

APPENDIX E:

LIST OF HAZARDOUS AND EXTREMELY HAZARDOUS MATERIALS

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Table E.1 Hazardous and Extremely Hazardous Materials Potentially Utilized or Produced During Construction, Drilling, Production, and Reclamation Operations.

Source	Approximate Quantity Per Well	Hazardous Substances ¹	Extremely Hazardous Substances
Drilling Material			
Barite	--	Barium compounds	
	--	Fine mineral fibers	
Bentonite	15,000 lbs	Fine mineral fibers	
Caustic Soda	300 lbs	Sodium hydroxide	
Glutaraidehyde	--	Isopropyl alcohol	
Lime	500 lbs	Calcium hydroxide	
Mica	500 lbs	Fine mineral fibers	
Modified Tannin	--	Ferrous sulfate	
	--	Fine mineral fibers	
Phoephaza Esters	--	Mehanol	
Polyacrylamides	100 gal		Acrylamide
	--	PAHs	
	--	Petroleum distillates	
	--	POM	
Retarders	--	Fine mineral fibers	
Anionic Polyacrylamide	20 lbs		Acrylamide
Polyanionic Cellulose	600 lbs	Fine mineral fibers	
Cementing/Plugging			
Bentonite	3,115 lbs	Fine mineral fibers	
Anti-foamer	--	Glycol ethers	
Calcium Chloride Flake	1,797 lbs	Fine mineral fibers	
Cellophane Flake	231 lbs	Fine mineral fibers	
Cements	66,928 lbs	Aluminum oxide	
	--	Fine mineral fibers	
Chemical Wash	840 gal	Ammonium oxide	
	--	Glycol ethers	
Diamaceous Earth	--	Fine mineral fibers	
Extenders	22,866 lbs	Aluminum oxide	
	--	Fine mineral fibers	
Fluid Loss Additive	--	Acrylamide	
	--	Fine mineral fibers	
	--	Naphthalene	
Friction Reducer	--	Fine mineral fibers	
	--	Naphthalene	
	--	PAHs	
	--	POM	

Table E.1 (Continued)

Source	Approximate Quantity Per Well	Hazardous Substances ¹	Extremely Hazardous Substances
Mud Flash	--	Fine mineral fibers	
Retarder	--	Fine mineral fibers	
Salt	--	Fine mineral fibers	
Silica Flour	--	Fine mineral fibers	
Fracturing Materials			
Biocides	4 gal	Fine mineral fibers PAHs POM	
Breakers	40 lbs	Ammonium persulphate Ammonium sulphate Copper compounds Ethylene glycol Fine mineral fibers Glycol ethers	
Clay Stabilizer	--	Fine mineral fibers Glycol ethers Isopropyl alcohol Methanol PAHs POM	
Crosslinkers	22 gal	Ammonium chloride Methanol Potassium hydroxide Zirconium nitrate Zirconium sulfate	
Foaming Agent	190 gal	Glycol ethers	
Gelling Agent	126 gal	Benzene Ethylbenzene Methyl tert-butyl ether Naphthalene PAHs POM Sodium hydroxide m-Xylene o-Xylene p-Xylene	
pH Buffers	--	Acetic acid Benzoic acid	

Table E.1 (Continued)

Source	Approximate Quantity Per Well	Hazardous Substances ¹	Extremely Hazardous Substances
	--	Fumaric acid	
	1,250 gal	Hydrochloric acid	
	27 gal	Sodium hydroxide	
Sands	170,300 lbs	Fine mineral fibers	
Solvents	--	Glycol ethers	
Surfactants	--	Glycol ethers	
	--	Isopropyl alcohol	
	--	Methanol	
	--	PAHs	
	--	POM	
Corrosion Inhibitor	10 gal		
Production Products			
Natural gas	--	n-Hexane PAHs POM	
Produced water/drill cuttings	--	See Appendix A, Water Management Plan	
Fuels			
Diesel fuel	--	Benzene Cumene Ethylbenzene Methyl tert-butyl ether Naphthalene PAHs POM Toluene m-Xylene o-Xylene p-Xylene	
Gasoline	--	Benzene Cumene Cyclohexane Ethylbenzene n-Hexane Methyl tert-butyl ether Naphthalene PAHs POM	
	--	Tetraethyl lead	

Table E.1 (Continued)

Source	Approximate Quantity Per Well	Hazardous Substances ¹	Extremely Hazardous Substances
	--	Toluene	
	--	m-Xylene	
	--	o-Xylene	
	--	p-Xylene	
Natural gas	--	n-Hexane	
	--	PAHs	
	--	POM	
Propane	--	Propylene	
Pipeline Materials			
Coating	--	Aluminum oxide	
Cupric sulfate solution	--	Cupric sulfate	
	--	Sulfuric acid	
Diethanolamine	--	Diethanolamine	
LP Gas	--	Benzene	
	--	n-Hexane	
	--	Propylene	
Molecular sieves	--	Aluminum oxide	
Pipeline primer	--	Naphthalene	
	--	Toluene	
Potassium hydroxide solution	--	Potassium hydroxide	
Rubber resin coatings	--	Acetone	
	--	Coal tar pitch	
	--	Ethyl acetate	
	--	Methyl ethyl ketone	
	--	Toluene	
	--	Xylene	
Emissions			
Gases	--	Formaldehyde	
	--		Nitrogen dioxide
	--		Ozone
	--		Sulfur dioxide
	--		Sulfur trioxide
Hydrocarbons	--	Benzene	
	--	Ethylbenzene	
	--	n-Hexane	
	--	PAHs	

