Ground Control Point Survey Report

Puerto Rico and USVI, QL1 Topographic LiDAR
USGS Contract: G16PC00020
Task Order Number: 140G0218F0146

Prepared for:
United States Geological Survey (USGS)

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1.   INTRODUCTION

1.1   *Project Summary*

Dewberry Engineers Inc. is under contract to the United States Geological Survey to provide 124 Ground Control Points in the Commonwealth of Puerto Rico and US Virgin Islands. Under the above referenced USGS Task Order, Dewberry is tasked to complete the quality assurance of LiDAR products. As part of this work Dewberry staff will complete Ground Control Point surveys that will be used to evaluate vertical and horizontal accuracy. The ground survey was conducted July 5, 2018 thru August 15, 2018.

Existing NGS Control Points were located and surveyed to check the accuracy of the RTK/GPS survey equipment with the results shown in Section 2.4 of this Report.

As an internal QA/QC procedure and to verify that the Ground Control Points meet the 95% confidence level approximately 50% of the points were re-observed and are shown in Section 5 of this report.

Final horizontal coordinates are referenced to Puerto Rico State Plane, Zone 5200, NAD83 (2011) in meters. Final Vertical elevations are referenced to NAVD88 in meters using Geoid model 2012B (Geoid12B).

1.2   *Points of Contact*

Questions regarding the technical aspects of this report should be addressed to:

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1.3   *Project Area*
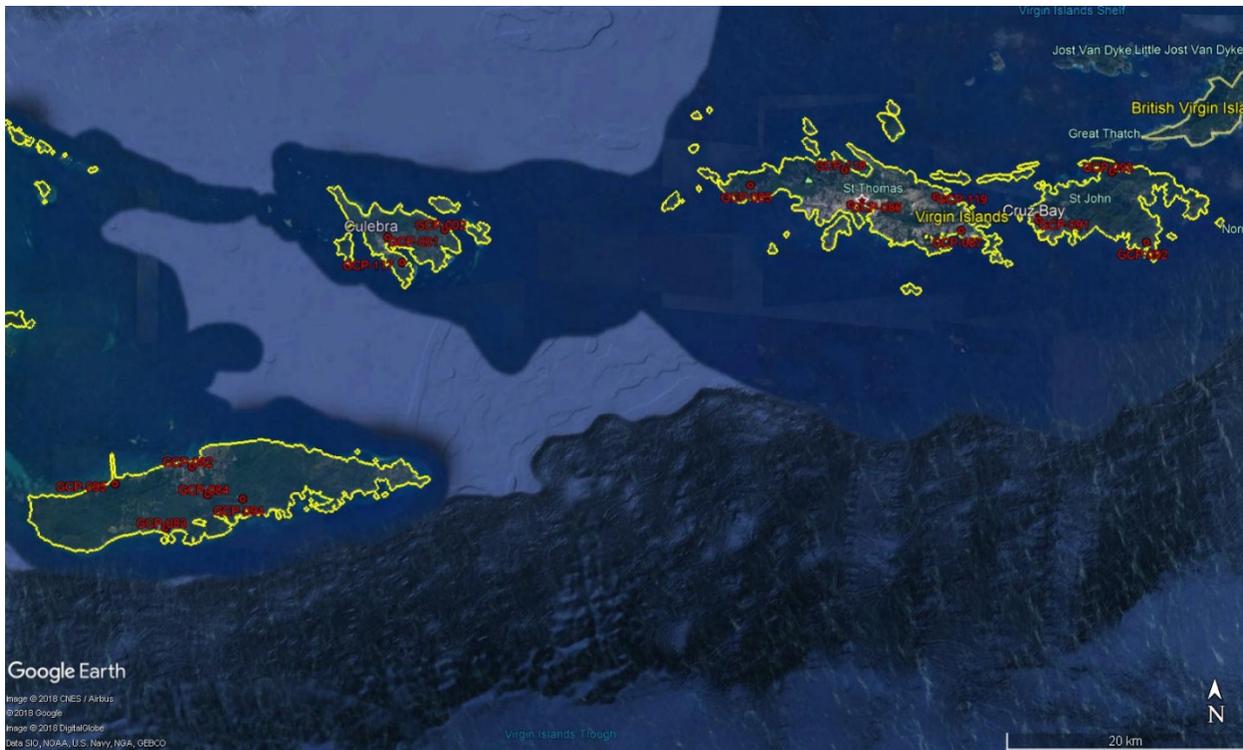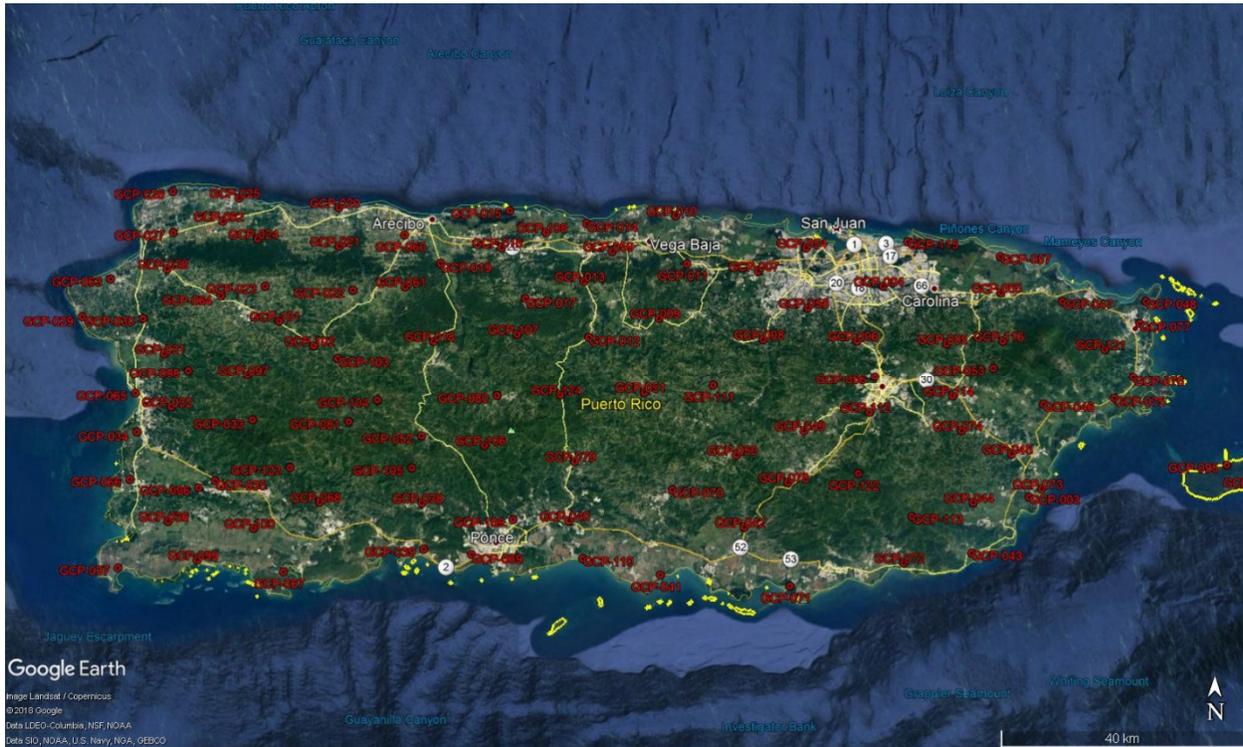
PROJECT DETAILS

