471	124	122	3.5	118	0.1	-0.1	DUMP
01/17 17:38:30	42 25.352	70 34.471	124	122	3.5	118	0.1	-0.1	DUMP
01/17 17:38:36	42 25.352	70 34.471	124	122	3.4	118	0.1	-0.1	DUMP
01/17 17:38:42	42 25.351	70 34.455	143	118	3.3	116	0.1	-0.1	DUMP
01/17 17:38:48	42 25.343	70 34.448	159	121	3.4	117	0.1	-0.1	DUMP
01/17 17:38:54	42 25.325	70 34.449	176	131	3.4	121	0.1	-0.1	DUMP
01/17 17:39:01	42 25.316	70 34.442	194	132	3.5	126	0.1	-0.1	DUMP
01/17 17:39:09	42 25.308	70 34.467	183	143	44.9	223	0.1	-0.1	DUMP
01/17 17:39:15	42 25.299	70 34.444	216	139	11.1	118	0.1	-0.1	DUMP
01/17 17:37:32	42 25.378	70 34.540	19	149	4.4	117	0.1	-0.1	DUMP
01/17 17:37:38	42 25.378	70 34.540	19	149	4.1	117	0.1	-0.1	DUMP
01/17 17:37:45	42 25.378	70 34.524	36	118	3.9	115	0.1	-0.1	DUMP
01/17 17:37:51	42 25.369	70 34.517	53	128	3.8	116	0.1	-0.1	DUMP
01/17 17:37:57	42 25.369	70 34.501	71	118	3.7	115	0.1	-0.1	DUMP
01/17 21:30:03	42 19.867	70 57.862	33576	252	11.7	90	991.3	828.0	
01/17 21:35:00	42 20.089	70 56.869	32154	252	10.4	72	991.3	828.0	

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/17 21:40:03	42 20.571	70 56.119	30906	253	8.6	37	991.3	828.0	
01/17 21:45:01	42 21.158	70 55.602	29926	255	8.7	37	991.3	828.0	
01/17 21:50:01	42 21.764	70 54.994	28840	257	9.1	51	991.3	828.0	
01/17 21:55:04	42 22.224	70 54.106	27462	258	9.4	62	991.3	828.0	
01/17 22:00:01	42 22.574	70 53.118	26002	258	11.6	77	0.0	-0.5	
01/17 22:05:03	42 22.760	70 52.018	24456	259	10.8	81	0.0	-0.5	
01/17 22:10:03	42 22.949	70 50.967	22973	259	10.7	80	0.0	-0.5	
01/17 22:15:01	42 23.153	70 49.896	21458	259	10.7	79	0.0	-0.5	
01/17 22:20:00	42 23.604	70 49.187	20352	261	16.9	65	0.0	-0.5	
01/17 22:25:04	42 23.737	70 48.137	18891	261	9.9	85	0.0	-0.5	
01/17 22:30:04	42 23.913	70 47.056	17376	261	10.2	81	0.0	-0.5	
01/17 22:35:02	42 24.084	70 45.971	15856	261	10.2	83	0.0	-0.5	
01/17 22:40:00	42 24.243	70 44.907	14368	262	9.6	82	0.0	-0.5	
01/17 22:45:03	42 24.434	70 43.804	12820	262	10.0	81	0.0	-0.5	
01/18 03:05:02	42 19.921	70 57.006	32429	252	11.9	73	991.3	828.0	
01/18 03:15:06	42 21.137	70 55.478	29772	255	10.5	36	991.3	828.0	
01/18 03:20:03	42 21.861	70 54.913	28691	257	9.5	41	991.3	828.0	
01/18 03:25:00	42 22.250	70 53.955	27250	258	7.8	105	0.3	-0.4	
01/18 03:30:00	42 22.432	70 52.807	25640	258	10.6	84	0.3	-0.4	
01/18 03:35:03	42 22.638	70 51.646	24001	258	11.2	80	0.3	-0.4	
01/18 03:40:04	42 22.821	70 50.496	22388	258	11.1	82	0.3	-0.4	
01/18 03:45:01	42 23.009	70 49.349	20777	258	11.2	83	0.3	-0.4	
01/18 03:50:01	42 23.201	70 48.219	19187	258	10.9	81	0.3	-0.4	
01/18 03:55:05	42 23.408	70 47.068	17563	258	10.2	84	0.3	-0.4	
01/18 04:00:00	42 23.618	70 45.935	15962	258	9.6	82	0.3	-0.4	
01/18 04:05:00	42 23.852	70 44.772	14312	259	11.0	78	0.3	-0.4	
01/18 04:10:01	42 24.053	70 43.645	12722	259	10.6	80	0.3	-0.4	
01/18 04:15:03	42 24.286	70 42.494	11091	259	12.8	76	0.3	-0.4	
01/18 04:20:02	42 24.488	70 41.365	9499	260	10.8	76	0.3	-0.4	
01/18 04:25:02	42 24.676	70 40.239	7918	260	9.9	80	0.3	-0.4	
01/18 08:35:02	42 21.863	70 54.868	28630	257	11.2	64	991.3	828.0	
01/18 08:40:03	42 22.261	70 53.917	27194	258	10.3	72	0.3	-0.4	
01/18 08:45:01	42 22.434	70 52.777	25599	258	11.0	86	0.3	-0.4	
01/18 08:50:02	42 22.611	70 51.655	24025	258	10.3	83	0.3	-0.4	
01/18 08:55:02	42 22.847	70 50.547	22447	258	10.9	79	0.3	-0.4	
01/18 09:00:04	42 23.051	70 49.459	20908	258	10.3	81	0.3	-0.4	
01/18 09:05:01	42 23.305	70 48.378	19360	259	10.3	76	0.3	-0.4	
01/18 09:10:01	42 23.555	70 47.292	17810	259	10.3	75	0.3	-0.4	
01/18 09:15:01	42 23.800	70 46.203	16257	260	10.0	78	0.3	-0.4	
01/18 09:20:02	42 24.077	70 45.121	14707	261	10.2	74	0.3	-0.4	
01/18 09:25:02	42 24.359	70 44.026	13142	262	11.1	71	0.3	-0.4	
01/18 09:30:03	42 24.626	70 42.967	11636	263	10.2	73	0.3	-0.4	
01/18 09:35:03	42 24.899	70 41.895	10120	265	9.7	72	0.3	-0.4	
01/18 09:40:04	42 25.158	70 40.811	8604	267	10.1	74	0.3	-0.4	
01/18 09:45:02	42 25.404	70 39.732	7113	270	10.4	74	0.3	-0.4	
01/18 09:50:02	42 25.733	70 38.703	5737	276	9.8	67	0.3	-0.4	
01/18 09:55:03	42 25.857	70 37.633	4322	282	10.2	100	0.3	-0.4	
01/18 10:00:03	42 25.687	70 36.533	2780	282	10.1	101	0.3	-0.4	
01/18 10:05:04	42 25.524	70 35.435	1245	282	10.2	101	0.3	-0.4	
01/18 10:10:01	42 25.388	70 34.627	110	271	5.8	91	0.3	-0.4	
01/18 10:11:05	42 25.370	70 34.549	32	184	3.8	105	0.3	-0.4	

DUMP

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/18 10:11:12	42 25.370	70 34.533	38	149	3.7	104	0.3	-0.4	DUMP
01/18 10:11:18	42 25.370	70 34.549	32	184	3.3	104	0.3	-0.4	DUMP
01/18 10:11:24	42 25.370	70 34.533	38	149	3.1	104	0.3	-0.4	DUMP
01/18 10:11:30	42 25.369	70 34.517	53	128	3.1	102	0.3	-0.4	DUMP
01/18 10:11:36	42 25.369	70 34.517	53	128	3.0	101	0.3	-0.4	DUMP
01/18 10:11:43	42 25.378	70 34.508	56	107	2.9	97	0.3	-0.4	DUMP
01/18 10:11:49	42 25.378	70 34.508	56	107	2.7	93	0.3	-0.4	DUMP
01/18 10:11:55	42 25.369	70 34.501	71	118	2.7	93	0.3	-0.4	DUMP
01/18 10:12:02	42 25.369	70 34.485	91	111	2.7	93	0.3	-0.4	DUMP
01/18 10:12:08	42 25.369	70 34.469	112	107	2.9	93	0.3	-0.4	DUMP
01/18 10:12:14	42 25.369	70 34.469	112	107	2.9	93	0.3	-0.4	DUMP
01/18 10:12:30	42 25.360	70 34.462	127	113	2.8	96	0.3	-0.4	DUMP
01/18 10:12:36	42 25.360	70 34.446	148	110	2.9	98	0.3	-0.4	DUMP
01/18 10:12:42	42 25.351	70 34.455	143	118	2.8	102	0.3	-0.4	DUMP
01/18 10:12:48	42 25.343	70 34.448	159	121	2.7	107	0.3	-0.4	DUMP
01/18 10:12:53	42 25.334	70 34.441	176	124	2.8	113	0.3	-0.4	DUMP
01/18 10:12:59	42 25.325	70 34.433	194	126	2.9	119	0.3	-0.4	DUMP
01/18 10:13:08	42 25.308	70 34.451	197	138	54.4	202	0.3	-0.4	DUMP
01/18 10:13:14	42 25.308	70 34.467	183	143	6.9	271	0.3	-0.4	DUMP
01/18 10:11:30	42 25.369	70 34.517	53	128	3.1	102	0.3	-0.4	DUMP
01/18 10:11:36	42 25.369	70 34.517	53	128	3.0	101	0.3	-0.4	DUMP
01/18 10:11:43	42 25.378	70 34.508	56	107	2.9	97	0.3	-0.4	DUMP
01/18 10:11:49	42 25.378	70 34.508	56	107	2.7	93	0.3	-0.4	DUMP
01/18 10:11:55	42 25.369	70 34.501	71	118	2.7	93	0.3	-0.4	DUMP
01/18 10:12:02	42 25.369	70 34.485	91	111	2.7	93	0.3	-0.4	DUMP
01/18 10:12:08	42 25.369	70 34.469	112	107	2.9	93	0.3	-0.4	DUMP
01/18 10:12:14	42 25.369	70 34.469	112	107	2.9	93	0.3	-0.4	DUMP
01/18 14:25:00	42 19.828	70 57.153	32673	252	10.7	93	991.3	828.0	
01/18 14:30:00	42 20.182	70 56.258	31304	252	9.4	38	991.3	828.0	
01/18 14:35:03	42 20.893	70 55.696	30182	254	8.4	36	991.3	828.0	
01/18 14:40:04	42 21.619	70 55.116	29066	256	9.3	36	991.3	828.0	
01/18 14:45:00	42 22.178	70 54.303	27744	258	11.7	62	991.3	828.0	
01/18 14:50:00	42 22.421	70 53.249	26236	258	11.2	88	0.4	-0.1	
01/18 14:55:00	42 22.599	70 52.143	24684	258	10.7	82	0.4	-0.1	
01/18 15:00:05	42 22.785	70 50.950	23012	258	11.4	80	0.4	-0.1	
01/18 15:05:02	42 22.966	70 49.783	21376	258	11.4	81	0.4	-0.1	
01/18 15:10:03	42 23.124	70 48.643	19785	258	10.1	87	0.4	-0.1	
01/18 15:15:02	42 23.323	70 47.502	18178	258	10.6	82	0.4	-0.1	
01/18 15:20:05	42 23.518	70 46.326	16525	258	10.6	81	0.4	-0.1	
01/18 15:25:03	42 23.717	70 45.199	14935	258	11.1	79	0.4	-0.1	
01/18 15:30:00	42 24.009	70 44.112	13366	259	10.8	73	0.4	-0.1	
01/18 15:35:02	42 24.305	70 43.012	11783	260	10.6	73	0.4	-0.1	
01/18 15:40:05	42 24.588	70 41.869	10152	262	11.4	73	0.4	-0.1	
01/18 15:45:05	42 24.849	70 40.770	8594	263	10.1	73	0.4	-0.1	
01/18 15:50:03	42 25.095	70 39.675	7055	266	11.9	80	0.4	-0.1	
01/18 15:55:03	42 25.364	70 38.549	5490	270	10.6	75	0.4	-0.1	
01/18 16:00:04	42 25.628	70 37.450	4007	276	10.2	71	0.4	-0.1	
01/18 16:05:01	42 25.862	70 36.373	2654	289	9.8	76	0.4	-0.1	
01/18 16:10:02	42 25.628	70 35.313	1142	293	9.9	112	0.4	-0.1	
01/18 16:14:48	42 25.387	70 34.547	0	47	5.3	121	0.4	-0.1	DUMP
01/18 16:14:54	42 25.387	70 34.531	22	91	5.2	121	0.4	-0.1	DUMP



## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/18 16:15:01	42 25.378	70 34.524	36	118	5.2	122	0.4	-0.1	DUMP
01/18 16:15:07	42 25.387	70 34.515	44	91	5.0	121	0.4	-0.1	DUMP
01/18 16:15:13	42 25.387	70 34.515	44	91	4.7	120	0.4	-0.1	DUMP
01/18 16:15:19	42 25.387	70 34.515	44	91	4.3	119	0.4	-0.1	DUMP
01/18 16:15:26	42 25.387	70 34.515	44	91	3.9	118	0.4	-0.1	DUMP
01/18 16:15:32	42 25.378	70 34.492	77	103	3.8	117	0.4	-0.1	DUMP
01/18 16:15:38	42 25.378	70 34.476	99	100	3.8	115	0.4	-0.1	DUMP
01/18 16:15:45	42 25.378	70 34.476	99	100	3.7	114	0.4	-0.1	DUMP
01/18 20:40:02	42 20.248	70 56.401	31453	252	10.4	67	991.3	828.0	
01/18 20:45:02	42 20.865	70 55.861	30413	254	8.4	33	991.3	828.0	
01/18 20:50:03	42 21.535	70 55.315	29369	256	8.2	36	991.3	828.0	
01/18 20:55:00	42 22.042	70 54.447	27992	257	9.9	64	991.3	828.0	
01/18 21:00:00	42 22.308	70 53.317	26372	258	13.1	82	0.8	-0.6	
01/18 21:05:00	42 22.524	70 52.179	24762	258	11.8	78	0.8	-0.6	
01/18 21:10:00	42 22.726	70 51.075	23203	258	11.6	78	0.8	-0.6	
01/18 21:15:01	42 22.914	70 49.961	21634	258	10.8	80	0.8	-0.6	
01/18 21:20:05	42 23.126	70 48.847	20059	258	10.9	77	0.8	-0.6	
01/18 21:25:05	42 23.325	70 47.723	18473	258	10.7	82	0.8	-0.6	
01/18 21:30:00	42 23.527	70 46.662	16972	258	9.9	80	0.8	-0.6	
01/18 21:35:00	42 23.744	70 45.564	15417	259	10.0	78	0.8	-0.6	
01/18 21:40:00	42 23.966	70 44.439	13822	259	10.6	79	0.8	-0.6	
01/18 21:45:01	42 24.192	70 43.362	12293	260	10.8	77	0.8	-0.6	
01/18 21:50:02	42 24.405	70 42.274	10755	260	10.2	78	0.8	-0.6	
01/18 21:55:02	42 24.614	70 41.182	9213	261	10.1	80	0.8	-0.6	
01/18 22:00:02	42 24.775	70 40.065	7654	261	10.1	81	0.8	-0.6	
01/18 22:05:03	42 24.940	70 38.936	6077	262	10.2	80	0.8	-0.6	
01/18 22:10:01	42 25.066	70 37.837	4552	263	10.2	81	0.8	-0.6	
01/18 22:15:04	42 25.206	70 36.700	2972	264	10.4	82	0.8	-0.6	
01/18 22:20:02	42 25.272	70 35.596	1455	262	9.9	85	0.8	-0.6	
01/18 22:25:02	42 25.370	70 34.645	137	257	6.5	76	0.8	-0.6	
01/18 22:26:13	42 25.413	70 34.552	49	351	4.4	59	0.8	-0.6	DUMP
01/18 22:26:19	42 25.405	70 34.545	32	4	4.2	59	0.8	-0.6	DUMP
01/18 22:26:25	42 25.413	70 34.552	49	351	3.9	57	0.8	-0.6	DUMP
01/18 22:26:32	42 25.404	70 34.545	32	4	3.5	58	0.8	-0.6	DUMP
01/18 22:26:38	42 25.413	70 34.552	49	351	3.2	55	0.8	-0.6	DUMP
01/18 22:26:44	42 25.422	70 34.543	65	4	3.0	52	0.8	-0.6	DUMP
01/18 22:26:51	42 25.422	70 34.543	65	4	2.8	49	0.8	-0.6	DUMP
01/18 22:26:59	42 25.413	70 34.552	49	351	29.3	242	0.8	-0.6	DUMP
01/18 22:27:05	42 25.413	70 34.552	49	351	0.0	242	0.8	-0.6	DUMP
01/18 22:27:12	42 25.422	70 34.559	67	345	2.9	329	0.8	-0.6	DUMP
01/18 22:27:28	42 25.431	70 34.535	82	12	2.9	36	0.8	-0.6	DUMP
01/18 22:27:34	42 25.431	70 34.535	82	12	2.7	41	0.8	-0.6	DUMP
01/18 22:27:39	42 25.430	70 34.519	89	26	2.8	52	0.8	-0.6	DUMP
01/18 22:27:45	42 25.430	70 34.503	101	37	3.2	61	0.8	-0.6	DUMP
01/18 22:27:51	42 25.421	70 34.496	95	48	3.3	72	0.8	-0.6	DUMP
01/18 22:27:57	42 25.422	70 34.496	95	48	3.2	78	0.8	-0.6	DUMP
01/18 22:28:03	42 25.430	70 34.487	115	46	3.2	78	0.8	-0.6	DUMP
01/18 22:28:10	42 25.439	70 34.478	135	45	3.3	75	0.8	-0.6	DUMP
01/18 22:28:16	42 25.430	70 34.471	132	53	3.3	77	0.8	-0.6	DUMP
01/18 22:28:22	42 25.421	70 34.464	131	61	3.3	82	0.8	-0.6	DUMP
01/18 22:28:38	42 25.413	70 34.552	49	351	3.2	55	0.8	-0.6	DUMP

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/18 22:26:44	42 25.422	70 34.543	65	4	3.0	52	0.8	-0.6	DUMP
01/18 22:26:51	42 25.422	70 34.543	65	4	2.8	49	0.8	-0.6	DUMP
01/18 22:26:59	42 25.413	70 34.552	49	351	29.3	242	0.8	-0.6	DUMP
01/18 22:27:05	42 25.413	70 34.552	49	351	0.0	242	0.8	-0.6	DUMP
01/18 22:27:12	42 25.422	70 34.559	67	345	2.9	329	0.8	-0.6	DUMP
01/19 02:05:04	42 19.959	70 57.003	32403	252	7.3	79	991.3	828.0	
01/19 02:10:05	42 20.263	70 56.149	31115	252	9.5	74	991.3	828.0	
01/19 02:15:01	42 20.934	70 55.619	30059	254	9.0	36	991.3	828.0	
01/19 02:20:02	42 21.654	70 55.158	29107	256	9.1	30	991.3	828.0	
01/19 02:25:03	42 22.162	70 54.244	27672	258	11.0	59	991.3	828.0	
01/19 02:30:00	42 22.414	70 53.212	26189	258	9.9	83	0.4	-0.4	
01/19 02:35:01	42 22.649	70 52.057	24550	258	10.9	81	0.4	-0.4	
01/19 02:40:02	42 22.821	70 50.978	23035	258	9.9	81	0.4	-0.4	
01/19 02:45:02	42 23.028	70 49.846	21437	258	10.6	81	0.4	-0.4	
01/19 02:50:03	42 23.240	70 48.701	19820	258	11.5	78	0.4	-0.4	
01/19 02:55:00	42 23.437	70 47.607	18275	259	10.6	80	0.4	-0.4	
01/19 03:00:01	42 23.667	70 46.489	16689	259	10.6	79	0.4	-0.4	
01/19 03:05:01	42 23.883	70 45.376	15114	259	10.4	77	0.4	-0.4	
01/19 03:10:02	42 24.104	70 44.280	13562	260	10.3	78	0.4	-0.4	
01/19 03:15:00	42 24.329	70 43.156	11971	261	10.6	78	0.4	-0.4	
01/19 03:20:01	42 24.568	70 42.042	10392	262	10.7	77	0.4	-0.4	
01/19 03:25:02	42 24.803	70 40.922	8812	263	10.4	76	0.4	-0.4	
01/19 03:30:03	42 25.024	70 39.823	7268	265	10.0	77	0.4	-0.4	
01/19 03:35:03	42 25.311	70 38.727	5736	269	9.9	72	0.4	-0.4	
01/19 03:40:04	42 25.611	70 37.657	4287	276	9.9	71	0.4	-0.4	
01/19 03:45:01	42 25.924	70 36.597	2982	289	10.9	68	0.4	-0.4	
01/19 03:50:04	42 25.762	70 35.706	1735	294	7.6	116	0.4	-0.4	
01/19 03:55:04	42 25.512	70 34.934	579	294	7.4	110	0.4	-0.4	
01/19 03:58:12	42 25.387	70 34.547	0	322	5.2	108	0.4	-0.4	DUMP
01/19 03:58:18	42 25.396	70 34.538	20	37	5.0	107	0.4	-0.4	DUMP
01/19 03:58:24	42 25.387	70 34.547	0	141	4.7	108	0.4	-0.4	DUMP
01/19 03:58:30	42 25.378	70 34.540	19	149	4.4	111	0.4	-0.4	DUMP
01/19 03:58:37	42 25.378	70 34.540	19	149	4.0	114	0.4	-0.4	DUMP
01/19 03:58:43	42 25.387	70 34.531	22	91	3.7	113	0.4	-0.4	DUMP
01/19 03:58:51	42 25.378	70 34.540	19	149	27.0	267	0.4	-0.4	DUMP
01/19 03:58:58	42 25.370	70 34.533	38	149	5.8	149	0.4	-0.4	DUMP
01/19 03:59:04	42 25.370	70 34.533	38	149	2.9	149	0.4	-0.4	DUMP
01/19 08:30:03	42 20.244	70 56.305	31330	252	11.1	68	991.3	828.0	
01/19 08:35:05	42 20.874	70 55.697	30193	254	8.4	39	991.3	828.0	
01/19 08:40:00	42 21.589	70 55.171	29152	256	7.0	18	991.3	828.0	
01/19 08:45:03	42 22.095	70 54.301	27776	257	10.5	91	991.3	828.0	
01/19 08:50:00	42 22.322	70 53.219	26235	258	9.5	89	0.5	-0.6	
01/19 08:55:01	42 22.538	70 52.081	24624	258	10.6	81	0.5	-0.6	
01/19 09:00:02	42 22.694	70 50.958	23058	258	10.7	84	0.5	-0.6	
01/19 09:05:03	42 22.856	70 49.822	21472	257	10.7	83	0.5	-0.6	
01/19 09:10:00	42 23.022	70 48.704	19908	257	10.6	83	0.5	-0.6	
01/19 09:15:03	42 23.222	70 47.564	18301	257	10.9	81	0.5	-0.6	
01/19 09:20:00	42 23.424	70 46.472	16757	257	10.6	77	0.5	-0.6	
01/19 09:25:01	42 23.641	70 45.374	15200	258	10.6	78	0.5	-0.6	
01/19 09:30:01	42 23.853	70 44.303	13681	258	10.4	79	0.5	-0.6	
01/19 09:35:05	42 24.079	70 43.194	12107	258	10.1	80	0.5	-0.6	

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/19 09:40:02	42 24.310	70 42.104	10557	259	10.3	77	0.5	-0.6	
01/19 09:45:01	42 24.501	70 40.997	8999	259	10.5	77	0.5	-0.6	
01/19 09:50:01	42 24.679	70 39.895	7452	260	10.2	80	0.5	-0.6	
01/19 09:55:04	42 24.862	70 38.763	5864	260	10.2	80	0.5	-0.6	
01/19 10:00:02	42 25.014	70 37.652	4315	261	10.6	78	0.5	-0.6	
01/19 10:05:02	42 25.153	70 36.562	2798	261	10.0	81	0.5	-0.6	
01/19 10:10:03	42 25.289	70 35.451	1254	262	10.0	84	0.5	-0.6	
01/19 10:15:03	42 25.248	70 34.609	271	198	3.6	39	0.5	-0.6	
01/19 10:18:58	42 25.396	70 34.538	20	37	2.7	29	0.5	-0.6	DUMP
01/19 10:19:04	42 25.404	70 34.529	40	37	2.8	31	0.5	-0.6	DUMP
01/19 10:19:10	42 25.396	70 34.538	20	37	2.7	32	0.5	-0.6	DUMP
01/19 10:19:17	42 25.396	70 34.522	38	65	2.6	37	0.5	-0.6	DUMP
01/19 10:19:23	42 25.404	70 34.529	40	37	2.5	37	0.5	-0.6	DUMP
01/19 10:19:29	42 25.404	70 34.529	40	37	2.4	37	0.5	-0.6	DUMP
01/19 10:19:35	42 25.413	70 34.520	60	37	2.4	37	0.5	-0.6	DUMP
01/19 10:19:42	42 25.422	70 34.512	80	37	2.5	38	0.5	-0.6	DUMP
01/19 10:19:48	42 25.439	70 34.510	109	28	2.8	34	0.5	-0.6	DUMP
01/19 10:19:55	42 25.448	70 34.501	129	29	3.1	33	0.5	-0.6	DUMP
01/19 14:25:01	42 19.782	70 58.015	33824	252	7.2	102	991.3	828.0	
01/19 14:30:02	42 19.836	70 57.328	32898	252	9.0	95	991.3	828.0	
01/19 14:35:04	42 20.197	70 56.316	31371	252	10.6	63	991.3	828.0	
01/19 14:40:01	42 20.855	70 55.714	30224	254	11.2	37	991.3	828.0	
01/19 14:45:02	42 21.570	70 55.172	29162	256	7.9	24	991.3	828.0	
01/19 14:50:02	42 22.121	70 54.337	27813	257	9.4	52	991.3	828.0	
01/19 14:55:02	42 22.404	70 53.235	26225	258	12.1	78	0.3	-0.1	
01/19 15:00:00	42 22.574	70 52.093	24627	258	12.8	79	0.3	-0.1	
01/19 15:05:03	42 22.750	70 50.923	22989	258	9.9	91	0.3	-0.1	
01/19 15:10:05	42 22.949	70 49.754	21344	258	13.3	67	0.3	-0.1	
01/19 15:15:02	42 23.116	70 48.606	19738	258	12.7	83	0.3	-0.1	
01/19 15:20:02	42 23.306	70 47.473	18146	258	10.6	71	0.3	-0.1	
01/19 15:25:02	42 23.527	70 46.333	16531	258	12.7	70	0.3	-0.1	
01/19 15:30:01	42 23.788	70 45.238	14962	259	11.1	78	0.3	-0.1	
01/19 15:35:04	42 24.062	70 44.122	13362	259	8.8	81	0.3	-0.1	
01/19 15:40:02	42 24.323	70 42.994	11754	260	11.8	73	0.3	-0.1	
01/19 15:45:04	42 24.606	70 41.867	10145	262	8.3	76	0.3	-0.1	
01/19 15:50:04	42 24.911	70 40.740	8542	264	11.4	76	0.3	-0.1	
01/19 15:55:01	42 25.210	70 39.656	7016	267	9.2	67	0.3	-0.1	
01/19 16:00:02	42 25.496	70 38.544	5487	272	9.0	82	0.3	-0.1	
01/19 16:05:02	42 25.804	70 37.433	4033	281	10.0	72	0.3	-0.1	
01/19 16:10:02	42 25.879	70 36.307	2581	291	11.2	104	0.3	-0.1	
01/19 16:15:03	42 25.646	70 35.359	1213	293	7.0	107	0.3	-0.1	
01/19 16:20:03	42 25.485	70 34.737	317	305	4.8	106	0.3	-0.1	
01/19 16:22:13	42 25.396	70 34.322	38	65	3.8	118	0.3	-0.1	DUMP
01/19 16:22:19	42 25.387	70 34.515	44	91	3.7	126	0.3	-0.1	DUMP
01/19 16:22:25	42 25.387	70 34.515	44	91	2.9	130	0.3	-0.1	DUMP
01/19 16:22:31	42 25.387	70 34.499	66	91	3.2	116	0.3	-0.1	DUMP
01/19 16:22:38	42 25.369	70 34.501	71	118	3.8	141	0.3	-0.1	DUMP
01/19 16:22:44	42 25.369	70 34.501	71	117	3.4	152	0.3	-0.1	DUMP
01/19 16:22:51	42 25.378	70 34.492	77	103	2.2	127	0.3	-0.1	DUMP
01/19 16:22:58	42 25.369	70 34.485	92	111	2.4	124	0.3	-0.1	DUMP
01/19 16:23:14	42 25.360	70 34.478	107	118	2.4	134	0.3	-0.1	DUMP

