

**NYS Dept. Of Public Service
Office of Electric, Gas & Water Division
Safety Section
Incident Investigation Report**

Pipeline System: 80 PSIG MAOP Distribution System,
Operating at 65 PSIG **Operator:** Orange and Rockland Utilities, Inc. (ORU)

Location: 52 Zarriello Lane, West Haverstraw, New York **Date of Incident:** January 16, 2012

Material Released: Natural Gas **Quantity:** Unknown Amount

Staff Arrival Time & Date: 3:40 PM 1/16/12 **Total Damages \$** \$1,382,000

Report Date (Final): 3/20/15 **Matter Number** 12-00189

Company Reported Apparent Cause:	Company Reported Sub-Cause (from either telephonic notice or 30-day report⁽¹⁾):
<input type="checkbox"/> Corrosion	
<input type="checkbox"/> Natural Forces	
<input checked="" type="checkbox"/> Excavation Damage	
<input type="checkbox"/> Other Outside Force Damage	
<input type="checkbox"/> Material Failure	
<input type="checkbox"/> Equipment Failure	
<input type="checkbox"/> Incorrect Operation	
<input type="checkbox"/> Other	

Accident/Incident Resulted in (check all that apply):	Comments:
<input type="checkbox"/> Rupture	
<input type="checkbox"/> Leak	
<input checked="" type="checkbox"/> Fire	
<input checked="" type="checkbox"/> Explosion	
<input checked="" type="checkbox"/> Evacuation	Area: 94 Homes in the Village Fairgrounds II Condominium Complex

Narrative Summary

Short summary of the Incident/Accident scenario

At approximately 1:30 PM, on January 16, 2012, Steven Blaney of the New York State Department of Public Service Gas Safety Section was notified by Orange and Rockland Utilities, Inc. (ORU) of a natural gas explosion at 52 Zarriello Lane in West Haverstraw, NY. ORU reported that a building exploded while company personnel were on the scene investigating damage caused by third party excavation. After the notification, Arpit Mehta of the Gas Safety Section was dispatched to investigate. Mehta responded and arrived on site at approximately 3:40 PM Police detectives, local fire department personnel, local media, and gas emergency responders were present at the location when Mehta arrived. Mehta noted that 52 Zarriello Lane was destroyed and 54 Zarriello Lane was significantly damaged. There were no fatalities. However, two firemen and two ORU gas servicemen were injured in the explosion. The two ORU servicemen were sent to the hospital for observation. Their injuries were reported to be limited to minor burns, bruises, and cuts. One of the firefighters was reported to have sustained a fractured cheekbone, concussion, first and second degree burns, and bruises to his leg. The other firefighter suffered more serious injuries and was transferred from the hospital to a rehabilitation center on January 23, 2012.

¹ Or from PHMSA Form 7000-1/7100.2 if appropriate.

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An ORU serviceman closed a distribution valve at the entrance of Zarriello Lane at 1:10 PM. A second distribution valve was closed at 1:22 PM, isolating the gas main on Zarriello Lane and interrupting gas service to 94 customers. Electric services were shutdown at 1:22 PM, interrupting 4,688 customers. By the following morning, 79 of the 94 gas services were restored, with 12 unable to be restored due to lack of access and 3 unable to be restored due to potential damage received during the explosion. Electric service was restored to all units by midnight of the day of the incident (1/16), with the exception of the three units that were located within the impact zone.

	Name	Title	Signature	Date
Lead Investigator	Arpit Mehta	Utility Engineer 2 (Safety)	Via DMM	3/19/15
Contributing Staff	Steven Blaney	Utility Engineer 3 (Safety)	Has Since Retired From Department	
Contributing Staff				
Local Supervisor	Suresh Thomas	Utility Engineer 3 (Safety)	Via DMM	3/19/15
Regional Supervisor	Christopher Stolicky	Utility Supervisor (Safety)	Via DMM	3/19/15
Section Chief	Kevin Speicher	Chief, Safety Section	Via DMM	3/19/15
Reviewed By				
Counsel	Robyn Adair	Assistant Counsel	Via DMM	3/20/15

Failure Location & Response

Location (City, Township, Range, County/Parish): West Haverstraw, New York		(Acquire Map)
Address or M.P. on Pipeline: 52 Zarriello Lane, West Haverstraw, NY	(2)	Type of Area (Rural, City): City (1)
Coordinates of failure location: Latitude: 41.205345		Longitude: -73.980909
Date: 1/16/12	Time of Failure: Undetermined – Prior to 12:00 PM	
Time Detected: 12:23 PM (ORU Crew Arrival Time)	Time Located: 12:23 PM (ORU Crew Arrival)	
How Located: Incident occurred while ORU staff was on site investigating a third party damage		
NRC Report #: 1000507	(Attach Report) Time Reported to NRC: 4:20 PM	Reported by: Richard Freud
Type of Pipeline:		
<input type="checkbox"/> Gas Distribution	<input type="checkbox"/> Gas Transmission	<input type="checkbox"/> Hazardous Liquid
<input type="checkbox"/> Municipal	<input type="checkbox"/> Interstate Gas	<input type="checkbox"/> Interstate Liquid
<input checked="" type="checkbox"/> Public Utility	<input type="checkbox"/> Intrastate Gas	<input type="checkbox"/> Intrastate Liquid
	<input type="checkbox"/> Gas Gathering	<input type="checkbox"/> LNG
Pipeline Configuration (Regulator Station, Pump Station, Pipeline, etc.): 2-inch plastic natural gas main with ¾-inch plastic services installed in 1991, MAOP of 80 psig, operating at 65 psig. Gas service regulators and meters are located outside of residences.		

