

HORIZONTAL DIRECTIONAL DRILL (HDD) & GUIDED AUGER BORE (GAB) PROJECT HISTORY REPORT



- 1. Reedsport, Oregon HDD 4,340' of 5.5" Zayo Group Completed December 2020
- 2. Florence, Oregon HDD 2,005' of 5.5" Zayo Group Completed December 2020
- 3. Clackamas, Oregon HDD 1,400' of 12" NW Natural Completed October 2020
- 4. Kelso, Washington HDD 800' of 4" Cascade Natural Gas Completed October 2020
- 5. Kalama, Washington HDD 2,400' of 4" Cascade Natural Gas Completed October 2020
- **6.** Sandy, Oregon HDD 10,500' of 8" Multiple Bores (14 Total) NW Natural Completed September 2020
- 7. Hillsboro, Oregon HDD 1,400' of 8" NW Natural Completed September 2020
- 8. Ukiah, California HDD 800' of 8" Pacific Gas and Electric Completed August 2020
- 9. Chandler, Oklahoma HDD 3,750' of 24" Plains All American Completed July 2020
- 10. Lodi, California HDD 1,011' of 4" Pacific Gas and Electric Completed July 2020
- 11. Chino, California HDD 1,600' of 36" So Cal Gas Completed April 2020
- 12. Santa Margarita, California HDD 620' & 700' of 10" So Cal Gas Completed April 2020
- 13. Santa Margarita, California GAB 160' of 16" So Cal Gas Completed April 2020
- 14. Bakersfield, California HDD 200' of 12" So Cal Gas Completed February 2020
- 15. California HDD Beach Approach Approximately 4,000' Completed January 2020
- 16. San Luis Obispo, California GAB 40' of 10" So Cal Gas Completed January 2020
- **17.** Fort Lupton, Colorado HDD Multiple Bores (15 total) Ranging From 444' to 1,185' of 4" Completed December 2019
- 18. Enumclaw, Washington HDD 1,525' of 6" City of Enumclaw Completed December 2019
- **19.** Salinas, California HDD 1,206' of 12" Pacific Gas and Electric Completed October 2019
- **20.** Pueblo, Colorado HDD 1,332' of 4" Xcel Energy Completed October 2019
- **21.** American Canyon, California GAB 160' & 350' of 24" Pacific Gas and Electric Completed August 2019
- **22.** Santa Margarita, California HDD 1,391' of 16" So Cal Gas Completed August 2019
- **23.** Wasco, California HDD 1,848' & 2,661' of 8" California Rail Builders Completed August 2019
- 24. Willows, California GAB 130' of 4" Pacific Gas and Electric



Completed June 2019

- 25. Hawaii HDD Beach Approach (6 total) Ranging from 3,000' to 6,500' June 2018 May 2019
- **26.** Victorville, California HDD 1,234' & 1,365' of 10" Pacific Gas and Electric Completed February 2019
- 27. California HDD Beach Approach 4,000' Completed February 2019
- **28.** Fremont, California HDD 4,800' of 36" Pacific Gas and Electric Completed December 2018
- **29.** Brighton, Colorado HDD 880' of 8" Xcel Energy Completed November 2018
- **30.** Aurora, Colorado HDD 1,100' of 20" Xcel Energy Completed October 2018
- **31.** Thornton, California HDD 3,000' of 24" Pacific Gas and Electric Completed October 2018
- **32.** Thornton, California GAB 1,455' of 24" Pacific Gas and Electric Completed October 2018
- **33.** San Mateo, California HDD 2,400' of 24" Pacific Gas and Electric Completed August 2018
- **34.** San Mateo, California HDD 1,800' & 2,900' of 16" Verizon Completed August 2018
- **35.** Puerto Rico HDD Beach Approach 2,500' Completed August 2018
- Oregon HDD Beach Approach (2 total) 5,500'
 Completed July 2018
- **37.** Burnsville-Black Dog, Minnesota GAB 150' of 16" Xcel Energy Completed March 2018
- **38.** Barstow-Kramer Junction, California GAB 130' of 34" Pacific Gas and Electric Completed February 2018
- **39.** Pueblo West, Colorado HDD 2,400' of 6" Xcel Energy Completed January 2018
- **40.** Camas, Washington HDD 605' of 6" NW Natural Completed November 2017
- **41.** Tracy, California GAB 150' of 20 380' of 36" Shell Completed October 2017
- **42.** La Grande, Oregon HDD 1,300' of 6" Avista Utilities Completed September 2017



