

Automatic Stormwater Diversion System Case Study

What: Automatic Stormwater Diversion System
Where: San Diego Zoo, California
When: August 11, 2011



An Attitude Systems Automatic Stormwater Diversion System, was installed as part of an extensive overhaul of the water drainage system at the San Diego Zoo. The water system at the zoo had been plumbed directly to the wastewater treatment plant because of potential water quality issues and even health hazards associated with runoff coming from the zoo grounds, including over 150 acres of animal enclosures. During large rain events, the sanitary sewer lines were overwhelmed, so besides sending excess flows to the treatment plant, overflows also occurred allowing the escape of polluted water to the environment. The project was designed to capture stormwater on site and allow a slow release of all water to the wastewater treatment plant, ensuring treatment of all water contacting the site. The low point of the property has had an existing retention pond for many years. As part of this project, a 30 million gallon holding tank was built adjacent to the retention pond. This increased the storage volume on the property so that even large rain events would not overflow the sanitary sewer lines.

At the top of the existing retention pond are two different box channels, one leading directly into the retention pond and one bypassing to the new holding tank. These box channels were outfitted with 48" stainless steel slide gates with actuators to allow for automatic positioning of the gates to determine which box channel would see the flow downstream of the slide gates. The retention pond was outfitted with a structure to hold a float switch so that when the water level in the retention pond neared an overflow level, the slide gates are switched, thus sending the excess rain water to the new larger holding tank.



The blue cylindrical structure in the foreground holds the float switches and one gate valve. The Controller is visible in the background.



View of the high and low level float switches in the structure in the retention pond.

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The Attitude Systems Controller has indicator lights to show which drainage path is opened. The system not only bypasses the standard discharge during a storm to prevent hydraulic overload, but also includes notification to zoo personnel when this occurs or if any other system upset occurs. Finally, the Automatic Stormwater Diversion System comes with an automatic exerciser that cycles the valves weekly to ensure the system remains in good working order. The San Diego Zoo is now in compliance with local state, EPA, and sanitation district regulations and also has peace-of-mind that the system will remain running without increasing manpower.