

October 21, 2019  
File No. 02219702.00

Mr. Tom Farrell, Manager  
Division of Solid Waste Enforcement  
New Jersey Department of Environmental Protection  
9 Ewing Street  
Trenton, New Jersey 08625-0420

Mr. Jeffrey Meyer, Manager  
Division of Air Enforcement  
Bureau of Air Compliance and Enforcement  
New Jersey Department of Environmental Protection  
7 Ridgedale Avenue  
Cedar Knolls, New Jersey 07927

Subject:           October 19 and 20, 2019 Monitoring Station Data  
Keegan Landfill  
New Jersey Sports and Exposition Authority  
Permit Activity Number: EIP190001  
EA ID#: NEA 190001-13317

Dear Mr. Farrell and Mr. Meyer:

On October 19 and 20, 2019, NEXA, on behalf of the New Jersey Sports and Exposition Authority (NJSEA), notified the NJDEP hotline (1-877-WARNDEP) via phone that hydrogen sulfide (H<sub>2</sub>S) gas measurements in excess of 30 ppb over a 30-minute period (rolling averages) were recorded at monitoring station MS-2 at the Keegan Landfill (see Attachment 1). NJSEA made these notifications, as required under the NJDEP-approved Monitoring Action Plan and Reference #11 of the subject Permit, for raw data collected from MS-2 on October 19 and 20, 2019 (see Attachment 2). We provide discussion and analysis of the data recorded at MS-2 below.

## **MONITORING STATION MS-1**

The 30-minute rolling average H<sub>2</sub>S concentration at Monitoring Station MS-1 was in excess of 30 ppb between 8:06 pm and 9:09 pm on October 19, 2019 (see raw data in Attachment 2). The hydrogen sulfide concentration, average wind speed and wind direction measured during the period of the exceedances are provided in Attachment 3. The average wind speed and wind direction was 1.9 mph and 207 degrees (i.e., from the south-southwest). The wind direction and MS-1 are shown on a map of the site. The nearest potential receptor is approximately 2,500 feet from the monitoring station (see Attachment 4).

## **MONITORING STATION MS-2**

The 30-minute rolling average H<sub>2</sub>S concentration at Monitoring Station MS-2 was in excess of 30 ppb between 9:03 pm on October 19 and 2:29 am on October 20, 2019 (see raw data in Attachment 2). The hydrogen sulfide concentration, average wind speed and wind direction measured during the period of the exceedances are provided in Attachment 3. The average wind speed and wind



October 21, 2019

Page 2

direction was 1.1 mph and 232 degrees (i.e., from the southwest). The wind direction and MS-2 are shown on a map of the site. The nearest potential receptor is approximately 3,000 feet from the monitoring station (see Attachment 4).

The cause of the emissions from Monitoring Stations MS-1 and MS-2 appears to be uncontrolled emissions from the Landfill. There was no corrective action implemented in accordance with the Odor Control Plan as the overnight exceedances returned to less than 30 ppb by 2:30 am.

The landfill gas collection and control system (GCCS) installation is complete and commenced operation on September 5, 2019. The GCCS is being continuously monitored and adjusted to ensure efficient collection of landfill gas and to address specific exceedances at the monitoring stations.

Please call either of the undersigned with any questions or comments.

Sincerely,



Christine H. Stokes  
Project Manager  
SCS Engineers



Lisa K. Wilkinson, PE  
Project Director  
SCS Engineers

cc: G. Lugo, NJDEP (electronic copy)  
A. Fontana, NJDEP (electronic copy)  
T. Marturano, NJSEA (electronic copy)  
A. Levy, NJSEA (electronic copy)  
C. Sanz, NJSEA (electronic copy)  
J. Stewart, Lowenstein (electronic copy)  
G. Castano, Castano Quigley (electronic copy)  
L. Lim, NJDEP (electronic copy)  
B. Farbanish, NJDEP (electronic copy)  
J. Mattessich, NJDEP (electronic copy)

## Attachment 1

**From:** [Nexa](#)  
**To:** [csanz@njsea.com](mailto:csanz@njsea.com); [Wilkinson, Lisa](mailto:Wilkinson.Lisa); [cwu@emilcott.com](mailto:cwu@emilcott.com); [Ayers, Christine](mailto:Ayers.Christine); [tmarturano@njsea.com](mailto:tmarturano@njsea.com)  
**Subject:** IntelliForm For (8005117069) 2019-10-19 09:37PM  
**Date:** Saturday, October 19, 2019 9:38:01 PM

===== This message originated outside of SCS Engineers =====



## New Jersey Sports & Exposition Authority

10/19/2019 9:37:48 PM



IN: 10/19/19 08:06 PM (E1LEE)  
OUT: 10/19/19 09:37 PM (STLEM AutoFile)

MONITORING STATION #: **MS -1**  
TIME 1ST EMAIL RECEIVED: **8:06 PM**  
PPB: **38.000 PPB**  
TIME RELAYED: **8:12 PM**  
INCIDENT #: **19-10-19-2010-09**  
NEXA ASSOCIATE NAME: **MELISSA P**  
RELAYED TO OPERATOR #: **91**  
TIME LAST ALERT RECEIVED: **9:09 PM**  
HIGHEST PPB FOR MS: **102**  
TIME RELAYED: **9:34 PM**  
INCIDENT #: **19-10-19-2010-09**  
NEXA ASSOCIATE NAME: **LEE ANN**  
RELAYED TO OPERATOR #: **93**

- 
- 1) 10/19/19 08:07 PM E1MLI Dial DEP (DEPARTMENT OF ENVIRONMENTAL PROTECTION) 8779276337,,2 dialing DEP
  - 2) 10/19/19 08:13 PM E1MLI Set Delay Action 015 (2430507)
  - 3) 10/19/19 08:19 PM E1MLI alert 57 667 at 8 09 PM
  - 4) 10/19/19 08:19 PM E1MLI alert 75 000 at 8 15PM
  - 5) 10/19/19 08:22 PM E1MLI alert 90 000 at 8 21 PM

- 6) 10/19/19 08:29 PM E1MLI alert 101 000 at 8 27 PM
- 7) 10/19/19 08:36 PM E1MLI alert 102 000 at 8 33 PM
- 8) 10/19/19 08:40 PM D1HJE Get Delay Action (2430507)
- 9) 10/19/19 08:40 PM E1MLI alert 95 500 at 8 39 PM
- 10) 10/19/19 08:42 PM D1HJE Set Delay Action 015 (2430507)
- 11) 10/19/19 08:51 PM E1MLI alert 84 333 at 8 45 PM
- 12) 10/19/19 08:53 PM E1MLI alert 71 667 at 8 51 PM
- 13) 10/19/19 09:00 PM E1MLI alert 56 000 at 8 57 PM
- 14) 10/19/19 09:02 PM D1ANW Get Delay Action (2430507)
- 15) 10/19/19 09:04 PM D1ANW Set Delay Action 015 (2430507)
- 16) 10/19/19 09:11 PM E1MLI alert 43 000 at 09 03 PM
- 17) 10/19/19 09:11 PM E1MLI alert 35 333 at 09 03 PM
- 18) 10/19/19 09:11 PM E1MLI alert 31 000 at 09 09 PM
- 19) 10/19/19 09:26 PM D1CAR Get Delay Action (2430507)
- 20) 10/19/19 09:34 PM E1LEE Dial DEP (DEPARTMENT OF ENVIRONMENTAL PROTECTION) 8779276337,,2 dialed DEP
- 21) 10/19/19 09:37 PM E1LEE Auto Script CALL COMPLETED
- 22) 10/19/19 09:37 PM \*EM Email OK: OFFICE EMAIL, api@nexa.com

