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## About Us

American Pipeline Solutions is proud to provide a wide range of pipeline services to clean and maintain pipelines across the nation.

<p><b>Founded</b></p> <p>American Pipeline Solutions was founded in 2018 and is part of sister company Montauk Services which was founded in 1976</p>	<p><b>Services</b></p> <ul style="list-style-type: none"> <li>• Conventional Pigging/Swabbing</li> <li>• Pipeline Inspection/Condition Analysis</li> <li>• Pipeline Mapping</li> <li>• Pipeline Pre-Commissioning</li> </ul>	<p><b>Services Cont.</b></p> <ul style="list-style-type: none"> <li>• Repair and Rehabilitation (inc lining)</li> <li>• Equipment Rental</li> <li>• Ice Pigging</li> </ul>
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## About Us

American Pipeline Solutions is a premier pipeline service provider for various industries.

<p><b>Municipal</b></p> <ul style="list-style-type: none"> <li>• Water</li> <li>• Waste water</li> </ul>	<p><b>Industrial</b></p> <ul style="list-style-type: none"> <li>• Oil and Gas</li> <li>• Power</li> <li>• Nuclear</li> <li>• Factories</li> </ul>	<p><b>Commercial</b></p> <ul style="list-style-type: none"> <li>• Hospital</li> <li>• HOA &amp; Condominium</li> <li>• Schools</li> <li>• Hotels</li> </ul>
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## What is Ice Pigging?

- ❖ Advanced pipe cleaning technology
- ❖ An award winning, innovative, sustainable
- ❖ improves water quality and aid asset management
- ❖ Developed by the University of Bristol, England
- ❖ APS only company offering this service in USA

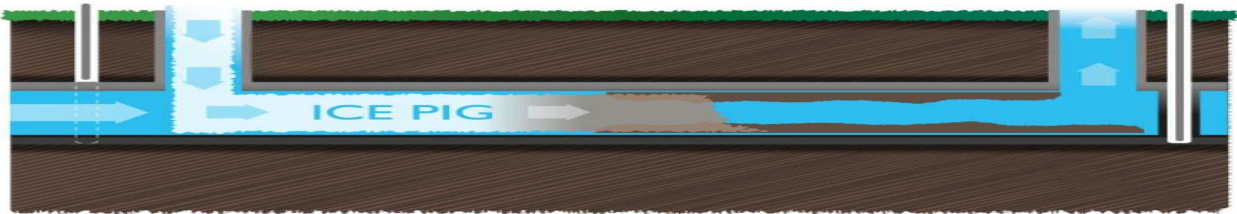


The image shows a trophy made of ice, shaped like a pig, which is a reference to the 'ice pig' used in pipe cleaning. The trophy is illuminated with blue lights and features the APS logo on its base.

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## How Does it Work?

- ❖ The ice slurry harnesses the characteristics of a semi-solid material
- ❖ Can be pumped like a liquid.....
- ❖ .... but behaves like a solid once the pig is formed in the pipe.



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## Controlling the Semi-Solid




- ❖ The correct consistency
- ❖ Freezing point depressant
- ❖ NSF Approved
- ❖ Food grade, fine table salt (NaCl)
- ❖ Brine Solution
- ❖ Freezing down to 24 degrees F
- ❖ Harmless to customers

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## The Benefits

### Flushing (UDF) vs Ice Pigging



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**Flushing (UDF)**

👎 Water gives low shear	✓ Ice Pigging 1,000 times more shear
👎 Large volumes of water wasted	✓ 30%-50% less water required
👎 High velocity required	✓ Normal operational flow & pressure
👎 Rarely removes all sediment	✓ Pipe is cleaned thoroughly

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## The Benefits

### Over other Traditional Methods




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**Other Methods:  
Hydro-Jetting & Air Scouring**

👎 May be too aggressive	✓ Less aggressive yet still effective
👎 Restricted by hose length	✓ Only restricted by available ice quantities

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## The Benefits

- ✓ Tested, proven effectiveness
- ✓ Guaranteed not to get stuck
- ✓ Easy access via existing fittings
- ✓ Will pass through butterfly valves
- ✓ Very short downtime

