Williams®

811®
Know what's **below.**
Call before you dig.

West Virginia University®
EXTENSION SERVICE


Damage Prevention Guide

for Excavators, Homeowners and Farmers

In the event of a Williams Access OA pipeline emergency, immediately call **9-1-1** and **855-427-2875** from a safe location.

2015

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Williams Damage Prevention Program

This guide is a part of the Williams Damage Prevention Program. Through a joint partnership with West Virginia University Extension Service, this program focuses on providing information to stakeholders in an effort to prevent damage to Williams' pipelines and facilities caused by excavation activities. This damage can be caused by any form of excavation — digging, grading, trenching, boring, blasting, etc. — or can result from road and highway maintenance, general construction and many farming activities, as well as new home construction and certain routine homeowner activities.

About Williams

Williams is one of the largest providers of energy infrastructure in North America. Our businesses are interstate natural gas pipelines; midstream gathering and processing; natural gas and natural gas liquids transportation and olefins production.

Williams is committed to operating safely in everything we do, every day and is dedicated to growing our business, our people, and our industry. We recognize and enthusiastically accept our responsibility to the environment and communities we serve, through acting as a good neighbor and through involvement and support for community activities.

For more information, visit Williams.com/Safety.

We also provide free pipeline safety training for excavators as we work to ensure the safety of our employees, neighbors and the environment.

Want more information about Williams' free custom training programs for excavators?

Contact us at: **PublicAwareness@Williams.com**

About West Virginia University Extension Service

West Virginia University Extension Service, a primary outreach division of West Virginia University, was created in 1914 with the signing of the Smith-Lever Act.

The Act created a nationwide Cooperative Extension system that is comprised of more than 70 land-grant colleges and universities across the United States whose main purpose is to bring trusted, research-based, university information and resources to their communities.

With this purpose in mind, WVU Extension focuses on four key areas to benefit residents of the state. These areas include Families and Health; 4-H Youth Development; Agriculture and Natural Resources; and Communities, Economic and Workforce Development.

Through West Virginia 4-H, more than 80,000 youths access opportunities to gain valuable life and leadership skills and experiences, and to advance to higher education.

West Virginia's small farm industry is an important part of the state's economy and culture, and Extension offers trusted, research-backed information to help farms thrive.

WVU Extension also provides guidance on proper stewardship and use of the state's plentiful natural resources which create capital for West Virginians and invigorate the state's economy.

WVU Extension's Families and Health programs, through trusted university research, provides curricula and education to reduce obesity, diabetes and increased overall wellbeing for the state's 1.8 million residents.

Through its Community, Economic Workforce Development program unit, Extension helps to strengthen and growth organizations and communities.

With a presence and connection to all counties across West Virginia, Extension faculty and staff serve their communities through many Extension outreach efforts for 100 years, and counting.

Protecting our Nation's Underground Infrastructure

The largest cause of damage to pipelines – or other underground facilities including electric lines, telecommunication or cable wires – is excavation. Improper excavation can result in serious risk of life, property and the environment.

In 2013, there were over 335,000 incidents to underground facilities and pipelines due to excavation related activities. (Source: 2012 CGA DIRT Report)

Call before you dig and use proper excavation practices to significantly reduce these risks. By working together, we can reduce third-party damage to underground facilities and pipeline, prevent accidents and keep our communities safe.

Did you know?

Contractors are subject to the Occupational Safety and Health Administration's (OSHA) requirements. OSHA cites in its "General Duty Clause" the possible regulatory enforcement action that could be taken against excavation contractors who place their employees at risk by not using proper damage prevention practices. The lack of adequate damage prevention could subject the excavator to OSHA regulatory enforcement. OSHA information may be found at www.OSHA.gov.

Additional Pipeline Resources

Williams	Williams.com/Safety
Common Ground Alliance	CommonGroundAlliance.com
Damage Prevention Summit	DamagePreventionSummit.com
National One-Call	Call811.com
National Pipeline Mapping System (transmission pipelines only)	NPMS.PHMSA.DOT.gov
Office of Pipeline Safety	OPS.DOT.gov
Pipeline and Hazardous Materials Safety Administration	PHMSA.DOT.gov
Texas Railroad Commission	www.RRC.State.TX.us/pipelinesafety/rules

Notes

ABOUT PIPLINES

Pipeline Basics

In general, pipelines can be classified into three systems depending on their purpose:

- **Gathering pipelines.** These are usually shorter, smaller diameter pipelines that form a complex network with the purpose of brining petroleum or natural gas from several nearby wells to a treatment plant or processing facility.
- **Transmission pipelines.** These are usually longer, larger diameter pipelines used to move petroleum, gas or refined products between cities, countries and even continents. These transportation networks include several compressor stations in natural gas lines or pump stations for petroleum and multi-product pipelines.
- **Distribution pipelines.** These are usually composed of smaller diameter, interconnected pipelines that are used to deliver products to the final consumer, such as homes and businesses. Pipelines at terminals for distributing products to tanks and storage facilities are also included in this group.

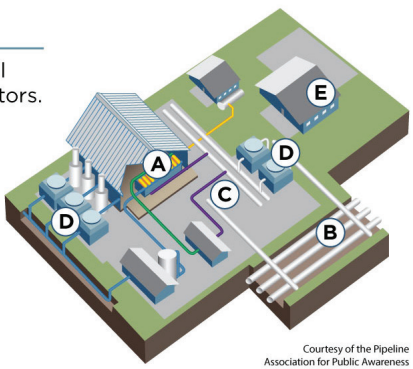
The two most common pipeline facilities are:

- **Processing or compressor stations.** A processing or compression facility cleans, dehydrates, pressurizes or otherwise prepares natural gas to the appropriate quality for a transmission pipeline. The natural gas enters the compressor station, where it is compressed by a turbine motor or engine. Compression of natural gas is periodically required to ensure that it continues to flow through the pipeline. This is accomplished by the compressor stations, usually placed at 40- to 100-mile intervals along the pipeline.

Compressor Stations

Equipment at a Compressor Station will Vary Depending Upon a Number of Factors.

- Engine and Compressor Units (A)
  - Positive-displacement Compressors
  - Continuous-flow Compressors
- Piping and Piping Manifolds (B)
- Filter Separators (C)
- Cooling Units (D)
  - Pig Manifolds
- Generators (E)
  - Gas and Fire Detection and Suppression Systems



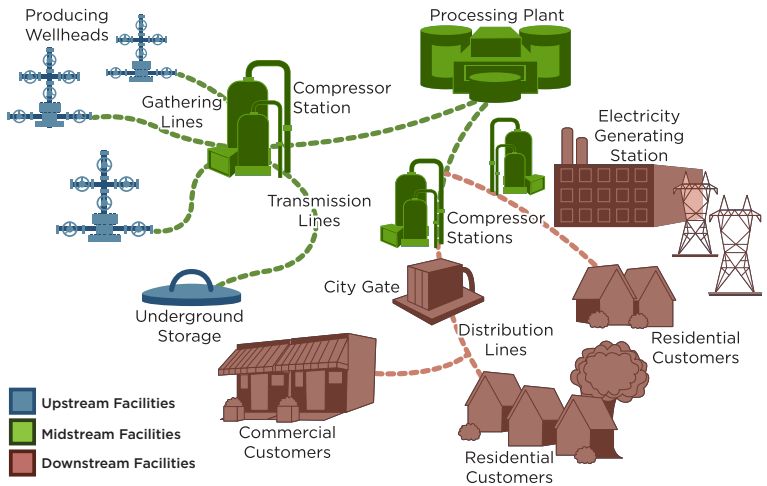
Courtesy of the Pipeline Association for Public Awareness

- **Pumping station.** A pumping station is used to push petroleum products through a pipeline. Pumps are located at originating and booster stations and are remotely controlled at computerized central control centers staffed by highly trained operators. These stations adjust the pressure, pump the product through the line and monitor flow and other product information.

