Go Big, Go Fast, Trenchless Emergency Response to the City of Fort Lauderdale

Presentation Outline

1. About the Team
2. Project Background
3. The Challenges
4. Project Approach
   - ✓ Planning & Phasing
   - ✓ Trenchless Technologies
   - ✓ Design and Permitting Considerations
   - ✓ Construction
5. Summary / Highlights

MPC Murphy Pipeline Contractors, Inc.

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About the Team

Murphy Pipeline Contractors

HQ in Jacksonville, FL
Regional offices: South Florida - Houston, TX -
Focus:

- Pressure pipeline replacement 2” through 78”
- R&D, development & execution of trenchless technologies

- Florida
- Texas
- Michigan
- Wisconsin
- Indiana
- Utah
- North Dakota
- Georgia
- Louisiana

- Ohio
- Colorado
- Nebraska
- Pennsylvania
- Maine
- North Dakota
- Montana
- Canada: British Columbia, Alberta, New Brunswick

- Asia
- Middle East
- Mexico
- Caribbean
- Europe

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About the Team

Murphy Pipeline Contractors

Millions of feet of static pipe bursting & Compression Fit HDPE lining experience
North America's most diverse and experienced trenchless technology management team

- **2018 Trenchless Project of the Year Honorable Mention**
- 2017 PE Alliance Leadership Award
- **2015 & 2014 Trenchless Project of the Year**
- 2014 WEFTEC Top Project Award
- 2010 UCTA Most Valuable Professional – Andy Mayer
- 2009 APWA Environmental Project of the Year
- 2008 CSX Rail Performance & Safety Awards
- 2005 & 2003 Trenchless Project of the Year Nominee

Lead instructor and advisor to the AWWA, EPA, state regulatory agencies and trenchless equipment manufactures

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About the Team

Chen Moore & Associates

- Funded in 1986 (32 years)
- HQ in Fort Lauderdale – 5 offices throughout Florida
  - ✓ Miami
  - ✓ Fort Lauderdale
  - ✓ West Palm Beach
  - ✓ Orlando
  - ✓ Gainesville
- Focus on *Water / Sewer / Drainage Infrastructure* Design, Permitting & CEI
- Designed hundreds of miles of gravity and pressure pipe
  - USA
  - Panama
  - Peru
  - Virgin Islands
  - Saudi Arabia

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Project Background

- Emergency Project in response to infrastructure brakes
- 40 year-old 30” CIP Forcemain located in sensitive areas
- Fast-tracked Design / Build
- $15,000,000
- 22,000 linear feet - ***4 Phases in 9 months***
  - ✓ Surveyed
  - ✓ Designed
  - ✓ Permitted
  - ✓ Constructed
  - ✓ Certified

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Project Background

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The Challenges

- Aggressive schedule – Emergency Project
- Dense Downtown areas - Limited right-of-way
- Busy urban and business areas – Minimal Disruptions allowed
- Intracoastal Crossing – Sensitive Ecosystems
- Contaminated adjacent sites – Dewatering constraints
- Nine (9) Jurisdictional Agencies – Including US Army Corp of Engineers
- Hurricane Irma

