

Nestled in the Rainforest of Costa Rica, 40 km due North of the capital, San José, is the Rara Avis Lodge and Reserve. Rara Avis, which borders the Braulio Carrillo National Park and the Zona Protectora La Selva, is a project that was founded to show that the rainforest is a valuable economic resource that can produce substantial economic benefits for the surrounding communities.

Rara Avis is comprised of a several lodges and a biological station and supports tourism, biological research and the development of new ways to use the rainforest without destroying it.

There are several streams high in the mountains which feed into a double waterfall above the Rara Avis complex. During the construction of this complex, it was found that heavy rain that fell high up in the mountains would cause the river to overflow. Advanced warning of oncoming



Photo supplied by Amos Bien

Double Waterfall above the Rara Avis Complex



Heavy rainfall causes the river to overflow, quickly causing flash flooding

Photo supplied by Amos Bien

flash floods was needed. With an average rainfall of 335 inches (8500 mm) per year, and as much as 4-8 inches (100-200 mm) possible in a few hours, this can be both quick and dangerous.

Ten years ago, a Madison MS8000 liquid level switch was installed in each of the two main streams feeding the waterfall. Located about 2600 feet (800 meters) above the waterfall, each MS8000 is screwed to a Plexiglas strip and set inside a plastic barrel which is set in concrete. When the water level rises more than 10 inches (25 cm), the MS8000 closes, sending a signal by telephone cable to a relay-operated alarm siren at the waterfall and a second alarm at the lodge office. This provides eleven minutes of warning before the river rises.

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Photo supplied by Amos Bien

Above: Madison's MS8000 Liquid Level Switch is installed in a rainforest stream to measure water level and warn of impending flash floods. This switch operates under the harshest environmental conditions

Right: MS800 Liquid Level Switch



The MS8000 has a 2800 ohm resistor in each circuit and a milliamp meter to indicate whether current is flowing in each leg of the circuit. In addition, a lighting-protection diode is used to reduce any damage to the circuit due to lightning strikes. The power supply is a solar-powered 12-volt automotive battery. The MS8000 operates under harsh environmental conditions which involve high water, mud and organic debris, combined with extreme turbulence. The water force is enough to move large boulders, and the rainforest's soil is quite acidic and highly corrosive. Under these conditions, the MS8000 has proven to last up to two years in service.

Data supplied by Amos Bien, President of Rara Avis Rainforest Lodge and Reserve

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