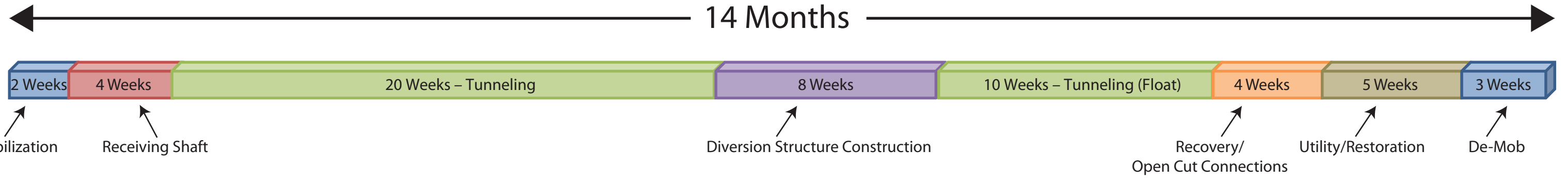
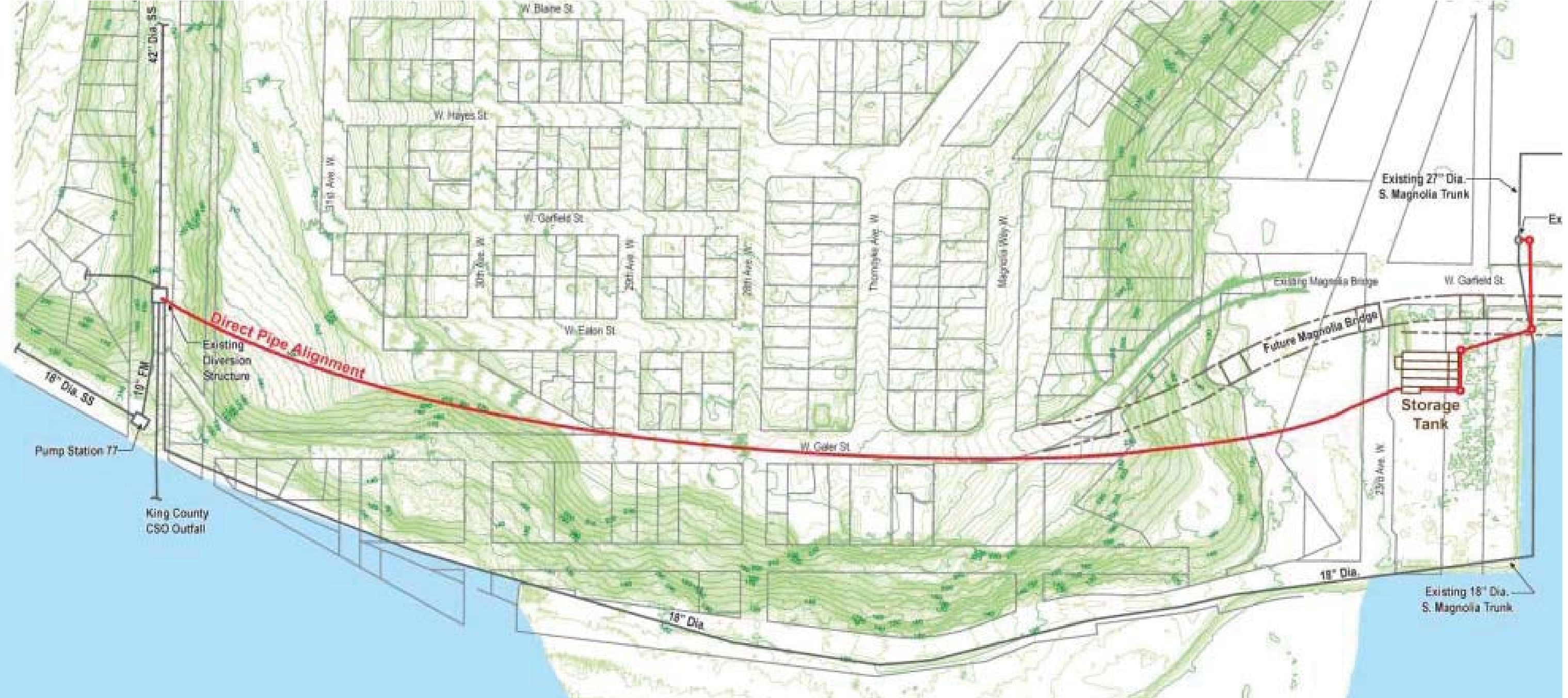