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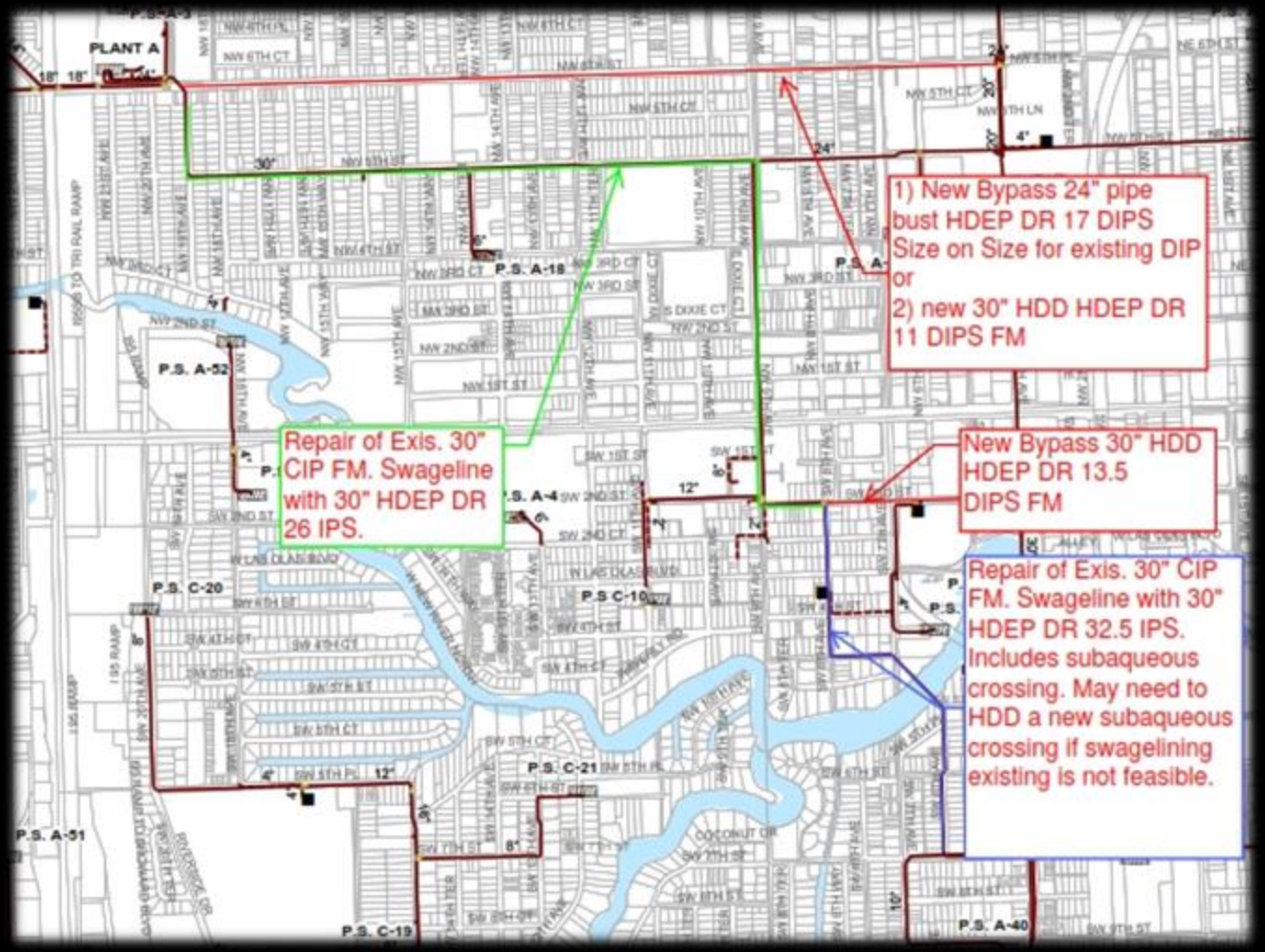
Project Approach

Fort Lauderdale, FL

- Downtown Urban Areas
- 23,000 feet of existing 30” D.I. Force Main
- 65% Swagelining, 30% Directional Drill, 5% open cut
- Phase 1 – 3 fast track 6 month schedule
- Phase 4 completion Q1 in 2018



