



Permian Highway Pipeline Project

**Barton Springs Edwards Aquifer
Conservation District Meeting**

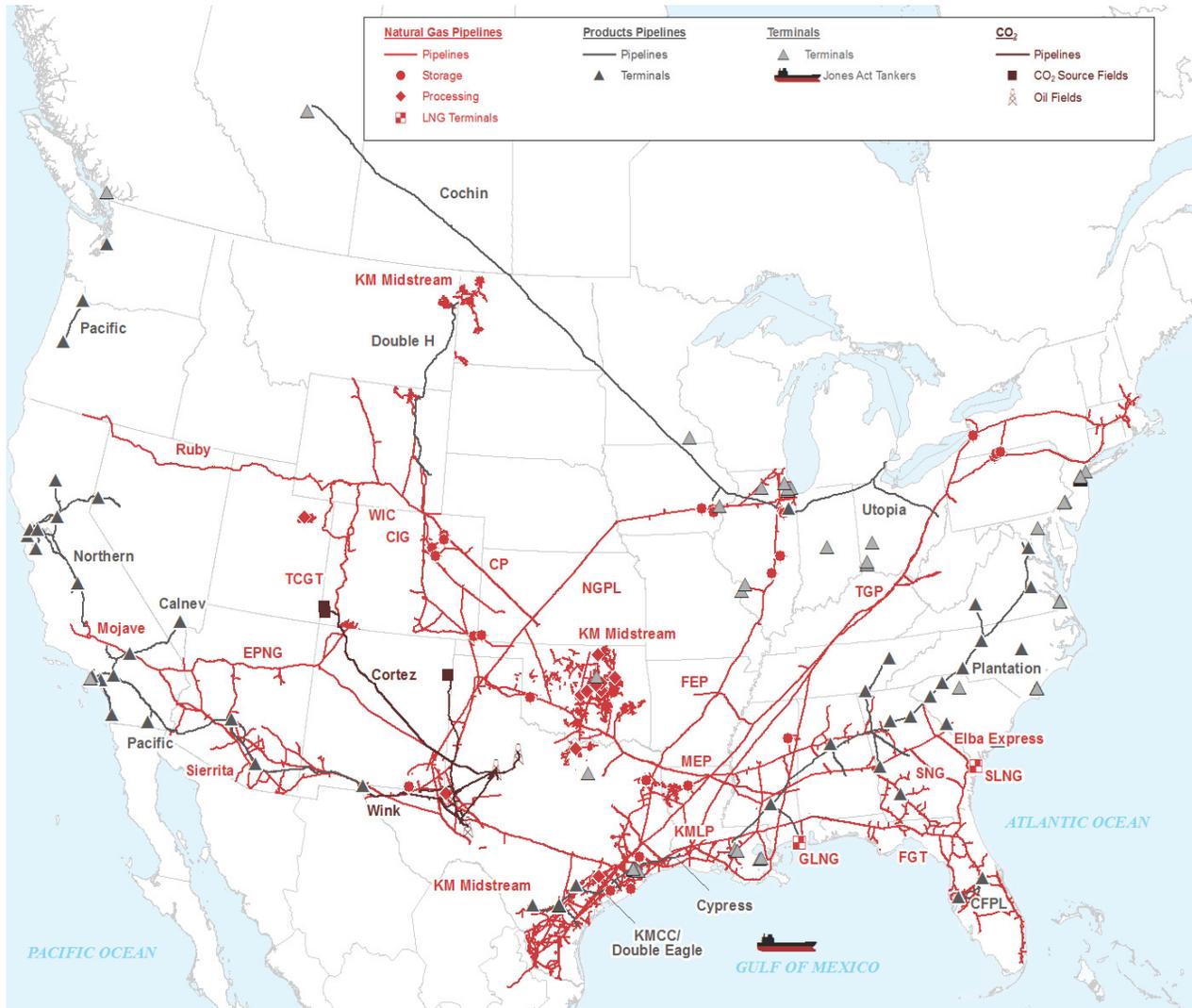
March 14, 2019



A. Introduction

Kinder Morgan Overview

- Kinder Morgan is one of the largest energy infrastructure companies in North America.
 - **Over 84,000 miles** of pipelines and **157 terminals**.
 - **Over 11,000 employees** in U.S. and Canada.
- Kinder Morgan is the largest **natural gas** transporter and storage operator in the United States.
 - **Approximately 70,000 miles** of pipelines.
 - We transport nearly **40%** of the natural gas consumed in the United States.



