May 3, 2019
File No. 02219702.00

Mr. Jeffery 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: Additional Monitoring Report Transmittal
Keegan Landfill
New Jersey Sports and Exposition Authority
EA ID#: NEA 190001-13317

Dear Mr. Meyer:

On behalf of the New Jersey Sports and Exposition Authority (NJSEA), SCS Engineers (SCS) has enclosed our report entitled 'Surface Emissions Monitoring Report' (April 2019 event), dated May 3, 2019.

Similar to the reports transmitted by the NJSEA on April 5 and as noted in the April Progress Report, we are submitting these reports for the purpose of sharing all data.

Please call with any questions or comments.

Sincerely,

Lisa K. Wilkinson
Project Director I
SCS Engineers

cc: T. Farrell, NJDEP
V. Prieto, NJSEA (via email)
T. Marturano, NJSEA (via email)
A. Levy, NJSEA (via email)
C. Sanz, NJSEA (via email)
J. Stewart, Lowenstein (via email)

May 3, 2019
File No. 02219702.00

Mr. Vincent Prieto
President
New Jersey Sports and Exposition Authority
One DeKorte Park Plaza
Lyndhurst, New Jersey 07071

SUBJECT: Surface Emissions Monitoring
Keegan Landfill

Dear Mr. Prieto:

On April 13, 2019, SCS Engineers conducted a second round of surface emissions monitoring (SEM) on the remaining portions of the Keegan Landfill (Landfill) that were not monitored in March (see letter dated March 26, 2019). This letter summarizes the work performed and presents the data collected on April 13. The letter is organized as follows:

- Landfill Background
- Monitoring Methodology and Equipment
- Monitoring Results
- Findings and Conclusions
- Recommendations

## LANDFILL BACKGROUND

The Keegan Landfill, which is owned by New Jersey Sports and Exposition Authority (NJSEA) and operated by Waste Management, Inc. (WM), is located in the Town of Kearny, Hudson County, New Jersey. The Landfill is approximately 95 acres and accepts primarily construction and demolition waste. The Landfill is a single mound-type landfill, constructed atop a historical municipal solid waste (MSW) dump site. The Landfill began receiving construction and demolition (C&D) waste in 2009. The entire landfill footprint is surrounded by a bentonite-slurry cutoff wall, which includes a leachate collection system. Collected leachate is pretreated for hydrogen sulfide ($H_2S$), prior to discharge to the local sewer system.

The Landfill is bordered on the northeast and east by a freshwater marsh. Industrial facilities are located to the north and south of the Landfill. Industrial facilities also bound the site to the west, but quickly transition to residential properties.

Numerous odor complaints have been made against the Landfill and a daily ambient air monitoring program was implemented on February 22, 2019 in response to the complaints. Based on the results of the daily ambient air monitoring program (submitted under separate cover), SEM for methane and $H_2S$ was recommended as a next step to supplement daily perimeter monitoring. SEM of the southwest area of the landfill was performed on March 18, 2019 (March SEM event) and the results were transmitted in a letter report dated March 26, 2019. The March 26, 2019 report

recommended expansion of the SEM to all areas of the Landfill to supplement the March SEM and to further identify areas of emissions from the Landfill.

# MONITORING METHODOLOGY AND EQUIPMENT

## Methodology

The SEM was performed on the northwest and eastern side slopes, and plateau area of the Landfill as these areas were not monitored during the March SEM event (see Drawing in **Attachment 1**).

While the Landfill is not subject to SEM requirements of the New Source Performance Standards (NSPS) for municipal solid waste landfills, 40 CFR 60 Subpart WWW, the methane monitoring was generally conducted as specified in 40 CFR 60.755 (c) and (d), and 40 CFR 60, Appendix A, Method 21.

Monitoring took place over a surface emissions monitoring route consisting of a serpentine path over the northwest and eastern side slopes, and plateau areas of the Landfill, with monitoring points at 30 meter intervals. Hydrogen sulfide monitoring was performed at the same locations as the methane SEM.

Surface monitoring was conducted at all monitoring points, with the tip of the instrument probe about five to ten centimeters (two to four inches) above the landfill surface. The SEM event was conducted on a day with typical meteorological conditions, as defined in CFR 60.755(c)(3), and excluded periods when wind speeds were measured greater than 14 mph average, as indicated by hand-held anemometer. Typical meteorological conditions should also exclude periods within 24 hours following a rain event greater than 0.25 inches total (per 24-hour period). We note that this SEM event was performed after a measured rainfall of 0.57 inches within 24 hours of the event (see weather data for Newark Airport in **Attachment 3).**

Basic meteorological conditions, including temperature, wind speed, rainfall, weather conditions and barometric pressure, were noted at the start of the day of monitoring and recorded on Calibration and Pertinent Data Forms, included in **Attachment 2**. Wind speed and direction at each monitoring location were also measured and recorded.

## Monitoring Equipment and Calibration

SEM for methane was conducted with a field portable flame ionization detector (FID), utilizing a Thermo Scientific model TVA 2020 FID. Equipment type, serial number and pertinent equipment information are recorded on Calibration and Pertinent Data Forms for the FID equipment (see **Attachment 2**).

A Jerome Model 631X meter was utilized for monitoring $H_2S$. The equipment type, serial number and certification of calibration is included in **Attachment 2**.

A handheld Kestrel Model 4500 anemometer was used to measure wind speed and direction during monitoring (Serial No. 719611).

## Calibration

Prior to the commencement of surface emissions monitoring, the FID equipment was calibrated in accordance with the manufacturer's recommended procedures and 40 CFR 60.755 (c) and (d), and 40 CFR 60, Appendix A, Method 21, using zero air and a certified span calibration gas containing 500 ppm methane in air. The procedure for calibration precision and response time was performed prior to the SEM. A post-monitoring calibration check was also performed for the TVA at the end of each monitoring event day.

The Jerome 631-X meter's gold film sensor is inherently stable and does not require frequent field calibration. The Jerome 631-X is factory calibrated using laboratory equipment containing NIST traceable permeation tubes. In order to calibrate the Jerome 631-X, a sophisticated calibration system is required that ensures stability of the calibration gas source, eliminates any pressure in the calibration gas stream, and controls the temperature of the calibration environment. The meter was factory calibrated on January 11, 2019, in accordance with the manufacturer's specifications.

## Calibration Precision

After the initial calibration of the FID instrument each day, instrument precision was calculated by running zero air gas through the instrument and then switching to the 500 ppm methane calibration gas and recording the reading. This procedure was performed three times during each calibration event to verify instrument precision. In accordance with 40 CFR 60.755 (c) and (d), and 40 CFR 60, Appendix A, Method 21, to be considered successful, the instrument reading during the calibration precision check must be within 10 percent of calibration gas concentration (i.e. 500 ppm +/- 10%). All of the calibration precision checks performed were successful, reading within 10 percent of 500 ppm. Therefore, the instrument precision was deemed to be in compliance. Results of FID calibration precision are recorded on Calibration and Pertinent Data Forms, included in Attachment 2.

In accordance with the manufacturer's recommendations, the Jerome meter was regenerated and zero adjusted prior to the start of the SEM.

## Instrument Response Time

After the initial calibration of the FID instrument, instrument response time was calculated by placing the instrument on the zero air and quickly switching to the calibration gas and recording the time from switching gases until the instrument reads 90 percent of the calibration gas concentration (i.e. 500 ppm). This procedure was completed three times during each calibration event to verify instrument response time. In accordance with 40 CFR 60.755 (c) and (d), and 40 CFR 60, Appendix A, Method 21, to be considered successful, the instrument response time must be within 30 seconds. The calibration response time checks performed were successful, with an average response time less than 30 seconds. Therefore, the instrument response was deemed to be in compliance. Results of instrument response are recorded on Calibration and Pertinent Data Forms, included in Attachment 2.

The Jerome 631-X was operated with a response time of 30 seconds. This is the manufacturers recommended response time for samples with concentrations ranging between 0.001 and 0.099 ppm $H_2S$ for an accuracy of +/- 0.003 ppm at 0.050 ppm.

## MONITORING RESULTS

The SEM event was performed on April 13, 2019. Weather conditions were recorded at the start of the event. Additional weather condition data, for the Newark Airport, is provided in **Attachment 3** to show the wind conditions and prior day's rainfall amount.

A total of 219 points were monitored on the operating area of the Landfill, along the pathway identified on the drawing in **Attachment 1**. The monitoring data is provided in **Attachment 3**.

NSPS considers methane concentrations above 500 ppm (0.05 percent), measured during a SEM event, as exceedances, requiring correction actions and rechecks. This is a surrogate for measurement of landfill gas that is typically generated within an MSW landfill. For non-regulatory, or informational SEM, we have considered 100 ppm as the threshold for further consideration regarding methane emissions. Methane concentrations greater than 100 ppm were detected at seven (7) locations during the event (see blue circled monitoring locations on Drawing in **Attachment 4**). There were no readings above 500 ppm measured during this SEM event.

NJDEP considers $H_2S$ concentrations in excess of 30 ppb over a 30-minute period at the property boundary as a violation of NJAC and requires corrective action. While the SEM did not continuously monitor one location for 30 minutes, we selected 30 ppb as the threshold for further consideration regarding the $H_2S$ concentrations. $H_2S$ concentrations greater than 30 ppb were detected at 44 locations during the event (see red highlighted stations on Drawing in **Attachment 4**). Of the 44 locations greater than 30 ppb, 28 locations were greater than 100 ppb (see yellow highlighted stations on Drawing in Attachment 4). The majority of the elevated concentrations were measured on the northwest plateau area of the Landfill, as well as the north side slope, downwind of the northwest plateau area.

Wind direction was generally noted from the south and southwest at speeds ranging from zero to 12.3 miles per hour (mph), as measured by the Kestrel. The wind speeds were below the NSPS regulatory limit of 14 mph.

## FINDINGS AND CONCLUSIONS

While the wind direction appeared consistent, the wind speeds were highly variable during the monitoring event. The changing wind speeds can affect the concentrations measured at a particular location. Concentrations of $H_2S$ were graphed with the wind speed. Similar to the March SEM event, there does not appear to be a correlation of lower wind speeds to higher concentrations of $H_2S$ as might be expected (see graph in **Attachment 5**).

LFG generation at C&D landfills is lower than that from MSW landfills due to waste composition and degradation rates. The highest methane concentration measured was 340 ppm (Tag 77) or 0.03 percent and only seven readings were greater than 100 ppm. This is an indication of the lower landfill gas generation rate in the Landfill.

While 30 ppb is the threshold for discussion, approximately 5-10 ppb is the concentration at which $H_2S$ can be detected by most people by smell. The majority of the $H_2S$ concentrations greater than 30 ppb appear at the break in grade and top plateau area of the area monitored. On the top plateau area, the majority of the $H_2S$ concentrations greater than 100 ppb are towards the northwest

quadrant of the monitoring area (see yellow highlighted locations on Drawing in **Attachment 4**). The combined results from the March SEM and April SEM are shown on the drawing in **Attachment 6.** This supports the conclusion of the March SEM event that $H_2S$ emissions appear to be predominantly from the western side of the landfill.

There is not a significant correlation between the methane concentrations greater than 100 ppm and the $H_2S$ concentrations greater than 30 ppb. While the majority of the monitored locations do not have significantly high methane concentrations, there are numerous locations with relatively high hydrogen sulfide concentrations that are capable of causing offsite odors.

As noted above, this SEM event was performed after a measured rainfall of 0.57 inches within 24 hours of the event. The rainfall criteria in the regulation requires the SEM be performed under 'typical meteorological conditions'. A significant rainfall event prior to a SEM event could result in a lower surface emission concentrations due to the saturation of the soil. Conversely, after the soils drain or dry, the gas that has built up in the soils could be released at higher concentrations.

