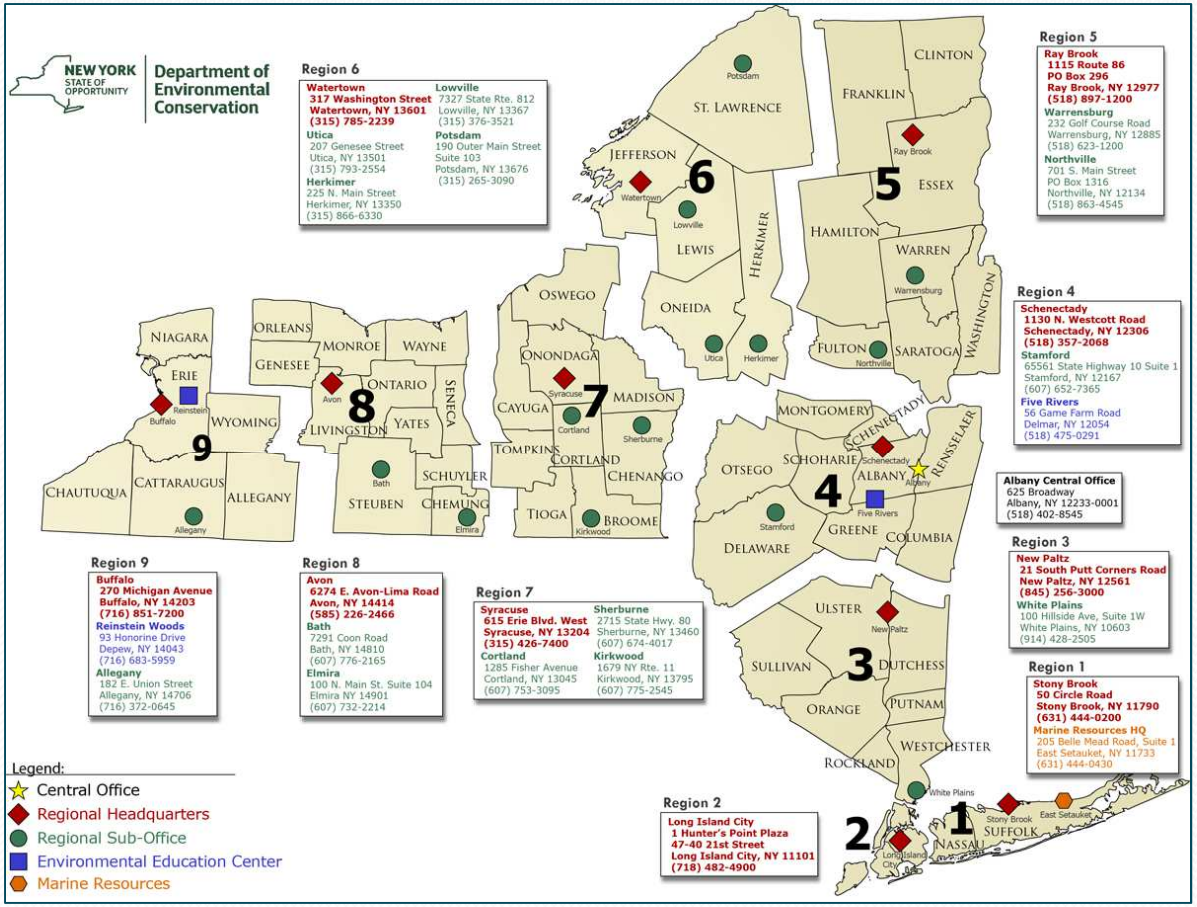
Inactive Landfill Initiative



Vincent Fay, Professional Geologist
Site Investigation & Mitigation
Division of Materials Management
New York State Department of Environmental Conservation

Background

Village of Hoosick Falls

- March 2016
- Due to concerns that the Village landfill may have accepted PFAS-laden waste the New York State Department of Environmental Conservation (DEC), Division of Environmental Remediation (DER) sampled monitoring wells and leachate from the Hoosick Falls Landfill for PFAS
- Samples tested between 150 - 21,000 ppt
- This landfill is now a Class 2 State Superfund Site undergoing remedial investigation
- The Hoosick Falls landfill results indicated a potential problem and led to legislation that enabled the investigation of inactive solid waste landfills