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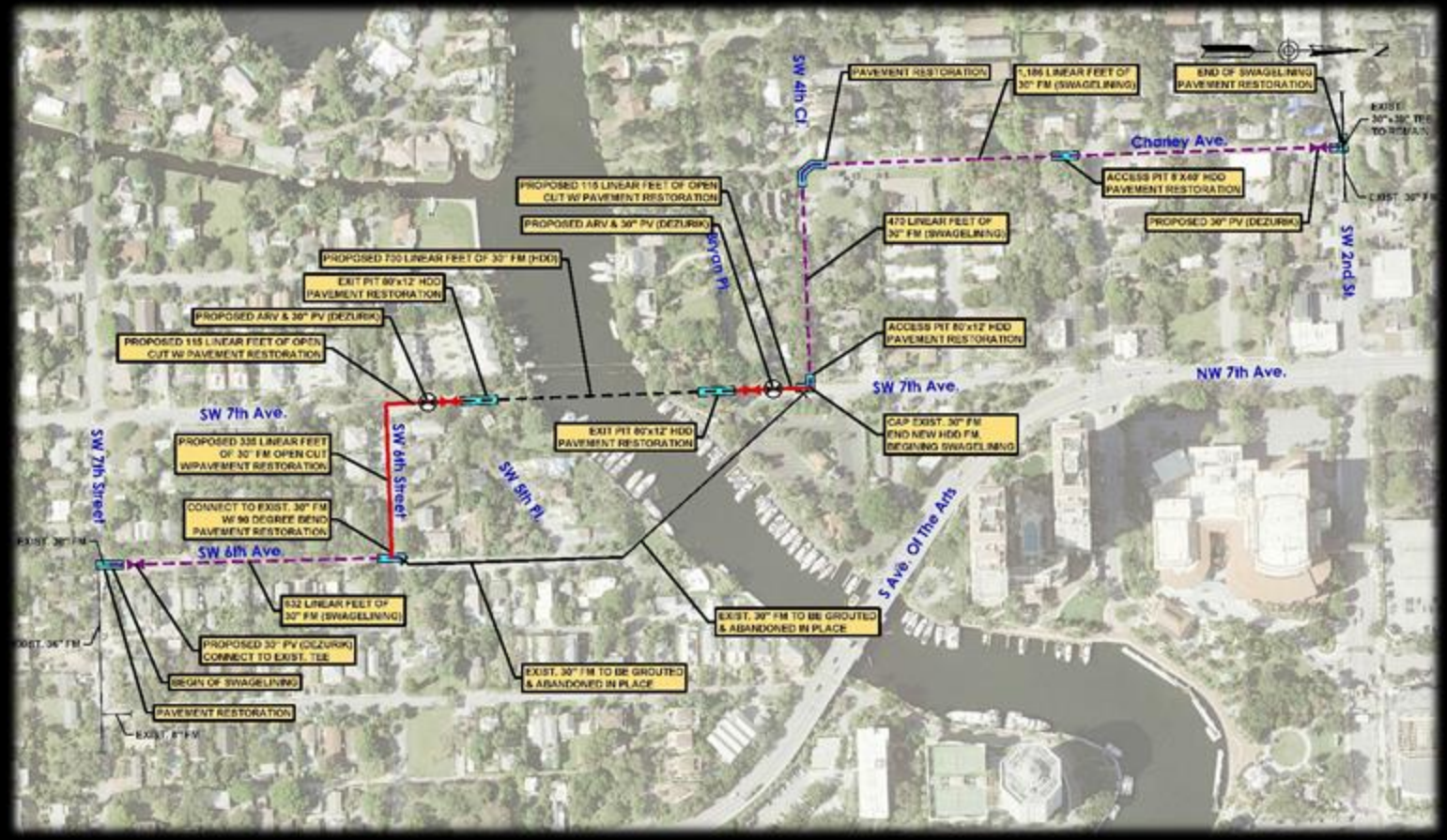
Project Approach

Planning and Phasing

- Phase 1
  - Rehabilitation of 3,200 LF of existing 30-inch force main by Swagelining. 700 LF subaqueous HDD crossing.