Natural Gas Transportation System

Transporting natural gas and petroleum from the wellhead to the final customer involves several physical transfers of custody and multiple processing steps. This entire system is divided into three sections:

1. **Upstream.** The exploration and production (E&P) arm of the industry, the upstream segment drills the wells that result in the production of natural gas or petroleum product.
2. **Midstream.** The midstream segment of the system constructs, installs and operates the gathering and transmission pipelines, processing facilities, compressor and pumping stations necessary to move the product from the wellhead to the distribution pipelines.
3. **Downstream.** The downstream sector involves the actual processing, selling and distribution of natural gas and petroleum-based products, including commodities such as gasoline, diesel fuel, and propane.



Williams Access Operating Area (Access OA) falls into the midstream segment of the natural gas transportation system. We are primarily a gathering company, owning and operating less than 1% of transmission pipeline. We construct, install and operate pipeline, processing facilities, compressor stations and pumping stations in order to move natural gas and petroleum products brought to the surface by the upstream companies in the Barnett, Eagle Ford, Haynesville, Marcellus, Niobrara and Utica Shale and the Mid-Continent Region. Our assets, located across nine states, are comprised of more than 6,700 miles of pipe and move an average of more than 3.5 billion cubic feet of product per day.

Why Do We Need Pipelines?

Pipelines play a vital role in our daily lives. Cooking and cleaning, the daily commute, air travel and the heating of homes and businesses are all made possible by the readily available fuels delivered through pipelines. These routine activities really add up, in terms of energy use. Natural gas provides for 24% of our country's total energy consumption, and petroleum provides for another 39%.

Because such huge volumes of hazardous liquids and gas must be transported, the only feasible way to do so is through pipelines. Pipelines do not crowd our highways and waterways as trucks and barges would, which reduces highway accidents and exhaust emissions.

Pipelines have a proven safety record, with more than 2 million miles of natural gas and petroleum product pipelines in the U.S. Pipelines, in short, are practical and safe.

Natural gas and petroleum product pipelines are highly regulated at the federal and state level by a number of agencies. Interstate pipelines are regulated by the Pipeline and Hazardous Materials Safety Administration (PHMSA) of the U.S. Department of Transportation (U.S. DOT), and intrastate pipelines are usually regulated by a state governmental agency or commission.

Committed to Safety and Reliability

Williams is committed to safe and environmentally sound operations across all of its operating areas. To ensure safe operations, we monitor our pipelines 24 hours a day, 365 days a year, which are designed, installed, tested, operated and maintained in accordance with all applicable Federal and State requirements.

Williams utilizes a risk-based integrity management program that addresses various threats that could affect the pipeline, such as excavator damage, corrosion, operator error, equipment failure and others. Routine processes are employed to maintain the integrity of our pipelines including:

- In-line inspection and hydrotest
- Cathodic protection
- Equipment maintenance and inspections
- Right of Way clearing and inspection
- Aerial and ground patrols
- Corrosion control (internally and externally)
- Operator qualification requirements
- Public awareness and damage prevention activities

Notes

Excavation Hazards (occupation and non-occupational)

Trenching and excavation work are part of OSHA's "Top 4" (Focus Four) most hazardous construction activities. While OSHA only has jurisdiction over employment activities; the hazards still exist for home owners and family farmers when engaged in excavating.

OSHA® QUICK CARD™

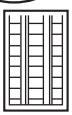
Working Safely in Trenches

Two workers are killed every month in trench collapses. Each worker in a trench shall be protected from a cave-in by an adequate protective system. Some of the protective systems for trenches are:

- Sloped for stability; or

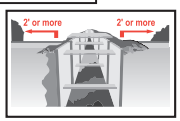
- Cut to create stepped benched grades (Type A or B soil only); or

- Supported by a system made with materials such as posts, beams, shores or planking and hydraulic jacks; or

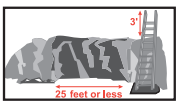


- Shielded by a trench box to protect workers in a trench.

Excavated or other materials and equipment must be at least 2 feet back from the edge of a trench; and



A safe way to exit must be provided within 25 feet of workers in a trench.



A competent person must inspect trenches daily and when conditions change. An unprotected trench is an early grave. Do not enter an unprotected trench.

For more information:

OSHA® Occupational Safety and Health Administration
U.S. Department of Labor
www.osha.gov (800) 321-OSHA (6742)
TTY (887) 889-5627

OSHA 3243-09R-11

Trenching and excavation hazards include: cave-in, striking underground utility lines, atmospheric hazards (low oxygen, hydrogen-cyanide and methane), water accumulation in trench bottom and vibrations from moving equipment. Employers MUST follow OSHA's Construction Safety regulations (29 CFR 1926.651 & 652, appendix A-F) to maintain a safe workplace, non-employment excavating also has dangerous hazards that must be addressed to protect personal safety and liability.

Safe trenching and excavation work must include underground utility identification (phone 811, Call Before you dig, Miss Utility...) trench cave-in protection, and the use of personal protective equipment.

Trench cave-in protection includes the use of trench boxes/ shields, shoring, and sloping/ benching of the soil. The BEST PRACTICE would involve consulting with a construction safety professional prior to beginning trenching and excavation activities.

Additional reference material is available at :

OSHA.gov (Construction safety)
OSHA Fact sheet: OSHA FS 3476 2011
OSHA Quick card: OSHA 3243 2011

Safe Digging

Help prevent damage in your community by being aware of underground facilities and pipeline locations, promoting damage prevention and watching for suspicious activities near pipelines. You should:

1. Work with our company to maintain up-to-date information on our pipeline locations.
2. Become familiar with the National Pipeline Mapping System (NPMS). Developed by the U.S. DOT Pipeline and Hazardous Materials Safety Administration (PHMSA), this online application provides information about gas transmission and liquid transmission operators and their pipelines. This site does not currently include gathering or distribution operators or pipelines.
    - The NPMS website is: www.npms.phmsa.dot.gov
3. Report suspicious activities on or near a pipeline, exposed pipe or damaged facilities to the pipeline operator.
    - In our nation's time of heightened security, it is more important than ever to guard pipelines against damage or attack. Homeland security and infrastructure protection is a shared responsibility.

Damage Prevention

Although we diligently monitor our pipelines and facilities, we cannot monitor every activity that takes place along our pipeline system. One of the greatest challenges to safe pipeline operations is accidental damage to a pipe or its coating. In the event you unexpectedly expose a utility or suspect any damage (a minor scrape, nick, cut, tear or dent) you must report it immediately. Not doing so could result in a future leak, service outage, explosion, accident, injury or death. Report it immediately by calling the utility owner, 9-1-1 and 811.

Williams personnel perform follow-up inspections of Williams pipelines that could be or might have been damaged by excavation, boring, trenchless technology or blasting activities by another company or entity. The inspections may be daily, or as often as necessary, during and after the activities to verify the integrity of the pipeline. In the case of blasting activities, any follow-up inspection includes a leakage survey of the affected pipeline.

Avoiding Underground Facility & Pipeline Damage

Even minor scratches, scrapes, gouges, dents or creases to a pipeline or its coating can result in future safety problems. If there is damage done to any utility or pipeline there may be costs to repair/replace the line, fees for labor, and fees for the loss of product or business, which may result in a claim to you. Excavation damage to a pipeline could result in:

- Explosion or fire
- Loss of life
- Personal injury
- Property damage
- Environmental impact
- Financial impact

Did you know?

The cost to replace a fiber optic line that has been cut during any excavation activity (regardless of who causes the damage) BEGINS at $10,000. Why?

1. Replacement materials: A fiber optic cable that has been cut cannot be spliced back together; an entirely new line – which may begin several blocks away from the damage – has to be installed.
2. Labor: A crew has to be brought out to assess the damage and ultimately replace the cut line.
3. Loss of use charges: Because most fiber optic cables are cable, telephone or internet, consumers are affected when one is damaged. The fiber optic company is required to rebate the loss of use by the minute to their customers from the time the service went out to the time it is restored.

Costs to repair are the damaging parties' responsibility.