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/19 16:23:19	42 25.360	70 34.478	107	118	2.1	137	0.3	-0.1	DUMP
01/19 16:23:25	42 25.360	70 34.462	127	113	2.5	118	0.3	-0.1	DUMP
01/19 16:23:31	42 25.351	70 34.455	143	118	3.4	122	0.3	-0.1	DUMP
01/19 16:23:37	42 25.351	70 34.455	143	118	3.1	124	0.3	-0.1	DUMP
01/19 16:23:44	42 25.343	70 34.464	141	126	2.6	155	0.3	-0.1	DUMP
01/19 16:23:50	42 25.343	70 34.448	159	121	2.7	143	0.3	-0.1	DUMP
01/19 16:23:56	42 25.343	70 34.448	159	121	2.3	137	0.3	-0.1	DUMP
01/19 16:24:02	42 25.334	70 34.441	176	124	2.8	139	0.3	-0.1	DUMP
01/19 16:24:08	42 25.316	70 34.426	211	128	4.9	145	0.3	-0.1	DUMP
01/19 16:24:15	42 25.307	70 34.403	246	127	7.0	137	0.3	-0.1	DUMP
01/19 16:24:22	42 25.307	70 34.403	246	127	6.1	134	0.3	-0.1	DUMP
01/19 16:22:38	42 25.369	70 34.501	71	118	3.8	141	0.3	-0.1	DUMP
01/19 16:22:44	42 25.369	70 34.501	71	118	3.4	152	0.3	-0.1	DUMP
01/19 16:22:51	42 25.378	70 34.492	77	103	2.2	127	0.3	-0.1	DUMP
01/19 16:22:58	42 25.369	70 34.485	92	111	2.4	124	0.3	-0.1	DUMP
01/19 21:10:02	42 20.053	70 57.136	32523	252	3.6	62	991.3	828.0	
01/19 21:15:02	42 20.202	70 56.382	31454	252	13.6	67	991.3	828.0	
01/19 21:20:05	42 20.794	70 55.807	30379	254	8.0	33	991.3	828.0	
01/19 21:25:02	42 21.461	70 55.306	29390	256	10.1	33	991.3	828.0	
01/19 21:30:05	42 22.011	70 54.516	28097	257	11.3	50	991.3	828.0	
01/19 21:35:03	42 22.389	70 53.550	26652	258	9.0	67	0.2	-0.6	
01/19 21:40:03	42 22.712	70 52.494	25113	259	9.3	76	0.2	-0.6	
01/19 21:45:01	42 22.950	70 51.403	23560	259	12.7	81	0.2	-0.6	
01/19 21:50:04	42 23.112	70 50.284	21995	259	8.3	93	0.2	-0.6	
01/19 21:53:01	42 23.279	70 49.168	20433	259	9.4	94	0.2	-0.6	
01/19 22:00:02	42 23.459	70 48.041	18879	259	11.4	75	0.2	-0.6	
01/19 22:05:02	42 23.618	70 46.967	17349	259	8.7	90	0.2	-0.6	
01/19 22:10:02	42 23.809	70 45.850	15778	259	11.1	79	0.2	-0.6	
01/19 22:15:00	42 23.995	70 44.759	14244	260	10.0	78	0.2	-0.6	
01/19 22:20:03	42 24.188	70 43.625	12650	260	11.7	76	0.2	-0.6	
01/19 22:25:00	42 24.348	70 42.527	11115	260	9.5	84	0.2	-0.6	
01/19 22:30:04	42 24.514	70 41.386	9519	260	10.9	85	0.2	-0.6	
01/19 22:35:04	42 24.685	70 40.277	7968	261	9.6	82	0.2	-0.6	
01/19 22:40:02	42 24.860	70 39.156	6397	261	10.8	76	0.2	-0.6	
01/19 22:45:02	42 25.022	70 38.038	4837	262	11.5	75	0.2	-0.6	
01/19 22:50:03	42 25.172	70 36.941	3308	263	10.6	83	0.2	-0.6	
01/19 22:53:00	42 25.335	70 35.853	1794	267	10.0	73	0.2	-0.6	
01/19 23:00:04	42 25.354	70 34.806	361	260	7.3	71	0.2	-0.6	
01/19 23:03:02	42 25.378	70 34.540	19	149	2.1	81	0.2	-0.6	DUMP
01/19 23:03:08	42 25.396	70 34.538	20	37	2.6	39	0.2	-0.6	DUMP
01/19 23:03:14	42 25.396	70 34.538	20	37	2.6	26	0.2	-0.6	DUMP
01/19 23:03:21	42 25.404	70 34.529	40	37	3.3	26	0.2	-0.6	DUMP
01/19 23:03:27	42 25.404	70 34.529	40	37	3.0	26	0.2	-0.6	DUMP
01/19 23:03:33	42 25.413	70 34.520	60	37	3.5	30	0.2	-0.6	DUMP
01/19 23:03:40	42 25.413	70 34.520	60	37	2.9	32	0.2	-0.6	DUMP
01/19 23:03:46	42 25.413	70 34.520	60	37	2.1	33	0.2	-0.6	DUMP
01/19 23:03:53	42 25.422	70 34.512	80	37	2.5	36	0.2	-0.6	DUMP
01/19 23:04:10	42 25.448	70 34.517	120	20	4.1	6	0.2	-0.6	DUMP
01/19 23:04:15	42 25.448	70 34.517	120	20	3.8	2	0.2	-0.6	DUMP
01/19 23:04:21	42 25.448	70 34.533	114	10	3.3	339	0.2	-0.6	DUMP
01/19 23:04:27	42 25.448	70 34.517	120	20	2.1	351	0.2	-0.6	DUMP

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/19 23:04:34	42 25.456	70 34.508	139	23	2.4	24	0.2	-0.6	DUMP
01/19 23:04:40	42 25.457	70 34.524	133	14	1.8	357	0.2	-0.6	DUMP
01/19 23:04:46	42 25.457	70 34.524	133	14	1.3	336	0.2	-0.6	DUMP
01/19 23:04:52	42 25.465	70 34.531	147	9	2.2	325	0.2	-0.6	DUMP
01/19 23:04:59	42 25.457	70 34.540	129	4	2.2	286	0.2	-0.6	DUMP
01/19 23:05:05	42 25.474	70 34.538	162	4	2.8	317	0.2	-0.6	DUMP
01/19 23:05:11	42 25.474	70 34.538	162	4	2.7	328	0.2	-0.6	DUMP
01/19 23:03:27	42 25.404	70 34.529	40	37	3.0	26	0.2	-0.6	DUMP
01/19 23:03:33	42 25.413	70 34.520	60	37	3.5	30	0.2	-0.6	DUMP
01/19 23:03:40	42 25.413	70 34.520	60	37	2.9	32	0.2	-0.6	DUMP
01/19 23:03:46	42 25.413	70 34.520	60	37	2.1	33	0.2	-0.6	DUMP
01/19 23:03:53	42 25.422	70 34.512	80	37	2.5	36	0.2	-0.6	DUMP
01/20 02:15:00	42 20.182	70 56.413	31506	252	11.2	77	991.3	828.0	
01/20 02:20:03	42 20.739	70 55.781	30373	254	6.7	23	991.3	828.0	
01/20 02:25:00	42 21.445	70 55.263	29340	256	10.0	37	991.3	828.0	
01/20 02:30:00	42 21.973	70 54.519	28116	257	9.1	68	991.3	828.0	
01/20 02:35:04	42 22.308	70 53.503	26622	258	9.2	86	0.2	-0.7	
01/20 02:40:01	42 22.506	70 52.383	25042	258	11.4	78	0.2	-0.7	
01/20 02:45:04	42 22.701	70 51.228	23417	258	11.5	76	0.2	-0.7	
01/20 02:50:05	42 22.891	70 50.099	21828	258	9.7	89	0.2	-0.7	
01/20 02:55:02	42 23.085	70 48.987	20262	258	10.6	82	0.2	-0.7	
01/20 03:00:03	42 23.276	70 47.856	18671	258	11.8	83	0.2	-0.7	
01/20 03:05:01	42 23.497	70 46.763	17120	258	11.1	69	0.2	-0.7	
01/20 03:10:01	42 23.697	70 45.637	15532	258	10.6	74	0.2	-0.7	
01/20 03:15:04	42 23.912	70 44.474	13889	259	13.7	74	0.2	-0.7	
01/20 03:20:02	42 24.147	70 43.374	12324	259	11.5	79	0.2	-0.7	
01/20 03:25:00	42 24.405	70 42.274	10755	260	10.2	75	0.2	-0.7	
01/20 03:30:04	42 24.668	70 41.145	9149	262	11.4	72	0.2	-0.7	
01/21 13:50:01	42 19.894	70 57.743	33406	252	10.6	95	991.3	828.0	
01/21 13:55:02	42 20.008	70 56.809	32121	252	9.8	81	991.3	828.0	
01/21 14:00:05	42 20.489	70 56.103	30929	253	8.6	45	991.3	828.0	
01/21 14:05:03	42 21.092	70 55.615	29974	255	8.1	33	991.3	828.0	
01/21 14:10:00	42 21.714	70 55.065	28956	256	9.5	60	991.3	828.0	
01/21 14:15:03	42 22.201	70 54.212	27613	258	13.6	55	991.3	828.0	
01/21 14:20:03	42 22.450	70 53.224	26192	258	10.9	79	0.3	-0.1	
01/21 14:25:03	42 22.652	70 52.184	24719	258	9.5	79	0.3	-0.1	
01/21 14:30:04	42 22.879	70 51.131	23219	258	8.8	77	0.3	-0.1	
01/21 14:35:01	42 23.118	70 50.103	21749	259	11.2	77	0.3	-0.1	
01/21 14:40:01	42 23.337	70 49.057	20264	259	9.8	72	0.3	-0.1	
01/21 14:45:02	42 23.578	70 48.013	18774	260	11.9	78	0.3	-0.1	
01/21 14:50:02	42 23.816	70 46.980	17302	260	9.0	83	0.3	-0.1	
01/21 14:55:02	42 24.049	70 45.959	15850	261	7.7	84	0.3	-0.1	
01/21 15:00:03	42 24.297	70 44.886	14326	262	10.8	84	0.3	-0.1	
01/21 15:05:00	42 24.549	70 43.863	12873	263	11.8	73	0.3	-0.1	
01/21 15:10:00	42 24.807	70 42.811	11388	265	11.0	68	0.3	-0.1	
01/21 15:15:03	42 25.051	70 41.749	9899	266	11.2	71	0.3	-0.1	
01/21 15:20:04	42 25.300	70 40.704	8448	269	8.6	77	0.3	-0.1	
01/21 15:25:04	42 25.545	70 39.640	6993	272	10.8	79	0.3	-0.1	
01/21 15:30:02	42 25.795	70 38.610	5625	278	10.9	68	0.3	-0.1	
01/21 15:35:00	42 26.032	70 37.569	4314	286	9.5	68	0.3	-0.1	
01/21 15:40:00	42 26.116	70 36.467	2959	297	13.2	78	0.3	-0.1	

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FB
01/21 15:45:00	42 25.787	70 35.489	1489	300	9.2	113	0.3	-0.1	
01/21 15:50:03	42 25.449	70 34.661	193	306	5.1	113	0.3	-0.1	
01/21 15:51:14	42 25.378	70 34.556	20	217	4.8	137	0.3	-0.1	DUMP
01/21 15:51:20	42 25.378	70 34.556	20	217	3.6	133	0.3	-0.1	DUMP
01/21 15:51:27	42 25.370	70 34.549	32	184	3.5	136	0.3	-0.1	DUMP
01/21 15:51:33	42 25.370	70 34.549	32	184	2.7	138	0.3	-0.1	DUMP
01/21 15:51:39	42 25.361	70 34.526	57	149	4.0	127	0.3	-0.1	DUMP
01/21 15:51:46	42 25.361	70 34.526	57	149	3.7	124	0.3	-0.1	DUMP
01/21 15:51:53	42 25.361	70 34.526	57	149	2.8	121	0.3	-0.1	DUMP
01/21 19:25:00	42 20.079	70 58.499	34296	253	3.5	85	991.3	828.0	
01/21 19:30:01	42 19.912	70 58.035	33777	253	4.1	118	991.3	828.0	
01/21 19:35:06	42 19.978	70 57.450	32976	252	2.3	86	991.3	828.0	
01/21 19:40:01	42 20.058	70 56.753	32020	252	7.0	80	991.3	828.0	
01/21 19:45:03	42 20.328	70 56.137	31062	252	9.0	43	991.3	828.0	
01/21 19:50:03	42 20.998	70 55.636	30050	254	9.6	29	991.3	828.0	
01/21 19:55:03	42 21.781	70 55.023	28871	257	9.0	42	991.3	828.0	
01/21 20:00:03	42 22.246	70 54.045	27372	258	9.3	68	0.2	-0.5	
01/21 20:05:01	42 22.445	70 52.941	25814	258	8.4	100	0.2	-0.5	
01/21 20:10:02	42 22.623	70 51.804	24220	258	9.4	91	0.2	-0.5	
01/21 20:15:02	42 22.805	70 50.686	22649	258	10.7	84	0.2	-0.5	
01/21 20:20:00	42 22.984	70 49.547	21053	258	12.8	80	0.2	-0.5	
01/21 20:25:03	42 23.159	70 48.420	19473	258	11.1	82	0.2	-0.5	
01/21 20:30:01	42 23.329	70 47.304	17910	258	13.3	84	0.2	-0.5	
01/21 20:35:00	42 23.513	70 46.197	16354	258	9.8	86	0.2	-0.5	
01/21 20:40:00	42 23.701	70 45.093	14799	258	9.0	86	0.2	-0.5	
01/21 20:45:01	42 23.896	70 43.960	13204	258	11.8	86	0.2	-0.5	
01/21 20:50:01	42 24.085	70 42.854	11647	258	12.2	80	0.2	-0.5	
01/21 20:55:05	42 24.288	70 41.741	10076	258	12.0	77	0.2	-0.5	
01/21 21:00:05	42 24.478	70 40.633	8516	259	10.9	78	0.2	-0.5	
01/21 21:05:03	42 24.673	70 39.543	6979	259	9.4	78	0.2	-0.5	
01/21 21:10:04	42 24.854	70 38.441	5432	260	9.4	85	0.2	-0.5	
01/21 21:15:04	42 25.058	70 37.340	3879	261	9.7	78	0.2	-0.5	
01/21 21:20:02	42 25.336	70 36.282	2382	268	8.8	73	0.2	-0.5	
01/21 21:25:02	42 25.628	70 35.186	983	297	11.5	73	0.2	-0.5	
01/21 21:29:58	42 25.352	70 34.519	76	149	6.6	152	0.2	-0.5	DUMP
01/21 21:30:05	42 25.361	70 34.510	71	134	4.6	138	0.2	-0.5	DUMP
01/21 21:30:11	42 25.360	70 34.494	88	124	4.3	113	0.2	-0.5	DUMP
01/21 21:30:17	42 25.360	70 34.494	88	124	3.5	99	0.2	-0.5	DUMP
01/21 21:30:24	42 25.360	70 34.478	107	118	3.9	89	0.2	-0.5	DUMP
01/21 21:30:31	42 25.352	70 34.471	124	122	3.9	101	0.2	-0.5	DUMP
01/21 21:30:37	42 25.352	70 34.471	124	122	3.1	107	0.2	-0.5	DUMP
01/21 21:30:54	42 25.343	70 34.448	159	121	3.4	117	0.2	-0.5	DUMP
01/21 21:31:00	42 25.334	70 34.441	176	124	3.8	126	0.2	-0.5	DUMP
01/21 21:31:05	42 25.334	70 34.441	176	124	3.4	130	0.2	-0.5	DUMP
01/21 21:31:12	42 25.334	70 34.441	176	124	2.5	134	0.2	-0.5	DUMP
01/21 21:31:18	42 25.334	70 34.441	176	124	1.5	138	0.2	-0.5	DUMP
01/21 21:31:24	42 25.334	70 34.425	195	120	2.0	109	0.2	-0.5	DUMP
01/21 21:31:30	42 25.325	70 34.433	194	126	1.7	140	0.2	-0.5	DUMP
01/21 21:31:36	42 25.316	70 34.426	211	128	2.7	155	0.2	-0.5	DUMP
01/21 21:31:42	42 25.316	70 34.426	211	128	2.6	159	0.2	-0.5	DUMP
01/21 21:31:50	42 25.308	70 34.419	229	130	3.1	157	0.2	-0.5	DUMP

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/21 21:31:56	42 25.307	70 34.403	246	127	3.5	135	0.2	-0.5	DUMP
01/21 21:32:03	42 25.307	70 34.403	246	127	3.1	125	0.2	-0.5	DUMP
01/21 21:32:09	42 25.299	70 34.396	264	128	3.4	129	0.2	-0.5	DUMP
01/21 21:30:24	42 25.360	70 34.478	107	118	3.9	89	0.2	-0.5	DUMP
01/21 21:30:31	42 25.352	70 34.471	124	122	3.9	101	0.2	-0.5	DUMP
01/21 21:30:37	42 25.352	70 34.471	124	122	3.1	107	0.2	-0.5	DUMP
01/22 01:30:04	42 21.765	70 54.980	28820	257	9.0	63	991.3	828.0	
01/22 01:35:02	42 22.206	70 54.107	27471	258	9.7	63	0.4	-0.5	
01/22 01:40:01	42 22.439	70 53.061	25977	258	9.8	77	0.4	-0.5	
01/22 01:45:01	42 22.633	70 51.998	24477	258	10.1	78	0.4	-0.5	
01/22 01:50:02	42 22.860	70 50.914	22935	258	11.3	73	0.4	-0.5	
01/22 01:55:02	42 23.064	70 49.843	21419	258	8.9	75	0.4	-0.5	
01/22 02:00:03	42 23.284	70 48.751	19870	259	10.0	78	0.4	-0.5	
01/22 02:05:03	42 23.508	70 47.662	18324	259	11.7	79	0.4	-0.5	
01/22 02:10:00	42 23.727	70 46.599	16816	259	11.2	79	0.4	-0.5	
01/22 02:15:02	42 23.952	70 45.508	15269	260	12.0	80	0.4	-0.5	
01/22 02:20:04	42 24.173	70 44.413	13719	261	10.3	87	0.4	-0.5	
01/22 02:25:02	42 24.407	70 43.343	12202	261	9.7	77	0.4	-0.5	
01/22 02:30:03	42 24.672	70 42.265	10670	263	10.0	66	0.4	-0.5	
01/22 02:35:04	42 25.004	70 41.223	9186	266	9.4	73	0.4	-0.5	
01/22 02:40:04	42 25.357	70 40.183	7731	270	9.5	67	0.4	-0.5	
01/22 02:45:04	42 25.706	70 39.138	6326	275	11.5	59	0.4	-0.5	
01/22 02:50:04	42 26.033	70 38.091	5006	284	11.8	72	0.4	-0.5	
01/22 02:55:02	42 26.083	70 37.026	3636	291	9.2	95	0.4	-0.5	
01/22 03:00:03	42 25.929	70 35.889	2096	299	12.0	93	0.4	-0.5	
01/22 03:05:00	42 25.617	70 34.907	652	311	9.7	134	0.4	-0.5	
01/22 03:08:35	42 25.369	70 34.501	71	118	4.1	136	0.4	-0.5	DUMP
01/22 03:08:41	42 25.369	70 34.501	71	118	2.9	143	0.4	-0.5	DUMP
01/22 03:08:47	42 25.369	70 34.501	71	118	1.7	149	0.4	-0.5	DUMP
01/22 03:08:53	42 25.360	70 34.494	88	124	2.2	153	0.4	-0.5	DUMP
01/22 03:08:59	42 25.360	70 34.494	88	124	1.9	154	0.4	-0.5	DUMP
01/22 03:09:06	42 25.352	70 34.503	89	137	2.3	185	0.4	-0.5	DUMP
01/22 03:09:12	42 25.343	70 34.496	108	139	3.1	180	0.4	-0.5	DUMP
01/22 03:09:18	42 25.343	70 34.480	123	131	3.2	152	0.4	-0.5	DUMP
01/22 03:09:25	42 25.326	70 34.481	145	142	4.6	158	0.4	-0.5	DUMP
01/22 03:09:31	42 25.325	70 34.465	160	136	4.9	144	0.4	-0.5	DUMP
01/22 03:09:38	42 25.317	70 34.458	178	137	5.2	140	0.4	-0.5	DUMP
01/22 03:09:45	42 25.325	70 34.449	176	131	4.1	120	0.4	-0.5	DUMP
01/22 03:10:01	42 25.299	70 34.444	216	139	4.0	144	0.4	-0.5	DUMP
01/22 03:10:08	42 25.308	70 34.435	212	134	3.0	132	0.4	-0.5	DUMP
01/22 03:10:14	42 25.307	70 34.403	246	127	4.4	106	0.4	-0.5	DUMP
01/22 03:10:20	42 25.307	70 34.403	246	127	4.5	97	0.4	-0.5	DUMP
01/22 03:10:26	42 25.316	70 34.394	247	122	4.6	78	0.4	-0.5	DUMP
01/22 03:10:32	42 25.316	70 34.378	266	120	5.2	74	0.4	-0.5	DUMP
01/22 03:10:38	42 25.316	70 34.378	266	120	4.4	72	0.4	-0.5	DUMP
01/22 03:10:45	42 25.316	70 34.378	266	120	3.1	71	0.4	-0.5	DUMP
01/22 03:08:59	42 25.361	70 34.494	88	124	1.9	154	0.4	-0.5	DUMP
01/22 03:09:06	42 25.352	70 34.503	89	137	2.3	185	0.4	-0.5	DUMP
01/22 03:09:12	42 25.343	70 34.496	108	139	3.1	180	0.4	-0.5	DUMP
01/22 03:09:18	42 25.343	70 34.480	123	131	3.2	152	0.4	-0.5	DUMP
01/22 03:09:25	42 25.326	70 34.481	145	142	4.6	158	0.4	-0.5	DUMP

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/22 03:09:31	42 25.325	70 34.465	160	136	4.9	144	0.4	-0.5	DUMP
01/22 03:09:38	42 25.317	70 34.458	178	137	5.2	140	0.4	-0.5	DUMP
01/22 03:09:45	42 25.325	70 34.449	176	131	4.1	120	0.4	-0.5	DUMP
01/22 06:55:05	42 21.413	70 55.332	29446	256	7.4	29	991.3	828.0	
01/22 07:00:01	42 22.028	70 54.544	28128	257	11.6	55	991.3	828.0	
01/22 07:05:02	42 22.364	70 53.499	26594	258	9.3	86	0.2	-0.2	
01/22 07:10:02	42 22.536	70 52.328	24956	258	12.1	86	0.2	-0.2	
01/22 07:15:03	42 22.712	70 51.189	23361	258	9.6	83	0.2	-0.2	
01/22 07:20:00	42 22.885	70 50.031	21740	258	11.3	81	0.2	-0.2	
01/22 07:25:04	42 23.053	70 48.869	20116	258	11.2	86	0.2	-0.2	
01/22 07:30:04	42 23.244	70 47.707	18483	258	13.1	76	0.2	-0.2	
01/22 07:35:01	42 23.421	70 46.594	16923	258	9.9	82	0.2	-0.2	
01/22 07:40:03	42 23.631	70 45.429	15277	258	12.3	71	0.2	-0.2	
01/22 07:45:00	42 23.808	70 44.299	13693	258	11.3	85	0.2	-0.2	
01/22 07:50:01	42 24.017	70 43.161	12086	258	12.8	75	0.2	-0.2	
01/22 07:55:01	42 24.196	70 42.014	10478	258	10.6	86	0.2	-0.2	
01/22 08:00:03	42 24.396	70 40.882	8883	258	9.5	78	0.2	-0.2	
01/22 08:05:05	42 24.601	70 39.706	7225	258	11.7	75	0.2	-0.2	
01/22 08:10:02	42 24.783	70 38.605	5678	259	10.1	86	0.2	-0.2	
01/22 08:15:02	42 24.996	70 37.480	4088	260	10.2	75	0.2	-0.2	
01/22 08:20:00	42 25.214	70 36.358	2504	263	11.4	73	0.2	-0.2	
01/22 08:25:01	42 25.453	70 35.235	952	277	11.8	75	0.2	-0.2	
01/22 08:30:01	42 25.387	70 34.531	22	91	5.4	120	0.2	-0.2	
01/22 08:30:10	42 25.378	70 34.524	36	118	5.2	132	0.2	-0.2	DUMP
01/22 08:30:16	42 25.370	70 34.533	38	149	4.6	154	0.2	-0.2	DUMP
01/22 08:30:22	42 25.370	70 34.533	38	149	3.6	166	0.2	-0.2	DUMP
01/22 08:30:29	42 25.369	70 34.517	53	128	3.0	149	0.2	-0.2	DUMP
01/22 08:30:35	42 25.378	70 34.492	77	103	3.8	98	0.2	-0.2	DUMP
01/22 08:30:41	42 25.369	70 34.485	92	111	4.6	97	0.2	-0.2	DUMP
01/22 08:30:47	42 25.369	70 34.469	112	107	5.5	95	0.2	-0.2	DUMP
01/22 08:30:54	42 25.360	70 34.462	127	113	5.5	105	0.2	-0.2	DUMP
01/22 08:31:00	42 25.369	70 34.453	133	105	4.9	96	0.2	-0.2	DUMP
01/22 08:31:06	42 25.360	70 34.430	168	107	5.8	100	0.2	-0.2	DUMP
01/22 08:31:13	42 25.351	70 34.439	163	114	4.5	118	0.2	-0.2	DUMP
01/22 08:31:20	42 25.351	70 34.439	163	114	3.1	131	0.2	-0.2	DUMP
01/22 08:31:36	42 25.325	70 34.433	194	126	4.1	167	0.2	-0.2	DUMP
01/22 08:31:42	42 25.325	70 34.433	194	126	3.8	172	0.2	-0.2	DUMP
01/22 08:31:48	42 25.325	70 34.433	194	126	3.0	175	0.2	-0.2	DUMP
01/22 08:31:54	42 25.325	70 34.417	212	123	2.5	145	0.2	-0.2	DUMP
01/22 08:32:00	42 25.308	70 34.419	229	130	3.6	155	0.2	-0.2	DUMP
01/22 08:32:07	42 25.308	70 34.419	229	130	3.2	158	0.2	-0.2	DUMP
01/22 08:32:14	42 25.308	70 34.419	229	130	2.4	160	0.2	-0.2	DUMP
01/22 08:32:20	42 25.308	70 34.419	229	130	1.6	162	0.2	-0.2	DUMP
01/22 08:30:35	42 25.378	70 34.492	77	103	3.8	98	0.2	-0.2	DUMP
01/22 08:30:41	42 25.369	70 34.485	91	111	4.6	97	0.2	-0.2	DUMP
01/22 08:30:47	42 25.369	70 34.469	112	107	5.5	95	0.2	-0.2	DUMP
01/22 08:30:54	42 25.360	70 34.462	127	113	5.5	105	0.2	-0.2	DUMP
01/22 08:31:00	42 25.369	70 34.453	133	105	4.9	96	0.2	-0.2	DUMP
01/22 08:31:06	42 25.360	70 34.430	168	107	5.8	100	0.2	-0.2	DUMP
01/22 08:31:13	42 25.351	70 34.439	163	114	4.5	118	0.2	-0.2	DUMP
01/22 08:31:20	42 25.351	70 34.439	163	114	3.1	131	0.2	-0.2	DUMP



## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/22 12:30:01	42 20.599	70 55.969	30695	253	9.3	28	991.3	828.0	
01/22 12:35:02	42 21.250	70 55.440	29667	255	8.7	40	991.3	828.0	
01/22 12:40:05	42 21.865	70 54.839	28589	257	9.3	54	991.3	828.0	
01/22 12:45:03	42 22.280	70 53.915	27185	258	10.8	80	0.5	-0.2	
01/22 12:50:03	42 22.495	70 52.840	25659	258	8.8	90	0.5	-0.2	
01/22 12:55:03	42 22.771	70 51.763	24108	258	9.7	74	0.5	-0.2	
01/22 13:00:00	42 23.013	70 50.722	22619	259	9.6	72	0.5	-0.2	
01/22 13:05:00	42 23.271	70 49.645	21078	259	10.7	68	0.5	-0.2	
01/22 13:10:01	42 23.497	70 48.589	19578	260	9.9	78	0.5	-0.2	
01/22 13:15:01	42 23.711	70 47.492	18027	260	11.7	82	0.5	-0.2	
01/22 13:20:02	42 23.902	70 46.423	16522	260	9.3	93	0.5	-0.2	
01/22 13:25:00	42 24.126	70 45.347	14998	261	9.7	85	0.5	-0.2	
01/22 13:30:00	42 24.345	70 44.266	13472	262	9.1	67	0.5	-0.2	
01/22 13:35:00	42 24.641	70 43.198	11947	263	11.0	66	0.5	-0.2	
01/22 13:40:01	42 24.958	70 42.161	10476	266	12.2	70	0.5	-0.2	
01/22 13:45:01	42 25.314	70 41.156	9067	269	10.7	60	0.5	-0.2	
01/22 18:25:03	42 20.222	70 56.366	31421	252	11.5	59	991.3	828.0	
01/22 18:30:04	42 20.885	70 55.674	30157	254	10.4	44	991.3	828.0	
01/22 18:35:01	42 21.654	70 55.158	29107	256	11.0	35	991.3	828.0	
01/22 18:40:05	42 22.171	70 54.266	27698	258	11.9	60	991.3	828.0	
01/22 18:45:03	42 22.469	70 53.223	26183	258	12.0	80	0.1	-0.2	
01/22 18:50:05	42 22.647	70 52.087	24590	258	10.9	86	0.1	-0.2	
01/22 18:55:00	42 22.830	70 50.985	23041	258	10.0	86	0.1	-0.2	
01/22 19:00:00	42 23.000	70 49.856	21460	258	9.2	100	0.1	-0.2	
01/22 19:05:01	42 23.203	70 48.720	19858	258	11.4	81	0.1	-0.2	
01/22 19:10:02	42 23.393	70 47.588	18266	258	12.2	77	0.1	-0.2	
01/22 19:15:02	42 23.577	70 46.466	16691	258	10.9	81	0.1	-0.2	
01/22 19:20:03	42 23.776	70 45.339	15102	259	8.4	84	0.1	-0.2	
01/22 19:25:03	42 23.962	70 44.200	13503	259	8.2	96	0.1	-0.2	
01/22 19:30:00	42 24.162	70 43.071	11911	259	9.5	80	0.1	-0.2	
01/22 19:35:01	42 24.366	70 41.928	10301	259	10.9	80	0.1	-0.2	
01/22 19:40:05	42 24.574	70 40.803	8713	260	8.5	78	0.1	-0.2	
01/22 19:45:05	42 24.769	70 39.667	7116	261	10.4	88	0.1	-0.2	
01/22 19:50:00	42 25.003	70 38.560	5551	263	12.7	64	0.1	-0.2	
01/22 19:55:00	42 25.216	70 37.467	4017	265	10.4	78	0.1	-0.2	
01/22 20:00:00	42 25.442	70 36.351	2476	272	11.5	77	0.1	-0.2	
01/22 20:05:01	42 25.549	70 35.202	947	288	11.9	83	0.1	-0.2	
01/22 20:10:01	42 25.387	70 34.531	22	91	4.5	119	0.1	-0.2	DUMP
01/22 20:10:07	42 25.387	70 34.531	22	91	3.8	127	0.1	-0.2	DUMP
01/22 20:10:13	42 25.378	70 34.524	36	117	4.0	138	0.1	-0.2	DUMP
01/22 20:10:19	42 25.378	70 34.524	36	118	3.2	143	0.1	-0.2	DUMP
01/22 20:10:26	42 25.369	70 34.517	53	128	3.5	148	0.1	-0.2	DUMP
01/22 20:10:32	42 25.369	70 34.501	71	117	3.8	131	0.1	-0.2	DUMP
01/22 20:10:38	42 25.360	70 34.494	88	124	4.4	130	0.1	-0.2	DUMP
01/22 20:10:45	42 25.360	70 34.494	88	124	3.7	130	0.1	-0.2	DUMP
01/22 20:10:51	42 25.352	70 34.487	106	128	3.8	136	0.1	-0.2	DUMP
01/22 20:10:58	42 25.352	70 34.471	124	122	4.1	124	0.1	-0.2	DUMP
01/22 20:11:05	42 25.343	70 34.464	141	126	4.4	126	0.1	-0.2	DUMP
01/22 23:50:05	42 19.802	70 57.705	33409	252	9.8	87	991.3	828.0	
01/22 23:55:02	42 19.902	70 56.713	32058	252	9.3	47	991.3	828.0	
01/23 00:00:03	42 20.449	70 55.980	30790	253	9.7	32	991.3	828.0	

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/23 00:05:00	42 21.125	70 55.516	29828	255	7.2	39	991.3	828.0	
01/23 00:10:00	42 21.819	70 55.020	28951	257	8.2	51	991.3	828.0	
01/23 00:15:01	42 22.272	70 54.065	27388	258	12.4	70	0.2	0.0	
01/23 00:20:01	42 22.488	70 52.990	25863	258	9.2	80	0.2	0.0	
01/23 00:25:05	42 22.694	70 51.844	24246	258	10.3	85	0.2	0.0	
01/23 00:30:03	42 22.912	70 50.737	22677	258	9.9	88	0.2	0.0	
01/23 00:35:03	42 23.126	70 49.626	21105	259	11.1	85	0.2	0.0	
01/23 00:40:00	42 23.334	70 48.588	19632	259	9.6	81	0.2	0.0	
01/23 00:45:01	42 23.575	70 47.511	18098	259	11.2	78	0.2	0.0	
01/23 00:50:02	42 23.830	70 46.429	16553	260	9.9	78	0.2	0.0	
01/23 00:55:02	42 24.099	70 45.342	14999	261	11.3	73	0.2	0.0	
01/23 01:00:01	42 24.345	70 44.282	13493	262	8.4	74	0.2	0.0	
01/23 01:05:02	42 24.614	70 43.177	11925	263	9.8	83	0.2	0.0	
01/23 01:10:02	42 24.870	70 42.092	10394	265	8.8	79	0.2	0.0	
01/23 01:15:02	42 25.145	70 41.241	9194	267	8.3	77	0.2	0.0	
01/23 01:20:01	42 25.410	70 40.225	7789	270	9.5	70	0.2	0.0	
01/23 01:25:00	42 25.706	70 39.169	6368	275	9.7	69	0.2	0.0	
01/23 01:30:03	42 26.015	70 38.108	5022	283	7.7	68	0.2	0.0	
01/23 01:35:04	42 26.101	70 37.040	3666	291	9.3	117	0.2	0.0	
01/23 01:40:02	42 25.851	70 35.952	2110	294	12.3	97	0.2	0.0	
01/23 01:45:03	42 25.600	70 35.005	742	302	7.5	112	0.2	0.0	
01/23 01:49:31	42 25.387	70 34.531	22	91	5.6	131	0.2	0.0	DUMP
01/23 01:49:37	42 25.387	70 34.531	22	91	4.3	134	0.2	0.0	DUMP
01/23 01:49:43	42 25.378	70 34.524	36	117	4.1	140	0.2	0.0	DUMP
01/23 01:49:49	42 25.378	70 34.508	56	107	4.2	128	0.2	0.0	DUMP
01/23 01:49:56	42 25.378	70 34.508	56	107	3.4	121	0.2	0.0	DUMP
01/23 01:50:02	42 25.378	70 34.508	56	107	2.4	116	0.2	0.0	DUMP
01/23 01:50:08	42 25.369	70 34.517	53	128	1.6	162	0.2	0.0	DUMP
01/23 01:50:15	42 25.369	70 34.501	71	118	1.8	142	0.2	0.0	DUMP
01/23 05:30:02	42 20.143	70 56.585	31752	252	10.5	80	991.3	828.0	
01/23 05:35:01	42 20.679	70 55.860	30508	253	9.9	30	991.3	828.0	
01/23 05:40:03	42 21.420	70 55.383	29511	256	10.3	25	991.3	828.0	
01/23 05:45:04	42 22.011	70 54.687	28326	257	10.0	63	991.3	828.0	
01/23 05:50:04	42 22.347	70 53.657	26812	258	10.3	81	0.3	-0.1	
01/23 05:55:03	42 22.526	70 52.553	25262	258	8.6	93	0.3	-0.1	
01/23 06:00:01	42 22.719	70 51.459	23720	258	9.1	81	0.3	-0.1	
01/23 06:05:02	42 22.900	70 50.339	22147	258	11.1	82	0.3	-0.1	
01/23 06:10:02	42 23.095	70 49.228	20582	258	10.0	78	0.3	-0.1	
01/23 06:15:03	42 23.304	70 48.112	19004	258	11.2	74	0.3	-0.1	
01/23 06:20:00	42 23.481	70 47.016	17466	258	10.1	82	0.3	-0.1	
01/23 06:25:00	42 23.691	70 45.898	15885	259	11.4	77	0.3	-0.1	
01/23 06:30:00	42 23.896	70 44.807	14342	259	10.9	74	0.3	-0.1	
01/23 06:35:00	42 24.088	70 43.688	12768	259	10.9	74	0.3	-0.1	
01/23 06:40:02	42 24.276	70 42.580	11211	259	10.2	83	0.3	-0.1	
01/23 06:45:02	42 24.478	70 41.467	9641	260	10.9	71	0.3	-0.1	

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/23 10:55:02	42 19.882	70 57.038	32493	252	13.5	78	991.3	828.0	
01/23 11:00:05	42 20.350	70 56.091	30990	252	8.3	40	991.3	828.0	
01/23 11:05:02	42 21.144	70 55.515	29817	255	11.9	32	991.3	828.0	
01/23 11:10:02	42 21.845	70 54.870	28640	257	9.4	70	991.3	828.0	
01/23 11:15:03	42 22.334	70 53.941	27199	258	10.9	58	0.3	-0.2	
01/23 11:20:05	42 22.496	70 52.825	25638	258	9.5	89	0.3	-0.2	
01/23 11:25:00	42 22.709	70 51.715	24067	258	12.8	72	0.3	-0.2	
01/23 11:30:01	42 22.862	70 50.636	22560	258	10.3	86	0.3	-0.2	
01/23 11:35:04	42 23.057	70 49.526	20996	258	12.1	80	0.3	-0.2	
01/23 11:40:05	42 23.257	70 48.450	19475	258	11.5	78	0.3	-0.2	
01/23 11:45:05	42 23.454	70 47.354	17930	258	12.1	77	0.3	-0.2	
01/23 11:50:03	42 23.636	70 46.293	16436	259	11.1	79	0.3	-0.2	
01/23 11:55:03	42 23.878	70 45.215	14899	259	11.3	80	0.3	-0.2	
01/23 12:00:04	42 24.115	70 44.148	13380	260	11.6	75	0.3	-0.2	
01/23 12:05:01	42 24.357	70 43.115	11907	261	8.3	67	0.3	-0.2	
01/23 12:10:02	42 24.727	70 42.105	10439	263	10.8	74	0.3	-0.2	
01/23 12:15:05	42 25.111	70 41.120	9031	267	8.5	69	0.3	-0.2	
01/23 12:20:05	42 25.516	70 40.152	7693	272	8.2	61	0.3	-0.2	
01/23 12:25:03	42 25.935	70 39.195	6456	279	10.3	60	0.3	-0.2	
01/23 12:30:03	42 26.349	70 38.234	5363	289	9.1	63	0.3	-0.2	
01/23 12:35:04	42 26.172	70 37.255	3988	291	9.3	120	0.3	-0.2	
01/23 12:40:02	42 25.931	70 36.223	2510	294	10.7	102	0.3	-0.2	
01/23 12:45:03	42 25.654	70 35.207	1031	299	10.0	124	0.3	-0.2	
01/23 12:48:51	42 25.387	70 34.531	22	91	6.7	115	0.3	-0.2	DUMP
01/23 12:48:57	42 25.387	70 34.531	22	91	5.0	117	0.3	-0.2	DUMP
01/23 12:49:04	42 25.387	70 34.515	44	91	4.6	110	0.3	-0.2	DUMP
01/23 12:49:10	42 25.387	70 34.515	44	91	3.4	106	0.3	-0.2	DUMP
01/23 12:49:16	42 25.378	70 34.508	56	107	3.2	118	0.3	-0.2	DUMP
01/23 12:49:23	42 25.378	70 34.508	56	107	2.4	126	0.3	-0.2	DUMP
01/23 12:49:29	42 25.378	70 34.508	56	107	1.6	133	0.3	-0.2	DUMP
01/23 12:49:36	42 25.387	70 34.499	66	91	1.4	76	0.3	-0.2	DUMP
01/23 12:49:43	42 25.378	70 34.492	77	103	1.8	95	0.3	-0.2	DUMP
01/23 16:15:04	42 19.839	70 57.857	33585	252	2.1	122	991.3	828.0	
01/23 16:20:04	42 19.887	70 57.259	32777	252	7.3	69	991.3	828.0	
01/23 16:25:01	42 20.219	70 56.410	31481	252	8.8	74	991.3	828.0	
01/23 16:30:02	42 20.820	70 55.827	30392	254	7.6	43	991.3	828.0	
01/23 16:35:05	42 21.450	70 55.344	29446	256	5.5	28	991.3	828.0	
01/23 16:40:00	42 21.987	70 54.622	28249	257	7.9	64	991.3	828.0	
01/23 16:45:03	42 22.391	70 53.706	26861	258	9.1	82	0.1	-0.2	
01/23 16:50:01	42 22.585	70 52.676	25404	258	8.8	87	0.1	-0.2	
01/23 16:55:08	42 22.876	70 51.642	23907	259	8.4	67	0.1	-0.2	
01/23 17:00:05	42 23.155	70 50.582	22382	259	11.6	74	0.1	-0.2	
01/23 17:05:02	42 23.384	70 49.545	20906	260	9.8	70	0.1	-0.2	
01/23 17:10:03	42 23.627	70 48.487	19399	260	9.3	76	0.1	-0.2	
01/23 17:15:03	42 23.875	70 47.433	17897	261	8.5	79	0.1	-0.2	
01/23 17:20:03	42 24.129	70 46.366	16379	262	12.1	74	0.1	-0.2	
01/23 17:25:04	42 24.377	70 45.325	14903	263	9.3	78	0.1	-0.2	
01/23 17:30:02	42 24.640	70 44.279	13422	264	10.4	69	0.1	-0.2	
01/23 17:35:02	42 24.907	70 43.236	11952	266	10.6	70	0.1	-0.2	
01/23 17:40:04	42 25.338	70 42.259	10580	270	10.6	65	0.1	-0.2	
01/23 17:45:03	42 25.659	70 41.272	9240	273	10.0	81	0.1	-0.2	

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/23 17:50:03	42 25.860	70 40.207	7813	276	10.7	78	0.1	-0.2	
01/23 17:55:00	42 26.067	70 39.143	6430	281	11.3	72	0.1	-0.2	
01/23 18:00:04	42 26.252	70 38.078	5101	288	10.4	82	0.1	-0.2	
01/23 18:05:01	42 26.285	70 37.030	3790	296	9.7	99	0.1	-0.2	
01/23 18:10:02	42 26.105	70 35.999	2394	304	9.9	108	0.1	-0.2	
01/23 18:15:05	42 25.705	70 35.042	899	311	11.0	122	0.1	-0.2	
01/23 18:20:03	42 25.396	70 34.538	20	37	5.8	93	0.1	-0.2	
01/23 18:20:12	42 25.387	70 34.531	22	91	4.6	108	0.1	-0.2	DUMP
01/23 18:20:19	42 25.378	70 34.524	36	117	4.5	123	0.1	-0.2	DUMP
01/23 18:20:25	42 25.378	70 34.524	36	118	3.6	131	0.1	-0.2	DUMP
01/23 18:20:31	42 25.378	70 34.524	36	118	2.5	138	0.1	-0.2	DUMP
01/23 18:20:38	42 25.369	70 34.517	53	128	2.7	147	0.1	-0.2	DUMP
01/23 18:20:45	42 25.369	70 34.517	53	128	2.2	152	0.1	-0.2	DUMP
01/23 18:21:01	42 25.360	70 34.494	88	124	2.9	129	0.1	-0.2	DUMP
01/23 18:21:06	42 25.369	70 34.485	92	111	2.9	105	0.1	-0.2	DUMP
01/23 18:21:12	42 25.369	70 34.469	112	107	3.8	92	0.1	-0.2	DUMP
01/23 18:21:18	42 25.360	70 34.478	107	118	2.9	105	0.1	-0.2	DUMP
01/23 18:21:25	42 25.360	70 34.478	107	118	2.0	117	0.1	-0.2	DUMP
01/23 18:21:31	42 25.360	70 34.462	127	113	2.5	109	0.1	-0.2	DUMP
01/23 18:21:37	42 25.360	70 34.462	127	113	2.2	106	0.1	-0.2	DUMP
01/23 18:21:43	42 25.360	70 34.462	127	113	1.6	103	0.1	-0.2	DUMP
01/23 18:21:49	42 25.360	70 34.462	127	113	1.0	101	0.1	-0.2	DUMP
01/23 18:21:56	42 25.352	70 34.471	124	122	1.1	193	0.1	-0.2	DUMP
01/23 18:22:02	42 25.343	70 34.464	141	126	2.4	183	0.1	-0.2	DUMP
01/23 18:22:08	42 25.351	70 34.455	143	118	1.6	152	0.1	-0.2	DUMP
01/23 18:22:15	42 25.343	70 34.464	141	126	1.7	174	0.1	-0.2	DUMP
01/23 18:22:21	42 25.334	70 34.472	142	134	2.6	200	0.1	-0.2	DUMP
01/23 18:20:38	42 25.369	70 34.517	53	128	2.7	147	0.1	-0.2	DUMP
01/23 18:20:45	42 25.369	70 34.517	53	128	2.2	152	0.1	-0.2	DUMP
01/23 21:50:00	42 20.147	70 56.371	31471	252	14.3	69	991.3	828.0	
01/23 21:55:03	42 20.910	70 55.724	30210	254	8.4	25	991.3	828.0	
01/23 22:00:00	42 21.710	70 55.154	29077	256	11.1	31	991.3	828.0	
01/23 22:05:01	42 22.201	70 54.212	27613	258	11.5	67	991.3	828.0	
01/23 22:10:01	42 22.498	70 53.183	26118	258	10.2	82	0.3	-0.1	
01/23 22:15:04	42 22.712	70 52.060	24529	258	11.6	85	0.3	-0.1	
01/23 22:20:02	42 22.921	70 50.977	22997	259	12.6	82	0.3	-0.1	
01/23 22:25:02	42 23.134	70 49.913	21487	259	10.0	80	0.3	-0.1	
01/23 22:30:02	42 23.353	70 48.836	19960	259	11.8	87	0.3	-0.1	
01/23 22:35:03	42 23.586	70 47.754	18421	260	11.6	82	0.3	-0.1	
01/23 22:40:05	42 23.834	70 46.651	16851	260	10.0	72	0.3	-0.1	
01/23 22:45:00	42 24.058	70 45.560	15306	261	11.9	88	0.3	-0.1	
01/23 22:50:01	42 24.315	70 44.446	13724	262	10.0	84	0.3	-0.1	
01/23 22:55:02	42 24.558	70 43.337	12155	263	10.0	74	0.3	-0.1	
01/23 23:00:05	42 24.815	70 42.190	10538	264	11.7	73	0.3	-0.1	
01/23 23:05:05	42 25.049	70 41.087	8993	266	11.5	73	0.3	-0.1	
01/23 23:10:00	42 25.288	70 39.986	7463	269	11.0	68	0.3	-0.1	
01/23 23:15:00	42 25.522	70 38.912	5993	272	12.3	60	0.3	-0.1	
01/23 23:20:00	42 25.769	70 37.847	4582	279	10.3	77	0.3	-0.1	
01/23 23:25:01	42 25.960	70 36.784	3246	289	7.9	98	0.3	-0.1	
01/23 23:30:02	42 25.867	70 35.728	1847	299	8.7	116	0.3	-0.1	
01/23 23:35:02	42 25.520	70 34.813	440	304	7.0	117	0.3	-0.1	

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/23 23:37:59	42 25.396	70 34.522	38	65	3.9	135	0.3	-0.1	DUMP
01/23 23:38:05	42 25.396	70 34.522	38	65	2.9	122	0.3	-0.1	DUMP
01/23 23:38:11	42 25.395	70 34.506	58	75	3.3	101	0.3	-0.1	DUMP
01/23 23:38:18	42 25.378	70 34.508	56	107	3.6	129	0.3	-0.1	DUMP
01/23 23:38:24	42 25.378	70 34.508	56	107	3.2	142	0.3	-0.1	DUMP
01/23 23:38:30	42 25.387	70 34.499	66	91	2.3	118	0.3	-0.1	DUMP
01/23 23:38:36	42 25.387	70 34.499	66	91	1.6	96	0.3	-0.1	DUMP
01/23 23:38:43	42 25.387	70 34.483	88	91	2.5	84	0.3	-0.1	DUMP
01/23 23:38:49	42 25.378	70 34.476	99	100	3.1	103	0.3	-0.1	DUMP
01/23 23:38:56	42 25.369	70 34.485	91	111	2.6	139	0.3	-0.1	DUMP
01/23 23:39:13	42 25.352	70 34.471	124	122	3.8	156	0.3	-0.1	DUMP
01/23 23:39:19	42 25.360	70 34.462	127	113	3.1	143	0.3	-0.1	DUMP
01/23 23:39:24	42 25.360	70 34.462	127	113	2.3	132	0.3	-0.1	DUMP
01/23 23:39:30	42 25.351	70 34.455	143	118	2.6	133	0.3	-0.1	DUMP
01/23 23:39:37	42 25.351	70 34.455	143	118	2.2	133	0.3	-0.1	DUMP
01/23 23:39:43	42 25.360	70 34.446	148	110	1.9	90	0.3	-0.1	DUMP
01/23 23:39:49	42 25.351	70 34.439	163	114	2.4	100	0.3	-0.1	DUMP
01/23 23:39:55	42 25.360	70 34.446	148	110	1.5	67	0.3	-0.1	DUMP
01/23 23:40:01	42 25.351	70 34.455	143	118	0.2	221	0.3	-0.1	DUMP
01/23 23:40:08	42 25.343	70 34.448	159	121	1.5	186	0.3	-0.1	DUMP
01/23 23:38:24	42 25.378	70 34.508	56	107	3.2	142	0.3	-0.1	DUMP
01/23 23:38:30	42 25.387	70 34.499	66	91	2.3	118	0.3	-0.1	DUMP
01/23 23:38:36	42 25.387	70 34.499	66	91	1.6	96	0.3	-0.1	DUMP
01/23 23:38:43	42 25.387	70 34.483	88	91	2.5	84	0.3	-0.1	DUMP
01/23 23:38:49	42 25.378	70 34.476	99	100	3.1	103	0.3	-0.1	DUMP
01/23 23:38:56	42 25.369	70 34.485	91	111	2.6	139	0.3	-0.1	DUMP
01/24 10:30:00	42 19.853	70 57.202	32724	252	13.1	93	991.3	828.0	
01/24 10:35:03	42 20.292	70 56.125	31067	252	11.7	44	991.3	828.0	
01/24 10:40:01	42 20.993	70 55.726	30170	254	7.0	30	991.3	828.0	
01/24 10:45:01	42 21.659	70 55.239	29213	256	8.9	32	991.3	828.0	
01/24 10:50:02	42 22.179	70 54.273	27704	258	11.4	70	991.3	828.0	
01/24 10:55:02	42 22.480	70 53.170	26107	258	10.8	78	0.3	-0.1	
01/24 11:00:03	42 22.667	70 52.056	24541	258	9.7	88	0.3	-0.1	
01/24 11:05:00	42 22.860	70 50.914	22935	258	11.9	80	0.3	-0.1	
01/24 11:10:03	42 23.039	70 49.792	21360	258	11.9	88	0.3	-0.1	
01/24 11:15:00	42 23.212	70 48.711	19843	258	12.3	84	0.3	-0.1	
01/24 11:20:01	42 23.411	70 47.586	18257	258	11.4	83	0.3	-0.1	
01/24 11:25:00	42 23.613	70 46.479	16694	259	10.0	76	0.3	-0.1	
01/24 11:30:02	42 23.803	70 45.360	15120	259	10.7	76	0.3	-0.1	
01/24 11:35:00	42 24.006	70 44.266	13575	259	10.0	77	0.3	-0.1	
01/24 11:40:02	42 24.187	70 43.154	12014	259	8.8	92	0.3	-0.1	
01/24 11:45:02	42 24.391	70 42.042	10446	260	10.3	79	0.3	-0.1	
01/24 11:50:05	42 24.590	70 40.927	8875	260	10.2	73	0.3	-0.1	
01/24 11:55:00	42 24.777	70 39.830	7335	261	10.8	80	0.3	-0.1	
01/24 12:00:04	42 25.029	70 38.739	5788	263	12.2	69	0.3	-0.1	
01/24 12:05:05	42 25.330	70 37.685	4305	269	11.3	72	0.3	-0.1	
01/24 12:10:03	42 25.609	70 36.644	2905	278	9.9	65	0.3	-0.1	
01/24 12:15:00	42 25.595	70 35.604	1500	285	10.3	106	0.3	-0.1	
01/24 12:20:00	42 25.396	70 34.602	77	283	7.5	113	0.3	-0.1	
01/24 12:20:25	42 25.387	70 34.515	44	91	8.4	97	0.3	-0.1	DUMP
01/24 12:20:31	42 25.378	70 34.508	56	107	7.3	105	0.3	-0.1	DUMP