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**From:** [Nexa](#)  
**To:** [csanz@njsea.com](mailto:csanz@njsea.com); [Wilkinson.Lisa](mailto:Wilkinson.Lisa); [cwu@emilcott.com](mailto:cwu@emilcott.com); [Ayers.Christine](mailto:Ayers.Christine); [tmarturano@njsea.com](mailto:tmarturano@njsea.com)  
**Subject:** IntelliForm For (8005117069) 2019-10-20 02:47AM  
**Date:** Sunday, October 20, 2019 2:48:35 AM

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===== This message originated outside of SCS Engineers =====  
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## New Jersey Sports & Exposition Authority

10/20/2019 2:48:24 AM



IN: 10/19/19 09:11 PM (D1TIN)  
OUT: 10/20/19 02:47 AM (STLEM AutoFile)

MONITORING STATION #: **MS-2**  
TIME 1ST EMAIL RECEIVED: **09:04**  
PPB: **35.333 PPB**  
TIME RELAYED: **9:14 PM**  
INCIDENT #: **19-10-19-2112-11**  
NEXA ASSOCIATE NAME: **MELISSA P**  
RELAYED TO OPERATOR #: **91**  
TIME LAST ALERT RECEIVED: **2:12 AM**  
HIGHEST PPB FOR MS: **131.667**  
TIME RELAYED: **246AM**  
INCIDENT #: **19-10-20-0239-05**  
NEXA ASSOCIATE NAME: **TINA**  
RELAYED TO OPERATOR #: **16**

- 
- 1) 10/19/19 09:12 PM E1MLI Dial DEP (DEPARTMENT OF ENVIRONMENTAL PROTECTION) 8779276337,,2
  - 2) 10/19/19 09:14 PM E1MLI alert 45 000 at 9 06 PM
  - 3) 10/19/19 09:14 PM E1MLI Set Delay Action 015 (2430576)
  - 4) 10/19/19 09:20 PM E1MLI alert 53 333 at 9 15 PM
  - 5) 10/19/19 09:20 PM E1MLI alert 60 167 at 9 18

- 6) 10/19/19 09:32 PM E1LEE alert 63.667 at 9:24 pm
- 7) 10/19/19 09:32 PM D1HJE Get Delay Action (2430576)
- 8) 10/19/19 09:33 PM E1LEE alert 73.833 at 9:30 pm
- 9) 10/19/19 09:33 PM E1LEE Set Delay Action 015 (2430576)
- 10) 10/19/19 09:38 PM E1LEE alert 80.500 at 9
- 11) 10/19/19 09:39 PM E1LEE alert 80.500 at 9:30 pm
- 12) 10/19/19 09:43 PM E1LEE alert 87.333 at 9:42 pm\
- 13) 10/19/19 09:50 PM E1MLI alert 90 000 at 9 48 PM
- 14) 10/19/19 09:51 PM D1HJE Get Delay Action (2430576)
- 15) 10/19/19 09:55 PM E1MLI alert 85 667 at 9 54 PM
- 16) 10/19/19 10:04 PM E1MLI alert 81 167 at 10 00 PM
- 17) 10/19/19 10:06 PM E1MLI Set Delay Action 015 (2430576)
- 18) 10/19/19 10:07 PM E1MLI alert 74 667 at 10 06 PM
- 19) 10/19/19 10:14 PM E1MLI alert 68 167 at 10 12 PM
- 20) 10/19/19 10:19 PM E1MLI alert 57 00 at 10 18 PM
- 21) 10/19/19 10:23 PM D1HJE Get Delay Action (2430576)
- 22) 10/19/19 10:24 PM D1HJE Set Delay Action 015 (2430576)
- 23) 10/19/19 10:29 PM E1MLI alert 63 500 at 10 24 PM
- 24) 10/19/19 10:29 PM E1MLI alert 74 667 at 10 27 PM
- 25) 10/19/19 10:39 PM E1MLI alert 74 833 at 10 33
- 26) 10/19/19 10:43 PM E1MLI alert 70 833 at 10 39 PM
- 27) 10/19/19 10:43 PM D1HJE Get Delay Action (2430576)
- 28) 10/19/19 10:44 PM D1HJE Set Delay Action 015 (2430576)
- 29) 10/19/19 10:46 PM E1MLI alert 66 833 at 10 45 PM
- 30) 10/19/19 10:52 PM E1MLI 67 000 10 51 PM
- 31) 10/19/19 11:05 PM D1HRC Get Delay Action (2430576)
- 32) 10/19/19 11:06 PM E1MLI alert 52 333 at 10 57 PM
- 33) 10/19/19 11:06 PM E1MLI alert 37 667 at 11 08 PM
- 34) 10/19/19 11:09 PM E1LEE Set Delay Action 015 (2430576)
- 35) 10/19/19 11:10 PM E1MLI alert 34 000 at 11 09 PM
- 36) 10/19/19 11:18 PM E1MLI alert 32 333 at 08 15 PM
- 37) 10/19/19 11:18 PM E1MLI alert 32 333 at 11 15 PM
- 38) 10/19/19 11:23 PM E1MLI alert 32 167 at 11 21 PM
- 39) 10/19/19 11:26 PM D1HRC Get Delay Action (2430576)
- 40) 10/19/19 11:28 PM E1MLI alert 42 333 at 11 27 PM
- 41) 10/19/19 11:36 PM E1LEE alert 60.333 at 11:33 pm
- 42) 10/19/19 11:37 PM E1LEE alert 78.333 at 11:36 pm
- 43) 10/19/19 11:38 PM E1LEE Set Delay Action 015 (2430576)
- 44) 10/19/19 11:49 PM E1LEE alert 94.333 at 11:42 pm



- 45) 10/19/19 11:50 PM E1LEE alert 107.833 at 11:48 pm
- 46) 10/19/19 11:50 PM E1LEE Set Delay Action 015 (2430576)
- 47) 10/19/19 11:56 PM E1LEE alert 119.833 at 11:54 pm
- 48) 10/20/19 12:03 AM E1LEE alert 120.667 at 12:00am
- 49) 10/20/19 12:03 AM E1LEE Set Delay Action 015 (2430576)
- 50) 10/20/19 12:09 AM E1LEE alert 111.667 at 12:06 am
- 51) 10/20/19 12:15 AM E1LEE alert 102.667 at 12:12 am
- 52) 10/20/19 12:21 AM D1MAR Get Delay Action (2430576)
- 53) 10/20/19 12:23 AM E1LEE alert 91.333 at 12:18 am
- 54) 10/20/19 12:23 AM E1LEE Set Delay Action 015 (2430576)
- 55) 10/20/19 12:27 AM E1LEE alert 80.000 at 12:24am
- 56) 10/20/19 12:34 AM E1DLC 68 667 at 1230am
- 57) 10/20/19 12:34 AM E1DLC Set Delay Action 015 (2430576)
- 58) 10/20/19 12:39 AM E1DLC 60 677 at 1236am
- 59) 10/20/19 12:39 AM E1DLC Set Delay Action 015 (2430576)
- 60) 10/20/19 12:40 AM E1DLC 66 333 at 1239am
- 61) 10/20/19 12:40 AM E1DLC Set Delay Action 015 (2430576)
- 62) 10/20/19 12:47 AM E1DLC 73 at 1245am
- 63) 10/20/19 12:47 AM E1DLC Set Delay Action 015 (2430576)
- 64) 10/20/19 12:52 AM E1DLC 86 333 at 1251am
- 65) 10/20/19 12:52 AM E1DLC Set Delay Action 015 (2430576)
- 66) 10/20/19 12:58 AM E1DLC 99 667 at 1257am
- 67) 10/20/19 12:58 AM E1DLC Set Delay Action 015 (2430576)
- 68) 10/20/19 01:10 AM E1DLC 113 at 103 am
- 69) 10/20/19 01:11 AM E1DLC 126 at 109am
- 70) 10/20/19 01:11 AM E1DLC Set Delay Action 015 (2430576)
- 71) 10/20/19 01:19 AM E1DLC 131 at 1215am
- 72) 10/20/19 01:19 AM E1DLC Set Delay Action 015 (2430576)
- 73) 10/20/19 01:22 AM E1DLC 131 667 at 121am
- 74) 10/20/19 01:22 AM E1DLC Set Delay Action 015 (2430576)
- 75) 10/20/19 01:30 AM E1DLC 130 at 127am
- 76) 10/20/19 01:30 AM E1DLC Set Delay Action 015 (2430576)
- 77) 10/20/19 01:36 AM E1DLC 118 5 at 133am
- 78) 10/20/19 01:36 AM E1DLC Set Delay Action 015 (2430576)
- 79) 10/20/19 01:43 AM E1DLC 107 at 139am
- 80) 10/20/19 01:43 AM E1DLC Set Delay Action 015 (2430576)
- 81) 10/20/19 01:53 AM E1DLC 93 833 at 145am
- 82) 10/20/19 01:53 AM E1DLC 76 at 151am
- 83) 10/20/19 01:53 AM E1DLC Set Delay Action 015 (2430576)