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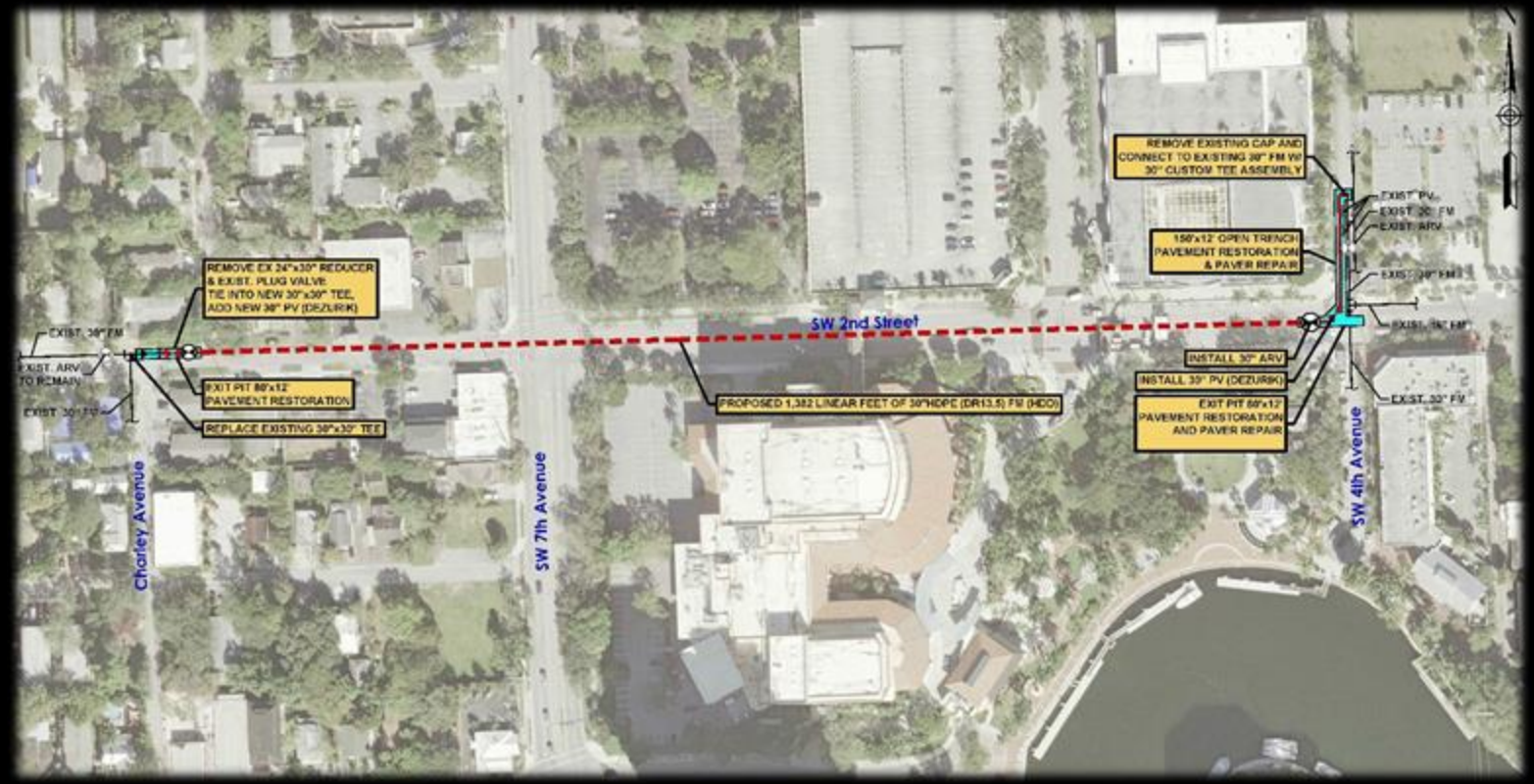
Project Approach

Planning and Phasing

- Phase 2
  - Installation of new 30” F.M. utilizing HDD for 1,500 linear feet, and two (2) bore pits.



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Project Approach

Planning and Phasing

- Phase 3
  - Installation of new 30” F.M. utilizing HDD for 6,400 LF, & three (3) bore pits.