Farming & Ranching Considerations

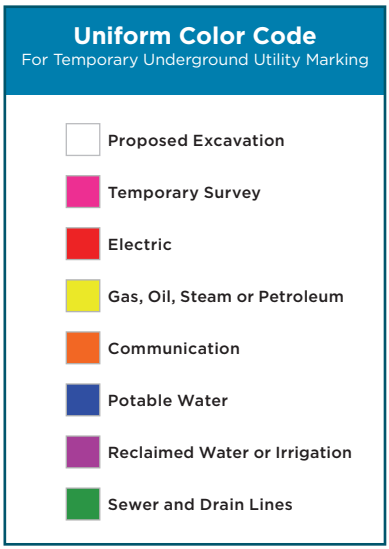
There are 2 million farms in the U.S. and 9.5 million acres are used for farming or ranching activities. These businesses are vast and uniquely at risk to come in contact with a utility or pipeline buried under their land.

We recognize that as a farmer, in some states you may be exempt from making a one-call notification before conducting certain farming related activities. However, pipelines can shift over time due to soil erosion, deep plowing and other reasons. For your own safety and to protect your farmland, we strongly encourage and ask that you call 811 before deep plowing, ditching, fencing, installing drain tile, clearing land or other excavation-related activities.

Call Before You Dig

Don't ever assume you know where underground utilities are located.

State laws require notification before digging or excavating. By calling 811, you are automatically connected to your state's one-call center, which will then notify pipeline and utility operations in the area. If the company has underground facilities that might be affected, a representative will be sent to locate and mark – with a temporary flag or spray paint – the buried facilities before you dig using the color system created by the American Public Works Association (APWA), which is found on this page. Facilities include a number of items such as pipelines, cables, telephone and electric lines.



State	Advance Notice	Web Site
Arkansas	2 to 10 working days	www.arkonecall.com
Kansas	2 full working days (not including the day the notice was placed)	www.kansasonecall.com
Louisiana	48 to 120 hours	www.laonecall.com
Ohio	48 hours	www.oups.org
Oklahoma	48 hours	www.callokie.com
Pennsylvania	3 to 10 business days (during construction phase; 10 to 90 days, design phase)	www.pa1call.org
Texas	2 working days (but not more than 14 days)	www.texas811.org
West Virginia	2 days but not more than 10 days	www.wv811.com
Wyoming	2 full business days	www.onecallofwyoming.com

- *See Appendix 1 for additional state specific requirements.*
- *Appendix 2 includes specific excavation and damage reporting requirements in Texas.*

Project Planning

The first step in a safe and efficient excavation project is proper planning of the location and scope, which includes **white lining.**

While it is necessary to be specific about your areas of excavation when calling 811, excavators are encouraged to pre-mark with white paint or flags, a process called white lining, to show the specific area where excavation will take place. This will eliminate the location of underground facilities not involved in the excavation area and reduce unnecessary paint on streets, roads and sidewalks.

For single point excavations, such as trenching, boring, etc., mark the center excavation line with dashes in white paint. Excavation width should be legibly indicated in feet on both sides of the center line.

When Contacting 811, You Should Provide:

- Cell phone number with area code
    - This must be the on-site contact
- Project location and address of where digging will occur
- GPS location or street address
- Project description including depth
- Project duration
- Digging start date and time
- Special instructions helpful for identifying the site

You will be provided with a locate request number and a list of companies who will be notified of your intended activities. This information should be kept with you on the project site. This is your documentation that you called before digging.

After the Call

- Wait the required time (additional time for weekends and legal holidays)
- Make a record of the positive response
- Routine locate tickets expire in 14 days (Exceptions: No expiration on locate tickets in Pennsylvania)
- Respect and protect all marks (if marks are removed or destroyed, new locates must be requested)
- Always dig with care in the tolerance zone! (no mechanized equipment)

When work is being done at multiple sites or over a large area, consider using a Preconstruction Meeting Request Form. See Appendix 3 for a sample form.

What is a positive response?

A positive response is a notification to the excavator by either:

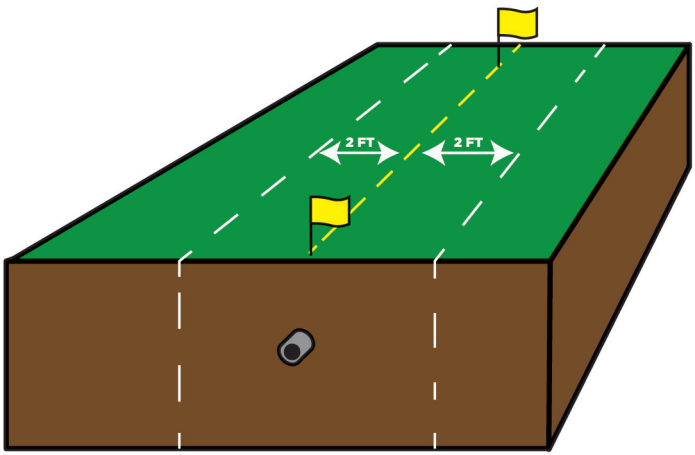
- Markings left at an excavation site that allow an excavator to know prior to the beginning of excavation that underground pipelines have been located or marked
- Notification to an excavator by fax, phone, email or written correspondence that allows an excavator to know prior to the beginning of excavation that there are no underground pipelines in the vicinity of the excavation area

Tolerance Zones

A tolerance zone is the width of an underground facility such as a pipeline or utility line plus a specified tolerance distance — typically two feet on both sides of the facility – where only non-mechanical digging is allowed. The asset owner should be onsite for any work near or within a tolerance zone.

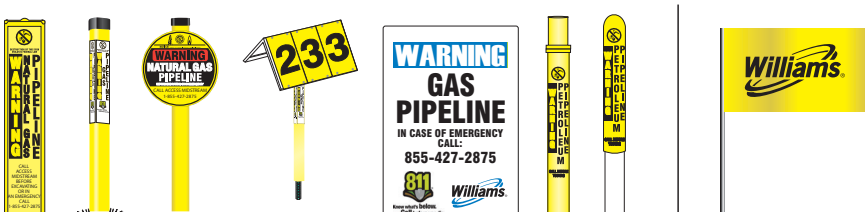
- Two feet on either side of the designated center line of the facility if the diameter is not provided
- Two feet from each outside edge if the diameter is provided

The facility below is marked with its location, but shows no width. So, 24 inches on each side gives us a tolerance zone of 48 inches. Tolerance zones may vary by state. For example: Texas uses 18" plus half the diameter of the pipe from the outside edge of either side of the pipe. See your state's One-Call information at the back of this booklet.



Pipeline Markers

Since pipelines are generally buried, markers and warning signs are used to indicate their general location, usually at river, railroad and street crossings and other heavily congested areas.



Pipeline markers are not intended to show the exact location, depth, pressure or number of pipelines.

When attempting to follow a pipeline route, you should remember that routes are rarely built as straight lines and will make abrupt turns and tie-ins with other pipelines.

Markers are very important to pipeline safety. It is a federal crime to damage or remove a marker. Markers can be removed, knocked down, obstructed or otherwise impaired through a number of everyday activities making them difficult or impossible to read. If you notice a missing or damaged marker, you should contact the operator so that the marker can be replaced.

Pipeline markers are not the only way you can tell if there are pipelines in the area. You should suspect a pipeline is nearby if you see:

- Exposed or visible pipelines
- Wellheads, compressor stations, pumping stations or other associated facilities or equipment
- Pipeline regulators or meter settings
- Pipeline casing vents
- Pipeline Right-of-Ways
- Temporary stakes or flags

Williams

811
Know what's **below.**
Call before you dig.

In case of emergency:
855-427-2875

Williams.com/Safety
DamagePrevention@Williams.com

Thank you for calling 811 before you dig!

Notes

Pipeline ROWs

One thing all pipelines have in common is that they are constructed in a right-of-way (ROW), a corridor of land also known as an easement, on which the pipeline operator has rights to construct, operate and maintain a pipeline. A ROW agreement does not, however, convey ownership.

A ROW is normally approximately 25-150 feet wide, containing one or more pipelines. The pipeline may be laid on top of the ground or buried several feet below the surface.

Did you know?

Other utilities such as telecommunications may also be located in the same ROW with pipelines?