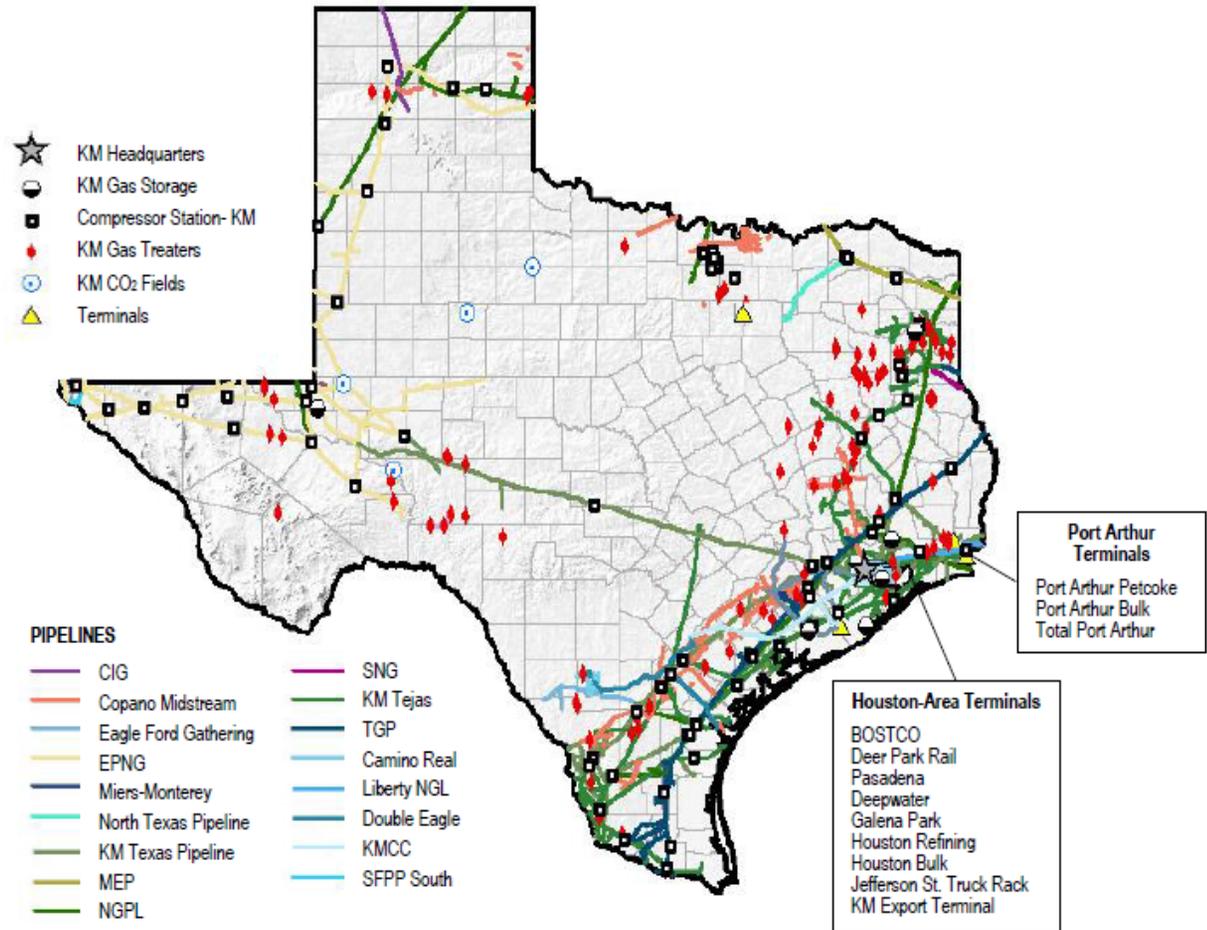
Kinder Morgan in Texas

Economic Impact:

- Kinder Morgan **employs over 4,970 people** in Texas.
- Kinder Morgan paid approximately \$122 million to state and local taxing bodies in 2017.