Division of Environmental Remediation (DER)
https://www.dec.ny.gov/chemical/108791.html

LEGISLATION

Title 12 Mitigation and Remediation of Certain Solid Waste Sites and Drinking Water Contamination

- Title 12 of Article 27 of the Environmental Conservation Law (Title 12), adopted as the Clean Water Infrastructure Act of 2017, established a program for the investigation and remediation of certain solid waste sites that may be impacting or contaminating drinking water supplies.

Objective

- To mitigate and remediate any solid waste site causing or substantially contributing to impairments of drinking water quality which may impact public health.

Results

- The Department's Inactive Landfill Initiative (ILI) was created
- The ILI is being implemented by the Division of Materials Management (DMM) in partnership with the Department of Health (DOH)
- The focus of the investigation was to be
  - PFAS (per- and polyfluoroalkyl substances)
  - 1,4-Dioxane

Legislation

https://www.nysenate.gov/legislation/laws/ENV/A27T12

Program Objectives

- Create an inventory of all of the inactive landfills in the State
- Inspect and rank all of the identified landfills
- Using the ranking system, prioritize and investigate the highest ranked landfills
- Develop a focus list of receptors where groundwater impacts have been identified
- Sample drinking water sources potentially impacted by the landfill
- Based on the results of the investigations, conduct further investigations and/or mitigation if warranted