2.1   *Survey Equipment*

In performing the GPS observations Trimble R-10 GNSS receiver/antenna attached to a two meter fixed height pole with a Trimble TSC3 Data Collector to collect GPS raw data were used to perform the field surveys.

2.2   *Survey Point Detail*

The 124 Ground Control Points were well distributed throughout the project area.

A sketch was made for each location and a nail was set at the point where possible or at an identifiable point. The Ground Control Point locations are detailed on the "Control Point Documentation Report" sheets attached to this report.

2.3   *Network Design*

The GPS survey performed by Dewberry Engineers Inc. office located in Lanham, MD was tied to a Real Time Network operated by HLCM Group. The network is a series of "real-time" continuously operating, high precision GPS reference stations. All of the reference stations have been linked together using Trimble GPSNet software, creating a Virtual Reference Station System (VRS).

The Trimble NetR5 Reference Station is a multi-channel, multi-frequency GNSS (Global Navigation Satellite System) receiver designed for use as a stand-alone reference station or as part of a GNSS infrastructure solution. Trimble R-Track technology in the NetR5 receiver supports the modernized GPS L2C and L5 signals as well as GLONASS L1/L2 signals.

2.4   *Field Survey Procedures and Analysis*

Dewberry field surveyors used Trimble R-10 GNSS receivers, which is a geodetic quality dual frequency GPS receiver, to collect data at each surveyed location.

All locations were occupied once with approximately 50% of the locations being re-observed. All re-observations matched the initially derived station positions within the allowable tolerance of ± 5cm or within the 95% confidence level. Each occupation which utilized the VRS network was occupied for approximately three (3) minutes in duration and measured to 180 epochs.

Each occupation which utilized OPUS (if used) was occupied between 20 and 30 minutes.

Field GPS observations are detailed on the "Control Point Documentation Reports" submitted as part of this report.