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/24 12:20:38	42 25.378	70 34.492	77	103	6.7	106	0.3	-0.1	DUMP
01/24 12:20:44	42 25.378	70 34.492	77	103	5.0	106	0.3	-0.1	DUMP
01/24 12:20:50	42 25.387	70 34.483	88	91	3.9	88	0.3	-0.1	DUMP
01/24 12:20:57	42 25.378	70 34.460	121	98	4.7	94	0.3	-0.1	DUMP
01/24 12:21:03	42 25.378	70 34.444	142	97	5.5	95	0.3	-0.1	DUMP
01/24 12:21:10	42 25.377	70 34.444	142	97	4.6	95	0.3	-0.1	DUMP
01/24 12:21:17	42 25.377	70 34.444	142	97	3.2	95	0.3	-0.1	DUMP
01/24 16:10:05	42 19.999	70 56.956	32319	252	8.5	70	991.3	828.0	
01/24 16:15:05	42 20.428	70 56.181	31065	253	4.9	40	991.3	828.0	
01/24 16:20:02	42 21.025	70 55.657	30063	254	7.8	30	991.3	828.0	
01/24 16:25:02	42 21.682	70 55.149	29082	256	10.1	42	991.3	828.0	
01/24 16:30:00	42 22.131	70 54.328	27798	257	11.5	55	991.3	828.0	
01/24 16:35:00	42 22.382	70 53.311	26335	258	12.0	75	0.3	-0.1	
01/24 16:40:01	42 22.597	70 52.406	25037	258	3.2	60	0.3	-0.1	
01/24 16:45:01	42 22.836	70 51.517	23754	259	8.8	73	0.3	-0.1	
01/24 16:50:01	42 23.024	70 50.450	22250	259	7.6	83	0.3	-0.1	
01/24 16:55:01	42 23.218	70 49.339	20685	259	11.3	84	0.3	-0.1	
01/24 17:00:05	42 23.408	70 48.270	19179	259	9.4	83	0.3	-0.1	
01/24 17:05:02	42 23.611	70 47.196	17660	259	11.9	73	0.3	-0.1	
01/24 17:10:02	42 23.802	70 46.141	16173	260	11.1	78	0.3	-0.1	
01/24 17:15:03	42 24.007	70 45.050	14633	260	12.5	80	0.3	-0.1	
01/24 17:20:03	42 24.208	70 43.986	13131	260	6.9	92	0.3	-0.1	
01/24 17:25:04	42 24.423	70 42.869	11555	261	11.9	75	0.3	-0.1	
01/24 17:30:04	42 24.642	70 41.802	10047	262	11.7	71	0.3	-0.1	
01/24 17:35:04	42 24.955	70 40.760	8560	265	9.5	81	0.3	-0.1	
01/24 17:40:01	42 25.307	70 39.733	7116	269	12.7	61	0.3	-0.1	
01/24 17:45:02	42 25.601	70 38.723	5742	274	8.0	85	0.3	-0.1	
01/24 17:50:05	42 25.769	70 37.610	4261	280	11.5	76	0.3	-0.1	
01/24 17:55:00	42 25.880	70 36.546	2889	288	9.5	85	0.3	-0.1	
01/24 18:00:02	42 25.752	70 35.444	1404	299	10.3	94	0.3	-0.1	
01/24 18:05:00	42 25.414	70 34.616	107	298	7.1	132	0.3	-0.1	
01/24 18:05:48	42 25.369	70 34.533	38	149	6.0	131	0.3	-0.1	DUMP
01/24 18:05:54	42 25.369	70 34.533	38	149	4.5	136	0.3	-0.1	DUMP
01/24 18:06:01	42 25.369	70 34.517	53	128	4.0	125	0.3	-0.1	DUMP
01/24 18:06:07	42 25.369	70 34.517	53	128	3.0	117	0.3	-0.1	DUMP
01/24 18:06:13	42 25.369	70 34.517	53	128	1.9	110	0.3	-0.1	DUMP
01/24 18:06:20	42 25.360	70 34.494	88	124	3.4	113	0.3	-0.1	DUMP
01/24 18:06:26	42 25.352	70 34.487	106	128	4.3	123	0.3	-0.1	DUMP
01/24 18:06:33	42 25.360	70 34.478	107	118	4.0	108	0.3	-0.1	DUMP
01/24 21:50:05	42 19.878	70 57.252	32774	252	10.1	87	991.3	828.0	
01/24 21:55:02	42 20.295	70 56.235	31210	252	9.6	51	991.3	828.0	
01/24 22:00:03	42 21.094	70 55.585	29934	255	14.4	44	991.3	828.0	
01/24 22:05:03	42 21.794	70 54.955	28775	257	12.0	64	991.3	828.0	
01/24 22:10:03	42 22.303	70 54.010	27304	258	7.8	58	0.3	-0.2	
01/24 22:15:00	42 22.502	70 52.891	25726	258	10.5	81	0.3	-0.2	
01/24 22:20:02	42 22.699	70 51.738	24103	258	10.6	70	0.3	-0.2	
01/24 22:25:02	42 22.882	70 50.589	22490	258	10.9	88	0.3	-0.2	
01/24 22:30:03	42 23.069	70 49.442	20879	258	10.9	85	0.3	-0.2	
01/24 22:35:00	42 23.252	70 48.336	19325	258	10.0	86	0.3	-0.2	
01/24 22:40:00	42 23.458	70 47.186	17702	258	11.0	76	0.3	-0.2	
01/24 22:45:00	42 23.660	70 46.046	16095	259	12.9	77	0.3	-0.2	

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/24 22:50:09	42 23.849	70 44.926	14520	259	7.3	84	0.3	-0.2	
01/24 22:55:04	42 24.051	70 43.784	12910	259	8.9	83	0.3	-0.2	
01/24 23:00:04	42 24.248	70 42.653	11317	259	8.9	86	0.3	-0.2	
01/24 23:05:02	42 24.442	70 41.517	9720	260	9.7	83	0.3	-0.2	
01/25 02:40:04	42 20.264	70 56.274	31278	252	10.8	66	991.3	828.0	
01/25 02:45:01	42 20.815	70 55.761	30307	254	6.8	27	991.3	828.0	
01/25 02:50:01	42 21.508	70 55.295	29354	256	10.5	29	991.3	828.0	
01/25 02:55:01	42 21.999	70 54.554	28153	257	8.5	56	991.3	828.0	
01/25 03:00:03	42 22.380	70 53.543	26646	258	10.6	80	0.5	-0.4	
01/25 03:05:01	42 22.567	70 52.460	25122	258	9.2	75	0.5	-0.4	
01/25 03:10:01	42 22.770	70 51.342	23544	258	8.8	83	0.5	-0.4	
01/25 03:15:05	42 23.004	70 50.248	21985	258	9.5	80	0.5	-0.4	
01/25 03:20:02	42 23.205	70 49.189	20488	259	7.9	87	0.5	-0.4	
01/25 03:25:00	42 23.440	70 48.093	18929	259	12.5	70	0.5	-0.4	
01/25 03:30:00	42 23.652	70 47.040	17436	259	9.1	87	0.5	-0.4	
01/25 03:35:04	42 23.897	70 45.934	15862	260	11.1	69	0.5	-0.4	
01/25 03:40:01	42 24.118	70 44.871	14356	261	10.8	79	0.5	-0.4	
01/25 03:45:02	42 24.354	70 43.772	12799	261	12.8	74	0.5	-0.4	
01/25 03:50:00	42 24.630	70 42.734	11318	263	11.1	74	0.5	-0.4	
01/25 03:55:00	42 24.954	70 41.687	9828	265	10.2	78	0.5	-0.4	
01/25 04:00:01	42 25.274	70 40.621	8334	269	11.5	74	0.5	-0.4	
01/25 04:05:02	42 25.590	70 39.581	6916	273	11.0	62	0.5	-0.4	
01/25 04:10:05	42 25.892	70 38.514	5522	280	11.1	73	0.5	-0.4	
01/25 04:15:00	42 26.172	70 37.492	4294	290	9.1	79	0.5	-0.4	
01/25 04:20:00	42 26.405	70 36.463	3233	306	9.9	120	0.5	-0.4	
01/25 04:25:01	42 25.936	70 35.593	1759	305	7.9	128	0.5	-0.4	
01/25 04:30:01	42 25.493	70 34.760	352	304	6.5	130	0.5	-0.4	
01/25 04:32:22	42 25.361	70 34.558	50	197	5.2	155	0.5	-0.4	DUMP
01/25 04:32:28	42 25.370	70 34.549	32	184	3.9	137	0.5	-0.4	DUMP
01/25 04:32:35	42 25.361	70 34.542	49	171	3.9	131	0.5	-0.4	DUMP
01/25 04:32:41	42 25.361	70 34.526	57	149	4.3	116	0.5	-0.4	DUMP
01/25 04:32:47	42 25.361	70 34.542	49	171	2.3	120	0.5	-0.4	DUMP
01/25 04:32:54	42 25.361	70 34.558	50	197	0.9	229	0.5	-0.4	DUMP
01/25 04:33:00	42 25.352	70 34.551	65	184	1.6	221	0.5	-0.4	DUMP
01/25 04:33:06	42 25.361	70 34.558	50	197	1.7	262	0.5	-0.4	DUMP
01/25 04:33:13	42 25.361	70 34.558	50	197	1.6	280	0.5	-0.4	DUMP
01/25 07:25:00	42 20.261	70 56.179	31155	252	7.6	42	991.3	828.0	
01/25 07:30:01	42 20.988	70 55.659	30085	254	7.6	30	991.3	828.0	
01/25 07:35:02	42 21.711	70 55.124	29037	256	10.0	41	991.3	828.0	
01/25 07:40:03	42 22.210	70 54.218	27619	258	10.7	59	991.3	828.0	
01/25 07:45:03	42 22.427	70 53.129	26073	258	11.5	86	0.4	-0.1	
01/25 07:50:02	42 22.614	70 52.000	24486	258	10.3	83	0.4	-0.1	
01/25 07:55:02	42 22.806	70 50.889	22921	258	10.4	79	0.4	-0.1	
01/25 08:00:02	42 22.985	70 49.766	21346	258	11.0	78	0.4	-0.1	
01/25 08:05:00	42 23.178	70 48.654	19779	258	9.6	82	0.4	-0.1	
01/25 08:10:04	42 23.386	70 47.504	18157	258	11.4	78	0.4	-0.1	
01/25 08:15:05	42 23.580	70 46.390	16587	258	9.5	90	0.4	-0.1	
01/25 08:20:03	42 23.787	70 45.269	15004	259	9.4	82	0.4	-0.1	
01/25 08:25:03	42 23.999	70 44.135	13402	259	10.1	74	0.4	-0.1	
01/25 08:30:04	42 24.199	70 42.990	11790	259	12.5	78	0.4	-0.1	
01/25 08:35:04	42 24.402	70 41.863	10200	260	9.2	83	0.4	-0.1	

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/25 08:40:04	42 24.601	70 40.715	8585	260	10.5	83	0.4	-0.1	
01/25 08:45:04	42 24.813	70 39.592	7001	261	12.1	77	0.4	-0.1	
01/25 08:50:01	42 25.004	70 38.481	5444	263	11.0	83	0.4	-0.1	
01/25 08:55:00	42 25.216	70 37.372	3888	265	10.0	78	0.4	-0.1	
01/25 09:00:00	42 25.441	70 36.271	2367	272	9.7	76	0.4	-0.1	
01/25 09:05:01	42 25.584	70 35.150	904	294	10.2	87	0.4	-0.1	
01/25 09:09:54	42 25.396	70 34.538	20	37	3.5	103	0.4	-0.1	DUMP
01/25 09:10:00	42 25.396	70 34.538	20	37	3.0	97	0.4	-0.1	DUMP
01/25 09:10:06	42 25.396	70 34.522	38	65	3.7	92	0.4	-0.1	DUMP
01/25 09:10:12	42 25.396	70 34.522	38	65	3.2	90	0.4	-0.1	DUMP
01/25 09:10:19	42 25.396	70 34.522	38	65	2.3	89	0.4	-0.1	DUMP
01/25 09:10:25	42 25.404	70 34.513	56	56	2.5	63	0.4	-0.1	DUMP
01/25 09:10:31	42 25.387	70 34.515	44	91	1.7	116	0.4	-0.1	DUMP
01/25 09:10:38	42 25.378	70 34.524	36	117	2.5	177	0.4	-0.1	DUMP
01/25 09:10:44	42 25.370	70 34.533	38	149	4.0	200	0.4	-0.1	DUMP
01/25 09:10:51	42 25.378	70 34.524	36	117	2.6	200	0.4	-0.1	DUMP
01/25 09:10:58	42 25.378	70 34.524	36	118	1.4	201	0.4	-0.1	DUMP
01/25 12:45:04	42 20.722	70 55.768	30365	253	9.0	37	991.3	828.0	
01/25 12:50:02	42 21.513	70 55.206	29233	256	13.0	46	991.3	828.0	
01/25 12:55:02	42 22.108	70 54.419	27929	257	11.3	68	991.3	828.0	
01/25 13:00:02	42 22.407	70 53.362	26393	258	13.0	78	0.1	-0.3	
01/25 13:05:02	42 22.623	70 52.224	24783	258	11.1	80	0.1	-0.3	
01/25 13:10:03	42 22.953	70 51.095	23143	259	10.4	77	0.1	-0.3	
01/25 13:15:00	42 23.249	70 50.002	21567	259	12.7	72	0.1	-0.3	
01/25 13:20:07	42 23.559	70 48.902	19981	260	10.2	69	0.1	-0.3	
01/25 13:25:01	42 23.845	70 47.861	18487	261	11.5	70	0.1	-0.3	
01/25 13:30:02	42 24.154	70 46.791	16951	262	9.5	68	0.1	-0.3	
01/25 13:35:02	42 24.467	70 45.709	15406	264	11.4	73	0.1	-0.3	
01/25 13:40:04	42 24.786	70 44.613	13853	265	14.2	70	0.1	-0.3	
01/25 13:45:05	42 25.080	70 43.561	12378	267	9.8	73	0.1	-0.3	
01/25 13:50:02	42 25.380	70 42.496	10904	270	9.0	89	0.1	-0.3	
01/25 13:55:03	42 25.746	70 41.436	9474	274	11.3	69	0.1	-0.3	
01/25 14:00:00	42 26.089	70 40.389	8119	279	11.5	65	0.1	-0.3	
01/25 14:05:03	42 26.410	70 39.324	6821	286	8.2	76	0.1	-0.3	
01/25 14:10:00	42 26.744	70 38.252	5670	296	10.3	69	0.1	-0.3	
01/25 14:15:01	42 26.505	70 37.239	4233	299	10.9	114	0.1	-0.3	
01/25 14:20:01	42 26.106	70 36.221	2655	300	10.9	117	0.1	-0.3	
01/25 14:25:01	42 25.715	70 35.225	1110	303	9.0	121	0.1	-0.3	
01/25 14:30:01	42 25.414	70 34.600	88	304	3.7	125	0.1	-0.3	
01/25 14:30:53	42 25.378	70 34.540	19	149	3.9	150	0.1	-0.3	DUMP
01/25 14:30:59	42 25.387	70 34.531	22	91	2.5	120	0.1	-0.3	DUMP
01/25 14:31:05	42 25.378	70 34.540	19	149	1.6	140	0.1	-0.3	DUMP
01/25 14:31:11	42 25.387	70 34.531	22	90	1.1	84	0.1	-0.3	DUMP
01/25 14:31:18	42 25.378	70 34.524	36	118	1.6	104	0.1	-0.3	DUMP
01/25 14:31:24	42 25.378	70 34.524	36	117	1.5	110	0.1	-0.3	DUMP
01/25 14:31:30	42 25.378	70 34.524	36	118	1.1	114	0.1	-0.3	DUMP
01/25 14:31:37	42 25.378	70 34.524	36	117	0.8	117	0.1	-0.3	DUMP
01/25 14:31:43	42 25.387	70 34.515	44	91	1.4	54	0.1	-0.3	DUMP
01/25 14:31:50	42 25.395	70 34.506	58	75	2.9	41	0.1	-0.3	DUMP
01/25 14:32:06	42 25.413	70 34.504	76	51	3.8	21	0.1	-0.3	DUMP
01/25 14:32:12	42 25.395	70 34.506	58	75	2.0	29	0.1	-0.3	DUMP



## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/25 14:32:18	42 25.395	70 34.506	58	74	0.8	47	0.1	-0.3	DUMP
01/25 14:32:24	42 25.395	70 34.506	58	75	0.4	129	0.1	-0.3	DUMP
01/25 14:32:30	42 25.395	70 34.506	58	75	0.6	174	0.1	-0.3	DUMP
01/25 14:32:37	42 25.404	70 34.497	75	65	0.9	59	0.1	-0.3	DUMP
01/25 14:32:43	42 25.378	70 34.508	56	107	2.3	181	0.1	-0.3	DUMP
01/25 14:32:49	42 25.378	70 34.508	56	107	3.1	187	0.1	-0.3	DUMP
01/25 14:32:55	42 25.378	70 34.492	77	103	3.0	161	0.1	-0.3	DUMP
01/25 14:33:01	42 25.378	70 34.492	77	103	2.5	147	0.1	-0.3	DUMP
01/25 14:31:18	42 25.378	70 34.524	36	118	1.6	104	0.1	-0.3	DUMP
01/25 14:31:24	42 25.378	70 34.524	36	118	1.5	110	0.1	-0.3	DUMP
01/25 14:31:30	42 25.378	70 34.524	36	118	1.1	114	0.1	-0.3	DUMP
01/25 14:31:37	42 25.378	70 34.524	36	117	0.8	117	0.1	-0.3	DUMP
01/25 14:31:43	42 25.387	70 34.515	44	91	1.4	54	0.1	-0.3	DUMP
01/25 14:31:50	42 25.395	70 34.506	58	75	2.9	41	0.1	-0.3	DUMP
01/25 18:15:03	42 20.637	70 55.951	30651	253	7.2	29	991.3	828.0	
01/25 18:20:04	42 21.303	70 55.495	29715	255	11.3	34	991.3	828.0	
01/25 18:25:01	42 21.856	70 54.832	28584	257	9.3	67	991.3	828.0	
01/25 18:30:02	42 22.304	70 53.981	27263	258	10.0	62	0.2	-0.3	
01/25 18:35:03	42 22.510	70 52.913	25752	258	9.9	74	0.2	-0.3	
01/25 18:40:01	42 22.676	70 51.845	24255	258	9.6	76	0.2	-0.3	
01/25 18:45:01	42 22.875	70 50.755	22715	258	11.5	78	0.2	-0.3	
01/25 18:50:02	42 23.080	70 49.653	21158	258	11.9	72	0.2	-0.3	
01/25 18:55:02	42 23.270	70 48.600	19673	259	9.0	86	0.2	-0.3	
01/25 19:00:00	42 23.485	70 47.519	18140	259	10.8	76	0.2	-0.3	
01/25 19:05:01	42 23.704	70 46.440	16610	259	10.8	74	0.2	-0.3	
01/25 19:10:04	42 23.946	70 45.363	15075	260	8.6	83	0.2	-0.3	
01/25 19:15:02	42 24.184	70 44.296	13558	261	9.6	75	0.2	-0.3	
01/25 19:20:03	42 24.436	70 43.209	12012	262	11.4	74	0.2	-0.3	
01/25 19:25:00	42 24.674	70 42.125	10479	263	11.8	73	0.2	-0.3	
01/25 19:30:01	42 24.908	70 41.053	8969	264	10.4	79	0.2	-0.3	
01/25 19:35:05	42 25.164	70 39.935	7402	267	11.6	77	0.2	-0.3	
01/25 19:40:03	42 25.390	70 38.854	5908	270	11.1	81	0.2	-0.3	
01/25 19:45:00	42 25.593	70 37.754	4416	275	12.6	82	0.2	-0.3	
01/25 19:50:01	42 25.732	70 36.648	2951	282	10.7	82	0.2	-0.3	
01/25 19:55:04	42 25.682	70 35.515	1436	292	10.7	97	0.2	-0.3	
01/25 20:00:04	42 25.423	70 34.671	183	291	5.7	121	0.2	-0.3	
01/25 20:01:34	42 25.378	70 34.524	36	118	4.6	122	0.2	-0.3	DUMP
01/25 20:01:40	42 25.378	70 34.524	36	117	4.0	118	0.2	-0.3	DUMP
01/25 20:01:46	42 25.369	70 34.517	53	128	4.0	126	0.2	-0.3	DUMP
01/25 20:01:53	42 25.369	70 34.517	53	128	3.2	129	0.2	-0.3	DUMP
01/25 20:01:59	42 25.361	70 34.510	71	134	3.3	139	0.2	-0.3	DUMP
01/25 20:02:05	42 25.360	70 34.494	88	124	3.8	126	0.2	-0.3	DUMP
01/25 20:02:12	42 25.369	70 34.485	91	111	3.6	99	0.2	-0.3	DUMP
01/25 20:02:18	42 25.360	70 34.478	107	118	3.8	102	0.2	-0.3	DUMP
01/25 20:02:25	42 25.360	70 34.478	107	118	3.0	103	0.2	-0.3	DUMP
01/25 20:02:32	42 25.360	70 34.478	107	118	2.0	105	0.2	-0.3	DUMP
01/25 20:02:48	42 25.352	70 34.471	124	122	1.6	136	0.2	-0.3	DUMP
01/25 20:02:53	42 25.343	70 34.464	141	126	2.3	146	0.2	-0.3	DUMP
01/25 20:02:59	42 25.343	70 34.464	141	126	2.3	149	0.2	-0.3	DUMP
01/25 20:03:05	42 25.343	70 34.464	141	126	1.8	152	0.2	-0.3	DUMP
01/25 20:03:12	42 25.343	70 34.464	141	126	1.2	154	0.2	-0.3	DUMP

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/25 20:03:18	42 25.334	70 34.457	158	128	1.9	152	0.2	-0.3	DUMP
01/25 20:03:24	42 25.334	70 34.457	158	128	1.8	151	0.2	-0.3	DUMP
01/25 20:03:30	42 25.317	70 34.458	178	137	3.4	171	0.2	-0.3	DUMP
01/25 20:03:36	42 25.325	70 34.433	194	126	3.5	134	0.2	-0.3	DUMP
01/25 20:03:43	42 25.325	70 34.433	194	126	3.2	117	0.2	-0.3	DUMP
01/25 20:01:59	42 25.361	70 34.510	71	134	3.3	139	0.2	-0.3	DUMP
01/25 20:02:05	42 25.360	70 34.494	88	124	3.8	126	0.2	-0.3	DUMP
01/25 20:02:12	42 25.369	70 34.485	92	111	3.6	99	0.2	-0.3	DUMP
01/25 20:02:18	42 25.360	70 34.478	107	118	3.8	102	0.2	-0.3	DUMP
01/25 20:02:25	42 25.360	70 34.478	107	118	3.0	103	0.2	-0.3	DUMP
01/25 20:02:32	42 25.360	70 34.478	107	118	2.0	105	0.2	-0.3	DUMP
01/25 23:35:01	42 19.951	70 56.827	32178	252	12.2	79	991.3	828.0	
01/25 23:40:01	42 20.571	70 55.964	30703	253	11.3	32	991.3	828.0	
01/25 23:45:02	42 21.364	70 55.387	29543	255	6.9	39	991.3	828.0	
01/25 23:50:05	42 22.025	70 54.589	28189	257	10.0	56	991.3	828.0	
01/25 23:55:05	42 22.363	70 53.514	26615	258	12.2	80	0.3	-0.2	
01/26 00:00:03	42 22.588	70 52.399	25031	258	10.2	85	0.3	-0.2	
01/26 00:05:03	42 22.828	70 51.248	23395	258	11.4	79	0.3	-0.2	
01/26 00:10:01	42 23.054	70 50.115	21789	259	12.0	79	0.3	-0.2	
01/26 00:15:04	42 23.285	70 48.986	20186	259	9.4	85	0.3	-0.2	
01/26 00:20:04	42 23.519	70 47.874	18605	259	8.5	85	0.3	-0.2	
01/26 00:25:01	42 23.768	70 46.755	17014	260	10.7	71	0.3	-0.2	
01/26 00:30:01	42 24.003	70 45.626	15413	260	11.2	75	0.3	-0.2	
01/26 00:35:02	42 24.242	70 44.530	13857	261	10.6	75	0.3	-0.2	
01/26 00:40:02	42 24.486	70 43.405	12266	262	8.7	89	0.3	-0.2	
01/26 00:45:00	42 24.743	70 42.290	10688	264	9.7	74	0.3	-0.2	
01/26 00:50:04	42 24.978	70 41.156	9097	265	10.4	80	0.3	-0.2	
01/26 00:55:01	42 25.226	70 40.031	7528	268	11.3	78	0.3	-0.2	
01/26 01:00:02	42 25.486	70 38.915	5995	272	11.2	69	0.3	-0.2	
01/26 01:05:04	42 25.743	70 37.810	4525	278	7.3	73	0.3	-0.2	
01/26 01:10:03	42 26.038	70 36.705	3196	292	11.0	82	0.3	-0.2	
01/26 01:15:03	42 25.849	70 35.729	1834	298	9.5	138	0.3	-0.2	
01/26 01:20:03	42 25.476	70 34.714	282	306	9.2	131	0.3	-0.2	
01/26 01:21:27	42 25.387	70 34.563	22	271	3.5	129	0.3	-0.2	DUMP
01/26 01:21:33	42 25.378	70 34.556	20	217	2.8	133	0.3	-0.2	DUMP
01/26 01:21:39	42 25.378	70 34.540	19	149	3.1	116	0.3	-0.2	DUMP
01/26 01:21:46	42 25.370	70 34.533	38	149	3.7	121	0.3	-0.2	DUMP
01/26 01:21:52	42 25.387	70 34.515	44	91	4.3	86	0.3	-0.2	DUMP
01/26 01:21:58	42 25.378	70 34.508	56	107	4.5	88	0.3	-0.2	DUMP
01/26 01:22:04	42 25.378	70 34.508	56	107	3.6	89	0.3	-0.2	DUMP
01/26 01:22:11	42 25.387	70 34.515	44	91	2.1	59	0.3	-0.2	DUMP
01/26 01:22:17	42 25.387	70 34.531	22	91	1.5	329	0.3	-0.2	DUMP
01/26 01:22:24	42 25.387	70 34.547	0	152	3.4	289	0.3	-0.2	DUMP
01/26 01:22:41	42 25.369	70 34.517	53	128	1.5	180	0.3	-0.2	DUMP
01/26 01:22:46	42 25.369	70 34.517	53	128	1.9	162	0.3	-0.2	DUMP
01/26 01:22:52	42 25.360	70 34.494	88	124	3.6	135	0.3	-0.2	DUMP
01/26 01:22:58	42 25.361	70 34.494	88	124	3.9	128	0.3	-0.2	DUMP
01/26 01:23:04	42 25.343	70 34.496	108	139	4.8	147	0.3	-0.2	DUMP
01/26 01:23:11	42 25.334	70 34.488	127	141	5.5	154	0.3	-0.2	DUMP
01/26 01:23:17	42 25.334	70 34.488	126	141	4.7	157	0.3	-0.2	DUMP
01/26 01:23:23	42 25.343	70 34.480	123	131	2.9	136	0.3	-0.2	DUMP