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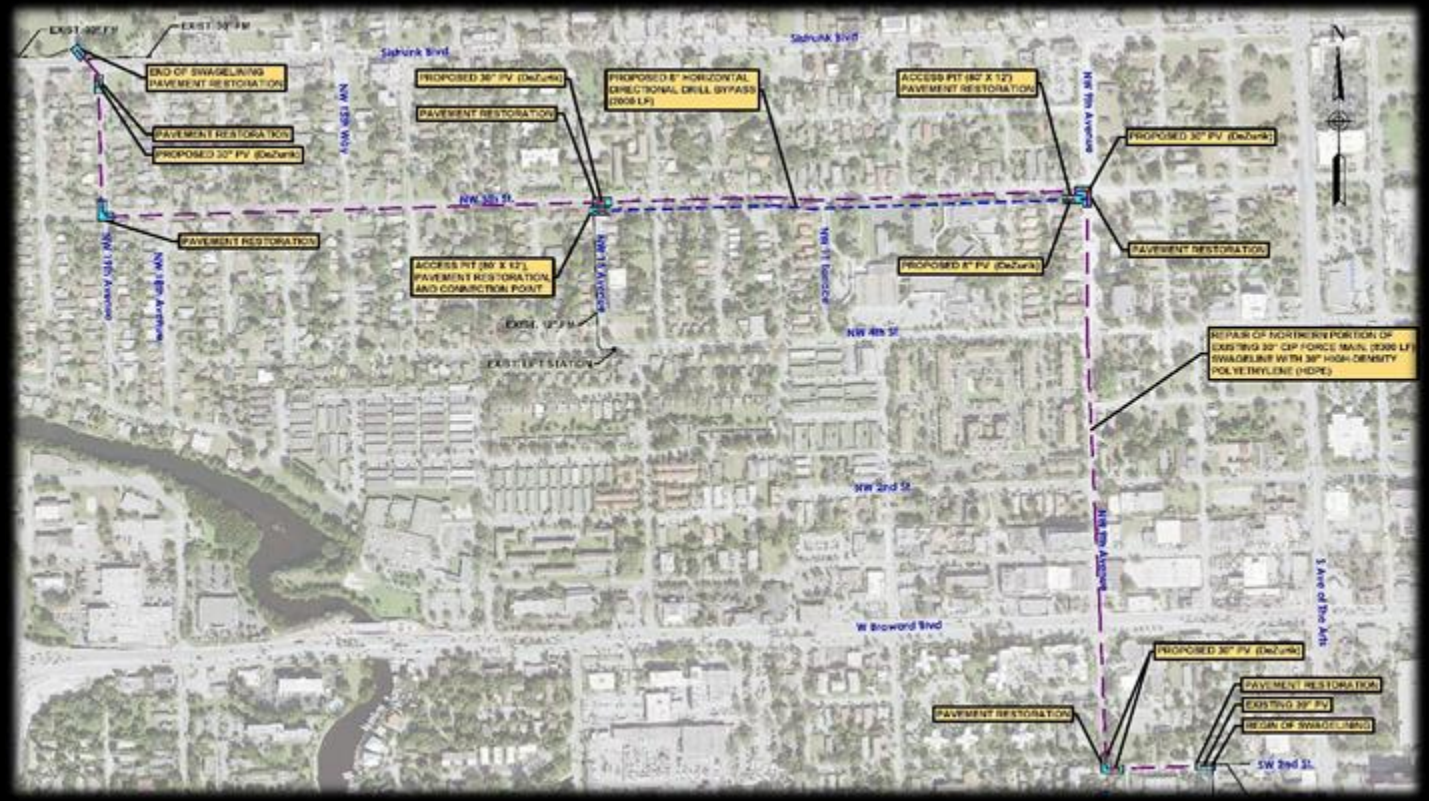
Project Approach

Planning and Phasing

- Phase 4
  - Rehabilitation of 8,300 linear feet of 30” F.M utilizing swagelining. A total of six (6) pits were used to complete this installation.



Phase	Installation	Size	DR
Phase 1	HDD Swagelining	30”	11 26
Phase 2	HDD	30”	13.5
Phase 3	HDD	30”	11
Phase 4	Swagelining	30”	26

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Project Approach

Trenchless Technologies

- Compression Fit HDPE Lining

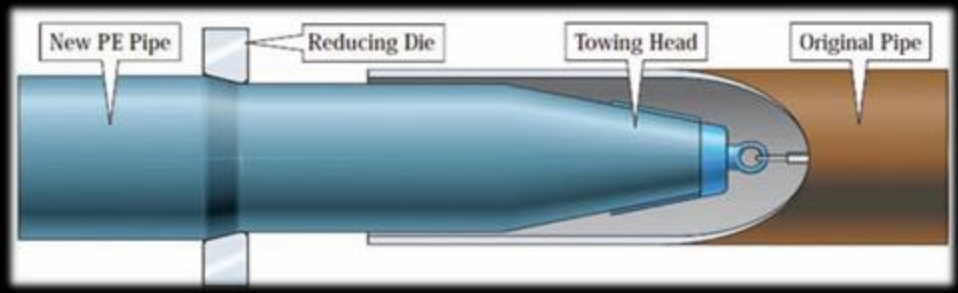
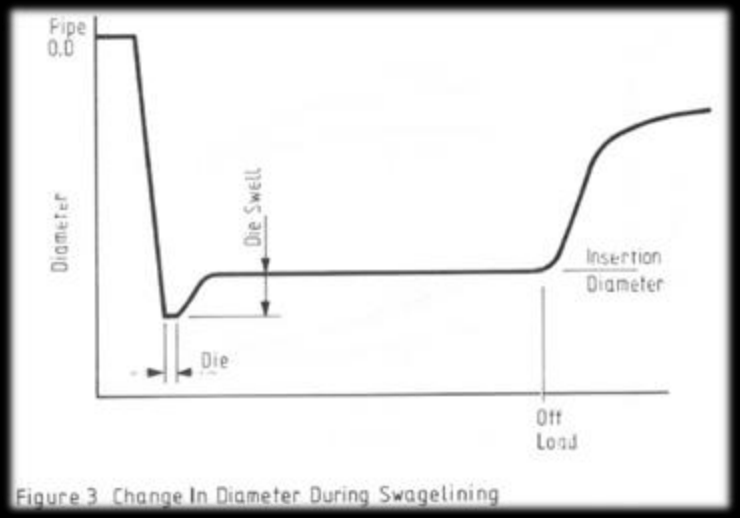