Operator/Owner Information

Operator: Orange and Rockland Utilities, Inc.	Owner: Consolidated Edison, Inc.
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2 Photo documentation

Incident Investigation Report

Operator/Owner Information	
Address: 390 West Route 59, Spring Valley, NY	Address: 4 Irving Place, New York, NY
Company Official: Francis W. Peverly	Company Official: Claude Trahan
Phone No.: 845-577-3697 Fax No.: 845-577-3074	Phone No. 212-460-6500 Fax No. 212-228-3436
Drug and Alcohol Testing Program Contacts	
Drug Program Contact & Phone: Mark Trevers (ORU) – 845-577-3241	
Alcohol Program Contact & Phone: Mark Trevers (ORU) – 845-577-3241	

Damages	
Product/Gas Loss or Spill ⁽³⁾	Estimated Property Damage \$ \$1,000,000
Amount Recovered	Associated Damages ⁽⁴⁾ \$382,000
Estimated Amount \$ 576	
Description of Property Damage: 52 Zariello Lane was completely destroyed. Adjacent building 54 Zariello Lane was heavily damaged by the explosion.	
Customers out of Service: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Number: 94	
Suppliers out of Service: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Number:	

Fatalities and Injuries				
Fatalities:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Company:	Contractor:	Public:
Injuries - Hospitalization:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Company: 2	Contractor:	Public: 2 (Firemen)
Injuries - Non-Hospitalization:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Company:	Contractor:	Public:
Total Injuries (including Non-Hospitalization):		Company: 2	Contractor:	Public: 2 (Firemen)
Name	Job Function	Yrs. w/ Comp.	Yrs. Exp.	Type of Injury (as reported)
Libor Stipek	Gas Serviceman	23	23	Sustained cuts, bruises, abrasions
Ian Mackey	Gas Troubleshooter	6	6	Scratches, Bruises, Burns, Irritated Eye
Ken Patterson	Volunteer Firefighter			Serious burns, broken bones and ribs, back injury
Gerald Knapp	Volunteer Firefighter			Burns, bruises, fractured cheekbone, concussion

3 Initial volume lost or spilled
4 Including cleanup cost

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Fatalities and Injuries				

Drug/Alcohol Testing					
Were all employees that could have contributed to the incident, post-accident tested within the 2 hour time frame for alcohol or the 32 hour time frame for all other drugs? ___ Yes <u>X</u> No ORU did not test the two employees that first responded to the incident for drugs and alcohol.					
Job Function	Test Date & Time	Location	Results		Type of Drug
			Pos	Neg	

System Description
Describe the Operator's System: Gas distribution in this area consists of 2-inch plastic gas main supplying ¾-inch gas services. MAOP of this system is 80 psig, operating at 65 psig. Service regulators and meter sets are located outside the residences.

Pipe Failure Description	
Length of Failure (inches, feet, miles): (1)	
Position (Top, Bottom, include position on pipe, 6 O'clock): ⁽¹⁾ 3 O'clock	Description of Failure (Corrosion Gouge, Seam Split): ⁽¹⁾ Main punctured by contractor's boring tool at 3 O'clock position.
Laboratory Analysis: ___ Yes <u>X</u> No	
Performed by:	
Preservation of Failed Section or Component: ___ Yes ___ No	
If Yes - Method:	
In Custody of: Town of Haverstraw Police Department	
Develop a sketch of the area including distances from roads, houses, stress inducing factors, pipe configurations, direction of flow, etc. Bar Hole Test Survey Plot, if included, should be outlined with concentrations at test points.	

Component Failure Description		<u>X</u> N/A
Component Failed:		(1)
Manufacturer:	Model:	
Pressure Rating:	Size:	
Other (Breakout Tank, Underground Storage):		

Pipe Data

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Pipe Data	
Material: Polyethylene	Wall Thickness/SDR:
Diameter (O.D.): 2-Inches	Installation Date: 1991
SMYS:	Manufacturer:
Longitudinal Seam: Not Applicable	Type of Coating: Not Applicable
Pipe Specifications (API 5L, ASTM A53, etc.):	

Joining		<u>X</u> <i>N/A</i>
Type:	Procedure:	
NDT Method:	Inspected: ___ Yes ___ No	

Pressure @ Time of Failure @ Failure Site					<u>X</u> <i>N/A</i>
Pressure @ Failure Site:			Elevation @ Failure Site:		
Pressure Readings @ Various Locations:				Direction from Failure Site	
Location/M.P./Station #	Pressure (psig)	Elevation (ft msl)	Upstream	Downstream	

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Upstream Pump Station Data		<u>X</u> N/A
Type of Product:	API Gravity:	
Specific Gravity:	Flow Rate:	
Pressure @ Time of Failure ⁽⁵⁾	Distance to Failure Site:	
High Pressure Set Point:	Low Pressure Set Point:	

Upstream Compressor Station Data		<u>X</u> N/A
Specific Gravity:	Flow Rate:	
Pressure @ Time of Failure ⁽⁵⁾	Distance to Failure Site:	
High Pressure Set Point:	Low Pressure Set Point:	

Operating Pressure	
Max. Allowable Operating Pressure: 80 psig	Determination of MAOP: Pressure Test
Actual Operating Pressure: 65 psig	
Method of Over Pressure Protection: Monitor with Relief Valve	
Relief Valve Set Point: 85 psig	Capacity Adequate? <u>X</u> Yes ___ No

Integrity Test After Failure		<u>X</u> N/A
Pressure test conducted in place? (Conducted on Failed Components or Associated Piping):	___ Yes ___ No	
If No, tested after removal?	___ Yes ___ No	
Method:		
Describe any failures during the test.		