Twenty five (23) existing NGS monument listed in the NSRS database were located as an additional QA/QC method to check the horizontal and vertical accuracy of the VRS network as well as being the primary project control monuments designated as DI1789, AB9841, DE5485, AB9844, AB9846, DO1063, DE5532, AB9842, DE5470, DI1785, AB9838, DN8538, DN8632, DK7148, DK7153, TV1496, DK7160, DL3600, DL3633, DL3616, DL3609, DL3595, DL3914, DL3915 & DL3918. The results are as follows:

	Observed Values			Data Sheet Values					
PT. #	NORTHING	EASTING	ELEVS.	NORTHING	EASTING	ELEVS.	Δ X	Δ Y	Δ Z
GPS-62	246946.52	123063.99	4.00	246946.52	123063.99	3.99	0.00	0.00	0.01
LAJAS 2	226494.73	144332.19	87.92	226494.70	144332.15	87.91	0.03	0.04	0.01
BERRIOS	267123.14	201085.70	43.39	267123.13	201085.71	43.37	0.01	-0.01	0.02
COCO	218681.52	219613.37	45.30	218681.52	219613.40	45.41	0.00	-0.03	-0.11
HUMACAO2	233305.13	264562.75	33.27	233305.10	264562.78	33.25	0.03	-0.04	0.02
L1017	255455.81	284113.29	3.45	N/A	N/A	3.39	N/A	N/A	0.06
M1005	270891.01	140261.24	108.21	270891.01	140261.24	108.20	0.00	-0.01	0.00
MAGAS	220084.48	164710.32	8.46	220084.46	164710.28	8.45	0.02	0.04	0.01
SANABRIA	265276.00	230024.22	3.91	265276.02	230024.23	3.93	-0.02	-0.01	-0.02
UPRM GPS13	242403.83	125328.97	18.05	242403.85	125328.96	18.28	-0.01	0.01	-0.23
UTUADO	248478.15	170061.98	166.46	248478.16	170061.92	166.48	0.00	0.06	-0.02
9752695H	229319.85	301787.86	3.68	N/A	N/A	3.65	N/A	N/A	0.02
B1018	253301.91	320807.78	0.99	N/A	N/A	1.01	N/A	N/A	-0.03
B1002	188765.36	377772.03	38.77	188765.38	377772.02	38.74	-0.02	0.01	0.03
B1012	190198.22	381702.32	69.98	190198.21	381702.32	69.96	0.01	0.00	0.02
975 1364 C	191304.12	383916.57	1.66	191304.12	383916.56	1.66	0.00	0.01	0.00
975 1472 2	256040.33	373353.46	0.75	N/A	N/A	0.79	N/A	N/A	-0.04
C 1016	257653.02	378975.89	284.12	N/A	N/A	284.14	N/A	N/A	-0.03
C 1023	257066.78	375772.29	176.89	N/A	N/A	176.89	N/A	N/A	0.00
JACOB	256029.05	373358.51	0.75	N/A	N/A	0.81	N/A	N/A	-0.06
A-1000	256555.01	357259.70	4.64	256555.00	357259.72	4.67	0.01	-0.01	-0.03

CORI	255955.17	356522.98	1.13	N/A	N/A	1.17	N/A	N/A	-0.04
VITH B	257072.10	354738.47	40.40	257072.08	354738.50	40.43	0.01	-0.03	-0.03

The above results indicate that the VRS network is providing positional values within the 5cm parameters for this survey.