Direct Pipe Site Plan



Direct Pipe Process



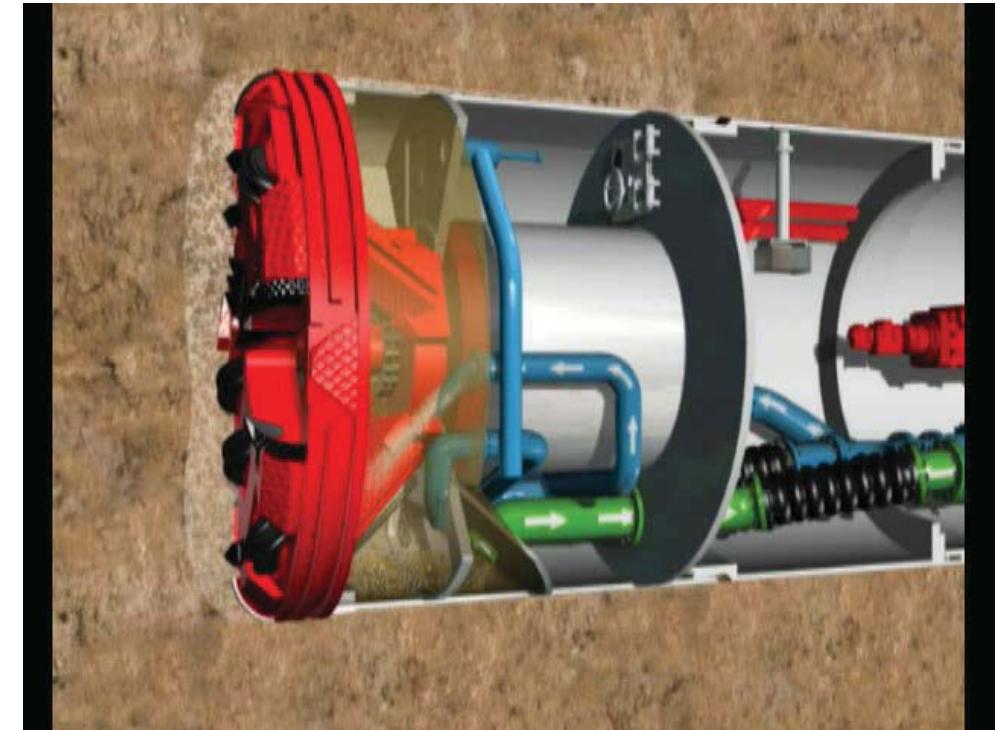
Rock
Cutting
Head



Cutting
Head for
Mixed Soil



Cutting
Head for
Soft Soil



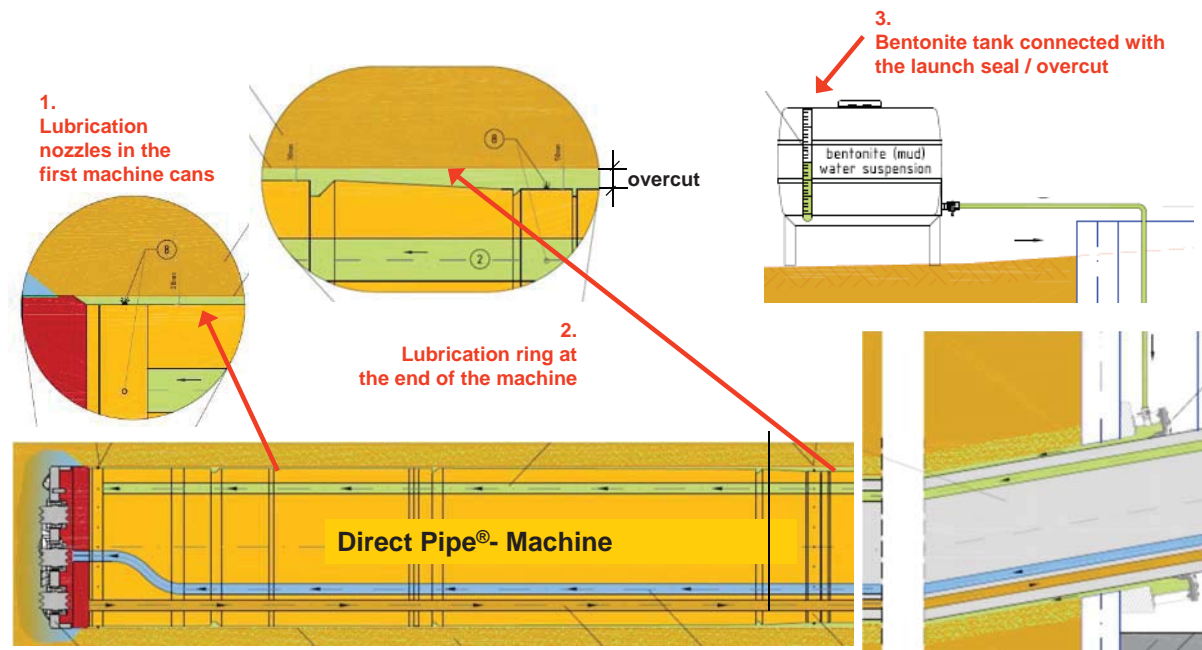
