

Honeywell
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July 30, 2013

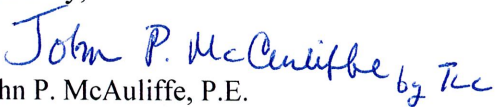
To: Harry Warner, NYSDEC, Region 7 (1 bound)
Holly Sammon, Onondaga County Public Library (1 bound)
Samuel Sage, Atlantic States Legal Foundation (1 bound)
Cara Burton, Solvay Public Library (1 bound)
Mary Ann Coogan, Camillus Town Hall (1 bound)
Moon Library, SUNY ESF (1 bound)
Diane Carlton, NYSDEC, Region 7 (1 PDF)
Joseph J. Heath, Esq., Onondaga Nation (1 bound)

Re: Letter of Transmittal – Onondaga Lake Repository Addition

The below document has been approved by the New York State Department of Environmental Conservation (NYSDEC) and is enclosed for your document holdings:

- Onondaga Lake Remediation Real-Time Benzene Monitoring Evaluation Plan dated July 2013

Sincerely,


John P. McAuliffe, P.E.
Program Director, Syracuse

Enc.

cc: Tim Larson - NYSDEC

New York State Department of Environmental Conservation

Division of Environmental Remediation

Remedial Bureau D, 12th Floor

625 Broadway, Albany, New York 12233-7013

Phone: (518) 402-9676 • **Fax:** (518) 402-9020

Website: www.dec.ny.gov



Joe Martens
Commissioner

July 29, 2013

Mr. John P. McAuliffe, P.E.
Program Director, Syracuse
Honeywell
301 Plainfield Road, Suite 330
Syracuse, NY 13212

Re: Onondaga Lake Remediation Real-Time Benzene Monitoring Evaluation Plan,
Dated July 2013

Dear Mr. McAuliffe:

We have received and reviewed the above-referenced document, transmitted by your July 29, 2013 letter to my attention, and find that the revised Plan has addressed our previous comments. Therefore, the Onondaga Lake Remediation Real-Time Benzene Monitoring Evaluation Plan, Dated July 2013, is hereby approved. Please see that copies of the approved Plan, along with this approval letter, are transmitted to the document repositories selected for this site.

Sincerely,

Timothy J. Larson, P.E.
Project Manager

ec: B. Israel, Esq. - Arnold & Porter
R. Nunes - USEPA, NYC
M. Sergott - NYSDOH, Albany
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T. Joyal, Esq.
J. Shenandoah
M. Distler - O'B&G

J. Gregg - NYSDEC
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July 29, 2013

Mr. Tim Larson, P.E.
Project Manager
NYSDEC Div. of Environmental Remediation
Remedial Bureau D
625 Broadway, 12th Floor
Albany, NY 12233-7016

**RE: Onondaga Lake Remediation
Real-Time Benzene Monitoring Evaluation Plan
July 2013**

Dear Mr. Smith:

Enclosed is the *Real-Time Benzene Monitoring Evaluation Plan* prepared by O'Brien & Gere.

Please contact Mark Distler at O'Brien & Gere (315-956-6536) or me should you have any questions regarding the information presented herein.

Sincerely,


by CCC

John P. McAuliffe, P.E.
Program Director, Syracuse

Enc.

cc: William Daigle (NYSDEC, Albany)
Donald Hesler (NYSDEC, Albany)
Mary Jane Peachey (NYSDEC, Region 7)
Robert Edwards (NYSDEC, Albany)
Reginald Parker (NYSDEC, Region 7)
Tara Blum (NYSDEC, Region 7)
Justin Deming (NYSDOH)
Mark Sergott (NYSDOH)
Larry Somer (Honeywell)
William Hague (Honeywell)
Bob Rule (deMaximis)
Tom Abrams (Parsons)
Mark Distler (O'Brien & Gere)

REAL-TIME BENZENE MONITORING EVALUATION PLAN JULY 2013 ONONDAGA LAKE REMEDIATION

This plan describes an evaluation of real-time monitoring of benzene associated with air quality monitoring on the Onondaga Lake remediation program. The purpose of the evaluation is to determine the reliability of a field instrument that can provide real-time measurement of benzene concentrations in ambient air at the sediment consolidation area (SCA) work perimeter.

The field instrument to be evaluated is the UltraRAE 3000 (BPID), which uses the same photoionization detection technology as the MiniRAE 3000 (PID) currently used on the Onondaga Lake remediation program to measure total volatile organic compound (TVOC) on a real-time basis. However, unlike the TVOC PID, which uses a 10.6 eV gas discharge lamp, the BPID uses a 9.8 eV gas discharge lamp and a compound specific separation tube to limit its measurements specifically to benzene¹. The separation tube removes compounds other than benzene, has a finite useful life, and therefore the BPID cannot operate unattended over long periods of time. The BPID also has internal data logging and computer (PC) interface capabilities that allow data to be averaged, stored, and downloaded. Table 1 presents some of the instrument's specifications.