84) 10/20/19 01:56 AM E1DLC 66 667 at 154 am  
85) 10/20/19 01:56 AM E1DLC Set Delay Action 015 (2430576)  
86) 10/20/19 02:04 AM E1DLC 57 333 at 2am  
87) 10/20/19 02:04 AM E1DLC Set Delay Action 015 (2430576)  
88) 10/20/19 02:15 AM E1DLC 56 at 206am  
89) 10/20/19 02:15 AM E1DLC 49 167 at 212am  
90) 10/20/19 02:15 AM E1DLC Set Delay Action 015 (2430576)  
91) 10/20/19 02:34 AM D1TIN Get Delay Action (2430576)  
92) 10/20/19 02:38 AM D1TIN Dial DEP (DEPARTMENT OF ENVIRONMENTAL PROTECTION) 8779276337,,2 dialing  
DEP  
93) 10/20/19 02:39 AM D1TIN OPER 16  
94) 10/20/19 02:47 AM D1TIN Auto Script CALL COMPLETED  
95) 10/20/19 02:47 AM D1TIN Set Delay Action 000 (2430576)  
96) 10/20/19 02:47 AM \*EM Email OK: OFFICE EMAIL, api@nexa.com

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## Attachment 2

**Hydrogen Sulfide Concentrations  
Monitoring Station MS-1  
Keegan Landfill**

Date & Time	H <sub>2</sub> S Concentration (ppb)	30 Minute Rolling Average (ppb)
10/19/2019 16:00	1	
10/19/2019 16:05	1	
10/19/2019 16:11	1	
10/19/2019 16:17	2	
10/19/2019 16:23	2	
10/19/2019 16:28	1	1.3
10/19/2019 16:34	1	1.3
10/19/2019 16:40	1	1.3
10/19/2019 16:46	1	1.3
10/19/2019 16:51	0	1.0
10/19/2019 16:57	0	0.7
10/19/2019 17:03	0	0.5
10/19/2019 17:09	1	0.5
10/19/2019 17:14	0	0.3
10/19/2019 17:20	0	0.2
10/19/2019 17:26	0	0.2
10/19/2019 17:32	0	0.2
10/19/2019 17:37	0	0.2
10/19/2019 17:43	0	0.0
10/19/2019 17:49	0	0.0
10/19/2019 17:55	0	0.0
10/19/2019 18:00	0	0.0
10/19/2019 18:06	0	0.0
10/19/2019 18:12	0	0.0
10/19/2019 18:18	0	0.0
10/19/2019 18:23	0	0.0
10/19/2019 18:29	0	0.0
10/19/2019 18:35	0	0.0
10/19/2019 18:41	1	0.2
10/19/2019 18:46	2	0.5
10/19/2019 18:52	2	0.8
10/19/2019 18:58	2	1.2
10/19/2019 19:04	2	1.5
10/19/2019 19:09	2	1.8
10/19/2019 19:15	2	2.0
10/19/2019 19:21	1	1.8
10/19/2019 19:27	1	1.7
10/19/2019 19:32	2	1.7
10/19/2019 19:38	16	4.0

**Hydrogen Sulfide Concentrations  
Monitoring Station MS-1  
Keegan Landfill**

Date & Time	H <sub>2</sub> S Concentration (ppb)	30 Minute Rolling Average (ppb)
10/19/2019 19:44	18	6.7
10/19/2019 19:50	26	10.7
10/19/2019 19:55	74	22.8
10/19/2019 20:01	92	38.0
10/19/2019 20:07	120	57.7
10/19/2019 20:13	120	75.0
10/19/2019 20:18	108	90.0
10/19/2019 20:24	92	101.0
10/19/2019 20:30	80	102.0
10/19/2019 20:36	53	95.5
10/19/2019 20:41	53	84.3
10/19/2019 20:47	44	71.7
10/19/2019 20:53	14	56.0
10/19/2019 20:59	14	43.0
10/19/2019 21:04	8	31.0
10/19/2019 21:10	6	23.2
10/19/2019 21:16	3	14.8
10/19/2019 21:22	3	8.0
10/19/2019 21:27	2	6.0
10/19/2019 21:33	2	4.0
10/19/2019 21:39	2	3.0
10/19/2019 21:45	2	2.3
10/19/2019 21:50	1	2.0
10/19/2019 21:56	1	1.7
10/19/2019 22:02	1	1.5
10/19/2019 22:08	0	1.2
10/19/2019 22:13	0	0.8
10/19/2019 22:19	0	0.5
10/19/2019 22:25	0	0.3
10/19/2019 22:31	0	0.2
10/19/2019 22:36	0	0.0
10/19/2019 22:42	2	0.3
10/19/2019 22:48	3	0.8
10/19/2019 22:54	3	1.3
10/19/2019 22:59	4	2.0
10/19/2019 23:05	5	2.8
10/19/2019 23:11	49	11.0
10/19/2019 23:17	5	11.5
10/19/2019 23:22	4	11.7

**Hydrogen Sulfide Concentrations  
Monitoring Station MS-1  
Keegan Landfill**

Date & Time	H <sub>2</sub> S Concentration (ppb)	30 Minute Rolling Average (ppb)
10/19/2019 23:28	4	11.8
10/19/2019 23:34	3	11.7
10/19/2019 23:40	3	11.3
10/19/2019 23:45	4	3.8
10/19/2019 23:51	3	3.5
10/19/2019 23:57	3	3.3
10/20/2019 0:03	3	3.2
10/20/2019 0:08	3	3.2
10/20/2019 0:14	2	3.0
10/20/2019 0:20	2	2.7
10/20/2019 0:26	2	2.5
10/20/2019 0:31	8	3.3
10/20/2019 0:37	10	4.5
10/20/2019 0:43	10	5.7
10/20/2019 0:49	8	6.7
10/20/2019 0:54	8	7.7