Create an Inventory of Inactive Landfills Statewide

Inactive Landfill Initiative Inventory

- Inventory was a compilation of landfills from a variety sources

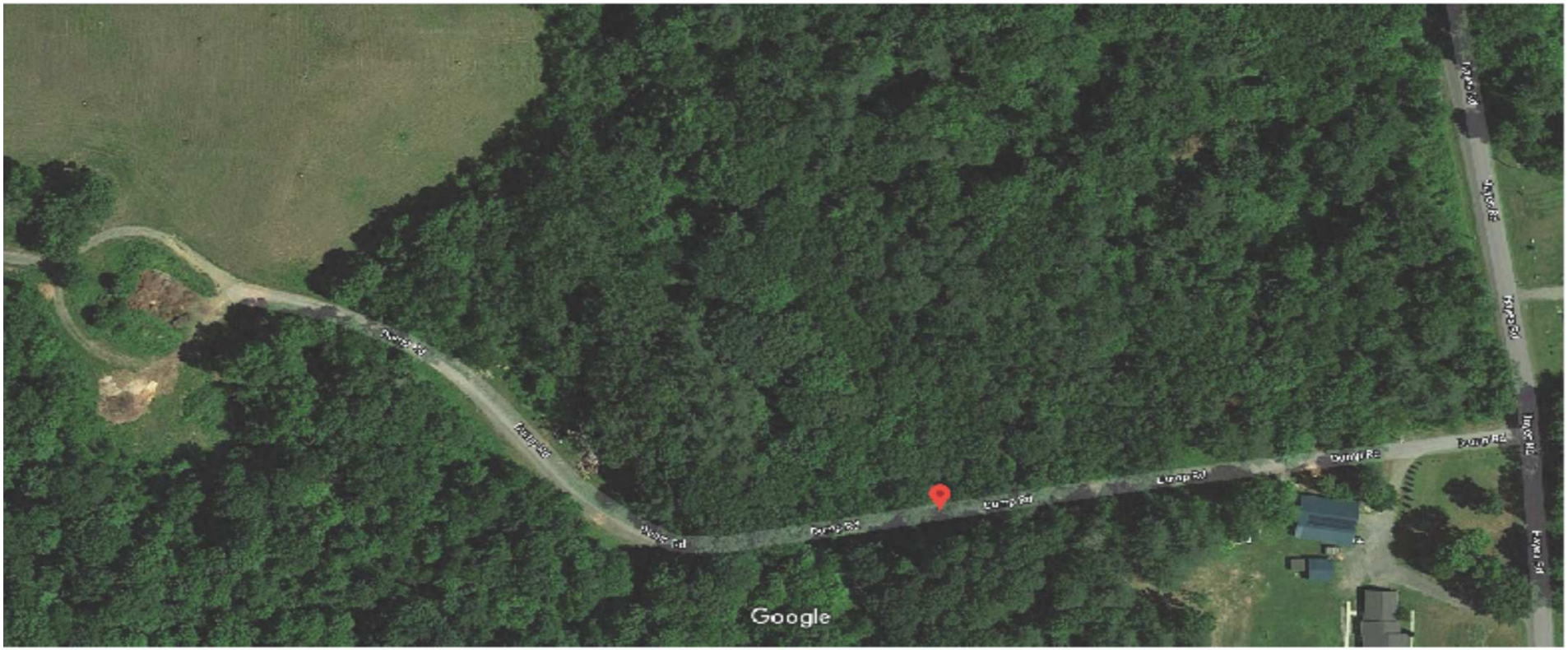
Complete Records Review

- Identification and location of landfills
- Landfill Coordinates
- Landfill history and disposal start/stop dates
- Landfill construction details
- Hydrogeologic site conditions
- Presence of monitoring wells and/or monitoring programs
- Review of historical data

Results

- Identified over 1,950 sites
- This compilation was the basis for the investigation stage

Dump Rd



Inspect and Rank the Identified Landfills

Inspections

- Site inspections were completed by DEC staff, Parsons Corporation and Obrien & Gere (now Ramboll)
- About 1,900 landfills have been inspected and ranked

Typical site inspection

- Walking the landfill property
- Verifying the landfill location in Degree Decimal
- Limits of waste
- Noting the presence, absence and condition of the cap
- Exposed waste
- Seeps
- Status and condition of existing monitoring wells where present

Site Inspection Report

- Documented in a Site Inspection report
- A site inspection report exists for every landfill inspected

INACTIVE LANDFILL INITIATIVE

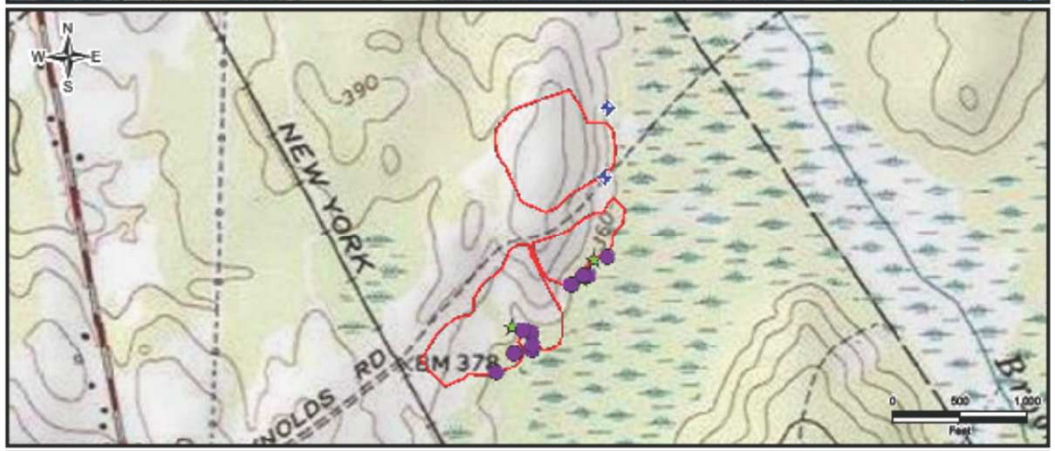
SITE RECON REPORT

REGION 6

INSPECTION DATE: 12/20/2017

LOCATION		CONTACT INFORMATION		SITE INFORMATION			
Site Name	POTSDAM (T) LANDFILL	Inspector(s)	SARA HAHNE DAVID KENT	Well(s)	YES	SWID #	N/A
Address	END OF REYNOLDS ROAD	NYSDEC DMM Manager	YUAN ZENG	Seeps	YES	Inactive Register #	N/A
County	ST. LAWRENCE	Site Contact Name	JOHN KELEHER	Exposed Waste	YES	DER Class	N/A
Decimal (Lat) Degrees (Long)	-74.976535 44.733143	Site Contact Number	315-276-6621	Wastetype	INDUSTRIAL WASTE, ASH, OR UNKNOWN	Approximate Fill Area	30.11 ac.

