S&P COMPANY
California

Decommissioning of Lucky Lager Brewing Plant

Alberto A. Gutiérrez served as principal in charge of this project while serving as President of GCL, predecessor to Geolex, Inc.

GCL was retained to conduct a Phase II environmental site assessment of a 17-acre (20 building) brewing plant being decommissioned, demolished and then developed as a residential complex. The brewery was constructed in 1933. Over the years, it was renovated several times and several additions were made to the structures. The plant was closed in 1978.

The scope of GCL's investigation included a comprehensive asbestos inspection; hazardous materials investigation; polychlorinated biphenyl (PCB) identification; underground storage tank and related soil and groundwater contaminants investigation; and a subsurface investigation, including soil and groundwater characterization. Our scope was to identify if the site had been contaminated by on-site operations, and define the extent of contamination. In addition, we provided a "cost to cure" analysis for remediation of the site to allow the development of a residential complex.

The results of the site investigation identified:

- Asbestos throughout the structures
- Hazardous materials (e.g., hydraulic fluid, lubricants, mercury and PCBs from mechanical equipment)
- Soil and groundwater sampling detected the presence of certain compounds of concern, such as PCB contamination, pesticide (DDT, Chlordane, Dieldrin among others) contamination, and petroleum hydrocarbons

From these results, GCL identified several strategies for remediation. However, the first step in identifying the most feasible approach to decontaminating the site was to conduct a risk assessment to determine the required level of remediation to permit development of the site as a residential community and ensure the health and safety of works performing the subsequent construction.

Based upon the risk assessment and the asbestos survey, GCL developed a plan to permit the demolition of the site buildings and the grading of the site. The purpose of the plan was to minimize the risk of exposure to asbestos during demolition and the risk associated with certain compounds in the soil during the lifetime of the residential community.

Major Project Elements:

- Asbestos inspection
- Hazardous materials investigation
- PCBs
- Underground storage tanks
- Soil/Groundwater sampling
- Risk assessment
- On-site bioremediation

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Soils in certain areas of the site were compiled for on-site bioremediation. Soils contaminated with PCBs and pesticides were excavated and disposed of off site. GCL's asbestos survey team monitored the demolition of the buildings to ensure that site workers and adjacent neighborhoods were not exposed. The results of GCL's planning allowed the site to be rehabilitated in a short period of time minimizing the additional expenses associated with the identified hazards.

One of the most innovative components of this project was GCL's approach to remediating hydrocarbon-contaminated soils. The process included an ex situ bioremediation process called windrow composting. This process effectively promoted the natural degradation of petroleum hydrocarbons, enhancing the metabolic activity by optimizing soil moisture, nutrient levels, oxygen, pH, and temperature. The soil mound was carefully monitored to ensure the ideal soil environment was maintained for biological growth.

The advantage of composting was that it recycled several different waste materials (e.g., animal waste, spent mushroom compost, food processing waste, fisheries waste) with petroleum-contaminated soil. The final product was a soil rich in nutrients and humic material that could be used for commercial landscaping and nursery applications.

At the brewery site, concentrations of diesel and fuel oil resulting from surface spills were measured as high as 2,433 parts per million (ppm). Using the compost treatment, GCL reduced concentrations to less than 100 mg/total petroleum hydrocarbon in a period of six weeks. Additionally, Toxic Characteristic Leaching Potential (TCLP) analysis showed none detected (less than 1 ppm) and allowed the soil to be used as fill or landscaping loam.

The client originally considered landfill disposal of the soil at a cost exceeding $100/cubic yard (cy). With composting, the treatment was performed at a cost of approximately $35/cy. Additionally, landscaping on the site could use the recycled soil, saving $19/cy that would otherwise have been spent on fresh top soil. The cost effectiveness of this project and the elimination of landfill liability was a significant benefit to the owner.