Direct Pipe Process 2



HERRENKNECHT AG
DIRECT PIPE®

THE BENTONITE LUBRICATION SYSTEM.

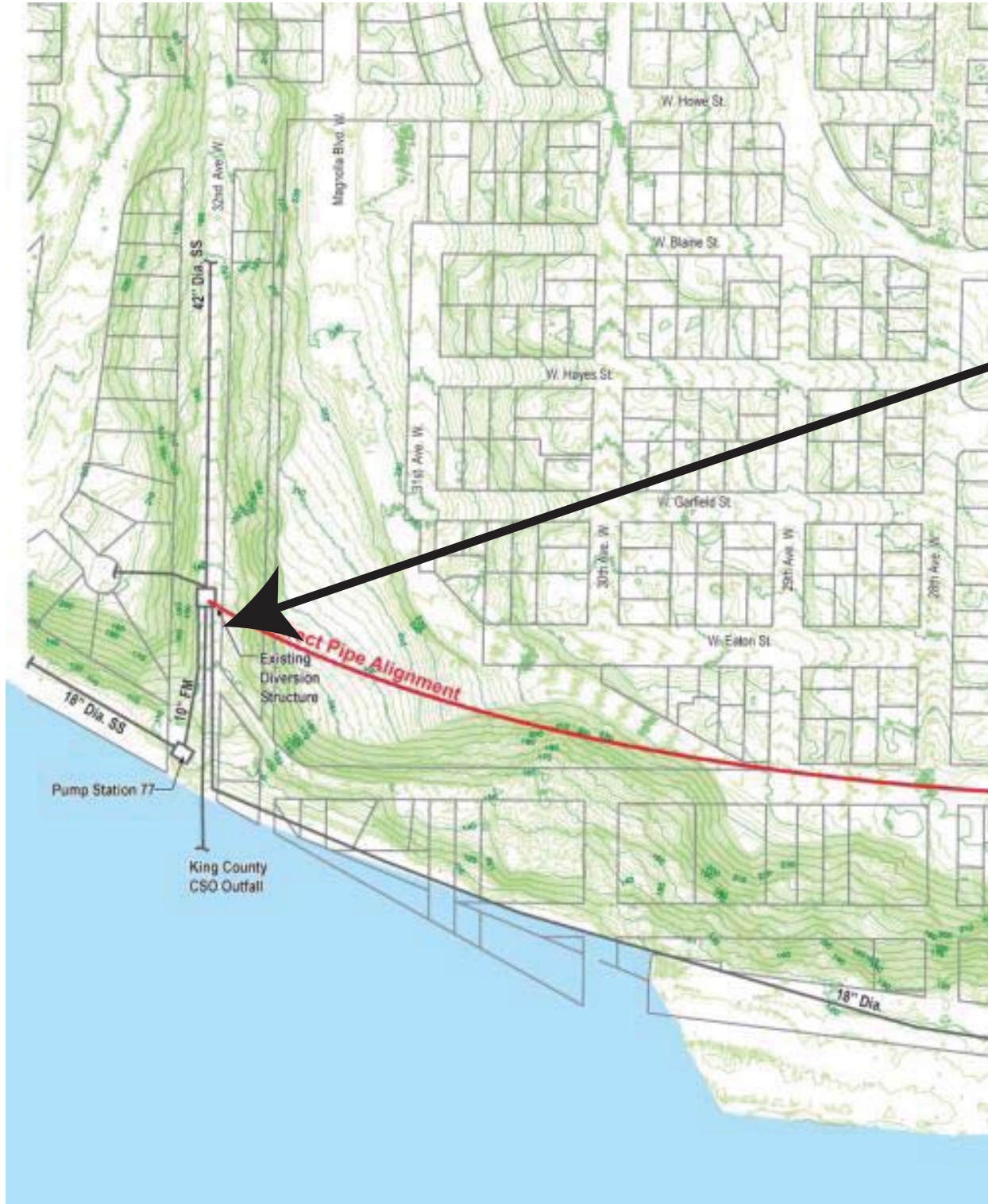
Separate supply line lubricating the annulus.