Figure #1: Compression Fit Tight HDPE lining (Swagelining)



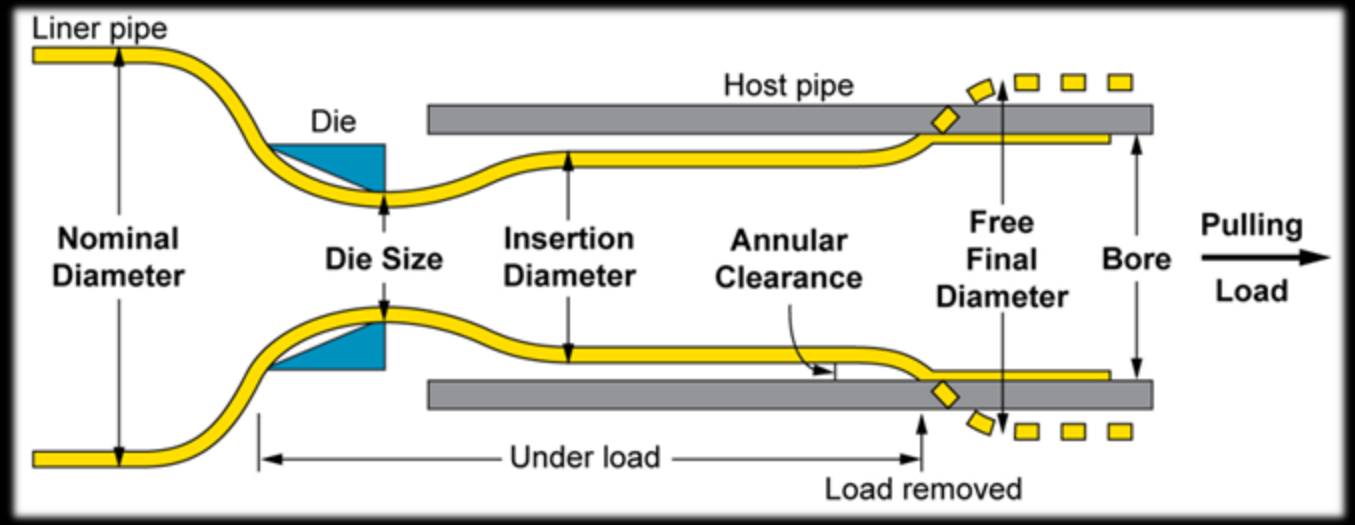


Figure #2: HDPE Compression Process

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Project Approach

Compression Fit HDPE Lining

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Project Approach

Design and Permitting Considerations

- Design and Constructability
  - ✓ Pipe Diameter – Flows
  - ✓ Pressure testing
  - ✓ As-built Research and Field Investigations
  - ✓ Pipe Layout – Confirm Proposed route
  - ✓ Determine Certification process

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Project Approach

Design and Permitting Considerations

- Close Fit Lining & Horizontal Directional Drill
  - ✓ Determine Pit locations
  - ✓ Design to accommodate busy corridors
  - ✓ Coordinate with businesses and residents
  - ✓ Subaqueous Crossing – Tarpon River
  - ✓ Costume HDPE fittings