>>The ROW

- Provides access for inspection, maintenance, testing or emergencies
- Provides an unobstructed view for aerial surveillance
- Provides a protective buffer against damage
- May be adjacent to other's ROWs, such as power lines, roads or highways

>>Prohibited ROW Activities

- Erecting buildings or other types of structures, including fences
- Planting trees or placing any other obstructions
- Excavating, changing the grade of the land or impounding water
- Crossings with heavy equipment

Encroachments

Structures or objects such as fences, sheds, swimming pools and wildlife feeders that overlap a ROW are known as encroachments. Residential encroachments may not pose a problem if they can be easily removed or dismantled, but permanent or larger encroachments may cause serious safety concerns. If you have questions regarding encroachments on or near Williams pipelines, please contact 855-245-2300 or email **Encroachment@Williams.com**.

Notes

Recognizing a Leak

Although leaks on natural gas or petroleum pipelines are uncommon, it is important to be able to recognize the possible warning signs. One or more of these signs may indicate a leak, but they may not occur at the same time.

LOOK FOR

- A dense white cloud or fog
- Discolored or dead vegetation
- Flames coming from the ground or an exposed pipeline valve
- A pool of liquid on the ground
- A slight mist of ice or frozen area on a ROW
- Continuous bubbling in a wet, flooded area
- A rainbow or sheen on water
- Dirt being blown or appearing to be thrown in the air

SMELL FOR

- An unusual odor or scent of gas, petroleum liquids or a slight hydrocarbon smell .
- Natural gas transported through pipelines like those operated by Williams are typically unodorized and may carry a faint petroleum scent or no odor at all. Hydrogen sulfide will carry a rotten egg odor.

LISTEN FOR

- An unusual hissing or roaring noise coming from a pipeline

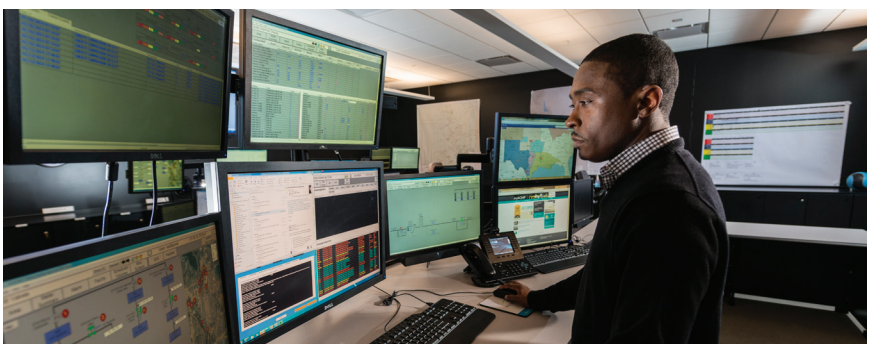
How to Respond

- If safe to do so, turn off and abandon any motorized equipment
- Leave the area immediately, move upwind and warn others to stay away
- Keep potential ignition sources (starting an engine, lighting a match, using a cell phone) away from the area
- Once you are safely away from the area, call 9-1-1
- **Call Williams' toll-free emergency number 1-855-427-2875**
- DO NOT touch, inhale or make contact with leaking liquids or gas
- DO NOT attempt to extinguish a natural gas fire
- DO NOT attempt to operate pipeline valves
- **Wait for an authorized pipeline representative**

How Williams will Respond

Williams personnel have been trained to properly respond to a pipeline emergency. If a release occurs, Williams will:

- Shutdown the pipeline
- Close valves to isolate the problem
- Dispatch personnel and equipment to the release site
- Identify the hazardous area
- Work with local officials to protect the health and safety of the community
- Contain and cleanup the area
- Excavate and repair the damaged pipeline



Hazardous Material Quick Guide

The following table outlines the characteristics of some common products transported via pipeline.

PRODUCT	LEAK TYPE	VAPORS	HEALTH HAZARDS	FIRE HAZARDS
Natural Gas	Gas	Lighter than air	Extremely high concentrations may cause irritation or asphyxiation	Extremely flammable and easily ignited by heat, sparks or flames
Highly Volatile Liquids (HVL) = Natural Gas Condensate	Liquid/ Gas	Heavier than air	Respiratory tract irritant; may cause central nervous system effects, drowsiness, asphyxiation	Extremely flammable liquid or vapor; vapors are heavier than air and may accumulate in low areas and travel considerable distance to an ignition source
Hydrogen Sulfide (H_2S)	Gas	Heavier than air	High concentrations may paralyze sense of smell and be fatal	Flammable; vapors are heavier than air and will settle, particularly in low-lying areas

Important Resource

- The Emergency Response Guide (ERG) can be viewed or purchased at hazmat.dot.gov.

Disclaimer: This list is not inclusive of Williams' assets. Please email PublicAwareness@Williams.com for specific commodities in your area.

Notes

APPENDIX

APPENDIX

Appendix 1

State One-Call Requirements

It is important to remember that excavation and one-call requirements differ from state to state, so you should familiarize yourself with your state's laws prior to beginning any project. The following pages provide a summary of One-Call requirements and contact information for states where Williams operates.

See One-Call chart on next page.

One-Call and State Law Directory	Tickets		State Laws & Provisions									Exemptions					Notifications Accepted				
811 Know what's below. Call before you dig.	Fax Tickets Available	Online Tickets	Coverage Statewide	Civil Penalities	Emergency Clause	Manadatory Membership	Excavator Permits Issued	Mandatory Premarks	Positive Response	Hand Dig Clause	Damage Reportings	DOT	Homeowner	Railroad	Agriculture	Depth	Damage	Design	Emergency	Overhead	Tolerance Zone
Arkansas	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	N	Y	N	N	N	N	Y	Y	Y	N	18"
Kansas	N	Y	Y	Y	Y	Y	N	N	Y	N	N	Y	N	Y	Y	N	N	Y	Y	N	24"
Louisiana	Y	Y	Y	Y	Y	Y	N	N	Y	Y	N	N	Y	N	N	N	N	Y	Y	N	18"
Ohio	N	Y	Y	N	Y	Y	N	N	N	Y	N	N	N	N	Y	N	Y	Y	Y	N	18"
Oklahoma	Y	Y	Y	N	Y	N	Y	N	Y	Y	N	N	N	N	Y	N	N	Y	Y	N	24"
Pennsylvania	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	Y	N	Y	Y	Y	N	18"
Texas	N	Y	Y	Y	Y	Y	N	N	Y	Y	Y	Y	N	Y	Y	16"	Y	Y	Y	N	(5)
West Virginia	Y	Y	Y	Y	Y	N	N	N	N	N	N	Y	N	N	Y	N	Y	Y	Y	N	24"
Wyoming	Y	Y	Y	Y	Y	Y	N	Y	N	Y	Y	N	N	N	Y	N	Y	N	Y	N	24"

Arkansas

Arkansas One-Call System, Inc. 800-482-8998 • www.arkonecall.com
Hours: 24 hours, 7 days
Advance Notice: 2 to 10 working days
Marks Valid: 20 working days
Law Link: www.arkonecall.com/statelaw/statelaw.html
Fax: 501-328-2522

Kansas

KANSAS ONE-CALL SYSTEM, INC. 800-344-7233 • www.kansasonecall.com
Hours: 24 hours, 7 days
Advance Notice: 2 full working days (1)
Marks Valid: 15 calendar days
Law Link: www.kansasonecall.com/static/pdf/KUUPDA_04.03.2010.pdf

Louisiana

LOUISIANA ONE CALL 800-272-3020 or 811 • www.laonecall.com
Hours: 7:00 AM - 6:00 PM
Advance Notice: 48 to 120 hours
Marks Valid: 10 calendar days
Law Link: www.laonecall.com/law_frame_page.htm
FAX: 225-272-2770

Ohio

Ohio Utilities Protection Service 800-362-2764 • www.oups.org
Hours: 24 hours, 7 days
Advance Notice: 48 hours
Marks Valid: As long as visible
Law Link: www.oups.org/law/Law_law.html