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## The Benefits

- ✓ Drought Friendly!
- ✓ Adapts to changing diameter
- ✓ Post clean disinfection not required
- ✓ Bacteriological samples not required

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## The Benefits

### Cleaning Capabilities

- ✓ Iron
- ✓ Manganese
- ✓ Sediments/grit
- ✓ Biofilms
- ✓ Fats, Oils, Greases (FOG)



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## Results following UDF



6-inch PVC Water Distribution Pipe  
Confluence Engineering (Consultants) –  
Idaho Municipality - November 2021

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## Results following Air Scouring



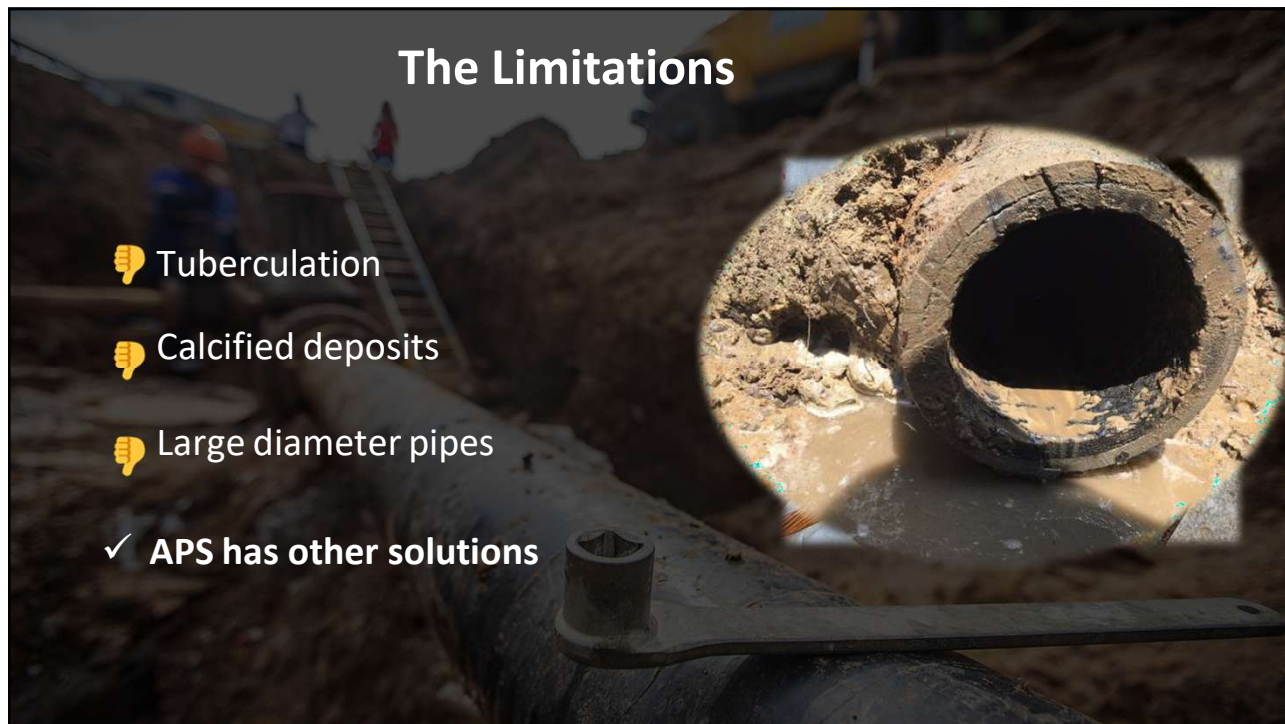
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## Results following No-Des



