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CCHRC

*Promoting and advancing
the development of healthy,
durable and sustainable shelter
for Alaskans and other
circumpolar people.*

Ground Water and Soil Temperature Monitoring at the CCHRC Research and Testing Facility

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Ground-water and soil-temperature monitoring are being collected at the CCHRC Research and Testing Facility (RTF). The objective of the monitoring system was to provide ground-water and soil temperature data needed for design and evaluation of the RTF foundation designs, as well as future facility maintenance. The data will also help evaluate subsurface monitoring systems.

The data collection system includes ground-water wells to measure water and permafrost levels and thermistor strings to measure soil-temperature profiles. Campbell Scientific data loggers are used to measure the thermistor strings.

The RTF is located in Fairbanks, Alaska, on the University of Alaska Fairbanks south campus. The ground-water wells are located near the four property corners as shown on the map shown as Figure 1.

The ground-water observation wells were screened to account for vertical seasonal variation in the water table. Each well has a mark to help identify a uniform measuring point for water level monitoring. The water levels are measured by Geo-Watersheds Scientific. See Table 1 below for well data.

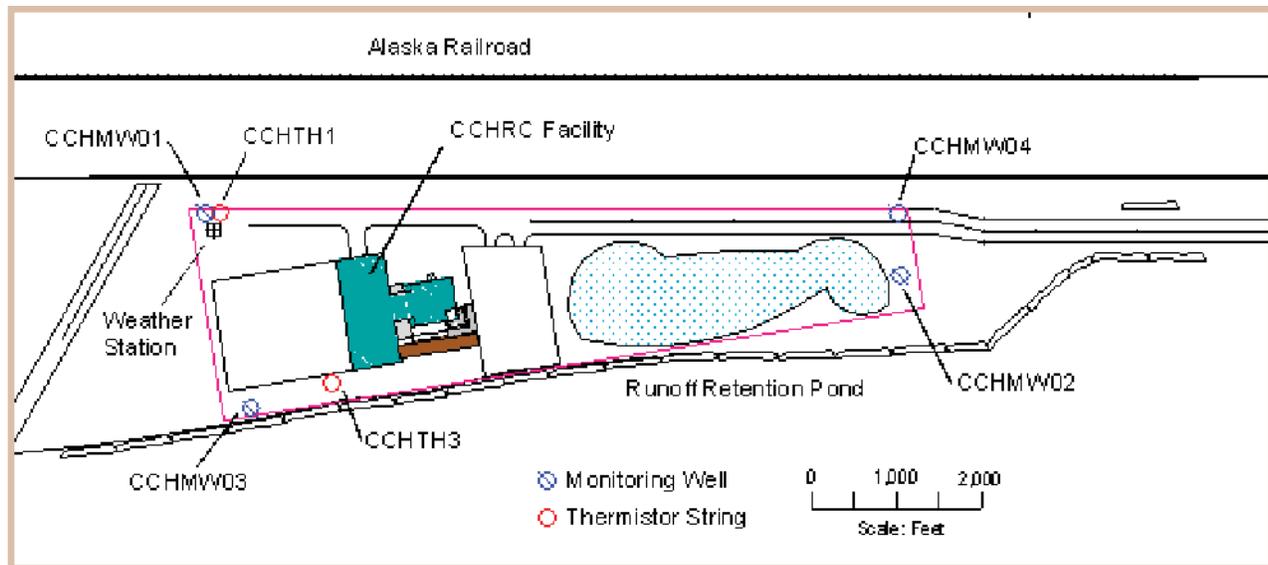


Figure 1. Site location map for CCHRC facility showing location of observation wells and thermistor borings. Locations of wells and thermistor strings are approximate.

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Website

- <http://www.cchrc.org/our-facility>

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Well ID	Well Location On Facility	Boring Depth (feet)	Screen Interval (feet)	Permafrost Depth (feet)
CCHMW01	Northwest Corner	18.7	16.7 to 18.7	> 18.7
CCHMW02	Southeast Corner	24	14 to 24	21
CCHMW03	Southwest Corner	18	8 to 18	15
CCHMW04	Northeast Corner	25	10 to 25	> 25

Table 1. Ground-water observation wells; well depths, and depth to permafrost (below land surface) in feet. Permafrost depth for CCHMW1 is taken from CCHTH1 boring information.

Two soil-temperature monitoring sites are also located on the Figure 1 map labeled ‘Thermistor Strings’. The first is located adjacent to the Mesonet data station and serves as a background site to represent future undisturbed conditions away from the facility. The second thermistor string is located on the southern edge of the RTF near to an area of high permafrost. Figure 8 below is the soil temperature profile from this area graphically over a 4-month span in 2004-2005.

