

Oil and Gas Infrastructure Survey Methodology

On behalf of ConnectGen Chautauqua County LLC (ConnectGen), Mott MacDonald LLC (Mott) performed a comprehensive survey of existing oil and gas infrastructure (both surface and subsurface) within the Facility Site of the South Ripley Solar Project. At the time the survey was conducted, it followed the requirements of Title 16, Article 10, Part 1001 of New York Public Service Law, outlining the content of an application for major electric generating facilities. Since the project is now proposed to be filed under Article 6, Section 94-c of New York Executive Law, oil and gas infrastructure surveys are governed by a new set of requirements not in place when the survey was conducted. In particular, §900-2.4 Exhibit 3, Location of Facilities and Surrounding Land Use, specifies in section (u) that “Unless another method was authorized by the office, the survey shall have been done by the use of magnetometers”. This survey is required because the Facility Site is located within NYSDEC region 9 and there are known oil and gas wells and collection lines within 500 feet of a proposed facility boundary. However, rather than a magnetometer survey, which was not required at the time, the following methodology was used, in consultation with local oil and gas owners, to identify and map existing infrastructure in relation to planned facility equipment siting.

Survey Dates

Survey Start Date: 7/27/2020

Survey End Date: 01/23/2021

Surveying Company

Mott performed the oil and gas infrastructure survey in combination with a comprehensive ALTA/NSPS Title Survey. Mott has been a provider of surveying, engineering, design, and consulting services in the energy, both power and oil and gas sectors, for well over a decade. Both the crew and data supervisor as well as the surveyor responsible for boundary location are licensed professionals with years of experience in both boundary and infrastructure surveying. The crews in the field have worked for Mott MacDonald for years and know our procedures to ensure all technical standards are met.

Methodology

Mott MacDonald completed the survey of existing oil and gas infrastructure using a combination of local and state consultations, landowner consultations, on-site electromagnetic location equipment to determine the location of the subsurface utilities, and mapping utilizing survey grade GPS.

Consultations

1. From 2018 through 2021, ConnectGen coordinated with local participating landowners to identify the location of on-site infrastructure including existing oil and gas wells and underground pipelines.
2. In August 2019, ConnectGen Chautauqua County LLC (ConnectGen) and Environmental Design and Research (EDR) held a consultation meeting with the New York State Department of Environmental Conservation (NYSDEC) during which the presence of existing oil and gas infrastructure was identified and discussed. Following the meeting, publicly available data from

the NYS GIS clearinghouse was collected to identify the gas well placement in the vicinity of the project area.

3. In July 2020, ConnectGen consulted with Empire Energy (USA) LLC (Empire) regarding the presence of Empire owned infrastructure in the Ripley township. Empire provided ConnectGen and Mott with a data set of existing oil and gas infrastructure including pipelines, wells, and access roads.
4. In early 2020, ConnectGen consulted with National Fuel Gas Co. (National Fuel) regarding the presence of National Fuel owned infrastructure in the Ripley township. National Fuel provided ConnectGen and Mott with a data set of existing oil and gas infrastructure in the project area.
5. In July 2020, Mott initiated One-Call requests for all survey tracts. Utilities that had underground infrastructure within the scope of the project marked out their facilities which was subsequently located by the Mott survey field crews.
6. At the same time that utility mark-outs and filed locations were taking place, Mott MacDonald reviewed the title reports for each individual property to determine the location of any underground utility easements that could be plotted to a location on the property. This helped to identify any utilities that may have been overlooked during the mark out procedure.

Based on the consultations performed with the local community, oil and gas infrastructure owners, and NYSDEC, Mott compiled a data set of existing oil and gas infrastructure, with mapped and approximate locations, expected types, and proximity to the Facility Site.

On-site Survey

From July 2020 to January 2021, Mott surveyors performed on-site field work to identify existing oil and gas infrastructure. Field crews performed boundary and planimetric surveys of all tracts within the Facility Site (53 in total) and undertook subsurface utility mapping to identify mapped and unmapped oil and gas infrastructure within the Facility Site. Field crews were only permitted access on participating parcels, any oil and gas infrastructure located on adjacent parcels on which ConnectGen and Mott did not have access rights was not surveyed.