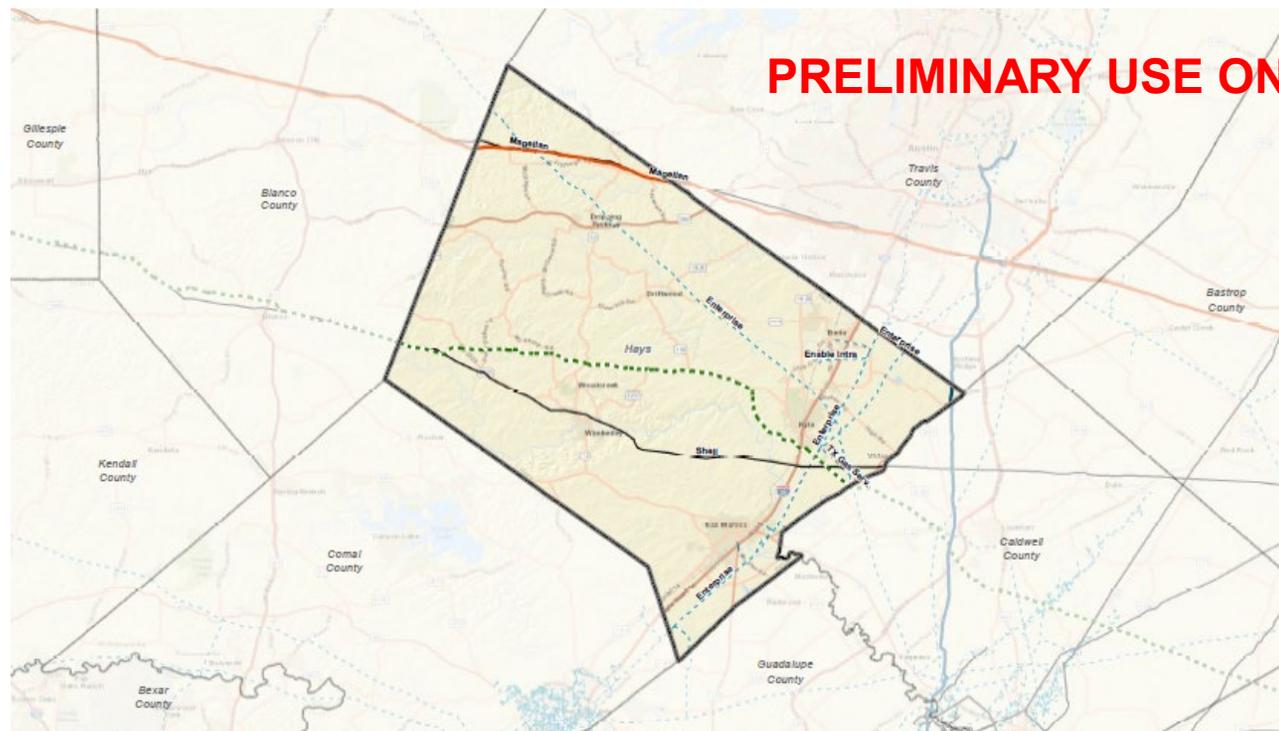
Kinder Morgan Assets in Texas:

- Kinder Morgan operates approximately **26,000 miles** of natural gas, CO2, crude and refined products pipelines and **15 terminals** handling both liquid and bulk goods.



Kinder Morgan in Hays County

- We operate **approximately 12.4 miles** of the **Kinder Morgan Texas Pipeline (KMTP)** system in Hays County.
 - KMTP is a 24 inch-diameter gas pipeline that has been in operation since the 1950's.
- We jointly own **approximately 1.2 miles** of the **Kinder Morgan Tejas Pipeline** system in Hays County.



