

Barton Springs Edwards Aquifer Authority Conservation District

Follow up questions | March 28, 2019

Pre-construction/Design

- Revised easement agreement indicating only natural gas transport.
- Corrosion protection plan.
- Karst survey report.
- Biological assessment.
- Cultural resource studies that include springs like Jacob's well or other sensitive karst features.

Questions

1. Will a surface geophysical survey be done in conjunction with the karst survey?

Yes, this survey started on 3/21/19.

2. What is the chemical composition of the natural gas to be transported? What toxic constituents will be present and what is their typical concentration in the gas to be transported?

The chemical composition may vary slightly depending on the individual source. However, PHP has a gas quality specification that every customer must meet in order to deliver gas to the pipeline.

3. What is the chemical composition of the condensate? What toxic constituents will be present and what is their typical concentration in the gas to be transported?

PHP's gas quality specifications require the cricondenthem dew point temperature of the gas stream to be normally less than 20 deg F, but in no event more than 40 deg F, and in either of those circumstances, Kinder Morgan does not expect any condensate to form in this pipeline.

4. Will K-M notify the BSEACD when karst features are encountered during construction and be allowed access to significant features that are found?

We are developing an Unanticipated Discovery and Void Response Plan with Cambrian and SWCA to address any karst features found during construction. Kinder Morgan can share information regarding significant Karst features. Access to individual features may be considered on a case-by-case basis at the time of discovery, and will be dependent on the ability to safely access the site during construction activities.

5. Will K-M be willing to enter into an agreement with GCD's, Counties, and Cities to formally document with these entities the prohibition of liquid products in the pipeline and agree to certain construction and operations methods that protect the aquifer and water supply?

Kinder Morgan is open to entering into an agreement with GCD's, Counties and Cities to formally document that this pipeline will transport natural gas. This would be consistent with our easement agreement language with landowners.

Construction

- Void mitigation plan
- Restoration and revegetation plan
- Erosion control and revegetation plan
- Stormwater Pollution Prevention Plan
- Aquifer protection plan be developed - plan should be based on the TCEQ Edwards Rules (Texas Water Code, §26.046).

Questions

6. What are the specific sedimentation controls? What type of sedimentation controls are required in Pennsylvania? How is this different in Texas?

The Project will follow guidance provided by the USACE Nationwide Permit 12 – the Nationwide Permit General Conditions and Regional Conditions for the State of Texas. In addition, Cambrian will provide a mitigation procedure that will address sedimentation controls around any known or unanticipated voids.

7. Who will inspect erosion controls and how often?

We will have a team of Craft and Environmental Inspectors that will be present on the right-of-way. The inspection team will inspect erosion control daily in active construction areas, as well as after large rain events in areas without active construction.

8. Where is the concrete cap located in the trench? Does the concrete cap hinder the natural gas escaping to atmosphere during a leak?

We are not installing concrete caps in the trench.

9. What is the size of the disturbed area before it is revegetated? Typically, how long does the soil remain exposed from the start of disturbance to revegetation?

For this project, we are seeking a 50-foot easement. During construction we plan to use up to an additional 75-feet of temporary workspace. We will begin the restoration process of these areas immediately after the pipeline is installed.

10. The Mopac project is 2 miles long and has encountered over 40 voids during excavation. These voids slow down project construction as it takes time to evaluate the void to determine proper mitigation. How will K-M respond to unknown voids found during construction?

We will have an Unanticipated Discovery and Void Response Plan that Cambrian and SWCA will put together to address this.

Operations

- Spill Response plan – request plans that address spills that occur during construction and leaks that occur after the pipeline is in operation.
- Pipeline management plan (K-M Standard Integrity Management Program)

Questions

11. What is the estimated volume of condensate that can be found in the pipeline or compressor stations at any one time?

PHP's gas quality specifications require the cricondenthem dew point temperature of the gas stream to be normally less than 20 deg F, but in no event more than 40 deg F, and in either of those circumstances, Kinder Morgan does not expect any condensate to form in this pipeline.

12. If a compressor station fails to remove the liquids, what is the volume of liquid in the pipeline?

Kinder Morgan does not expect any condensate to form in this pipeline.

13. What is the volume of condensate that could escape from the pipe?

Kinder Morgan does not expect any condensate to form in this pipeline.

14. It was stated at the presentation that the condensate occurs at when the temperature changes. Will additional condensate liquids be generated at leak locations when the gas rises from the underground pipeline to the surface? How does the volume of the condensate increase from micro leaks to larger leaks?

Any volume of condensate that may form from a temperature drop associated with a leak would be very small. In addition, any condensates which may temporarily form would vaporize and dissipate quickly due to the atmospheric temperature outside the pipeline.

15. At the presentation, it was stated K-M detects leaks through pressure changes in the pipeline. How are micro leaks detected?

We monitor our pipelines 24 hours a day, seven days a week and 365 days a year using a Supervisory Control and Data Acquisition (SCADA) computer system.

These specialized communication systems allow us to monitor and control equipment on the gas pipelines we operate. SCADA systems transmit operating status, flow volumes, and pressure/temperature information including safety alarms from compressor stations, measurement stations, key pipeline valves and other equipment to centralized, manned control facilities. Kinder Morgan uses state-of-the-art communication systems that include cellular, satellite, microwave, radio and traditional telephone lines to reliably transmit this information to and from the control center, and provide real time monitoring and control of the vast Kinder Morgan pipeline network. Whenever operating conditions change, an alarm alerts the operator on duty, and the condition is investigated and corrected.

We employ internal inspections using sophisticated, computerized inline inspection equipment (aka "smart pigs"), close interval surveys and cathodic protection to protect pipelines from external corrosion.

"Smart pigs" are inserted into the pipeline at a valve. They then are pushed along by the products through the pipe measuring and recording any irregularities that may represent or presage corrosion, cracks, laminations, deformations or other defects that could turn into problems. There are three basic types of smart pigs. One uses mechanical arms or other electro-mechanical means to measure the bore of the pipe. These geometry tools can identify a variety of deformations and can sense changes in girth welds and wall thickness. Two other types utilize ultrasonic testing, either via compression waves or shear waves, and magnetic flux leakage (MFL) with the magnetic field oriented either axially or circumferentially.

For new pipeline systems, and occasionally on existing lines, we also use hydrostatic pressure testing to perform strength and leak tests. This process is performed before putting the pipeline into service, or after taking an existing pipeline out of service, filling it with water, raising the internal pressure of the pipe to a designated level well above its allowed "in-service pressure," and holding the pipe at or above that level for a prescribed period of time.

16. If a leak from corrosion is along the bottom of the pipeline, the leak will be roughly 7 or 8 feet below the surface. As the gas travels out of the trench, will it be likely to enter voids along the trench walls? Why or why not?

The PHP Project will transport natural gas, which is lighter than air (meaning it rises) and does not sink into the ground or water table. In the extremely unlikely event of a leak, the gas will not remain on the ground or impact the aquifer.

17. Will herbicides be used for maintenance of the easement?

Following construction, Kinder Morgan restores the right-of-way in accordance with applicable rules and regulations, including seeding and fertilizing to the property to landowner specifications.

18. If there were an explosive incident, what would be the damage to the karst structure that is the water supply?

Damage to nearby features would be highly dependent on the circumstances of the incident. However, an incident involving a natural gas pipeline is not expected to impact water quality or supplies.