NGS Monuments
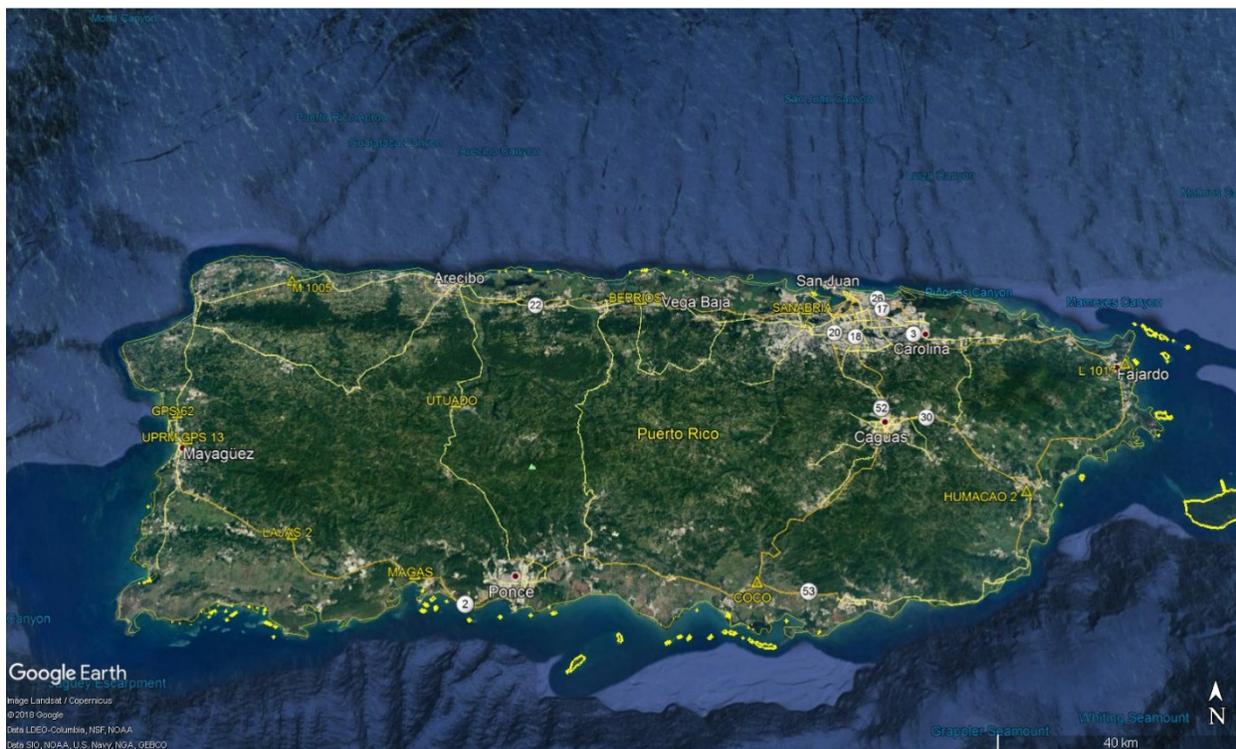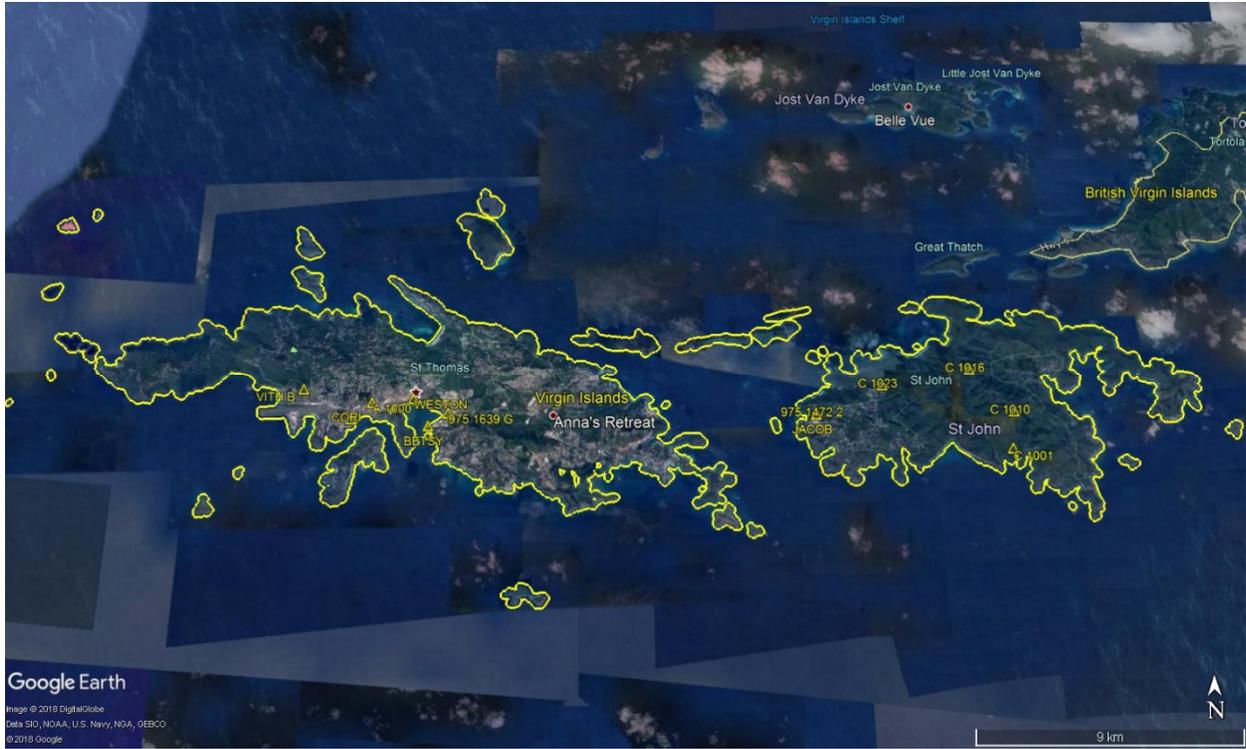
2.5   *Adjustment*

The survey data was collected using Virtual Reference Stations (VRS) methodology within a Virtual Reference System (VRS).

The system is designed to provide a true Network RTK performance, the RTKNet software enables high-accuracy positioning in real time across a geographic region. The RTKNet software package uses real-time data streams from the HLCM Group network user and generates correction models for high-accuracy RTK GPS corrections throughout the network. Therefore, corrections were applied to the points as they were being collected, thus negating the need for a post process adjustment.

2.6   *Data Processing Procedures*

After field data is collected the information is downloaded from the data collectors into the office software. The Software program used is called Trimble Business Center.

Downloaded data is run through the TBC program to obtain the following reports; points report, point comparison report and a point detail report. The reports are reviewed for point accuracy and precision.

After review of the point data an "ASCII" or "txt" file which is the industry standard is created. Point files are loaded into our CADD program (Carlson Survey 2017) to make a visual check of the point data (Pt. #, Coordinates, Elev. and Description). The data can now be imported into the final product.