ADDITIONAL INFORMATION							
Access	OPEN AROUND POTTER'S COMPANY WAREHOUSES. GATES PREVENT VEHICLE ACCESS, BUT NOT ON-FOOT ACCESS.	Cap Erosion	MINOR	Cap Vegetation	GRASS, SMALL TREES	Approximate Slopes	10 - 33 PERCENT
		Cap Settlement	YES				



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LEGEND

MONITORING WELL | SEEP | EXPOSED WASTE | MISCELLANEOUS FEATURE | WATER FLOW

WATER FEATURE | APPROXIMATE INACTIVE FILL AREA | APPROXIMATE ACTIVE FILL AREA

REFERENCES:
AERIALS: NYS Orthos Online; https://orthos.dhses.ny.gov/
TOPO: Copyright © 2013 National Geographic Society, i-cubed
WATER: USGS NHD; https://nhd.usgs.gov/

NEW YORK STATE OF OPPORTUNITY. Department of Environmental Conservation

OBG

Using the ranking system, prioritize and investigate the highest ranked landfills

Purpose

- To create an objective measure that will allow the Department to determine which facilities will have the higher potential to discharge contaminants into the groundwater

Four categories

- Proximity to Potential Receptors
- Landfill Characteristics
- Geologic Setting
- Current Conditions of the Site