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/26 01:23:29	42 25.334	70 34.473	142	134	2.9	127	0.3	-0.2	DUMP
01/26 01:23:35	42 25.325	70 34.465	160	136	3.4	131	0.3	-0.2	DUMP
01/26 01:21:52	42 25.387	70 34.515	44	91	4.3	86	0.3	-0.2	DUMP
01/26 01:21:58	42 25.378	70 34.508	56	107	4.5	88	0.3	-0.2	DUMP
01/26 01:22:04	42 25.378	70 34.508	56	107	3.6	89	0.3	-0.2	DUMP
01/26 01:22:11	42 25.387	70 34.515	44	91	2.1	59	0.3	-0.2	DUMP
01/26 01:22:17	42 25.387	70 34.531	22	91	1.5	329	0.3	-0.2	DUMP
01/26 01:22:24	42 25.387	70 34.547	0	152	3.4	289	0.3	-0.2	DUMP
01/26 05:15:02	42 20.466	70 56.008	30818	253	9.5	20	991.3	828.0	
01/26 05:20:00	42 21.073	70 55.616	29985	255	11.4	29	991.3	828.0	
01/26 05:25:00	42 21.682	70 55.149	29082	256	8.3	44	991.3	828.0	
01/26 05:30:04	42 22.139	70 54.335	27803	258	9.6	63	991.3	828.0	
01/26 05:35:01	42 22.381	70 53.326	26356	258	9.2	86	0.2	-0.3	
01/26 05:40:02	42 22.496	70 52.204	24806	258	12.6	95	0.2	-0.3	
01/26 05:45:01	42 22.578	70 51.117	23318	257	8.0	92	0.2	-0.3	
01/26 05:50:01	42 22.749	70 50.020	21780	257	9.6	86	0.2	-0.3	
01/26 05:55:04	42 22.952	70 48.915	20219	257	12.7	74	0.2	-0.3	
01/26 06:00:04	42 23.131	70 47.853	18725	257	10.3	82	0.2	-0.3	
01/26 06:05:02	42 23.344	70 46.769	17187	257	12.0	70	0.2	-0.3	
01/26 06:10:02	42 23.534	70 45.698	15676	257	10.4	75	0.2	-0.3	
01/26 06:15:03	42 23.739	70 44.605	14131	258	11.3	80	0.2	-0.3	
01/26 06:20:04	42 23.958	70 43.522	12593	258	11.5	65	0.2	-0.3	
01/26 06:25:00	42 24.154	70 42.437	11061	258	12.3	80	0.2	-0.3	
01/26 06:30:04	42 24.373	70 41.336	9501	259	12.0	71	0.2	-0.3	
01/26 06:35:02	42 24.579	70 40.287	8016	259	8.4	76	0.2	-0.3	
01/26 06:40:03	42 24.825	70 39.191	6455	261	10.2	75	0.2	-0.3	
01/26 06:45:00	42 25.048	70 38.123	4945	263	11.5	69	0.2	-0.3	
01/26 06:50:00	42 25.251	70 37.036	3423	266	10.0	82	0.2	-0.3	
01/26 06:55:04	42 25.475	70 35.934	1910	275	10.3	65	0.2	-0.3	
01/26 07:00:01	42 25.486	70 34.897	513	291	7.5	102	0.2	-0.3	
01/26 07:03:17	42 25.370	70 34.533	38	149	3.7	120	0.2	-0.3	DUMP
01/26 07:03:24	42 25.369	70 34.533	38	149	2.3	144	0.2	-0.3	DUMP
01/26 07:03:30	42 25.369	70 34.517	53	128	2.3	130	0.2	-0.3	DUMP
01/26 07:03:36	42 25.361	70 34.510	71	134	3.0	133	0.2	-0.3	DUMP
01/26 07:03:42	42 25.360	70 34.478	107	118	5.1	112	0.2	-0.3	DUMP
01/26 07:03:49	42 25.360	70 34.478	107	118	5.1	106	0.2	-0.3	DUMP
01/26 07:03:55	42 25.352	70 34.471	124	122	5.0	113	0.2	-0.3	DUMP
01/26 07:04:01	42 25.360	70 34.462	127	113	4.3	100	0.2	-0.3	DUMP
01/26 07:04:08	42 25.351	70 34.455	143	118	3.9	106	0.2	-0.3	DUMP
01/26 07:04:15	42 25.351	70 34.455	143	118	2.9	110	0.2	-0.3	DUMP
01/26 07:04:31	42 25.351	70 34.439	163	114	2.3	102	0.2	-0.3	DUMP
01/26 07:04:37	42 25.360	70 34.430	168	107	2.5	79	0.2	-0.3	DUMP
01/26 07:04:43	42 25.351	70 34.439	163	114	1.5	90	0.2	-0.3	DUMP
01/26 07:04:49	42 25.351	70 34.423	183	111	2.0	98	0.2	-0.3	DUMP
01/26 07:04:55	42 25.351	70 34.407	204	109	3.3	97	0.2	-0.3	DUMP
01/26 07:05:01	42 25.351	70 34.407	204	109	3.2	96	0.2	-0.3	DUMP
01/26 07:05:07	42 25.334	70 34.409	214	118	3.3	136	0.2	-0.3	DUMP
01/26 07:05:15	42 25.333	70 34.393	234	115	3.9	134	0.2	-0.3	DUMP
01/26 07:05:21	42 25.325	70 34.369	270	115	5.5	127	0.2	-0.3	DUMP
01/26 07:05:27	42 25.316	70 34.362	286	118	6.3	129	0.2	-0.3	DUMP
01/26 07:03:42	42 25.360	70 34.478	107	118	5.1	112	0.2	-0.3	DUMP

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/26 07:03:49	42 25.360	70 34.478	107	118	5.1	106	0.2	-0.3	DUMP
01/26 07:03:55	42 25.352	70 34.471	124	122	5.0	113	0.2	-0.3	DUMP
01/26 07:04:01	42 25.360	70 34.462	127	113	4.3	100	0.2	-0.3	DUMP
01/26 07:04:08	42 25.351	70 34.455	143	118	3.9	106	0.2	-0.3	DUMP
01/26 07:04:15	42 25.351	70 34.455	143	118	2.9	110	0.2	-0.3	DUMP
01/26 10:45:03	42 19.996	70 57.155	32580	252	10.8	83	991.3	828.0	
01/26 10:50:00	42 20.303	70 56.102	31031	252	7.5	40	991.3	828.0	
01/26 10:55:00	42 21.106	70 55.532	29859	255	10.4	25	991.3	828.0	
01/26 11:00:00	42 21.833	70 54.923	28715	257	11.9	58	991.3	828.0	
01/26 11:05:01	42 22.324	70 53.949	27213	258	10.3	60	0.5	-0.2	
01/26 11:10:02	42 22.506	70 52.802	25603	258	11.1	87	0.5	-0.2	
01/26 11:15:05	42 22.721	70 51.632	23951	258	8.5	80	0.5	-0.2	
01/26 11:20:00	42 22.922	70 50.480	22329	258	13.3	84	0.5	-0.2	
01/26 11:25:02	42 23.137	70 49.323	20693	258	11.6	74	0.5	-0.2	
01/26 11:30:03	42 23.347	70 48.177	19075	259	11.8	78	0.5	-0.2	
01/26 11:35:01	42 23.552	70 47.056	17493	259	11.4	78	0.5	-0.2	
01/26 11:40:02	42 23.763	70 45.907	15872	259	12.7	73	0.5	-0.2	
01/26 11:45:02	42 23.968	70 44.769	14267	259	9.9	84	0.5	-0.2	
01/26 11:50:00	42 24.179	70 43.634	12664	260	9.2	86	0.5	-0.2	
01/26 11:55:00	42 24.420	70 42.490	11042	261	10.8	74	0.5	-0.2	
01/26 12:00:04	42 24.692	70 41.353	9425	262	8.9	71	0.5	-0.2	
01/26 12:05:02	42 24.941	70 40.230	7839	264	12.5	71	0.5	-0.2	
01/26 12:10:00	42 25.204	70 39.115	6275	267	10.6	68	0.5	-0.2	
01/26 12:15:04	42 25.453	70 37.957	4679	271	12.6	75	0.5	-0.2	
01/26 12:20:01	42 25.697	70 36.857	3221	280	12.2	66	0.5	-0.2	
01/26 12:25:01	42 25.928	70 35.746	1925	301	9.6	77	0.5	-0.2	
01/26 12:30:01	42 25.582	70 34.943	652	304	6.5	123	0.5	-0.2	
01/26 12:33:41	42 25.370	70 34.549	32	184	6.6	133	0.5	-0.2	DUMP
01/26 12:33:47	42 25.378	70 34.540	19	149	5.2	121	0.5	-0.2	DUMP
01/26 12:33:54	42 25.370	70 34.533	38	149	4.7	121	0.5	-0.2	DUMP
01/26 12:34:00	42 25.370	70 34.533	38	149	3.4	121	0.5	-0.2	DUMP
01/26 12:34:06	42 25.361	70 34.526	57	149	3.3	131	0.5	-0.2	DUMP
01/26 12:34:12	42 25.361	70 34.510	71	134	3.7	121	0.5	-0.2	DUMP
01/26 12:34:19	42 25.360	70 34.494	88	124	4.5	108	0.5	-0.2	DUMP
01/26 12:34:25	42 25.352	70 34.503	89	137	3.6	122	0.5	-0.2	DUMP
01/26 12:34:32	42 25.352	70 34.503	89	137	2.5	134	0.5	-0.2	DUMP
01/26 12:34:39	42 25.360	70 34.494	88	124	1.6	97	0.5	-0.2	DUMP
01/26 16:20:04	42 19.973	70 56.936	32308	252	8.4	77	991.3	828.0	
01/26 16:25:04	42 20.412	70 56.138	31017	253	7.8	29	991.3	828.0	
01/26 16:30:01	42 21.015	70 55.665	30079	254	5.3	19	991.3	828.0	
01/26 16:35:03	42 21.691	70 55.156	29087	256	6.2	32	991.3	828.0	
01/26 16:40:00	42 22.139	70 54.335	27803	258	9.6	65	991.3	828.0	
01/26 16:45:00	42 22.428	70 53.315	26323	258	9.2	85	0.4	0.0	
01/26 16:50:01	42 22.679	70 52.190	24716	258	12.7	69	0.4	0.0	
01/26 16:55:01	42 22.908	70 51.076	23134	259	13.5	72	0.4	0.0	
01/26 17:00:01	42 23.139	70 50.026	21637	259	10.7	78	0.4	0.0	
01/26 17:05:02	42 23.395	70 48.931	20074	259	12.3	66	0.4	0.0	
01/26 17:10:02	42 23.618	70 47.888	18592	260	8.7	83	0.4	0.0	
01/26 17:15:02	42 23.883	70 46.814	17057	261	8.9	71	0.4	0.0	
01/26 17:20:01	42 24.135	70 45.745	15535	261	10.6	75	0.4	0.0	
01/26 17:25:03	42 24.400	70 44.685	14027	263	10.0	69	0.4	0.0	

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/26 17:30:02	42 24.652	70 43.614	12513	264	8.5	83	0.4	0.0	
01/26 17:35:02	42 24.917	70 42.522	10975	265	11.7	77	0.4	0.0	
01/26 17:40:02	42 25.187	70 41.448	9474	268	10.0	77	0.4	0.0	
01/26 17:45:00	42 25.427	70 40.380	8002	271	8.6	92	0.4	0.0	
01/26 17:50:01	42 25.653	70 39.269	6496	274	10.3	80	0.4	0.0	
01/26 17:55:01	42 25.804	70 38.160	5016	279	9.8	90	0.4	0.0	
01/26 18:00:02	42 25.855	70 37.032	3517	284	8.9	90	0.4	0.0	
01/26 18:05:02	42 25.877	70 35.894	2058	296	10.0	99	0.4	0.0	
01/26 18:10:00	42 25.530	70 34.932	591	297	7.6	129	0.4	0.0	
01/26 18:13:22	42 25.396	70 34.554	19	329	4.0	92	0.4	0.0	DUMP
01/26 18:13:29	42 25.396	70 34.554	19	329	2.6	86	0.4	0.0	DUMP
01/26 18:13:35	42 25.396	70 34.554	19	329	1.5	78	0.4	0.0	DUMP
01/26 18:13:41	42 25.396	70 34.554	19	329	0.7	65	0.4	0.0	DUMP
01/26 18:13:47	42 25.396	70 34.538	20	37	1.6	82	0.4	0.0	DUMP
01/26 18:13:54	42 25.387	70 34.531	22	91	2.5	112	0.4	0.0	DUMP
01/26 18:14:00	42 25.387	70 34.531	22	90	2.5	120	0.4	0.0	DUMP
01/26 18:14:07	42 25.387	70 34.515	44	91	3.2	110	0.4	0.0	DUMP
01/26 18:14:13	42 25.378	70 34.524	36	118	2.7	134	0.4	0.0	DUMP
01/26 21:45:01	42 20.610	70 55.931	30639	253	10.6	37	991.3	828.0	
01/26 21:50:01	42 21.345	70 55.403	29573	255	10.4	31	991.3	828.0	
01/26 21:55:02	42 21.946	70 54.699	28369	257	7.3	45	991.3	828.0	
01/26 22:00:02	42 22.364	70 53.700	26864	258	8.8	77	0.5	-0.2	
01/26 22:05:00	42 22.544	70 52.567	25274	258	12.4	86	0.5	-0.2	
01/26 22:10:01	42 22.676	70 51.410	23671	258	12.9	82	0.5	-0.2	
01/26 22:15:02	42 22.767	70 50.252	22083	257	11.7	88	0.5	-0.2	
01/26 22:20:05	42 22.963	70 49.111	20476	257	11.0	72	0.5	-0.2	
01/26 22:25:05	42 23.155	70 47.980	18885	257	8.8	84	0.5	-0.2	
01/26 22:30:00	42 23.368	70 46.866	17307	258	10.5	77	0.5	-0.2	
01/26 22:35:00	42 23.596	70 45.746	15716	258	10.0	76	0.5	-0.2	
01/26 22:40:01	42 23.829	70 44.613	14106	258	9.8	74	0.5	-0.2	
01/26 22:45:03	42 24.066	70 43.451	12457	259	13.6	72	0.5	-0.2	
01/26 22:50:00	42 24.271	70 42.356	10910	259	10.6	83	0.5	-0.2	
01/26 22:55:01	42 24.507	70 41.223	9301	260	9.5	73	0.5	-0.2	
01/26 23:00:05	42 24.748	70 40.076	7676	261	11.6	71	0.5	-0.2	
01/25 09:11:14	42 25.378	70 34.508	56	107	1.3	98	0.4	-0.1	DUMP
01/25 09:11:20	42 25.378	70 34.508	56	107	1.4	88	0.4	-0.1	DUMP
01/25 09:11:26	42 25.369	70 34.501	71	118	1.9	113	0.4	-0.1	DUMP
01/25 09:11:32	42 25.369	70 34.501	71	117	1.9	122	0.4	-0.1	DUMP
01/25 09:11:38	42 25.369	70 34.501	71	118	1.5	128	0.4	-0.1	DUMP
01/25 09:11:44	42 25.378	70 34.492	77	103	1.6	78	0.4	-0.1	DUMP
01/25 09:11:51	42 25.369	70 34.485	92	111	2.1	96	0.4	-0.1	DUMP
01/25 09:11:57	42 25.369	70 34.485	91	111	1.9	103	0.4	-0.1	DUMP
01/25 09:12:03	42 25.369	70 34.469	112	107	2.8	99	0.4	-0.1	DUMP
01/26 22:30:00	42 23.368	70 46.866	17307	258	10.5	77	0.5	-0.2	
01/26 22:35:00	42 23.596	70 45.746	15716	258	10.0	76	0.5	-0.2	
01/26 22:40:01	42 23.829	70 44.613	14106	258	9.8	74	0.5	-0.2	
01/26 22:45:03	42 24.066	70 43.451	12457	259	13.6	72	0.5	-0.2	
01/26 22:50:00	42 24.271	70 42.356	10910	259	10.6	83	0.5	-0.2	
01/26 22:55:01	42 24.507	70 41.223	9301	260	9.5	73	0.5	-0.2	
01/26 23:00:05	42 24.748	70 40.076	7676	261	11.6	71	0.5	-0.2	
01/27 02:40:00	42 20.199	70 56.441	31533	252	12.5	74	991.3	828.0	

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/27 02:45:00	42 20.868	70 55.801	30333	254	11.6	33	991.3	828.0	
01/27 02:50:03	42 21.614	70 55.221	29208	256	10.6	37	991.3	828.0	
01/27 02:55:00	42 22.119	70 54.381	27873	257	9.4	71	991.3	828.0	
01/27 03:00:01	42 22.410	70 53.302	26312	258	10.1	93	0.3	-0.2	
01/27 03:05:05	42 22.662	70 52.161	24684	258	11.6	77	0.3	-0.2	
01/27 03:10:03	42 22.890	70 51.077	23143	258	10.0	85	0.3	-0.2	
01/27 03:15:02	42 23.122	70 49.997	21605	259	11.5	84	0.3	-0.2	
01/27 03:20:04	42 23.359	70 48.919	20070	259	8.3	82	0.3	-0.2	
01/27 03:25:08	42 23.620	70 47.842	18530	260	10.9	69	0.3	-0.2	
01/27 03:30:00	42 23.848	70 46.772	17010	260	11.4	73	0.3	-0.2	
01/27 03:35:01	42 24.082	70 45.704	15494	261	10.9	78	0.3	-0.2	
01/27 03:40:04	42 24.338	70 44.621	13956	262	11.1	75	0.3	-0.2	
01/27 03:45:02	42 24.599	70 43.573	12467	263	11.0	65	0.3	-0.2	
01/27 03:50:00	42 24.838	70 42.506	10965	265	9.7	77	0.3	-0.2	
01/27 03:55:03	42 25.090	70 41.434	9463	267	9.8	75	0.3	-0.2	
01/27 04:00:03	42 25.347	70 40.348	7958	269	10.8	73	0.3	-0.2	
01/27 04:05:01	42 25.591	70 39.282	6507	273	10.3	76	0.3	-0.2	
01/27 04:10:04	42 25.866	70 38.209	5101	280	11.0	69	0.3	-0.2	
01/27 04:15:01	42 26.154	70 37.177	3877	291	9.0	76	0.3	-0.2	
01/27 04:20:00	42 26.368	70 36.164	2867	309	9.4	116	0.3	-0.2	
01/27 04:25:02	42 25.829	70 35.317	1336	308	9.4	124	0.3	-0.2	
01/27 04:30:03	42 25.405	70 34.545	32	4	5.7	118	0.3	-0.2	
01/27 04:30:18	42 25.396	70 34.538	20	37	3.9	124	0.3	-0.2	DUMP
01/27 04:30:25	42 25.396	70 34.538	20	37	2.3	125	0.3	-0.2	DUMP
01/27 04:30:31	42 25.387	70 34.515	44	91	3.6	121	0.3	-0.2	DUMP
01/27 04:30:37	42 25.387	70 34.515	44	91	3.3	119	0.3	-0.2	DUMP
01/27 04:30:43	42 25.378	70 34.508	56	107	3.6	128	0.3	-0.2	DUMP
01/27 04:30:50	42 25.369	70 34.501	71	118	4.2	137	0.3	-0.2	DUMP
01/27 04:30:56	42 25.369	70 34.485	92	111	4.6	128	0.3	-0.2	DUMP
01/27 04:31:03	42 25.361	70 34.494	88	124	3.9	142	0.3	-0.2	DUMP
01/27 04:31:10	42 25.369	70 34.485	92	111	2.6	125	0.3	-0.2	DUMP
01/27 08:00:01	42 20.052	70 56.548	31755	252	9.6	63	991.3	828.0	
01/27 08:05:01	42 20.639	70 55.907	30591	253	9.7	21	991.3	828.0	
01/27 08:10:01	42 21.306	70 55.436	29635	255	4.9	23	991.3	828.0	
01/27 08:15:02	42 21.915	70 54.753	28454	257	10.0	64	991.3	828.0	
01/27 08:20:05	42 22.366	70 53.842	27053	258	9.1	72	0.5	-0.1	
01/27 08:25:03	42 22.543	70 52.784	25565	258	9.4	76	0.5	-0.1	
01/27 08:30:03	42 22.747	70 51.682	24009	258	10.1	86	0.5	-0.1	
01/27 08:35:00	42 22.945	70 50.607	22490	258	10.0	91	0.5	-0.1	
01/27 08:40:04	42 23.140	70 49.497	20926	259	9.0	89	0.5	-0.1	
01/27 08:45:01	42 23.331	70 48.398	19378	259	11.6	84	0.5	-0.1	
01/27 08:50:05	42 23.528	70 47.272	17792	259	12.4	88	0.5	-0.1	
01/27 08:55:05	42 23.729	70 46.178	16248	259	9.5	82	0.5	-0.1	
01/27 09:00:00	42 23.916	70 45.104	14736	259	9.7	90	0.5	-0.1	
01/27 09:05:00	42 24.118	70 43.994	13170	260	11.0	82	0.5	-0.1	
01/27 09:10:00	42 24.316	70 42.894	11621	260	8.4	86	0.5	-0.1	
01/27 09:15:04	42 24.519	70 41.766	10033	261	11.6	77	0.5	-0.1	
01/27 09:20:01	42 24.735	70 40.648	8456	262	12.0	69	0.5	-0.1	
01/27 09:25:01	42 24.937	70 39.564	6933	263	9.6	70	0.5	-0.1	
01/27 09:30:02	42 25.153	70 38.443	5362	265	9.6	76	0.5	-0.1	
01/27 09:35:05	42 25.347	70 37.335	3825	269	10.7	71	0.5	-0.1	

