TERRATHERM®

Active Manufacturing Facility
ISTD Treatment in Saprolite and Fractured Rock

Bird's Eye View of ISTD Well Field

Project Location: Southeastern US

Owner: Confidential

Consultant: Rogers & Callcott Engineers, Inc.

Time Frame: 2006-2007

Site Information: Site is an active manufacturing facility. TCE is the primary contaminant of concern (COC) present in the subsurface and appears to have been released via a sump/catch basin system associated with an aboveground TCE storage tank and a TCE reclamation unit. The Target Treatment Zone (TTZ) or source area is associated with the former TCE storage and reclamation area and is approximately 33 ft x 76 ft (2,508 ft^2) extending from ground surface to approximately 10 feet below the typical bedrock surface or 85 feet below ground surface (bgs). The total volume encompassed by the TTZ is 7,900 cubic yards. The extended TTZ depth allowed for undulations in the bedrock surface and ensured treatment of all of the soil within the TTZ. The heated interval extended to approximately 90 ft bgs to ensure complete heating of the TTZ.

CoCs: Trichloroethene (TCE)

View of ISTD Well Field

Soil Characteristics: The source area targeted for treatment (i.e., TTZ) was underlain by 4 geologic units. The units are listed below in order from the ground surface down.

1) Fill (re-worked saprolite): 0-25 ft bgs

2) Saprolitic Soil (weathered granite): 25-55 ft bgs

3) Partially Weathered Bedrock: 55-75 ft bgs

4) Fractured Bedrock: The bedrock surface undulates with an average depth to the bedrock surface of approximately 75 ft.

The water table is at the bottom of the saprolitic soil at approximately 55 feet bgs, resulting in a total saturated thickness of approximately 20 feet of soil and partially weathered bedrock overlying the fractured bedrock.

Project Approach: ISTD remediation at the Southeastern US Active Manufacturing Facility Site included the following design features: a) minimum target temperature of 100°C; b) 15-ft spacing between thermal wells; c) 24 thermal wells; d) vapor barrier; e) heated interval extending from 1 ft to ~90 ft bgs (i.e., approximately 15 ft into the top of bedrock).

Project Results: The project was finished within the planned 120 day heating period and the treatment zone reached steam temperatures within 100 days. All remedial goals were reached. The ISTD heaters and vapor collection system operated continuously 100% of the time with no failures or downtime. Laboratory data from sampling showed that the 95% UCL of the TCE concentrations in soil above and below the water table was less than 0.02 mg/kg.