**Hydrogen Sulfide Concentrations  
Monitoring Station MS-2  
Keegan Landfill**

Date & Time	H <sub>2</sub> S Concentration (ppb)	30 Minute Rolling Average (ppb)
10/19/2019 17:03	6	
10/19/2019 17:09	6	
10/19/2019 17:15	6	
10/19/2019 17:20	6	
10/19/2019 17:26	10	
10/19/2019 17:32	10	-
10/19/2019 17:37	10	-
10/19/2019 17:55	8	-
10/19/2019 18:00	8	-
10/19/2019 18:06	7	-
10/19/2019 18:12	6	-
10/19/2019 18:18	6	-
10/19/2019 18:23	6	-
10/19/2019 18:29	7	6.7
10/19/2019 18:35	13	7.5
10/19/2019 18:41	13	8.5
10/19/2019 18:46	14	9.8
10/19/2019 18:52	14	11.2
10/19/2019 18:58	14	12.5
10/19/2019 19:04	14	13.7
10/19/2019 19:09	13	13.7
10/19/2019 19:15	9	13.0
10/19/2019 19:21	7	11.8
10/19/2019 19:27	7	10.7
10/19/2019 19:32	4	9.0
10/19/2019 19:38	4	7.3
10/19/2019 19:44	3	5.7
10/19/2019 19:50	3	4.7
10/19/2019 19:55	3	4.0
10/19/2019 20:01	3	3.3
10/19/2019 20:07	3	3.2
10/19/2019 20:13	6	3.5
10/19/2019 20:18	7	4.2
10/19/2019 20:24	8	5.0
10/19/2019 20:30	8	5.8
10/19/2019 20:36	8	6.7
10/19/2019 20:41	28	10.8
10/19/2019 20:47	49	18.0
10/19/2019 20:53	49	25.0



**Hydrogen Sulfide Concentrations  
Monitoring Station MS-2  
Keegan Landfill**

Date & Time	H <sub>2</sub> S Concentration (ppb)	30 Minute Rolling Average (ppb)
10/19/2019 20:59	70	35.3
10/19/2019 21:04	69	45.5
10/19/2019 21:10	55	53.3
10/19/2019 21:16	69	60.2
10/19/2019 21:22	70	63.7
10/19/2019 21:27	110	73.8
10/19/2019 21:33	110	80.5
10/19/2019 21:39	110	87.3
10/19/2019 21:45	71	90.0
10/19/2019 21:50	43	85.7
10/19/2019 21:56	43	81.2
10/19/2019 22:02	71	74.7
10/19/2019 22:08	71	68.2
10/19/2019 22:13	43	57.0
10/19/2019 22:19	110	63.5
10/19/2019 22:25	110	74.7
10/19/2019 22:31	44	74.8
10/19/2019 22:36	47	70.8
10/19/2019 22:42	47	66.8
10/19/2019 22:48	44	67.0
10/19/2019 22:54	22	52.3
10/19/2019 22:59	22	37.7
10/19/2019 23:05	22	34.0
10/19/2019 23:11	37	32.3
10/19/2019 23:17	46	32.2
10/19/2019 23:22	105	42.3
10/19/2019 23:28	130	60.3
10/19/2019 23:34	130	78.3
10/19/2019 23:40	118	94.3
10/19/2019 23:45	118	107.8
10/19/2019 23:51	118	119.8
10/19/2019 23:57	110	120.7
10/20/2019 0:03	76	111.7
10/20/2019 0:08	76	102.7
10/20/2019 0:14	50	91.3
10/20/2019 0:20	50	80.0
10/20/2019 0:26	50	68.7
10/20/2019 0:31	62	60.7
10/20/2019 0:37	110	66.3

**Hydrogen Sulfide Concentrations  
Monitoring Station MS-2  
Keegan Landfill**

Date & Time	H <sub>2</sub> S Concentration (ppb)	30 Minute Rolling Average (ppb)
10/20/2019 0:43	116	73.0
10/20/2019 0:49	130	86.3
10/20/2019 0:54	130	99.7
10/20/2019 1:00	130	113.0
10/20/2019 1:06	140	126.0
10/20/2019 1:12	140	131.0
10/20/2019 1:17	120	131.7
10/20/2019 1:23	120	130.0
10/20/2019 1:29	61	118.5
10/20/2019 1:35	61	107.0
10/20/2019 1:40	61	93.8
10/20/2019 1:46	33	76.0
10/20/2019 1:52	64	66.7
10/20/2019 1:58	64	57.3
10/20/2019 2:03	53	56.0
10/20/2019 2:09	20	49.2
10/20/2019 2:15	21	42.5
10/20/2019 2:21	20	40.3
10/20/2019 2:26	17	32.5
10/20/2019 2:32	16	24.5
10/20/2019 2:38	20	19.0
10/20/2019 2:44	20	19.0
10/20/2019 2:49	17	18.3
10/20/2019 2:55	17	17.8
10/20/2019 3:01	17	17.8
10/20/2019 3:07	16	17.8
10/20/2019 3:12	8	15.8
10/20/2019 3:18	7	13.7
10/20/2019 3:24	7	12.0
10/20/2019 3:30	5	10.0
10/20/2019 3:35	5	8.0
10/20/2019 3:41	5	6.2
10/20/2019 3:47	5	5.7
10/20/2019 3:53	5	5.3
10/20/2019 3:58	6	5.2
10/20/2019 4:04	9	5.8
10/20/2019 4:10	9	6.5
10/20/2019 4:16	9	7.2
10/20/2019 4:21	6	7.3

**Hydrogen Sulfide Concentrations  
Monitoring Station MS-2  
Keegan Landfill**

Date & Time	H <sub>2</sub> S Concentration (ppb)	30 Minute Rolling Average (ppb)
10/20/2019 4:27	5	7.3
10/20/2019 4:33	5	7.2
10/20/2019 4:39	5	6.5
10/20/2019 4:44	7	6.2
10/20/2019 4:50	7	5.8
10/20/2019 4:56	7	6.0
10/20/2019 5:02	4	5.8
10/20/2019 5:07	3	5.5
10/20/2019 5:13	2	5.0
10/20/2019 5:19	1	4.0
10/20/2019 5:25	1	3.0
10/20/2019 5:30	1	2.0
10/20/2019 5:36	1	1.5
10/20/2019 5:42	1	1.2
10/20/2019 5:48	2	1.2
10/20/2019 5:53	2	1.3
10/20/2019 5:59	2	1.5

## Attachment 3

Daily H <sub>2</sub> S Readings at MS1 - Keegan Landfill Monitoring			
Date/Time	MS-1 -- Hydrogen Sulfide (ppb)	Wind Speed (mph)	Wind Direction
10/19/19 9:01	0	2.3	SW
10/19/19 9:06	0	2.0	SSW
10/19/19 9:12	0	2.6	SSW
10/19/19 9:18	0	1.7	W
10/19/19 9:24	1	2.1	SSW
10/19/19 9:29	2	2.8	SSW
10/19/19 9:35	2	1.2	SSW
10/19/19 9:41	2	2.2	SW
10/19/19 9:47	2	1.9	SW
10/19/19 9:52	2	1.6	NNW
10/19/19 9:58	1	1.0	ENE
10/19/19 10:04	1	1.0	NNW
10/19/19 10:10	1	0.6	NW
10/19/19 10:15	1	1.6	W
10/19/19 10:21	1	2.2	W
10/19/19 10:27	1	0.8	SW
10/19/19 10:33	1	0.9	W
10/19/19 10:38	1	1.9	WSW
10/19/19 10:44	1	1.7	W
10/19/19 10:50	1	2.0	W
10/19/19 10:56	1	3.1	NW
10/19/19 11:01	1	2.5	S
10/19/19 11:07	1	0.8	SE
10/19/19 11:13	1	1.9	NE
10/19/19 11:19	1	1.6	WNW
10/19/19 11:24	0	1.1	NE
10/19/19 11:30	0	2.0	ENE
10/19/19 11:36	0	2.2	SW
10/19/19 11:42	0	1.5	WSW
10/19/19 11:47	0	2.5	SW
10/19/19 11:53	0	3.0	NW
10/19/19 11:59	0	2.0	NNW
10/19/19 12:05	0	1.0	NNE
10/19/19 12:10	0	1.9	ENE
10/19/19 12:16	0	2.1	NW
10/19/19 12:22	0	3.8	SW
10/19/19 12:28	0	1.4	NW
10/19/19 12:33	0	2.1	SE
10/19/19 12:39	0	3.3	SW
10/19/19 12:45	0	3.7	SSW
10/19/19 12:51	0	3.1	SSW
10/19/19 12:56	0	2.2	WNW
10/19/19 13:02	0	2.3	WNW
10/19/19 13:08	0	3.2	SW
10/19/19 13:14	0	2.9	NW
10/19/19 13:19	0	1.7	N
10/19/19 13:25	0	1.9	WNW
10/19/19 13:31	0	1.4	NNE
10/19/19 13:37	0	2.5	SW
10/19/19 13:42	0	2.0	W
10/19/19 13:48	0	1.5	W
10/19/19 13:54	0	2.3	SE
10/19/19 14:00	0	1.8	SSW
10/19/19 14:05	0	4.0	SSW
10/19/19 14:11	1	1.5	S