Exhibit 1 below compares the SEM data from the March and April SEM events. The maximum $H_2S$ and methane concentrations measured in April were lower than the March maximums. The percentage of $H_2S$ and methane readings over the thresholds used for this analysis were also lower in April than in March. While this could be attributed to the rain event prior to the April monitoring, there are many variables such as barometric pressure or wind speed that can affect surface emissions monitoring results. The average wind speed measured during the April event was higher than in March.

Exhibit 1. March and April SEM Data Summary.

| Measured Parameter | March Event | April Event |
|---|---|---|
| Maximum $H_2S$ reading (ppm) | 14 | 1.36 |
| Maximum $CH_4$ reading (ppm) | 1032 | 340 |
| Maximum wind speed (mph) | 12.3 | 12.3 |
| Average wind speed (mph) | 5.5 | 6.0 |
| # $H_2S$ readings >0.030 ppm | 41 | 44 |
| # $H_2S$ readings >0.100 ppm | 20 | 28 |
| % $H_2S$ readings > 0.030 ppm | 36% | 20% |
| % $H_2S$ readings >0.100 ppm | 17% | 13% |
| # $CH_4$ readings >100 ppm | 6 | 7 |
| % $CH_4$ readings >100 ppm | 5% | 3% |

While the lower April results could be related to the rain event prior to monitoring, the readings from both the March and April are being used to determine areas of the landfill with the highest emissions in which installation of a collection system will be the most effective. These areas are determined to be the western side of the landfill.

## RECOMMENDATIONS

As indicated in the March SEM report, we recommend NJSEA continue to improve daily and intermediate cover procedures. During the SEM, technicians noticed irregular coverage of the waste with soil, which could provide pathways for gas to migrate from the Landfill.

Also as indicated in the March SEM report, we recommend installation of an active LFG collection and control system. A well-designed and operated LFG collection and control system is the best management practice for LFG-related odors. While a comprehensive system may be required in the future, we recommend that the initial installation target the western top plateau area of the Landfill. We recommend provisions for expansion to the eastern side of the landfill as future conditions warrant.

Please review and call to discuss.

Sincerely,

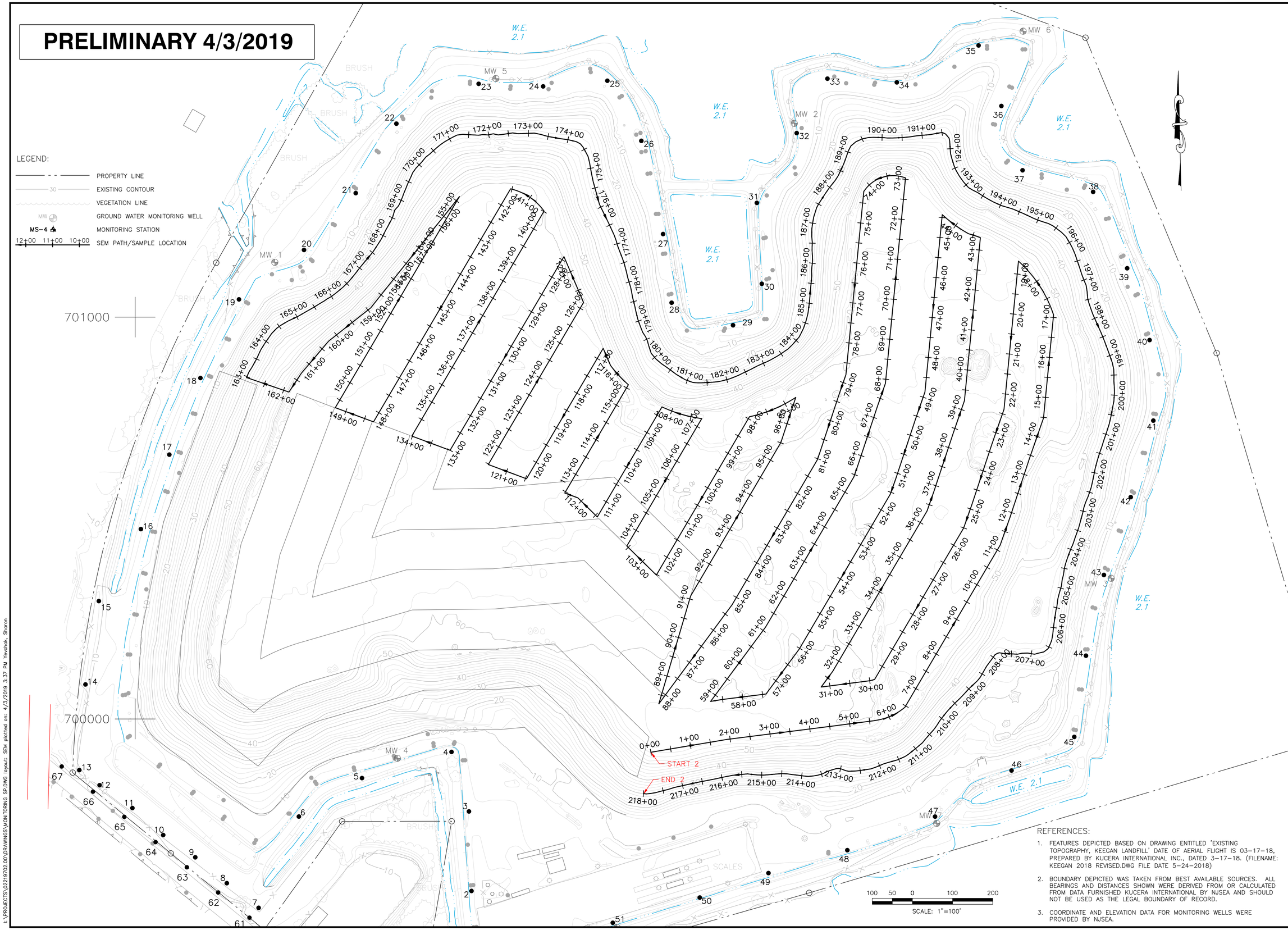
Lisa K. Wilkinson
Project Manager
SCS ENGINEERS

Gregory P. McCarron, P.E.
Project Director
SCS ENGINEERS

cc: T. Marturano, NJSEA
C. Sanz, NJSEA
A. Levy, NJSEA
J. Stewart, Lowenstein Sandler

Attachment 1

# PRELIMINARY 4/3/2019




REFERENCES:

1. FEATURES DEPICTED BASED ON DRAWING ENTITLED 'EXISTING TOPOGRAPHY, KEEGAN LANDFILL' DATE OF AERIAL FLIGHT IS 03-17-18, PREPARED BY KUCERA INTERNATIONAL INC., DATED 3-17-18. (FILENAME: KEEGAN 2018 REVISED.DWG FILE DATE 5-24-2018)
2. BOUNDARY DEPICTED WAS TAKEN FROM BEST AVAILABLE SOURCES. ALL BEARINGS AND DISTANCES SHOWN WERE DERIVED FROM OR CALCULATED FROM DATA FURNISHED KUCERA INTERNATIONAL BY NJSEA AND SHOULD NOT BE USED AS THE LEGAL BOUNDARY OF RECORD.
3. COORDINATE AND ELEVATION DATA FOR MONITORING WELLS WERE PROVIDED BY NJSEA.

| NO. | REVISION | DATE |
|---|---|---|
| A | ISSUED FOR CLIENT REVIEW | 3/15/2019 |
| B | ADD PATH 2 | 4/3/2019 |

SHEET TITLE: **SEM SITE PLAN**

PROJECT TITLE: **MONITORING SUPPORT KEEGAN LANDFILL**

CLIENT: **NEW JERSEY SPORTS & EXHIBITION AUTHORITY**
1 DE KORTE PARK PLAZA, POB 640
LYNDHURST, NJ 07071


**SCS ENGINEERS**
STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS, INC.
4 EXECUTIVE BLVD, SUITE 201, SUFFERN, NY 10901
PH. (845) 357-1510 FAX. (845) 357-1049


PROJ. NO. 02219702.00 | DSN. BY: LKW | DWN. BY: CHY | CHK. BY: LKW | Q/A RVW BY: KW | APP. BY: LKW

CADD FILE: MONITORING SP

DATE: 3/15/2019

SCALE: AS SHOWN

DRAWING NO. 1 of 1


I:\PROJECTS\02219702.00\DRAWINGS\MONITORING SP.DWG layout: SEM plotted on: 4/3/2019 3:37 PM Yevchak, Sharon

Attachment 2

SCS FIELD SERVICES

NSPS Surface Emissions Monitoring
Calibration and Pertinent Data Form

Date: 04/13/19 Site: Keegan LF Job Number: 02219702.00

Technician(s): Ben Lock

**Weather Observations**

Wind Speed: 5 MPH Wind Direction: SW Barometric Pressure: 29.90 "Hg

Air Temperature: 55 °F General Weather Conditions: Clear

**Calibration Information**

Instrument Info Make/Model: TVA 2020 Serial No: 202016093665

| Cal Gas Info | Manufacturer | Lot # | Expiration Date | Concentration |
|---|---|---|---|---|
| Span Gas: | QED Landtec | 4827601 | 10/1/2021 | 500 ppm |
| Zero Gas: | QED Landtec | 4828301 | 10/1/2021 | 0 ppm |

Pre-monitoring Calibration Precision Check

*Procedure: Calibrate the instrument. Make a total of three measurements by alternating zero air and the calibration gas. Record the readings and calculate the average algebraic difference between the instrument reading and the calibration gas as a percentage.* ***The calibration precision must be less than or equal to 10% of the calibration gas value.***

| Trial | Zero Air Reading (ppm) | Cal Gas Reading (ppm) | \|Cal Gas Conc. – Cal Gas Reading\| |
|---|---|---|---|
| 1 | 0.3 | 499 | 1 |
| 2 | 0.2 | 500 | 0 |
| 3 | 0 | 501 | 1 |
| | | **Average Difference:** | 1 |

Calibration Precision = Average Difference / Cal. Gas Conc. X 100%

= 1 / 500 X 100%

= 0.13 %

Pre-monitoring Response Time Check

*Procedure: Introduce zero concentration methane/H2S into the instrument. Quickly change to the calibration gas and record stabilized reading. Record the amount of time it took the instrument to read 90 of the stabilized reading.* ***This average response time must be less than or equal to 30 seconds.***

| Trial | Stabilized Reading on Cal Gas | 90% of Stabilized Reading | Time to Reach 90% of Stabilized Reading (Seconds) |
|---|---|---|---|
| 1 | 499 | 449 | 15 |
| 2 | 500 | 450 | 9 |
| 3 | 501 | 451 | 7 |
| | | **Average Response Time:** | 10 |

Background Concentration Checks

Upwind Location Description: SW of site on perimeter road Reading: 0.50 ppm

Downwind Location Description: NE of site on perimeter road Reading: 1.10 ppm

Average Background Reading: 0.80 ppm

Post-monitoring Calibration Precision Check

Zero Air Reading: 0 ppm Cal Gas Reading: 500 ppm

**Notes/Comments:**

3375 N. Delaware Street, Chandler, AZ 85225
800.528.7411 | (f) 602.281.1745 | azic.com

# *Certification of Instrument Calibration*

AMETEK Brookfield - New Unit
3375 N. Delaware Street
Chandler, AZ 85225

RMA # 2624267

This is to certify that the Jerome **X631 0101** Gold Film Hydrogen Sulfide Analyzer, Serial Number **3066**, with Sensor Number **18-8-8-R2BS**, was calibrated with standard units traceable to NIST.