Oklahoma

Call Okie 800-522-6543 • www.callokie.com
Hours: 24 hours, 7 days
Advance Notice: 48 hours
Marks Valid: 10 business days
Law Link: www.callokie.com/information/law/default.asp
Fax: 800-377-1339

Pennsylvania

Pennsylvania One Call System, Inc. 800-242-1776 • www.paonecall.org
Hours: 24 hours, 7 days
Advance Notice: 3 to 10 business days (2)
Marks Valid: (3)
Law Link: www.paonecall.org/palaw

Texas

Texas 811 800-344-8377 • www.texas811.com
Hours: 24 hours
Advance Notice: 2 working days (4)
Marks Valid: 14 working days
Law Link: www.rrc.state.tx.us/formpr/tdr.html

West Virginia

Miss Utility of West Virginia, Inc. 800-245-4848 • www.muwv.org
Hours: 24 hours
Advance Notice: 2 days but not more than 10 days
Marks Valid: 10 days
Law Link: www.muwv.org/modules.php?name=WV_Law
Fax: 800-217-3720

Wyoming

One-Call of Wyoming 800-849-2476 • www.onecallofwyoming.com
Hours: 24 hours
Advance Notice: 2 full business days
Marks Valid: 14 business days
Law Link: www.onecallofwyoming.com/law.htm
Fax: 800-217-3719

(1) not including the day the notice was placed

(2) during construction phase; 10 to 90 days, design phase

(3) as long as equipment is on site

(4) but not more than 14 days

(5) 18" plus half the diameter of the pipeline from the outside edge of either side of the pipeline

Notes

Appendix 2

Damage Prevention Requirements in Texas

In Texas, those excavating near a pipeline must follow additional safety requirements implemented by the Texas Railroad Commission. The requirements are the steps an excavator must take before digging or excavating. If the steps are not followed, an excavator is subject to fines and penalties by the Railroad Commission. When excavating in Texas, you must follow the steps outlined below which summarize the state law. A complete version of the Chapter 18 Rule is located in the Texas Administrative Code, Title 16, Part 1, Chapter 18 and can be found online at www.sos.state.tx.us/tac.

Know the law, always call before you dig and follow these steps:

- Prior to calling your local One-Call center, you must white line the area of the excavation if the project area cannot be accurately described to the One-Call center. White-lining the area of excavation requires the excavator to place a white line with spray-paint or flags around the area of excavation.
- **Notify One-Call center by dialing 811 at least 48 hours**, but not more than 14 days prior to the date of excavation, excluding Saturdays, Sundays, and legal Federal and Texas holidays (see Texas Government Code 662.003 for a list of the Texas holidays)
- When calling a One-Call Notification center, the excavator must provide:
  - » Your name
  - » Address
  - » Telephone number of the person calling
  - » The location of the proposed excavation (street address or description)
  - » The name, address and number of the excavator
  - » The excavator's telephone number
  - » If available, a fax number, email, or other electronic number to which an operator may send the required positive response
  - » The start date and time and the anticipated completion date of excavation
  - » A statement as to whether explosives will be used and the method an excavator will receive positive response
- **You must wait at least 48 hours**, not including Saturday, Sunday or holidays **before beginning an excavation**.
- If a pipeline operator wants to be present during excavation, you must contact the operator and notify them of any change during in the excavation start time.
- You must confirm that a copy of a valid locate ticket is available, and can be provided, if requested by the Texas Railroad Commission, within one hour.

- You must verify that the address on the locate ticket is correct and the white-lining is correct, if applicable, in addition to making a visual check for any unmarked pipelines before beginning excavations.
- You may begin an excavation when you have received a positive response that all lines have been marked or received a confirmation that no facilities are present from all operators in the areas who were notified of the excavation.
- If you:
    - » Have knowledge of the existence of an underground pipeline that has received an "all clear' or "no conflict"
    - » Observe clear evidence of an unmarked underground pipeline for which there has been no positive response, or
    - » Receive a positive response that is unclear or erroneous
- Then, you must make a second call to a notification center and wait four hours before excavation may begin.

During the excavation, you must:

- Preserve markings left by the pipeline operator during excavation activities.
- Plan excavation in a manner as to avoid damage, minimize interference and protect underground pipelines.
- Exercise reasonable care when excavating in a tolerance zone.
- If you do not complete your project within 14 days, you must call the One-Call center (just dial 811) and request the markings be refreshed for only the area yet to be excavated.
- If you damage a pipeline, immediately, but no later than two hours, contact the pipeline owner. If you do not know who the owner of the pipeline or other underground facility is, contact the One-Call notification center by dialing 811. If the damage results in an emergency, dial 9-1-1.

If damage occurs, you must also:

- Delay backfilling until the damage is reported to the operator and repair schedule is mutually agreed and/or the operator's approval.
- Keep ignition sources away from the area.
- You are required to make a report to Texas Railroad Commission within 10 days when:
    - A pipeline operator fails to provide you a positive response to a first or second call to a notification center.
    - Any damage occurs to a pipeline (in addition to immediately notifying the pipeline operator).

The Texas Damage Reporting Form is located under the Forms, Maps & More section at www.rrc.state.tx.us

Retain required records (specifically locate tickets and positive response records) for at least four years.

Appendix 3

Sample Preconstruction Meeting Request Form

(Use when work is being done at multiple sites or over a large area)

Company Name: _____
Phone Number: _____
Address: _____
City: _____ State: _____ Zip: _____

Worksite Information

Scope of Work: _____
_____
_____
_____
_____
_____

Address or Location Information: _____
_____
_____
County: _____City: _____
Latitude _____ Longitude: _____
Site White Lined? Yes _____ or No _____ Meeting Requested: Yes _____ or No _____
Meeting Date/Time: _____
Meeting Location: _____
Directions: _____
_____
Person to Contact: _____
Office Phone: _____ Cell Phone: _____
Email Address: _____

Contract #/Permit # or Job # _____

Remarks: _____
_____

Call 811 Before You Dig

One Call Locate Ticket # _____
Start Date: _____ End Date: _____
Facility Owner Members Notified: _____
_____
_____
_____

Appendix 4

Sample Job Safety Analysis

The purpose of this Job Safety Analysis is to eliminate and prevent hazards when working in and around excavations and trenches.

Job Safety Analysis (JSA) Checklist

Excavations & Trenches

Reference: OSHA Standard 29 CFR 1926.650-1926.652, Subpart P, Excavations

Sequence of Basic Job Steps	Identified Hazards	Action taken to Eliminate/Reduce Hazards

Safety Equipment Required to Do THIS Job

O Hard Hat	O Face Shields/Goggles	O Fire Extinguishers	O Gas Detector
O Safety Toed Boots	O Cotton/Rubber Gloves	O Ground Static Cable	O First Aid Kit
O Safety Glasses	O Rubber Boots & Apron	O Wheel Chocks	O Eye Wash
O FR Clothing	O Safety Harness/Anti-Fall Device	O Lockout/Tagout	O SCBA
O Hearing Protection	O Rescue Lanyard & Rope	O Communications	O MSDS on site
O Safety Vests	O Helmets (ATV)	O Lights	Other:

Excavation/Trenching/Drilling Note: One-Call must occur at least 48 hours (or longer depending on state laws) prior to excavation, trenching or drilling.