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FB
01/27 09:40:02	42 25.537	70 36.238	2336	277	10.7	81	0.5	-0.1	
01/27 09:45:00	42 25.636	70 35.145	941	299	10.1	114	0.5	-0.1	
01/27 09:49:53	42 25.387	70 34.531	22	91	4.9	113	0.5	-0.1	DUMP
01/27 09:49:59	42 25.387	70 34.531	22	91	4.3	111	0.5	-0.1	DUMP
01/27 09:50:06	42 25.387	70 34.547	0	326	1.9	124	0.5	-0.1	DUMP
01/27 09:50:12	42 25.378	70 34.540	19	149	1.8	155	0.5	-0.1	DUMP
01/27 09:50:18	42 25.370	70 34.533	38	149	2.8	162	0.5	-0.1	DUMP
01/27 09:50:25	42 25.387	70 34.515	44	91	2.4	101	0.5	-0.1	DUMP
01/27 09:50:31	42 25.378	70 34.508	56	107	3.2	98	0.5	-0.1	DUMP
01/27 09:50:37	42 25.369	70 34.501	71	118	3.7	112	0.5	-0.1	DUMP
01/27 09:50:44	42 25.369	70 34.501	71	118	3.2	118	0.5	-0.1	DUMP
01/27 09:50:51	42 25.369	70 34.501	71	118	2.2	122	0.5	-0.1	DUMP
01/27 13:15:01	42 20.109	70 57.595	33093	253	12.1	127	991.3	828.0	
01/27 13:20:00	42 20.181	70 56.428	31526	252	12.4	63	991.3	828.0	
01/27 13:25:01	42 20.990	70 55.785	30250	254	11.8	26	991.3	828.0	
01/27 13:30:02	42 21.786	70 55.119	28997	257	10.9	47	991.3	828.0	
01/27 13:35:02	42 22.254	70 54.066	27397	258	11.1	83	0.2	-0.1	
01/27 13:40:02	42 22.438	70 52.889	25747	258	12.2	81	0.2	-0.1	
01/27 13:45:00	42 22.635	70 51.721	24104	258	11.7	66	0.2	-0.1	
01/27 13:50:00	42 22.801	70 50.543	22459	258	10.5	79	0.2	-0.1	
01/27 13:55:03	42 22.963	70 49.360	20810	258	11.0	85	0.2	-0.1	
01/27 14:00:04	42 23.157	70 48.200	19179	258	12.4	85	0.2	-0.1	
01/27 14:05:05	42 23.336	70 47.059	17579	258	12.3	80	0.2	-0.1	
01/27 14:10:02	42 23.520	70 45.921	15981	258	12.0	75	0.2	-0.1	
01/27 14:15:03	42 23.709	70 44.769	14363	258	10.7	79	0.2	-0.1	
01/27 14:20:00	42 23.884	70 43.652	12797	257	10.1	86	0.2	-0.1	
01/27 14:25:01	42 24.100	70 42.504	11172	258	11.0	87	0.2	-0.1	
01/27 14:30:01	42 24.329	70 41.348	9534	258	11.6	75	0.2	-0.1	
01/27 14:35:04	42 24.544	70 40.197	7906	259	10.8	75	0.2	-0.1	
01/27 14:40:05	42 24.764	70 39.047	6280	259	12.4	74	0.2	-0.1	
01/27 14:45:02	42 24.952	70 37.966	4759	260	8.1	75	0.2	-0.1	
01/27 14:50:04	42 25.119	70 36.787	3113	261	10.3	77	0.2	-0.1	
01/27 14:55:05	42 25.281	70 35.619	1484	262	12.9	77	0.2	-0.1	
01/27 15:00:04	42 25.397	70 34.666	164	276	6.0	91	0.2	-0.1	
01/27 15:01:32	42 25.387	70 34.547	0	335	1.6	99	0.2	-0.1	DUMP
01/27 15:01:38	42 25.378	70 34.540	19	149	1.9	123	0.2	-0.1	DUMP
01/27 15:01:44	42 25.387	70 34.531	22	90	2.1	92	0.2	-0.1	DUMP
01/27 15:01:50	42 25.387	70 34.515	44	91	3.3	84	0.2	-0.1	DUMP
01/27 15:01:57	42 25.395	70 34.506	58	74	4.2	69	0.2	-0.1	DUMP
01/27 15:02:03	42 25.387	70 34.499	66	91	4.1	81	0.2	-0.1	DUMP
01/27 15:02:09	42 25.395	70 34.490	79	79	4.2	74	0.2	-0.1	DUMP
01/27 15:02:16	42 25.387	70 34.483	88	91	3.8	89	0.2	-0.1	DUMP
01/27 15:02:22	42 25.395	70 34.474	101	81	3.7	80	0.2	-0.1	DUMP
01/27 15:02:29	42 25.395	70 34.474	101	81	2.9	75	0.2	-0.1	DUMP
01/27 18:55:00	42 22.333	70 53.770	26969	258	10.3	81	0.3	-0.1	
01/27 19:00:05	42 22.514	70 52.621	25359	258	11.5	86	0.3	-0.1	
01/27 19:05:03	42 22.700	70 51.491	23770	258	10.7	79	0.3	-0.1	
01/27 19:10:04	42 22.900	70 50.354	22168	258	11.2	69	0.3	-0.1	
01/27 19:15:01	42 23.149	70 49.254	20596	258	10.9	77	0.3	-0.1	
01/27 19:20:01	42 23.410	70 48.194	19076	259	9.1	86	0.3	-0.1	
01/27 19:25:02	42 23.677	70 47.106	17518	260	10.3	71	0.3	-0.1	

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/27 19:30:03	42 23.939	70 46.030	15979	260	9.2	73	0.3	-0.1	
01/27 19:35:03	42 24.224	70 44.939	14417	261	9.4	79	0.3	-0.1	
01/27 19:40:00	42 24.505	70 43.859	12878	263	11.5	76	0.3	-0.1	
01/27 19:45:01	42 24.807	70 42.796	11366	265	9.9	67	0.3	-0.1	
01/27 19:50:01	42 25.114	70 41.704	9831	267	9.0	79	0.3	-0.1	
01/27 19:55:04	42 25.407	70 40.585	8283	270	9.7	68	0.3	-0.1	
01/27 20:00:02	42 25.687	70 39.470	6776	275	11.4	70	0.3	-0.1	
01/27 20:05:03	42 25.901	70 38.364	5321	280	9.1	88	0.3	-0.1	
01/27 20:10:00	42 26.049	70 37.219	3865	288	12.2	83	0.3	-0.1	
01/27 23:55:02	42 20.396	70 56.095	30970	253	7.7	39	991.3	828.0	
01/28 00:00:03	42 21.163	70 55.498	29786	255	11.2	36	991.3	828.0	
01/28 00:05:00	42 21.853	70 54.891	28665	257	12.4	65	991.3	828.0	
01/28 00:10:01	42 22.295	70 53.974	27257	258	8.5	79	0.3	-0.1	
01/28 00:15:04	42 22.458	70 52.858	25697	258	10.3	83	0.3	-0.1	
01/28 00:20:05	42 22.635	70 51.736	24124	258	9.9	95	0.3	-0.1	
01/28 00:25:01	42 22.816	70 50.632	22573	258	12.5	81	0.3	-0.1	
01/28 00:30:01	42 22.985	70 49.517	21012	258	11.4	83	0.3	-0.1	
01/28 00:35:02	42 23.168	70 48.412	19458	258	10.2	82	0.3	-0.1	
01/28 00:40:02	42 23.365	70 47.285	17871	258	9.0	81	0.3	-0.1	
01/28 00:45:02	42 23.541	70 46.156	16288	258	11.9	77	0.3	-0.1	
01/28 00:50:00	42 23.720	70 45.060	14748	258	9.7	81	0.3	-0.1	
01/28 00:55:05	42 23.923	70 43.950	13180	258	8.4	80	0.3	-0.1	
01/28 01:00:02	42 24.112	70 42.843	11623	258	9.5	85	0.3	-0.1	
01/28 01:05:03	42 24.297	70 41.717	10040	258	9.7	87	0.3	-0.1	
01/28 01:10:01	42 24.505	70 40.607	8472	259	10.2	78	0.3	-0.1	
01/28 05:20:01	42 20.044	70 56.835	32135	252	9.7	73	991.3	828.0	
01/28 05:25:05	42 20.505	70 56.131	30957	253	5.8	48	991.3	828.0	
01/28 05:30:04	42 21.090	70 55.659	30035	255	7.1	37	991.3	828.0	
01/28 05:35:00	42 21.721	70 55.116	29022	256	8.2	39	991.3	828.0	
01/28 05:40:00	42 22.144	70 54.246	27682	257	8.7	63	991.3	828.0	
01/28 05:45:00	42 22.324	70 53.174	26174	257	10.3	85	0.6	-0.4	
01/28 05:50:04	42 22.510	70 52.075	24628	258	10.9	83	0.6	-0.4	
01/28 05:55:05	42 22.673	70 51.035	23169	257	9.1	87	0.6	-0.4	
01/28 06:00:02	42 22.850	70 49.989	21697	257	10.3	84	0.6	-0.4	
01/28 06:05:02	42 22.978	70 48.935	20235	257	11.1	92	0.6	-0.4	
01/28 06:10:03	42 22.878	70 47.875	18864	256	9.6	102	0.6	-0.4	
01/28 06:15:00	42 23.027	70 46.819	17393	255	11.2	74	0.6	-0.4	
01/28 06:20:00	42 23.199	70 45.811	15974	255	7.6	77	0.6	-0.4	
01/28 06:25:01	42 23.413	70 44.757	14475	255	8.8	79	0.6	-0.4	
01/28 06:30:01	42 23.677	70 43.725	12983	256	10.7	70	0.6	-0.4	
01/28 06:35:02	42 23.945	70 42.727	11535	257	9.6	77	0.6	-0.4	
01/28 10:40:02	42 20.069	70 57.334	32772	253	12.2	120	991.3	828.0	
01/28 10:45:03	42 20.270	70 56.340	31361	252	9.8	44	991.3	828.0	
01/28 10:50:00	42 20.953	70 55.773	30252	254	9.7	37	991.3	828.0	
01/28 10:55:05	42 21.624	70 55.198	29172	256	9.3	56	991.3	828.0	
01/28 11:00:00	42 22.091	70 54.376	27877	257	6.9	58	991.3	828.0	
01/28 11:05:00	42 22.434	70 53.382	26410	258	11.3	79	0.4	-0.1	
01/28 11:10:02	42 22.647	70 52.304	24882	258	10.2	81	0.4	-0.1	
01/28 11:15:00	42 22.864	70 51.260	23397	258	10.2	73	0.4	-0.1	
01/28 11:20:00	42 23.069	70 50.205	21904	259	11.0	73	0.4	-0.1	
01/28 11:25:01	42 23.270	70 49.146	20406	259	10.5	84	0.4	-0.1	



### HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/28 11:30:01	42 23.485	70 48.112	18939	259	10.0	75	0.4	-0.1	
01/28 11:35:02	42 23.696	70 47.059	17447	260	8.7	68	0.4	-0.1	
01/28 11:40:01	42 23.895	70 46.011	15967	260	11.0	81	0.4	-0.1	
01/28 11:45:02	42 24.126	70 44.955	14468	261	10.3	77	0.4	-0.1	
01/28 11:50:05	42 24.325	70 43.906	12988	261	11.5	74	0.4	-0.1	
01/28 11:55:03	42 24.548	70 42.858	11506	262	12.2	64	0.4	-0.1	

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/28 16:25:00	42 20.059	70 56.584	31799	252	10.9	78	991.3	828.0	
01/28 16:30:03	42 20.733	70 55.900	30533	254	9.5	36	991.3	828.0	
01/28 16:35:01	42 21.420	70 55.383	29511	256	7.0	38	991.3	828.0	
01/28 16:40:01	42 21.984	70 54.681	28330	257	7.7	67	991.3	828.0	
01/28 16:45:01	42 22.280	70 53.714	26915	258	10.1	82	0.5	-0.2	
01/28 16:50:04	42 22.420	70 52.674	25466	258	9.6	80	0.5	-0.2	
01/28 16:55:05	42 22.564	70 51.666	24059	257	10.4	89	0.5	-0.2	
01/28 17:00:03	42 22.731	70 50.722	22727	258	8.0	78	0.5	-0.2	
01/28 17:05:03	42 22.886	70 49.737	21345	257	8.6	83	0.5	-0.2	
01/28 17:10:03	42 23.056	70 48.793	20013	258	10.0	70	0.5	-0.2	
01/28 17:15:00	42 23.195	70 47.855	18702	257	9.9	88	0.5	-0.2	
01/28 17:20:01	42 23.357	70 46.951	17426	258	8.2	69	0.5	-0.2	
01/28 17:25:03	42 23.507	70 46.052	16162	258	8.3	83	0.5	-0.2	
01/28 17:30:04	42 23.673	70 45.149	14885	258	9.6	72	0.5	-0.2	
01/28 17:35:02	42 23.818	70 44.260	13637	258	8.7	83	0.5	-0.2	
01/28 17:40:00	42 23.978	70 43.381	12397	258	9.1	85	0.5	-0.2	
01/28 17:45:04	42 24.144	70 42.492	11139	258	8.5	86	0.5	-0.2	
01/28 17:50:04	42 24.325	70 41.598	9870	259	11.1	70	0.5	-0.2	
01/28 17:55:05	42 24.548	70 40.751	8651	260	8.8	72	0.5	-0.2	
01/28 18:00:03	42 24.741	70 39.881	7414	261	7.2	95	0.5	-0.2	
01/28 18:05:02	42 24.966	70 39.020	6185	263	7.4	66	0.5	-0.2	
01/28 18:10:00	42 25.136	70 38.130	4937	265	8.1	98	0.5	-0.2	
01/28 18:15:02	42 25.339	70 37.217	3664	269	8.2	82	0.5	-0.2	
01/28 18:20:02	42 25.485	70 36.323	2442	274	8.8	84	0.5	-0.2	
01/28 18:25:00	42 25.559	70 35.368	1170	286	8.8	94	0.5	-0.2	
01/28 18:30:03	42 25.432	70 34.726	260	289	3.7	146	0.5	-0.2	
01/28 18:31:53	42 25.361	70 34.542	49	171	5.3	130	0.5	-0.2	DUMP
01/28 18:31:59	42 25.370	70 34.533	38	149	4.3	112	0.5	-0.2	DUMP
01/28 18:32:06	42 25.370	70 34.533	38	149	3.1	99	0.5	-0.2	DUMP
01/28 18:32:12	42 25.369	70 34.517	53	128	3.5	89	0.5	-0.2	DUMP
01/28 18:32:18	42 25.360	70 34.494	88	124	5.0	99	0.5	-0.2	DUMP
01/28 18:32:25	42 25.369	70 34.501	71	117	3.8	89	0.5	-0.2	DUMP
01/28 22:10:02	42 20.415	70 56.248	31160	253	8.2	49	991.3	828.0	
01/28 22:15:03	42 20.999	70 55.792	30255	254	5.0	36	991.3	828.0	
01/28 22:20:03	42 21.612	70 55.250	29248	256	9.4	42	991.3	828.0	
01/28 22:25:01	42 22.030	70 54.499	28068	257	10.8	62	991.3	828.0	
01/28 22:30:01	42 22.375	70 53.662	26809	258	9.1	73	0.4	-0.2	
01/28 22:35:02	42 22.575	70 52.699	25439	258	9.0	87	0.4	-0.2	
01/28 22:40:01	42 22.799	70 51.753	24085	259	8.6	68	0.4	-0.2	
01/28 22:45:02	42 23.001	70 50.790	22716	259	8.7	76	0.4	-0.2	
01/28 22:50:02	42 23.219	70 49.823	21336	259	9.9	76	0.4	-0.2	
01/28 22:55:03	42 23.434	70 48.867	19975	260	9.6	80	0.4	-0.2	
01/28 23:00:03	42 23.644	70 47.924	18632	260	9.2	78	0.4	-0.2	
01/28 23:05:00	42 23.861	70 46.984	17294	261	9.5	82	0.4	-0.2	
01/28 23:10:02	42 24.073	70 46.057	15975	261	8.2	73	0.4	-0.2	
01/28 23:15:00	42 24.273	70 45.165	14711	262	9.4	72	0.4	-0.2	
01/28 23:20:02	42 24.470	70 44.286	13468	263	8.3	81	0.4	-0.2	
01/28 23:25:05	42 24.682	70 43.372	12176	264	9.3	75	0.4	-0.2	
01/28 23:30:00	42 24.909	70 42.484	10924	265	6.9	63	0.4	-0.2	
01/28 23:35:00	42 25.089	70 41.574	9655	267	6.6	99	0.4	-0.2	
01/28 23:40:04	42 25.328	70 40.616	8326	269	10.2	70	0.4	-0.2	

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/28 23:45:01	42 25.484	70 39.685	7051	271	9.9	71	0.4	-0.2	
01/28 23:50:00	42 25.619	70 38.737	5764	274	9.1	68	0.4	-0.2	
01/28 23:55:01	42 25.760	70 37.825	4549	279	10.2	61	0.4	-0.2	
01/29 00:00:01	42 25.864	70 36.944	3404	285	7.2	81	0.4	-0.2	
01/29 00:05:02	42 25.991	70 36.018	2307	299	5.5	92	0.4	-0.2	
01/29 00:10:04	42 26.124	70 35.080	1548	332	10.7	71	0.4	-0.2	
01/29 00:15:03	42 25.910	70 34.526	968	2	7.7	177	0.4	-0.2	
01/29 00:20:00	42 25.518	70 34.558	243	357	2.3	176	0.4	-0.2	
01/29 00:22:15	42 25.378	70 34.540	19	149	4.3	184	0.4	-0.2	DUMP
01/29 00:22:22	42 25.378	70 34.540	19	149	3.4	176	0.4	-0.2	DUMP
01/29 00:22:28	42 25.370	70 34.533	38	149	3.5	162	0.4	-0.2	DUMP
01/29 00:22:35	42 25.370	70 34.533	38	149	2.8	155	0.4	-0.2	DUMP
01/29 00:22:42	42 25.352	70 34.535	67	165	3.8	168	0.4	-0.2	DUMP
01/29 04:05:00	42 20.213	70 56.359	31418	252	12.8	60	991.3	828.0	
01/29 04:10:00	42 20.925	70 55.782	30279	254	7.9	31	991.3	828.0	
01/29 04:15:01	42 21.689	70 55.200	29148	256	11.0	45	991.3	828.0	
01/29 04:20:02	42 22.150	70 54.312	27768	258	8.4	67	991.3	828.0	
01/29 04:25:04	42 22.393	70 53.258	26260	258	11.0	87	0.2	-0.2	
01/29 04:30:03	42 22.531	70 52.231	24828	258	8.8	96	0.2	-0.2	
01/29 04:35:04	42 22.694	70 51.176	23350	258	9.9	90	0.2	-0.2	
01/29 04:40:02	42 22.853	70 50.147	21908	258	9.7	84	0.2	-0.2	
01/29 04:45:02	42 23.017	70 49.136	20489	258	8.9	78	0.2	-0.2	
01/29 04:50:03	42 23.177	70 48.138	19088	258	7.7	76	0.2	-0.2	
01/29 04:55:05	42 23.325	70 47.114	17656	258	8.7	82	0.2	-0.2	
01/29 05:00:02	42 23.479	70 46.093	16227	257	9.1	88	0.2	-0.2	
01/29 05:05:01	42 23.638	70 45.121	14863	257	8.4	76	0.2	-0.2	
01/29 05:10:01	42 23.794	70 44.131	13474	257	7.7	93	0.2	-0.2	
01/29 05:15:04	42 23.947	70 43.122	12061	257	8.6	83	0.2	-0.2	
01/29 05:20:03	42 24.158	70 42.173	10705	258	8.1	67	0.2	-0.2	
01/29 05:25:01	42 24.366	70 41.205	9327	258	8.5	69	0.2	-0.2	
01/29 05:30:04	42 24.561	70 40.226	7940	259	8.9	84	0.2	-0.2	
01/29 05:35:02	42 24.780	70 39.250	6548	260	9.5	79	0.2	-0.2	
01/29 05:40:00	42 25.004	70 38.292	5186	262	10.0	67	0.2	-0.2	
01/29 05:45:01	42 25.189	70 37.335	3842	265	8.1	56	0.2	-0.2	
01/29 05:50:02	42 25.407	70 36.354	2479	271	12.0	65	0.2	-0.2	
01/29 05:55:00	42 25.638	70 35.448	1320	291	8.3	71	0.2	-0.2	
01/29 06:00:01	42 25.841	70 34.629	848	352	5.7	84	0.2	-0.2	
01/29 06:05:04	42 25.630	70 34.394	496	25	4.2	246	0.2	-0.2	
01/29 06:09:22	42 25.396	70 34.602	77	283	1.4	220	0.2	-0.2	DUMP
01/29 06:09:29	42 25.387	70 34.595	66	271	1.6	171	0.2	-0.2	DUMP
01/29 06:09:35	42 25.388	70 34.611	88	271	1.6	209	0.2	-0.2	DUMP
01/29 06:09:41	42 25.379	70 34.604	79	259	2.1	191	0.2	-0.2	DUMP
01/29 06:09:48	42 25.379	70 34.604	79	259	2.0	185	0.2	-0.2	DUMP
01/29 06:09:54	42 25.379	70 34.604	79	259	1.5	181	0.2	-0.2	DUMP
01/29 06:10:01	42 25.370	70 34.581	56	236	2.9	133	0.2	-0.2	DUMP
01/29 09:35:00	42 20.026	70 56.822	32128	252	8.2	76	991.3	828.0	
01/29 09:40:03	42 20.494	70 56.169	31013	253	10.0	39	991.3	828.0	
01/29 09:45:00	42 21.034	70 55.663	30068	254	7.1	55	991.3	828.0	
01/29 09:50:03	42 21.673	70 55.157	29097	256	8.1	28	991.3	828.0	
01/29 09:55:00	42 22.101	70 54.368	27862	257	7.2	57	991.3	828.0	
01/29 10:00:01	42 22.366	70 53.454	26533	258	7.9	87	0.4	-0.2	

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FB
01/29 10:05:02	42 22.549	70 52.447	25111	258	9.1	72	0.4	-0.2	
01/29 10:10:03	42 22.739	70 51.412	23649	258	9.9	76	0.4	-0.2	
01/29 10:15:00	42 22.934	70 50.396	22211	258	9.7	84	0.4	-0.2	
01/29 10:20:00	42 23.144	70 49.376	20761	258	10.8	83	0.4	-0.2	
01/29 10:25:01	42 23.360	70 48.358	19314	259	8.1	80	0.4	-0.2	
01/29 10:30:04	42 23.563	70 47.330	17858	259	10.7	78	0.4	-0.2	
01/29 10:35:00	42 23.770	70 46.335	16446	260	10.5	83	0.4	-0.2	
01/29 10:40:04	42 23.984	70 45.298	14975	260	9.4	86	0.4	-0.2	
01/29 10:45:02	42 24.202	70 44.295	13551	261	9.0	85	0.4	-0.2	
01/29 10:50:02	42 24.417	70 43.272	12103	261	9.6	77	0.4	-0.2	
01/29 10:55:02	42 24.636	70 42.284	10704	263	9.4	67	0.4	-0.2	
01/29 11:00:03	42 24.835	70 41.262	9269	264	8.8	80	0.4	-0.2	
01/29 11:05:02	42 25.047	70 40.251	7850	265	8.4	85	0.4	-0.2	
01/29 11:10:03	42 25.274	70 39.218	6411	268	10.0	82	0.4	-0.2	
01/29 11:15:04	42 25.497	70 38.213	5033	272	9.6	68	0.4	-0.2	
01/29 11:20:03	42 25.698	70 37.206	3692	279	9.8	73	0.4	-0.2	
01/29 11:25:02	42 25.852	70 36.223	2455	291	7.7	81	0.4	-0.2	
01/29 11:30:05	42 25.627	70 35.138	924	299	8.4	119	0.4	-0.2	
01/29 11:34:56	42 25.387	70 34.563	22	271	1.6	123	0.4	-0.2	DUMP
01/29 11:35:03	42 25.387	70 34.563	22	271	1.2	134	0.4	-0.2	DUMP
01/29 11:35:09	42 25.378	70 34.556	20	217	2.1	147	0.4	-0.2	DUMP
01/29 11:35:15	42 25.378	70 34.540	19	149	3.0	126	0.4	-0.2	DUMP
01/29 11:35:22	42 25.370	70 34.533	38	149	4.0	128	0.4	-0.2	DUMP
01/29 11:35:28	42 25.378	70 34.540	19	149	2.4	119	0.4	-0.2	DUMP
01/29 11:35:35	42 25.370	70 34.533	38	149	2.3	127	0.4	-0.2	DUMP
01/29 11:35:42	42 25.369	70 34.517	53	128	3.0	114	0.4	-0.2	DUMP
01/29 11:35:58	42 25.369	70 34.501	71	118	3.1	100	0.4	-0.2	DUMP
01/29 11:36:04	42 25.360	70 34.494	88	124	3.3	110	0.4	-0.2	DUMP
01/29 11:36:10	42 25.352	70 34.503	89	137	2.9	137	0.4	-0.2	DUMP
01/29 11:36:16	42 25.343	70 34.496	108	139	3.6	154	0.4	-0.2	DUMP
01/29 11:36:22	42 25.343	70 34.480	123	131	4.0	142	0.4	-0.2	DUMP
01/29 11:36:28	42 25.334	70 34.473	142	134	4.7	139	0.4	-0.2	DUMP
01/29 11:36:34	42 25.325	70 34.465	160	136	5.2	141	0.4	-0.2	DUMP
01/29 11:36:41	42 25.325	70 34.465	160	136	4.4	142	0.4	-0.2	DUMP
01/29 11:36:47	42 25.308	70 34.467	183	143	4.8	159	0.4	-0.2	DUMP
01/29 11:36:53	42 25.299	70 34.476	189	149	5.1	179	0.4	-0.2	DUMP
01/29 11:36:59	42 25.291	70 34.485	198	154	5.5	195	0.4	-0.2	DUMP
01/29 11:37:06	42 25.291	70 34.485	198	154	4.7	203	0.4	-0.2	DUMP
01/29 11:35:22	42 25.370	70 34.533	38	149	4.0	128	0.4	-0.2	DUMP
01/29 11:35:28	42 25.378	70 34.540	19	149	2.4	119	0.4	-0.2	DUMP
01/29 11:35:35	42 25.370	70 34.533	38	149	2.3	127	0.4	-0.2	DUMP
01/29 11:35:42	42 25.369	70 34.517	53	128	3.0	114	0.4	-0.2	DUMP
01/29 15:20:02	42 20.299	70 57.846	33321	254	2.8	241	991.3	828.0	
01/29 15:25:00	42 20.270	70 58.009	33551	254	1.6	249	991.3	828.0	
01/29 15:30:00	42 20.215	70 58.277	33932	254	2.8	269	991.3	828.0	
01/29 15:35:03	42 20.185	70 58.594	34365	254	4.8	266	991.3	828.0	
01/29 15:40:04	42 19.851	70 58.112	33913	252	9.8	79	991.3	828.0	
01/29 15:45:04	42 20.012	70 56.904	32243	252	14.1	85	991.3	828.0	
01/29 15:50:01	42 20.573	70 55.934	30663	253	11.3	44	991.3	828.0	
01/29 15:55:05	42 21.414	70 55.317	29426	256	11.4	37	991.3	828.0	
01/29 16:00:00	42 22.054	70 54.565	28145	257	7.8	62	991.3	828.0	