Field crews of 2 surveyors located wells and underground collection pipelines using existing data generated from consultations and utilized a McLaughlin locator and RTK GPS Trimble R10 system while in the field. The McLaughlin Vison GX2 is not a magnetometer but was determined to be the best option for the site because it is capable of locating polyethylene (plastic) lines in addition to metal lines (magnetometers locate metal only based on intensity of magnetic fields). From consultations with the local oil and gas companies, it was determined that a large number of the gas collection lines in the site are polyethylene rather than metal, meaning a standard magnetometer survey would potentially fail to locate polyethylene lines without metal tracing wire (which could not be guaranteed by the infrastructure owners). The Trimble RTK GPS is a surveying device used to measure locations with precision to 8mm The survey teams used the locator in Peak mode with manual gain adjustment to locate the center of underground utilities. The locator is capable of locating lines up to 16 feet deep with a depth accuracy of $\pm 2.5\%$ up to 6.5 feet deep. For pipeline infrastructure associated with any on-site wells identified above,

field crews traced collection pipelines from the well head location to the boundary of the parcel, as determined in the boundary and planimetric survey mapping. For any pipelines associated with wells on adjacent non-participating parcels, field crews identified where pipelines entered the parcel boundary and then traced lines until they exited the parcel boundary.

Control Network

The survey crews set up a control network by observing two NGS Stations (M 56 and French Creek stations) as well as 2 new points to be used as primary control simultaneously. From those control points, secondary control points were set throughout the site boundary to strengthen and condense the network as well as verify strength of radio signal to tighter locations from base stations set on our control points to the rover used to mark locations with the RTK GPS units.

From: [James Muscato](#)
To: [Isaac Phillips](#); [John Kuba](#); [Rande Patterson](#); [Benjamin Brazell](#); [Kayleigh Robinson](#); [Steven D. Wilson](#); [William Whipps](#); [Laurie Stubenrauch](#)
Subject: Fwd: South Ripley Solar Project- oil and gas infrastructure survey methodology and request for approval of an alternative methodology
Date: Friday, May 21, 2021 1:10:11 PM

[EXTERNAL SENDER]

Isaac- can you please send this to MM?

Jim

From: Edick, Rudyard (ORES) <Rudyard.Edick@ores.ny.gov>
Sent: Friday, May 21, 2021 11:49 AM
To: James Muscato
Cc: jeremy.flaum; Loukides, Ted N (DEC); Davis, Andrew (DPS); Moaveni, Houtan (ORES)
Subject: South Ripley Solar Project- oil and gas infrastructure survey methodology and request for approval of an alternative methodology

Good Day Mr. Muscato,

Thank you for your 30 April 2021 letter providing the oil and gas infrastructure survey report. This was provided pursuant to section §900-2.4(u) Exhibit 3, Location of Facilities and Surrounding Land Use which authorizes the Office to approve another methodology to identify the existence of oil and gas infrastructure in a project area for the Application submission. And you requested ORES review the methodology provided with the email.

According to the document attached to the 30 April email, titled "Oil and Gas Infrastructure Methodology" ("Methodology Summary"), Mott MacDonald LLC performed a survey of existing oil and gas infrastructure within the Facility Site of the South Ripley Solar Project between 7/27/20 and 1/23/21. Following review of the Methodology Summary, ORES (in consultation with DEC and DPS Staffs) requests additional information as follows:

1. According to Page 2 of the Methodology Summary, "From July 2020 to January 2021, Mott surveyors performed on-site field work to identify existing oil and gas infrastructure. Field crews performed boundary and planimetric surveys of all tracts within the Facility Site (53 in total) and undertook subsurface utility mapping to identify mapped and unmapped oil and gas infrastructure within the Facility Site. Field crews were only permitted access on participating parcels, any oil and gas infrastructure located on adjacent parcels on which ConnectGen and Mott did not have access rights was not surveyed." Please provide parcel-based maps of the survey area delineating the exact locations of the survey, clearly distinguishing parcels that were surveyed from those for which access rights could not be obtained, and showing the locations of each

of the 53 tracts referenced. Also, please provide the overall percentage of the planned facility area that was surveyed.

2. Pages 2-3 provide a limited description of the technologies used for the survey. Please provide additional information regarding the McLaughlin Vison GX2 locator and the RTK GPS Trimble R10 system, including manufacturer specifications and capabilities/limitations for identifying and locating previously unknown oil/gas infrastructure for which no point of reference is already known (e.g. there is no available mapping of the existing infrastructure; there is no surface expression of a well head, pipeline, or other observable indicators of potential buried facilities; etc.).

If you have any questions, please let me know.

Most Respectfully,

Rudyard G. Edick

Environmental Analyst III

New York State Office of Renewable Energy Siting (ORES)

From: [Edick, Rudyard \(ORES\)](#)
To: [James Muscato](#)
Cc: [Flaum, Jeremy \(DPS\)](#); [Loukides, Ted N \(DEC\)](#); [Davis, Andrew \(DPS\)](#); [Moaveni, Houtan \(ORES\)](#)
Subject: RE: South Ripley Solar Project- oil and gas infrastructure survey methodology and request for approval of an alternative methodology
Date: Thursday, July 29, 2021 2:10:29 PM

Good Afternoon Mr. Muscato.

The methodology is considered acceptable for South Ripley oil and gas infrastructure.

