TABLE 2.9
Technology/Process Option Evaluation—*Ex-situ* Groundwater Treatment and Disposal

General Response Action	Remedial Technologies	Process Options	Technical Implementability	Effectiveness	Cost	Comments
Ex-Situ (Post-Collection Treatment of Groundwater)	Physical	Adsorption with GAC[1]	Good	Demonstrated	Moderate to High	Retained. Some COPCs with low adsorption coefficients (e.g. acetone) may be present at concentrations exceeding discharge limits in process stream; secondary treatment may be required.
		Air Stripping[1]	Good	Good	Moderate	Retained. Only treats water process stream; off-gas would require treatment; some COPCs with low adsorption coefficients (e.g. acetone) may be present at concentrations exceeding discharge limits in process stream; secondary treatment may be required.
		Clarification (Sedimentation)	Good	Poor	Low	Does not address COPCs.
		Coagulation	Good	Poor	Low	Does not address COPCs.
		Component Separation	Good	Poor	Low	Does not address COPCs.
		Evaporation	Good	Good	Low	Vapor emissions not controllable or permitable.
		Flocculation	Will not remove COPCs from process stream.			
		Freeze Crystallization	Will not remove COPCs from process stream.			
		Ion Exchange	Will not remove COPCs from process stream			
		Metals Precipitation	Will not remove COPCs from process stream.			
		Microfiltration/ Ultrafiltration	Will not remove COPCs from process stream.			

TABLE 2.9
Technology/Process Option Evaluation—*Ex-situ* Groundwater Treatment and Disposal

General Response Action	Remedial Technologies	Process Options	Technical Implementability	Effectiveness	Cost	Comments
		Phase Separation	Good	Poor	Low	Not effective for destruction or reduction of COPCs.
		Precipitation with Sand Filtration	Will not remove COPCs from process stream.			
		Reverse Osmosis	Will not remove COPCs from process stream.			
		Steam Stripping	Not feasible due to cost			
	Chemical	Neutralization	Will not remove COPCs from process stream.			
		Oxidation	Good	Good	High	Safety issues associated with the handling and use of oxidants may complicate the application of this process.
		Reduction	Will not remove COPCs from process stream.			
		UV Oxidation[1]	Good	Demonstrated	Moderate	Retained. Potentially applicable for treatment of water process stream.
	Biological	Aeration/Aerobic	Good	Poor to Fair	Low	Does not address COPCs and long residence time not feasible.
		Bioreactors	Good	Fair	Moderate	Difficult to implement due to wide variety of COPCs; would require both aerobic and anaerobic processes.
		Fixed Film	Good	Fair	Moderate	Difficult to implement due to wide variety of COPCs; would require both aerobic and anaerobic processes.
		Oxidation Enhancement w/ Hydrogen Peroxide	Good	Poor to Fair	Low	Only addresses aerobically degradable COPCs.

TABLE 2.9
Technology/Process Option Evaluation—*Ex-situ* Groundwater Treatment and Disposal

General Response Action	Remedial Technologies	Process Options	Technical Implementability	Effectiveness	Cost	Comments
Ex –Situ Groundwater Disposal	Pre–Treatment Discharge	RCRA TSDF	Good	Good	High	High cost.
	Post –Treatment Discharge	Reuse as drinking water	Good	Good	Moderate	Low quantities of water would not justify required additional treatment due to unpotable nature of groundwater; not acceptable by community and other stakeholders.
		Reuse as irrigation water	Good	Good	Moderate	Potentially feasible for park watering, but community acceptance not likely.
		Reuse as process water	Remedial options will not require process water			
		Sewer system discharge	Good	Good	Low	Retained. Local POTW may not accept water discharge.
		Surface water discharge	Good	Good	Low	Retained. Potentially feasible to Los Angeles River.
	Subsurface	Deep Well Injection	Good	Good	Moderate	Retained. Potentially feasible.

Effectiveness is the ability to perform as part of a comprehensive alternative that can meet RAOs under conditions and limitations that exist at the site. Technical Implementability encompasses the applicability/feasibility of performing the process option under the regulatory, technical, and schedule constraints of the project. Cost is for comparative purposes only, relative to other processes/technologies that perform similar functions.

COPCs	Chemicals of Potential Concern	RAOs	Remedial Action Objectives
GAC	Granular activated carbon	RCRA	Resource Conservation and Recovery Act
GW	Groundwater	SVE	Soil Vapor Extraction
NA	Not applicable	VOCs	Volatile Organic Contaminants
NCP	National Contingency Plan	TSDF	Treatment, storage, or disposal facility
POTW	Publicly Owned Treatment Works	UV	Ultraviolet

[1] Detailed evaluation and comparative analysis of these *ex-situ* treatment technologies may be referenced in Appendix B.