Each soil temperature profile string has 12 thermistors spaced at various distances from a ground-surface reference. The thermistor spacing takes into account active layer, ground water and permafrost measurement objectives. The continuously monitored temperature data will be reported on the Fairbanks Mesonet web site: <http://www.tanana-watershed.org/meonet/stations/cchrc/cchrc.shtml>.

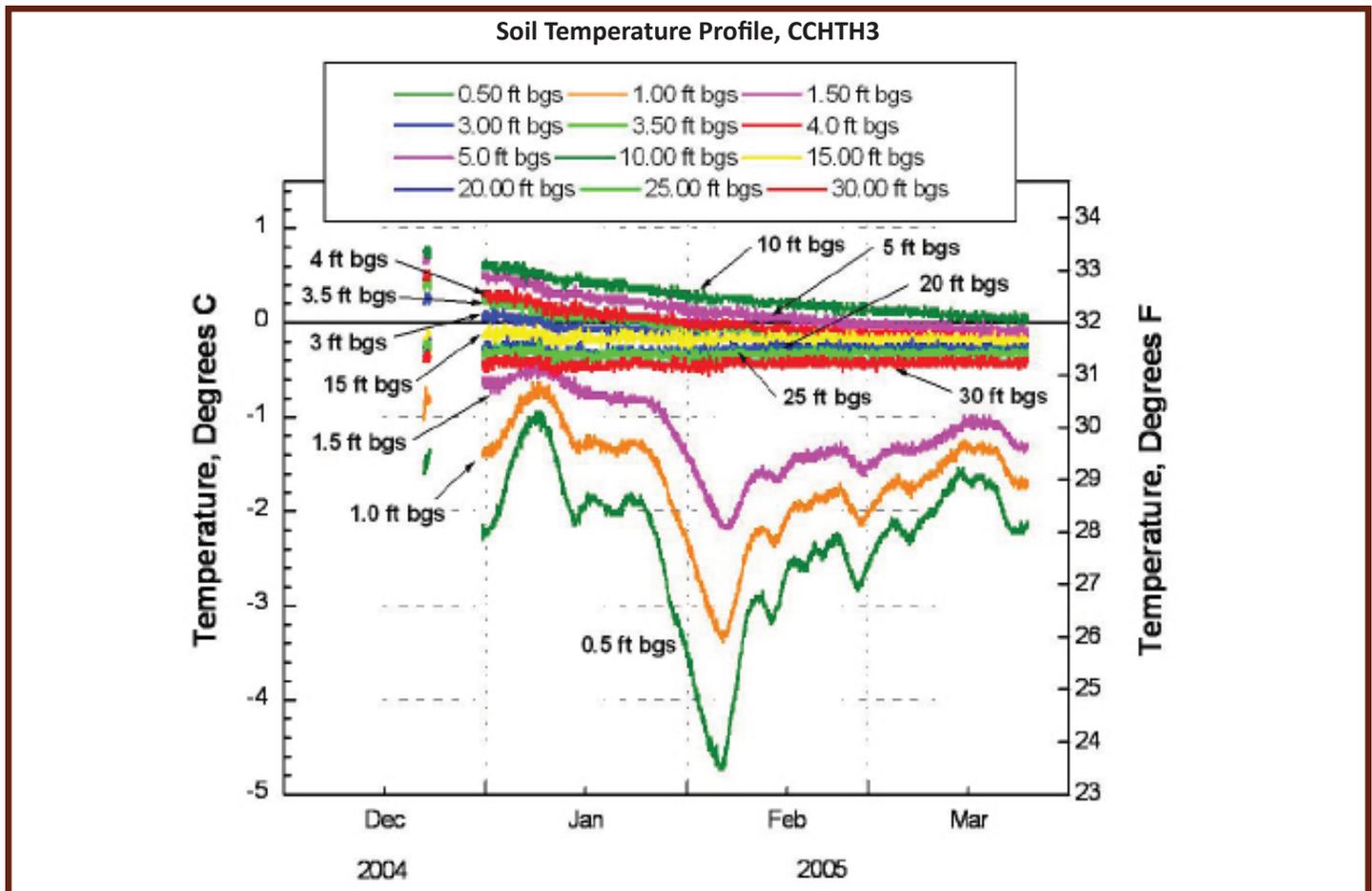


Figure 2. Site CCHTH3, located on the southwest side of the CCHRC property. All thermistor readings are shown with depth labels. Installation occurred on 12/9/04.