

Directional Drilling

Frac Out & Spill Guidance



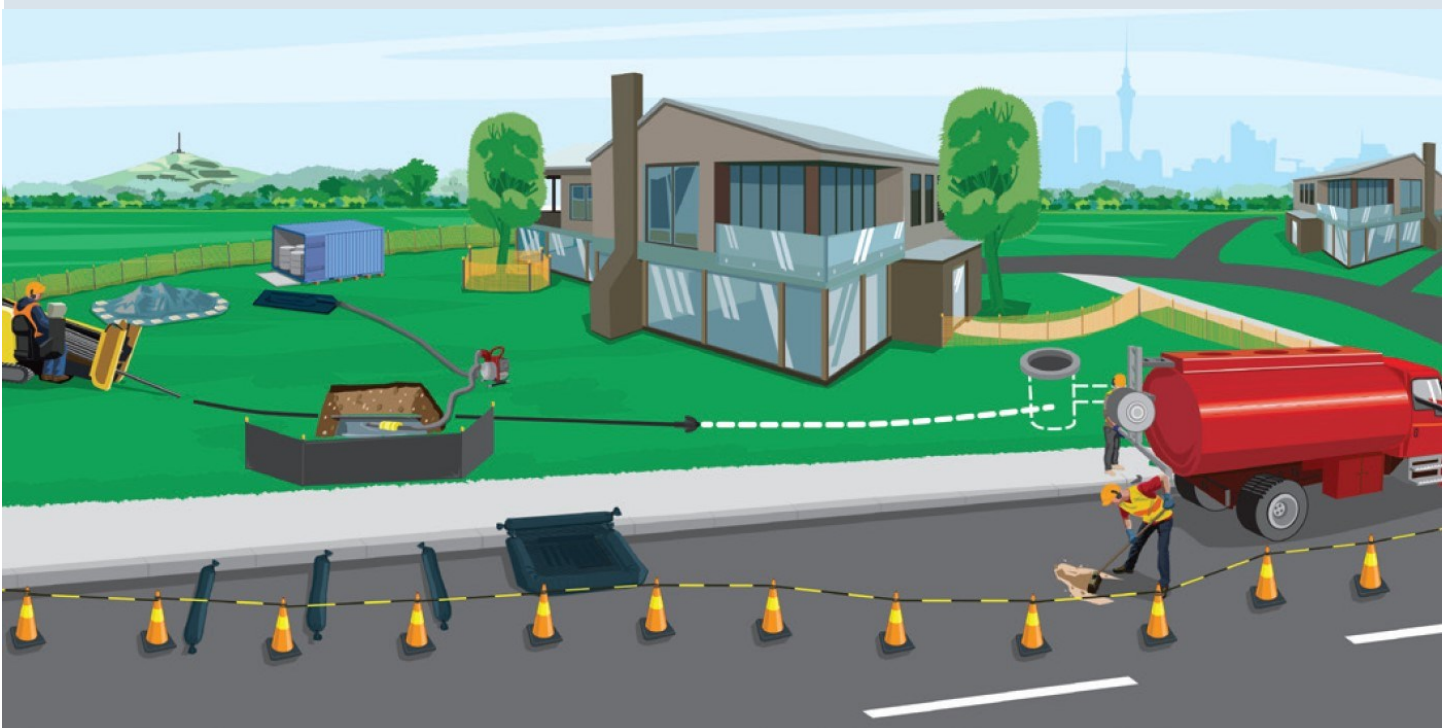
If you have any questions about this guidance sheet contact Colorado Springs Stormwater Enterprise at (719) 385-5980.

1. When should I use this guidance sheet? This sheet applies to any site where directional drilling is occurring, regardless of site size or duration of work.
2. What's the goal? Only rain down the drain! To manage directional drilling operations; protecting downstream receiving environments (e.g. curbs, stormwater catch basins, groundwater and surface water bodies) from sedimentation and water quality degradation.
3. Why manage directional drilling? Directional drilling, or otherwise called directional boring, horizontal directional drilling or HDD, is the practice of drilling of non-vertical bores with a drilling rig. Directional drilling is a common method of installing underground pipes and conduits along a prescribed bore path from the surface. Most directional boring machines use a high pressure jet of drilling fluid, which is generally a mixture of bentonite clay, water and additives, to cut through the soil and form the bore. The soil cuttings become suspended in the drilling fluid, which flow to a containment pit where the slurry is either allowed to soak in or is removed through dewatering methods.

Directional drilling excavations and the production of drilling slurry pose a risk of sediment and other contaminant discharges to the environment. If discharged these substances can:

- Clog the gills of fish and damage other sensitive tissues through abrasion.
- Suffocate aquatic plants, fish and insects by smothering them.
- Reduce the amount of light entering the water, which can stop plants and algae growing – removing a major food source for fish and insects.
- Burn and poison aquatic plants and animals.
- Interfere with fish vision making them vulnerable to predators or unable to see their prey.
- Increase the risk of flooding.

Other contaminants contained in the drilling fluid, such as polymer extenders, and copper drill lubricants can result in a range of adverse effects on natural habitats and ecosystems, and may pass through the food chain and concentrate in the tissues of fish, birds or humans.



