WEB EXCLUSIVE

SCS Engineers Goes Back to School

By Vicki Strickler

The Los Angeles Unified School District (LAUSD) faced a number of challenges and intense pressure to expand its schools to accommodate a rapidly growing student population. To solve the capacity crisis, LAUSD proposed building a large number of schools in the Los Angeles area.

Because the L.A. area is largely built-out, and there is a scarcity of unimproved land, some of these school sites were located on older industrial and commercial properties, which had been identified with contaminated soils. Soil cleanup for these sites was a priority of the LAUSD. In addition, many areas in Los Angeles are vulnerable to methane gas seeps—from underground petroleum sources and/or oil-field activities (e.g., old wells or pipelines). The most notorious example was the Belmont Learning Complex site, where a newly constructed school lay unused for 10 years while solutions to (and litigation over) a previously unknown methane problem was successfully resolved.

Before constructing begins at new school sites, California State law requires approval from the Department of Toxic Substances Control (DTSC) following an environmental investigation to identify potentially hazardous materials or contamination. If contamination is found during site investigations, appropriate remediation is necessary for the protection of staff and children in order to receive DTSC approval and for new construction to proceed.

LAUSD clearly needed assistance to position the properties for failsafe expansion—and to cope with the complex environmental review process necessary to comply with strict California State regulations for school cleanup.

The Belmont Learning Center was included among these sites, and what ensued was the crafting of a long-term solution to the methane issue. Support along these lines came from several partner affiliates, including work performed by SCS Engineers, a national environmental engineering and consulting firm, which played a role in the expansion.

The Belmont Learning Center was partly reconstructed, and is now open as the Edward R. Roybal Learning Center. Another school site that achieved national visibility was at the former Ambassador Hotel, site of Robert Kennedy's assassination in 1968. Methane problems were overcome through a variety of control measures—and the LAUSD successfully built the Robert F. Kennedy Community Schools at the site (the scene of the assassination has been architecturally preserved as a memorial to the fallen senator).

Since 2001, SCS has provided LAUSD with a wide variety of services including engineering design plans, technical specifications, construction oversight, soil and soil vapor remediation implementation and documentation. The technical reports submitted by SCS to the DTSC for each of these sites

were approved, allowing LAUSD to proceed with the next phase of planned site improvements and ultimately the opening of new schools.

What was required was remedial action implementation, or "cleanup" projects, at two proposed future school sites: South Region High School # 15 in San Pedro and Valley Region Elementary School #13 in Panorama City. These projects included oversight of soil excavation, removal of impacted material, and confirmation sampling.

The services rendered for the soil cleanup were marked by:
Coordination with on-site personnel, LAUSD, and the DTSC;
Construction oversight of excavation and soil removal remediation contractors;
Confirmation of soil sampling;
Evaluation of confirmatory soil sampling laboratory analysis results;
Monitoring air quality;
Review of data validation procedures and reporting;

The Remedial Action Objectives, also known as RAOs, were geared to:
--Address identified chemicals of potential concern to allow the development of the site for a school.
--Minimize the potential for migration of chemicals of concern in soil and soil vapor to other media (air, surface water, and groundwater).
--Reduce on-site contamination concentrations and volume, thereby minimizing potential exposure and risk over the long term, to protect human health and the environment.

The team was tasked with securing approval from DTSC to construct South Region High School, with SCS Engineers serving as the Remedial Oversight Consultant for the removal of impacted soil containing hazardous materials. The partner's role was to ensure that protocols established in the cleanup plan for the excavation and removal of contaminated soils were adhered to and completed by LAUSD's remedial contractor.

The soil contained heavy metals (arsenic and lead), organochlorine pesticides (OCPs), total petroleum hydrocarbons (TPH), semi-volatile organic compounds (SVOCs), and dioxins. To allow for partial site approval, remedial activities were separated into five areas of the site, referred to as Areas 1 through 5. Separate cleanup activities and documentation were submitted to DTSC for review and approval. This phased approach allowed LAUSD to start school construction in some portions of the site while removal activities continued in other areas.

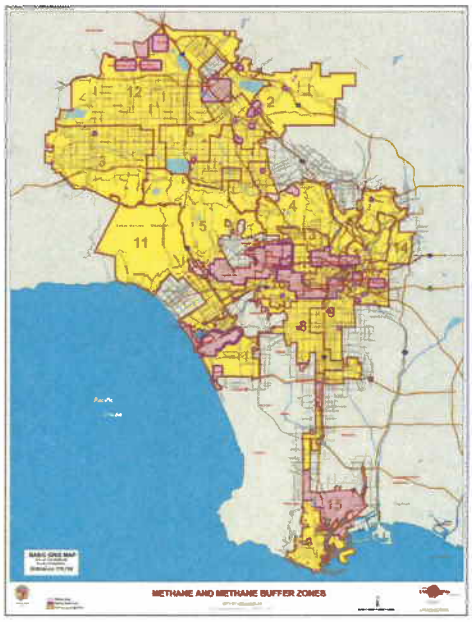
Some of the other activities that were also marked as priorities and ultimately completed included:
--Soil remedial action for Areas 1 and 5, resulting in the excavation and off-site disposal of 3,939 tons of non-hazardous soil, and 72 tons of California-hazardous soil.
--Soil remedial action for Area 2, resulting in the excavation and off-site disposal of 464 tons of non-hazardous soil, 279 tons of California-hazardous soil, and 63 tons of Resource Conservation and Recovery Act (RCRA)-hazardous soil.
--Soil remedial action for Area 4, resulting in the excavation and off-site disposal of 3,275 tons of non-hazardous soil, and 3,782 tons of non-RCRA hazardous soil.

