

Attachment 1

Definitions

- Authorized commercial disposal or treatment facility

A commercial disposal or treatment facility permitted by the Utah Division of Oil, Gas and Mining (UDOGM), Environmental Protection Agency (EPA), or a state environmental quality agency, that accepts exploration and production wastes from more than one operator.

- Authorized officer

Authorized Officer (AO) means an employee of the Bureau of Land Management (BLM) authorized to perform duties described in 43 CFR Groups 3000 and 3100. For purposes of this IM the AO will also apply to any employee of the UDOGM who has the authority to render decisions within the oil and gas section. Agency AO jurisdiction will be determined by mineral and/or surface ownership.

- Bioremediation

The use of bioremediation involves either enhancing the growth of indigenous soil fungi and microbes, (biostimulation) or can be further promoted by adding nonindigenous, designer microbes (bioaugmentation). Oil may be treated in place (in-situ remediation) or contaminated soils may be moved to a better suited location for treatment (ex-situ remediation).

- Blowdown/flare pit

A pit constructed to contain fluids discharged as the result of the emptying or depressurizing of a vessel or pipeline. Flare pit is constructed to safely contain flaring of natural gas.

- Cap

A layer of clay or other impermeable material installed over the top of a closed landfill, or pit, to prevent entry of rainwater and minimize leachate.

- Capillary barrier

A high porosity layer installed over an area of waste disposal in lieu of a cap to prevent upward migration of waste constituents in areas where the annual evaporation rate is greater than the annual precipitation rate, the annual precipitation rate is 25 inches or less, and the depth to ground water is greater than 100 feet, is proposed to describe a kind of cap which retards or prevents upward movement of saline fluid. Such fluids may occur in abandoned drilling pits and are prevented from depositing chlorides in surface soil by a capillary barrier..

- Centralized pit

A pit centrally located to accept wastes from multiple sources in a field.

- Closed-loop drilling

A method of drilling whereby a rig's mud-and-solids-control system efficiently recycles the circulated mud used during the drilling process, while at the same time preventing these fluids from coming into contact with native soils by eliminating the need for a reserve pit. This system uses a combination of solids control equipment (e.g., shale shakers, flow line cleaners, desanders, desilters, mud cleaners, centrifuges, agitators, and necessary pumps and piping) incorporated in a series on the rig's steel mud tanks, or as a self-contained unit that continually separates entrained drilling solids within the mud for continued use. In addition to removing solids from the mud, wastewater may also be chemically treated to remove fine solids and reused or disposed of in an environmentally safe manner. The only waste discarded as part of the operations is moist, drilled-up rock materials that may be disposed of off-site. A closed-loop mud system does not necessarily include the use of a small cuttings pit (which would constitute a "semi-closed loop drilling system").

- Completion fluids

Low-solids fluid or drilling mud used when a well is being completed. It is selected not only for its ability to control formation pressure, but also for the properties that minimize formation damage.

- Completion/re-completion pit

A pit used to hold completion fluids and small amounts of co-produced water or hydrocarbons that are flowed back from the well during completion operations.

- Condensate

A liquid hydrocarbon which:

- (a) Was produced as a liquid at the surface,
- (b) Existed as gas in the reservoir, and
- (c) Has API gravity greater than or equal to fifty degrees, unless otherwise proven.

- Diesel Range Organics (DRO)

DRO corresponds to the range of alkanes from C₁₀ to C₂₈ and a boiling point range of approximately 170 ° C - 430 ° C.

- Drilling mud

A special mixture of clay, water, and chemical additives pumped downhole through the drill pipe and drill bit. The mud cools the rapidly rotating bit; lubricates the drill pipe as it turns in the wellbore; carries rock cuttings to the surface; and serves as a plaster to prevent the wall of

the borehole from crumbling or collapsing. Drilling mud also provides the weight or hydrostatic head to prevent extraneous fluids from entering the wellbore and to control downhole pressures that may be encountered.

- Emergency operations

Actions taken to prevent adverse consequences that may arise from situations which pose an immediate danger to public health, safety or welfare, and/or to the environment.

- Emergency pit

A pit constructed to contain any products generated from emergency well operations (temporary) or a pit designed to collect the discharge from accidental releases (permanent). Any emergency use of pits shall be reported in accordance with NTL-3A or subsequent replacement Order procedures, and the pit shall be emptied and the liquids disposed of in accordance with applicable State and/or Federal regulations within 48 hours following its use, unless such time is extended by the authorized officer.

- Ephemeral drainage

A watercourse that flows only in direct response to precipitation, and whose channel is above the water table at all times.

- Exploration and Production (E&P) Wastes

Those wastes associated with operations to locate or remove oil or gas from the ground or to remove impurities from such substances and which are uniquely associated with and intrinsic to oil and gas exploration, development, or production operations. (EPA RCRA E&P Exemption Guidance)

- Federal lands

Federal lands means all lands and interests in lands owned by the United States which are subject to the mineral leasing laws, including mineral resource or nonmineral estates reserved to the United States in the conveyance of a surface or nonmineral estate.