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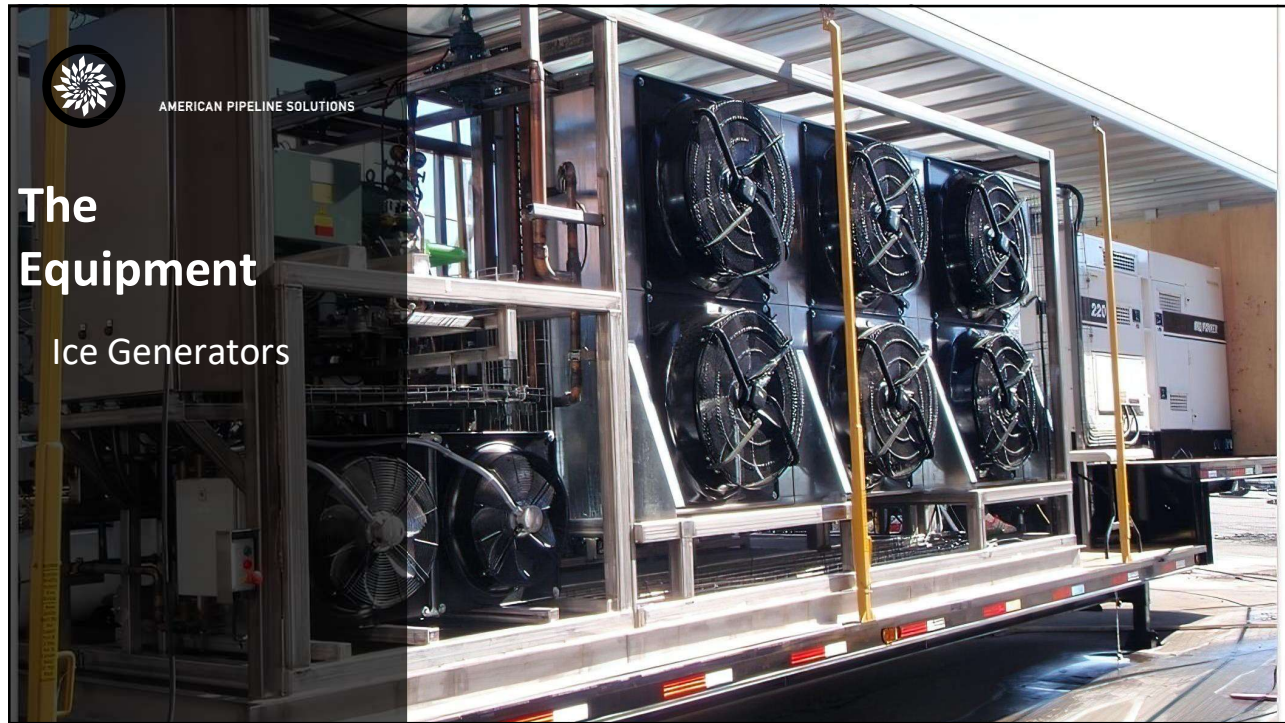


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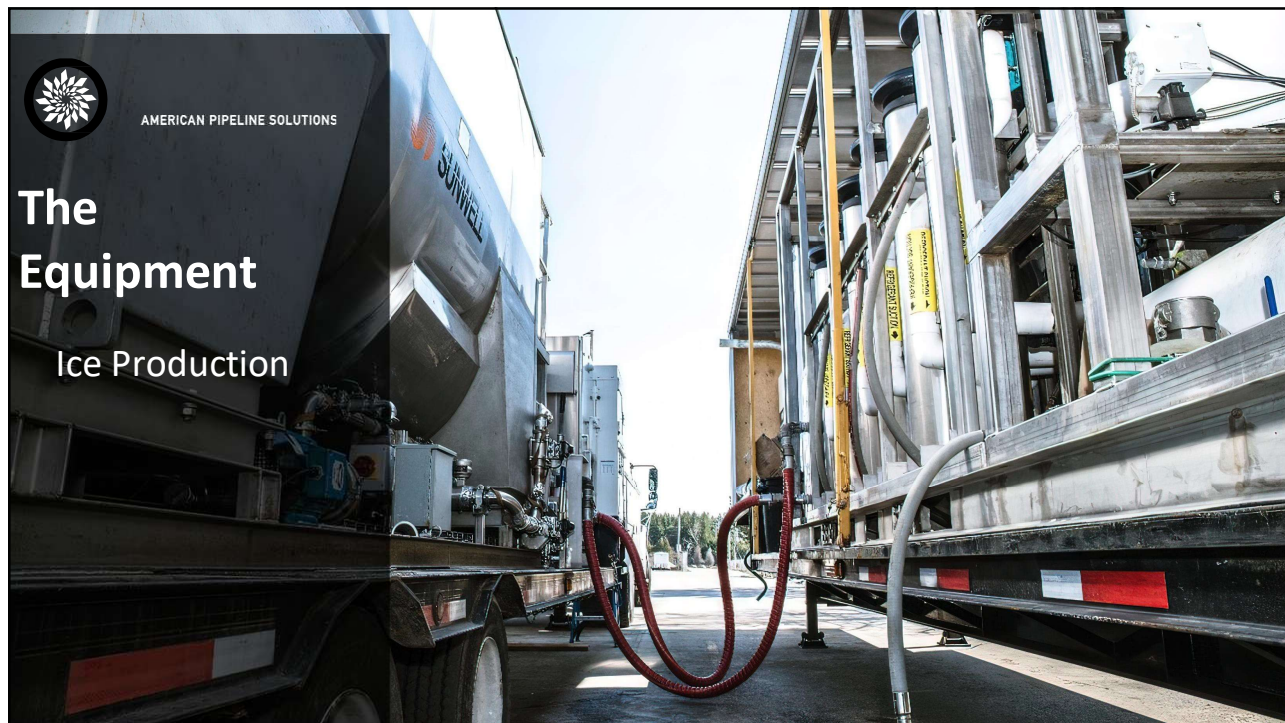