KINDER MORGAN
Pipeline Map - Hays County, TX
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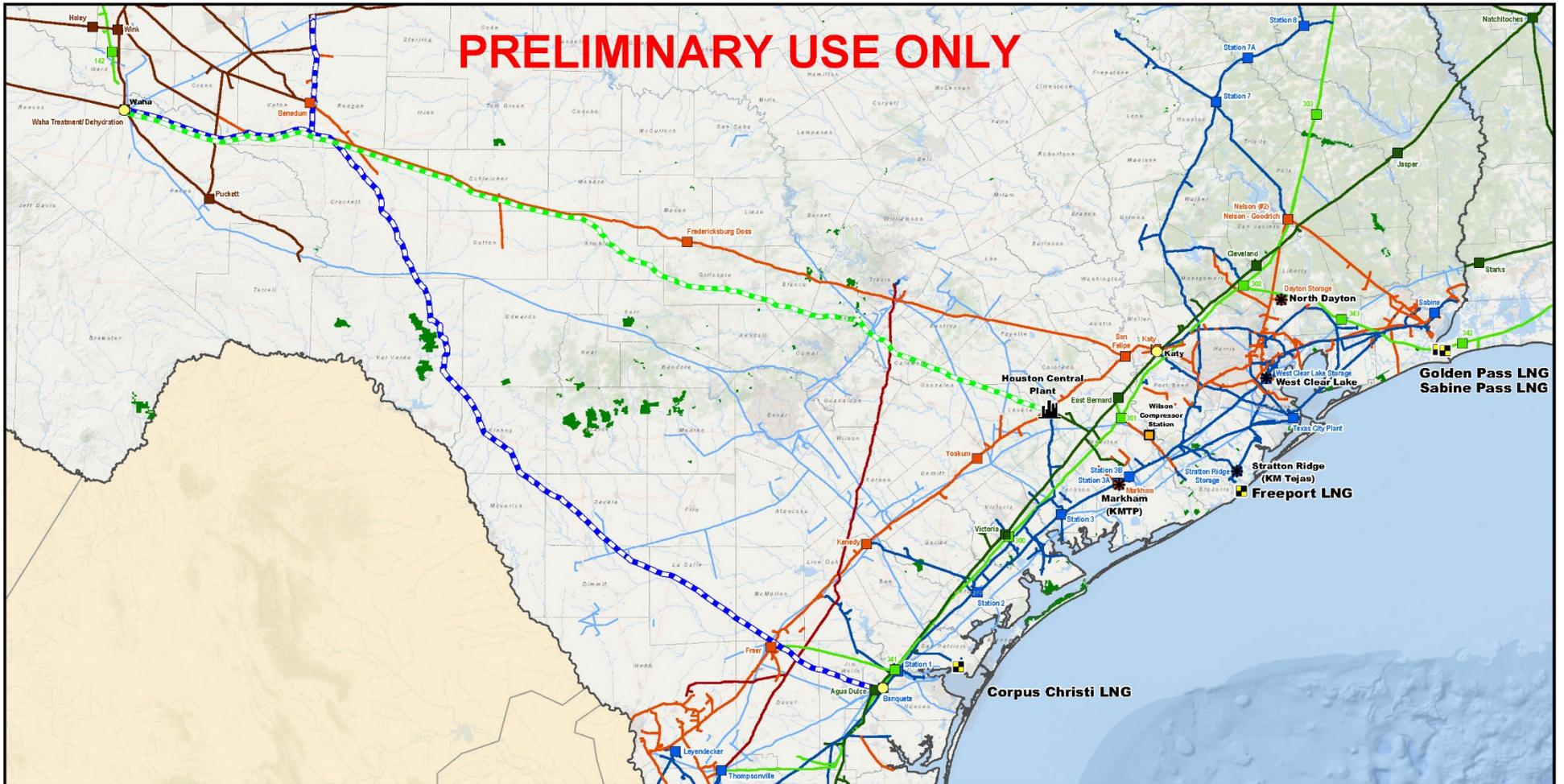


Kinder Morgan Pipeline
— KMTP
— TEJAS
- - - Permian Highway Pipeline
— Crude Pipeline
- - - 3rd Party Natural Gas Pipeline