Does work involve excavation? O Yes O No	Has the excavation site been white lined? O Yes O No	Has One-Call (811) been notified? O Yes O No
One-Call Notification #:	One-Call Notification Date:	

Crew Members, Company Representatives & Third Party Signatures Note: Back side of form can be used for additional names

I have personally inspected the worksite & confirm that it is safe for the work described

Authorized Signature_____ Print Name_____

Pipeline Terminology

811 — National toll-free Call Before You Dig number; federally mandated to eliminate the need of having to remember a state one-call center

A

Abandoned pipeline — A pipeline that is physically separated from its source of natural gas and is no longer maintained under 49 CFR Part 192

American Gas Association (AGA) — Professional trade association of the United States natural gas distribution industry; AGA is an advocate for local natural gas utility companies and provides a broad range of programs and services for member natural gas pipelines, marketers, gatherers, international gas companies and industry associates

American Petroleum Institute (API) — Professional trade association of the United States petroleum industry; Publishes technical standards and information for all areas of the industry, including exploration, production, refining, marketing, transportation, and fire and safety

Association of Oil Pipe Lines (AOPL) — Professional trade association of the oil pipeline industry that acts as an information clearinghouse for the public, media and pipeline industry, and represents common carrier crude and product petroleum pipelines in Congress, before regulatory agencies and in federal court

B

Batching — The process by which multiple products and grades of gasoline are simultaneously transported through a single pipeline; batching may be done with or without a physical barrier separating the different products

Bleve (Boiling Liquid Expanding Vapor Explosion) — A container failure with a release of energy, often rapidly and violently, which is accompanied by a release of natural gas into the atmosphere and propulsion of the container or container pieces due to an overpressure rupture

Block valve — A type of valve that can block oil flow in both directions; block valves include manual and remote gate valves and station block valves (suction valves and discharge valves)

Boom — A floating physical barrier serving as a continuous obstruction to the spread of a contaminant

Boring — Commonly called horizontal directional drilling (HDD), it is a steerable trenchless method of installing underground pipes, conduits and cables in a shallow arc along a prescribed bore path by using a surface launched drilling rig, with minimal impact on the surrounding area; Directional boring is used when trenching or excavating is not practical

Breakout tank — A tank used to relieve surges in a hazardous liquid pipeline system or to receive and store hazardous liquid transported by a pipeline for injection and continued transportation by pipeline

British Thermal Unit (BTU) — The amount of energy required to raise the temperature of one pound of water by one Fahrenheit degree; One BTU is equivalent to 252 calories, 0.293 watt-hours or 1,055 joules

C

Cathodic protection — Method of pipeline corrosion protection that uses a constant, low-voltage electrical current run through the pipeline

Check valve — A type of valve that allows one-way flow and prevents the reverse flow of oil; Check valves are designed to be held open by flowing oil and drop closed automatically when oil flow stops or is reversed

Class Location Unit (CLU) —

- **Class 1:** Offshore pipelines or any CLU that has 10 or fewer buildings intended for human occupancy
- **Class 2:** Any CLU that has more than 10, but less than 46 buildings intended for human occupancy
- **Class 3:** Any CLU that has more than 46 buildings or is within 100 yards of an area occupied by 20 or more persons on at least five days per week for 10 weeks in any 12-month period
- **Class 4:** Any CLU where there is a four or more story building

Christmas tree — the arrangement of pipes and valves at the wellhead to control the flow of natural gas or oil and to prevent blowouts (see wellhead)

Code of Federal Regulations (CFR) — A collection of regulations established by federal law; Contact with the agency that issues the regulation is recommended for details and interpretation

Cold zone — The hazard control zone of a hazmat incident that contains the incident command post and other necessary support functions; This zone may also be referred to as the clean or support zone

Command staff — The command staff consists of the public information, safety and liaison officers who report directly to the incident commander

Common carrier — Any transportation system available for use by the public for transporting oil; almost all interstate pipelines are common carriers

Common Ground Alliance (CGA) — A member-driven association dedicated to ensuring public safety, environmental protection and the integrity of services by promoting effective damage prevention practices

Completion — The procedure by which a successful well is readied for production

Compressed Natural Gas (CNG) — CNG is utility, pipeline-quality natural gas that has been compressed to 3,000 to 3,600 pounds per square inch (psi)

Compressor station (booster station) — Pipeline facility with compressors that are used to boost the pressure on natural gas pipelines that is lost as a result of friction

Control center — Pipeline systems are operated from highly computerized control centers which coordinate operations throughout the system including rate of flow, pressure, opening and closing valves, abrupt changes in operating parameters and fast response to emergency conditions; Satellite and telecommunications links connect control centers with pipeline facilities to assure rapid response and constant monitoring

Conventional resource — Any area where natural gas can be drilled and extracted vertically

Corrosion control — Various processes are used to prevent pipeline corrosion; Internal corrosion control injects chemicals into a pipeline that are used to reduce general corrosion and prevent harmful bacteria from corroding pipelines with water present; All pipelines are monitored and tested regularly to ensure effectiveness; Cathodic protection is used to prevent the external corrosion of steel pipe (see cathodic protection)

Crude oil — A mixture of oil, natural gas, water and other impurities, such as metallic compounds and sulfur; Its color can range from yellow to black and include a variety of petroleum fractions with a wide range of boiling points

Cubic foot — The amount of natural gas required at room temperature at sea level to fill a volume of one cubic foot

D

Department of Transportation (DOT) — Federal agency responsible for enacting regulations and standards governing the design, construction and operation of interstate pipeline systems; The Office of Pipeline Safety (OPS) is the specific agency within DOT assigned responsibility

Derrick/drilling rig — A steel structure mounted over the borehole to support the drill pipe and other drilling equipment

Dig Safely program — Nationwide damage prevention campaign originally developed by the DOT to raise public awareness of the one-call system and provide guidance on safe digging practices including accurately locating and marking pipelines and other underground infrastructures

Dike — A defensive confinement procedure consisting of an embankment or ridge on the ground used to control the movement of liquids, sludges, solids or other materials; Barrier which prevents passage of a hazmat

Directional drilling — A technique that enables drilling at an angle to reach a particular underground formation

Discharge pressure — Pressure of the oil in the pipeline as it exits a pump station

Distribution pipeline — Composed of several interconnected pipelines with small diameters that are used to take the products to the final consumer

Department of Energy (DOE) — A Cabinet-level federal agency created in 1977 to replace the Federal Energy Administration; The DOE manages national energy policy, nuclear power and weapons programs and the national energy research labs

Drillbit — Tool used in drilling to mechanically break up rock to penetrate the subsoil; The drillbit drills a circular hole

Drilling permit — Authorization from a regulatory agency to drill a well

E

Easement — A corridor of land on which the pipeline operator has the rights to construct, operate and maintain a pipeline and associated assets; It does not, however, convey ownership

Emergency Operations Center (EOC) — The secured site where government or facility officials exercise centralized direction and control in an emergency; The EOC serves as a resource center and coordination point for additional field assistance

Emergency response — Response to any occurrence that has or could result in a release of a hazardous substance

Emergency Response Plan (ERP) — A plan that establishes guidelines for handling hazmat incidents as required by regulations such as SARA, Title III and HAZWOPER (29 CFR 1910.120)

Emergency Shutdown System (ESD) — Manual or automatically activated emergency systems that may be found at compressor or pumping stations to stop the compressor/pump engines, isolate piping and vent piping contents in a manner that will not create an additional hazard

Emergency Valve — Valve designed to shut down the flow of product in a pipeline in the event of an emergency

Encroachment — Structures or objects such as fences, sheds, swimming pools and wildlife feeders that overlap a ROW are known as encroachments

Energy Information Administration (EIA) — An agency within the U.S. Department of Energy; EIA provides energy data, forecasts and analyses

Environmental Protection Agency (EPA) — The purpose of the EPA is to protect and enhance our environment today and for future generations to the fullest possible extent under the laws enacted by Congress; The agency's mission is to control and abate pollution in the areas of water, air, solid waste, pesticides noise and radiation

Evacuation — A public protective option which results in the removal of fixed facility personnel and the public from a threatened area to a safer location; It is typically regarded as the controlled relocation of people from an area of known danger or unacceptable risk to a safer area or one in which the risk is considered acceptable

Excavation — Any operation using non-mechanical equipment, mechanical equipment or explosives in the movement of earth, rock or other material below existing grade; This includes, but is not limited to, augering, blasting, boring, digging, ditching, dredging, drilling, driving-in, grading, plowing-in, pulling-in, ripping, scraping, trenching and tunneling

Excavator — Any person proposing to or engaging in excavation or demolition work

Exposures — Items which may be impinged upon by a hazmat release including people public and emergency responders, property, the environmental and systems disruption

F

Farm tap — A single pressure reducing station connected to a pipeline with a pressure greater than 60 psi, usually to serve an individual or a small number of customers