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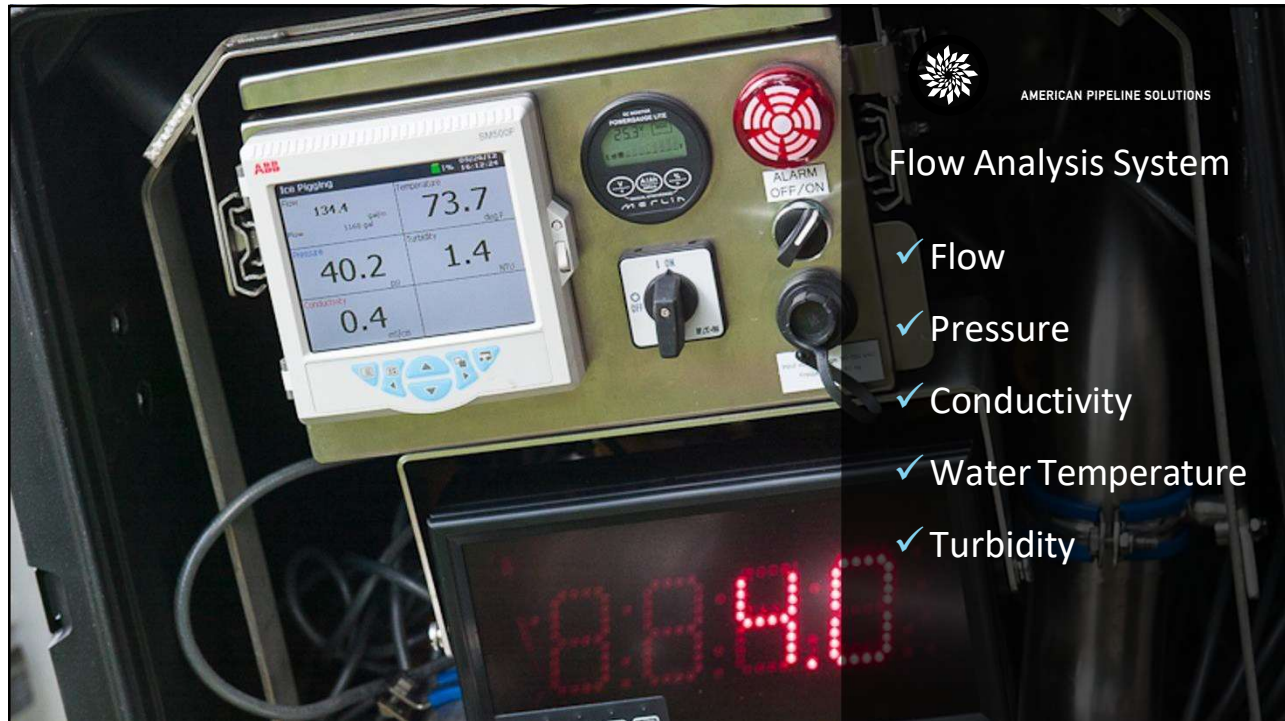