B. The Permian Highway Pipeline Project

PHP Project Map

PRELIMINARY USE ONLY



Legend		Third Party Pipelines	
	Hub		Enterprise Pipeline - Natural Gas
	KM Plants		Preliminary Routes
	EPNG Compressor Station		Gulf Coast Express Pipeline (+4447 MI.)
	KM Texas Compressor Station		Permian Highway Pipeline (PHP) (+/- 424 MI.)
	NGPL Compressor Station		National Conservation Easement Database
	TGP Compressor Station		TX NCED
	KM Tejas Compressor Station		
	LNG Facility		
	Gas Storage		
	KM Existing Pipelines		
	EPNG		
	HPL / KM JV		
	TEJAS		
	KMTP		
	NGPL		
	TGP		

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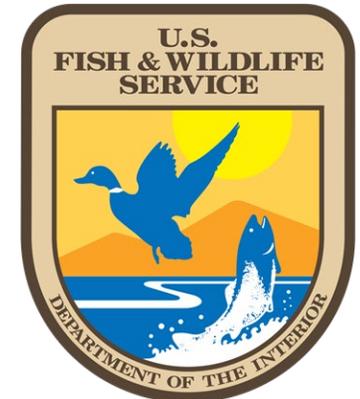
PERMIAN HIGHWAY PROJECT
OVERALL MAP

The Permian Highway Pipeline (PHP) Project is designed to transport up to 2.1 billion cubic feet per day (Bcf/d) of natural gas through approximately 430 miles of 42-inch pipeline from the Waha, Texas, area to the U.S. Gulf Coast and Mexico markets. Kinder Morgan Texas Pipeline (KMTP) will build and operate the pipeline.

- **Location:** The Project will cross 16 counties within the state of Texas (from west to east): Reeves, Pecos, Crane, Upton, Reagan, Crockett, Schleicher, Menard, Kimble, Gillespie, Blanco, Hays, Caldwell, Gonzales, Lavaca and Colorado.
- **Cost:** The estimated project construction cost is approximately \$2 billion.
- **Customers:** Long-term firm transportation agreements with shippers have already been completed for the Project's original capacity of 2.0 Bcf/d. The approximately 0.1 Bcf/d of expansion capacity is currently being marketed. Shippers that have committed to the project include EagleClaw, Apache Corporation (Apache) and XTO Energy Inc., a subsidiary of Exxon Mobil Corporation, amongst others.

PHP Project Overview (cont...)

- **Project Regulatory Oversight:** A number of federal and state agencies will be involved with the approval and oversight of the PHP Project, including, but not limited to, the Railroad Commission of Texas, U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, Texas Historical Commission, Texas Commission on Environmental Quality, Texas General Land Office and Native American tribes as applicable.
- **Product:** The Project is being developed to transport dry pipeline quality natural gas. Multiple shippers have signed long-term, binding contracts strictly for natural gas transmission.
 - Written contract with landowners that states only natural gas will be shipped through the PHP Project.



**US Army Corps
of Engineers®**



PHP Project Overview (cont...)

- Project Schedule:

Stakeholder Outreach	Ongoing
Civil & Environmental Surveys	Sept. 2018 - June 2019
Targeted Construction Start Date	Fall 2019
Proposed In-Service Date	Fourth Quarter 2020