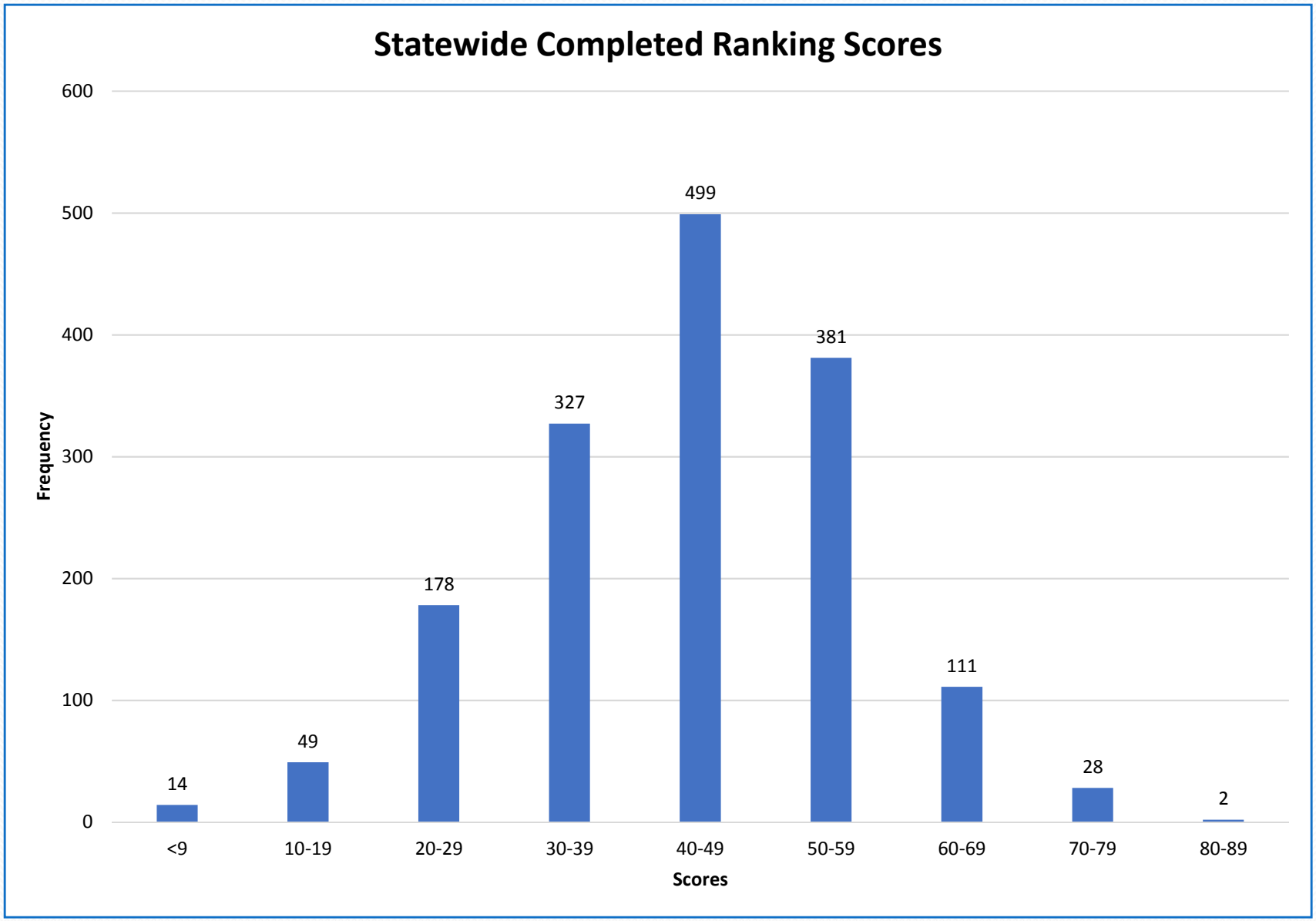
Additional Criteria

- Located over a sole source or primary aquifer, sensitive watershed
- Local complaints
- Presence of Part 360 cap indicating it was closed after 1988
- Known disposal of fire retardant or fire impacted materials
- Regional input

Results

- Prioritized 410 landfills
- Completed groundwater investigation for 169 landfills
- Groundwater investigations being completed under different programs 47
- Groundwater investigation that are proposed or in progress 194
  - (Numbers represent work completed through the end of December 2019)

Ranking Distribution (as of 12/31/18)



Groundwater Investigations

- Site specific investigations were determined based on their ranking
- A Site Specific Work Plan (SSWP) was submitted for each of the landfills selected for investigation
- All Site Specific Work Plans were submitted to the Regional geologist for review and approval
- A typical SSWP proposed to collect three groundwater samples, but the number of samples collected would vary based on site conditions
- Seep samples were collected when pertinent

Parameters

- Emerging contaminants
  - 21 PFAS
  - 1,4-Dioxane (PAH)
- Additional Parameters
  - Leachate Indicators
  - 26 Inorganics (Metals)
  - 17 Polynuclear Aromatic Hydrocarbons (PAHs)
  - 49 Volatiles

- Monitoring Wells Installed 338
- Landfill Samples Collected 1,710

LEGEND

- PROPOSED MONITORING WELL
- PROPOSED SURFACE WATER SAMPLE
- SEEP INSPECTION
- EXPOSED WASTE
- WATER FEATURE AND FLOW
- WATER FEATURE
- APPROXIMATE PARCEL BOUNDARY
- APPROXIMATE LANDFILL EXTENT