Calibration Status as Received: **New**

| | | Actual | | Calibration Gas | | Allowable Range |
|---|---|---|---|---|---|---|
| **Incoming:** | Range 1 | | ppm H2S | | ppm H2S | +/- 6% |
| | RSD % | | | | | <5% |
| **Outgoing:** | Range 1 | 0.506 | ppm H2S | 0.500 | ppm H2S | +/- 6% |
| | RSD % | 1.48 | | | | <5% |

Calibration Status as Left: **New**

Estimated Uncertainty of Calibration System: 2.8%

Calibration Date: 11-Jan-2019 Recalibration Date: 10-Jan-2020

Temperature °F: 72.30 % Relative Humidity: 35.80

Approved By: Cheryl Hradek Date Approved: 11-Jan-2019
Title: Cheryl Hradek - Quality Control

Equipment Used:

**H2S Calibration Standard:** CC-230020 **NIST#:** 1417575
**Calibration Date:** 30-May-2017 **Calibration Date Due:** 31-May-2020

**Mass Flow Controller B:** 124604 **NIST#:** 215457
**Calibration Date:** 13-Dec-2018 **Calibration Date Due:** 13-Dec-2019

**Mass Flow Controller D:** 124602 **NIST#:** 215454
**Calibration Date:** 13-Dec-2018 **Calibration Date Due:** 13-Dec-2019

**Digital Multimeter:** 74620534 **NIST#:** 7003079
**Calibration Date:** 16-Feb-2018 **Calibration Date Due:** 16-Feb-2019

**Flowmeter:** US04I26032 **NIST#:** 1813; 1817; 1796
**Calibration Date:** 17-Oct-2018 **Calibration Date Due:** 18-Oct-2019

Calibration Procedure Used: 730-0032

AMETEK Brookfield certifies that the above listed instrument meets or exceeds all published specifications and has been calibrated using standards whose accuracy are traceable to the NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY within the limitations of the Institute's calibration services, or have been derived from accepted values of natural physical constants, or have been derived by the ratio type of self-calibration techniques.
Disclaimer: Any unauthorized adjustments, removal or breaking of QC seals, or other customer modifications on your Jerome Analyzer WILL VOID this factory calibration. Because any of the above acts could affect the calibration and readings of the instrument, their certification will no longer be valid and, further, AMETEK Brookfield WILL NOT be responsible for any liabilities created as a result of using the instrument after such adjustments, seal removal, or modifications.
As long as a functional test is within range, according to the procedure outlined in the Operator's Manual, the instrument is performing correctly.

This document shall not be reproduced, except in full, without the written approval of AMETEK Brookfield.

# INSTRUMENT CALIBRATION REPORT

**Pine Environmental Services LLC**
92 North Main St, Building 20
Windsor, NJ 08561
Toll-free: (800) 301-9663

## Pine Environmental Services, Inc.

**Instrument ID** 44911
**Description** Arizona Instruments 631-X Hydrogen Sulfide Analyzer
**Calibrated** 2/18/2019 3:57:20PM

**Manufacturer** Arizona
**Model Number** 631-X
**Serial Number/ Lot Number** 3066
**Location** New Jersey
**Department**

**State Certified**
**Status** Pass
**Temp °C** 22.8
**Humidity %** 19

### Calibration Specifications

**Group #** 1
**Group Name**
**Test Performed: Yes** **As Found Result: Pass** **As Left Result: Pass**

### Test Instruments Used During the Calibration

| Test Standard ID | Description | Manufacturer | Model Number | Serial Number / Lot Number | (As Of Cal Entry Date) Last Cal Date/ Opened Date | Next Cal Date / Expiration Date |
|---|---|---|---|---|---|---|
| NJ HYDROGEN SULFIDE - 872248 | NJ Hydrogen Sulfide 10 PPM - 872248 | Pine Environmental Services, Inc. | 31691 | 872248 | | 1/1/2020 |

**Notes about this calibration**

**Calibration Result** Calibration Successful
**Who Calibrated** Daniel Teller

All instruments are calibrated by Pine Environmental Services LLC according to the manufacturer's specifications, but it is the customer's responsibility to calibrate and maintain this unit in accordance with the manufacturer's specifications and/or the customer's own specific needs.

**Notify Pine Environmental Services LLC of any defect within 24 hours of receipt of equipment**
**Please call 800-301-9663 for Technical Assistance**

Attachment 3

## Methane and Hydrogen Sulfide Surface Emission Monitoring Results
## Keegan Landfill

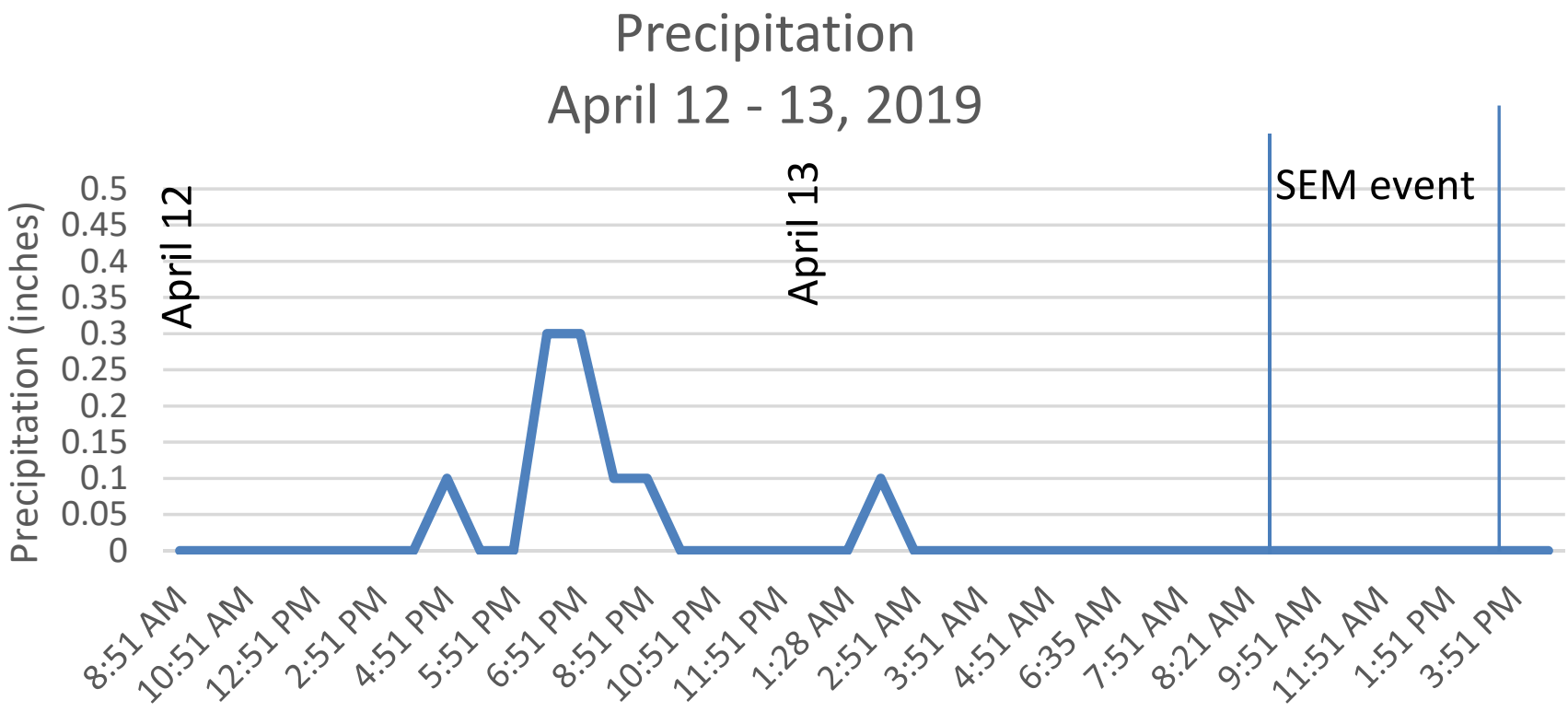
| Monitoring Station (x100') | TIME | CH4 Concentration (ppm) | H2S Concentration (ppm) | Wind Direction | Wind Speed (mph) | Comments |
|---|---|---|---|---|---|---|
| **Top Plateau of Landfill** | | | | | | |
| 0 | 9:33:16 | 3.5 | 0.003 | S | 11.7 | |
| 1 | 9:35:16 | 210 | 0.003 | S | 8.2 | |
| 2 | 9:36:34 | 27.3 | 0.003 | S | 6.0 | |
| 3 | 9:38:55 | 10.1 | 0.003 | S | 7.2 | |
| 4 | 9:41:04 | 20.9 | 0.003 | S | 8.3 | |
| 5 | 9:43:02 | 14.1 | 0.003 | S | 8.3 | |
| 6 | 9:44:24 | 4 | 0.003 | S | 5.8 | |
| 7 | 9:46:30 | 5.1 | 0.003 | S | 5.7 | |
| 8 | 9:48:17 | 3.1 | 0.004 | S | 6.1 | |
| 9 | 9:49:41 | 2.5 | 0.004 | S | 4.1 | |
| 10 | 9:51:07 | 16.7 | 0.003 | S | 6.1 | |
| 11 | 9:54:51 | 25.2 | 0.003 | S | 3.3 | |
| 12 | 9:56:17 | 5.4 | 0.003 | S | 5.7 | |
| 13 | 9:58:17 | 11.9 | 0.004 | S | 6.2 | |
| 14 | 9:59:57 | 6.4 | 0.004 | S | 6.6 | |
| 15 | 10:01:27 | 13.1 | 0.004 | S | 5.5 | |
| 16 | 10:04:14 | 10.1 | 0.004 | S | 6.9 | |
| 17 | 10:05:53 | 12 | 0.003 | S | 3.4 | |
| 18 | 10:08:58 | 3.1 | 0.005 | S | 4.1 | |
| 19 | 10:11:08 | 2.4 | 0.003 | S | 3.4 | |
| 20 | 10:13:01 | 4.9 | 0.004 | S | 5.0 | |
| 21 | 10:14:32 | 30.8 | 0.004 | S | 6.8 | |
| 22 | 10:16:17 | 29.8 | 0.004 | S | 3.5 | |
| 23 | 10:17:41 | 11.3 | 0.004 | S | 4.4 | |
| 24 | 10:19:25 | 12.8 | 0.005 | S | 7.8 | |
| 25 | 10:21:41 | 7.8 | 0.004 | S | 5.4 | |
| 26 | 10:22:53 | 89.3 | 0.004 | S | 6.1 | |
| 27 | 10:25:20 | 5.2 | 0.004 | S | 5.5 | |
| 28 | 10:26:44 | 11.4 | 0.004 | S | 7.8 | |
| 29 | 10:28:06 | 7.5 | 0.004 | S | 5.5 | |
| 30 | 10:29:38 | 20.7 | 0.005 | S | 3.7 | |
| 31 | 10:30:58 | 3.7 | 0.003 | S | 4.5 | |
| 32 | 10:39:04 | 83.6 | 0.004 | S | 6.7 | |
| 33 | 10:41:01 | 49.8 | 0.003 | S | 6.8 | |
| 34 | 10:42:33 | 15.1 | 0.003 | S | 11.2 | |
| 35 | 10:44:22 | 32 | 0.004 | S | 7.3 | |
| 36 | 10:47:55 | 11.8 | 0.004 | S | 4.7 | |
| 37 | 10:49:46 | 98.2 | 0.004 | S | 5.3 | |
| 38 | 10:52:20 | 13.7 | 0.004 | S | 8.7 | |
| 39 | 10:55:03 | 19.2 | 0.004 | S | 5.2 | |
| 40 | 10:57:22 | 4.7 | 0.004 | S | 4.7 | |
| 41 | 10:59:57 | 3.5 | 0.004 | S | 7.1 | |
| 42 | 11:01:48 | 3.3 | 0.004 | S | 5.7 | |
| 43 | 11:04:29 | 14.6 | 0.005 | S | 6.7 | |
| 44 | 11:05:35 | 9 | 0.006 | S | 8.6 | |
| 45 | 11:08:35 | 3.2 | 0.005 | S | 6.4 | |
| 46 | 11:11:12 | 5.1 | 0.004 | S | 8.1 | |
| 47 | 11:12:42 | 6.7 | 0.004 | S | 8.0 | |
| 48 | 11:13:50 | 8.6 | 0.004 | S | 7.2 | |
| 49 | 11:15:16 | 16.6 | 0.005 | S | 7.4 | |