Federal Energy Regulatory Commission (FERC) — Independent federal agency that regulates the interstate transmission of natural gas, oil and electricity; FERC also regulates the transmission and sale of natural gas for resale in interstate commerce, the transmission of oil by pipeline in interstate commerce and approves the setting and abandonment of interstate natural gas facilities including pipelines, storage and liquefied natural gas

Flammable (explosive) range — The range of natural gas or vapor concentration (percentage by volume in air) that will burn or explode if an ignition source is present; Limiting concentrations are commonly called lower flammable (explosive) limit and the upper flammable (explosive) limit; Below the lower flammable limit, the mixture is too lean to burn; above the upper flammable limit, the mixture is too rich to burn

Flaring — The controlled and safe burning of natural gas to reduce or control the pressure and/or dispose of the product

Flash point — Minimum temperature at which a liquid gives off enough vapors to ignite and flashover, but will not continue to burn without the addition of more heat

Flow line — Pipeline used to collect hydrocarbon products from a well and deliver them to nearby gathering pipelines or storage tanks; These lines generally only travel a short distance and may contain natural gas, crude oil or other petroleum products

G

Gas processing plant — A facility which extracts liquefiable hydrocarbons or sulfur from natural gas and/or fractionates a liquid stream

Gate station — The point where natural gas from a transmission pipeline enters the distribution system; Gate stations, or city gates, perform several functions including metering and controlling pipeline flow and regulating, monitoring and reducing pipeline pressure for use in the distribution mains

Gathering — The process of collecting natural gas flowing from numerous wells and bringing it together into pooling areas where it is received into transmission pipelines

Gathering pipelines — Small pipelines, usually two to eight inches in diameter, that move natural gas or crude oil mixtures from individual wellheads and production locations to a central processing facility — often referred to as a gathering center or flow station — where natural gas, oil and water are separated and processed

Gasoline Gallon Equivalent (GGE) — the amount of alternative fuel it takes to equal the energy content of one liquid gallon of gasoline; In 1994 the U.S. National Institute of Standards and Technology or NIST defined GGE as 5.660 pounds of natural gas

Geographic Information System (GIS) — A system designed to capture, store, manipulate, analyze, manage and present geographically-referenced data

H

Hazard control zones — The designation of areas at a hazardous materials incident based upon safety and the degree of hazard, typically referred to as the hot, warm and cold zones

Hazardous material — Any substance or material in any form or quantity that poses an unreasonable risk to safety, health and property when transported in commerce

Horizontal drilling — An advanced form of directional drilling in which the lateral hole is drilled horizontally

Hot zone — Area where hazardous vapors and liquids are present; Working in a hot zone requires a special permit and personal protective equipment; Hot zones are also known as exclusion, red or restricted zones

Hydrocarbons — Compounds primarily made up of hydrogen and carbon such as propane gas, gasoline and fuel oils

Hydraulic fracturing — A proven technique that has been successfully used by the natural gas and oil industry since the 1940s; During this process, water, sand and a small amount of additives are pumped at extremely high pressures into the well-bore to fracture the formation; the sand or proppants then hold the newly created cracks open, allowing natural gas and to flow into the wellbore

I

Incident Action Plan (IAP) — The strategic goals, tactical objectives and support requirements for an incident

Incident Command System (ICS) — An organized system of roles, responsibilities and standard operating procedures used to manage and direct emergency operations

Incident Commander (IC) — The individual responsible for establishing and managing the overall incident action plan, which includes developing an effective organizational structure, incident strategy and tactical action plan, allocating resources, making appropriate assignments, managing information and continually attempting to achieve basic command goals; The IC is in charge of the incident site and may also be referred to as the on-scene incident commander

Incident Command Post (ICP) — The on-scene location where the incident commander develops goals and objectives, communicates with subordinates and coordinates activities between various agencies and organizations

In-line inspection tools (ILI) — Cylinder shaped plugs of roughly the same diameter of a pipeline that are used to inspect and locate anomalies in the pipeline wall before they can progress to the point of causing a leak

Internal corrosion control — Injects chemicals into a pipeline that are used to reduce general corrosion and prevent harmful bacteria from corroding pipelines with water present; All pipelines are monitored and tested regularly to ensure effectiveness

J

Joint Information Center (JIC) — Single location where public information officers from different agencies work together to provide information to the public

L

Landman — The individual in a natural gas and oil company or agent who negotiates natural gas and oil leases with mineral owners, cures title defects and negotiates with other companies on agreements concerning the lease

Line locator — A trained person who is qualified to operate the equipment used to locate buried facilities prior to ground disturbance activities

Liquefied natural gas (LNG) — Natural gas that has been cooled into a liquid state so that it takes up only one-six hundredth of the volume of natural gas

Liquefied petroleum gas (LPG) — Propane, butane or propane-butane mixtures derived from crude oil refining or natural gas fractionation; for convenience of transportation these gases are liquefied through pressurization

Local distribution company (LDC) — Typically transports natural gas from delivery points located on interstate and intrastate pipelines to households and businesses through thousands of miles of small-diameter distribution pipe

M

Main distribution valves — Valves on a natural gas distribution system normally located in the street that control large sections of the main gas grid

Main line valve (MLV) — Installed along the natural gas transmission pipeline system to help isolate or control the flow of natural gas; Also know as gate settings, these are generally installed approximately every 10 to 20 miles along the pipeline and used to isolate a particular section of the pipeline

Manifold — An arrangement of connected piping and valves used to provide links between a number of pumps, tanks and/or pipelines

Manual block valve — Block valves that are operated manually

Maximum Allowable Operating Pressure (MAOP) — A rating indicating the maximum pressure at which a natural gas pipeline or segment of a pipeline may be operated under DOT regulations (49 CFR Part 192) during normal operating conditions; similar to MOP for hazardous liquid pipelines

Maximum Operating Pressure (MOP) — A rating indicating the maximum pressure at which a hazardous liquid pipeline or segment of a pipeline may be operated under DOT regulations (49 CFR Part 195) during normal operating conditions; similar to MAOP for natural gas pipelines

Meter — A commonly used term for instruments used to monitor and detect the presence and/or concentration of contaminants within an environment

Mineral interest — An ownership of the minerals beneath a tract of land; if the surface ownership and the mineral ownership are different, the minerals are said to be severed

N

National Incident Management System (NIMS) — A standardized systems approach to incident management that consists of five major subdivisions that provide a total systems approach to all-risk incident management

National Pipeline Mapping System (NPMS) — Public map viewer of natural gas pipelines and storage facilities in the U.S.

National Transportation Safety Board (NTSB) — Independent federal agency responsible for investigating serious accidents and emergencies involving various modes of transportation (highway, pipeline, rail or air), as well as hazardous materials

Natural gas — A naturally occurring mixture of hydrocarbon and non-hydrocarbon gases found in porous rock formations; Its principal component is methane

Natural gas liquids (NGL) — A general term for liquid products separated from natural gas in a gas processing plant; These include propane, butane, ethane and natural gasoline

Natural Gas Vehicle (NGV) — An alternative fuel vehicle that uses compressed natural gas (CNG) or liquefied natural gas (LNG) as a clean alternative to other fuels

Non-Compliant Ticket — One Calls received with less than the required notice by state law are considered non-compliant requests

O

Office of Pipeline Safety (OPS) — DOT agency responsible for the establishment of rules and regulations governing the design, construction and operation of pipelines in the U.S.