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4. Site management and control measures

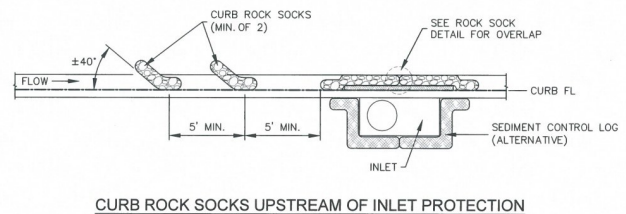
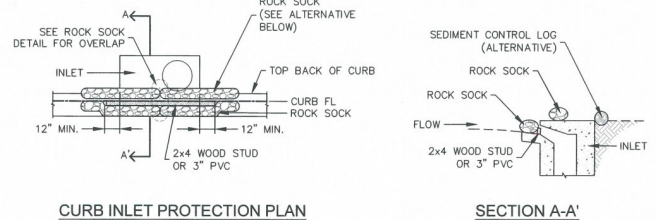
Forward planning – before you start work

- Before you start work identify the potential environmental risks and define how these can be mitigated or reduced through site practices or environmental controls.
- Check the lay of the land and decide where any run-off is likely to go. Pay particular attention to receiving environments.
- Identify the path of the bore – mark the location of underground services (call 811 before you dig) and where drilling work is likely to occur in and around trees. Gain any necessary approvals, protect and carefully manage work to avoid impacts on services and trees.
- Have a Frac Out Contingency Plan to deal with incidents and emergencies – keep a fully stocked spill kit on-site and make sure staff are well trained in spill response and emergency management procedures: – be aware of pathways to receiving environments when refueling or refilling the drill rig with drilling fluid and take steps to minimize risks.
- Identify a person who will be responsible for ensuring environmental practices and controls are followed and implemented prior to starting works.



Environmental practices and control measures

- Try to maintain a grass berm between drilling operations and the roadside.
- Put in place sediment controls around the works (e.g. rock socks, silt fences etc) to prevent sediment runoff.
- Install rock socks in the flow line of the curb and gutter at a 40 degree angle.
- Install stormwater inlet protection measures around downstream inlets (refer to the Inlet Protection specs in the SCM). Often multiple inlets will need to be protected.
- Have oil absorbent booms and pads in your spill kit in case of equipment failure. Hydraulic line failure is a common illicit discharge from directional drilling operations.
- If stockpiling is required, identify an appropriate area for spoil or stockpiling of soil away from receiving environments. Do not stockpile material near stormwater inlets, curbs, near any surface water body or in over-land flow paths or on gradients steeper than 15 percent.
- Cover stockpiles (e.g. with a tarpaulin, polythene sheet or geotextile fabric) to prevent sediment runoff.



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Minimize the Potential for a Frac Out

- Provide staff adequate training.
- Control drilling speed to prevent the need to back out the drill to realign.
- Pulling back and redrilling may cause localized pressure bulbs. This can increase pressure over time. Too much pressure could lead to a frac out.
- Drilling in a single run allows for better control of the pressure, reducing the threat of a frac out.

Detection of Frac Outs

- Watch for drops or spikes in pressure.
- Watch for drop in fluids returning into the entry pit.
- Watch for fluids entering the curb and gutter.

If a frac out occurs, stop all drilling operations immediately!

- Stage a vac truck onsite so it can mobilize to the site immediately.
- Berm the spill to prevent more runoff.
- Remove all slurry from the city's ROW and MS4.
- Vacuum large spills and use shovels/brooms to remove sediment.

When a Spill Occurs- Notify Appropriately

- When a discharge occurs the site foreman shall notify their management.
- If the drilling company is contracted to perform work, they shall notify the agency they are contracted with.
- The drilling company shall contact the spill hotline (719-491-6096) to report discharges to the City's MS4 (inlets, ponds, etc.).
- The drilling company shall notify CDPHE's spill reporting line (877-518-5608) within 24 hours of the incident if a spill reached State waters and must submit a 5-day report on the cleanup process.

Enforcement

When a directional drilling company spills slurry and other pollutants repeatedly into the MS4 and the City finds there were no control measures in place enforcement may include a Stop Work Order, Business License revocation, or a municipal summons. Enforcement is dependent upon the severity of the violation and the recalcitrance of the responsible party. In all instances, proof of completed remediation and installed control measures must be submitted to the City.



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5. Tips

- Although this sheet presents a range of accepted control measures, there are many ways of achieving the above aim. Inspect site control measures at least once a day to ensure they are working properly.
- Regularly inspect and clean out sediment control measures and inlet protection.
- Have a spill response plan and spill kit on-site and make sure staff are well trained.
- Rehabilitate all disturbed areas as soon as possible and stabilize exposed soils.
- Once work is complete remove control measures. Inspect stormwater catch basins and remove any contamination associated with site works.

6. Useful links and information

- Go to <https://coloradosprings.gov/stormwater-enterprise> here you will find a range of helpful information and links to the range of pollution related resources and educational materials.
- Go to <https://www.colorado811.org> or call 811 to locate underground utilities.
- To report spills dumping to the City's MS4 and call 719-491-6096
- For information on CDPHE reporting requirements: <https://cdphe.colorado.gov/report-concern-emergency>



KEEP IT CLEAN...
BECAUSE WE'RE ALL
DOWNSTREAM

To Report Spills and Dumping in Colorado Springs

Call:

719-491-6096

For More Information Visit:

<https://coloradosprings.gov/stormwater>