NOTE: Wind Direction reported in the direction that the wind is coming from

10/19/19 14:17	1	3.4	SSW
10/19/19 14:23	1	1.9	SSW
10/19/19 14:28	1	2.2	S
10/19/19 14:34	1	1.3	S
10/19/19 14:40	1	5.7	SSW
10/19/19 14:46	1	3.6	SSW
10/19/19 14:51	1	1.9	SE
10/19/19 14:57	1	3.9	SW
10/19/19 15:03	0	2.4	WSW
10/19/19 15:54	0	3.6	SW
10/19/19 16:00	1	5.1	SW
10/19/19 16:05	1	4.2	SSW
10/19/19 16:11	1	5.2	SSW
10/19/19 16:17	2	4.1	SW
10/19/19 16:23	2	1.1	SSW
10/19/19 16:28	1	1.7	WSW
10/19/19 16:34	1	3.2	SW
10/19/19 16:40	1	2.2	SW
10/19/19 16:46	1	3.0	WSW
10/19/19 16:51	0	2.5	SW
10/19/19 16:57	0	2.3	SW
10/19/19 17:03	0	2.1	WSW
10/19/19 17:09	1	3.7	SSW
10/19/19 17:14	0	1.5	SW
10/19/19 17:20	0	3.2	SW
10/19/19 17:26	0	2.7	SSW
10/19/19 17:32	0	0.6	WSW
10/19/19 17:37	0	1.0	SW
10/19/19 17:43	0	1.0	SSW
10/19/19 17:49	0	1.4	SW
10/19/19 17:55	0	1.1	SW
10/19/19 18:00	0	1.1	SSW
10/19/19 18:06	0	1.6	SSW
10/19/19 18:12	0	1.0	SSW
10/19/19 18:18	0	1.1	SSW
10/19/19 18:23	0	1.2	SSW

NOTE: Wind Direction reported in the direction that the wind is coming from

10/19/19 18:29	0	1.6	SSW
10/19/19 18:35	0	2.2	SSW
10/19/19 18:41	1	1.6	SSW
10/19/19 18:46	2	2.3	SSW
10/19/19 18:52	2	2.6	SSW
10/19/19 18:58	2	1.4	SSW
10/19/19 19:04	2	2.6	SSW
10/19/19 19:09	2	1.0	S
10/19/19 19:15	2	0.7	WSW
10/19/19 19:21	1	1.3	SSW
10/19/19 19:27	1	2.0	SSW
10/19/19 19:32	2	2.5	SSW
10/19/19 19:38	16	2.5	SSW
10/19/19 19:44	18	1.6	SSW
10/19/19 19:50	26	0.7	SW
10/19/19 19:55	74	2.0	SSW
10/19/19 20:01	92	2.5	SSW
10/19/19 20:07	120	2.9	SSW
10/19/19 20:13	120	2.4	SSW
10/19/19 20:18	108	1.3	SSW
10/19/19 20:24	92	2.0	SSW
10/19/19 20:30	80	0.5	SW
10/19/19 20:36	53	2.7	SSW
10/19/19 20:41	53	1.7	SW
10/19/19 20:47	44	1.9	S
10/19/19 20:53	14	2.1	SSW
10/19/19 20:59	14	2.3	SSW
10/19/19 21:04	8	1.7	SW
10/19/19 21:10	6	0.9	WSW
10/19/19 21:16	3	0.5	SW
10/19/19 21:22	3	0.6	SW
10/19/19 21:27	2	1.4	SSW
10/19/19 21:33	2	1.2	SSW
10/19/19 21:39	2	1.5	SSW
10/19/19 21:45	2	2.4	SSW
10/19/19 21:50	1	1.3	SSW
10/19/19 21:56	1	1.5	SSW
10/19/19 22:02	1	1.4	SSW
10/19/19 22:08	0	0.7	SW
10/19/19 22:13	0	0.9	SSW
10/19/19 22:19	0	0.8	SSW
10/19/19 22:25	0	0.7	SW
10/19/19 22:31	0	1.3	S
10/19/19 22:36	0	0.4	NNW
10/19/19 22:42	2	0.6	E
10/19/19 22:48	3	0.9	W
10/19/19 22:54	3	0.6	SSE
10/19/19 22:59	4	0.5	WSW
10/19/19 23:05	5	0.6	SW
10/19/19 23:11	49	0.7	SW
10/19/19 23:17	5	0.8	SSW
10/19/19 23:22	4	0.4	SE
10/19/19 23:28	4	0.5	SW
10/19/19 23:34	3	1.0	WSW
10/19/19 23:40	3	0.4	SSE
10/19/19 23:45	4	0.8	W
10/19/19 23:51	3	0.5	SSW
10/19/19 23:57	3	0.5	ESE

NOTE: Wind Direction reported in the direction that the wind is coming from





Daily H <sub>2</sub> S Readings at MS2 - Keegan Landfill Monitoring			
Date/Time	MS-2 -- Hydrogen Sulfide (ppb)	Wind Speed (mph)	Wind Direction
10/19/19 0:00	2	0.5	SW
10/19/19 0:05	2	0.6	SW
10/19/19 0:11	2	1.1	W
10/19/19 0:17	2	0.8	SW
10/19/19 0:23	2	1.1	WSW
10/19/19 0:28	2	1.0	SSW
10/19/19 0:34	2	0.5	WSW
10/19/19 0:40	2	0.4	WSW
10/19/19 0:46	5	1.0	WSW
10/19/19 0:51	5	1.0	WNW
10/19/19 0:57	7	0.9	WNW
10/19/19 1:03	7	1.1	W
10/19/19 1:09	3	0.8	WSW
10/19/19 1:14	2	0.8	W
10/19/19 1:20	2	1.0	W
10/19/19 1:26	2	0.6	SW
10/19/19 1:32	2	0.6	SSW
10/19/19 1:37	1	0.7	SW
10/19/19 1:43	1	0.9	W
10/19/19 1:49	1	0.9	W
10/19/19 1:55	1	1.4	WNW
10/19/19 2:00	2	1.3	W
10/19/19 2:06	2	1.0	SSW
10/19/19 2:12	3	0.6	SSW
10/19/19 2:18	4	0.9	SSW
10/19/19 2:23	4	1.1	W
10/19/19 2:29	4	1.2	W
10/19/19 2:35	3	0.8	W
10/19/19 2:41	3	1.0	WNW
10/19/19 2:46	3	1.7	WNW
10/19/19 2:52	3	1.6	W
10/19/19 2:58	3	1.2	W
10/19/19 3:04	3	0.7	W
10/19/19 3:09	3	0.4	SSW
10/19/19 3:15	7	0.7	NNW
10/19/19 3:21	7	0.8	SW
10/19/19 3:26	7	2.3	W
10/19/19 3:32	21	0.7	SW
10/19/19 3:38	21	1.1	NW
10/19/19 3:44	21	1.2	WNW
10/19/19 3:50	16	1.3	WNW
10/19/19 3:55	9	1.2	WNW
10/19/19 4:01	8	1.0	NW
10/19/19 4:07	7	0.9	NNW