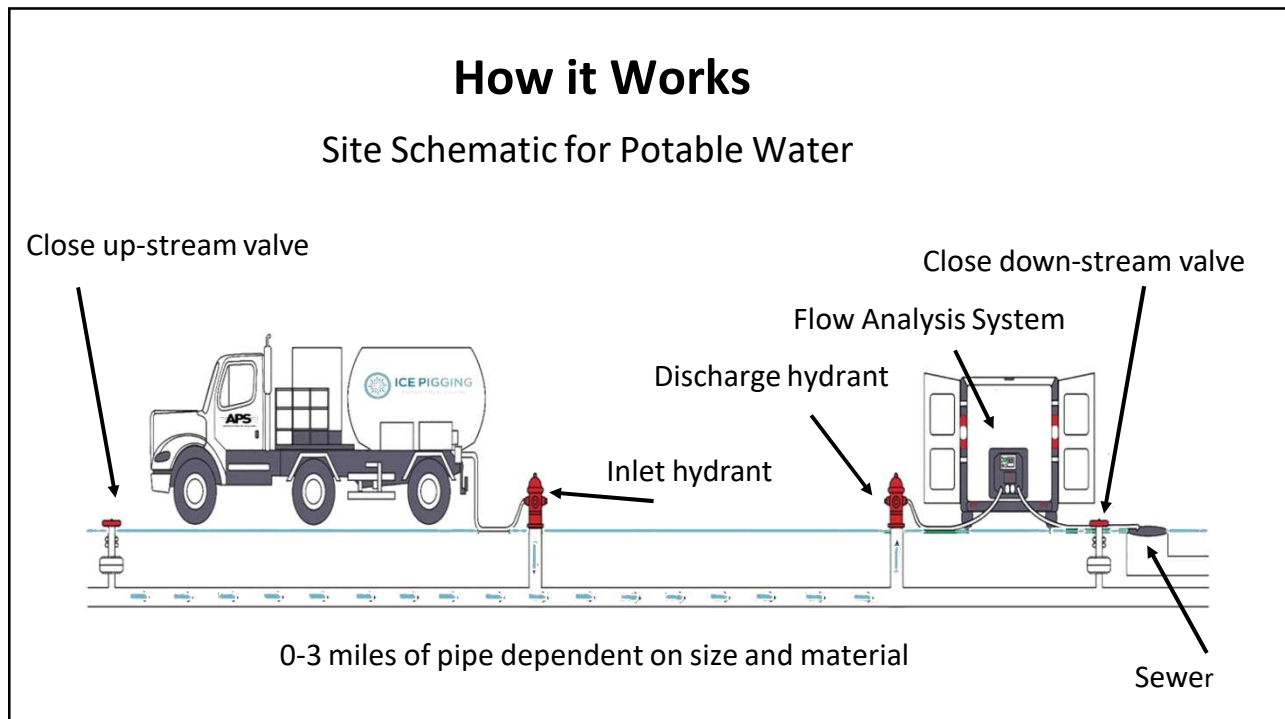
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## Potable Water

