

# CRYSTAL (MADSEN) HOT SPRINGS

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*Crystal Hot Springs Resort with cold stream in foreground and hot tubs in background.*

## GEOLOGY

Crystal (Madsen) Hot Springs, located about 1.3 mi (2 km) north of Honeyville in Box Elder County flows from the base of a small salient extending west from the Wellsville Mountains (northern extension of the Wasatch fault zone)(Blacket, et al., 204). The springs flow from fractured Paleozoic rocks at temperatures between 121 and 135°F (49.5 and 57°C). Although there are a number of warm springs and seeps in the area, the original main spring orifice is no longer visible. A nearby cold spring 52°F (11°C), along with water from the hot springs, is used to help fill a 300,000-gallon-(1.14-million-liter-) pool, while the hot springs alone are used to fill therapeutic hot tubs and mineral pools. Swimming pool temperatures range from 70 to 100°F (21 to 38°C). Roughly 2,000 ft (610 m) south of the main spring, a series of low-flowing warm springs and seeps are present in a small branch of Salt Creek, a tributary of the Bear River (Murphy and Gwynn, 1979).

Total flow from all springs and seeps at Crystal Hot Springs drains southwest along Salt Creek and has been estimated at about 4,000 gpm (250 L/s). Mundorff (1970) estimated discharge of about 1,680 gpm (106 L/s) for the main hot spring (Murphy and Gwynn, 1979). TDS content of the thermal waters at Crystal (Madsen) Hot Springs is the highest of any spring in Utah with TDS measured values above 46,000 mg/L. Over 90 percent of the ions in solution are

sodium and chloride. In addition to high TDS values, the springs reportedly contain elevated levels of radium (220 µg/L) and uranium (1.5 µg/L) (Felmlee and Cadigan, 1978).

## UTILIZATION

The facility has several small pools, a soaking pool kept at 95 - 100°F (35 - 38°C), three hot tubs kept at around 97, 102 and 105°F (36, 39 and 40.5°C), and a small lap pool kept at around 82°F (28°C). A large pool, described above, is kept at 70°F (21°C). There is also a large water slide



*Water slide, large pool and abandoned skating rink building.*

emptying into a small pool at 70 to 80°F (21-27°C). A two-storey building houses the registration area, changing rooms and the “Blue” and “Green” rooms used for wedding and birthdays. There is also a RV park and picnic area adjacent to the pool area, managed by the resort. An abandoned roller skating building also sits on the property, used only for storage.



*Hot tubs with water slide in background.*



*Pool heating system pipes.*



*The larger pool.*

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