

## **Material Handling and Spill Prevention**

**Leak Detection Plan:** To ensure protection for the surface during fracturing treatment, the location will be specifically constructed to contain any releases or spills. All containment will be steel with impermeable barriers installed inside and along the internal sidewalks of the containment. Volume capacity will be 110% or greater of the largest tank plus largest annual rainfall. The majority of the product will be piped out of the location.

Leak detection will be monitored by daily operator inspections and remote hi/lo pressure monitoring with electronic shut down functionality. Secondary containment from any chemical spills or leaks will surround any trucks that carry, mix, or add chemicals to the flow stream as well as connections that could possibly leak fluid. Should any spill or release occur, every reasonable step will be taken to quickly remediate the area disturbed. One to seven inspections per week will be recorded and kept in the district office and available to regulatory agencies. Records will be kept electronically indefinitely. All tanks will have hi level shut down for all producing wells on the pad.

Both gas and oil will be sold via pipeline and consequently will have remote ESD system functionality and independently tied to the operational status of the purchasing line(s) as well as high pressure ESD for all lines and vessels.

Flowlines will either be welded or threaded, some lines may be non-metallic. Welded Flowlines will be installed with welded or flanged connections. All threaded metallic pipe will be joined with appropriate lubricant/sealant. All non-metallic pipes that require welded joints will be installed with appropriate equipment to meet manufacturer recommendations and welded with qualified welders. All buried non-metal Flowline installation will contain a continuous metallic tracer line attached to the pipeline with surface access or other means of surface location. All flowlines will be pressure tested to their maximum manufactured value (at minimum 70%) prior to hydrocarbon production use. 10% of welds will be x-rayed for integrity. Chemical inspection program begins as soon as well begins flowback. A contractor for PetroShare will perform daily flowline inspections to ensure flowline integrity and prevent leaks/spills. Records of inspections will be available to COGCC upon request.

Transfer of oil and gas will be via pipeline. Salt water transfer will be via truck and the transfer point load line will be internal to the containment.