### Ice Insertion



### Discharge



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## The Results

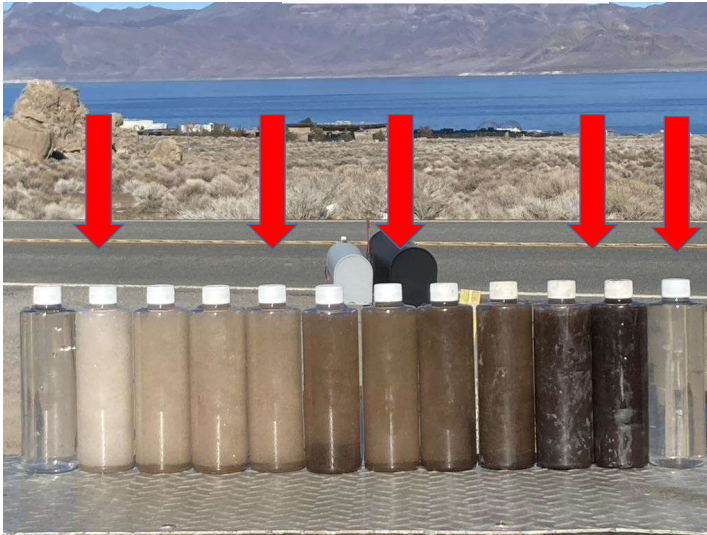
### Discharge of the Ice Pig



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## The Results



1. Sample from front of pig
2. Samples from middle of pig as it carries the sediment
3. Samples at end of pig where ice (and main) are clean