Dr. Gerhard Lang - Herrenknecht AG



Shaft Construction on 32nd for Direct Pipe

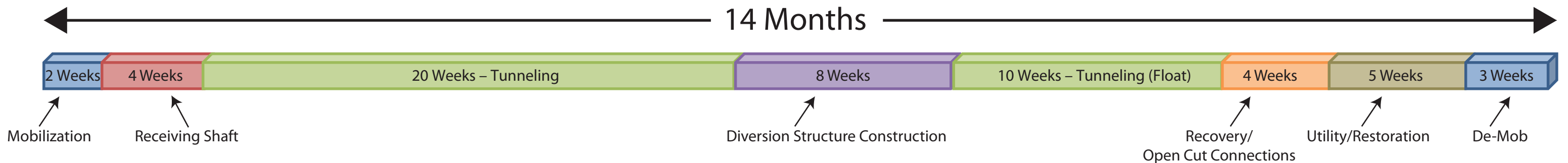


Overall Duration for Construction on 32nd Ave. W = 14 Months

Duration for Retrieval Shaft Construction on 32nd Ave. W
About 4 Weeks

Retrieval of Direct Pipe Machine
About 5 Days

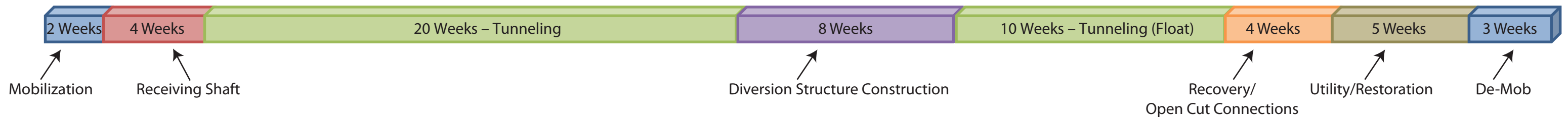
Diversion Structure Modification
About 8 Weeks



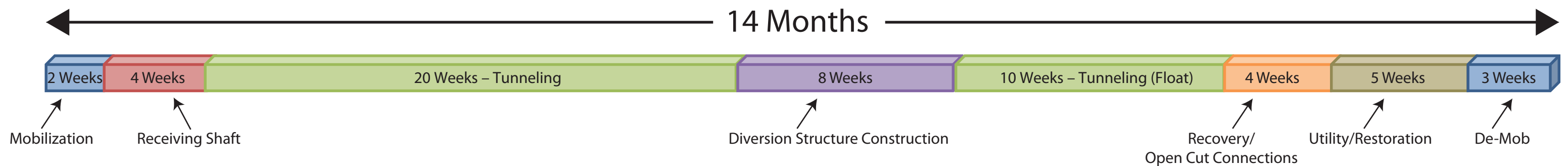
Direct Pipe Retrieval



14 Months



Diversion Structure



Pavement Restoration