Table E.1 (Continued)

Source	Approximate Quantity Per Well	Hazardous Substances ¹	Extremely Hazardous Substances
	--	Toluene	
	--	m-Xylene	
	--	o-Xylene	
	--	p-Xylene	
Particulate matter	--	Barium	
	--	Cadmium	
	--	Copper	
	--	Fine mineral fibers	
	--	Lead	
	--	Manganese	
	--	Nickel	
Particulate matter (cont.)	--	POM	
	--	Zinc	
Miscellaneous Materials			
Acids	--	Acetic anhydride	
	--	Formic acid	
	--	Sodium chromate	
	--	Sulfuric acid	
Antifreeze, heat control, and dehydration agents	--	Acrolein	
	--	Cupric sulfate	
	--	Ethylene glycol	
	--	Freon	
	--	Phosphoric acid	
	--	Potassium hydroxide	
	--	Sodium hydroxide	
	--	Triethylene glycol	
Batteries	--	Cadmium	
	--	Cadmium oxide	
	--	Lead	
	--	Nickel hydroxide	
	--	Potassium hydroxide	
	--	Sulfuric acid	
Biocides	--	Formaldehyde	
	--	Isopropyl alcohol	
	--	Methanol	
Cleaners	--	Hydrochloric acid	
Corrosion inhibitors	--	4-4' methylene dianiline	

Table E.1 (Continued)

Source	Approximate Quantity Per Well	Hazardous Substances ¹	Extremely Hazardous Substances
	--	Acetic acid	
	--	Ammonium bisulfite	
	--	Basic zinc carbonate	
	--	Diethylamine	
	--	Dodecylbenzenesulfonic acid	
	--	Ethylene glycol	
	--	Isobutyl alcohol	
	--	Isopropyl alcohol	
	--	Methanol	
	--	Naphthalene	
	--	Sodium nitrite	
	--	Toluene	
	--	Xylene	
Emulsion breakers	--	Acetic acid	
	--	Acetone	
Emulsion breakers	--	Ammonium chloride	
(cont.)	--	Benzoic acid	
	--	Isopropyl alcohol	
	--	Methanol	
	--	Naphthalene	
	--	Toluene	
	--	Xylene	
	--	Zinc chloride	
Fertilizers	--	Unk	
Herbicides	--	Unk	
Lead-free thread compound	--	Copper	
Lubricants	--	Zinc	
	--	1,2,4-trimethylbenzene	
	--	Barium	
	--	Cadmium	
	--	Copper	
	--	n-Hexane	
	--	Lead	
	--	Manganese	
	--	Nickel	
	--	PAHs	
	--	POM	

Table E.1 (Continued)

Source	Approximate Quantity Per Well	Hazardous Substances ¹	Extremely Hazardous Substances
Methanol	--	Zinc	
Motor oil	--	Methanol	
Paints	--	Zinc compounds	
	--	Aluminum	
	--	Barium	
	--	n-Butyl alcohol	
	--	Cobalt	
	--	Lead	
	--	Manganese	
	--	PAHs	
	--	POM	
	--	Sulfuric acid	
	--	Toluene	
	--	Triethylamine	
	--	Xylene	
Paraffin control	--	Carbon disulfide	
	--	Ethylbenzene	
	--	Methanol	
	--	Toluene	
	--	Xylene	
Photoreceptors	--	Selenium	
Scale inhibitors	--	Acetic acid	
	--	Ethylene diamine tetra	
	--	Ethylene glycol	
	--	Formaldehyde	
	--	Hydrochloric acid	
	--	Isopropyl alcohol	
	--	Methanol	
	--	Nitrilotriacetic acid	
Sealants	--	1,1,1-trichloroethane	
	--	n-Hexane	
	--	PAHs	
	--	POM	
Solvents	--	1,1,1-trichloroethane	
	--	Acetone	
	--	t-Butyl alcohol	
	--	Carbontetrachloride	
	--	Isopropyl alcohol	

Table E.1 (Continued)

Source	Approximate Quantity Per Well	Hazardous Substances ¹	Extremely Hazardous Substances
	--	Methyl ethyl ketone	
	--	Methanol	
	--	PAHs	
	--	POM	
	--	Toluene	
	--	Xylene	
Starting fluid	--	Ethyl ether	
Surfactants	--	Ethylene diamine	
	--	Isopropyl alcohol	
	--	Petroleum naphtha	

¹ PAH = polynuclear aromatic hydrocarbons

POM = polycyclic organic matter.