Soil/water Conditions @ Failure Site		<u>X</u> N/A
Condition of and Type of Soil around Failure Site (Color, Wet, Dry, Frost Depth):		
Type of Backfill (Size and Description):		
Type of Water (Salt, Brackish):	Water Analysis ⁽⁶⁾ ___ Yes ___ No	

Cathodic Protection		<u>X</u> N/A
P/S (Surface):	P/S (Interface):	
Soil Resistivity: pH:	Date of Installation:	
Method of Protection:		
Did the Operator have knowledge of Corrosion before the Incident? ___ Yes ___ No		
How Discovered? (Close Interval Survey, Instrumented Pig, Annual Survey, Rectifier Readings, ECDA, etc):		

- 5 Obtain event logs and pressure recording charts
6 Attach copy of water analysis report

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External Pipe or Component Examination		<u>X</u> <u>N/A</u>
External Corrosion? <input type="checkbox"/> Yes <input type="checkbox"/> No ⁽¹⁾	Coating Condition (Disbonded, Non-existent): ⁽¹⁾	
Description of Corrosion:		
Description of Failure Surface (Gouges, Arc Burns, Wrinkle Bends, Cracks, Stress Cracks, Chevrons, Fracture Mode, Point of Origin):		
Above Ground: <input type="checkbox"/> Yes <input type="checkbox"/> No ⁽¹⁾	Buried: <input type="checkbox"/> Yes <input type="checkbox"/> No ⁽¹⁾	
Stress Inducing Factors: ⁽¹⁾	Depth of Cover: ⁽¹⁾	

Internal Pipe or Component Examination		<u>X</u> <u>N/A</u>
Internal Corrosion: <input type="checkbox"/> Yes <input type="checkbox"/> No ⁽¹⁾	Injected Inhibitors: <input type="checkbox"/> Yes <input type="checkbox"/> No	
Type of Inhibitors:	Testing: <input type="checkbox"/> Yes <input type="checkbox"/> No	
Results (Coupon Test, Corrosion Resistance Probe):		
Description of Failure Surface (MIC, Pitting, Wall Thinning, Chevrons, Fracture Mode, Point of Origin):		
Cleaning Pig Program: <input type="checkbox"/> Yes <input type="checkbox"/> No	Gas and/or Liquid Analysis: <input type="checkbox"/> Yes <input type="checkbox"/> No	
Results of Gas and/or Liquid Analysis ⁽⁷⁾		
Internal Inspection Survey: <input type="checkbox"/> Yes <input type="checkbox"/> No	Results ⁽⁸⁾	
Did the Operator have knowledge of Corrosion before the Incident? <input type="checkbox"/> Yes <input type="checkbox"/> No		
How Discovered? (Instrumented Pig, Coupon Testing, ICDA, etc.):		

Natural Forces	<u>X</u> <u>N/A</u>
Description (Earthquake, Tornado, Flooding, Erosion):	

7 Attach copy of gas and/or liquid analysis report
 8 Attach copy of internal inspection survey report

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Outside Force Damage	
Excavator: FGC Communications Inc.	Telephone No.: (914)-382-7591
Address: 97 Croton Avenue, Cortlandt Manor, NY	
Work Being Performed: Installing duct for Verizon fiber optic cables	
Equipment Involved: Pneumatic Bullet (Boring) ⁽¹⁾	Called One Call System? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
One Call Name: Dig Safely New York	One Call Report # ⁽⁹⁾ 12281-134-051-00, 12281-134-055-00
Notice Date: 12/28/11	Time: 1:20 PM and 1:28 PM
Response Date: 1/5/12	Time: 12:49 AM, based on entry on ticket
<p>Details of Response: Mark-out tickets placed by FGC Communications, Inc. (FGC) indicate a start date of 1/3/12. ORU placed a two-day delay on the ticket on 1/3/12. ORU began marking out on Zariello Lane on 1/4/12, but stopped after receiving multiple complaints from community residents about excess paint on the street. ORU "cancelled" the mark-out ticket on 1/5/12, requesting the contractor to white mark its excavation area. ¹⁰</p> <p>The contractor called the locator on 1/6/12 to arrange a meeting on the morning of 1/9/12. On 1/9/12, the locator placed two sets of two dots in the area to indicate the gas main and electric facilities on the street. The locator also marked the electric and gas service lines going to 52 Zariello Lane. When the contractor struck the gas main on 1/16/12, they were over twenty feet outside and east of the dots. Based on interviews with FGC personnel, the excavator apparently assumed that both gas and electric facilities turned away from the road and went under the transformer in front of 52 Zariello Lane, continuing toward the building beneath the lawn area.</p>	
Was Location Marked According to Procedures? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
ORU Procedure 202 "Location of Underground Facilities / One Call System" details ORU's response to a mark-out request. Section 1 (a) (2) states "Every underground facility belonging to the Company which is located in or within 15 feet of the work area has been staked, marked, or otherwise designated in accordance with the provisions of each state's guidelines." ORU failed to fully mark its facilities in the work area.	
Pipeline Marking Type: Dots, Arrows, Service Line Marks ⁽¹⁾	Location: In front of the transformer at 52 Zariello Lane ⁽¹⁾
State Law Damage Prevention Program Followed? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If No, attach copy of §753 Citation(s))	
Notice Required: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Response Required: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Was Operator Member of State One Call? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Was Operator on Site? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Did a deficiency in the Public Awareness Program contribute to the accident? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	

Failure Isolation	
Squeeze Off/Stopple Location and Method: PM A distribution valve was closed at the west end of Zariello Lane at 1:10 PM. The back feed from Peck Lane was closed at 1:22 PM. The gas main to the apartment complex was confirmed to be isolated by 1:54 PM.	
Valve Closed - Upstream:	I.D.:

⁹ Attach copy of one-call report

¹⁰ 16 NYCRR 753 "Protection of Underground Facilities" does not include a provision for a facility operator to "cancel" a mark-out request from an excavator

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Failure Isolation	
Time:	M.P.:
Valve Closed - Downstream:	I.D.:
Time:	M.P.:
Pipeline Shutdown Method: <input checked="" type="checkbox"/> Manual <input type="checkbox"/> Automatic <input type="checkbox"/> SCADA <input type="checkbox"/> Controller <input type="checkbox"/> ESD	
Failed Section Bypassed or Isolated: Isolated	
Performed By: ORU Company Crews	Valve Spacing: 0.3 miles

Odorization		<u>X</u> N/A
Method of Determination:	Concentration of Odorant ⁽¹¹⁾ : % LEL: __ % Gas In Air: __ Time Taken:	
Was Odorizer Working Prior to the Incident? <input type="checkbox"/> Yes <input type="checkbox"/> No	Type of Odorizer (Wick, By-Pass):	
Odorant Manufacturer: Model:	Type of Odorant:	
Amount Injected:	Monitoring Interval (Weekly):	
Odorization History (Leaks Complaints, Low Odorant Levels, Monitoring Locations, Distances from Failure Site):		