Notes

PARCELS GEOREFERENCED FROM LEWIS COUNTY GIS

0 100 200 Feet

SITE PLAN

NEW YORK STATE
DEPARTMENT OF CONSERVATION
NEW BREMEN SLF (T)
LOWVILLE, NEW YORK
REGION 6 LEWIS COUNTY

FIGURE 01

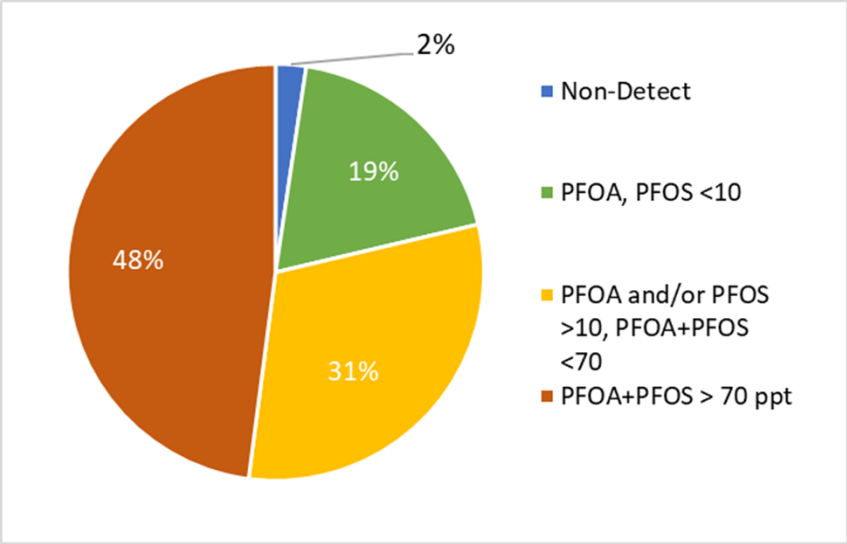
O'BRIEN & GERE ENGINEERS, INC.
A RAMBOLL COMPANY

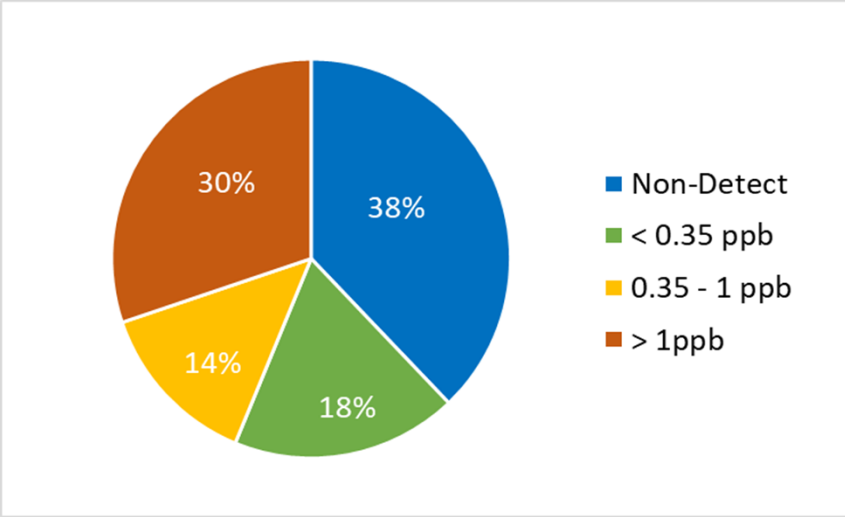
RAMBØLL

TABLE 1 – ANALYTICAL PARAMETERS
(Continued)

Parameter	Method
N-ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	Modified 537
N-methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	Modified 537
Perfluorobutanesulfonic acid (PFBS)	Modified 537
Perfluorodecanoic acid (PFDA)	Modified 537
Perfluorododecanoic acid (PFDoA)	Modified 537
Perfluoroheptanoic acid (PFHpA)	Modified 537
Perfluorohexanesulfonic acid (PFHxS)	Modified 537
Perfluorohexanoic acid (PFHxA)	Modified 537
Perfluorononanoic acid (PFNA)	Modified 537
Perfluorooctanesulfonic acid (PFOS)	Modified 537
Perfluorooctanoic acid (PFOA)	Modified 537
Perfluorotetradecanoic acid (PFTeA)	Modified 537
Perfluorotridecanoic Acid (PFTriA)	Modified 537
Perfluoroundecanoic acid (PFUnA)	Modified 537
Perfluorobutanoic acid (PFBA)	Modified 537
Perfluoropentanoic acid (PFPeA)	Modified 537
Perfluorohepanesulfonic acid (PFHpS)	Modified 537
Perfluoro-1-decanesulfonic acid (PFDS)	Modified 537
Perfluror-1-octanesulfonamide (FOSA)	Modified 537
6:2 Fluorotelomer sulfonate (6:2FTS)	Modified 537
8:2 Fluorotelomer sulfonate (8:2FTS)	Modified 537