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## The Results

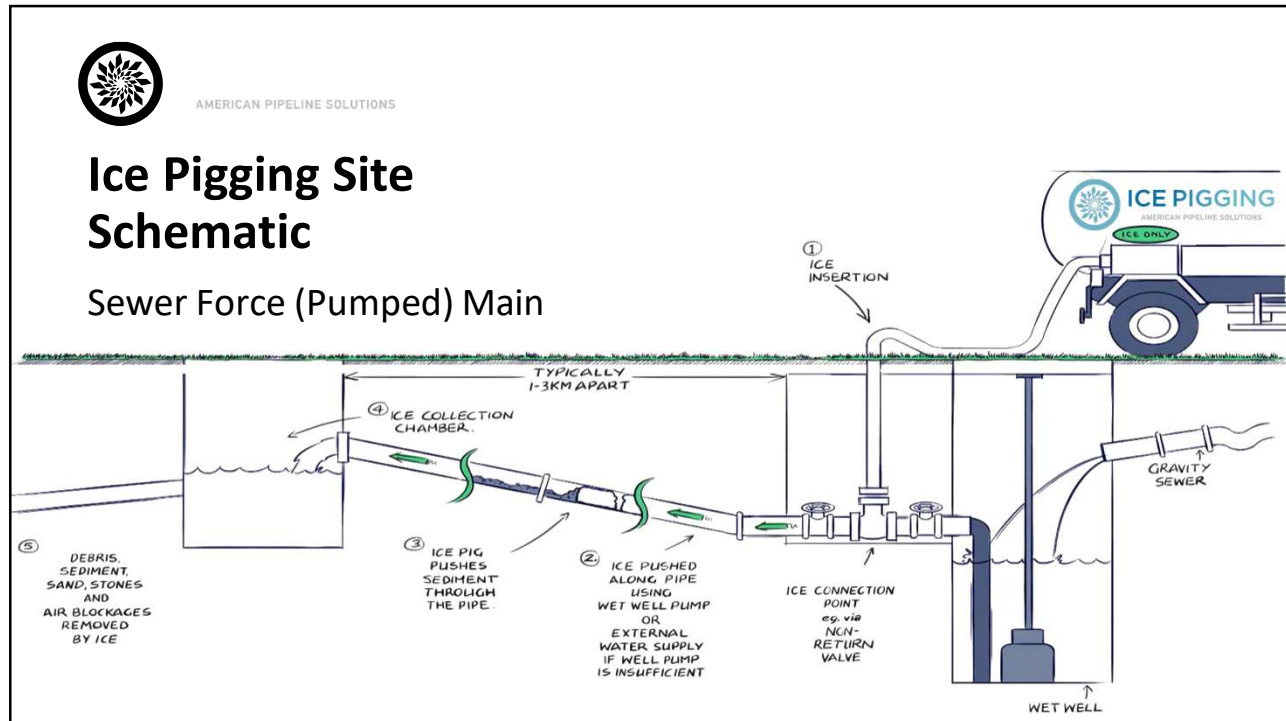
### Project Report

#### Analysis

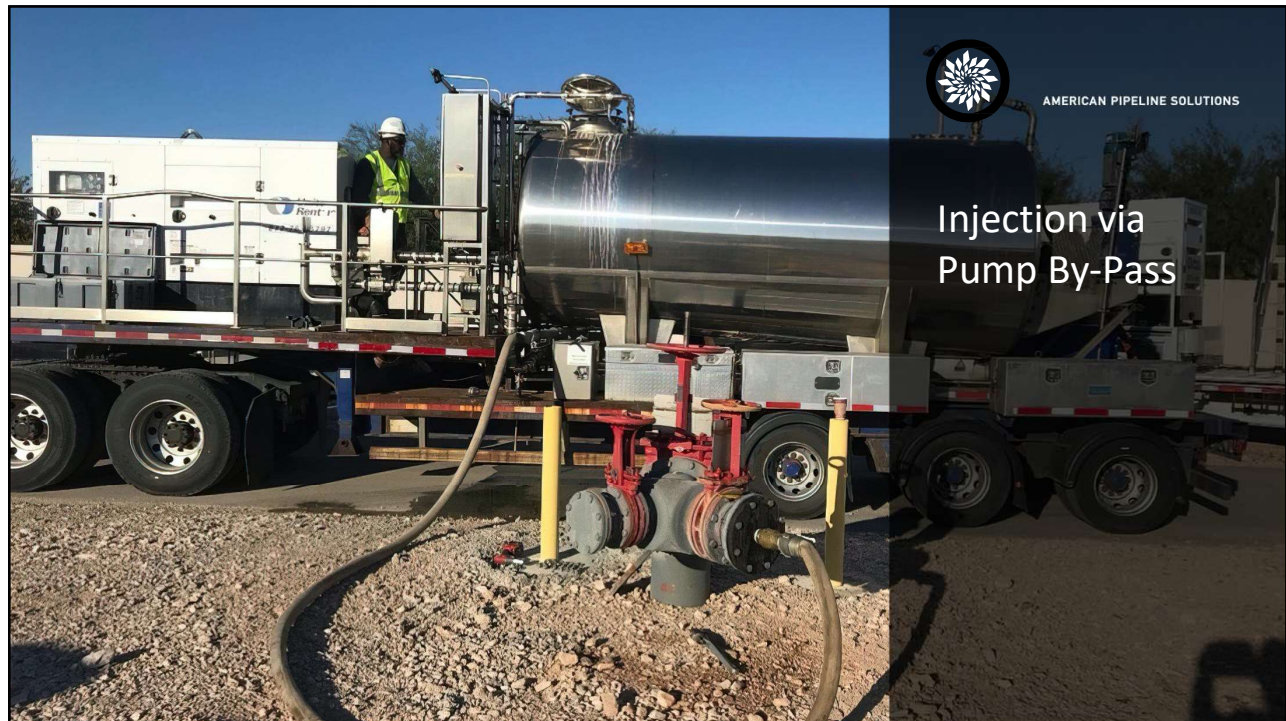
- ❖ Chemical
- ❖ Mechanical
- ❖ Biological




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## Naperville, Illinois



**About Naperville:**

- The 4th most populated city in Illinois. Located 28 miles west of the City of Chicago.
- Naperville's Water and Wastewater Utility is one of the state's largest combined utility systems, operating both water distribution and sanitary sewer conveyance with wastewater treatment.

**Collection System Overview:**

- 566.5 Miles of Sanitary Sewer
- 14,085 Manholes
- 23 Lift Stations/Pump Stations (26 Wastewater Force Mains)
- 44,000 Customers
- 164,594 Total Population Served
- 1 Satellite Community.





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## Results

Cinnamon Creek Force Main



Pre-Draw Down Test Flow	Post-Draw Down Test Flow	Flow Increase
<b>301 GPM</b>	<b>372 GPM</b>	<b>19%</b>
Pre-Pump Run Times (per day)	Post-Pump Run Times (per day)	Run Time Decrease (per day)
<b>1.1 hours</b>	<b>.8 hours</b>	<b>20%</b>



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## Results

### Country Lakes Force Main



Pre-Draw Down Test Flow	Post-Draw Down Test Flow	Flow Increase
<b>1100 GPM</b>	<b>1380 GPM</b>	<b>20%</b>
Pre-Pump Run Times (per day)	Post-Pump Run Times (per day)	Run Time Decrease (per day)
<b>5.4 hours</b>	<b>4.3 hours</b>	<b>20%</b>



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## Current Status Ice Pigging Milestones

- ✓ 500+ Completed projects in the U.S.
- ✓ Cleaning over 1,100 miles of pipeline across 44 states.
- ✓ Maximum length of 2.3 miles cleaned with one load.
- ✓ 2"– 42" Diameter pipe cleaned.
- ✓ Technique also developed for sewer force mains and siphons.
- ✓ APS only Ice Pigging Company in US.