Weather Conditions	
Temperature: 22 Degrees F	Wind (Direction & Speed): 7 MPH South Southwest
Climate (Snow, Rain): Clear	Humidity: 59 %
Was Incident preceded by a rapid weather change? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Weather Conditions Prior to Incident (Cloud Cover, Ceiling Heights, Snow, Rain, Fog): Partly Cloudy	

Gas Migration Survey	
Bar Hole Test of Area: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Equipment Used: Bascom-Turner Gas-Ranger

11 Post Incident at Failure Site

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Internal Line Inspection/Other Assessment History					<u>X</u> N/A
<i>(Expand List as Necessary)</i>					
	Req'd ⁽¹³⁾ Assessment Deadline Date	Assessment Date	Type of ILI Tool ⁽¹⁵⁾	Other Assessment Method ⁽¹⁶⁾	Indicated Anomaly If yes, describe below
Initial					__ Yes __ No
Next					__ Yes __ No
Next					__ Yes __ No
Most Recent					__ Yes __ No
Describe any previously indicated anomalies at the failed pipe, and any subsequent pipe inspections (anomaly digs) and remedial actions.					

Pre-Failure Conditions and Actions	<u>X</u> N/A
Was there a known pre-failure condition requiring ⁽¹³⁾ the operator to schedule evaluation and remediation? __ Yes (describe below or on attachment) __ No	
If there was such a known pre-failure condition, had the operator established and adhered to a required ⁽¹³⁾ evaluation and remediation schedule? Describe below or on attachment. __ Yes __ No __ N/A	
Prior to the failure, had the operator performed the required ⁽¹³⁾ actions to address the threats that are now known to be related to the cause of this failure? __ Yes __ No __ N/A List below or on an attachment such operator-identified threats, and operator actions taken prior to the accident.	
Describe any previously indicated anomalies at the failed pipe, and any subsequent pipe inspections (anomaly digs) and remedial actions.	

Leak Survey History	<u>X</u> N/A
Leak Survey History (Trend Analysis, Leak Plots):	

Pipeline Operation History	<u>X</u> N/A
Description (Repair or Leak Reports, Exposed Pipe Reports):	
Did a Safety Related Condition Exist Prior to Failure? __ Yes __ No Reported? __ Yes __ No	
Unaccounted For Gas:	
Over & Short/Line Balance (24 hr., Weekly, Monthly/Trend):	

15 MFL, TFI, UT, Combination, Geometry, etc.

16 ECDA, ICDA, SCCDA, "other technology," etc.

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Operator/Contractor Error - See "Outside Force Damage" section for detail on ORU's failure to follow its Procedure 202 "Location of Underground Facilities / One Call System"				
Name:		Job Function:		
Title:		Years of Experience:		
Training (Type of Training, Background):				
Was the person "Operator Qualified" as applicable to a precursor abnormal operating condition? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A				
Was qualified individual suspended from performing covered task <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A				
Type of Error (Inadvertent Operation of a Valve):				
Procedures that are required:				
Actions that were taken:				
Pre-Job Meeting (Construction, Maintenance, Blow Down, Purging, Isolation):				
Prevention of Accidental Ignition (Tag & Lock Out, Hot Weld Permit):				
Procedures conducted for Accidental Ignition:				
Was a Company Inspector on the Job? <input type="checkbox"/> Yes <input type="checkbox"/> No				
Was an Inspection conducted on this portion of the job? <input type="checkbox"/> Yes <input type="checkbox"/> No				
Additional Actions (Contributing factors may include number of hours at work prior to failure or time of day work being conducted):				
Training Procedures:				
Operation Procedures:				
Controller Activities:				
Name	Title	Years Experience	Hours on Duty Prior to Failure	Shift
Alarm Parameters:				
High/Low Pressure Shutdown:				
Flow Rate:				
Procedures for Clearing Alarms:				
Type of Alarm:				

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Operator/Contractor Error - See "Outside Force Damage" section for detail on ORU's failure to follow its Procedure 202 "Location of Underground Facilities / One Call System"

Company Response Procedures for Abnormal Operations:

Over/Short Line Balance Procedures:

Frequency of Over/Short Line Balance:

Additional Actions:

Additional Actions Taken by the Operator

Make notes regarding the emergency and Failure Investigation Procedures (Pressure reduction, Reinforced Squeeze Off, Clean Up, Use of Evacuators, Line Purging, closing Additional Valves, Double Block and Bleed, Continue Operating downstream Pumps):

ORU isolated the gas main serving the Village Fairground II Condominium Complex by 1:54 PM by closing two distribution valves. This resulted in 94 gas service outages. To restore service, ORU isolated the damaged section of the main by installing a valve on one side of the damaged section and a coupling on the other side. The damaged main was cut out and replaced with a new 4-foot section of 2-inch plastic gas main by 8:00 PM on January 16th.

Gas restoration began at 8:00 PM, with 21 ORU and Con Edison gas servicemen dispatched. By the morning of January 17th, 79 homes were restored, 12 were locked due to lack of access, and three were unable to be restored due to damage from the explosion.

Summary

At approximately 1:30 PM, on January 16, 2012, Steven Blaney of the New York State Department of Public Service Gas Safety Section was notified by Orange and Rockland Utilities, Inc. (ORU) of a natural gas explosion at 52 Zarriello Lane in West Haverstraw, NY. ORU reported that a building exploded while company personnel were on the scene investigating damage caused by third party excavation. After the notification, Arpit Mehta of the Gas Safety Section was dispatched to investigate. Mehta responded and arrived on site at approximately 3:40 PM. Police detectives, local fire department personnel, local media, and gas emergency responders were present at the location when Mehta arrived. Mehta noted that 52 Zarriello Lane was destroyed and 54 Zarriello Lane was significantly damaged. There were no fatalities. However, two firemen and two ORU gas servicemen were injured in the explosion. The two ORU servicemen were sent to the hospital for observation. Their injuries were reported to be limited to minor burns, bruises, and cuts. One of the firefighters was reported to have sustained a fractured cheekbone, concussion, first and second degree burns, and bruises to his leg. The other firefighter suffered more serious injuries and was transferred from the hospital to a rehabilitation center on January 23, 2012.