3. FINAL COORDINATES/ELEVATIONS

POINT ID	NORTHING (m)	EASTING (m)	ELEV. (m)
Puerto Rico USVI Zone 5200 NAD 83 (2011), Meters			
Ground Control Points - GCP			
Puerto Rico, Vieques and Culebra			
GCP-001	253610.14	319889.26	50.92
GCP-002	254221.15	324558.91	1.95
GCP-003	227800.12	265877.84	53.18
GCP-004	261028.16	242171.35	63.78
GCP-005	252001.94	252438.51	218.60
GCP-006	252320.65	238100.79	91.66
GCP-007	263205.63	222186.79	69.80
GCP-008	252374.80	223111.92	84.28
GCP-009	255569.63	206512.37	172.69
GCP-010	271811.04	208994.37	2.53
GCP-011	264217.91	210922.55	29.69
GCP-012	252472.00	195369.87	361.42
GCP-013	261270.34	194481.10	86.69
GCP-014	270480.71	194827.25	26.03
GCP-015	272376.55	182615.94	6.66
GCP-016	266441.08	181316.12	100.05
GCP-017	258540.02	185217.75	183.59
GCP-018	251618.48	170529.18	214.84
GCP-019	263890.04	171651.63	13.32
GCP-020	272534.75	155337.28	8.71
GCP-021	266422.37	155542.57	159.78
GCP-022	261318.98	157050.12	279.69
GCP-023	259999.57	143847.44	179.12
GCP-024	267470.86	142502.22	167.07
GCP-025	273828.42	139460.84	63.31
GCP-026	274861.11	128629.48	49.20
GCP-027	268316.03	129025.01	146.36
GCP-028	262692.24	128107.75	53.45
GCP-029	254895.48	114516.95	8.29
GCP-030	254719.61	124337.82	152.20
GCP-031	249136.57	127733.07	17.38
GCP-032	240608.56	128976.00	115.40

GCP-033	238755.76	142119.19	426.46
GCP-034	236604.00	123472.76	4.07
GCP-035	229047.60	136108.78	45.57
GCP-036	222515.46	128540.68	29.45
GCP-037	215143.30	120837.44	0.83
GCP-038	225880.92	169117.11	87.74
GCP-039	218604.24	169440.11	11.67
GCP-040	223278.55	192512.94	45.46
GCP-041	214921.05	207171.84	3.54
GCP-042	222613.98	220418.67	83.23
GCP-043	218853.79	256774.95	10.18
GCP-044	226797.07	256872.56	22.33
GCP-045	234586.20	262917.22	29.38
GCP-046	242498.62	267896.68	19.86
GCP-047	258977.51	270874.55	17.47
GCP-048	259103.54	284316.12	5.37
GCP-049	237909.39	229727.40	409.82
GCP-050	233996.85	219022.27	614.46
GCP-051	243727.02	204313.80	507.35
GCP-052	236507.04	169043.78	480.67
GCP-053	248169.89	259761.14	476.30
GCP-054	266962.49	229831.28	3.80
GCP-055	260204.29	261014.07	15.15
GCP-056	246855.59	241242.20	65.52
GCP-057	265981.28	260893.71	3.11
GCP-058	257468.82	230197.01	48.18
GCP-059	266062.19	198784.30	81.84
GCP-060	268341.04	165931.12	77.54
GCP-061	260113.31	166093.77	236.57
GCP-062	270176.28	136897.49	128.10
GCP-063	260923.71	119004.37	3.03
GCP-064	258403.58	136720.92	78.48
GCP-065	242752.02	123169.65	1.71
GCP-066	229118.46	122411.60	30.69
GCP-067	214794.24	147109.71	11.64
GCP-068	225837.49	152846.88	176.90
GCP-069	217863.63	177063.69	15.69
GCP-070	228375.22	208899.37	146.26
GCP-071	213376.05	227833.66	1.93

GCP-072	217188.05	245925.53	17.96
GCP-073	229042.31	267922.45	2.37
GCP-074	238176.19	254806.08	125.74
GCP-075	243625.80	279359.98	27.94
GCP-076	247033.32	282391.56	36.11
GCP-077	255627.92	283344.85	10.23
GCP-078	229750.20	227262.15	462.01
GCP-079	232710.76	193329.93	173.41
GCP-080	242844.04	180968.81	408.86
GCP-081	238779.46	157481.02	463.57
GCP-082	234589.89	303949.46	15.94
GCP-083	229588.31	301833.47	9.62
GCP-084	232340.12	305290.59	54.76
GCP-094	232019.98	308182.04	11.84
GCP-095	233134.85	297657.82	4.29
GCP-096	228013.49	132899.07	31.70
GCP-097	245865.64	141172.47	307.27
GCP-098	246510.69	131638.90	79.54
GCP-099	216410.81	133289.08	23.40
GCP-100	221590.47	142285.12	11.87
GCP-101	254557.12	146068.27	318.48
GCP-102	250635.98	151701.49	386.51
GCP-103	248689.83	155581.46	472.93
GCP-104	242077.81	161954.81	672.46
GCP-105	231063.03	168176.21	902.14
GCP-106	235097.53	179050.78	777.18
GCP-107	252555.50	184021.80	286.40
GCP-108	268959.55	188412.20	4.23
GCP-109	223249.98	183762.37	45.66
GCP-110	217364.32	194741.83	1.08
GCP-111	244970.56	215226.90	611.52
GCP-112	240856.18	240308.70	98.90
GCP-113	224570.91	247149.56	449.39
GCP-114	243647.26	253436.21	82.85
GCP-115	268150.91	246022.08	2.05
GCP-116	252531.66	261184.90	512.10
GCP-117	251532.68	321080.75	2.64
GCP-121	251394.52	277689.03	66.12
GCP-122	231282.66	238434.51	765.85

