

## CARSON PLAZA COMBINED N-SITU REMEDIATION OF AN OPERATING DRY-CLEANING BUSINESS USING THERMAL REMEDIATION CARSON, CA

<u>Summary</u> – The soil and groundwater beneath an operating dry-cleaning business and strip mall in Carson, California was impacted with tetrachloroethene (PCE), trichloroethene (TCE), dichloroethene (DCE), and vinyl chloride to a depth of 30 feet below ground surface (bgs). Initial soil concentrations at a depth of 16 feet bgs have maximum values of 860  $\mu$ g/kg PCE and 1,700  $\mu$ g/kg TCE. Initial groundwater concentrations in the hot spot area were 4,600  $\mu$ g/L PCE and 18,000  $\mu$ g/L TCE.

ERG employed a phased approach as part of a combined remedy solution to address legacy CVOC impacts at the Site, integrating vapor extraction, dual-phase extraction, and limited groundwater extraction in the initial stages. Subsequent steps included targeted electrical resistance heating (ERH) to accelerate contaminant removal, followed by chemical oxidant injections and continued vapor extraction. In the final phase, a focused wellfield consisting of eight wells, utilizing ERG's Patent Pending Hybrid Energy Thermal Remediation (HETR) approach to Thermal Conduction Heating (TCH) alongside Soil Vapor Extraction (SVE), was used to address residual source zone contamination. Verification sampling from 2024 confirmed that the Site met the required cleanup objectives in soil, groundwater, and soil vapor. The guaranteed remediation contract was based upon reducing existing concentrations to MCL's and obtain a no further action letter from the Los Angeles Regional Water Quality Control Board (LARWQCB). Overall concentrations were reduced by approximately 99% in soil, groundwater, and soil vapor, and the Site was submitted for regulatory Closure in 2024.

A Division of CES						
Model	Energy Output Range	Energy Flux (to formation)	Thermoelectric Renewable Energy Generation	Electrical Requirement	Max Operating Length	Max depth of displace upper heating interva
	Kilowatts	Kilowatts	Watts	VAC	ft	ft
FDG-HETR-150X	8.8 to 44	4.5 to 23	100-500	None (offgrid) to 115V/1Ø AC	55.0	15
FDG-HETR-250X	8.8 to 74	4.5 to 36	100-500	None (offgrid) to 115V/1Ø AC	85.0	20

# COMBINED THERMAL REMEDY

### Technology(s)

Phase 1: SVE. DPE

Phase 2: ISTR - ERH, MPE

Phase 2: ISCO, SVE

Phase 3: TCH & SVE

Treatment Area:

13,270 square feet

Treatment Interval:

0 to 30-ft bgs

Treatment Volume:

12,300 cubic yards

#### Extraction System:

MPE and SVE

Liquid Phase Treatment:

LGAC treatment

Vapor Phase Treatment:

VGAC treatment

#### Regulatory Driver:

Los Angeles Regional Water Quality Control Board (LARWQCB).

#### Project Costs:

#### Confidential

