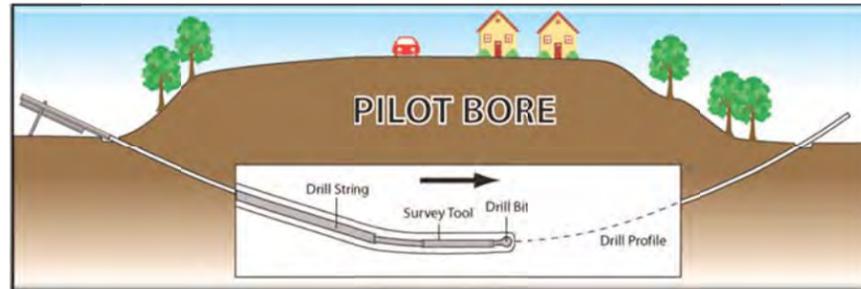


# HDD Sequence

## Step 1 - Drilling the Pilot Bore

An initial drilling step establishes a pilot hole. The surrounding soils are stabilized with drilling mud



A drilling engineer steers the drill bit using special survey tools



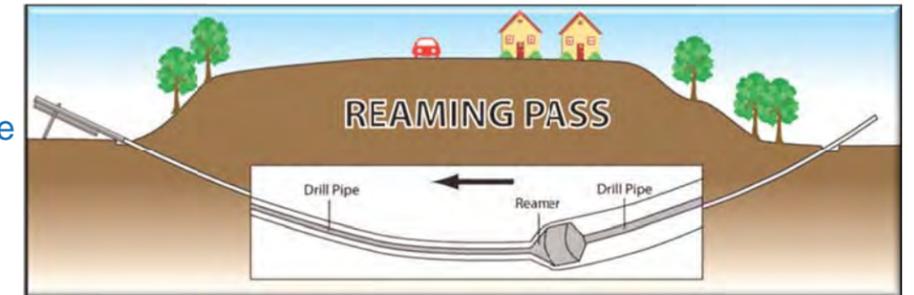
Horizontal Directional Drilling (HDD) Rig used for Drilling and Reaming



Tracking devices at the surface track the drill bit location during the initial bore

## Step 2 - Reaming Pass

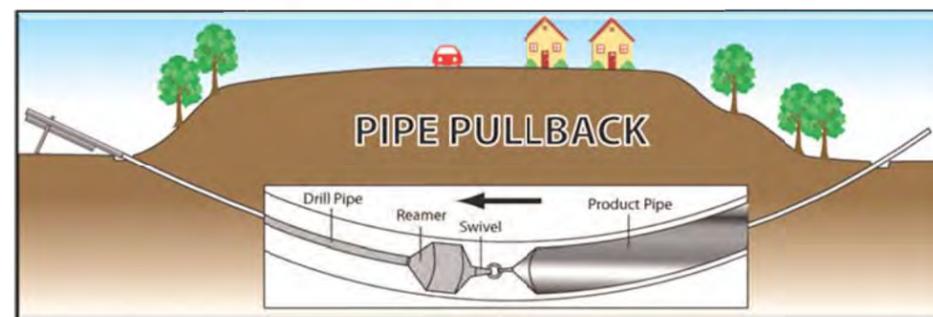
The pilot hole is then enlarged to the final pipe size using a reamer. The drilling mud excavated in this step is collected and recycled.



Specific equipment is used for drilling in different conditions. Both drill bits and reaming heads for the Magnolia Project will be selected based on the soil types found at the drill depth

## Step 3 - Pipe Pullback

The final pipeline is then pulled back through the prepared bore hole



Heavy equipment is used to lift the pipe and pull it through the prepared bore hole



# HDD Rigs

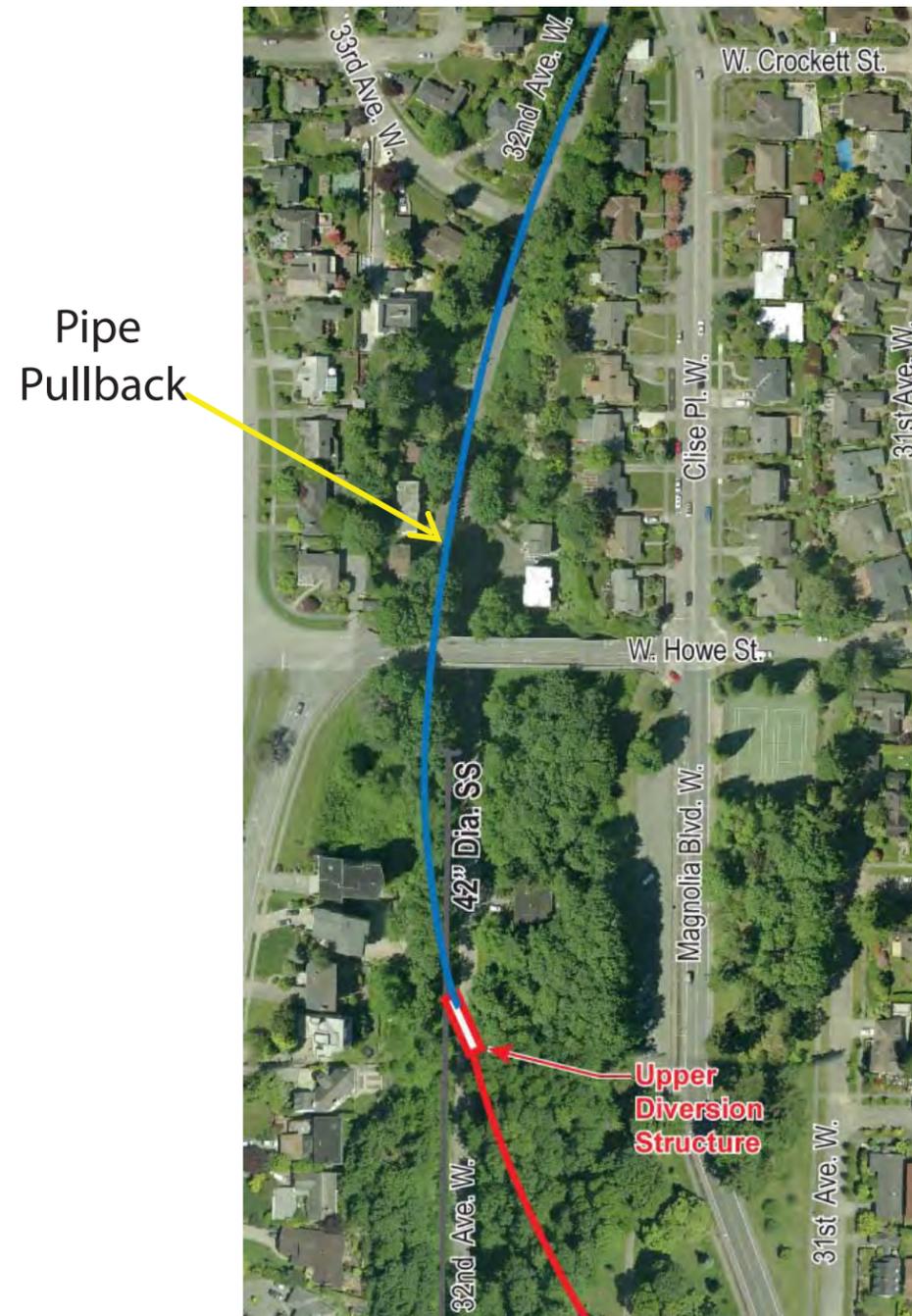


# HDD Layout Area

Pipe Laydown Duration: 8 Weeks



# Pipe Pull Back



Duration: 1-2 Days