GCP-123	231288.24	148110.19	651.17
GCP-124	242919.88	191038.84	442.23
St. Croix			
GCP-088	185393.90	364585.74	16.53
GCP-089	191307.40	374708.30	58.27
GCP-090	189535.01	388637.68	7.88
GCP-120	188867.59	377485.25	27.72
St. John			
GCP-091	255626.32	373388.94	1.81
GCP-092	253828.12	382416.92	32.90
GCP-093	259563.44	379491.20	2.10
St. Thomas			
GCP-085	258131.76	349654.98	119.97
GCP-086	256668.91	357955.77	1.34
GCP-087	254637.46	367076.96	23.69
GCP-118	259191.81	357471.50	148.26
GCP-119	257490.85	365051.16	3.43

4. *GPS OBSERVATIONS*

POINT ID	OBSERV. DATE	JULIAN DATE	TIME OF DAY (AST)	RE-OBSERV. DATE	RE-OBSERV. TIME
GCP-001	8/14/2018	226	17:08	8/14/2018	17:11
GCP-002	8/15/2018	227	10:26	8/15/2018	10:29
GCP-003	7/14/2018	195	11:17	7/16/2018	12:37
GCP-004	7/10/2018	191	8:12	7/12/2018	15:40
GCP-005	7/11/2018	192	8:46	7/11/2018	8:49
GCP-006	7/11/2018	192	7:34	7/11/2018	7:37
GCP-007	7/9/2018	190	17:05	7/9/2018	17:08
GCP-008	7/11/2018	192	9:34	7/11/2018	9:37
GCP-009	7/11/2018	192	22:44	7/11/2018	22:47
GCP-010	7/11/2018	192	13:34	7/12/2018	12:26
GCP-011	7/11/2018	192	12:24	7/11/2018	12:27
GCP-012	7/7/2018	188	7:54	7/11/2018	11:23
GCP-013	7/7/2018	188	7:11	N/A	N/A
GCP-014	7/6/2018	187	7:23	7/16/2018	7:26
GCP-015	7/6/2018	187	10:19	7/16/2018	12:10
GCP-016	7/6/2018	187	10:57	N/A	N/A
GCP-017	7/7/2018	188	9:01	N/A	N/A
GCP-018	7/8/2018	189	7:19	N/A	N/A
GCP-019	7/6/2018	187	12:33	N/A	N/A
GCP-020	7/5/2018	186	17:13	N/A	N/A
GCP-021	7/6/2018	187	15:50	N/A	N/A
GCP-022	7/6/2018	187	14:57	N/A	N/A
GCP-023	7/7/2018	188	15:50	7/7/2018	15:53
GCP-024	7/6/2018	187	17:33	7/12/2018	22:49
GCP-025	7/12/2018	193	9:23	7/12/2018	9:27
GCP-026	7/12/2018	193	8:26	7/12/2018	8:29
GCP-027	7/9/2018	190	8:38	7/12/2018	7:49
GCP-028	7/7/2018	188	17:30	7/12/2018	13:30
GCP-029	7/9/2018	190	6:27	7/9/2018	6:30
GCP-030	7/8/2018	189	15:48	7/9/2018	17:55
GCP-031	7/8/2018	189	15:17	7/8/2018	15:20
GCP-032	7/8/2018	189	16:57	7/12/2018	16:48
GCP-033	7/13/2018	194	8:03	7/13/2018	8:06
GCP-034	7/9/2018	190	11:00	7/10/2018	5:37