One-call systems — Notification centers used by anyone preparing to conduct excavation activities; One-call systems alert the appropriate entities of planned activities, allowing them to mark any and all facilities in the area before work begins

One hundred cubic feet (CCF) — One CCF is one hundred cubic feet of natural gas at a standard distribution pressure of 14.73 pounds per square inch and 60 Fahrenheit

Operator — The party responsible for pipeline operations and maintenance

P

Permeability — A measure of the resistance offered by rock to the movement of fluids through it

Petroleum — crude oil

Pig — A device placed inside a pipeline and moved through by the product flow that is used to clean or scrape residues from the inner wall; See also smart pig and pig traps

Pig trap — A type of pipeline equipment used to launch and receive pigs and smart pigs; Also called pig launchers and pig receivers

Pipeline — A string of interconnected pipe providing a route for natural gas or oil to travel from the wellhead to market

Pipeline Control Room — The central communications and operations center for the pipeline operator

Pipeline and Hazardous Materials Safety Administration (PHMSA) — An agency within the U.S. Department of Transportation (DOT), which regulates all pipeline transportation in or affecting interstate or foreign commerce, including pipeline facilities on the Outer Continental Shelf

Plug — A permanent plug, usually cement, set in a borehole to block the flow of fluids to isolate sections of the well or permanently plug a dry hole or depleted well

Pooling — A term frequently used interchangeably with unitization, which refers to the combining of small or irregular tracts into a unit large enough to meet state spacing regulations for drilling permits; Unitization describes the combined operations of all or some portion of a producing reservoir

Porosity — The open space within a rock, similar to pores in a sponge

Pressure relief valve — A valve designed to open automatically to relieve and maintain pressure below a specified level

Pressure spike — A sudden, brief rise in pressure

Pressure surge — A pressure spike produced by a sudden change in velocity of the moving stream that results from shutting down a pump station or pumping unit, closure of a valve or any other blockage of the moving stream; Pressure surges move through the pipeline at sonic velocity and stop and reverse direction when they hit a closure in the pipeline such as a closed valve

Products — Refined hydrocarbons made from crude oil including gasoline, fuel oil and jet and diesel fuel

Processing — The separation of oil, natural gas and natural gas liquids and the removal of impurities

Proved reserves — The quantity of natural gas and oil estimated to be recoverable from known fields under existing economic and operating conditions determined on the basis of drilling results, production and historical trends

Public awareness — Programs that provide safety information to stakeholders to help keep communities near pipelines safe

Pump station — Pipeline facilities with compressors that are used to boost the pressure on liquid pipelines that is lost as a result of friction loss

R

Refined products — Liquid petroleum products produced through the refining process including gasoline, aviation gasoline, jet fuels and distillates such as home heating and diesel fuels

Regulator stations — Monitor and control the gas pressure for major sections of the natural gas distribution system

Remote block valve — A block valve that can be remotely controlled from a pipeline control center for the primary purpose of directing pipeline flow and isolating the pipeline into segments in the event of a pipeline break

Reservoir — Porous, permeable rock containing natural gas and oil enclosed or surrounded by layers of less permeable or impervious rock

Rights-of-way (ROW) — A strip of land usually 25 to 150 feet wide containing one or more pipelines or other subsurface utilities, on which the pipeline operator has the rights to construct, operate and maintain a pipeline

Royalty — The share of production or proceeds reserved to a mineral owner under the terms of a mineral lease, usually expressed as a fraction of production

S

Seismic — A tool for identifying underground accumulations of natural gas or oil by sending and measuring the return of energy or sound waves to map sedimentary structures

Shale — Unusually nonporous rock requiring special drilling and completion techniques to retrieve natural gas and oil reserves

Shutin well — A well that is producing or capable of producing, but is not produced; reasons for wells being shutin may be lack of pipeline access to market or unfavorable market prices

Smart pig — An electronic inspection device placed inside the pipeline to provide data about its condition such as dents or corrosion

Sound blanket — A sound blanket or a wall sometimes erected to reduce the noise from a drilling rig

Sour crude — Crude oil with a high concentration of hydrogen sulfide (H_2S)

Spacing — The distance between wells allowed by a regulatory body based on what is deemed to be the amount of acreage that can be efficiently and economically drained by a well

Spud — The commencement of drilling operations

Stakeholder — A person, group or organization who can be affected by a natural gas or petroleum product pipeline system; The four main stakeholder groups for a pipeline public awareness program include the affected public, emergency responders, excavators and public officials

Standard cubic feet (SCF) — The volume of natural gas contained in one cubic foot of space at a pressure of 14.65 pounds per square inch and a temperature of 60 Fahrenheit

Station block valve — A gate valve installed at the inlet (suction) side and the outlet (discharge) side of the pump station to isolate it from the pipeline in the event of an emergency

Suction pressure — The pressure of oil in a pipeline as it enters a pump station

Supervisory Control and Data Acquisition System (SCADA) — A comprehensive electronic surveillance system used to monitor and control an entire pipeline system and its operations from a pipeline control center; The data typically includes the pressures, volume and flow rate of each pipeline and the operating status of all pumping equipment and remotely operated valves on each pipeline

Sweet crude — Crude oil with a low concentration of hydrogen sulfide (H_2S)

T

Tank battery — Tank batteries are part of the production equipment installed after a well is completed that store saltwater or other liquids that are returned from a producing well

Transmission pipelines —

- **Liquids** — Pipelines are used to move refined liquid products from refineries to marketing and distribution terminals where the products are then loaded onto cargo tank trucks for delivery to the consumer; Pipeline sizes vary from eight to 42 inches in diameter
- **Natural Gas** — Large cross-country pipelines that are used to move natural gas from production and processing facilities to distribution companies and large volume customers; Pipelines range from 20 to 42 inches diameter with pressures from 300 to 1,500 pounds per square inch

Trunk lines — Large crude oil pipelines, usually eight to 24 inches in diameter, that bring crude oil from gathering centers, oil producing areas and ports throughout North America to refineries

U

Unconventional resource — Any area, such as shales, tight sands or fractured carbonates, where natural gas or oil cannot be drilled and extracted vertically

Unified Command (UC) — The process of determining overall incident strategies and tactical objectives by having all agencies, organizations or individuals who have jurisdictional responsibility, and in some cases those who have functional responsibility participate in the decision making process

Unified commanders — Command level representatives from each of the primary responding agencies who represent their agency's interests as a member of the unified command team

V

Valve — Pipeline valves allow the operator to isolate any segment of the pipeline for maintenance work or to contain a rupture or leak

W

Warm zone — The area where personnel and equipment decontamination and hot zone support takes place; Also referred to as the decontamination, yellow, support or limited access zone

Wellbore — Include the open hole or uncased portion of the well; Borehole may refer to the inside diameter of the wellbore wall, which is the rock face that bounds the drilled hole

Wellhead — The control equipment fitted to the top of the well that consists of outlets, valves, blowout prevention equipment, etc.

Working interest — The right granted to the lessee of a property to explore for and produce natural gas, oil or other minerals; The working interest owners bear the exploration, development and operating costs

Notes

SURVEY

Public Safety Survey

Please take a few moments to complete the following survey questions. Your participation allows us to measure your overall understanding of pipeline safety and helps us continuously improve our communication.

1. Are you familiar with your state's One-Call, or Call Before You Dig, system, which is a resource for locating and marking underground utilities prior to digging?

   Yes No

2. Have you ever used your state's One-Call system?

   Yes No

3. Do you know how to recognize a pipeline location or right-of-way (ROW)?

   Yes No

4. Would you know what to do if you witnessed someone acting suspiciously around a pipeline or pipeline facility?

   Yes No

5. Do you know how to recognize and react to a pipeline incident (evacuate, stay up wind, call 9-1-1, call pipeline operator, etc.)?

   Yes No

Name _____

Title _____

Organization _____

Phone Number _____

Email Address _____

**We respect your privacy and will not sell or share your information with any outside party.*

Notes

Uniform Color Code

For Temporary Underground Utility Marking

- Proposed Excavation
- Temporary Survey
- Electric
- Gas, Oil, Steam or Petroleum
- Communication
- Potable Water
- Reclaimed Water or Irrigation
- Sewer and Drain Lines

(Remove this page and keep with you for quick reference.)

Notes

Notes

Williams®

811 Know what's below. Call before you dig.

P.O. Box 18355
Oklahoma City, Ok 73154
Williams.com/Safety

In the event of a Williams Access OA pipeline emergency call 9-1-1 and 855-427-2875 from a safe location.

For more information about pipeline safety or to request additional information or training, contact **PublicAwareness@Williams.com** or **855-255-2406**.

Local Contacts

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