An ORU serviceman closed a distribution valve at the entrance of Zarriello Lane at 1:10 PM. A second distribution valve was closed at 1:22 PM, isolating the gas main on Zarriello Lane and interrupting gas

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service to 94 customers. Electric services were shutdown at 1:22 PM, interrupting 4,688 customers. By the following morning, 79 of the 94 gas services were restored, with 12 unable to be restored due to lack of access and 3 unable to be restored due to potential damage received during the explosion. Electric service was restored to all units by midnight of the day of the incident (1/16), with the exception of the three units that were located within the impact zone.

Description of Facilities

Natural gas to 52 Zarriello Lane was provided by a ¾-inch high density polyethylene service line installed in 1991, which teed off a 2-inch high density polyethylene gas main operating at 65 psig with a maximum allowable operating pressure of 80 psig. The service line was equipped with an outside meter set and service regulator.

Audit of Applicable Records

A search of ORU's leak management system shows there were no open/outstanding leaks in the vicinity of 52 Zarriello Lane.

A ticket search of Dig Safely New York found that FGC Communications did place two one-call tickets for Zarriello Lane on 12/28/11 (#12281-134-055-00, #12281-134-051-00). The tickets show a work start date of 1/3/12. After first delaying the locate by two days, ORU's ticket management system indicates that ORU cancelled the ticket on 1/5/12 without completing the mark-outs, and instructed FGC to call in another ticket.

ORU surveyed the area around 52 Zarriello Lane daily from the immediately after the explosion on 1/16/12 until the following week. While natural gas readings persisted in the area due to ground saturation from the blowing gas, no additional leaks were found.

Investigation and Analysis

December 28, 2011

FGC placed five mark-out requests through Dig Safely New York for excavations on various streets in the Village Fairgrounds II condominium complex in order to install ducts for fiber optic lines. FGC was working as a subcontractor for MasTec, which was a contractor for Verizon. The two notices on Zarriello Lane request that facility operators "Mark from Pole 3 going to Building 52 on North Side of Rd" and "Mark from Building 52 to Dead End." The two notices combined encompass most of Zarriello Lane, a length of approximately 0.2 miles. The tickets indicated start dates of 1/3/12.

The mark-out ticket also indicates "Shovels/Hand Digging" as the means of excavation, as well as "No" for whether there would be "Boring/Directional Drilling." During a subsequent interview, FGC indicated this as a mistake on their part.

January 3, 2012

ORU placed a two day delay to the contractor, noting that FGC should not dig because the location is not marked. This is documented in ORU's one-call ticket management system.

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January 4, 2012

ORU attempted to mark-out its facilities on Zarriello Lane. However, according to ORU's one-call notice log, ORU received complaints from community residents regarding the paint lines being placed along the street. [REDACTED]

January 6, 2012

FGC called ORU to arrange a meeting for the morning of Monday January 9, 2012 to go over the mark-outs.

January 9, 2012

The ORU locator arrived between 9:00 AM and 9:30 AM. FGC and MasTec representatives were already on site. During the interview with the contractor on 2/22/12, FGC claims to have placed white marks on the ground where they would be crossing.

According to the ORU locator, after discussion with FGC, he placed two sets of two dots on the ground within the area that the locator stated they would be crossing the road. A red dot in each set indicated the primary electric, while the yellow dot indicated the gas main. Measured from an electric transformer in front of 52 Zarriello, the first set of dots is approximately 12 feet away from the transformer. The second set of dots is approximately 40 feet away from the transformer. The two sets of dots are 28 feet apart. Closer to the transformer, the locator placed another yellow dot for the gas main along with a red arrow mark-out for the electric. There is an arc of electric arrow mark-outs leading to the service line mark-outs (see Image #3 and Image #7).

[REDACTED]

During interviews on 2/22/12 & 3/6/13, FGC denies that ORU told them this. FGC claimed that due to the placement of the dots and the service line arrows leading to the transformer, it believed that rather than continuing east under Zariello Lane, both the electric line and gas main turned away from the roadway and into the field by 52 Zarriello Lane.

January 16, 2012

Using a pneumatic device commonly referred to as a "bullet", FGC was boring across the street in front of 52 Zarriello Lane. It was approximately 28 feet to the east of where the dots had been placed by the ORU locator. According to FGC, this was towards the end of their work in the complex. During a subsequent interview, MasTec confirmed that FGC excavated where it instructed them to dig. MasTec also claimed that they instructed FGC to dig test holes to verify the gas main location. FGC denies this in interviews with Staff.

Prior to 12:00 PM that day (1/16), FGC hit the 2-inch high pressure gas distribution main in the street.

According to FGC, the contractor alerted the residents at 52 Zarriello Lane, who left the house. The residents

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of 52 Zariello Lane allowed them to use their phone to call 911. According to FGC, they also attempted to alert the neighbors of five adjacent houses to the blowing gas situation, but there was nobody in the other homes.

FGC called 911 between approximately 12:00 PM and 12:10 PM. ORU was notified at 12:13 PM. Two gas servicemen were dispatched at 12:15 PM and arrived at 12:23 PM. The fire department was already on scene when ORU arrived. ORU began their investigation by checking manholes. [REDACTED]

[REDACTED] The gas servicemen requested assistance from the firemen to gain access to the building. While waiting for the firemen to bring tools to gain access to 52 Zariello Lane, the explosion occurred at 12:57 PM.