- Fly Ash

Fly ash is the finely divided residue resulting from the combustion of ground or powdered coal. Fly ash is generally captured from the chimneys of coal-fired power plants; it has POZZOLANIC properties, and is sometimes blended with cement for this reason. Fly ash includes substantial amounts of silicon dioxide (SiO₂) (both amorphous and crystalline) and calcium oxide (CaO). Toxic constituents may include arsenic, beryllium, boron, cadmium, chromium, cobalt, lead, manganese, mercury, molybdenum, selenium, strontium, thallium, and vanadium.

- Fracture stimulation fluids

A fluid, slurry or foam that carries proppant material in suspension downhole under very high pressure to fracture and prop open the small cracks and fissures made in the producing formation by the intense pressure. After the proppant material (sand grains or microscopic beads) is in place, the pumping of the fluids is discontinued, allowing fluid to drain out of the formation, leaving the proppant behind to hold open small cracks.

- Freeboard

Free-board means the vertical distance from the top of the fluid surface to the lowest point on the top of the dike surrounding the pit.

- Gasoline Range Organics (GRO)

GRO corresponds to the range of alkanes from C₆ to C₁₀ and a boiling point range of approximately 60 ° C - 170 ° C.

- Impermeable

Material that does not permit fluids to pass through, that is the quality or state of resisting penetration by water or plant roots.

- Intermittent drainage

Intermittent drainage is a watercourse that is below the local water table for at least some part of the year and which obtains its flow from both surface runoff and ground water discharge.

- Land Farming

Land farming is the controlled and repeated application of wastes to the soil surface or treatment in windrows, using native microorganisms in the soil to naturally biodegrade hydrocarbon constituents, dilute and attenuate metals, and transform and assimilate waste constituents.(For further information see Attachment 6)

- Leaching

Leaching is the release of a constituent from a solid into a contacting liquid. The term “leachability” may be used to describe either the extent of leaching (e.g. percentage of total content that has leached), or rate of release (e.g., the time-dependent release) from materials. The mechanisms controlling the extent and rate of leaching include a combination of chemical reactions at the material surface and mass transport through the material pore structure. Chemical reactions determine the partitioning between the solid and liquid phases, whereas the mass transport (i.e., the summation of diffusion, hindered diffusion, tortuosity effects, effective surface area, etc.) describes the movement of a contaminant through the pore structure of the material to the environment.

- Lined pit

An excavated and/or bermed area that is required to be lined with a manmade synthetic liner acceptable to the authorizing agency that will prevent seepage.

- Oil-base mud

Drilling mud that uses oil, or a mixture of oil and water, mixed with various clays to make drilling mud. Oil-base muds are used in very deep wells where the bottom-hole temperatures preclude the use of water-base muds, and also used when drilling through salt sequences preventing excessive formation dissolution. Oil-base muds can be used when drilling through clay formations, where absorption of the water from water-base muds creates swelling to the extent that the drillpipe becomes stuck. Oil-base additives in the past included diesel fuels or crude oil, which were considered detrimental to the environment and have been replaced with mineral oils and new synthetic fluids with a lower toxicity.

- Perennial drainage

A watercourse that flows continuously. Perennial streams are generally associated with a water table in the localities through which they flow.

- Pozzolan

A pozzolan is a material which, when combined with calcium hydroxide (lime), exhibits cementitious properties. Pozzolans are commonly used as an addition (the technical term is "cement extender") to Portland cement concrete mixtures to increase the long-term strength and other material properties of Portland cement concrete, and in some cases reduce the material cost of concrete. Once completely solidified, the Pozzolana cement blend may be stronger than Portland cement, because of its low porosity, making it more protected from water absorption and spalling. Some of the most frequently used pozzolans include: Class F - fly ash from coal-fired power plants, Silica fume from silicon production, Rice husk ash from rice paddy-fields, Metakaolin from oil sand operation, Class C (calcareous) fly ash, and Ground granulated blast furnace slag.

- Production pit

A historic earthen, lined or unlined pit originally constructed to hold water or hydrocarbons accumulated from well production. BLM Utah and UDOGM no longer authorize construction of these pits.

- RCRA-exempt E&P wastes

Exploration and Production wastes that are exempt from the Resource Conservation and Recovery Act (RCRA), Subtitle C regulations. The RCRA Subtitle C exemption, however, does not preclude E&P wastes from control under state regulations, under RCRA Subtitle D solid waste regulations, or other federal regulations. Although the operator is relieved from regulation as hazardous wastes, the exemption does not mean these wastes could not present

a hazard to human health and the environment if improperly managed. (EPA RCRA E&P Exemption Guidance)

- Reserve pit

An excavation connected to the working mud pits of a drilling rig to hold excess or reserve drilling mud; a standby pit containing already mixed drilling mud for use when extra mud is needed.

- Risk-based decision making

A decision-making process that entails considerations of political, social, economic, and engineering information with risk-related information to develop, analyze, and compare regulatory options and to select the appropriate regulatory response to a potential chronic health hazard.

- Risk-based screening level (RBSL) for TPH

Addresses the risk of adverse non-cancer human health effects associated with the bulk of the hydrocarbons in complex petroleum mixtures.