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## Summary

World Renown – Proven to be Effective  
on;

- ✓ Sewers – (Force Mains & Siphons)
- ✓ Potable Water
- ✓ Food & Beverage
- ✓ Cooling Towers
- ✓ Produced Water

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## Summary

World Renown – Tested & Proven

- ✓ Simple, effective method of pipe cleaning
- ✓ Offers real cost savings
- ✓ Rapid, Environmentally friendly, Efficient solution
- ✓ Effective on Gas and Oil
- ✓ Simple Solution for “Unpiggable” pipes
- ✓ 50% Less water usage over standard flushing
- ✓ Exceptionally low risk

50%

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## Tested & Proven Flushing vs Ice Pigging



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## Any Questions?

### Contact Information:

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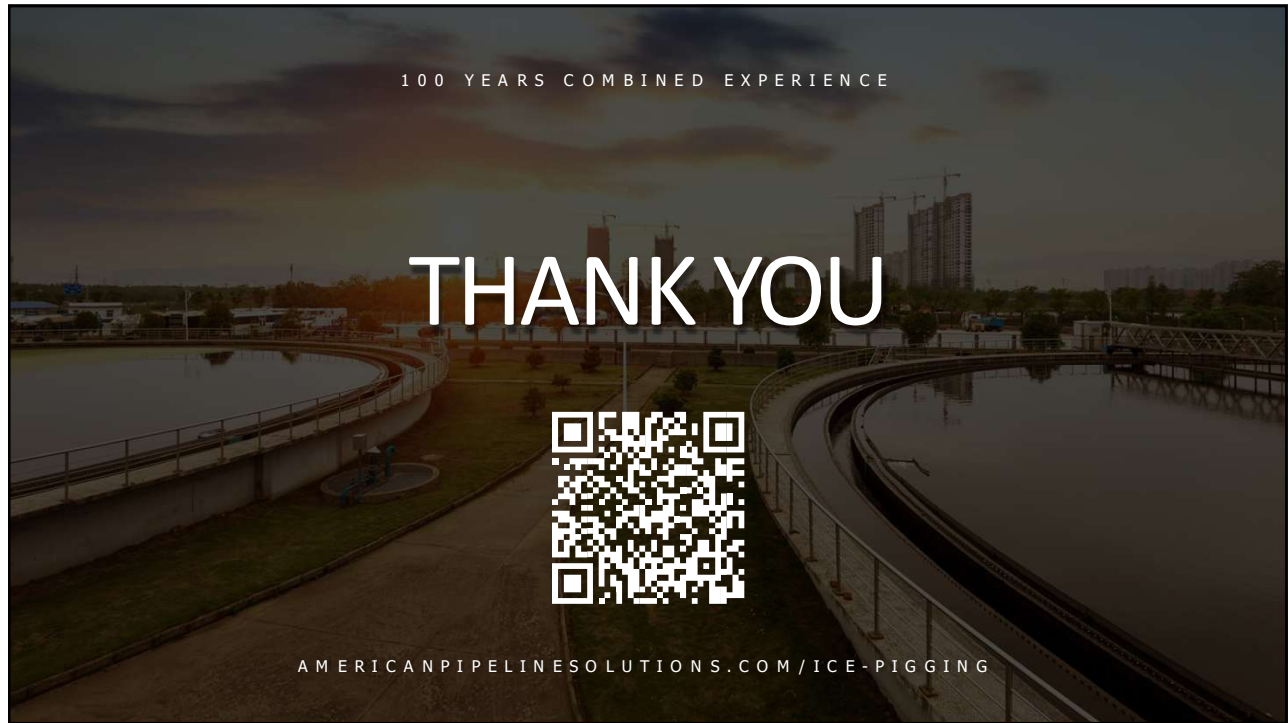


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