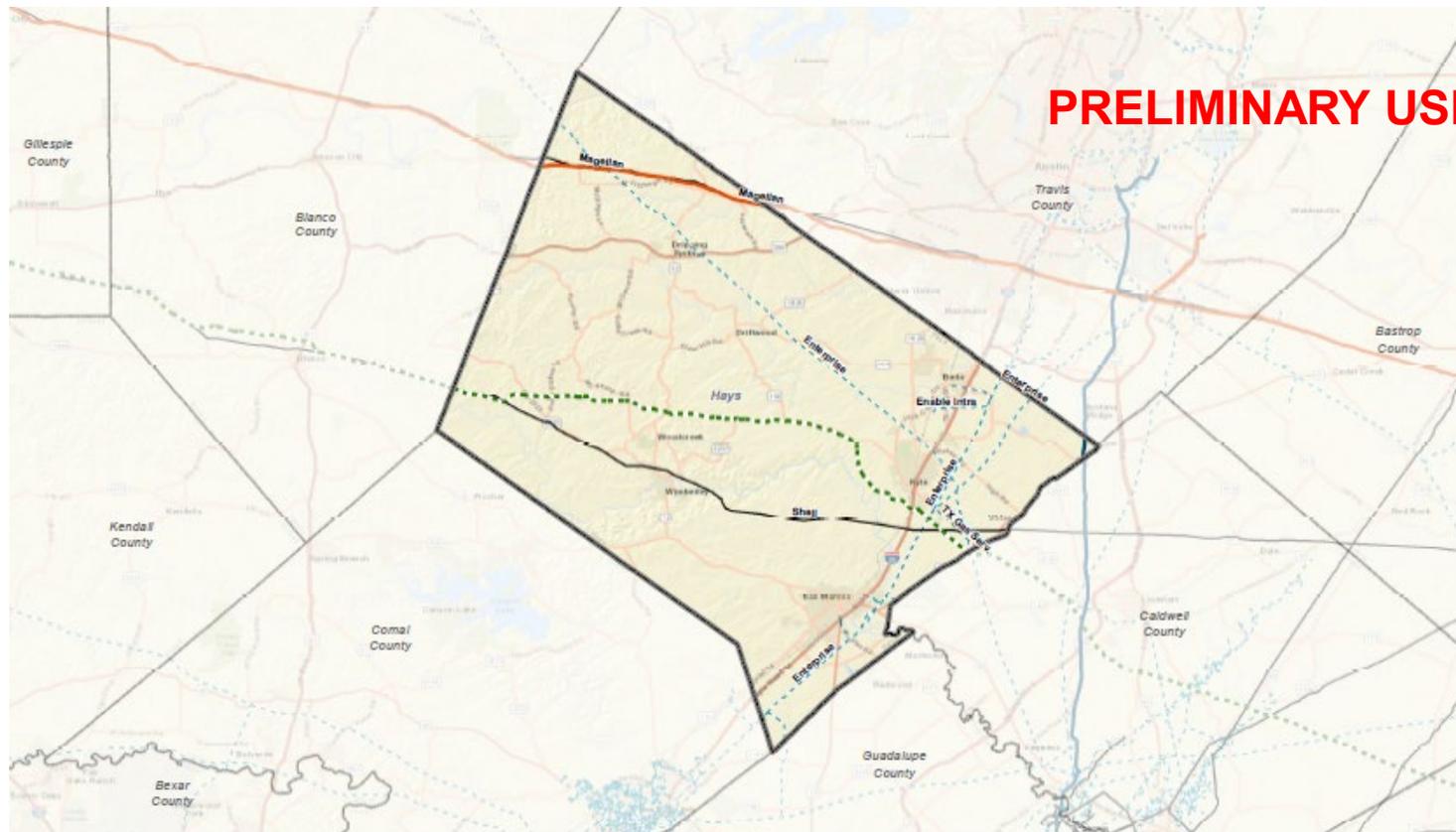
Existing KM pipeline in Hays County



Existing KM pipeline in Blanco County

PHP Project in Hays County

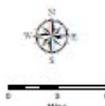
- The PHP Project proposes installation of approx. **31.5 miles** of new 42"-diameter pipe in Hays County.
- The proposed PHP route in Hays County crosses approximately **67 tracts** of property.



KINDER MORGAN

Pipeline Map - Hays County, TX

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Kinder Morgan Pipelines

— KMTF

— TEJAS

--- Permian Highway Pipeline

— Crude Pipeline

--- 3rd Party Natural Gas Pipeline

PHP Project Benefits

- **Jobs:** The PHP Project will directly generate an estimated **2,500 construction jobs** and 18 full-time positions following the project's completion.
- **Environmental Benefits:** The Project will provide **an outlet for excess natural gas** in the Permian Basin. Currently ~400 million cubic feet per day of natural gas is flared in the Permian as a result of a lack of pipeline capacity. The PHP project will provide 2.1 billion cubic feet per day of natural gas takeaway capacity to the Permian, thereby reducing flaring and associated CO₂ and methane emissions.
- **Tax Revenue:** When complete, the new facilities constructed as part of the Project will generate **approximately \$42 million in increased annual tax revenue** to state and local taxing bodies.
- **Strengthening the Economy: PHP is an approximately \$2 billion investment in Texas.** The Texas oil and gas industry paid ~\$14 Billion in state and local taxes and state royalties- the equivalent of \$38 million a day- to fund schools, roads, universities and first responders throughout Texas.