- **43.** Tacoma, Washington HDD 13,000' of 16" Puget Sound Energy Completed September 2017
- **44.** Turlock, California HDD 800' of 12" Pacific Gas and Electric Completed September 2017
- **45.** Sacramento, California HDD 2,450' of 30" Pacific Gas and Electric Completed August 2017
- **46.** Richland-Kennewick, Washington HDD 3,790' of 6" Cascade Natural Gas Completed August 2017
- **47.** The Dalles, Oregon HDD 677' of 6" NW Natural Gas Completed April 2017
- **48.** Buttonwillow, California HDD 305' of 12" SoCal Gas Completed January 2017
- **49.** Knappa, Oregon HDD 1,065' of 10" NW Natural Completed October 2016
- **50.** Sonoma, California HDD 800' of 6" Pacific Gas and Electric Completed September 2016
- **51.** Lemoore, California HDD 5,740' of 16" SoCal Gas Completed 2016
- **52.** Lemoore, California GAB 116' of 16" SoCal Gas Completed 2016
- **53.** Bakersfield, California GAB 1,054' of 12" SoCal Gas Completed 2016
- **54.** Santa Clarita, California HDD 1900' of 14" Plains Pipeline Completed February 2016 Various Sandstone Layers
- **55.** Castaic, California HDD 2,148' of 14" Plains Pipeline Completed February 2016 Various Sandstone Layers
- **56.** Larkspur, California HDD 700' of 30" HDPE City of Larkspur Completed September 2015 Fat Clay
- **57.** Elk Grove, California HDD 3600' of 24" Pacific Gas and Electric Completed January 2015 Soft\Fat Clay
- **58.** Elk Grove, California HDD 2300' of 24" Pacific Gas and Electric Completed December 2014 Soft\Fat Clay
- **59.** Vacaville, California HDD 1708' of 42" Pacific Gas and Electric Completed November 2014 Fat Clay under Wetland with Intersect
- **60.** Roseville, California HDD 3300' of 16" Pacific Gas and Electric Completed September of 2014
- **61.** Roseville, California HDD 3600' of 16" Pacific Gas and Electric Completed October of 2014



- **62.** Albany, Oregon HDD 3200' of 30" HDPE City of Albany October 2012 Solid Rock under Willamette and Calapooia River
- **63.** Corvallis\Monmouth, Oregon HDD 1200',3400',4200',5200' of 12" NW Natural Gas Completed May 2012 Fat Clay under City of Monmouth
- **64.** Sunnyvale, California HDD 950' of 24" Pacific Gas and Electric Completed July 2012 Fat Clay Bay Mud
- **65.** Sunnyvale, California HDD 2800' of 24" Pacific Gas and Electric Completed August 2012 Fat Clay Bay Mud
- **66.** Monmouth, Oregon HDD 4300' of 12" NW Natural Gas Completed April 2012 Fat Clay under Environmentally Sensitive Farmland
- **67.** Fresno, California HDD 2000' of 24" Pacific Gas and Electric Completed November 2012
- **68.** Medford, Oregon HDD 2800' 12" Avista Utilities
 Completed November 2010 Sandstone Intersect under Larson Creek
- **69.** Grants Pass, Oregon HDD 3000' 6" HDPE Avista Utilities Completed November 2010 Sandstone\Cobble under the Rogue River
- **70.** Cranberry Township, Pennsylvania HDD 3000' of 12" Charles Machine Works / Ditch Witch Completed February 2012 Fractured Rock
- **71.** Avon, Colorado 2800' of 16" HDD Xcel Energy Completed December 2011 Cemented Cobble Emergency Bore