Area 3 had no impacted locations, so no remedial action was necessary. DTSC approved the site after completion of the remedial action and LAUSD proceeded with construction of the high school.

At Valley Region Elementary School #13, environmental investigations of the soil indicated that hazardous materials were present and needed to be removed in order to meet the RAOs and to gain approval from DTSC.

To ensure construction could proceed, SCS coordinated the following:
--Treatment of more than 49,000 cubic yards of soil to eliminate residual volatile organic compounds (VOCs), and was reused on site. The treated soil provided material for backfill, which reduced the overall cost of clean-up by reducing the need to import soil.
--The excavation and off-site disposal of more than 2,600 cubic yards of soil contaminated with pesticides, metals, and petroleum hydrocarbons.

In March 2004, the city of Los Angeles Department of Building and Safety issued regulations to address construction in, and immediately adjacent to, areas prone to generate methane gas.



Construction of school buildings within a potential methane zone is under the jurisdiction of the California Environmental Protection Agency (CalEPA) and the DTSC, which, at its discretion, can apply existing guidance and/or local regulations regarding methane mitigation measures.

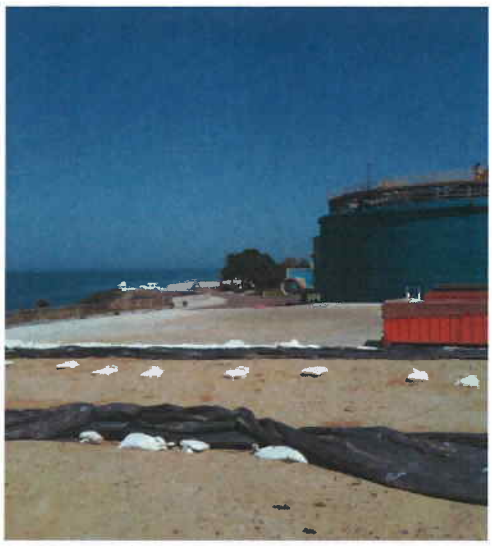
The purpose of the mitigation features incorporated into buildings and school grounds is to reduce the potential for methane and other identified soil vapors or gases to accumulate beneath or within site structures.

At the Edward R. Roybal Learning Center, Robert F. Kennedy Community Schools, and Harry Bridges Span K-8, the design and implementation of gas mitigation systems, in accordance with CalEPA and the DTSC Advisory on Methane Assessment and Common Remedies, was necessitated.

Principal engineering control components of the subsurface gas mitigation systems at these sites include all or some of the features listed below, as shown in the subsurface gas system schematic:

--An impervious membrane liner system below the building floor slabs, which acts as a physical barrier to prevent gas migration into buildings or subsurface structures (i.e., vaults or sumps).
--A passive venting system below buildings and paved areas, which allows for passive discharge of any potential gases to the atmosphere through a network of vent risers, thus preventing accumulation of subsurface gas beneath sealed asphalt or concrete. The system below the building can be augmented with mechanically enhanced active venting by means of air injection blowers that will automatically activate when gas concentrations exceed a monitoring set point or concentration. The gas sensors communicate with a central programmable logic controller that will continuously display the status of the performance monitoring. Automatic activation of the system occurs in the event of detected concentrations at or above the action levels.
--Audible and visual alarm systems, required at some sites, to signal occupants if significant levels of gases are detected.
--An engineered sand dispersion layer for exterior landscape areas, such as playfields/sports areas, which provides even dispersion and continual passive release of gas at very low concentrations. Sealant material in electrical conduit or cables to prevent the passage of gases, vapors, or flames inside the utility conduit.
--Trench dam installed in all electrical, plumbing, gas, or other utilities to prevent potential migration of underground gas into buildings or structures along the trench backfill. Concrete slurry added to the trench immediately adjacent to the exterior perimeter of the building structure or high soil compaction is typically employed.

Soil vapor monitoring probes allow for routine monitoring of subsurface conditions, providing advance notice of any changes in the concentrations and distribution of vapors beneath the site.



DTSC approved Removal Action Completion Reports submitted by SCS, which allowed Edward R. Roybal Learning Center and Robert F. Kennedy Community Schools to open. Oversight and documentation are still underway at Harry Bridges Span K-8 with substantial completion projected for September 2011.

The careful management of remedial projects such as these is vitally important in ensuring the construction of school sites is swift, cost-efficient, in compliance with state regulations—and most importantly—leads to a safe environment for teachers and students. SCS's experienced project management and environmental engineering expertise resulted in the timely and efficient expansion of LAUSD school sites.

,Project Manager at SCS Engineers, has helped develop wastewater effluent standards for the U.S. EPA. With an advanced degree in Civil and Environmental Engineering and an earlier background in the fields of chemistry and biology, Vicki made a natural transition from developing environmental standards in the early 80's to the hands on of engineering, construction oversight, and technical services involving subsurface vapor intrusion, water, and soil remediation. She is based out of the SCS Long Beach California office.

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