



## MEETING MINUTES

May 11, 2021  
Virtual Meeting

### Attendees:

| Name of Attendee(s)   | Company / Agency Name                        | Email Address                 |
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| Adam Brown            | West Yost Associates                         | abrown@westyost.com           |
| Alexandra Watson      | HydroScience Engineers                       | awatson@hydroscience.com      |
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| George Mallakis       | TT Technologies, Inc.                        | gmallakis@tttechnologies.com  |
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| James Kohne           | Woodard & Curran                             | jkohne@woodardcurran.com      |
| Jan Punzalan          | City of Oakland                              | jpunzalan@oaklandca.gov       |
| Jason Fitch           | Central Contra Costa Sanitary Sewer District | jfitch@centralsan.org         |
| John Goodwin          | West Yost Associates                         | jgoodwin@westyost.com         |
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| Kaitlyn Leong         | NV5  | kaitlyn.leong@nv5.com         |
| Karl Ono              | Napa Sanitary District                       | kono@napasan.com              |
| Karla Castro          | City of Hayward                              | karla.castro@hayward-ca.gov   |

Minutes by Alexandra Watson, HydroScience Engineers  
Secretary, Nor Cal PUG

Page 1 of 7

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|------------------|--|--------------------------------|
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#### **Announcements:**

- **PUG**  
*Future Presentations for Monthly Meetings – For future meetings, PUG is open to presentations for future topics. The one slot available for 2021 is December.*
- **NASTT**
  - **September 27-28, 2021 LIVE**  
*South Central Trenchless Technology Conference- Sugar Land, TX.*
  - **November 8-10, 2021 LIVE LIVE**  
*No-Dig - North Vancouver, BC*
- **UESI (ASCE Pipelines)**
  - **UESI Pipelines 2021 Conference -Virtual – Calgary, Alberta, Canada – August 3 – 6, 2021.**
  - **Public Sector Utility Scholarship deadline is March 31, 2021. Early bird registration deadline is May 19, 2021.**
- **Trenchless Technology Road Show 2021**
- **May 11, 12, 13, 18, and 20, 2021 – Virtual Event**
  - *Early bird pricing through April 10<sup>th</sup>!*
  - <https://www.cattrenchlessroadshow.ca/>
- **WEFTEC 2021**

Minutes by Alexandra Watson, HydroScience Engineers  
Secretary, Nor Cal PUG

Page 2 of 7

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- *October 16-20 Conference - LIVE - McCormick Place, Chicago and On-line*
- *October 18-20 Exhibition*

**General:**

**April 2021 Meeting Minutes:** An overview of the March meeting was presented (by Alexandra Watson).

**Financial Update:** The current total in the organization account as of April 31, 2021 is \$69,317.50. (Dustin La Vallee)

**Project Discussions:**

1. (Angela Andrews) Waste County Wastewater “WCWW”  
The main sewer replacement & pipe bursting projects manager is on leave until the end of the summer. For questions about related projects and coordination contact John Haig at [jhaig@rgs.ca.gov](mailto:jhaig@rgs.ca.gov). Also, WCWW has several projects such as sewer replacement projects for Terra Hills, El Sobrante, San Pablo neighborhoods, and various lift station projects. Check the district website for further details.
2. (Nancy McWilliams) Solano Irrigation District  
Working on a general analysis and in the process to determine if the construction shall continue in house or to outsource to a design bid built for future repairs of the pipelines and to determine what is the most cost effective for the district and beneficial for the clients.  
  
50 miles of unreinforced concrete pipe end of the useful life.  
Agricultural water pipe size 12-inch, but mostly 30-inch pipes, usually shallow with 2.5 to 3-feet of cover. Most of the pipes are go through farm fields.
3. Solano irrigation District had 8 bids for electrical and fence work at 13 different sites. Engineer estimate \$1M, low bid \$736K, and Highest \$1.4M.
4. (Mike Garcia) Forterra attended May 5, 2021 the SFPUC Annual Construction breakfast announcing various large projects SFPUC leads Diamond Street (\$9.6M), Gold Mine Drive (\$6.3M), Jersey Street (\$8.0M), Laidley Street (\$7.8M) Hampshire St. (\$17.7M).
5. Bjon mentioned the Microtunnel project on the April meeting.

**Presentation: “Pipe Bursting Practice - Trenchless Technology HDPE 101”** Collins Orton. Trenchless Solutions.

***Highlights from the presentation include:***

The presentation was about pipe bursting definition, installations, pipe bursting expanders - bursting head and dimensions and how to size the expanders. Root intrusion in the manholes in areas where pipe bursting occurred recently and how to seal the manholes. New Faction Fusion saddles used to make good connections.

***Overview:***

**A. Pipe bursting Definition:**

Pipe Bursting is the trenchless replacement method in which an existing pipe is fractured in place, and a new pipe with the same or larger ID is pulled into its place. Pipe bursting uses a lot of energy from a

cable or rod pulling system, hydraulic or pneumatic power. The force is transmitted to the expander or pneumatic hammer to burst the existing pipe and the soil expands temporarily.

Three things happen concurrently:

- 1) Existing pipe is being fractured.
- 2) The soil is being expanded to receive the new pipe.
- 3) The new pipe is being pulled into the place of the existing pipe.

2/3 of the time the pipe will be upsized from the original size and highly used in the replacement of water main.

## **B. Systems**

Pneumatic Pipe Bursting Method: (dynamic system) pneumatic hammering inserted into the existing pipe and is power by a compressor.