GCP-035	7/10/2018	191	13:11	N/A	N/A
GCP-036	7/10/2018	191	6:42	N/A	N/A
GCP-037	7/9/2018	190	13:19	N/A	N/A
GCP-038	7/14/2018	195	7:57	N/A	N/A
GCP-039	7/11/2018	192	9:47	N/A	N/A
GCP-040	7/11/2018	192	12:41	N/A	N/A
GCP-041	7/17/208	198	7:17	N/A	N/A
GCP-042	7/17/208	198	8:16	N/A	N/A
GCP-043	7/14/2018	195	14:00	7/16/2018	10:31
GCP-044	7/14/2018	195	12:15	7/16/2018	12:09
GCP-045	7/14/2018	195	8:58	7/16/2018	14:30
GCP-046	7/11/2018	192	12:22	7/13/2018	12:44
GCP-047	7/10/2018	191	12:05	7/12/2018	14:08
GCP-048	7/13/2018	194	7:49	7/13/2018	18:38
GCP-049	7/10/2018	191	16:34	7/10/2018	16:37
GCP-050	7/17/208	198	15:00	7/17/2018	15:03
GCP-051	7/16/2018	197	11:40	7/16/2018	11:43
GCP-052	7/13/2018	194	13:00	7/16/2018	8:50
GCP-053	7/11/2018	192	10:27	7/11/2018	10:30
GCP-054	7/12/2018	193	10:54	7/12/2018	10:57
GCP-055	7/10/2018	191	12:25	7/10/2018	18:14
GCP-056	7/10/2018	191	15:04	7/10/2018	15:07
GCP-057	7/10/2018	191	11:15	N/A	N/A
GCP-058	7/9/2018	190	18:15	N/A	N/A
GCP-059	7/6/2018	187	7:59	N/A	N/A
GCP-060	7/5/2018	186	16:25	N/A	N/A
GCP-061	7/7/2018	188	12:36	N/A	N/A
GCP-062	7/15/2018	196	18:58	N/A	N/A
GCP-063	7/9/2018	190	8:02	N/A	N/A
GCP-064	7/7/2018	188	16:25	N/A	N/A
GCP-065	7/12/2018	193	14:14	N/A	N/A
GCP-066	7/9/2018	190	11:41	N/A	N/A
GCP-067	7/10/2018	191	9:10	N/A	N/A
GCP-068	7/10/2018	191	10:39	N/A	N/A
GCP-069	7/11/2018	192	10:25	N/A	N/A
GCP-070	7/17/208	198	9:37	N/A	N/A
GCP-071	7/15/2018	196	13:50	N/A	N/A
GCP-072	7/14/2018	195	15:22	N/A	N/A
GCP-073	7/14/2018	195	10:47	7/16/2018	13:16

GCP-074	7/11/2018	192	15:09	7/13/2018	13:47
GCP-075	7/13/2018	194	11:12	7/13/2018	16:39
GCP-076	7/13/2018	194	10:10	7/13/2018	16:58
GCP-077	7/13/2018	194	8:32	7/13/2018	18:07
GCP-078	7/15/2018	196	17:03	7/15/2018	17:06
GCP-079	7/11/2018	192	13:29	7/16/2018	16:31
GCP-080	7/14/2018	195	12:06	7/14/2018	12:09
GCP-081	7/13/2018	194	10:11	7/15/2018	9:54
GCP-082	8/12/2018	224	13:50	N/A	N/A
GCP-083	8/12/2018	224	10:50	N/A	N/A
GCP-084	8/12/2018	224	15:15	N/A	N/A
GCP-085	8/2/2018	214	16:00	N/A	N/A
GCP-086	8/1/2018	213	14:52	N/A	N/A
GCP-087	8/1/2018	213	11:35	8/3/2018	11:24
GCP-088	7/30/2018	211	13:04	N/A	N/A
GCP-089	7/29/2018	210	13:11	N/A	N/A
GCP-090	7/27/2018	208	13:26	7/28/2018	12:52
GCP-091	8/6/2018	218	8:06	8/8/2018	8:28
GCP-092	8/7/2018	219	15:01	N/A	N/A
GCP-093	8/7/2018	219	9:32	N/A	N/A
GCP-094	8/12/2018	224	15:49	N/A	N/A
GCP-095	8/12/2018	224	12:52	N/A	N/A
GCP-096	7/10/2018	191	13:44	N/A	N/A
GCP-097	7/18/2018	199	12:20	N/A	N/A
GCP-098	7/18/2018	199	14:17	N/A	N/A
GCP-099	7/10/2018	191	7:58	N/A	N/A
GCP-100	7/11/2018	192	7:31	N/A	N/A
GCP-101	7/7/2018	188	14:47	N/A	N/A
GCP-102	7/7/2018	188	14:23	N/A	N/A
GCP-103	7/8/2018	189	10:05	N/A	N/A
GCP-104	7/13/2018	194	11:15	N/A	N/A
GCP-105	7/13/2018	194	14:55	N/A	N/A
GCP-106	7/14/2018	195	10:26	N/A	N/A
GCP-107	7/7/2018	188	10:59	N/A	N/A
GCP-108	7/6/2018	187	9:30	N/A	N/A
GCP-109	7/13/2018	194	17:04	N/A	N/A
GCP-110	7/11/2018	192	12:15	7/17/2018	18:17
GCP-111	7/17/208	198	14:54	7/17/2018	14:57
GCP-112	7/10/2018	191	15:40	N/A	N/A

