Mariner East Timeline

- PA DEP Chapters 102 & 105 permits received - February 2017
- ME2 construction commenced - mid-February 2017
- Westtown construction timing - March/ April 2017
- ME2 20-inch pipe construction complete Q3 2017
- ME2 16-inch pipe sequential construction into 2018
Building a Typical Liquefied Petroleum Gas Pipeline

Construction Method: Open Cut

Phase One
Several months before construction of the pipeline begins, field crews survey the pipeline route to identify any environmental concerns and to determine the precise extent of right-of-way. Subsequently, the final route is identified and marked with stakes.

Phase Two
The site is prepared for construction by removing trees and grading the soil within the right-of-way and all additional work space areas. Additionally, topsoil will be segregated where applicable.

Phase Three
Field crews stake the final route of the pipeline and layout pipe sections on a single line within the right-of-way.

Phase Four
Field crews bend and weld the pipe sections together.

Phase Five
All weld sections are inspected in the field and a trench is excavated for the newly assembled pipe. The excavated soil is stockpiled within the right-of-way.

Phase Six
The newly assembled pipe is carefully lowered into the trench.

Phase Seven
The trench is backfilled with the stockpiled soil.

Phase Eight
Field crews use water to test the pipe’s structural integrity and to ensure the pipe meets the required operating pressure.

Phase Nine
The right-of-way area is restored to conditions in accordance with state and regulatory requirements.

NOTE: These illustrations are conceptual and general in nature; specific construction and restoration techniques could vary depending on circumstances.
Horizontal Directional Drilling (HDD) is used to install pipe underground over long distances. HDD is typically used to install pipe underneath waterways, wetlands, and roads, and there is less environmental and local impact by using this method of drilling.
Mariner East: Westtown Overview

2 HDD entry around West Chester Pike x RT 352 s
(behind Dunkin Donuts)
<table>
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<tr>
<th>Preparation</th>
<th>Mobilization &amp; Activation</th>
<th>Restoration</th>
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<tr>
<td>– Surveying</td>
<td>– Equipment preparation and set-up</td>
<td>– Landscape renovation</td>
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<td>– Tree clearing</td>
<td>– Construction</td>
<td>– Road restoration</td>
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<td>– Grading / Leveling / Matting</td>
<td>– Environmental inspection</td>
<td>– Right of Way marker placement</td>
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<td>– Pipeline installation</td>
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</table>
Pipe loader transports with the rig
Micro-processor, touch screen controls
Variable cooling fan for superior noise reduction
Cummins QSX15 T4 final engine (or Tier 3 depending on country of purchase)

660,000 lbs. (300 Tonnes) Thrust/Pullback
Pipeline Pullback Area For HDD
Protecting Ground Water Systems

- **PADEP Permit**
  - Contains Plans that detail how we protect both surface and groundwater during construction of Mariner East 2.
  - Plans Include:
    - Water Supply Plan
    - Inadvertent Return Plan
    - Void Mitigation Plan
    - Prevention, Preparedness and Contingency Plan
Protecting Ground Water Systems

▪ **Survey of Mariner 2 Corridor**
  – Hydrogeologic Review completed by Professional Registered Geologist and Geologic Specialist.
  – Comprehensive Hydrogeological Review and Aquifer Assessment Completed.
  – Identification of geology (i.e., underlying formation) at each Horizontal Directional Drill (HDD) location.
    – Soil Types / Thickness
    – Bedrock Type / Thickness
    – Structural Features
    – Groundwater Depth / Yield
    – Topography
  – Identification of Surface Water Features and Classification
    – Streams
    – Wetlands

▪ **Identification of Water Supplies**
  – Private Water Supply Wells & Springs
  – Public Water Supply Well Source Water Protection Areas
Preconstruction (Baseline) Potable Well Sampling & Well Yield Testing

– Well Testing offered to property owners along corridor prior to start of construction to establish a baseline at Expense of Sunoco Logistics.
– Permission from Well Owner necessary to commence testing, and or desire for third party to complete testing.

Baseline Testing Includes:

– Testing to determine the Well Yield or Specific Capacity (requires well head to be opened).
– Made available to Land Owners 150 feet from Centerline of Construction.
– Post Construction Sampling being made available to Land Owners after the completion of Construction.

Parameters:

– INORGANICS: pH ▪ Specific Conductance ▪ Turbidity ▪ Total Dissolved Solids (TDS) ▪ Total Suspended Solids (TSS) ▪ Hardness ▪ Anions: Bromide, Chloride, Sulfate ▪ Total Alkalinity
– TRACE METALS: Metals Analysis (Ba, Ca, Fe, K, Mg, Mn, Na)
– ORGANICS: BTEX ▪ Light Gas Analysis [Methane, Ethane, Propane]
For More Information

SX L Hotline: 1855-430-4491
www.sxlpipelineprojects.com

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