NOTE: Wind Direction reported in the direction that the wind is coming from

10/19/19 4:13	4	1.2	WNW
10/19/19 4:18	4	1.3	W
10/19/19 4:24	4	1.4	W
10/19/19 4:30	3	1.7	WNW
10/19/19 4:36	2	0.8	W
10/19/19 4:41	2	1.3	S
10/19/19 4:47	2	0.8	SSW
10/19/19 4:53	38	1.0	W
10/19/19 4:58	38	1.0	W
10/19/19 5:04	38	0.3	NW
10/19/19 5:10	35	0.8	WNW
10/19/19 5:16	30	1.7	W
10/19/19 5:21	29	1.2	W
10/19/19 5:27	28	1.2	WNW
10/19/19 5:33	15	1.6	W
10/19/19 5:39	8	1.9	WNW
10/19/19 5:44	8	0.8	SW
10/19/19 5:50	7	1.0	WNW
10/19/19 5:56	7	1.3	WNW
10/19/19 6:02	6	2.0	WNW
10/19/19 6:08	4	2.3	WNW
10/19/19 6:13	4	0.8	SSW
10/19/19 6:19	4	1.3	S
10/19/19 6:25	10	0.8	SW
10/19/19 6:30	23	0.5	W
10/19/19 6:36	23	0.9	W
10/19/19 6:42	23	1.0	W
10/19/19 6:48	23	1.0	W
10/19/19 6:54	24	1.0	WSW
10/19/19 6:59	23	1.7	WSW
10/19/19 7:05	24	1.7	W
10/19/19 7:11	26	1.4	SW
10/19/19 7:16	26	0.8	WNW
10/19/19 7:22	26	1.3	W
10/19/19 7:28	26	1.0	W
10/19/19 7:34	28	0.5	WSW
10/19/19 7:40	28	1.9	WSW
10/19/19 7:45	25	1.7	W
10/19/19 7:51	25	0.9	WNW
10/19/19 7:57	28	1.3	W
10/19/19 8:03	25	1.1	W
10/19/19 8:08	24	1.3	SW
10/19/19 8:14	24	1.0	SW
10/19/19 8:20	42	0.9	W
10/19/19 8:25	24	1.4	SSW
10/19/19 8:31	24	2.6	W
10/19/19 8:37	19	1.7	W

NOTE: Wind Direction reported in the direction that the wind is coming from

10/19/19 8:43	6	2.0	WSW
10/19/19 8:48	5	1.8	SW
10/19/19 8:54	5	1.3	W
10/19/19 9:00	6	1.4	SW
10/19/19 9:06	5	1.7	SSW
10/19/19 9:12	5	1.1	WSW
10/19/19 9:17	5	2.7	W
10/19/19 9:23	4	1.7	SSW
10/19/19 9:29	3	1.6	NNW
10/19/19 9:34	3	0.9	SE
10/19/19 9:40	3	2.3	WNW
10/19/19 9:46	3	3.1	W
10/19/19 9:52	3	2.4	N
10/19/19 9:57	3	1.1	NE
10/19/19 10:03	1	2.1	N
10/19/19 10:09	1	1.8	NNE
10/19/19 10:15	1	1.8	NE
10/19/19 10:20	1	1.7	WNW
10/19/19 10:26	1	1.5	NNE
10/19/19 10:32	1	1.3	NW
10/19/19 10:38	1	1.7	NE
10/19/19 10:43	1	0.7	W
10/19/19 10:49	1	1.7	ESE
10/19/19 10:55	1	2.0	ENE
10/19/19 11:01	1	2.6	N
10/19/19 11:06	1	1.7	N
10/19/19 11:12	1	2.1	NNE
10/19/19 11:18	1	1.4	ENE
10/19/19 11:24	1	1.9	E
10/19/19 11:29	1	2.8	NNE
10/19/19 11:35	1	1.5	NNE
10/19/19 11:41	1	3.4	NNW
10/19/19 11:47	1	1.7	SE
10/19/19 11:52	1	1.7	S
10/19/19 11:58	1	1.7	NW
10/19/19 12:04	1	1.8	NNW
10/19/19 12:10	1	2.0	E
10/19/19 12:15	1	2.3	NNE
10/19/19 12:21	1	1.3	ENE
10/19/19 12:27	1	3.2	WSW
10/19/19 12:33	1	1.8	N
10/19/19 12:38	1	2.0	NE
10/19/19 12:44	1	3.9	W
10/19/19 12:50	1	1.4	SW
10/19/19 12:56	2	1.0	SSW
10/19/19 13:01	1	2.0	N
10/19/19 13:07	1	3.2	W

NOTE: Wind Direction reported in the direction that the wind is coming from

10/19/19 13:13	1	2.5	W
10/19/19 13:19	1	2.0	WSW
10/19/19 13:24	1	1.0	ENE
10/19/19 13:30	1	1.2	NNW
10/19/19 13:36	1	2.1	W
10/19/19 13:42	2	3.1	W
10/19/19 13:47	2	3.2	WNW
10/19/19 13:53	2	2.8	SSW
10/19/19 13:59	2	1.4	N
10/19/19 14:05	2	2.3	SSW
10/19/19 14:10	1	2.5	SW
10/19/19 14:16	2	4.3	SW
10/19/19 14:22	1	2.3	SSE
10/19/19 14:28	1	3.2	SW
10/19/19 14:33	1	1.9	SE
10/19/19 14:39	1	2.0	SE
10/19/19 14:45	1	2.1	WSW
10/19/19 14:51	2	1.5	SW
10/19/19 14:56	2	2.1	SE
10/19/19 15:02	2	2.9	SW
10/19/19 15:08	2	1.5	W
10/19/19 15:14	2	2.7	WSW
10/19/19 15:19	2	2.5	SW
10/19/19 15:25	2	2.7	SW
10/19/19 15:31	2	4.3	WSW
10/19/19 15:37	2	3.1	SSW
10/19/19 15:42	2	2.5	WSW
10/19/19 15:48	2	1.4	NNW
10/19/19 15:54	2	2.9	SW
10/19/19 16:00	3	2.2	SW
10/19/19 16:05	4	2.9	SSW
10/19/19 16:11	5	2.3	SW
10/19/19 16:17	4	2.3	S
10/19/19 16:23	5	2.4	SW
10/19/19 16:28	4	4.0	W
10/19/19 16:34	3	4.5	W
10/19/19 16:40	3	2.7	SSW
10/19/19 16:46	7	2.7	SW
10/19/19 16:51	2	4.4	W
10/19/19 16:57	4	2.6	W
10/19/19 17:03	6	3.5	W
10/19/19 17:09	6	3.0	WSW
10/19/19 17:15	6	2.1	SSW
10/19/19 17:20	6	3.4	W
10/19/19 17:26	10	2.3	WSW
10/19/19 17:32	10	1.7	WSW
10/19/19 17:37	10	2.8	W