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Project Approach

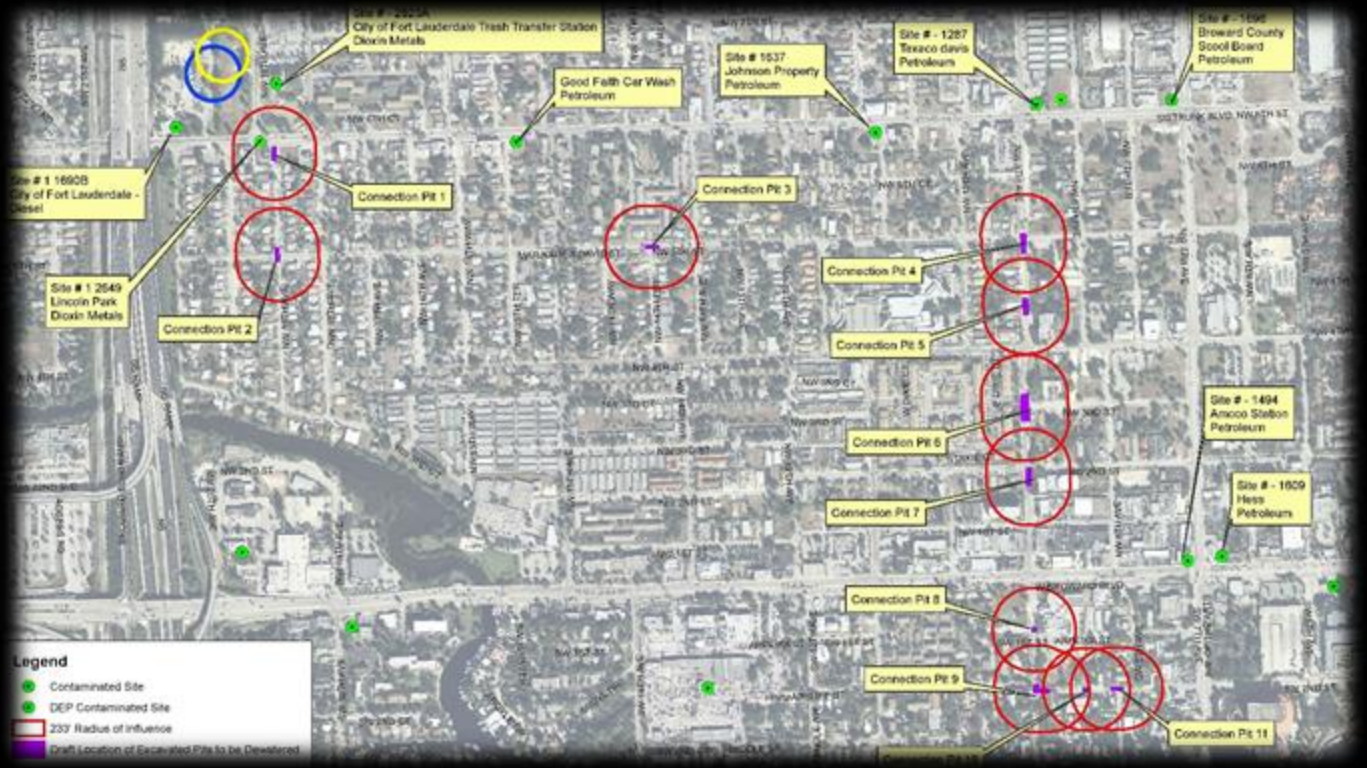
Design and Permitting Considerations

- Pre-Application meetings with Regulatory Agencies
  - ✓ Nine (9) Jurisdictional Agencies
  - ✓ Broward County / FDEP
  - ✓ Traffic Mobility – Bus Routes
  - ✓ U.S. Army Corps of Engineers
  - ✓ Environmental Agencies

Project Approach

Design and Permitting Considerations

- Environmental Challenges
  - ✓ Several Contaminated Sites
  - ✓ Dewatering Constraints
  - ✓ Hydrocarbons
  - ✓ Heavy Metals



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Project Approach

Design and Permitting Considerations

- Environmental Considerations
  - ✓ Sensitive Ecosystems
  - ✓ Federal Agencies Involved
  - ✓ Easements

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Project Approach

Construction

- Compression Fit HDPE lining
- 40’x8’ access pits; small pulls
- 80’x8’ access pits; long pulls
- Reused existing ARV structures
- Ability to fuse and pull for limited pipe laydown areas

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Project Approach

Construction

- HDD
- Ability to install new main within urban areas
- Isolated staging areas
- New jointless main with HDPE
- Tarpon River

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Summary / Highlights

- City Openness and Flexibility
- Fast-tracked (9 months). Multi-phase approach
- Innovative Technologies
- Minimal Disruptions
- Team Resolve through challenges including Hurricane Irma

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QUESTIONS

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