- Roadspreading

- A process whereby RCRA-exempt exploration and production wastes that exhibit properties similar to commercial road oils, mixes, dust suppressants, or road compaction or de-icing materials are applied to or incorporated into a roadbed. Examples of such wastes include drilling fluids, produced water and produced water-contaminated soils, waste crude oil, sludges, and oil-contaminated soils.

- Sensitive Areas

Sensitive areas may include those in close proximity to shallow ground water, groundwater recharge areas, wetlands, riparian areas, Public Water Reserves, springs, sensitive wildlife habitats, WSAs, ACECs, National Parks, National Monuments, and/or Wilderness Areas.

There are two Sensitive Area assessment criterion: 1) Pit Liner Requirement; and 2) Oily Waste Cleanup Levels. Ranking scores will be calculated using the worksheets in Attachment 5.

Pit Liner Requirement

Level I Sensitivity (Ranking ≥ 20): Requires total containment by synthetic liner, concrete structure or other type of total containment structure or material.

Level II Sensitivity (Ranking 15-19): Bentonite or other compatible lining is discretionary depending on the fluid to be contained and environmental sensitivity.

Level III Sensitivity (Ranking < 15): No specific lining requirements.

Oily Waste Cleanup Levels

Level I Sensitivity (Ranking < 50)

Level II Sensitivity (Ranking ≥ 50)

Waivers, additions, or exceptions to these criteria may be allowed only in limited circumstances when supported through NEPA analysis and affirmed by the BLM or UDOGM Authorized Officer. Such instances may include (but are not limited to) where special conditions warrant, such as in closed hydrologic basins, locations within sensitive wildlife habitat, or on excessively steep topography.

- Squeezing of pits

The mechanical manipulation of pit contents that contain standing fluids.

- Sodium Adsorption Ratio

A measure of the suitability of water for use in agricultural irrigation as determined by the concentrations of solids dissolved in the water. It is also a measure of the sodicity of soil, as determined from analysis of water extracted from the soil.

The formula for calculating sodium adsorption ratio is:

$$\text{SAR} = [\text{Na}^+] / \{([\text{Ca}^{2+}] + [\text{Mg}^{2+}]) / 2\}^{1/2}$$

- Solidification of pit contents

Solidification refers to techniques that encapsulate the waste in a monolithic solid of high structural integrity. The encapsulation may be of fine waste particles (micro-encapsulation) or of a large block or container of wastes (macro-encapsulation). Solidification does not necessarily involve a chemical interaction between the wastes and the solidifying reagents but may mechanically bind the waste into the monolith. Contaminant migration is restricted by decreasing the surface area exposed to leaching and/or by isolating the wastes within an impervious capsule.

- Stabilization of pit contents

Stabilization refers to those techniques that reduce the hazard potential of a waste by converting the contaminants into their least soluble, mobile, or toxic form. The physical nature and handling characteristics of the waste are not necessarily changed by stabilization.

- Tankbottoms

The unmerchantable accumulation of hydrocarbon material, i.e. slop or waste oil, and other substances that settle naturally to the bottom of producing lease tanks and/or pipeline storage tanks after a period of being treated chemically (i.e., surfactants) and/or mechanically (i.e., separator, treater, heater treaters, etc.). Tank bottoms may consist of a combination of

several elements including, but not limited to, heavy hydrocarbons, paraffin, basic sediment, water, and emulsions.

- Tier 1

A comparison of the concentration of a naturally occurring contaminant to the background concentration of that contaminant in the affected medium, using methods approved by BLM/UDOGM to determine background levels.

- Tier 2

A comparison of the concentration of a contaminant to the risk-based cleanup values in the Tier 2 Risk-Based Summary Table, found at the back of Attachment 4 of this IM which is only applicable to Cleanup Level I Sensitivity criteria (see Attachment 5, Soil Cleanup Levels tab).

- Tier 3

Involves collecting the necessary data, under BLM/UDOGM direction, to replace default values in the Tier 2 equations with site-specific information which is applicable to Cleanup Level II Sensitivity criteria (see Attachment 5, Soil Cleanup Levels tab).

- Tinhorn

A below-grade structure used to receive oil, condensate, or produced water.

- Toxic Constituents in Produced Water

Toxic constituents means substances in produced water, that when found in toxic concentrations as specified by Federal or State regulations, can have harmful effects on plant or animal life. These substances include but are not limited to arsenic (As), barium (Ba), cadmium (Cd), hexavalent chromium (bCr), total chromium (tCr), lead (Pb), mercury (Hg), zinc (Zn), selenium (Se), benzene, toluene, ethylbenzene, and xylenes, as defined in 40 CFR 261.

- Workover pit

A pit constructed to hold fluids resulting from any downhole remedial operation in an existing oil or gas well that is designed to sustain, restore or increase the production rate or ultimate recovery in a geologic interval currently completed or producing. Workover pits may contain, but are not limited to containing, fluids and materials from: acidizing, re-perforating, fracture treating, sand/paraffin removal, casing repair, squeeze cementing, or setting of bridge plugs to isolate water productive zones from oil or gas productive zones, or any combination thereof.