NOTE: Wind Direction reported in the direction that the wind is coming from

10/19/19 17:55	8	2.2	W
10/19/19 18:00	8	2.6	W
10/19/19 18:06	7	2.4	W
10/19/19 18:12	6	2.8	W
10/19/19 18:18	6	2.0	W
10/19/19 18:23	6	2.9	W
10/19/19 18:29	7	2.4	W
10/19/19 18:35	13	1.6	WSW
10/19/19 18:41	13	1.8	W
10/19/19 18:46	14	1.2	SSW
10/19/19 18:52	14	1.0	SSW
10/19/19 18:58	14	0.6	S
10/19/19 19:04	14	1.8	S
10/19/19 19:09	13	0.6	SW
10/19/19 19:15	9	1.0	S
10/19/19 19:21	7	0.7	WSW
10/19/19 19:27	7	0.6	WSW
10/19/19 19:32	4	1.3	WSW
10/19/19 19:38	4	1.3	SW
10/19/19 19:44	3	0.4	SW
10/19/19 19:50	3	1.1	WSW
10/19/19 19:55	3	1.4	SW
10/19/19 20:01	3	1.8	SW
10/19/19 20:07	3	1.6	SW
10/19/19 20:13	6	1.4	SW
10/19/19 20:18	7	0.8	WSW
10/19/19 20:24	8	0.3	SW
10/19/19 20:30	8	1.4	WSW
10/19/19 20:36	8	1.8	SW
10/19/19 20:41	28	1.5	WSW
10/19/19 20:47	49	0.6	WSW
10/19/19 20:53	49	0.6	SSW
10/19/19 20:59	70	1.5	WSW
10/19/19 21:04	69	2.0	SW
10/19/19 21:10	55	1.0	WSW
10/19/19 21:16	69	1.0	SSW
10/19/19 21:22	70	1.3	SSW
10/19/19 21:27	110	1.3	SW
10/19/19 21:33	110	0.8	SW
10/19/19 21:39	110	1.4	WSW
10/19/19 21:45	71	0.8	SW
10/19/19 21:50	43	1.9	WSW
10/19/19 21:56	43	1.9	SW
10/19/19 22:02	71	1.0	SW
10/19/19 22:08	71	1.0	WSW
10/19/19 22:13	43	1.6	WSW
10/19/19 22:19	110	1.0	SSW

NOTE: Wind Direction reported in the direction that the wind is coming from

10/19/19 22:25	110	0.6	SW
10/19/19 22:31	44	1.2	S
10/19/19 22:36	47	1.4	S
10/19/19 22:42	47	1.2	S
10/19/19 22:48	44	0.8	WSW
10/19/19 22:54	22	0.9	W
10/19/19 22:59	22	0.4	SSW
10/19/19 23:05	22	0.4	SW
10/19/19 23:11	37	1.6	WSW
10/19/19 23:17	46	1.6	WSW
10/19/19 23:22	105	1.6	SE
10/19/19 23:28	130	0.6	WNW
10/19/19 23:34	130	1.7	W
10/19/19 23:40	118	0.8	S
10/19/19 23:45	118	0.7	WNW
10/19/19 23:51	118	0.6	NW
10/19/19 23:57	110	1.0	WSW

NOTE: Wind Direction reported in the direction that the wind is coming from

Daily H <sub>2</sub> S Readings at MS2 - Keegan Landfill Monitoring			
Date/Time	MS-2 -- Hydrogen Sulfide (ppb)	Wind Speed (mph)	Wind Direction
10/20/19 0:03	76	1.3	W
10/20/19 0:08	76	1.5	W
10/20/19 0:14	50	1.0	W
10/20/19 0:20	50	0.7	WSW
10/20/19 0:26	50	1.4	WSW
10/20/19 0:31	62	1.0	SW
10/20/19 0:37	110	1.3	SW
10/20/19 0:43	116	1.4	SSE
10/20/19 0:49	130	1.2	SSE
10/20/19 0:54	130	0.6	WSW
10/20/19 1:00	130	0.8	WSW
10/20/19 1:06	140	0.7	SE
10/20/19 1:12	140	0.7	WSW
10/20/19 1:17	120	0.5	SSW
10/20/19 1:23	120	0.6	SSW
10/20/19 1:29	61	1.4	WSW
10/20/19 1:35	61	1.9	WNW
10/20/19 1:40	61	1.3	WNW
10/20/19 1:46	33	2.1	W
10/20/19 1:52	64	1.8	SW
10/20/19 1:58	64	1.1	WSW
10/20/19 2:03	53	0.5	S
10/20/19 2:09	20	0.3	SE
10/20/19 2:15	21	1.4	WNW
10/20/19 2:21	20	2.0	W
10/20/19 2:26	17	0.8	W
10/20/19 2:32	16	0.6	SSW
10/20/19 2:38	20	1.0	S
10/20/19 2:44	20	1.3	W
10/20/19 2:49	17	1.9	WNW
10/20/19 2:55	17	2.0	W
10/20/19 3:01	17	1.8	W
10/20/19 3:07	16	0.5	S
10/20/19 3:12	8	1.0	WNW
10/20/19 3:18	7	1.0	W
10/20/19 3:24	7	1.0	W
10/20/19 3:30	5	1.2	W
10/20/19 3:35	5	0.7	SSW
10/20/19 3:41	5	0.5	SW
10/20/19 3:47	5	1.2	W
10/20/19 3:53	5	1.0	W
10/20/19 3:58	6	0.8	WNW
10/20/19 4:04	9	1.0	W
10/20/19 4:10	9	1.1	W

NOTE: Wind Direction reported in the direction that the wind is coming from

10/20/19 4:16	9	0.6	WSW
10/20/19 4:21	6	0.7	WNW
10/20/19 4:27	5	0.9	WNW
10/20/19 4:33	5	1.2	WNW
10/20/19 4:39	5	0.7	WSW
10/20/19 4:44	7	0.7	NNW
10/20/19 4:50	7	0.8	ENE
10/20/19 4:56	7	1.6	ENE
10/20/19 5:02	4	1.2	NE
10/20/19 5:07	3	0.8	WNW
10/20/19 5:13	2	0.8	W
10/20/19 5:19	1	0.7	NNW
10/20/19 5:25	1	0.6	NNW
10/20/19 5:30	1	1.1	NW
10/20/19 5:36	1	1.2	NW
10/20/19 5:42	1	0.8	WNW
10/20/19 5:48	2	1.3	NW
10/20/19 5:53	2	0.6	SW
10/20/19 5:59	2	0.5	NNW
10/20/19 6:05	2	1.0	WNW
10/20/19 6:11	2	0.6	SSW
10/20/19 6:16	2	0.7	S
10/20/19 6:22	2	0.6	S
10/20/19 6:28	1	0.9	WNW
10/20/19 6:34	3	1.0	W
10/20/19 6:39	3	0.7	WNW
10/20/19 6:45	3	1.1	WNW
10/20/19 6:51	4	1.0	NNW
10/20/19 6:57	4	1.7	NW
10/20/19 7:02	4	1.6	NNW
10/20/19 7:08	3	0.8	NW
10/20/19 7:14	3	0.8	W
10/20/19 7:20	3	0.5	W
10/20/19 7:25	3	0.6	W
10/20/19 7:31	3	0.9	W
10/20/19 7:37	3	0.9	NW
10/20/19 7:43	3	0.7	NNW
10/20/19 7:48	3	1.4	NNE
10/20/19 7:54	3	1.2	NNE
10/20/19 8:00	1	1.5	NE
10/20/19 8:06	1	1.2	NNE
10/20/19 8:11	1	1.5	NNE
10/20/19 8:17	1	0.9	NE
10/20/19 8:23	1	1.1	ENE
10/20/19 8:29	1	1.0	ENE
10/20/19 8:34	1	1.4	NNE
10/20/19 8:40	1	1.5	NNE