| Monitoring Station (x100') | TIME | CH4 Concentration (ppm) | H2S Concentration (ppm) | Wind Direction | Wind Speed (mph) | Comments |
|---|---|---|---|---|---|---|
| 50 | 11:16:54 | 8.5 | 0.005 | S | 7.7 | |
| 51 | 11:20:17 | 62.9 | 0.004 | S | 7.2 | |
| 52 | 11:21:53 | 18.4 | 0.004 | S | 5.1 | |
| 53 | 11:23:33 | 12.9 | 0.004 | S | 5.8 | |
| 54 | 11:25:05 | 18.1 | 0.006 | S | 9.4 | |
| 55 | 11:26:56 | 10.1 | 0.005 | S | 7.9 | |
| 56 | 11:28:38 | 30.1 | 0.005 | S | 6.0 | |
| 57 | 11:30:39 | 20.2 | 0.005 | S | 4.6 | |
| 58 | 11:33:28 | 24.4 | 0.004 | S | 5.6 | |
| 59 | 11:36:31 | 23.2 | 0.004 | S | 6.9 | |
| 60 | 11:38:01 | 9.5 | 0.004 | S | 7.3 | |
| 61 | 11:39:54 | 9.7 | 0.005 | S | 5.7 | |
| 62 | 11:41:58 | 22.1 | 0.004 | S | 8.6 | |
| 63 | 11:43:41 | 12.4 | 0.005 | S | 7.5 | |
| 64 | 11:45:19 | 3.3 | 0.005 | S | 7.8 | |
| 65 | 11:47:22 | 25.4 | 0.004 | S | 6.4 | |
| 66 | 11:49:05 | 10.1 | 0.004 | S | 5.7 | |
| 67 | 11:50:51 | 3.5 | 0.005 | S | 6.4 | |
| 68 | 11:52:15 | 7.2 | 0.005 | S | 1.5 | |
| 69 | 11:53:58 | 20.1 | 0.019 | S | 6.0 | |
| 70 | 11:55:50 | 10 | 0.005 | S | 4.4 | |
| 71 | 11:57:24 | 9 | 0.004 | S | 4.1 | |
| 72 | 11:58:25 | 10.6 | 0.004 | S | 4.6 | |
| 73 | 11:59:30 | 9.8 | 0.004 | S | 8.0 | |
| 74 | 12:01:25 | 2.6 | 0.007 | S | 5.3 | |
| 75 | 12:02:52 | 2 | 0.008 | S | 5.5 | |
| 76 | 12:05:00 | 12.1 | 0.008 | S | 2.0 | |
| 77 | 12:06:15 | 340 | 0.015 | S | 1.0 | |
| 78 | 12:07:37 | 24.9 | 0.009 | S | 0.0 | |
| 79 | 12:08:41 | 3.3 | 0.009 | S | 0.0 | |
| 80 | 12:10:32 | 3.7 | 0.009 | S | 6.9 | |
| 81 | 12:12:28 | 6.1 | 0.008 | S | 1.7 | |
| 82 | 12:15:14 | 8.7 | 0.004 | S | 7.2 | |
| 83 | 12:16:48 | 26.7 | 0.009 | S | 5.0 | |
| 84 | 12:17:51 | 34 | 0.004 | S | 4.9 | |
| 85 | 12:19:48 | 18.7 | 0.008 | S | 5.5 | |
| 86 | 12:21:01 | 7.3 | 0.004 | S | 4.6 | |
| 87 | 12:24:02 | 1.8 | 0.004 | S | 4.4 | |
| 88 | 12:25:38 | 5.4 | 0.015 | SSW | 5.7 | odors |
| 89 | 12:27:28 | 44.4 | 0.014 | SSW | 6.0 | odors |
| 90 | 12:54:27 | 44.3 | 0.082 | SSW | 8.0 | odors |
| 91 | 12:56:34 | 20.7 | 0.073 | SSW | 5.7 | odors |
| 92 | 12:57:37 | 6 | 0.028 | SSW | 7.1 | odors |
| 93 | 12:59:37 | 9.9 | 0.059 | SSW | 5.9 | odors |
| 94 | 13:01:04 | 20.3 | 0.006 | SSW | 6.9 | |
| 95 | 13:04:13 | 7.5 | 0.006 | SSW | 6.8 | |
| 96 | 13:05:23 | 7 | 0.004 | SSW | 4.0 | |
| 97 | 13:08:26 | 11.7 | 0.005 | SSW | 11.3 | |
| 98 | 13:11:33 | 0.8 | 0.005 | SSW | 4.4 | |
| 99 | 13:13:21 | 3.1 | 0.004 | SSW | 6.7 | |
| 100 | 13:14:38 | 3.6 | 0.006 | SSW | 3.4 | |
| 101 | 13:15:55 | 77.3 | 0.01 | SSW | 6.2 | |
| 102 | 13:19:00 | 4.4 | 0.005 | SSW | 6.0 | |
| 103 | 13:23:42 | 17.3 | 0.018 | SSW | 3.5 | odors |
| 104 | 13:27:11 | 12.4 | 0.051 | SSW | 8.0 | odors |
| 105 | 13:28:46 | 4.1 | 0.004 | SSW | 3.7 | odors |

| Monitoring Station (x100') | TIME | CH4 Concentration (ppm) | H2S Concentration (ppm) | Wind Direction | Wind Speed (mph) | Comments |
|---|---|---|---|---|---|---|
| 106 | 13:30:38 | 10.2 | 0.33 | SSW | 8.7 | odors |
| 107 | 13:31:44 | 140 | 0.015 | SSW | 5.3 | |
| 108 | 13:33:36 | 11 | 0.16 | SSW | 6.2 | |
| 109 | 13:35:03 | 21.2 | 0.016 | SSW | 5.7 | |
| 110 | 13:37:09 | 120 | 0.008 | SSW | 8.7 | |
| 111 | 13:38:17 | 4.5 | 0.15 | SSW | 7.2 | odors |
| 112 | 13:40:13 | 21.9 | 0.007 | SSW | 4.1 | odors |
| 113 | 13:41:55 | 1.5 | 0.019 | SSW | 5.9 | odors |
| 114 | 13:43:09 | 8.6 | 0.16 | SSW | 4.4 | odors |
| 115 | 13:45:27 | 6.4 | 0.125 | SSW | 1.8 | odors |
| 116 | 13:46:53 | 15.6 | 0.15 | SSW | 3.0 | odors |
| 117 | 13:48:14 | 26.2 | 0.014 | SSW | 8.0 | odors |
| 118 | 13:50:00 | 42.1 | 0.11 | SSW | 6.3 | odors |
| 119 | 13:51:26 | 12.3 | 0.03 | SSW | 6.6 | odors |
| 120 | 13:53:00 | 10.1 | 0.042 | SSW | 6.5 | odors |
| 121 | 13:54:29 | 10.3 | 0.007 | SSW | 6.3 | odors |
| 122 | 13:57:14 | 21.1 | 0.022 | SSW | 5.1 | odors |
| 123 | 13:58:33 | 1.4 | 0.015 | SSW | 3.4 | odors |
| 124 | 13:59:45 | 6 | 0.011 | SSW | 4.1 | odors |
| 125 | 14:01:28 | 28.6 | 0.038 | SSW | 3.1 | odors |
| 126 | 14:03:20 | 42.1 | 0.15 | SSW | 2.2 | odors |
| 127 | 14:04:15 | 5.3 | 0.01 | SSW | 5.0 | odors |
| 128 | 14:06:15 | 26.7 | 0.012 | SSW | 6.4 | odors |
| 129 | 14:08:21 | 2.9 | 0.013 | SSW | 11.3 | odors |
| 130 | 14:09:42 | 74.4 | 0.039 | SSW | 9.1 | odors |
| 131 | 14:10:55 | 27.3 | 0.24 | SSW | 10.0 | odors |
| 132 | 14:12:28 | 95.6 | 0.065 | SSW | 3.4 | odors |
| 133 | 14:13:52 | 39.9 | 0.25 | SSW | 3.5 | odors |
| 134 | 14:15:32 | 189 | 0.25 | SSW | 5.7 | odors |
| 135 | 14:17:00 | 51.1 | 0.021 | SSW | 3.6 | odors |
| 136 | 14:18:28 | 11.1 | 0.012 | SSW | 3.2 | odors |
| 137 | 14:20:08 | 57.6 | 0.058 | SSW | 8.2 | odors |
| 138 | 14:21:20 | 34.2 | 0.036 | SSW | 8.0 | odors |
| 139 | 14:22:50 | 11.5 | 0.11 | SSW | 9.1 | odors |
| 140 | 14:24:02 | 25.2 | 0.05 | SSW | 9.3 | odors |
| 141 | 14:25:41 | 45.8 | 0.12 | SSW | 1.8 | odors |
| 142 | 14:27:05 | 20.7 | 0.019 | SSW | 5.7 | odors |
| 143 | 14:29:48 | 20.7 | 0.045 | SSW | 12.3 | odors |
| 144 | 14:31:46 | 11.4 | 0.13 | SSW | 10.2 | odors |
| 145 | 14:33:12 | 27.8 | 0.012 | SSW | 11.7 | odors |
| 146 | 14:34:24 | 12.8 | 0.112 | SSW | 11.0 | odors |
| 147 | 14:36:03 | 52.3 | 0.067 | SSW | 9.7 | odors |
| 148 | 14:37:39 | 35.8 | 0.006 | SSW | 5.5 | odors |
| 149 | 14:39:11 | 4.2 | 0.17 | SSW | 8.1 | odors |
| 150 | 14:40:14 | 13.5 | 0.13 | SSW | 4.7 | odors |
| 151 | 14:41:29 | 21.2 | 0.008 | SSW | 4.9 | odors |
| 152 | 14:42:37 | 4.1 | 0.12 | SSW | 7.7 | odors |
| 153 | 14:44:08 | 14 | 1.05 | SSW | 8.0 | odors |
| 154 | 14:44:31 | 26.2 | 0.029 | SSW | 7.2 | odors |
| 155 | 14:45:47 | 276 | 0.026 | SSW | 5.7 | odors |
| 156 | 14:46:52 | 73.4 | 0.3 | SSW | 10.3 | odors |
| 157 | 14:48:18 | 23.8 | 0.21 | SSW | 9.4 | odors |
| 158 | 14:48:56 | 12.2 | 0.004 | SSW | 8.0 | odors |
| 159 | 14:50:03 | 31.9 | 1.36 | SSW | 5.7 | odors |
| 160 | 14:51:11 | 3.8 | 0.2 | SSW | 7.4 | odors |
| 161 | 14:52:40 | 2.1 | 0.078 | SSW | 11.4 | odors |