Groundwater Investigations





Landfills sampled 169

Action levels

10 ppt for PFOA
10 ppt for PFOS
1 ppb for 1,4-Dioxanne

Exceedance of Emerging contaminants

PFOA /PFOS	79%
1,4-Dioxane	30%

Trigger the focus list investigation

Drinking Water Sampling

Focus List Investigation

- A focus list is compiled of potential receptors within ¼ mile downgradient of the landfill
  - Residential drinking water wells
  - Public water supply wells (These are not municipal water systems)
- Additional receptors due to site specific conditions
  - Up-gradient and cross gradient wells
  - Residential drinking water wells and public water supply wells between the ¼ to ½ mile limit

Focus List Review

- DEC regional staff review and provide recommendation to the draft focus list
- DOH provides concurrence or comments based on their internal review with input from the County or District DOH staff
- The final focus list is approved by the DEC based on discussion with the DOH

Outreach

- A letter is sent to every resident and property owner on the focus list with an offer to test their well
  - Each letter is site specific, the offer is to test only the elevated parameters found at the landfill
  - Response is variable 0-100%
  - Second mailing
  - Hang Tags
  - Water Supply sources solicited 896
  - Water supply sources sampled 447
  - Ultimately about 50% of residences agreed to have their wells tested

FIGURE 1

LEGEND

- GENERAL GROUNDWATER FLOW DIRECTION
- PUBLIC SUPPLY WELL
- DER PFC FACILITY

AREA RECEPTORS

- NO WATER
- NON-FOCUS LIST PARCEL
- FOCUS LIST PARCEL WITHIN 1/4 MILE
- FOCUS LIST PARCEL WITHIN 1/2 MILE
- PRIVATE WATER - OUTSIDE FOCUS AREA
- ELEVATION CONTOURS
- POTENTIAL CONTAMINANT FLOW AREA
- ESTIMATED SITE BOUNDARY
- 0.25 MILE BUFFER
- 0.5 MILE BUFFER
- SARATOGA COUNTY PARCEL BOUNDARIES (APPROXIMATE)

FOCUS LIST SELECTION CRITERIA:
DOWNGRADIENT PRIVATE WELLS OR PUBLIC WATER SUPPLY WELLS WITHIN 0.5 MILES OF LANDFILL BOUNDARY

REFERENCES:
GROUNDWATER FLOW INTERPRETED FROM FIELD MEASUREMENTS AND SURVEY

NEW YORK STATE
DEPARTMENT OF CONSERVATION
CLIFTON PARK LF
CLIFTON PARK, NEW YORK
REGION 5 SARATOGA COUNTY

RECEPTOR EVALUATION

N

0 425 850 1,700
Feet

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

O'BRIEN & GERE ENGINEERS, INC.

I:\Parsons-Eng.865365982.Inactive-Landfl\Docs\DWG\MXD\Receptor Evaluation\Region 5\Clifton Park\RECEPTOR_EVALUATION_Final.mxd 6/28/2019 10:05:18 AM

8653.65982 JUNE 2019

Sample Canvas Letter

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NEW YORK STATE OF OPPORTUNITY. | Department of Health

April 15, 2019

[Owner]
[Address]
[City], NY [Zip Code]

Re: Offer to test private well water
[Landfill Site] (ID #)
Location: [Address], [City], NY [Zip Code]

As part of New York State's Inactive Landfill Initiative, the New York State Department of Environmental Conservation (NYSDEC) and the New York State Department of Health (NYSDOH) are offering to test drinking water wells near the inactive landfill referenced above for per- and polyfluoroalkyl substances (PFAS), and metals. PFAS are a group of man-made chemicals that have been used in industry and consumer products, and the sampling will help determine whether these chemicals are impacting drinking water supplies in your area. If you have a private well and would like to have it sampled, the Agencies are offering to perform the testing at no cost to you.