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/29 16:05:01	42 22.345	70 53.501	26603	258	10.3	83	0.3	-0.2	
01/29 16:10:01	42 22.514	70 52.420	25088	258	10.1	85	0.3	-0.2	
01/29 16:15:05	42 22.689	70 51.296	23513	258	10.6	84	0.3	-0.2	
01/29 16:20:02	42 22.879	70 50.167	21925	258	12.4	69	0.3	-0.2	
01/29 16:25:03	42 23.027	70 49.098	20433	258	11.3	79	0.3	-0.2	
01/29 16:30:00	42 23.198	70 48.030	18934	258	11.6	75	0.3	-0.2	
01/29 16:35:00	42 23.366	70 46.958	17431	258	9.9	83	0.3	-0.2	
01/29 16:40:01	42 23.539	70 45.858	15889	258	10.1	88	0.3	-0.2	
01/29 16:45:02	42 23.726	70 44.814	14416	258	9.2	85	0.3	-0.2	
01/29 16:50:02	42 23.918	70 43.742	12904	258	9.6	85	0.3	-0.2	
01/29 16:55:04	42 24.096	70 42.705	11444	258	9.0	87	0.3	-0.2	
01/29 17:00:05	42 24.307	70 41.631	9921	258	11.3	76	0.3	-0.2	
01/29 17:05:00	42 24.496	70 40.584	8444	259	10.5	74	0.3	-0.2	
01/29 17:10:03	42 24.699	70 39.501	6914	259	10.7	74	0.3	-0.2	
01/29 17:15:04	42 24.872	70 38.471	5466	260	10.1	72	0.3	-0.2	
01/29 17:20:05	42 25.049	70 37.428	4001	261	9.9	75	0.3	-0.2	
01/29 17:25:03	42 25.214	70 36.358	2504	263	10.7	71	0.3	-0.2	
01/29 17:30:01	42 25.323	70 35.288	1024	263	9.4	74	0.3	-0.2	
01/29 17:35:04	42 25.378	70 34.540	19	149	3.9	101	0.3	-0.2	
01/29 17:35:14	42 25.387	70 34.531	22	91	3.0	75	0.3	-0.2	DUMP
01/29 17:35:20	42 25.387	70 34.531	22	91	2.3	63	0.3	-0.2	DUMP
01/29 17:35:26	42 25.396	70 34.522	38	65	2.8	46	0.3	-0.2	DUMP
01/29 17:35:33	42 25.387	70 34.515	44	91	2.3	68	0.3	-0.2	DUMP
01/29 17:35:50	42 25.395	70 34.490	79	79	3.3	74	0.3	-0.2	DUMP
01/29 17:35:56	42 25.395	70 34.490	79	79	3.0	74	0.3	-0.2	DUMP
01/29 17:36:02	42 25.395	70 34.474	101	81	3.5	80	0.3	-0.2	DUMP
01/29 17:36:08	42 25.386	70 34.467	110	91	3.8	100	0.3	-0.2	DUMP
01/29 17:36:14	42 25.395	70 34.458	123	83	3.9	91	0.3	-0.2	DUMP
01/29 17:36:20	42 25.386	70 34.451	132	91	3.9	103	0.3	-0.2	DUMP
01/29 17:36:27	42 25.395	70 34.442	144	84	3.7	90	0.3	-0.2	DUMP
01/29 17:36:33	42 25.395	70 34.426	166	85	4.4	85	0.3	-0.2	DUMP
01/29 17:36:39	42 25.395	70 34.410	188	86	5.2	85	0.3	-0.2	DUMP
01/29 17:36:45	42 25.394	70 34.394	210	86	5.9	86	0.3	-0.2	DUMP
01/29 17:36:52	42 25.386	70 34.387	219	91	5.7	98	0.3	-0.2	DUMP
01/29 17:36:59	42 25.377	70 34.380	230	95	5.1	115	0.3	-0.2	DUMP
01/29 17:37:06	42 25.360	70 34.398	211	104	4.7	157	0.3	-0.2	DUMP
01/29 17:37:12	42 25.351	70 34.391	225	107	5.4	172	0.3	-0.2	DUMP
01/29 17:37:19	42 25.333	70 34.393	234	115	6.7	180	0.3	-0.2	DUMP
01/29 17:37:26	42 25.325	70 34.417	212	123	7.3	201	0.3	-0.2	DUMP
01/29 17:35:56	42 25.395	70 34.490	79	79	3.0	74	0.3	-0.2	DUMP
01/29 17:36:02	42 25.395	70 34.474	101	81	3.5	80	0.3	-0.2	DUMP
01/29 17:36:08	42 25.386	70 34.467	110	91	3.8	100	0.3	-0.2	DUMP
01/29 17:36:14	42 25.395	70 34.458	123	83	3.9	91	0.3	-0.2	DUMP
01/29 17:36:20	42 25.386	70 34.451	132	91	3.9	103	0.3	-0.2	DUMP
01/29 17:36:27	42 25.395	70 34.442	145	84	3.7	90	0.3	-0.2	DUMP
01/29 17:36:33	42 25.395	70 34.426	166	85	4.4	85	0.3	-0.2	DUMP
01/29 17:36:39	42 25.395	70 34.410	188	86	5.2	85	0.3	-0.2	DUMP
01/29 17:36:45	42 25.394	70 34.394	210	86	5.9	86	0.3	-0.2	DUMP
01/29 17:36:52	42 25.386	70 34.387	219	91	5.7	98	0.3	-0.2	DUMP
01/29 17:36:59	42 25.377	70 34.380	230	95	5.1	115	0.3	-0.2	DUMP
01/29 17:37:06	42 25.360	70 34.398	211	104	4.7	157	0.3	-0.2	DUMP

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/29 17:37:12	42 25.351	70 34.391	225	107	5.4	172	0.3	-0.2	DUMP
01/29 17:37:19	42 25.333	70 34.393	234	115	6.7	180	0.3	-0.2	DUMP
01/29 17:37:26	42 25.325	70 34.417	212	123	7.3	201	0.3	-0.2	DUMP
01/29 22:15:01	42 20.230	70 57.454	32843	253	7.5	130	991.3	828.0	
01/29 22:20:02	42 20.140	70 56.644	31832	252	7.6	60	991.3	828.0	
01/29 22:25:03	42 20.659	70 56.046	30763	253	8.3	42	991.3	828.0	
01/29 22:30:03	42 21.282	70 55.527	29766	255	9.4	33	991.3	828.0	
01/29 22:35:00	42 21.824	70 54.916	28710	257	8.3	61	991.3	828.0	
01/29 22:40:00	42 22.291	70 54.063	27379	258	8.9	59	0.2	-0.1	
01/29 22:45:04	42 22.476	70 53.058	25959	258	7.7	83	0.2	-0.1	
01/29 22:50:01	42 22.669	70 52.011	24479	258	9.7	90	0.2	-0.1	
01/29 22:55:02	42 22.895	70 50.942	22958	258	10.3	70	0.2	-0.1	
01/29 23:00:02	42 23.099	70 49.885	21463	259	8.5	71	0.2	-0.1	
01/29 23:05:02	42 23.317	70 48.824	19956	259	8.8	87	0.2	-0.1	
01/29 23:10:01	42 23.558	70 47.794	18485	259	8.5	72	0.2	-0.1	
01/29 23:15:04	42 23.796	70 46.715	16950	260	11.5	72	0.2	-0.1	
01/29 23:20:01	42 24.029	70 45.662	15454	261	11.5	77	0.2	-0.1	
01/29 23:25:02	42 24.267	70 44.612	13962	261	9.2	72	0.2	-0.1	
01/29 23:30:02	42 24.492	70 43.551	12463	262	9.4	74	0.2	-0.1	
01/29 23:35:03	42 24.731	70 42.485	10956	264	8.1	73	0.2	-0.1	
01/29 23:40:01	42 24.966	70 41.414	9452	265	9.8	72	0.2	-0.1	
01/29 23:45:05	42 25.179	70 40.325	7935	267	10.1	79	0.2	-0.1	
01/29 23:50:03	42 25.309	70 39.231	6427	269	10.3	90	0.2	-0.1	
01/29 23:55:00	42 25.347	70 38.141	4930	269	10.6	87	0.2	-0.1	
01/30 00:00:01	42 25.373	70 37.024	3398	270	9.3	88	0.2	-0.1	
01/30 00:05:04	42 25.405	70 35.877	1825	271	9.8	94	0.2	-0.1	
01/30 00:10:05	42 25.407	70 34.833	394	275	9.0	91	0.2	-0.1	
01/30 00:15:00	42 25.360	70 34.494	88	124	0.6	207	0.2	-0.1	
01/30 00:19:52	42 25.370	70 34.549	32	184	1.9	217	0.2	-0.1	DUMP
01/30 00:19:59	42 25.361	70 34.558	50	197	2.9	201	0.2	-0.1	DUMP
01/30 00:20:05	42 25.370	70 34.565	40	217	2.1	223	0.2	-0.1	DUMP
01/30 00:20:11	42 25.361	70 34.574	60	217	2.7	230	0.2	-0.1	DUMP
01/30 00:20:18	42 25.361	70 34.590	76	231	3.6	247	0.2	-0.1	DUMP
01/30 00:20:24	42 25.361	70 34.590	76	231	3.3	252	0.2	-0.1	DUMP
01/30 00:20:31	42 25.370	70 34.597	75	245	3.1	279	0.2	-0.1	DUMP
01/30 00:20:48	42 25.353	70 34.631	131	241	4.4	255	0.2	-0.1	DUMP
01/30 00:20:53	42 25.353	70 34.646	150	245	5.0	256	0.2	-0.1	DUMP
01/30 00:20:59	42 25.353	70 34.647	150	245	4.5	256	0.2	-0.1	DUMP
01/30 00:21:05	42 25.353	70 34.662	170	248	4.7	261	0.2	-0.1	DUMP
01/30 00:21:11	42 25.345	70 34.687	208	248	6.2	256	0.2	-0.1	DUMP
01/30 00:21:18	42 25.336	70 34.712	245	247	8.1	252	0.2	-0.1	DUMP
01/30 00:21:25	42 25.336	70 34.728	266	249	8.3	253	0.2	-0.1	DUMP
01/30 00:21:31	42 25.328	70 34.737	283	247	7.7	249	0.2	-0.1	DUMP
01/30 00:21:38	42 25.328	70 34.753	303	249	7.2	250	0.2	-0.1	DUMP
01/30 00:21:44	42 25.319	70 34.762	320	247	6.6	245	0.2	-0.1	DUMP
01/30 00:21:50	42 25.319	70 34.778	341	248	6.2	248	0.2	-0.1	DUMP
01/30 00:21:56	42 25.319	70 34.794	361	250	6.1	255	0.2	-0.1	DUMP
01/30 00:22:03	42 25.319	70 34.810	382	251	6.2	261	0.2	-0.1	DUMP
01/30 00:20:18	42 25.361	70 34.590	76	231	3.6	247	0.2	-0.1	DUMP
01/30 00:20:24	42 25.361	70 34.590	75	231	3.3	252	0.2	-0.1	DUMP
01/30 00:20:31	42 25.370	70 34.597	75	245	3.1	279	0.2	-0.1	DUMP

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/30 04:55:00	42 20.038	70 58.268	34014	253	14.8	97	991.3	828.0	
01/30 05:00:00	42 20.026	70 57.131	32532	252	9.6	94	991.3	828.0	
01/30 05:05:01	42 20.497	70 56.109	30933	253	12.7	40	991.3	828.0	
01/30 05:10:04	42 21.273	70 55.535	29781	255	11.1	39	991.3	828.0	
01/30 05:15:02	42 21.903	70 54.821	28550	257	9.8	64	991.3	828.0	
01/30 05:20:05	42 22.322	70 53.808	27025	258	10.7	73	0.3	-0.1	
01/30 05:25:00	42 22.499	70 52.750	25536	258	10.4	88	0.3	-0.1	
01/30 05:30:00	42 22.647	70 51.652	24007	258	11.7	74	0.3	-0.1	
01/30 05:35:01	42 22.757	70 50.524	22451	257	9.9	91	0.3	-0.1	
01/30 05:40:04	42 22.889	70 49.412	20909	257	10.1	88	0.3	-0.1	
01/30 05:45:01	42 23.025	70 48.348	19430	257	8.8	82	0.3	-0.1	
01/30 05:50:04	42 23.204	70 47.238	17873	257	9.8	83	0.3	-0.1	
01/30 05:55:03	42 23.423	70 46.189	16380	257	9.0	83	0.3	-0.1	
01/30 06:00:03	42 23.646	70 45.143	14889	258	8.1	83	0.3	-0.1	
01/30 06:05:00	42 23.875	70 44.085	13380	258	11.0	76	0.3	-0.1	
01/30 06:10:02	42 24.109	70 43.029	11874	259	10.2	73	0.3	-0.1	
01/30 06:15:05	42 24.356	70 41.984	10378	259	9.4	73	0.3	-0.1	
01/30 06:20:05	42 24.608	70 40.941	8888	261	10.7	73	0.3	-0.1	
01/30 06:25:00	42 24.846	70 39.933	7456	262	11.4	65	0.3	-0.1	
01/30 06:30:01	42 25.090	70 38.898	5994	265	10.7	72	0.3	-0.1	
01/30 06:35:02	42 25.339	70 37.865	4553	269	9.8	71	0.3	-0.1	
01/30 06:40:05	42 25.469	70 36.800	3095	273	9.8	87	0.3	-0.1	
01/30 06:45:05	42 25.552	70 35.727	1648	281	10.0	86	0.3	-0.1	
01/30 06:50:03	42 25.485	70 34.817	412	296	4.5	114	0.3	-0.1	
01/30 06:53:26	42 25.378	70 34.556	20	217	2.6	161	0.3	-0.1	DUMP
01/30 06:53:32	42 25.387	70 34.547	0	20	1.4	122	0.3	-0.1	DUMP
01/30 06:53:38	42 25.387	70 34.531	22	91	2.6	87	0.3	-0.1	DUMP
01/30 06:53:44	42 25.387	70 34.547	0	338	1.3	68	0.3	-0.1	DUMP
01/30 06:53:51	42 25.387	70 34.531	22	91	1.8	73	0.3	-0.1	DUMP
01/30 06:53:57	42 25.378	70 34.540	19	149	1.0	126	0.3	-0.1	DUMP
01/30 06:54:04	42 25.378	70 34.524	36	117	1.9	121	0.3	-0.1	DUMP
01/30 06:54:11	42 25.378	70 34.508	56	107	3.2	107	0.3	-0.1	DUMP
01/30 06:54:29	42 25.378	70 34.492	77	103	3.3	97	0.3	-0.1	DUMP
01/30 06:54:35	42 25.378	70 34.492	77	103	2.8	96	0.3	-0.1	DUMP
01/30 06:54:41	42 25.378	70 34.476	99	100	3.3	93	0.3	-0.1	DUMP
01/30 06:54:47	42 25.378	70 34.476	99	100	2.9	91	0.3	-0.1	DUMP
01/30 06:54:53	42 25.369	70 34.469	112	107	3.0	111	0.3	-0.1	DUMP
01/30 06:55:00	42 25.360	70 34.478	107	118	2.7	151	0.3	-0.1	DUMP
01/30 06:55:06	42 25.352	70 34.471	124	122	3.7	164	0.3	-0.1	DUMP
01/30 06:55:12	42 25.352	70 34.471	124	122	3.4	168	0.3	-0.1	DUMP
01/30 06:55:18	42 25.334	70 34.473	142	134	4.6	177	0.3	-0.1	DUMP
01/30 06:55:24	42 25.326	70 34.481	145	142	5.3	189	0.3	-0.1	DUMP
01/30 06:55:31	42 25.326	70 34.481	145	142	4.6	194	0.3	-0.1	DUMP
01/30 06:55:37	42 25.317	70 34.490	152	149	4.6	203	0.3	-0.1	DUMP
01/30 06:55:51	42 25.387	70 34.531	22	91	1.8	73	0.3	-0.1	DUMP
01/30 06:53:57	42 25.378	70 34.540	19	149	1.0	126	0.3	-0.1	DUMP
01/30 06:54:04	42 25.378	70 34.524	36	117	1.9	121	0.3	-0.1	DUMP
01/30 06:54:11	42 25.378	70 34.508	56	107	3.2	107	0.3	-0.1	DUMP
01/30 07:00:02	42 25.192	70 35.405	1231	253	11.0	260	0.3	-0.1	DUMP
01/30 07:05:03	42 25.040	70 36.629	2927	257	12.6	264	0.3	-0.1	DUMP
01/30 07:10:02	42 24.900	70 37.798	4550	259	10.4	267	0.3	-0.1	DUMP

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FS
01/30 07:15:00	42 24.753	70 38.930	6126	259	10.8	261	0.3	-0.1	DUMP
01/30 07:20:03	42 24.754	70 39.245	6550	260	3.7	142	0.3	-0.1	DUMP
01/30 07:25:02	42 24.692	70 39.305	6653	259	4.6	297	0.3	-0.1	DUMP
01/30 07:30:03	42 24.569	70 40.343	8094	259	10.9	260	0.3	-0.1	DUMP
01/30 07:35:01	42 24.434	70 41.463	9650	259	10.8	260	0.3	-0.1	DUMP
01/30 07:40:05	42 24.294	70 42.610	11244	260	11.3	261	0.3	-0.1	DUMP
01/30 07:45:02	42 24.131	70 43.769	12862	260	9.3	257	0.3	-0.1	DUMP
01/30 07:50:00	42 23.964	70 44.954	14517	260	11.2	264	0.3	-0.1	DUMP
01/30 07:55:03	42 23.774	70 46.167	16217	259	11.0	261	0.3	-0.1	DUMP
01/30 08:00:01	42 23.607	70 47.349	17868	259	11.2	269	0.3	-0.1	DUMP
01/30 08:05:05	42 23.418	70 48.512	19501	259	7.7	255	0.3	-0.1	DUMP
01/30 08:10:03	42 23.264	70 49.328	20654	259	6.9	258	0.3	-0.1	DUMP
01/30 08:15:00	42 23.133	70 50.192	21864	259	8.9	261	0.3	-0.1	DUMP
01/30 16:45:00	42 20.004	70 57.625	33189	253	12.0	110	991.3	828.0	
01/30 16:50:04	42 20.209	70 56.418	31497	252	10.0	66	991.3	828.0	
01/30 16:55:01	42 20.933	70 55.649	30099	254	8.7	30	991.3	828.0	
01/30 17:00:01	42 21.771	70 55.046	28906	257	9.8	39	991.3	828.0	
01/30 17:05:01	42 22.253	70 54.096	27438	258	10.1	78	0.4	0.0	
01/30 17:10:05	42 22.442	70 53.001	25895	258	10.2	91	0.4	0.0	
01/30 17:15:03	42 22.646	70 51.900	24340	258	12.0	83	0.4	0.0	
01/30 17:20:01	42 22.818	70 50.820	22824	258	9.6	98	0.4	0.0	
01/30 17:25:02	42 23.014	70 49.711	21261	258	11.1	81	0.4	0.0	
01/30 17:30:03	42 23.197	70 48.622	19729	258	10.1	83	0.4	0.0	
01/30 17:35:03	42 23.376	70 47.528	18192	258	11.7	81	0.4	0.0	
01/30 17:40:03	42 23.569	70 46.459	16685	258	9.9	77	0.4	0.0	
01/30 17:45:00	42 23.739	70 45.388	15182	258	10.1	82	0.4	0.0	
01/30 17:50:00	42 23.925	70 44.296	13645	259	9.0	83	0.4	0.0	
01/30 17:55:01	42 24.141	70 43.243	12150	259	8.8	75	0.4	0.0	
01/30 18:00:02	42 24.362	70 42.177	10637	260	9.6	79	0.4	0.0	
01/30 18:05:02	42 24.650	70 41.131	9135	261	9.7	71	0.4	0.0	
01/30 18:10:03	42 24.934	70 40.097	7660	264	9.7	66	0.4	0.0	
01/30 18:15:03	42 25.186	70 39.070	6215	267	9.2	72	0.4	0.0	
01/30 18:20:01	42 25.426	70 38.062	4822	271	7.9	75	0.4	0.0	
01/30 18:25:01	42 25.601	70 36.985	3368	277	10.4	83	0.4	0.0	
01/30 18:30:01	42 25.684	70 35.913	1953	286	10.4	93	0.4	0.0	
01/30 18:35:01	42 25.547	70 34.898	566	302	7.5	113	0.4	0.0	
01/30 18:38:53	42 25.396	70 34.554	19	329	2.0	132	0.4	0.0	DUMP
01/30 18:38:59	42 25.387	70 34.547	0	162	2.6	147	0.4	0.0	DUMP
01/30 18:39:06	42 25.387	70 34.547	0	13	2.3	152	0.4	0.0	DUMP
01/30 18:39:12	42 25.378	70 34.540	19	149	3.0	153	0.4	0.0	DUMP
01/30 18:39:18	42 25.387	70 34.531	22	91	2.4	124	0.4	0.0	DUMP
01/30 18:39:24	42 25.378	70 34.540	19	149	1.8	145	0.4	0.0	DUMP
01/30 18:39:31	42 25.370	70 34.533	38	149	2.5	156	0.4	0.0	DUMP
01/30 18:39:37	42 25.361	70 34.526	57	149	3.5	156	0.4	0.0	DUMP
01/30 18:39:44	42 25.369	70 34.517	53	128	2.8	131	0.4	0.0	DUMP
01/30 22:00:02	42 20.135	70 58.649	34463	254	4.1	119	991.3	828.0	
01/30 22:05:02	42 20.051	70 57.922	33553	253	10.4	74	991.3	828.0	
01/30 22:10:03	42 20.089	70 57.009	32336	252	7.3	75	991.3	828.0	
01/30 22:15:03	42 20.420	70 56.314	31244	253	6.2	18	991.3	828.0	
01/30 22:20:00	42 20.957	70 55.869	30377	254	7.8	44	991.3	828.0	
01/30 22:25:01	42 21.522	70 55.383	29465	256	5.6	39	991.3	828.0	



## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/30 22:30:01	42 22.006	70 54.605	28219	257	9.6	52	991.3	828.0	
01/30 22:35:04	42 22.334	70 53.740	26929	258	8.9	88	0.4	0.0	
01/30 22:40:02	42 22.555	70 52.730	25489	258	11.9	72	0.4	0.0	
01/30 22:45:02	42 22.735	70 51.751	24105	258	6.7	92	0.4	0.0	
01/30 22:50:00	42 22.931	70 50.736	22668	258	9.0	84	0.4	0.0	
01/30 22:55:03	42 23.114	70 49.711	21223	259	9.8	85	0.4	0.0	
01/30 23:00:00	42 23.312	70 48.711	19806	259	9.8	72	0.4	0.0	
01/30 23:05:01	42 23.506	70 47.707	18386	259	9.2	78	0.4	0.0	
01/30 23:10:01	42 23.706	70 46.692	16949	259	11.6	80	0.4	0.0	
01/30 23:15:02	42 23.912	70 45.680	15514	260	11.6	74	0.4	0.0	
01/30 23:20:03	42 24.104	70 44.688	14113	260	7.7	80	0.4	0.0	
01/30 23:25:03	42 24.303	70 43.669	12673	261	9.1	70	0.4	0.0	
01/30 23:30:04	42 24.516	70 42.613	11182	262	12.2	80	0.4	0.0	
01/30 23:35:04	42 24.707	70 41.586	9737	263	11.3	76	0.4	0.0	
01/30 23:40:02	42 24.904	70 40.546	8278	264	9.9	71	0.4	0.0	
01/30 23:45:02	42 25.079	70 39.504	6824	265	10.3	76	0.4	0.0	
01/30 23:50:00	42 25.259	70 38.496	5423	267	8.8	70	0.4	0.0	
01/30 23:55:04	42 25.383	70 37.411	3928	270	7.8	95	0.4	0.0	
01/31 00:00:04	42 25.459	70 36.317	2432	273	11.4	99	0.4	0.0	
01/31 00:05:01	42 25.453	70 35.251	974	277	10.6	84	0.4	0.0	
01/31 00:09:58	42 25.378	70 34.540	19	149	2.5	102	0.4	0.0	DUMP
01/31 00:10:05	42 25.370	70 34.533	38	149	2.6	117	0.4	0.0	DUMP
01/31 00:10:11	42 25.370	70 34.549	32	184	1.2	165	0.4	0.0	DUMP
01/31 00:10:17	42 25.370	70 34.533	38	149	1.2	140	0.4	0.0	DUMP
01/31 00:10:24	42 25.369	70 34.517	53	128	2.4	106	0.4	0.0	DUMP
01/31 00:10:30	42 25.369	70 34.517	53	128	2.4	99	0.4	0.0	DUMP
01/31 03:55:03	42 20.228	70 56.262	31283	252	12.7	51	991.3	828.0	
01/31 04:00:01	42 20.998	70 55.636	30050	254	9.0	45	991.3	828.0	
01/31 04:05:02	42 21.781	70 55.038	28891	257	7.4	50	991.3	828.0	
01/31 04:10:03	42 22.253	70 54.081	27418	258	8.3	81	0.3	0.0	
01/31 04:15:00	42 22.422	70 53.032	25945	258	10.0	82	0.3	0.0	
01/31 04:20:01	42 22.597	70 51.971	24454	258	8.2	97	0.3	0.0	
01/31 04:25:04	42 22.770	70 50.876	22919	258	9.8	85	0.3	0.0	
01/31 04:30:00	42 22.929	70 49.816	21435	258	11.4	80	0.3	0.0	
01/31 04:35:00	42 23.093	70 48.759	19953	258	9.0	87	0.3	0.0	
01/31 04:40:01	42 23.282	70 47.643	18382	258	13.1	72	0.3	0.0	
01/31 04:45:00	42 23.448	70 46.584	16898	258	9.7	83	0.3	0.0	
01/31 04:50:01	42 23.638	70 45.497	15366	258	11.6	74	0.3	0.0	
01/31 04:55:04	42 23.824	70 44.421	13851	258	10.2	83	0.3	0.0	
01/31 05:00:02	42 24.023	70 43.370	12364	258	9.0	78	0.3	0.0	
01/31 05:05:03	42 24.227	70 42.290	10837	259	9.6	76	0.3	0.0	
01/31 05:10:03	42 24.437	70 41.214	9313	259	12.1	74	0.3	0.0	
01/31 09:55:01	42 22.564	70 52.101	24641	258	32.4	92	991.3	828.0	
01/31 10:00:01	42 22.764	70 51.027	23123	258	8.2	81	991.3	828.0	
01/31 10:05:01	42 22.922	70 50.013	21702	258	8.2	82	991.3	828.0	
01/31 10:10:04	42 23.069	70 48.943	20209	258	10.8	77	991.3	828.0	
01/31 10:15:05	42 23.229	70 47.928	18786	258	8.3	82	991.3	828.0	
01/31 10:20:05	42 23.395	70 46.887	17325	258	10.7	80	991.3	828.0	
01/31 10:25:00	42 23.584	70 45.877	15897	258	11.9	73	991.3	828.0	
01/31 10:30:00	42 23.761	70 44.842	14439	258	11.6	70	991.3	828.0	
01/31 10:35:04	42 23.908	70 43.797	12981	258	9.7	84	991.3	828.0	