| Monitoring Station (x100') | TIME | CH4 Concentration (ppm) | H2S Concentration (ppm) | Wind Direction | Wind Speed (mph) | Comments |
|---|---|---|---|---|---|---|
| Landfill Side Slopes | | | | | | |
| 162 | 14:54:20 | 42.4 | 0.004 | SSW | 9.9 | |
| 163 | 14:56:18 | 26.1 | 0.005 | SSW | 3.4 | |
| 164 | 14:58:10 | 37.7 | 0.004 | SSW | 2.1 | |
| 165 | 15:00:06 | 0.2 | 0.003 | SSW | 4.9 | |
| 166 | 15:04:46 | 9.9 | 0.002 | SSW | 2.6 | |
| 167 | 15:05:46 | 11.2 | 0.002 | SSW | 7.4 | |
| 168 | 15:44:04 | 13.8 | 0.002 | SSW | 5.7 | |
| 169 | 15:44:43 | 24 | 0.032 | SSW | 9.2 | odors |
| 170 | 15:45:32 | 6.1 | 0.003 | SSW | 9.7 | |
| 171 | 15:46:38 | 18.7 | 0.002 | SSW | 8.6 | |
| 172 | 15:47:32 | 0.9 | 0.004 | SSW | 6.9 | |
| 173 | 15:48:35 | 10 | 0.001 | SSW | 7.2 | |
| 174 | 15:49:32 | 2.8 | 0.024 | SSW | 7.4 | odors |
| 175 | 15:50:36 | 241 | 0.052 | SSW | 8.2 | odors |
| 176 | 15:52:03 | 10 | 0.41 | SSW | 10.0 | odors |
| 177 | 15:52:50 | 5.4 | 0.19 | SSW | 7.6 | odors |
| 178 | 15:53:36 | 6.4 | 0.27 | SSW | 6.8 | odors |
| 179 | 15:55:48 | 19.8 | 0.13 | SSW | 2.7 | odors |
| 180 | 15:56:29 | 33.8 | 0.11 | SSW | 4.3 | odors |
| 181 | 15:59:26 | 17.2 | 0.012 | SSW | 8.5 | odors |
| 182 | 16:00:24 | 37.1 | 0.029 | SSW | 5.7 | odors |
| 183 | 16:01:42 | 19.4 | 0.007 | SSW | 8.0 | |
| 184 | 16:02:44 | 19.2 | 0.005 | SSW | 2.3 | |
| 185 | 16:03:43 | 14.2 | 0.005 | S | 7.9 | |
| 186 | 16:04:46 | 163 | 0.006 | S | 5.7 | |
| 187 | 16:05:06 | 92.6 | 0.003 | S | 8.0 | |
| 188 | 16:05:55 | 7.8 | 0.005 | S | 7.4 | |
| 189 | 16:07:11 | 6.6 | 0.01 | S | 6.7 | |
| 190 | 16:08:16 | 3.8 | 0.028 | SSW | 4.6 | |
| 191 | 16:09:04 | 4.7 | 0.017 | SSW | 4.6 | |
| 192 | 16:09:52 | 1.5 | 0.002 | SSW | 4.0 | |
| 193 | 16:11:02 | 5 | 0.005 | SSW | 2.9 | |
| 194 | 16:11:53 | 1.4 | 0.007 | SSW | 3.2 | |
| 195 | 16:13:06 | 10.6 | 0.015 | SSW | 4.7 | |
| 196 | 16:13:49 | 3.7 | 0.011 | SSW | 3.8 | |
| 197 | 16:15:45 | 2.7 | 0.004 | S | 1.2 | |
| 198 | 16:17:24 | 11.9 | 0.008 | S | 2.4 | |
| 199 | 16:18:25 | 3.2 | 0.005 | S | 4.4 | |
| 200 | 16:19:15 | 56.8 | 0.005 | S | 4.8 | |
| 201 | 16:20:09 | 37.1 | 0.006 | S | 3.4 | |
| 202 | 16:21:11 | 17.4 | 0.004 | S | 4.5 | |
| 203 | 16:22:30 | 13.1 | 0.006 | S | 3.3 | |
| 204 | 16:23:18 | 4.1 | 0.004 | S | 1.3 | |
| 205 | 16:24:05 | 1.2 | 0.005 | S | 5.8 | |
| 206 | 16:25:09 | 0.7 | 0.005 | S | 4.1 | |
| 207 | 16:26:23 | 5.1 | 0.004 | S | 4.0 | |
| 208 | 16:28:01 | 3.2 | 0.004 | S | 4.6 | |
| 209 | 16:28:41 | 0.3 | 0.005 | S | 3.4 | |
| 210 | 16:29:26 | 0 | 0.003 | S | 6.1 | |
| 211 | 16:30:09 | 0.6 | 0.003 | S | 4.6 | |
| 212 | 16:31:07 | 3.6 | 0.005 | S | 6.0 | |
| 213 | 16:31:52 | 13.8 | 0.004 | S | 8.2 | |
| 214 | 16:33:28 | 0.1 | 0.006 | S | 7.7 | |
| 215 | 16:34:27 | -0.4 | 0.005 | S | 4.2 | |
| 216 | 16:35:34 | 14.1 | 0.005 | S | 4.0 | |

| Monitoring Station (x100') | TIME | CH4 Concentration (ppm) | H2S Concentration (ppm) | Wind Direction | Wind Speed (mph) | Comments |
|---|---|---|---|---|---|---|
| 217 | 16:36:34 | 0.2 | 0.005 | S | 4.7 | |
| 218 | 16:37:39 | -0.3 | 0.005 | S | 5.9 | |
| | Minimum | -0.40 | 0.001 | | 0 | |
| | Maximum | 340 | 1.360 | | 12.3 | |
| | Average | | | | 6.0 | |
| | Methane > 100 ppm | 163 | | | | |
| | H2S>0.030 ppm | | 0.052 | | | |
| | H2S>0.1 | | 0.41 | | | |




source:https://www.wunderground.com/history/daily/us/nj/newark/KEWR/date/2019-4-13

(/)

Search Locations

Log in (/log...

★ (/member/favorites)

Recent Cities

Manhattan, NY (weather/us/ny/manhattan/40.77,-73.98) Perry Hall, MD (weather/us/md/perry-hall/39.38,-76.46) Rensselaer, NY (weather/us/ny/renssela

Elev **0 40.69** °N, **74.18** °W

# Newark Liberty International Airport, New Jersey ★

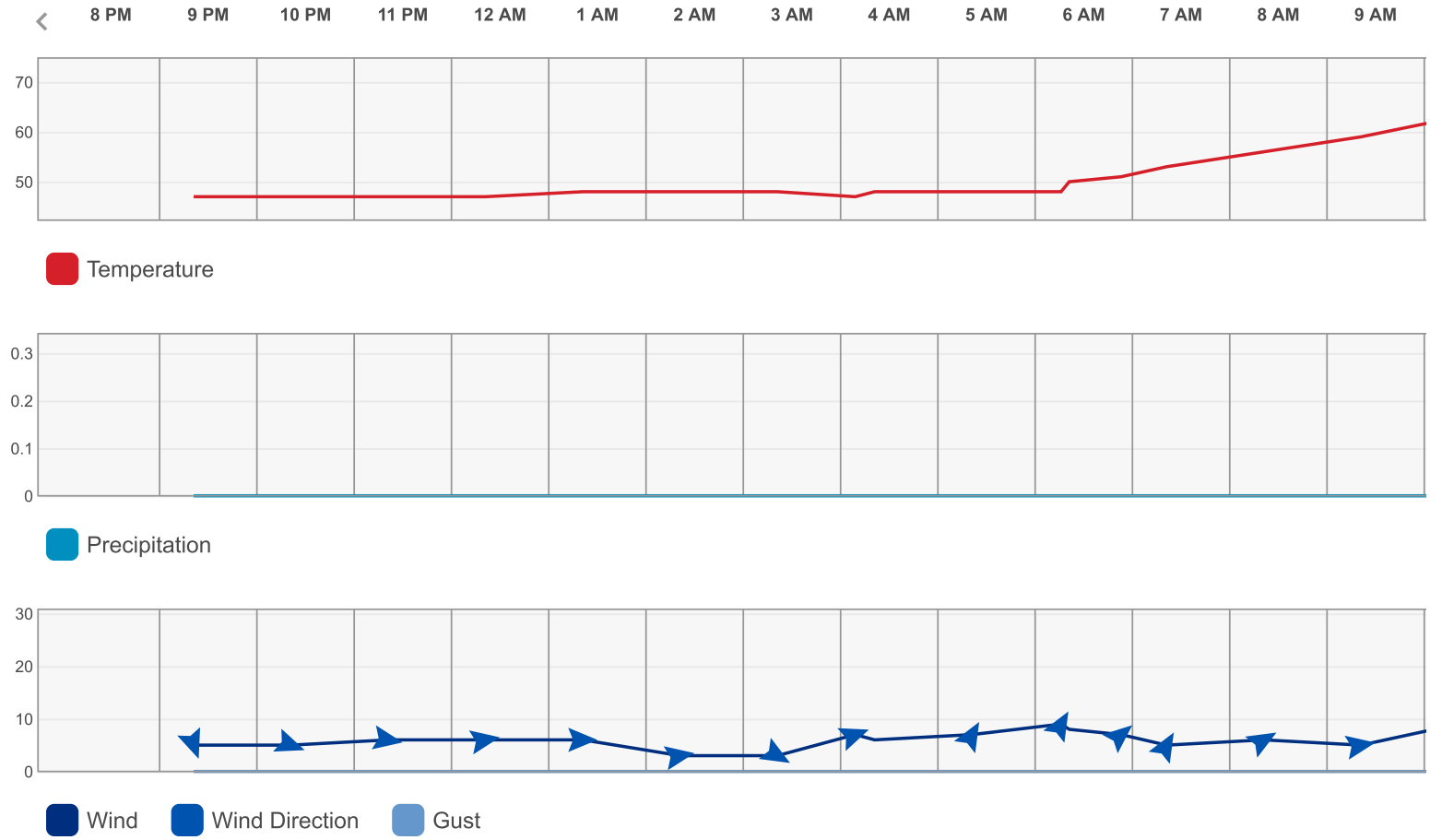
**61° NEWARK LIBERTY INTERNATIONAL AIRPORT STATION (/HISTORY/DAILY/US/NJ/NEWARK/KEWR/DATE/2019-4-15?CM_VEN=LOCALWX_PWSDASH)** | CHANGE

HISTORY (/HISTORY/DAILY/US/NJ/NEWARK/KEWR/DATE/2019-4-15)

- TODAY (/WEATHER/US/NJ/NEWARK/40.73,-74.17)
- HOURLY (/HOURLY/US/NJ/NEWARK/40.73,-74.17)
- 10-DAY (/FORECAST/US/NJ/NEWARK/40.73,-74.17)
- CALENDAR (/CALENDAR/US/NJ/NEWARK/KEWR/DATE/2019-4)
- HISTORY (/HISTORY/DAILY/US/NJ/NEWARK/KEWR/DATE/2019-4-15)
- WUNDERMAP (/WUNDERMAP?LAT=40.69&LON=-74.18)

