



Conversations

Newsletter for the CONVERSE Family of Consulting Companies

www.converseconsultants.com

Special 60th Anniversary Issue #3: 1986-Present

"Hole-in-One" on the 18th Hole, Trump National Opens with Converse's Help

Trump National is a breathtaking golf course and residential project totaling over 100 acres constructed on a Pacific Ocean Bluff. The site is an environmentally sensitive habitat that plays host to several protected plant species and endangered birds.

The project site, located between the Portuguese Bend landslide and the South Shores landslide, has had quite a history and Converse Consultants has played a part since the 1960's when its prior owners proposed a development on their 150-acre peninsula site. The project was rejected by the community but resurfaced in the late 1980's as a golf course and residential development, which was again denied, this time by the Coastal Commission.

Finally, in 1994, all requirements were met and approval was granted for the Ocean Trails project to move forward. Groundbreaking for the project took place in 1998 and by February of 1999, 9 holes were completed with a July 2 opening date set for the finished 18-hole course.

On June 2, 1999 a significant landslide demolished the signature 18th hole. The slide mass covered approximately 17 acres and caused the collapse of a 50-year-old sewer trunk, the loss of coastal habitat, access trails, bikeways and wildlife corridors. Converse Consultants was retained to investigate the cause of the slide and develop a viable repair plan.

The investigation, planning, design and construction for the repair topped over \$200 million. During the investigation, 28 large diameter boreholes were drilled with depths up to 120 feet through the slide mass for downhole logging purposes and three continuous diamond core borings with depths up to 300 feet. Comprehensive laboratory testing was conducted on the samples of the slide mass and the bluff. Our staff completed 2- and 3-dimensional slope stability studies and countless hours of engineering analyses to develop a repair plan that was acceptable to the community and the Coastal Commission.

In July, 2000 the owners received approval to open Ocean Trails as a 15-hole golf course while work began on restoring the 18th hole. The course opened with 15 holes in November with the designation as the 'best 15 holes in golf'.

The repair elements of our plan involved the installation of 115 large diameter, high strength, shear pins through the rupture surface to sta-



bilize the sea cliff bluff top and the main slide block. These pins are 36-inches in diameter, 1 1/2 inches thick, and 20 feet long at 90 feet below ground surface.

Earthwork activities were massive and included the removal of 1.2 million cubic yards of landslide materials and 12 acres of bentonite clay layer over the earthen materials. Slot-cut excavation methods were utilized to overcome the physical constraints of the project area and Holes No. 9 and 12 were used for stockpile of the excavated materials for reuse.

Extensive hydroauger drains and backslope subdrains were installed.

A large geosynthetic-reinforced mechanically stabilized earth (MSE) buttress retaining wall was installed to prevent further slides. The MSE buttress retaining wall is 1,600 feet long, up to 95 feet in height and up to 110 feet in geosynthetic reinforcement embedment length. The seaward perimeters of the repair area in front of the MSE wall were

backfilled with geosynthetic reinforced compacted fill materials, using about 3 million square feet (70 acres) of geotextile reinforcements.

Restoration efforts of the golf course, parks, coastal access trails, bikeways and habitat preserves were closely monitored by the Coastal Com-

(continued on Page 5)



Converse Environmental Division Keeps Pace with Rapidly Changing Industry

In 1984, Converse added the ability to provide environmental consulting services to its range of expertise available to our clients. This new service division was added in response to the increasing number of guidelines, acts, laws and regulations, created by regulatory agencies to address the growing concern over environmental issues.

The Environmental Protection Agency (EPA) was established in 1970 with a mission to protect human health and safeguard the natural environment—air, water and land—upon which life depends. In the years following the creation of the EPA, numerous laws were enacted mandating the cleanup of hazardous waste sites and imposing strict liability for the associated costs.

Additionally, new regulations concerning asbestos, lead-based paint, air emissions control and soil and groundwater remediation for petroleum releases were passed into law.