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/31 10:40:03	42 24.078	70 42.738	11495	258	9.8	85	991.3	828.0	
01/31 10:45:00	42 24.253	70 41.713	10052	258	8.6	85	991.3	828.0	
01/31 10:50:00	42 24.451	70 40.659	8561	258	9.0	84	991.3	828.0	
01/31 10:55:02	42 24.672	70 39.605	7064	259	11.2	71	991.3	828.0	
01/31 11:00:03	42 24.889	70 38.595	5629	261	9.1	77	991.3	828.0	
01/31 11:05:03	42 25.111	70 37.524	4116	263	9.3	83	991.3	828.0	
01/31 11:10:03	42 25.293	70 36.469	2642	266	8.9	81	991.3	828.0	
01/31 15:15:00	42 19.847	70 57.893	33628	252	8.8	163	991.3	828.0	
01/31 15:20:03	42 20.112	70 56.639	31840	252	14.0	77	991.3	828.0	
01/31 15:25:01	42 20.819	70 55.842	30411	254	8.8	46	991.3	828.0	
01/31 15:30:01	42 21.622	70 55.242	29233	256	11.8	22	991.3	828.0	
01/31 15:35:05	42 22.169	70 54.296	27739	258	10.4	58	991.3	828.0	
01/31 15:40:00	42 22.377	70 53.215	26208	258	10.7	94	0.2	-0.3	
01/31 15:45:00	42 22.557	70 52.049	24574	258	10.7	88	0.2	-0.3	
01/31 15:50:00	42 22.732	70 50.925	22998	258	11.0	87	0.2	-0.3	
01/31 15:55:01	42 22.876	70 49.775	21401	257	12.0	84	0.2	-0.3	
01/31 16:00:05	42 23.024	70 48.659	19847	257	7.3	98	0.2	-0.3	
01/31 16:05:02	42 23.187	70 47.506	18238	257	12.1	82	0.2	-0.3	
01/31 16:10:03	42 23.356	70 46.356	16630	257	11.0	79	0.2	-0.3	
01/31 16:15:03	42 23.519	70 45.231	15059	257	10.5	74	0.2	-0.3	
01/31 16:20:01	42 23.687	70 44.094	13469	256	11.1	80	0.2	-0.3	
01/31 16:25:02	42 23.852	70 42.952	11876	256	10.2	82	0.2	-0.3	
01/31 16:30:02	42 24.020	70 41.844	10325	256	10.0	80	0.2	-0.3	
01/31 16:35:00	42 24.212	70 40.720	8744	256	9.6	70	0.2	-0.3	
01/31 16:40:03	42 24.407	70 39.599	7164	255	8.4	90	0.2	-0.3	
01/31 16:45:01	42 24.634	70 38.486	5580	256	10.4	75	0.2	-0.3	
01/31 16:50:02	42 24.865	70 37.359	3977	256	12.9	69	0.2	-0.3	
01/31 16:55:00	42 25.082	70 36.220	2363	256	13.3	77	0.2	-0.3	
01/31 17:00:05	42 25.295	70 35.124	809	258	9.7	78	0.2	-0.3	
01/31 17:04:43	42 25.370	70 34.533	38	149	3.6	111	0.2	-0.3	DUMP
01/31 17:04:50	42 25.370	70 34.533	38	149	2.6	114	0.2	-0.3	DUMP
01/31 17:04:56	42 25.370	70 34.533	38	149	1.6	118	0.2	-0.3	DUMP
01/31 17:05:02	42 25.370	70 34.533	38	149	0.8	123	0.2	-0.3	DUMP
01/31 17:05:08	42 25.378	70 34.524	36	117	1.3	53	0.2	-0.3	DUMP
01/31 17:05:15	42 25.387	70 34.515	44	91	2.8	38	0.2	-0.3	DUMP
01/31 17:05:21	42 25.378	70 34.508	56	107	2.7	60	0.2	-0.3	DUMP
01/31 17:05:27	42 25.378	70 34.508	56	107	2.2	73	0.2	-0.3	DUMP
01/31 17:05:34	42 25.378	70 34.492	77	103	3.0	86	0.2	-0.3	DUMP
01/31 17:05:41	42 25.378	70 34.492	77	103	2.7	91	0.2	-0.3	DUMP
01/31 17:05:57	42 25.387	70 34.483	88	91	2.1	66	0.2	-0.3	DUMP
01/31 17:06:03	42 25.387	70 34.483	88	91	1.8	59	0.2	-0.3	DUMP
01/31 17:06:08	42 25.404	70 34.481	95	71	2.8	25	0.2	-0.3	DUMP
01/31 17:06:15	42 25.404	70 34.465	116	75	3.6	36	0.2	-0.3	DUMP
01/31 17:06:21	42 25.421	70 34.464	131	61	5.2	27	0.2	-0.3	DUMP
01/31 17:06:27	42 25.421	70 34.464	131	61	4.9	24	0.2	-0.3	DUMP
01/31 17:06:33	42 25.421	70 34.464	131	61	3.7	22	0.2	-0.3	DUMP
01/31 17:06:39	42 25.430	70 34.455	149	58	3.7	26	0.2	-0.3	DUMP
01/31 17:06:45	42 25.439	70 34.462	151	51	3.7	12	0.2	-0.3	DUMP
01/31 17:06:52	42 25.439	70 34.462	151	51	3.0	4	0.2	-0.3	DUMP
01/31 17:05:08	42 25.378	70 34.524	36	118	1.3	53	0.2	-0.3	DUMP
01/31 17:05:15	42 25.387	70 34.515	44	91	2.8	38	0.2	-0.3	DUMP

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
01/31 17:05:21	42 25.378	70 34.508	56	107	2.7	60	0.2	-0.3	DUMP
01/31 17:05:27	42 25.378	70 34.508	56	107	2.2	73	0.2	-0.3	DUMP
01/31 17:05:34	42 25.378	70 34.492	77	103	3.0	86	0.2	-0.3	DUMP
01/31 17:05:41	42 25.378	70 34.492	77	103	2.7	91	0.2	-0.3	DUMP
01/31 20:40:04	42 20.009	70 57.242	32687	252	8.6	64	991.3	828.0	
01/31 20:45:02	42 20.324	70 56.366	31364	253	10.8	65	991.3	828.0	
01/31 20:50:05	42 20.892	70 55.881	30426	254	6.8	37	991.3	828.0	
01/31 20:55:00	42 21.477	70 55.364	29460	256	7.2	36	991.3	828.0	
01/31 21:00:03	42 21.998	70 54.584	28193	257	9.9	56	991.3	828.0	
01/31 21:05:00	42 22.338	70 53.650	26807	258	10.8	73	0.1	-0.2	
01/31 21:10:01	42 22.545	70 52.552	25253	258	10.4	79	0.1	-0.2	
01/31 21:15:02	42 22.748	70 51.419	23655	258	14.2	74	0.1	-0.2	
01/31 21:20:00	42 22.944	70 50.388	22197	258	8.1	77	0.1	-0.2	
01/31 21:25:03	42 23.138	70 49.293	20652	258	9.3	81	0.1	-0.2	
01/31 21:30:01	42 23.345	70 48.238	19157	259	10.2	75	0.1	-0.2	
01/31 21:35:04	42 23.532	70 47.149	17626	259	12.2	85	0.1	-0.2	
01/31 21:40:04	42 23.758	70 46.091	16121	259	11.7	68	0.1	-0.2	
01/31 21:45:03	42 23.954	70 45.040	14636	260	9.9	82	0.1	-0.2	
01/31 21:50:01	42 24.182	70 43.950	13090	260	12.4	83	0.1	-0.2	
01/31 21:55:03	42 24.414	70 42.893	11590	261	9.7	72	0.1	-0.2	
01/31 22:00:01	42 24.651	70 41.824	10075	262	9.1	70	0.1	-0.2	
01/31 22:05:01	42 24.875	70 40.744	8553	264	10.0	73	0.1	-0.2	
01/31 22:10:02	42 25.095	70 39.675	7055	266	9.4	89	0.1	-0.2	
01/31 22:15:00	42 25.311	70 38.601	5563	269	9.9	80	0.1	-0.2	
01/31 22:20:00	42 25.435	70 37.485	4031	271	8.8	80	0.1	-0.2	
01/31 22:25:03	42 25.547	70 36.340	2478	277	10.0	85	0.1	-0.2	
01/31 22:30:02	42 25.549	70 35.218	967	288	9.9	94	0.1	-0.2	
01/31 22:34:20	42 25.378	70 34.508	56	107	6.4	118	0.1	-0.2	DUMP
01/31 22:34:26	42 25.378	70 34.508	56	107	5.6	118	0.1	-0.2	DUMP
01/31 22:34:32	42 25.378	70 34.508	56	107	4.1	118	0.1	-0.2	DUMP
01/31 22:34:38	42 25.369	70 34.517	53	128	2.7	146	0.1	-0.2	DUMP
01/31 22:34:45	42 25.361	70 34.510	71	134	3.1	164	0.1	-0.2	DUMP
01/31 22:34:51	42 25.352	70 34.503	89	137	3.8	165	0.1	-0.2	DUMP
01/31 22:34:57	42 25.360	70 34.494	88	124	2.8	143	0.1	-0.2	DUMP
01/31 22:35:04	42 25.360	70 34.494	88	124	1.9	123	0.1	-0.2	DUMP
01/31 22:35:11	42 25.360	70 34.478	107	118	2.6	97	0.1	-0.2	DUMP
01/31 22:35:27	42 25.326	70 34.497	133	149	3.8	179	0.1	-0.2	DUMP
01/31 22:35:33	42 25.326	70 34.497	133	149	3.9	186	0.1	-0.2	DUMP
01/31 22:35:39	42 25.326	70 34.481	145	142	3.4	170	0.1	-0.2	DUMP
01/31 22:35:45	42 25.317	70 34.490	152	149	3.3	175	0.1	-0.2	DUMP
01/31 22:35:51	42 25.308	70 34.499	160	156	3.8	191	0.1	-0.2	DUMP
01/31 22:35:57	42 25.308	70 34.499	160	156	3.3	199	0.1	-0.2	DUMP
01/31 22:36:03	42 25.300	70 34.508	171	162	3.7	209	0.1	-0.2	DUMP
01/31 22:36:10	42 25.291	70 34.517	183	167	4.4	215	0.1	-0.2	DUMP
01/31 22:36:16	42 25.291	70 34.533	179	174	4.8	231	0.1	-0.2	DUMP
01/31 22:36:22	42 25.291	70 34.533	179	174	4.1	239	0.1	-0.2	DUMP
01/31 22:36:28	42 25.282	70 34.542	194	178	4.2	236	0.1	-0.2	DUMP
01/31 22:34:45	42 25.361	70 34.510	71	134	3.1	164	0.1	-0.2	DUMP
01/31 22:34:51	42 25.352	70 34.503	89	137	3.8	165	0.1	-0.2	DUMP
01/31 22:34:57	42 25.360	70 34.494	88	124	2.8	143	0.1	-0.2	DUMP
01/31 22:35:04	42 25.360	70 34.494	88	124	1.9	123	0.1	-0.2	DUMP

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FB
01/31 22:35:11	42 25.360	70 34.478	107	118	2.6	97	0.1	-0.2	DUMP
02/01 02:35:01	42 21.721	70 55.116	29022	256	11.3	44	991.3	828.0	
02/01 02:40:01	42 22.192	70 54.205	27608	258	9.5	52	991.3	828.0	
02/01 02:45:03	42 22.402	70 53.063	25995	258	14.0	78	0.4	-0.3	
02/01 02:50:05	42 22.581	70 51.928	24402	258	10.5	85	0.4	-0.3	
02/01 02:55:00	42 22.745	70 50.811	22840	258	11.2	70	0.4	-0.3	
02/01 03:00:03	42 22.890	70 49.646	21222	257	10.6	87	0.4	-0.3	
02/01 03:05:03	42 23.028	70 48.522	19662	257	8.2	95	0.4	-0.3	
02/01 03:10:02	42 23.191	70 47.384	18073	257	11.0	87	0.4	-0.3	
02/01 03:15:00	42 23.377	70 46.232	16455	257	12.8	78	0.4	-0.3	
02/01 03:20:03	42 23.532	70 45.069	14837	257	10.5	80	0.4	-0.3	
02/01 03:25:01	42 23.718	70 43.930	13237	256	11.2	76	0.4	-0.3	
02/01 03:30:02	42 23.917	70 42.784	11622	256	11.6	73	0.4	-0.3	
02/01 03:35:05	42 24.130	70 41.647	10014	257	8.8	84	0.4	-0.3	
02/01 03:40:00	42 24.355	70 40.520	8413	257	11.1	71	0.4	-0.3	
02/01 03:45:04	42 24.559	70 39.357	6775	257	11.5	70	0.4	-0.3	
02/01 03:50:03	42 24.740	70 38.239	5205	257	8.8	84	0.4	-0.3	
02/01 03:55:03	42 24.935	70 37.099	3599	257	12.0	78	0.4	-0.3	
02/01 04:00:00	42 25.134	70 35.992	2037	257	9.4	75	0.4	-0.3	
02/01 04:05:04	42 25.364	70 34.893	477	265	9.8	72	0.4	-0.3	
02/01 04:08:28	42 25.378	70 34.540	19	149	1.7	42	0.4	-0.3	DUMP
02/01 04:08:34	42 25.378	70 34.540	19	149	2.1	37	0.4	-0.3	DUMP
02/01 04:08:40	42 25.370	70 34.549	32	184	0.4	27	0.4	-0.3	DUMP
02/01 04:08:46	42 25.370	70 34.533	38	149	1.2	102	0.4	-0.3	DUMP
02/01 04:08:52	42 25.361	70 34.542	49	171	1.6	160	0.4	-0.3	DUMP
02/01 04:08:59	42 25.361	70 34.526	57	149	2.4	139	0.4	-0.3	DUMP
02/01 04:09:05	42 25.369	70 34.517	53	128	2.6	101	0.4	-0.3	DUMP
02/01 04:09:11	42 25.361	70 34.526	57	149	1.8	118	0.4	-0.3	DUMP
02/01 04:09:18	42 25.361	70 34.526	57	149	1.2	134	0.4	-0.3	DUMP
02/01 04:09:24	42 25.369	70 34.517	53	128	1.2	71	0.4	-0.3	DUMP
02/01 04:09:30	42 25.361	70 34.510	71	134	1.7	97	0.4	-0.3	DUMP
02/01 04:09:37	42 25.352	70 34.519	76	149	1.6	153	0.4	-0.3	DUMP
02/01 04:09:44	42 25.360	70 34.494	88	124	2.5	105	0.4	-0.3	DUMP
02/01 04:10:00	42 25.334	70 34.472	142	134	4.7	129	0.4	-0.3	DUMP
02/01 04:10:06	42 25.317	70 34.474	164	143	5.5	145	0.4	-0.3	DUMP
02/01 04:10:12	42 25.317	70 34.490	151	149	4.7	165	0.4	-0.3	DUMP
02/01 04:10:18	42 25.317	70 34.490	152	149	3.6	181	0.4	-0.3	DUMP
02/01 04:10:24	42 25.308	70 34.483	170	149	3.5	181	0.4	-0.3	DUMP
02/01 04:10:30	42 25.291	70 34.501	189	160	5.1	199	0.4	-0.3	DUMP
02/01 04:10:36	42 25.282	70 34.510	201	165	6.2	208	0.4	-0.3	DUMP
02/01 04:08:52	42 25.361	70 34.542	49	171	1.6	160	0.4	-0.3	DUMP
02/01 04:08:59	42 25.361	70 34.526	57	149	2.4	139	0.4	-0.3	DUMP
02/01 04:09:05	42 25.369	70 34.517	53	128	2.6	101	0.4	-0.3	DUMP
02/01 04:09:11	42 25.361	70 34.526	57	149	1.8	118	0.4	-0.3	DUMP
02/01 04:09:18	42 25.361	70 34.526	57	149	1.2	134	0.4	-0.3	DUMP
02/01 04:09:24	42 25.369	70 34.517	53	128	1.2	71	0.4	-0.3	DUMP
02/01 04:09:30	42 25.361	70 34.510	71	134	1.7	97	0.4	-0.3	DUMP
02/01 04:09:37	42 25.352	70 34.519	76	149	1.6	153	0.4	-0.3	DUMP
02/01 04:09:44	42 25.360	70 34.494	88	124	2.5	105	0.4	-0.3	DUMP
02/01 07:50:00	42 20.593	70 56.073	30834	253	4.5	30	991.3	828.0	
02/01 07:55:03	42 21.333	70 55.441	29629	255	13.1	41	991.3	828.0	

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FB
02/01 08:00:03	42 21.896	70 54.769	28484	257	7.9	61	991.3	828.0	
02/01 08:05:03	42 22.377	70 53.804	26998	258	11.3	83	0.0	-0.2	
02/01 08:10:00	42 22.565	70 52.722	25474	258	10.1	72	0.0	-0.2	
02/01 08:15:05	42 22.761	70 51.553	23830	258	11.0	84	0.0	-0.2	
02/01 08:20:02	42 22.969	70 50.439	22255	258	11.6	80	0.0	-0.2	
02/01 08:25:03	42 23.163	70 49.359	20732	259	7.8	81	0.0	-0.2	
02/01 08:30:05	42 23.372	70 48.258	19175	259	8.5	76	0.0	-0.2	
02/01 08:35:00	42 23.539	70 47.217	17715	259	7.9	92	0.0	-0.2	
02/01 08:40:01	42 23.758	70 46.091	16121	259	12.7	79	0.0	-0.2	
02/01 08:45:01	42 23.963	70 45.031	14622	260	9.6	75	0.0	-0.2	
02/01 08:50:01	42 24.164	70 43.936	13077	260	10.7	75	0.0	-0.2	
02/01 08:55:01	42 24.370	70 42.843	11535	261	10.1	85	0.0	-0.2	
02/01 09:00:02	42 24.590	70 41.760	10004	262	10.7	78	0.0	-0.2	
02/01 09:05:00	42 24.796	70 40.681	8485	263	10.6	77	0.0	-0.2	
02/01 09:10:00	42 25.016	70 39.580	6939	264	10.3	78	0.0	-0.2	
02/01 09:15:04	42 25.180	70 38.480	5409	266	10.2	87	0.0	-0.2	
02/01 09:20:04	42 25.286	70 37.396	3913	267	9.1	113	0.0	-0.2	
02/01 09:25:03	42 25.406	70 36.275	2370	271	12.5	81	0.0	-0.2	
02/01 09:30:03	42 25.436	70 35.205	907	276	9.8	94	0.0	-0.2	
02/01 09:34:57	42 25.378	70 34.540	19	149	2.9	82	0.0	-0.2	DUMP
02/01 09:35:03	42 25.370	70 34.533	38	149	2.6	98	0.0	-0.2	DUMP
02/01 09:35:09	42 25.387	70 34.531	22	91	2.5	58	0.0	-0.2	DUMP
02/01 09:35:15	42 25.378	70 34.524	36	117	2.3	68	0.0	-0.2	DUMP
02/01 09:35:22	42 25.387	70 34.515	44	91	2.9	59	0.0	-0.2	DUMP
02/01 09:35:28	42 25.387	70 34.515	44	91	2.5	55	0.0	-0.2	DUMP
02/01 09:35:34	42 25.395	70 34.506	58	75	3.2	46	0.0	-0.2	DUMP
02/01 09:35:41	42 25.395	70 34.506	58	75	2.8	43	0.0	-0.2	DUMP
02/01 09:35:47	42 25.404	70 34.513	56	56	2.7	14	0.0	-0.2	DUMP
02/01 09:35:53	42 25.404	70 34.513	56	56	2.3	360	0.0	-0.2	DUMP
02/01 09:36:00	42 25.404	70 34.513	56	56	1.7	349	0.0	-0.2	DUMP
02/01 09:36:17	42 25.430	70 34.519	89	26	3.6	348	0.0	-0.2	DUMP
02/01 09:36:22	42 25.422	70 34.527	70	23	2.8	333	0.0	-0.2	DUMP
02/01 09:36:28	42 25.430	70 34.519	89	26	2.6	345	0.0	-0.2	DUMP
02/01 09:36:34	42 25.431	70 34.535	82	12	2.6	322	0.0	-0.2	DUMP
02/01 09:36:41	42 25.439	70 34.542	97	4	3.4	316	0.0	-0.2	DUMP
02/01 09:36:47	42 25.439	70 34.542	97	4	3.1	314	0.0	-0.2	DUMP
02/01 09:36:53	42 25.448	70 34.549	113	359	3.5	318	0.0	-0.2	DUMP
02/01 09:36:59	42 25.466	70 34.547	145	0	4.7	338	0.0	-0.2	DUMP
02/01 09:37:05	42 25.457	70 34.556	130	355	3.7	329	0.0	-0.2	DUMP
02/01 09:35:22	42 25.387	70 34.515	44	91	2.9	59	0.0	-0.2	DUMP
02/01 09:35:28	42 25.387	70 34.515	44	91	2.5	55	0.0	-0.2	DUMP
02/01 09:35:34	42 25.395	70 34.506	58	75	3.2	46	0.0	-0.2	DUMP
02/01 09:35:41	42 25.395	70 34.506	58	75	2.8	43	0.0	-0.2	DUMP
02/01 09:35:47	42 25.404	70 34.513	56	56	2.7	14	0.0	-0.2	DUMP
02/01 09:35:53	42 25.404	70 34.513	56	56	2.3	360	0.0	-0.2	DUMP
02/01 09:36:00	42 25.404	70 34.513	56	56	1.7	349	0.0	-0.2	DUMP
02/01 13:05:03	42 19.971	70 57.847	33499	253	6.0	80	991.3	828.0	
02/01 13:10:03	42 20.001	70 57.221	32663	252	7.0	100	991.3	828.0	
02/01 13:15:00	42 20.090	70 56.700	31932	252	4.2	59	991.3	828.0	
02/01 13:20:00	42 20.167	70 56.340	31419	252	2.7	57	991.3	828.0	
02/01 13:25:03	42 20.289	70 56.324	31329	252	1.3	347	991.3	828.0	

## HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
02/01 13:30:01	42 20.386	70 56.258	31188	253	4.2	10	991.3	828.0	
02/01 13:35:02	42 20.789	70 55.881	30479	254	8.8	51	991.3	828.0	
02/01 13:40:02	42 21.317	70 55.398	29579	255	8.0	29	991.3	828.0	
02/01 13:45:05	42 21.870	70 54.920	28696	257	7.1	48	991.3	828.0	
02/01 13:50:05	42 22.251	70 54.126	27479	258	11.0	70	0.2	-0.1	
02/01 13:55:02	42 22.421	70 53.062	25986	258	12.7	79	0.2	-0.1	
02/01 14:00:01	42 22.558	70 52.034	24554	258	9.7	90	0.2	-0.1	
02/01 14:05:05	42 22.712	70 50.971	23069	258	10.9	83	0.2	-0.1	
02/01 14:10:03	42 22.839	70 50.027	21753	257	7.9	90	0.2	-0.1	
02/01 14:15:00	42 22.972	70 49.117	20482	257	9.2	71	0.2	-0.1	
02/01 14:20:01	42 23.074	70 48.230	19252	257	6.7	100	0.2	-0.1	
02/01 14:25:01	42 23.211	70 47.321	17981	257	10.1	71	0.2	-0.1	
02/01 14:30:05	42 23.327	70 46.412	16717	257	10.0	80	0.2	-0.1	
02/01 14:35:00	42 23.467	70 45.535	15487	257	7.9	82	0.2	-0.1	
02/01 14:40:00	42 23.631	70 44.646	14230	257	8.6	83	0.2	-0.1	
02/01 14:45:00	42 23.802	70 43.729	12934	257	10.8	84	0.2	-0.1	
02/01 14:50:01	42 23.960	70 42.850	11692	257	8.8	89	0.2	-0.1	
02/01 14:55:07	42 24.152	70 41.948	10407	257	5.9	72	0.2	-0.1	
02/01 15:00:02	42 24.323	70 41.061	9150	258	10.5	66	0.2	-0.1	
02/01 15:05:05	42 24.473	70 40.219	7963	258	7.5	83	0.2	-0.1	
02/01 15:10:03	42 24.647	70 39.380	6770	258	7.5	70	0.2	-0.1	
02/01 15:15:01	42 24.792	70 38.549	5600	259	8.1	72	0.2	-0.1	
02/01 15:20:04	42 24.952	70 37.745	4461	260	5.7	78	0.2	-0.1	
02/01 15:25:02	42 25.075	70 37.085	3529	261	7.6	76	0.2	-0.1	
02/01 15:30:02	42 25.214	70 36.421	2591	263	6.7	54	0.2	-0.1	
02/01 15:35:00	42 25.291	70 35.897	1860	265	5.2	75	0.2	-0.1	
02/01 15:40:00	42 25.367	70 35.419	1197	268	2.9	81	0.2	-0.1	
02/01 15:45:04	42 25.427	70 35.198	896	275	1.3	277	0.2	-0.1	
02/01 15:50:02	42 25.384	70 35.306	1041	270	2.4	230	0.2	-0.1	
02/01 15:55:02	42 25.375	70 35.331	1075	269	1.2	121	0.2	-0.1	
02/01 16:00:02	42 25.417	70 35.015	645	275	5.9	88	0.2	-0.1	
02/01 16:05:00	42 25.413	70 34.552	49	351	0.9	98	0.2	-0.1	
02/01 16:07:06	42 25.370	70 34.549	32	184	4.8	200	0.2	-0.1	DUMP
02/01 16:07:12	42 25.370	70 34.549	32	184	4.2	206	0.2	-0.1	DUMP
02/01 16:07:18	42 25.361	70 34.542	49	171	3.8	194	0.2	-0.1	DUMP
02/01 16:07:24	42 25.361	70 34.542	49	171	2.9	186	0.2	-0.1	DUMP
02/01 16:07:30	42 25.352	70 34.551	65	184	3.1	194	0.2	-0.1	DUMP
02/01 16:07:37	42 25.352	70 34.535	67	165	2.5	166	0.2	-0.1	DUMP
02/01 16:07:43	42 25.352	70 34.535	67	165	2.0	146	0.2	-0.1	DUMP
02/01 16:07:49	42 25.335	70 34.520	104	159	3.9	142	0.2	-0.1	DUMP
02/01 16:07:56	42 25.335	70 34.520	104	159	3.9	142	0.2	-0.1	DUMP
02/01 16:08:03	42 25.326	70 34.513	122	158	4.2	143	0.2	-0.1	DUMP
02/01 16:08:10	42 25.317	70 34.506	141	157	4.6	146	0.2	-0.1	DUMP
02/01 16:08:25	42 25.300	70 34.508	171	162	4.2	164	0.2	-0.1	DUMP
02/01 16:08:31	42 25.300	70 34.508	171	162	3.6	168	0.2	-0.1	DUMP
02/01 16:08:37	42 25.299	70 34.492	179	155	3.1	149	0.2	-0.1	DUMP
02/01 16:08:43	42 25.299	70 34.476	189	149	3.6	118	0.2	-0.1	DUMP
02/01 16:08:49	42 25.291	70 34.469	208	149	4.4	116	0.2	-0.1	DUMP
02/01 16:08:55	42 25.290	70 34.453	221	144	5.2	109	0.2	-0.1	DUMP
02/01 16:09:03	42 25.290	70 34.453	221	144	4.2	105	0.2	-0.1	DUMP
02/01 16:09:09	42 25.290	70 34.437	234	140	4.4	99	0.2	-0.1	DUMP

### HOPPER DREDGE DUMP POSITIONS

DATE/TIME	LATITUDE	LONGITUDE	RANGE	BRG	SPD	CRS	ERR 1	ERR 2	FG
02/01 16:09:15	42 25.299	70 34.428	231	135	4.4	81	0.2	-0.1	DUMP
02/01 16:07:30	42 25.352	70 34.551	65	184	3.1	194	0.2	-0.1	DUMP
02/01 16:07:37	42 25.352	70 34.535	67	165	2.5	166	0.2	-0.1	DUMP
02/01 16:07:43	42 25.352	70 34.535	67	165	2.0	146	0.2	-0.1	DUMP
02/01 16:07:49	42 25.335	70 34.520	104	159	3.9	142	0.2	-0.1	DUMP
02/01 16:07:56	42 25.335	70 34.520	104	159	3.9	142	0.2	-0.1	DUMP
02/01 16:08:03	42 25.326	70 34.513	122	158	4.2	143	0.2	-0.1	DUMP
02/01 16:08:10	42 25.317	70 34.506	141	157	4.6	146	0.2	-0.1	DUMP