A valve at the entrance to 52 Zariello Lane was closed at 1:10 PM by an ORU mechanic. A second valve, the back feed valve at Peck Lane, was closed at 1:22 PM by the gas supervisor. Electric services were isolated at 1:22 PM. The section of damaged main was cut out by 8:00 PM and a replacement piece was installed, at which point restoration of gas service began. Of the 94 services interrupted, 79 were restored by the following morning. Twelve services were unable to be restored due to lack of access, while three services were unable to be restored due to damage from the explosion.

Arpit Mehta interviewed the ORU locating supervisor on 1/18/12. The locating supervisor showed the location of the dots placed by the ORU locator on 1/9/12, as well as the marks placed for the gas and electric services. Steven Blaney, Suresh Thomas, and Arpit Mehta interviewed personnel from FGC on 2/22/12. Steven Blaney and Suresh Thomas interviewed MasTec on 3/13/12.

A citation was issued to FGC Communications Inc. on May 11, 2012 for providing incorrect information (not indicating that directional drilling would be employed) to the one-call notification system and failing to verify the location of a gas main as required by 16 NYCRR 753-3.2(a)(6) and 16 NYCRR 753-3.6(b), respectively. During an interview on 2/22/12, FGC admitted that it did not provide accurate information to Dig Safely by listing "Shovels/Hand Digging" instead of boring and selecting "Boring/Directional Drilling" as "No." During their description of the excavation process, FGC made no mention of hand digging test holes to verify the location of the gas main.

FGC met with DPS Staff members Steven Blaney, Jeffrey Kline, Christopher Stolicky and Steven Kramer in Albany on March 6, 2013. At this time FGC denied that it was instructed by MasTec to verify the location of the gas main where it crossed the path of their directional drill. FGC also stated that it did dig a test hole in the lawn area in front of 52 Zariello, where ORU markings indicated the gas service crossed the path of its conduit installation.

A citation was issued to Orange and Rockland Utilities, Inc. on May 11, 2012 for failing to complete mark-outs within the two day extension period and for failing to completely and accurately mark-out as required by 16 NYCRR 753.4.5(b) and 16 NYCRR 753.4.6(b), respectively.

During the informal conference regarding the notice of probable violation for the two citations identified above, ORU argued that FGC was excavating prior to locating being completed and they were a threat to the integrity of ORU's distribution system. The argument from ORU indicates that it had reason to believe that damage to their pipeline could result from the excavation activities. In accordance with 16 NYCRR 255.614(b), *Damage prevention program*, ORU was required to inspect as frequently as necessary to prevent

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damage from occurring. 16 NYCRR 255.614(b) states: “Where the operator has reason to believe damage could be done by the excavation activities, the pipeline must be inspected as frequently as necessary during and after the activities to verify the integrity of the pipeline.” ORU failed to comply with this requirement.

Incident Investigation Report

<i>Photo Documentation</i> ⁽¹⁾			
Overall Area from best possible view. Pictures from the four points of the compass. Failed Component, Operator Action, Damages in Area, Address Markings, etc.			
Photo No.	Description	Photo No.	Description
1	Damage to 52 Zarriello Lane	6	Service Line Mark-Outs at Transformer
2	Pneumatic Bullet Used by Contractor	7	Mark-Outs Leading to Transformer
3	Location of Pre-Incident Mark-Outs		
4	Drawing by FGC of Mark-Outs on Location		
5	Mark-Out Dots Placed by ORU		
Camera Type: Canon PowerShot S3 IS			

Incident Investigation Report



Image #1: Damage to 52 Zarriello Lane – Taken by Arpit Mehta



Image #2 – Pneumatic Bullet Used by Contractor – Taken by Arpit Mehta

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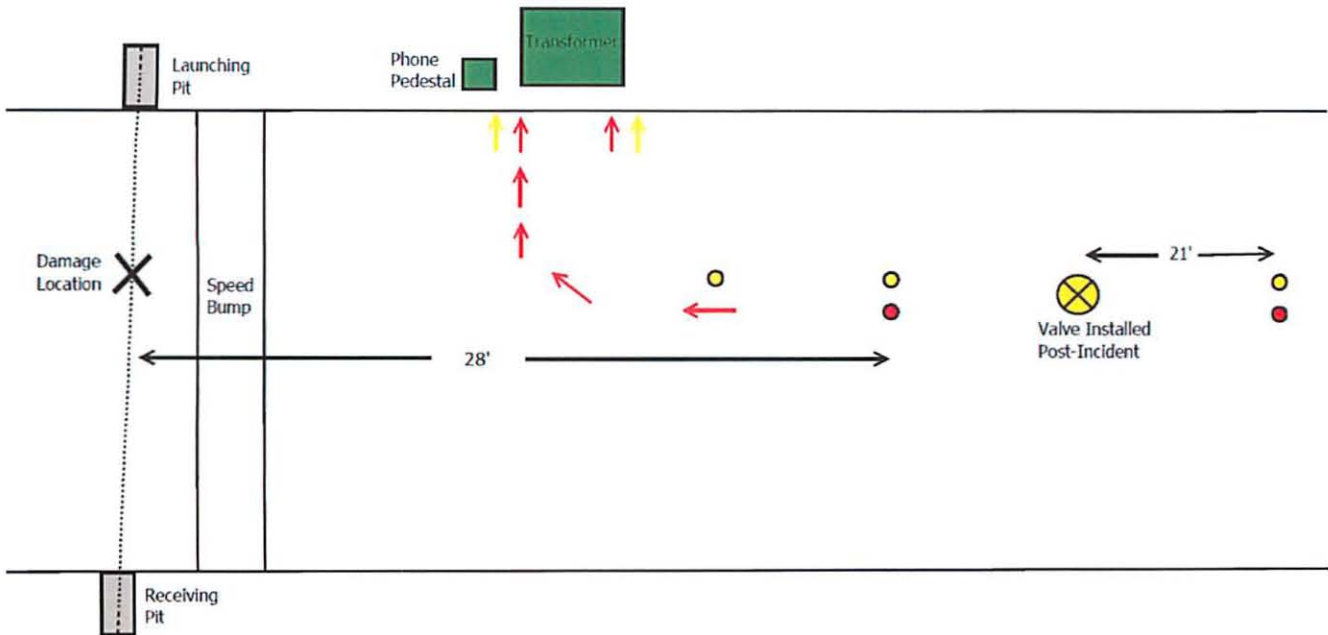