With the influx of this increasingly complex system of regulatory guidelines and restrictions affecting all phases of property development and management, the need for a new group of professionals experienced in navigating through the environmental regulatory processes and developing new methodologies to comply with the regulatory issues was imperative. Converse developed an environmental team consisting of a diverse group of multidisciplinary professionals and experienced technical personnel uniquely qualified to provide innovative approaches and cost-efficient, practical solutions to meet the new challenges presented by the regulatory environment.

Converse remains actively involved in regulatory processes on the city, county, state and national level, and its personnel have developed strong professional relationships with the decision makers at each of these public sector levels. We are familiar with compliance issues and keep abreast of current legislation and reg-

ulations regarding environmental health and safety issues and can quickly respond to changes within the industry.

Converse provides a diverse range of quality environmental solutions for Phase I and Phase II site assessments, soil and groundwater remediation, asbestos and lead-based paint surveys, mold and microbial/fungal consulting, industrial hygiene, health & safety, indoor air quality, outdoor air quality, regulatory compliance, permitting, stormwater management and landfills.

Our environmental philosophy is to balance the needs of business, the environment and the community. This approach has earned us a solid reputation as a leader in providing environmental services and has resulted in the award of many large-scale dewatering, treatment and remediation projects. ☺

For more information, contact Kurt Goebel, C.E.M., at (702) 263-7600.

Showcase Project: Tunneling Through Mountain Satisfies Thirsty Las Vegas Valley

The Las Vegas office of Converse conducted geologic and geotechnical design studies for the \$20,000,000 River Mountains Tunnel No. 2 Project under the Capital Improvement Program (CIP) implemented by the Southern Nevada Water Authority (SNWA) in 1995. Tunnel No. 2 crosses the River Mountains from east to west, is approximately 4 miles long, and is located 14 miles southeast of downtown Las Vegas and 1 mile east of Henderson. It runs parallel to and 150 feet north of an existing tunnel which was constructed in the late 1960's. The maximum ground cover is 600 feet, with an average ground cover of 300 feet. This second tunnel was built to satisfy the increasing demand for water to be delivered from Lake Mead to Las Vegas residents. The original tunnel carried 85 percent of the municipal water for the valley and was rapidly nearing full capacity.



Tunnel Boring Machine drills through mountain

The tunnel was mined by a tunnel boring machine (TBM) with an extended diameter of 14 feet. It has a cast-in-place concrete liner. The tunnel penetrates layered Tertiary volcanic rocks of rhyolitic to dacitic composition. Geotechnical studies conducted by Converse focused on characterization of the engineering properties of the rock masses, determination of rock mass quality using Q-system and the Rock Mass Rating System (RMR), mapping the distribution of the rock masses, characterization of groundwater conditions, analyses of initial support requirements and rock loads, recommendations for portal development, preparation of the Geotechnical Design Summary Report (GDSR) and performance of probabilistic seismic hazard analyses, including recommendations for a fault crossing at the west portal. Geologic logging was provided during the tunnel excavation. The entire project took only 604 days to complete with construction ending in December of 1996, ahead of the fast-track 34-month schedule.

The success of this project has led to the award of other challenging SNWA projects over the years, including the \$43 million East Valley Transmission System Tunnel Undercrossing (SNWA 170-A), a large diameter pipeline and tunnel project completed in 2005, the current Proposed In-Valley Effluent Interceptor and Lake Mead Outfall Project (SCOP), the Las Vegas Lateral (Historical Lateral Crossing), Las Vegas Wash Undercrossing Tunnel and numerous other water transmission projects throughout the Las Vegas Valley.

Since the inception of SNWA's CIP, Converse has participated in over 65 percent of the projects awarded under the program. Services we have provided have included geotechnical engineering, geologic analyses, dewatering investigations, corrosion evaluations and/or observation and testing services during construction. ☺

For more information, contact Jim Werle, P.E., at (702) 269-8336.