Daily Weekly Monthly

April 12 2019 View



# Summary

April 12, 2019

RAINFALL FOR APRIL 12

| **Temperature (° F)** | Actual | Historic Avg. | Record |
|---|---|---|---|
| High Temp | 70 | 61 | 90 |
| Low Temp | 46 | 43 | 27 |
| Day Average Temp | 58 | 52 | - |
| **Precipitation (Inches)** | Actual | Historic Avg. | Record |
| Precipitation | 0.57 | 0.15 | 2.5 |
| Month to Date | 1.02 | 1.77 | - |
| Year to Date | 12.9 | 12.37 | - |
| **Degree Days (° F)** | Actual | Historic Avg. | Record |
| Heating Degree Days | 7 | 14 | - |
| HDD Month to Date | 171 | 187 | - |
| HDD Since July 1 | 4469 | 4531 | - |
| Cooling Degree Days | 0 | 0 | - |
| CDD Month to Date | 1 | 0 | - |
| CDD Year to Date | 1 | 1 | - |
| Growing Degree Days | 8 | - | - |
| **Dew Point (° F)** | Actual | Historic Avg. | Record |
| Dew Point | 45 | - | - |
| High | 59 | - | - |
| Low | 23 | - | - |
| Average | 45 | - | - |
| **Wind (MPH)** | Actual | Historic Avg. | Record |
| Max Wind Speed | 22 | - | - |
| Visibility | 10 | - | - |
| **Sea Level Pressure (Hg)** | Actual | Historic Avg. | Record |
| Sea Level Pressure | 30.29 | - | - |

| Temperature (° F) | Actual | Historic Avg. | Record |
|---|---|---|---|

| Astronomy | Day Length | Rise | Set |
|---|---|---|---|
| Actual Time | 13h 9m | 6:24 AM | 7:33 PM |
| Civil Twilight | | 5:55 AM | 8:01 PM |
| Nautical Twilight | | 5:22 AM | 8:34 PM |
| Astronomical Twilight | | 4:47 AM | 9:10 PM |
| Moon: waxing half first qtr | | 11:44 AM | 2:01 AM |

# Daily Observations

Start April 12, 2019

April 11, 2019

| Time | Temperature | Dew Point | Humidity | Wind | Wind Speed | Wind Gust | Pressure | Precip. | Precip Accum | Condition |
|---|---|---|---|---|---|---|---|---|---|---|
| 8:51 PM | 47 ° F | 30 ° F | 52 % | SSE | 5 mph | 0 mph | 30.3 in | 0.0 in | 0.0 in | Cloudy |
| 9:51 PM | 47 ° F | 31 ° F | 54 % | ESE | 5 mph | 0 mph | 30.3 in | 0.0 in | 0.0 in | Cloudy |
| 10:51 PM | 47 ° F | 31 ° F | 54 % | E | 6 mph | 0 mph | 30.2 in | 0.0 in | 0.0 in | Cloudy |
| 11:51 PM | 47 ° F | 26 ° F | 44 % | E | 6 mph | 0 mph | 30.2 in | 0.0 in | 0.0 in | Cloudy |
| 12:51 AM | 48 ° F | 23 ° F | 37 % | E | 6 mph | 0 mph | 30.2 in | 0.0 in | 0.0 in | Cloudy |
| 1:51 AM | 48 ° F | 25 ° F | 41 % | E | 3 mph | 0 mph | 30.2 in | 0.0 in | 0.0 in | Cloudy |
| 2:51 AM | 48 ° F | 35 ° F | 61 % | ESE | 3 mph | 0 mph | 30.2 in | 0.0 in | 0.0 in | Cloudy |
| 3:39 AM | 47 ° F | 38 ° F | 71 % | ENE | 7 mph | 0 mph | 30.3 in | 0.0 in | 0.0 in | Cloudy |
| 3:51 AM | 48 ° F | 38 ° F | 68 % | NE | 6 mph | 0 mph | 30.3 in | 0.0 in | 0.0 in | Cloudy |
| 4:51 AM | 48 ° F | 41 ° F | 77 % | NNE | 7 mph | 0 mph | 30.3 in | 0.0 in | 0.0 in | Cloudy |
| 5:46 AM | 48 ° F | 43 ° F | 82 % | NNE | 9 mph | 0 mph | 30.3 in | 0.0 in | 0.0 in | Cloudy |
| 5:51 AM | 50 ° F | 42 ° F | 74 % | NNE | 8 mph | 0 mph | 30.3 in | 0.0 in | 0.0 in | Cloudy |
| 6:23 AM | 51 ° F | 42 ° F | 71 % | NE | 7 mph | 0 mph | 30.3 in | 0.0 in | 0.0 in | Cloudy |
| 6:51 AM | 53 ° F | 43 ° F | 69 % | NNE | 5 mph | 0 mph | 30.3 in | 0.0 in | 0.0 in | Mostly Cloudy |
| 7:51 AM | 56 ° F | 43 ° F | 62 % | ENE | 6 mph | 0 mph | 30.2 in | 0.0 in | 0.0 in | Mostly Cloudy |
| 8:51 AM | 59 ° F | 45 ° F | 60 % | E | 5 mph | 0 mph | 30.2 in | 0.0 in | 0.0 in | Mostly Cloudy |
| 9:51 AM | 63 ° F | 47 ° F | 56 % | E | 9 mph | 0 mph | 30.2 in | 0.0 in | 0.0 in | Mostly Cloudy |
| 10:51 AM | 63 ° F | 49 ° F | 60 % | ENE | 6 mph | 0 mph | 30.1 in | 0.0 in | 0.0 in | Mostly Cloudy |
| 11:51 AM | 64 ° F | 52 ° F | 65 % | VAR | 5 mph | 0 mph | 30.1 in | 0.0 in | 0.0 in | Mostly Cloudy |
| 12:51 PM | 68 ° F | 53 ° F | 59 % | S | 5 mph | 0 mph | 30.1 in | 0.0 in | 0.0 in | Light Rain |
| 1:51 PM | 66 ° F | 56 ° F | 70 % | S | 13 mph | 0 mph | 30.1 in | 0.0 in | 0.0 in | Cloudy |
| 2:51 PM | 65 ° F | 57 ° F | 75 % | S | 16 mph | 28 mph | 30.1 in | 0.0 in | 0.0 in | Light Rain |
| 3:51 PM | 62 ° F | 58 ° F | 86 % | S | 12 mph | 22 mph | 30.1 in | 0.0 in | 0.0 in | Light Rain |
| 4:51 PM | 61 ° F | 58 ° F | 90 % | S | 10 mph | 0 mph | 30.1 in | 0.1 in | 0.0 in | Rain |
| 5:09 PM | 61 ° F | 59 ° F | 93 % | S | 10 mph | 0 mph | 30.1 in | 0.0 in | 0.0 in | Light Rain |
| 5:51 PM | 62 ° F | 59 ° F | 90 % | SW | 8 mph | 0 mph | 30.1 in | 0.0 in | 0.0 in | Light Rain |
| 6:20 PM | 61 ° F | 59 ° F | 93 % | SSW | 8 mph | 0 mph | 30.1 in | 0.3 in | 0.0 in | Rain |
| 6:51 PM | 61 ° F | 59 ° F | 93 % | S | 7 mph | 0 mph | 30.1 in | 0.3 in | 0.0 in | Light Rain |
| 7:51 PM | 61 ° F | 59 ° F | 93 % | S | 12 mph | 0 mph | 30.1 in | 0.1 in | 0.0 in | Rain |

(/)

Search Locations

Log in (/log...

★ (/member/favorites)

Recent Cities

Manhattan, NY (weather/us/ny/manhattan/40.77,-73.98) Perry Hall, MD (weather/us/md/perry-hall/39.38,-76.46) Rensselaer, NY (weather/us/ny/renssela

Elev **0 40.69** °N, **74.18** °W

# Newark Liberty International Airport, New Jersey ★

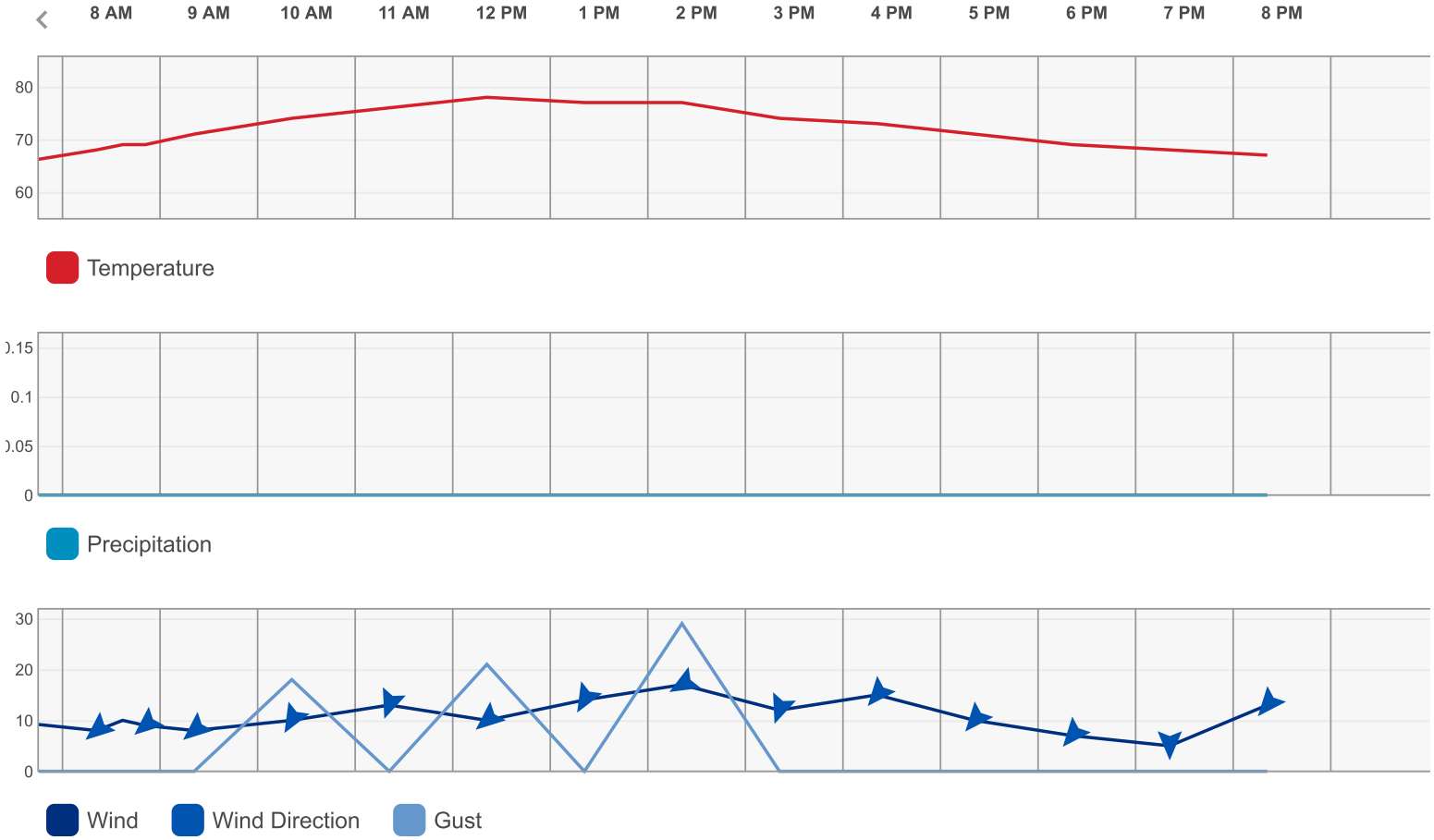
**61° NEWARK LIBERTY INTERNATIONAL AIRPORT STATION (/HISTORY/DAILY/US/NJ/NEWARK/KEWR/DATE/2019-4-15?CM_VEN=LOCALWX_PWSDASH)** | CHANGE

HISTORY (/HISTORY/DAILY/US/NJ/NEWARK/KEWR/DATE/2019-4-15)

- TODAY (/WEATHER/US/NJ/NEWARK/40.73,-74.17)
- HOURLY (/HOURLY/US/NJ/NEWARK/40.73,-74.17)
- 10-DAY (/FORECAST/US/NJ/NEWARK/40.73,-74.17)
- CALENDAR (/CALENDAR/US/NJ/NEWARK/KEWR/DATE/2019-4)
- HISTORY (/HISTORY/DAILY/US/NJ/NEWARK/KEWR/DATE/2019-4-15)
- WUNDERMAP (/WUNDERMAP?LAT=40.69&LON=-74.18)