M/R,

Rudyard Edick

From: James Muscato <JMuscato@youngsommer.com>
Sent: Thursday, July 29, 2021 10:23 AM
To: Edick, Rudyard (ORES) <Rudyard.Edick@ores.ny.gov>
Cc: Flaum, Jeremy (DPS) <Jeremy.Flaum@dps.ny.gov>; Loukides, Ted N (DEC) <ted.loukides@dec.ny.gov>; Davis, Andrew (DPS) <Andrew.Davis@dps.ny.gov>; Moaveni, Houtan (ORES) <Houtan.Moaveni@ores.ny.gov>
Subject: RE: South Ripley Solar Project- oil and gas infrastructure survey methodology and request for approval of an alternative methodology

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Hi Rudyard,

I'm following up on the below. Can you please let me know if DPS/ORES Staffs had any additional questions on this or whether or not we can consider the methodology acceptable for purposes of submitting the application?

Thank you,

Jim

Jim Muscato
Young / Sommer LLC
ATTORNEYS AT LAW
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From: James Muscato
Sent: Monday, June 28, 2021 7:55 PM
To: Edick, Rudyard (ORES) <Rudyard.Edick@ores.ny.gov>
Cc: Flaum, Jeremy (DPS) <jeremy.flaum@dps.ny.gov>; Loukides, Ted N (DEC) <ted.loukides@dec.ny.gov>; Davis, Andrew (DPS) <Andrew.Davis@dps.ny.gov>; Moaveni, Houtan (ORES) <Houtan.Moaveni@ores.ny.gov>
Subject: RE: South Ripley Solar Project- oil and gas infrastructure survey methodology and request for approval of an alternative methodology

See below. I had a KMZ originally attached, but I received a kick back saying it was not deliverable. If you need the KMZ we can try to get it to you another way.

Jim

Jim Muscato
Young / Sommer LLC
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From: James Muscato
Sent: Monday, June 28, 2021 5:17 PM
To: Edick, Rudyard (ORES) <Rudyard.Edick@ores.ny.gov>
Cc: Flaum, Jeremy (DPS) <jeremy.flaum@dps.ny.gov>; Loukides, Ted N (DEC) <ted.loukides@dec.ny.gov>; Davis, Andrew (DPS) <Andrew.Davis@dps.ny.gov>; Moaveni, Houtan (ORES) <Houtan.Moaveni@ores.ny.gov>
Subject: RE: South Ripley Solar Project- oil and gas infrastructure survey methodology and request for approval of an alternative methodology

Greetings Rudyard,
See responses added below and attached information. Let me know if you have any further questions. We would appreciate your confirmation that this is an acceptable methodology under the ORES regulations. If there is additional work required, we anticipate it is something that can be confirmed prior to construction as a compliance filing.

Jim

Jim Muscato
Young / Sommer LLC
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To: James Muscato <JMuscato@youngsommer.com>
Cc: jeremy.flaum <jeremy.flaum@dps.ny.gov>; Loukides, Ted N (DEC) <ted.loukides@dec.ny.gov>; Davis, Andrew (DPS) <Andrew.Davis@dps.ny.gov>; Moaveni, Houtan (ORES) <Houtan.Moaveni@ores.ny.gov>
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To be clear, all parcels within the Facility Site (tax parcels anticipated to host project infrastructure) were surveyed by Mott MacDonald. If the survey team did not have survey access permission, a property was not surveyed but any property not surveyed is a non-participant and would not have facility components or infrastructure located on the property (this does not include GNAs). Thus, the percentage was 100%. Attached is a KMZ of the surveyed area. Parcels with blue boundaries were surveyed, those with yellow were not.

2. Pages 2-3 provide a limited description of the technologies used for the survey. Please provide additional information regarding the McLaughlin Vison GX2 locator and the RTK GPS Trimble R10 system, including manufacturer specifications and capabilities/limitations for identifying and locating previously unknown oil/gas infrastructure for which no point of reference is already known (e.g. there is no available mapping of the existing infrastructure; there is no surface expression of a well head, pipeline, or other observable indicators of potential buried facilities; etc.).

Please see attached for additional manufacturer spec sheets for the equipment. The survey methodology was selected based on site specific limitations that would limit the effectiveness of other survey techniques. Specifically, aerial platform magnetometers posed limitations due to wind conditions, widespread foliage cover, and local landowner concerns with drones. Mott MacDonald followed the guidelines as set forth in The American Society of Civil Engineers (ASCE) for the collection and depiction of existing subsurface utility data (CI/ASCE 38-02). The quality levels of subsurface utility location range from level A to level D, with A being the highest level of utility location which would involve test pits and exposure of the actual utility and survey shots then taken. Our survey and location quality level is Level B, which is the level typically used in projects involving permit-level preliminary engineering design. This level involves record research with the utility companies, one-call notifications, land owner discussions, review of distribution maps and transmission maps, subsurface utility location equipment which is used by our survey crews who are certified as to their use, and high precision surveying equipment to tie the location of the utility to the parcel boundary. ConnectGen performed an extensive 150-year title review prior to mobilization to identify any potential subsurface oil & gas facilities rights owners and coordinated with both owners with on-site equipment. Survey teams additionally coordinated with local landowners, many of whom were in the area when the oil and gas wells were drilled and pipelines laid.