Image #3: Location of Pre-Incident Mark-Outs

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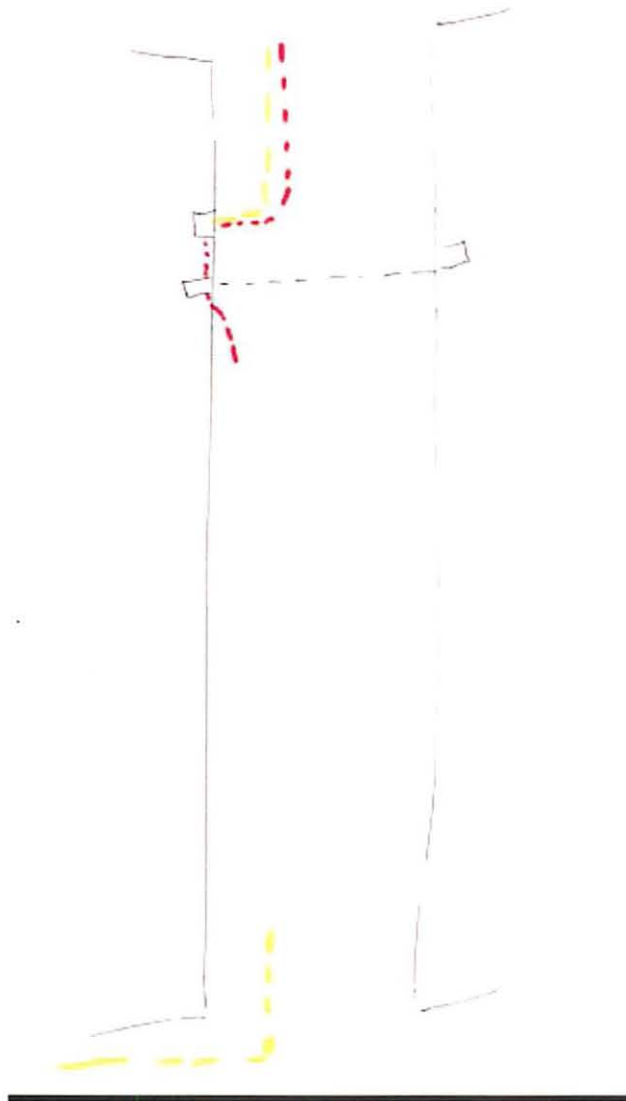


Image #4: – Drawing by Fidel Padilla of FGC Communications Inc of Mark-Outs Observed by the Contractor on Location During Excavation, Drawn During Staff's Interview with FGC on February 22, 2012