C. Environmental Protection

- **Product:** The PHP Project will ONLY be transporting 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 would rise into the atmosphere.

- **Geological Assessments:**
 - PHP is working with SWCA and Cambrian Environmental to perform a geological assessment for the PHP project. This assessment includes a thorough desktop analysis of the entire project.
 - This analysis will be followed by “on the ground” karst surveys of the Edwards Aquifer Karst, Trinity Aquifer Karst, and Edwards / Trinity Plateau Karst. Surveys generally conform to the “Instructions to Geologists for Geologic Assessments on the Edwards Aquifer Recharge/Transition Zones” as written by the Texas Commission on Environmental Quality (TCEQ).
 - Kinder Morgan is working with Cambrian Environmental in locating major subsurface features that may directly influence groundwater, and we are developing a response and mitigation plan for construction activities in these areas. Kinder Morgan will work closely with local groundwater districts in the region on the implementation of this plan.

Environmental Overview (cont...)

- **USACE Permits:** Kinder Morgan is required to obtain permits from the U.S. Army Corps of Engineers (USACE), which requires environmental assessments.
 - For the USACE permit for crossing Waters of the U.S. (WOTUS), the applicant (Kinder Morgan) must, in the words of the USACE, *“demonstrate that all appropriate and practicable steps have been taken to avoid and minimize impacts to aquatic resources.”*
- **USFWS and USACE Permits:** As a component of the USACE/USFWS permitting process, Kinder Morgan will submit a Biological Assessment (BA) that will assess the impacts to all listed species potentially found along the pipeline route. This BA will be filed with both the USFWS and the USACE. The USFWS will then respond to the BA with a Biological Opinion (BO) as to the effect the project will have on each species. The USACE will use the BO during the permitting process.
- **Ongoing Communications:** Kinder Morgan has held, and continues to be in close communication, with groundwater districts and advocacy groups, including the Edwards Aquifer Authority and Barton Springs Edwards Aquifer Conservation District regarding the project.

Environmental Consideration (1 of 5)

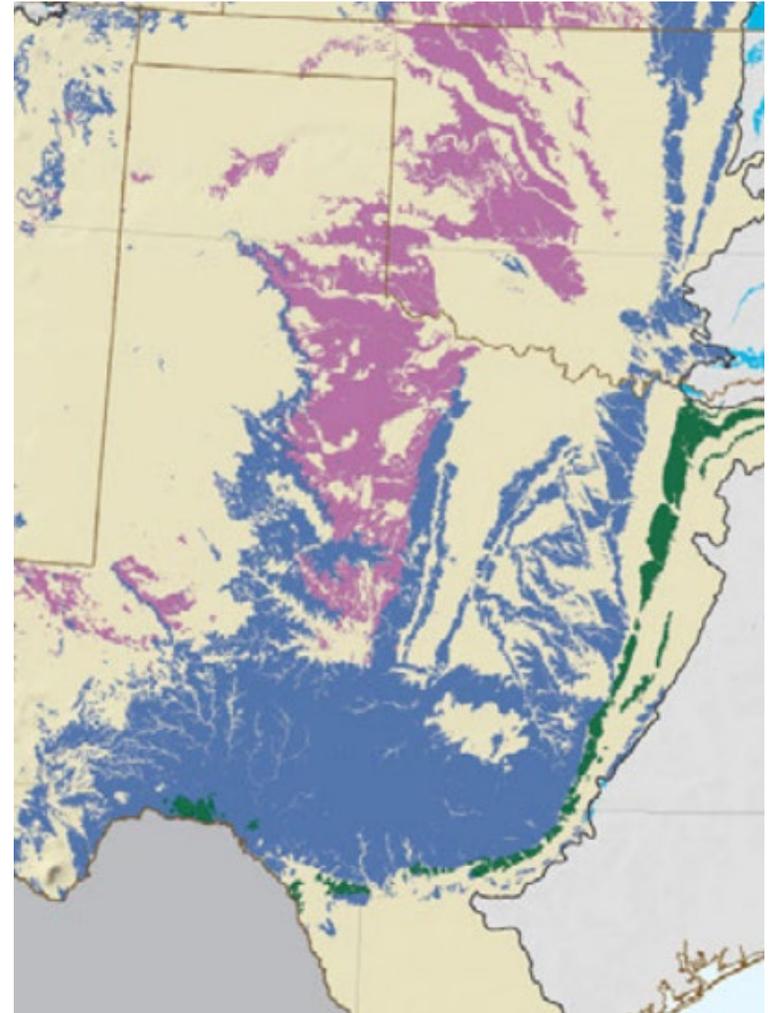
Corrosion & Cathodic Protection:

- KM is developing a comprehensive corrosion prevention plan to protect the integrity of the pipeline for the lifetime of the asset.
- PHP is currently completing a study to determine the cathodic protection system that is required for the new pipeline.
- Typically, ground beds and test stations will be installed with the new pipeline or soon after it is placed in-service. The types of the anodes selected are based on ground conditions and if there are concerns regarding a deep anode bed being installed we would certainly take that under consideration.
- Additional testing of the cathodic protection system occurs over the lifetime of the pipeline to determine if any supplemental measures are required.

Environmental Consideration (2 of 5)

Karst Geography:

- PHP is working daily with a karst expert to identify features along the route and within close proximity to the centerline.
- PHP will be developing a void response and mitigation plan to avoid and/or minimize features crossed and/or those encountered unexpectedly during construction.
- PHP is well staffed with experts and consultants to determine and ensure planned construction methods avoid harmful impact to karst features.
- KM is preparing a biological assessment (BA) for the U.S. Fish & Wildlife Services.



Stormwater Runoff During Construction

- PHP will install soil erosion and sediment controls (BMPs or E&S measures) to control the migration of sediment from the construction right-of-way. These BMPs will use industry standards that have proven effective for projects of this nature. In addition, PHP will have experienced environmental inspectors to ensure the BMPs are installed and maintained properly.
- KM will limit the exposure of open trench, where necessary. The trench will be open at minimum for two – six weeks.
- PHP will use mechanical means to backfill the trench with native soil. If rock is encountered, it would then require padding to be placed in the ditch prior to placing the remaining native soil.



Environmental Consideration (4 of 5)

Construction Oversight:

- The PHP project will be transporting dry “pipeline-grade” natural gas (ie: methane). This means the gas is treated prior to receipt into PHP.
- As typical, PHP will have filter/separators at each compressor station that would capture any free liquids that have dropped out of the gas during transportation. Liquids filtered from the pipeline at the compressor stations and meter stations are transported to offsite facilities in accordance with state regulations. We expect a very minimal amount of liquids to be collected due to this being pipeline quality gas.
- During the construction process, KM and its contractors will be required to maintain adequate spill control measures in the event of a localized spill (such as from trucks or equipment, etc.).

Groundwater Monitoring:

- KM will not install groundwater monitoring wells.
- There will be no impact to local groundwater wells, as there is no contaminate source from the project or ongoing pipeline operation; therefore, groundwater monitoring wells are not needed. Further, during construction, the contractor will be required to maintain adequate spill controls and cleanup material to handle localized spills that occur as a result of equipment breakdown.

Pipeline Management Plan

- As stated in previous discussions with the District and other Districts, due to the high pressure of the pipeline, the pipeline is considered a regulated facility under DOT PHMSA 49 CFR 192 and follows guidelines set forth by this regulatory authority. The engineers and the well qualified consultants are in the process of preparing the hydrostatic pressure test plans.
- Once the pipeline is placed in service, the pipeline enters into the KM standard integrity management program which would ensure the integrity of the pipeline is maintained.



Permian Highway Pipeline Project

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