NOTE: Wind Direction reported in the direction that the wind is coming from



10/20/19 8:46	1	2.2	NNE
10/20/19 8:52	1	1.5	N
10/20/19 8:57	1	1.4	NNE
10/20/19 9:03	1	2.5	N
10/20/19 9:09	1	2.1	N
10/20/19 9:15	1	1.8	NNE
10/20/19 9:20	1	2.7	N
10/20/19 9:26	1	2.3	NNE
10/20/19 9:32	1	1.8	NE
10/20/19 9:38	1	3.1	N
10/20/19 9:43	1	2.6	NNE
10/20/19 9:49	1	2.0	N
10/20/19 9:55	1	3.3	N
10/20/19 10:01	1	3.3	N
10/20/19 10:06	1	2.2	NNE
10/20/19 10:12	1	2.2	N
10/20/19 10:18	1	2.1	NNE
10/20/19 10:24	1	2.4	N
10/20/19 10:29	1	1.2	NNE
10/20/19 10:35	1	1.2	NNE
10/20/19 10:41	1	1.4	NNE
10/20/19 10:47	1	1.4	NE
10/20/19 10:52	1	1.9	NNE
10/20/19 10:58	2	1.9	NNE
10/20/19 11:04	2	1.8	NNE
10/20/19 11:10	2	2.2	N
10/20/19 11:15	2	2.7	N
10/20/19 11:21	2	1.5	NNE
10/20/19 11:27	2	2.4	ENE
10/20/19 11:33	2	1.4	NE
10/20/19 11:38	2	1.6	ENE
10/20/19 11:44	2	2.1	NNW
10/20/19 11:50	2	1.8	NNE
10/20/19 11:56	2	2.9	N
10/20/19 12:01	2	2.1	N
10/20/19 12:07	2	1.4	N
10/20/19 12:13	2	2.0	N
10/20/19 12:19	2	2.5	N
10/20/19 12:24	2	2.3	N
10/20/19 12:30	2	1.3	N
10/20/19 12:36	2	1.6	NNW
10/20/19 12:42	2	2.1	N
10/20/19 12:47	2	1.7	N
10/20/19 12:53	2	1.0	NNW
10/20/19 12:59	2	1.3	NNW
10/20/19 13:05	2	2.2	NNW
10/20/19 13:10	2	1.3	NNW

NOTE: Wind Direction reported in the direction that the wind is coming from

10/20/19 13:16	2	2.2	NNW
10/20/19 13:22	2	1.8	NNW
10/20/19 13:28	2	2.0	N
10/20/19 13:33	2	1.5	N
10/20/19 13:39	2	2.5	NNW
10/20/19 13:45	2	1.1	N
10/20/19 13:51	2	1.7	NNW
10/20/19 13:56	2	2.2	N
10/20/19 14:02	2	1.8	NNW
10/20/19 14:08	2	2.0	NNW
10/20/19 14:14	2	1.3	N
10/20/19 14:19	1	1.7	NNW
10/20/19 14:25	1	2.4	N
10/20/19 14:31	1	1.9	NNW
10/20/19 14:37	1	2.4	NNW
10/20/19 14:42	1	2.3	N
10/20/19 14:48	1	2.8	N
10/20/19 14:54	1	4.0	N
10/20/19 15:00	1	3.3	N
10/20/19 15:05	1	3.5	N
10/20/19 15:11	1	3.2	N
10/20/19 15:17	1	2.0	NE
10/20/19 15:23	1	2.6	NNE
10/20/19 15:28	1	1.7	NE
10/20/19 15:34	1	2.6	NE
10/20/19 15:40	1	2.6	NNE
10/20/19 15:46	1	2.9	NNE
10/20/19 15:51	1	3.1	NNE
10/20/19 15:57	1	3.2	NNE
10/20/19 16:03	1	4.6	NNE
10/20/19 16:09	1	4.7	N
10/20/19 16:14	1	5.0	N
10/20/19 16:20	1	4.3	N
10/20/19 16:26	1	4.9	NNE
10/20/19 16:32	1	4.9	NNE
10/20/19 16:37	1	4.3	NNE
10/20/19 16:43	1	3.8	NNE
10/20/19 16:49	1	6.0	NNE
10/20/19 16:55	1	4.3	NNE
10/20/19 17:00	1	3.7	NNE
10/20/19 17:06	1	2.3	NNE
10/20/19 17:12	1	3.8	NNE
10/20/19 17:18	1	3.4	NNE
10/20/19 17:23	1	4.4	NNE
10/20/19 17:29	1	4.1	NNE
10/20/19 17:35	1	3.3	NNE
10/20/19 17:41	1	3.5	NNE

NOTE: Wind Direction reported in the direction that the wind is coming from

10/20/19 17:46	1	3.1	NNE
10/20/19 17:52	1	3.0	NNE
10/20/19 17:58	1	4.4	NNE
10/20/19 18:04	1	3.5	NNE
10/20/19 18:09	1	3.3	NE
10/20/19 18:15	1	3.6	NE
10/20/19 18:21	1	2.9	NE
10/20/19 18:27	1	3.8	ENE
10/20/19 18:32	1	4.8	ENE
10/20/19 18:38	1	5.6	ENE
10/20/19 18:44	1	5.0	ENE
10/20/19 18:50	1	7.3	ENE
10/20/19 18:55	1	5.7	ENE
10/20/19 19:01	1	7.2	ENE
10/20/19 19:07	1	5.9	E
10/20/19 19:13	1	3.8	ENE
10/20/19 19:18	1	3.9	ENE
10/20/19 19:24	1	3.7	ENE
10/20/19 19:30	1	3.8	ENE
10/20/19 19:36	1	3.6	ENE
10/20/19 19:41	1	4.0	E
10/20/19 19:47	1	5.4	E
10/20/19 19:53	1	4.1	E
10/20/19 19:59	1	4.6	E
10/20/19 20:04	1	5.3	E
10/20/19 20:10	1	3.8	E
10/20/19 20:16	1	3.6	ENE
10/20/19 20:22	1	4.4	ENE
10/20/19 20:27	2	4.0	ENE
10/20/19 20:33	1	3.6	ENE
10/20/19 20:39	1	3.8	ENE
10/20/19 20:45	1	4.0	ENE
10/20/19 20:50	1	4.4	ENE
10/20/19 20:56	1	4.6	ENE
10/20/19 21:02	2	3.4	ENE
10/20/19 21:08	2	3.8	NE
10/20/19 21:13	2	3.9	NE
10/20/19 21:19	2	4.2	ENE
10/20/19 21:25	2	4.3	ENE
10/20/19 21:31	2	3.8	NE
10/20/19 21:36	2	3.4	NE
10/20/19 21:42	2	4.6	NE
10/20/19 21:48	2	3.7	ENE
10/20/19 21:54	1	2.3	NE
10/20/19 21:59	1	2.8	NE
10/20/19 22:05	1	2.6	NE
10/20/19 22:11	2	2.8	N

NOTE: Wind Direction reported in the direction that the wind is coming from

10/20/19 22:17	2	3.4	NNE
10/20/19 22:22	2	3.7	NNE
10/20/19 22:28	1	3.7	NNE
10/20/19 22:34	1	4.9	NE
10/20/19 22:40	1	3.8	NNE
10/20/19 22:45	1	3.4	NNE
10/20/19 22:51	1	3.6	NNE
10/20/19 22:57	1	4.7	NNE
10/20/19 23:03	0	4.5	NNE
10/20/19 23:08	0	4.2	NNE
10/20/19 23:14	0	4.9	NNE
10/20/19 23:20	0	5.7	N
10/20/19 23:26	0	5.1	NNE
10/20/19 23:31	0	3.7	NNE
10/20/19 23:37	0	4.3	NNE
10/20/19 23:43	0	4.4	NNE
10/20/19 23:49	0	6.3	N
10/20/19 23:54	0	6.7	N

NOTE: Wind Direction reported in the direction that the wind is coming from

## Attachment 4



MS-1

WIND DIRECTION