GCP-113	7/14/2018	195	17:33	7/14/2018	17:36
GCP-114	7/11/2018	192	16:10	7/13/2018	14:57
GCP-115	7/10/2018	191	10:17	7/10/2018	10:20
GCP-116	7/11/2018	192	9:45	7/11/2018	9:48
GCP-117	8/14/2018	226	16:12	N/A	N/A
GCP-118	8/2/2018	214	12:54	8/4/2018	12:17
GCP-119	8/1/2018	213	9:21	8/3/2018	8:41
GCP-120	7/28/2018	209	12:50	7/29/2018	13:14
GCP-121	7/13/2018	194	9:47	7/13/2018	17:22
GCP-122	7/14/2018	195	9:24	7/14/2018	9:27
GCP-123	7/10/2018	191	11:10	7/15/2018	6:00
GCP-124	7/11/2018	192	15:47	N/A	N/A

5. *POINT COMPARISON*

Point ID	Point CK	Delta North (M)	Delta East (M)	Vertical Difference (M)
GCP-001	GCP-001CK	0.00	0.00	-0.01
GCP-002	GCP-002CK	0.01	0.00	0.00
GCP-003	GCP-003CK	0.01	-0.02	-0.02
GCP-004	GCP-004CK	-0.01	0.00	0.00
GCP-005	GCP-005CK	0.01	0.00	-0.02
GCP-006	GCP-006CK	-0.01	0.00	0.00
GCP-007	GCP-007CK	0.01	0.00	0.00
GCP-008	GCP-008CK	0.01	0.00	0.00
GCP-009	GCP-009CK	0.01	0.02	0.01
GCP-010	GCP-010CK	-0.02	0.00	-0.02
GCP-011	GCP-011CK	0.01	0.00	-0.01
GCP-012	GCP-012CK	0.00	0.00	0.00
GCP-014	GCP-014CK	0.00	0.00	0.00
GCP-015	GCP-015CK	0.00	0.00	-0.01
GCP-023	GCP-023CK	-0.01	0.01	-0.02
GCP-024	GCP-024CK	0.00	0.01	0.01
GCP-025	GCP-025CK	0.00	-0.03	0.00
GCP-026	GCP-026CK	-0.01	0.01	-0.01
GCP-027	GCP-027CK	0.00	0.01	-0.03
GCP-028	GCP-028CK	0.00	0.00	0.01
GCP-029	GCP-029CK	0.00	-0.01	0.02
GCP-030	GCP-030CK	-0.01	0.00	0.00
GCP-031	GCP-031CK	0.00	-0.01	0.04
GCP-032	GCP-032CK	0.01	0.00	0.00
GCP-033	GCP-033CK	0.01	0.00	-0.02
GCP-034	GCP-034CK	0.00	0.00	0.01
GCP-043	GCP-043CK	-0.01	0.01	-0.03
GCP-044	GCP-044CK	0.01	-0.01	-0.04
GCP-045	GCP-045CK	0.01	0.00	0.01
GCP-046	GCP-046CK	0.00	-0.01	-0.03
GCP-047	GCP-047CK	-0.01	-0.01	-0.04
GCP-048	GCP-048CK	0.00	0.00	0.00
GCP-049	GCP-049CK	0.00	-0.01	0.00
GCP-050	GCP-050CK	0.00	0.00	0.00
GCP-051	GCP-051CK	0.00	0.01	0.00
GCP-052	GCP-052CK	0.00	0.00	0.00

GCP-053	GCP-053CK	0.00	0.00	0.00
GCP-054	GCP-054CK	0.00	0.00	-0.01
GCP-055	GCP-055CK	0.00	0.00	-0.01
GCP-056	GCP-056CK	0.00	-0.01	0.02
GCP-073	GCP-073CK	0.00	0.00	0.02
GCP-074	GCP-074CK	0.00	0.00	0.01
GCP-075	GCP-075CK	0.00	0.01	0.02
GCP-076	GCP-076CK	0.00	-0.01	0.01
GCP-077	GCP-077CK	0.00	0.00	-0.01
GCP-078	GCP-078CK	0.00	0.00	0.03
GCP-080	GCP-080CK	-0.02	0.02	0.01
GCP-087	GCP-087CK	-0.03	0.02	-0.07
GCP-090	GCP-090CK	0.00	-0.01	0.06
GCP-091	GCP-091CK	0.00	0.01	0.01
GCP-110	GCP-110CK	0.00	0.00	0.01
GCP-111	GCP-111CK	0.00	-0.01	0.00
GCP-113	GCP-113CK	0.00	0.01	0.01
GCP-114	GCP-114CK	0.01	-0.01	-0.01
GCP-115	GCP-115CK	0.00	-0.01	-0.02
GCP-116	GCP-116CK	0.00	0.00	-0.03
GCP-118	GCP-118CK	0.03	-0.03	0.07
GCP-119	GCP-119CK	0.00	-0.01	0.00
GCP-120	GCP-120CK	-0.01	-0.02	-0.02
GCP-121	GCP-121CK	0.00	0.01	0.00
GCP-122	GCP-122CK	-0.01	0.01	0.00
GCP-123	GCP-123CK	0.01	0.00	0.00