Daily Weekly Monthly

April 13 2019 View



# Summary

April 13, 2019

RAINFALL FOR APRIL 13

| Temperature (° F) | Actual | Historic Avg. | Record |
|---|---|---|---|
| High Temp | 79 | 61 | 86 |
| Low Temp | 61 | 43 | 26 |
| Day Average Temp | 70 | 52 | - |

| Precipitation (Inches) | Actual | Historic Avg. | Record |
|---|---|---|---|
| Precipitation | 0.17 | 0.15 | 1.05 |
| Month to Date | 1.19 | 1.92 | - |
| Year to Date | 13.07 | 12.52 | - |

| Degree Days (° F) | Actual | Historic Avg. | Record |
|---|---|---|---|
| Heating Degree Days | 0 | 13 | - |
| HDD Month to Date | 171 | 200 | - |
| HDD Since July 1 | 4469 | 4544 | - |
| Cooling Degree Days | 5 | 0 | - |
| CDD Month to Date | 6 | 0 | - |
| CDD Year to Date | 6 | 1 | - |
| Growing Degree Days | 20 | - | - |

| Dew Point (° F) | Actual | Historic Avg. | Record |
|---|---|---|---|
| Dew Point | 58 | - | - |
| High | 61 | - | - |
| Low | 44 | - | - |
| Average | 58 | - | - |

| Wind (MPH) | Actual | Historic Avg. | Record |
|---|---|---|---|
| Max Wind Speed | 21 | - | - |
| Visibility | 10 | - | - |

| Sea Level Pressure (Hg) | Actual | Historic Avg. | Record |
|---|---|---|---|
| Sea Level Pressure | 30.09 | - | - |

| Temperature (° F) | Actual | Historic Avg. | Record |
|---|---|---|---|

| Astronomy | Day Length | Rise | Set |
|---|---|---|---|
| Actual Time | 13h 11m | 6:22 AM | 7:34 PM |
| Civil Twilight | | 5:54 AM | 8:02 PM |
| Nautical Twilight | | 5:20 AM | 8:36 PM |
| Astronomical Twilight | | 4:45 AM | 9:11 PM |
| Moon: waxing gibbous | | 12:49 PM | 2:55 AM |

# Daily Observations

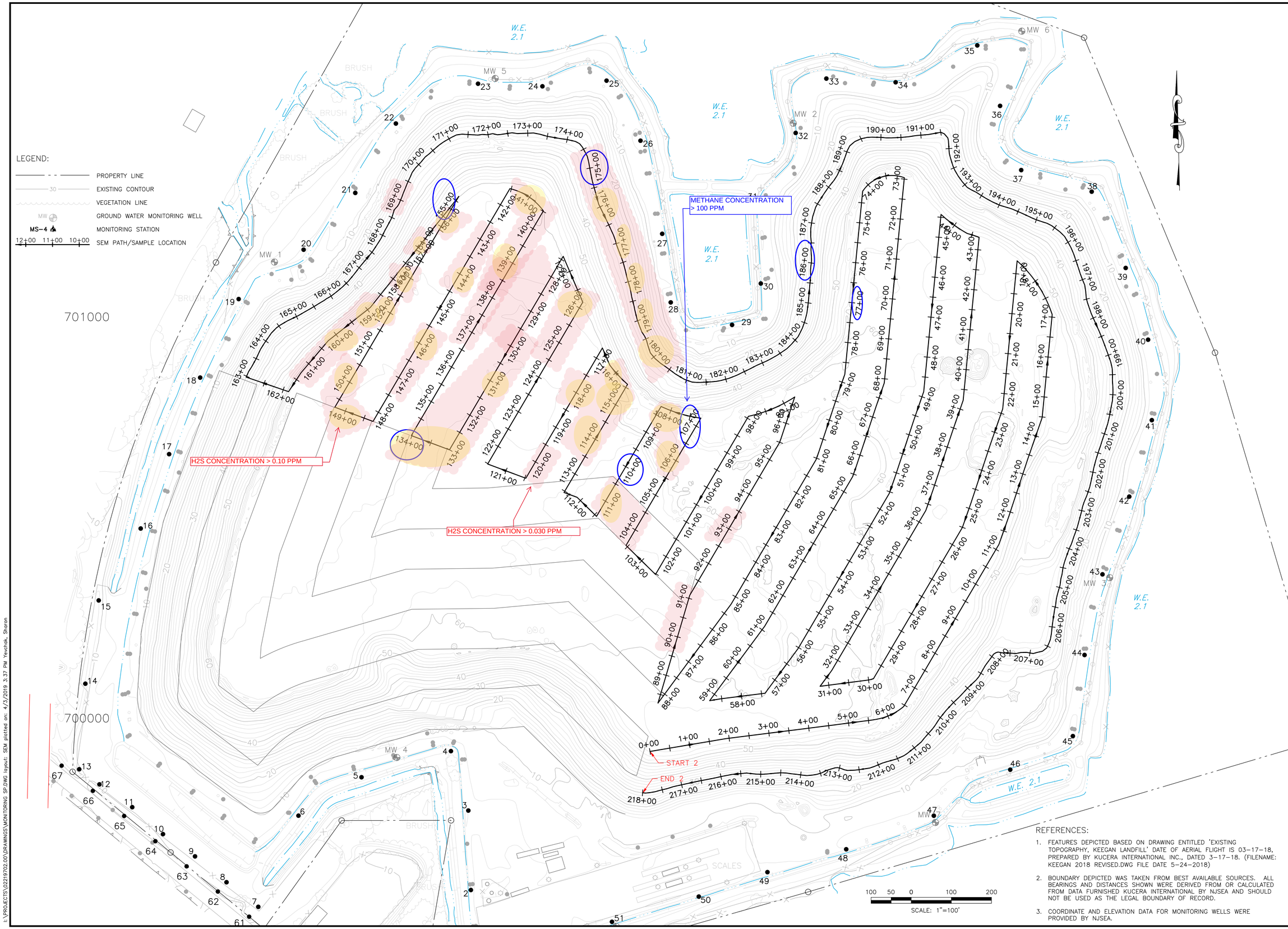
Start April 13, 2019

Period SEM was performed

April 12, 2019

| Time | Temperature | Dew Point | Humidity | Wind | Wind Speed | Wind Gust | Pressure | Precip. | Precip Accum | Condition |
|---|---|---|---|---|---|---|---|---|---|---|
| 8:51 PM | 62 ° F | 59 ° F | 90 % | S | 13 mph | 0 mph | 30.1 in | 0.1 in | 0.0 in | Light Rain |
| 9:51 PM | 62 ° F | 59 ° F | 90 % | S | 14 mph | 0 mph | 30.1 in | 0.0 in | 0.0 in | Light Rain |
| 10:51 PM | 62 ° F | 58 ° F | 86 % | S | 15 mph | 0 mph | 30.0 in | 0.0 in | 0.0 in | Cloudy |
| 11:40 PM | 62 ° F | 58 ° F | 86 % | S | 15 mph | 0 mph | 30.0 in | 0.0 in | 0.0 in | Cloudy |
| 11:51 PM | 62 ° F | 58 ° F | 86 % | S | 15 mph | 24 mph | 30.0 in | 0.0 in | 0.0 in | Cloudy |
| 12:51 AM | 62 ° F | 58 ° F | 86 % | S | 20 mph | 0 mph | 30.0 in | 0.0 in | 0.0 in | Cloudy |
| 1:28 AM | 61 ° F | 59 ° F | 93 % | SW | 13 mph | 0 mph | 30.0 in | 0.0 in | 0.0 in | Rain |
| 1:51 AM | 61 ° F | 60 ° F | 97 % | WSW | 7 mph | 0 mph | 30.0 in | 0.1 in | 0.0 in | Heavy Rain |
| 2:51 AM | 61 ° F | 60 ° F | 97 % | S | 5 mph | 0 mph | 30.0 in | 0.0 in | 0.0 in | Light Rain |
| 3:40 AM | 62 ° F | 60 ° F | 93 % | SW | 13 mph | 0 mph | 30.1 in | 0.0 in | 0.0 in | Light Rain |
| 3:51 AM | 62 ° F | 60 ° F | 93 % | SW | 15 mph | 0 mph | 30.1 in | 0.0 in | 0.7 in | Cloudy |
| 4:36 AM | 63 ° F | 61 ° F | 93 % | SSW | 10 mph | 0 mph | 30.1 in | 0.0 in | 0.0 in | Cloudy |
| 4:51 AM | 63 ° F | 60 ° F | 90 % | S | 8 mph | 0 mph | 30.1 in | 0.0 in | 0.0 in | Cloudy |
| 5:51 AM | 64 ° F | 61 ° F | 90 % | SW | 9 mph | 0 mph | 30.1 in | 0.0 in | 0.0 in | Cloudy |
| 6:35 AM | 64 ° F | 61 ° F | 90 % | WSW | 13 mph | 0 mph | 30.1 in | 0.0 in | 0.0 in | Cloudy |
| 6:51 AM | 65 ° F | 61 ° F | 87 % | SW | 10 mph | 0 mph | 30.1 in | 0.0 in | 0.0 in | Cloudy |
| 7:51 AM | 68 ° F | 61 ° F | 78 % | SW | 8 mph | 0 mph | 30.1 in | 0.0 in | 0.0 in | Mostly Cloudy |
| 8:07 AM | 69 ° F | 61 ° F | 75 % | SW | 10 mph | 0 mph | 30.0 in | 0.0 in | 0.0 in | Mostly Cloudy |
| 8:21 AM | 69 ° F | 60 ° F | 73 % | SW | 9 mph | 0 mph | 30.0 in | 0.0 in | 0.0 in | Mostly Cloudy |
| 8:51 AM | 71 ° F | 59 ° F | 66 % | SW | 8 mph | 0 mph | 30.0 in | 0.0 in | 0.0 in | Mostly Cloudy |
| 9:51 AM | 74 ° F | 56 ° F | 53 % | SSW | 10 mph | 18 mph | 30.0 in | 0.0 in | 0.0 in | Mostly Cloudy |
| 10:51 AM | 76 ° F | 54 ° F | 46 % | SSW | 13 mph | 0 mph | 30.0 in | 0.0 in | 0.0 in | Partly Cloudy |
| 11:51 AM | 78 ° F | 52 ° F | 40 % | SW | 10 mph | 21 mph | 30.0 in | 0.0 in | 0.0 in | Mostly Cloudy |
| 12:51 PM | 77 ° F | 51 ° F | 40 % | SSW | 14 mph | 0 mph | 30.0 in | 0.0 in | 0.0 in | Mostly Cloudy |
| 1:51 PM | 77 ° F | 44 ° F | 31 % | WSW | 17 mph | 29 mph | 30.0 in | 0.0 in | 0.0 in | Cloudy |
| 2:51 PM | 74 ° F | 54 ° F | 50 % | SSW | 12 mph | 0 mph | 29.9 in | 0.0 in | 0.0 in | Cloudy |
| 3:51 PM | 73 ° F | 55 ° F | 53 % | SW | 15 mph | 0 mph | 30.0 in | 0.0 in | 0.0 in | Cloudy |
| 4:51 PM | 71 ° F | 56 ° F | 59 % | SW | 10 mph | 0 mph | 30.0 in | 0.0 in | 0.0 in | Cloudy |
| 5:51 PM | 69 ° F | 57 ° F | 65 % | SW | 7 mph | 0 mph | 30.0 in | 0.0 in | 0.0 in | Mostly Cloudy |
| 6:51 PM | 68 ° F | 57 ° F | 68 % | S | 5 mph | 0 mph | 29.9 in | 0.0 in | 0.0 in | Mostly Cloudy |

Attachment 4




REFERENCES:

1. FEATURES DEPICTED BASED ON DRAWING ENTITLED 'EXISTING TOPOGRAPHY, KEEGAN LANDFILL' DATE OF AERIAL FLIGHT IS 03-17-18, PREPARED BY KUCERA INTERNATIONAL INC., DATED 3-17-18. (FILENAME: KEEGAN 2018 REVISED.DWG FILE DATE 5-24-2018)
2. BOUNDARY DEPICTED WAS TAKEN FROM BEST AVAILABLE SOURCES. ALL BEARINGS AND DISTANCES SHOWN WERE DERIVED FROM OR CALCULATED FROM DATA FURNISHED KUCERA INTERNATIONAL BY NJSEA AND SHOULD NOT BE USED AS THE LEGAL BOUNDARY OF RECORD.
3. COORDINATE AND ELEVATION DATA FOR MONITORING WELLS WERE PROVIDED BY NJSEA.

| NO. | REVISION | DATE |
|---|---|---|
| A | ISSUED FOR CLIENT REVIEW | 3/15/2019 |
| B | ADD PATH 2 | 4/3/2019 |

SHEET TITLE: **SEM SITE PLAN**

PROJECT TITLE: **MONITORING SUPPORT KEEGAN LANDFILL**

CLIENT: **NEW JERSEY SPORTS & EXHIBITION AUTHORITY**
1 DE KORTE PARK PLAZA, POB 640
LYNDHURST, NJ 07071

**SCS ENGINEERS**
STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS, INC.
4 EXECUTIVE BLVD, SUITE 201, SUFFERN, NY 10901
PH. (845) 357-1510 FAX. (845) 357-1049

PROJ. NO. 02219702.00
DSGN. BY: LKW
DWN. BY: SHY
CHK. BY: LKW
O/A RVW BY: LKW
APP. BY: LKW

CADD FILE: MONITORING SP

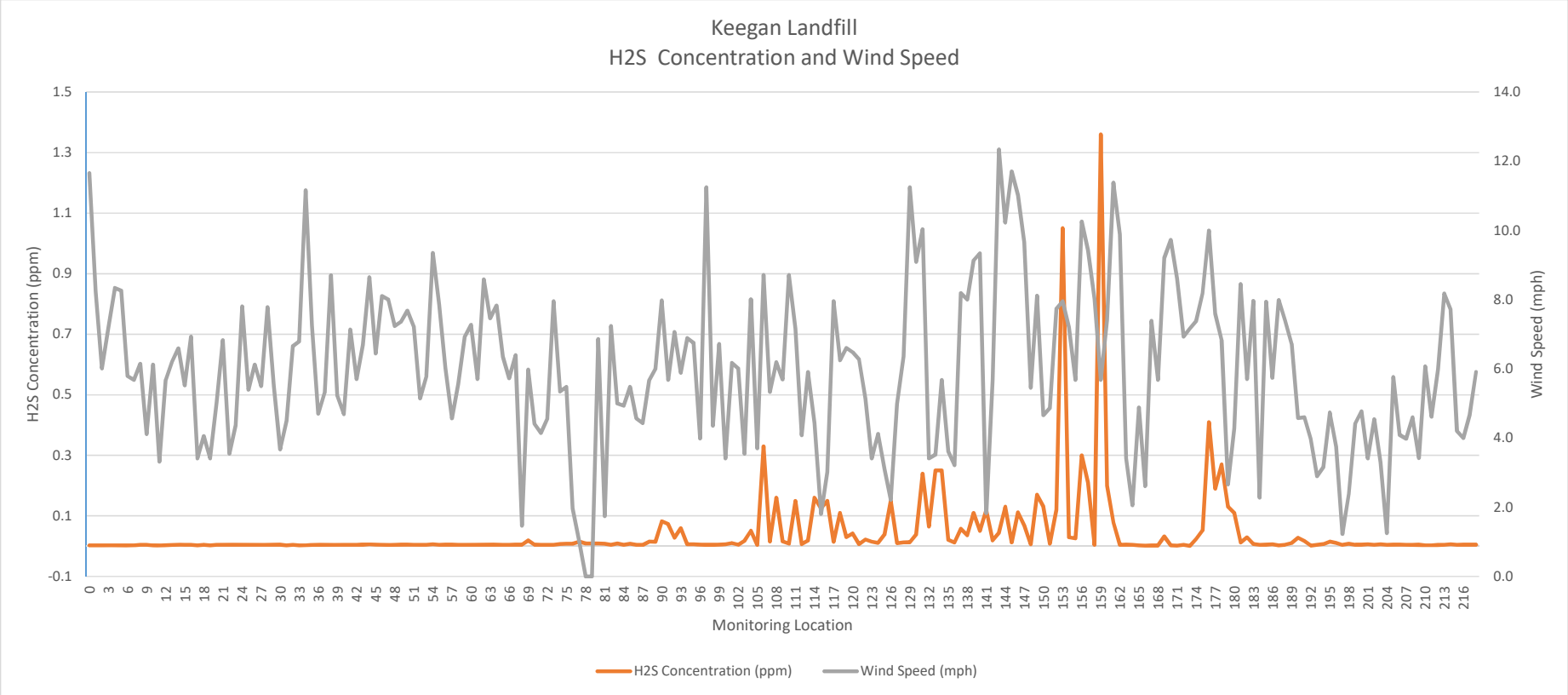
DATE: 3/15/2019

SCALE: AS SHOWN

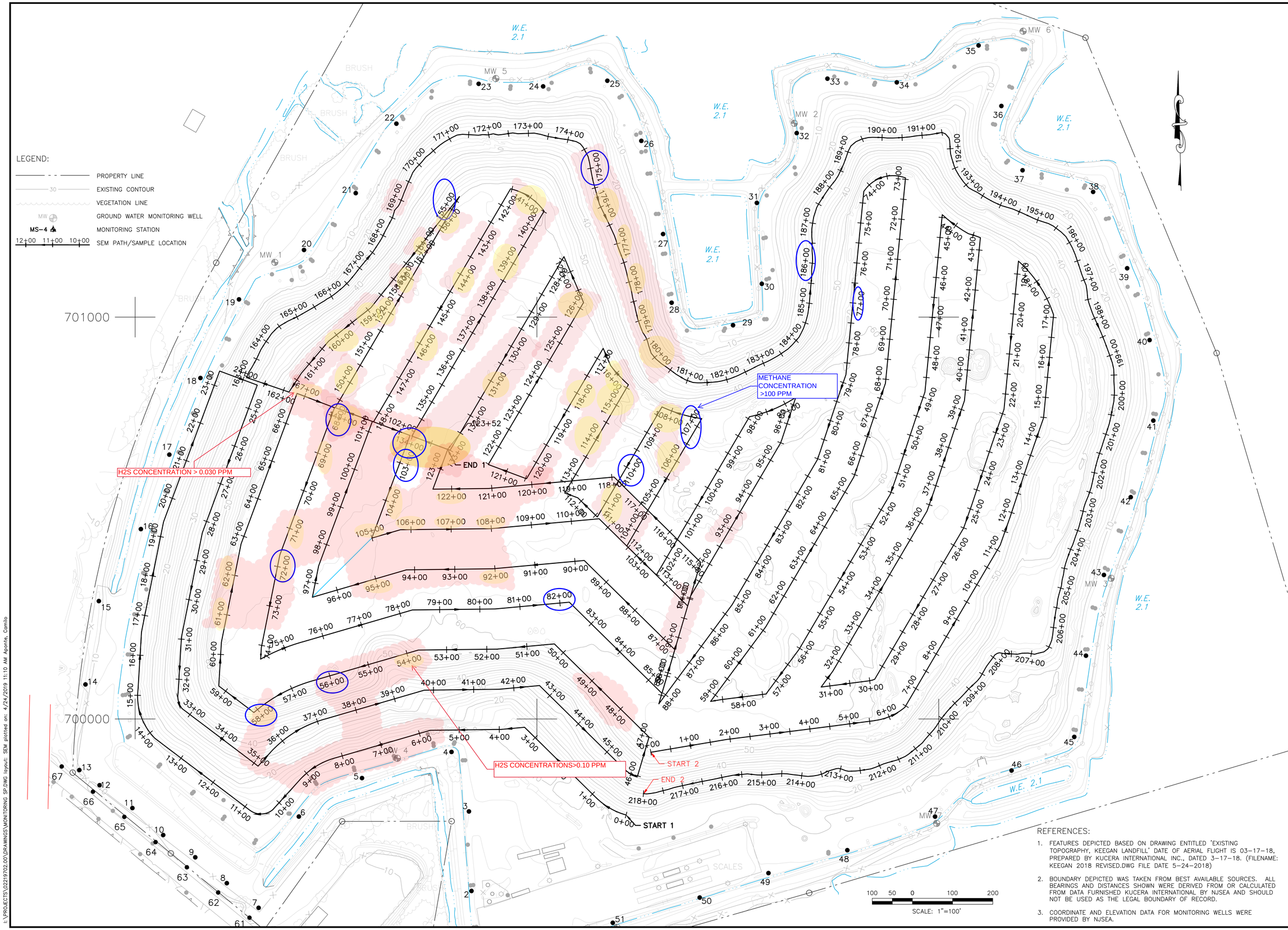
DRAWING NO. 1 of 1

I:\PROJECTS\02219702.00\DRAWINGS\MONITORING SP.DWG layout: SEM plotted on: 4/3/2019 3:37 PM Yevchak, Sharon

Attachment 5


Keegan Landfill
H2S Concentration and Wind Speed
H2S Concentration (ppm)
Wind Speed (mph)
Monitoring Location
H2S Concentration (ppm)
Wind Speed (mph)

Attachment 6




REFERENCES:

1. FEATURES DEPICTED BASED ON DRAWING ENTITLED 'EXISTING TOPOGRAPHY, KEEGAN LANDFILL' DATE OF AERIAL FLIGHT IS 03-17-18, PREPARED BY KUCERA INTERNATIONAL INC., DATED 3-17-18. (FILENAME: KEEGAN 2018 REVISED.DWG FILE DATE 5-24-2018)
2. BOUNDARY DEPICTED WAS TAKEN FROM BEST AVAILABLE SOURCES. ALL BEARINGS AND DISTANCES SHOWN WERE DERIVED FROM OR CALCULATED FROM DATA FURNISHED KUCERA INTERNATIONAL BY NJSEA AND SHOULD NOT BE USED AS THE LEGAL BOUNDARY OF RECORD.
3. COORDINATE AND ELEVATION DATA FOR MONITORING WELLS WERE PROVIDED BY NJSEA.

| NO. | REVISION | DATE |
|---|---|---|
| A | ISSUED FOR CLIENT REVIEW | 3/15/2019 |
| B | ADD PATH 2 | 4/3/2019 |

SHEET TITLE: **SEM SITE PLAN**

PROJECT TITLE: **MONITORING SUPPORT KEEGAN LANDFILL**

CLIENT: **NEW JERSEY SPORTS & EXHIBITION AUTHORITY**
1 DE KORTE PARK PLAZA, POB 640
LYNDHURST, NJ 07071

**SCS ENGINEERS**
STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS, INC.
4 EXECUTIVE BLVD, SUITE 201, SUFFERN, NY 10901
PH. (845) 357-1510 FAX. (845) 357-1049

PROJ. NO. 02219702.00 | DWN. BY: SHY | Q/A RVW BY: LKW
DSN. BY: LKW | CHK. BY: LKW | APP. BY: LKW

CADD FILE: MONITORING SP

DATE: 3/15/2019

SCALE: AS SHOWN

DRAWING NO. **1** of **1**

I:\PROJECTS\02219702.00\DRAWINGS\MONITORING SP.DWG layout: SEM plotted on: 4/24/2019 11:10 AM Aponte, Camilo