Testing will include collection of one or more water samples from a readily accessible area, such as from a tap or faucet located in the kitchen or from an outdoor spigot. The sampling will be performed by Parsons, a qualified environmental contractor hired by the NYSDEC, who may be accompanied by the staff from either of the two Departments and/or your local County DOH. Sampling personnel and support staff will be required to provide you with proper identification before entering your property. Once the laboratory analysis is complete and the results are finalized, which may take several weeks or longer, the NYSDOH will provide you with a copy of the laboratory report and a letter explaining the results.

We will be in your area collecting samples during the week of May 6th (May 6 and 7). If you are interested in having your private well water tested, please contact (Contact) of (Company) at (Phone Number) to schedule an appointment at your earliest convenience. Feel free to contact (Contact) of the NYSDEC, of my staff, at (Phone) if you have questions about this sampling offer. Thank you in advance for your cooperation.

Sincerely,

Division of Materials Management
New York State Department of Environmental Conservation

ec:

Department of Health Review

DOH Review

- All drinking water results go to the DOH for review
- The DOH contacts every resident by phone to discuss the results
- This conversation is followed up with a letter and a copy of the results

Analytical results response

- No further action
- Additional investigation
- Additional monitoring
- Non time-critical remediation / mitigation
- Immediate threat / immediate mitigation

Analytical results requiring immediate action

- 59 drinking water supplies with PFOA and PFOS exceeding 10 ppt
- 10 drinking water supplies with 1,4-Dioxane exceeding 1 ppb

Immediate mitigation

- Provisions for alternative water supply such as bottled water
- Point of Entry Treatment (POET) installation (several sites)

Drinking Water Sampling Results

Results

Water supply sources solicited	896
Water supply sources sampled	447

PFOA and PFOS not detected	287
PFOA and PFOS < 10 ppt	107
PFOA and PFOS > 10 ppt	59

1,4-Dioxane not detected	106
1,4-Dioxane < 0.35 ppb	59
1,4-Dioxane > 0.35 ppb, < 1 ppb	10
1,4-Dioxane > 1 ppb	10

Ongoing and Future Activities

- Multi-year program
- 2017-2018 - Landfill inventory, investigation and ranking phase
- Groundwater investigation phase
  - 2018-19 - Landfill ranking >55 >200 facilities
  - 2020 - Landfill ranking 53-55 151 facilities
  - 2021 - Landfill ranking 49-52 180 facilities
  - 2022 - Landfill ranking 46-48 150 facilities
  - 2023 - Landfill ranking 43-45 167 facilities
  - 2024 - Landfill ranking 40-42 177 facilities
- Analytical Results Phase
  - Assess potential impacts
  - Drinking water sampling
  - Mitigate and/or remediate where necessary
- Site Investigation Report

Division of Environmental Remediation

Objectives

- Insure that all landfills of concern will be sampled
- To avoid duplication of efforts

Division of Materials Management

- Former DER sites (delisted)
- DER Class N sites (No further action at this time)
- Sites with sufficiently high results are referred to DER
- Evaluated as Class P site (Potential superfund listing)
- DMM has referred 10 sites to DER

Division of Environmental Remediation

- DER has sampled over 1400 sites
- Brownfields Clean-up Program (Class A)
- State Superfund Sites (Class 2 & 4)
- Environmental Restoration Program (Class A)

Sites Referred to DER

- Damascus Road Landfill (Suffolk County)
- Joseph Menafra Manufacturing (L&C Concrete Corp) (Suffolk County)
- Quiogue SLF (Old Quogue Landfill) (Suffolk County)
- Fair Street (Putnam County)
- Newburgh City Landfill (Orange County)
- Town of Saugerties Landfill (Ulster County)
- Columbia Corporation (Hoosick) (Rensselaer County)
- Palmyra Landfill (Wayne County)

FOIL Request

- http://www.dec.ny.gov/public/373.html

THANK YOU !

VINCENT FAY, PROFESSIONAL GEOLOGIST
SITE INVESTIGATION & MITIGATION
DIVISION OF MATERIALS MANAGEMENT

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