- 1) Soil displacement method
- 2) Expander head is fitted to the front or rear of the pneumatic hammer.
- 3) Provides more power where you needed.
- 4) Does not required large pulling mechanism.
- 5) Equipment includes pneumatic hammer, expander, air horse (size range between 1.5 to 2 inches), and tension winch to pull.
- 6) Heavy and High noise level.

Static Pipe Bursting Method is more abrupt force need to pull very hard.

- 1) Static bursting unit, bursting rods, hydropower, rolling blade cutting rod.
- 1) No compressed air
- 2) No Hammering
- 2) Needs a large machine to pull the pipe.
- 3) Need a receiving pit.

## **C. Bentonite typical used for soil lubrication**

## **D. Typical Pipes used**

- 1) HDPE, fusible PVC, but VCP, steel and ductile iron pipes have been used in some cases.

## **E. Benefits of Trenchless Technology**

- 1) Trenchless safes money on excavation.
- 2) Reduces excavation, Less issues with compaction, Less haul of spoils, Less soil import.
- 3) Reduced traffic impacts.
- 4) Reduced in damage prevention to third party utilities.

## **F. Applications for Pipe Bursting**

- 1) Potable water
- 2) Gravity sanitary sewer

Minutes by      Alexandra Watson, HydroScience Engineers  
Secretary, Nor Cal PUG

Page 4 of 7

- 3) Stormwater
- 4) Process piping
- 5) Raw water
- 6) Agricultural water
- 7) Electrical ducts

**G. Bursting Ductile Iron Pipe**

Tools are good at breaking the DIP however the broken DIP can damage the new plastic pipe (recommend a steel sleeve and slip line the new plastic pipe to protect the new pipe.

**H. Range in Diameters and Lengths**

Max size up to 54-inches, mainly pipe size range between 4-inch to 42-inch typica, lengths range between 300 feet to 500 feet.

**I. Pipe bursting vs. Open Cut**

Typically, a pipe bursting project will range in 20% open cut and 80% trenchless. Therefore, 80% less spoils, less compaction less, footprint, and done quickly.

**J. Site investigation**

Survey and record drawings.

**K. Geotechnical investigation very critical (do not skip this)**

Critical items to know specially for pipe 24-inches and greater in diameter.

- 1) How wide was the existing trench, what was the backfill material and compaction level?
- 2) Type of soil surrounded the trench.
- 3) Ground water level

**L. Evaluation of Soil Displacement**

- 4) Most pipe bursting project do not have Heave.
- 5) Need to have compressible soils.
- 6) Ground vibrations need to study the impact to sensitive structures.

**M. Selecting a replacement pipe**

HDPE is typically HDPE very bendable, Fusible welded PVC becoming more common. Benefit of HDPE is bendable and used for difficult areas.

Pre CCTV if the utility owner has this information provide the information logs and videos available to the bidders.

**N. Manhole preparation -Sewer**

- 1) Maintaining Service - Temporary bypass systems

Minutes by Alexandra Watson, HydroScience Engineers  
Secretary, Nor Cal PUG

Page 5 of 7

- 2) Typical trenchless insertion pit for HDPE Pipe
- 3) Opening shall be 5 inches larger than the diameter of the pipe for seal rings.
- 4) Manhole seals sand collar with rubber ring gasket outside embedded with core sand for manhole seal.

**O. Pipe Bursting expanders dimensions are critical.**

The outside diameter of the expander needs to be large enough to create room for the new pipe and big enough to pickup any anticipated rebound and keep the drag down in the pipe.

If you use taper with more relax angle of attack for better drag through the ground but make the expander longer.

**P. Construction observations**

- 1) Pipe alignment in excavation
- 2) Expander dimensions are critical large enough to create a new space for the new pipe enough annular space for the new pipe can go through without too much drag.
- 3) Pipe lubrication important such as bentonite
- 4) Slow progress indicates hard soils.
- 5) Check rate of progress for pneumatic burst.
- 6) Check pulling pressures for static machines.
- 7) Pull the whole pipe alignment the same day. Do not wait for the next day since the pipe and soils will be frozen in the ground making impossible to move. overnight and the pipe cannot longer be moved the next day.
- 8) Start early is recommended.

**Q. Cons**

Pipe bursting typically cannot pull through manufactured bends greater than 22 degrees, valves, and tees.

**R. Faction - Fusion slides**

**Q & A:**

- 1) Davina Carboni: Can you talk about any special requirements that PG&E has when pipe bursting near their gas lines? Is there a set clearance requirement, how do they monitor against uplift?

Important to pothole utility first. Pipe bursting clearance needed a few pipe diameters away from the existing structures running parallel (approximately 2 to 3 feet).

Pipe bursting exonerated from san Bruno gas pipe explosion.

- 2) Advantages of faction system over electro fused saddles?

Minutes by Alexandra Watson, HydroScience Engineers  
Secretary, Nor Cal PUG

Page 6 of 7

Stronger, does not fracture and it was an award NASTT for innovating products.

3) Can you do pipe bursting under a building?

Yes, and it depends how the building foundation or slab and depth of structure. If pipe is 3 feet below structure, there not a problem. Static vs Pneumatic under a building not an issue under the building

4) Can you pipe burst a line with CIPP lining?

Yes, several jobs, even pipes with three liners.

Thank you to Collins Orton for a great presentation.

**Next Meeting:**

The next meeting is scheduled for Tuesday, June 8, 2021. “The topic will by “**McKinley Park Combined Storage**” with Daniel Breg – Stantec & Nina Buelna - City of Sacramento.