Incident Investigation Report

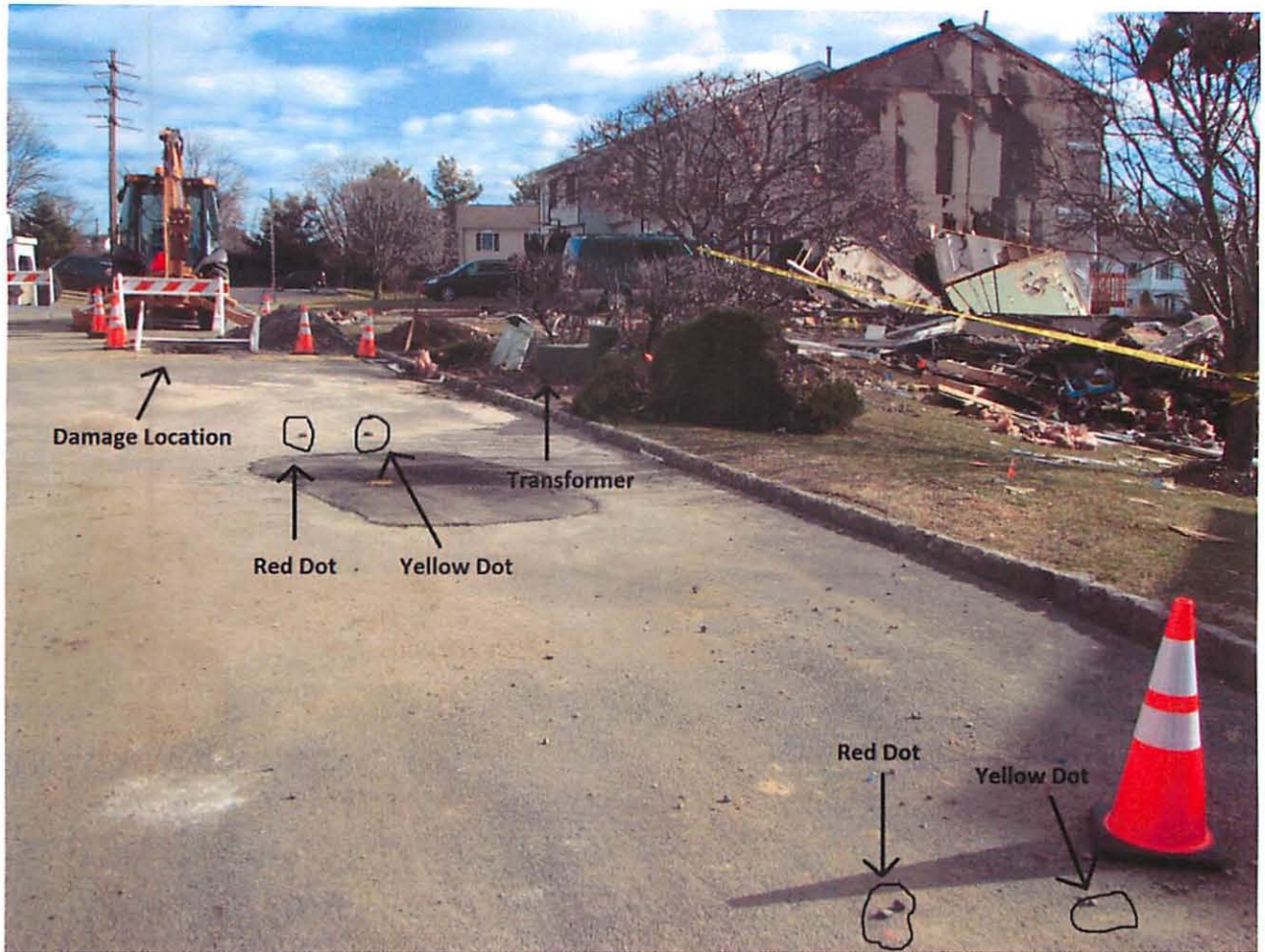


Image #5: Mark-Out Dots Placed by ORU – Taken by Arpit Mehta

Image shows the four dots placed by ORU to mark the location of the natural gas main and electric facilities. The red dots indicate electric facilities, while the yellow dots indicate the location of the natural gas main in the street. The damage location can be seen in the background, approximately 28 feet away from the easternmost dots.

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Image #6 – Service Line Mark-Outs at Transformer Placed by ORU – Taken by Arpit Mehta

Image shows the four service line mark-outs at the transformer and curb of the street. There are two gas service line mark-outs (yellow) and two electric service line mark-outs (red).

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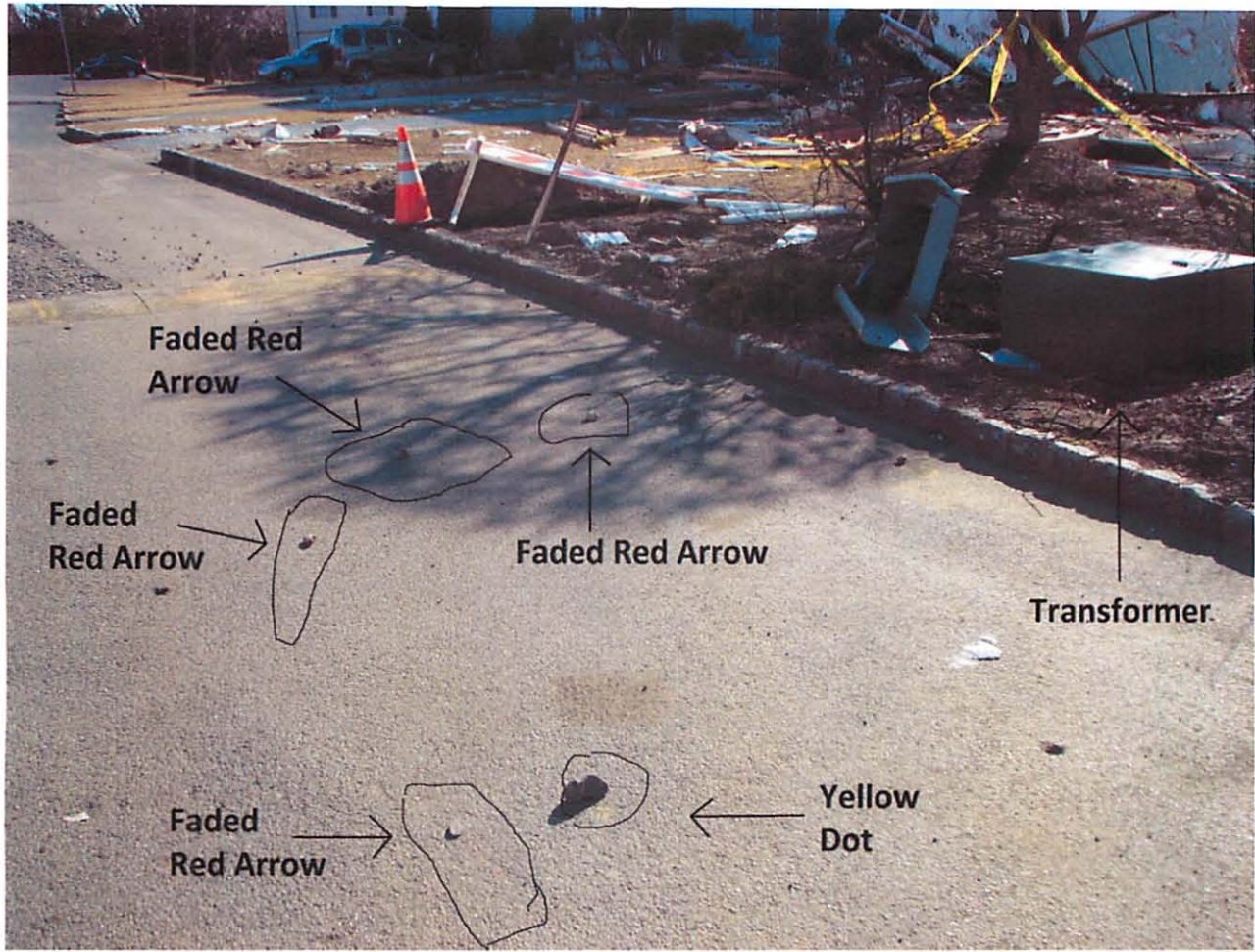


Image #7: Mark-Outs Leading to Transformer Placed by ORU – Taken by Arpit Mehta

Image shows mark-outs leading to the transformer. There are four red arrows signifying electric facilities. The first red arrow runs parallel to the curb. The next arrow is angled, bending into the curb. The next two red marks are perpendicular to the curb and are intended to show the electric service going into the transformer. There is only one natural gas mark-out, a yellow dot in the street by the first red arrow. At the transformer, there are four mark-outs for electric and natural gas service lines, as shown in Image #6.

Incident Investigation Report

Site Description

Provide a sketch of the area including distances from roads, houses, stress inducing factors, pipe configurations, etc. Bar Hole Test Survey Plot should be outlined with concentrations at test points. Photos should be taken from all angles with each photo documented. Additional areas may be needed in any area of this guideline.