Table 1. UltraRAE 3000 Monitor (BPID) Specifications

Range	0 to 200 ppm
Minimum Detection Limit	0.05 ppm
Resolution	0.05 ppm
Response Rate	1 measurement every 60 seconds
Accuracy (stated)	3% of calibration point (stated)
Temperature Range	-4 to 122 °F

FIELD EVALUATION

To determine the reliability of the BPID in providing accurate measurements of benzene at the SCA work perimeter, O'Brien & Gere will perform a field evaluation of the BPID consisting of the following tests:

1. Instrument calibration
2. Separation tube life
3. Humidity affects
4. Data reasonability

The anticipated eventual use of the BPID is over a short-term period (1 to 8 hours) per use, closely watched by a trained operator. Therefore, long-term, unmanned operation is not proposed for the field evaluation.

The intention of the field evaluation is to deploy two BPIDs at the existing monitoring station nearest to the SCA (SCA7) for approximately 8 hours per day for approximately 5 days. The duration of the evaluation period is dependent on the results. For instance, if the instrument's calibration does not drift over each 8-hour period, or the field conditions during the first several days do not include varying meteorological conditions (e.g., humidity levels), we may extend the evaluation period. If we find the instrument's calibration drifts significantly in an hour or its separation tube depletes in a short time, we may terminate the evaluation early. The decision to extend or terminate early will be discussed and agreed upon with a NYSDEC representative.

¹ Other compounds are also measured and are considered interferences, as discussed later in this plan.

INSTRUMENT CALIBRATION

Similar to the TVOC PID, a two point calibration (zero and span) will be performed on each BPID. A certified zero gas containing less than 0.01 ppm total hydrocarbons will be used to set the instrument's zero point, while a certified gas containing 0.5 ppm (nominally) of benzene will set the span point. Note that the NYSDEC short-term guideline concentration for benzene is 0.4 ppm. The zero and span calibration will be performed on the BPID each day, immediately prior to its use.

At the conclusion of benzene monitoring for the day, the BPID's calibration will be checked ("bump" tested) with the zero and span calibration standards to determine calibration drift (how well the instrument holds the initial calibration). Calibration checks will also be conducted immediately before and after any instrument maintenance, such as separation tube replacement, or during periods of suspected zero or span drifts. The instrument's calibration will not be adjusted during each 8-hour daily evaluation. The results of the calibration drift will be documented.

INSTRUMENT PRECISION

Two BPIDs will be operated together, at the same location and over the same evaluation period. The instrument's precision will be evaluated as the absolute difference in measurements. The difference in calibration drift and humidity affects between the two instruments will also be evaluated.

SEPARATION TUBE LIFE

According to the instrument's manufacturer, field conditions such as humidity, temperature, and TVOC concentrations determine separation tube life. The separation tube incorporates a visual indicator (i.e., color change) to determine when the tube should be changed. Per manufacturer's recommendations, the separation tube should be replaced when $\frac{3}{4}$ of the tube color has changed from yellow to green.

The life of the separation tubes will be monitored. Tubes will be replaced as recommended by the manufacturer. The frequency of tube replacement will be documented and correlated with TVOC concentrations, temperature and relative humidity recorded during the evaluation days.

HUMIDITY AFFECTS

Humidity affects PID responses when relative humidity rises above 90% (according to the manufacturer) or when the odor control mister system mists get pulled into the PID. PID responses to high humidity appear as a gradual (during increasing humidity) or sudden (upon liquid/mist impingement into the PID) positive response that results in a broad peak, which does not return to zero until the humidity decreases or the condensation in the PID dissipates. These responses are different from actual VOC measurements that typically have sharp peaks that return to zero just as quickly. If high humidity conditions are not realized during the 5-day 8-hour per day evaluation period, other periods, such as early morning hours, or other conditions, such as direct exposure to mists, may be used.

The instrument manufacturer recommends and provides humidity tubes to help mitigate humidity affects. The tubes are attached to the inlet of the PID, in-line with and after the separation tube. A series of tests will be conducted to evaluate the effectiveness of humidity tubes. Each test will involve deploying humidity tubes to one BPID while it operates alongside a BPID without a humidity tube. This comparison will indicate the effectiveness of the humidity tube to minimize humidity affects. The difference between BPIDs will be documented.

Zero and span checks will be conducted on both BPIDs (one with and one without a humidity tube) to assess how humidity or the humidity tube affects the instruments' zero and span drift.

REPORTING

The results of BPID evaluation will be provided in a technical memorandum at the conclusion of the evaluation. Results will include a summary of:

- calibration drift
- instrument precision
- separation tube life correlated with actual field conditions
- effectiveness of humidity tubes to mitigate humidity affects

PROJECT SCHEDULE

The field evaluation can begin within one week of NYSDEC approval of this plan. The technical memorandum can be submitted to NYSDEC within three weeks of completion of the evaluation.