If you have any questions, please let me know.

Most Respectfully,

Rudyard G. Edick
Environmental Analyst III
New York State Office of Renewable Energy Siting (ORES)

Total Control Panel

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jmuscato@youngsommer.com

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rudyard.edick@ores.ny.gov

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VISION **GX₂** Digital Locator

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VISION **GX₂** Digital Locator



3-YEAR WARRANTY — INCLUDES WATER DAMAGE*

Receiver key features:

- > Dual Peak/Null mode for increased efficiency and productivity
- > Manual and semi-auto gain adjustment
- > Auto depth and current displayed simultaneously
- > Compass icon for quick reference of utility direction
- > Gain value displayed on LCD
- > No periodic calibration needed
- > Custom low frequencies — field selectable

Transmitter key features:

- > 7 watts of output power
- > 6 active frequency modes
- > Signal loop indication — audible and visual
- > Inductive clamp — no limitations (does not need to encircle the utility)

*Equipment, including outer case, is subject to inspection by McLaughlin for warranty determination.

RECEIVER (RX) SPECIFICATIONS

Passive radio	RAD: 9 kHz – 33 kHz (80 bands)
Passive power	50/60 Hz 5th harmonic (60 Hz or 60 Hz user selectable) 100/120 Hz 3rd harmonic (100 Hz or 120 Hz user selectable)
Battery type	6 alkaline LR6 “AA”
Battery life	24 hours, 68° F (20° C)
Battery status	Continuous indication
Power save function	Automatically powers off after 5 minutes of inactivity
Visual indication	LCD: bar graph, digital number and character, include backlight
Depth display range	Line: 0' – 16' (0 m – 4.9 m) 0' – 99' (0 m – 30.2 m) Probe: 0' – 99' (0 m – 30.2 m)
Depth readout unit	Feet and inches / Meters

Depth accuracy**	6.5' (2 m): ± 2.5% 10' (3 m): ± 5% 16.5' (5 m): ± 10%
Current value	Current value flowing on the conductor is displayed for line identity in milliamps
Digital level	Indicate horizontal level on LCD of the receiver
Audio output	Internal speaker (500 to 2 kHz), earphone (optional)
Data logging	Memorized 400 points of the depth/current measurement data
Interface	6-pin connector for PC communication/GPS sensor
Operating temp.	-4° F – 122° F (-20° C – 50° C)
Dimensions	26" x 5.1" x 10.6" (66 cm x 13 cm x 26.9 cm)
Weight	4.7 lb approx. (2.1 kg) including 6 batteries

**Locators are tested in the model field conditions with no adjacent signals. Always excavate the line with non-destructive means before digging. Optional cable is necessary to read the logging data.

TRANSMITTER (TX) SPECIFICATIONS

Output frequencies	38 kHz: 38 kHz ± 0.02% (Standard frequency) 9.5 kHz: 9.5 kHz ± 0.02% 80 kHz: 78.125 kHz ± 0.02% 853 Hz: 853.33 Hz ± 0.02% 640 Hz: 640 Hz ± 0.02% 512 Hz: 512 Hz ± 0.02% Dual Direct mode: 9.5 kHz & 38 kHz ± 0.02% Inductive mode (1): 38 kHz & 80 kHz ± 0.02% Inductive mode (2): 9.5 kHz & 80 kHz ± 0.02%
Output power	7 W maximum/80 kHz: 1 W maximum
Operating modes	Direct connection mode, inductive mode External coil mode (optional)
Battery type	10 alkaline LR20 “D” or NiMH “D”
Battery life	Direct mode: 50 hours Output 4 mA, 68° F (20° C) Inductive mode: 20 hours Output 50%, 68° F (20° C) Full power (7 W): 10 hours, 68° F (20° C)

Battery status	Continuous indication
Visual indication	LCD: bar graph and digital number, includes backlight
Audio indication	Internal speaker: alarm, beeping sounds
Measuring function	Output current: 0 mA – 400 mA Line voltage: AC 0 V – 250 V DC -100 V – +100 V Resistance: 0 – 10 M ohms
Output protection	AC 250 V (512 Hz/640 Hz): output is cut off automatically
Operating temp.	-4° F – 122° F (-20° C – 50° C)
Dimensions	15.7" x 9.1" x 3.9" (39.9 cm x 23.1 cm x 9.9 cm)
Weight	9.3 lb approx. (4.2 kg) including 10 batteries

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