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## Unique Malibu Project Sets Standard for OWTS in Environmentally Sensitive Areas

### Environmentally Sensitive Areas

Malibu Creek Plaza is located in one of the most environmentally sensitive areas in Malibu given its proximity to Malibu Creek, the Malibu Lagoon, and the world famous Surfrider Beach. Malibu Creek is categorized by the EPA as impaired for its entire ten mile length from the Lake to Lagoon. Concerns about the potential impact of the facility's existing conventional septic system on the Lagoon and beaches caused the owner to install a state-of-the-art onsite wastewater treatment system (OWTS) to address potential concerns. The new system promises to eliminate any future impact to the environment.

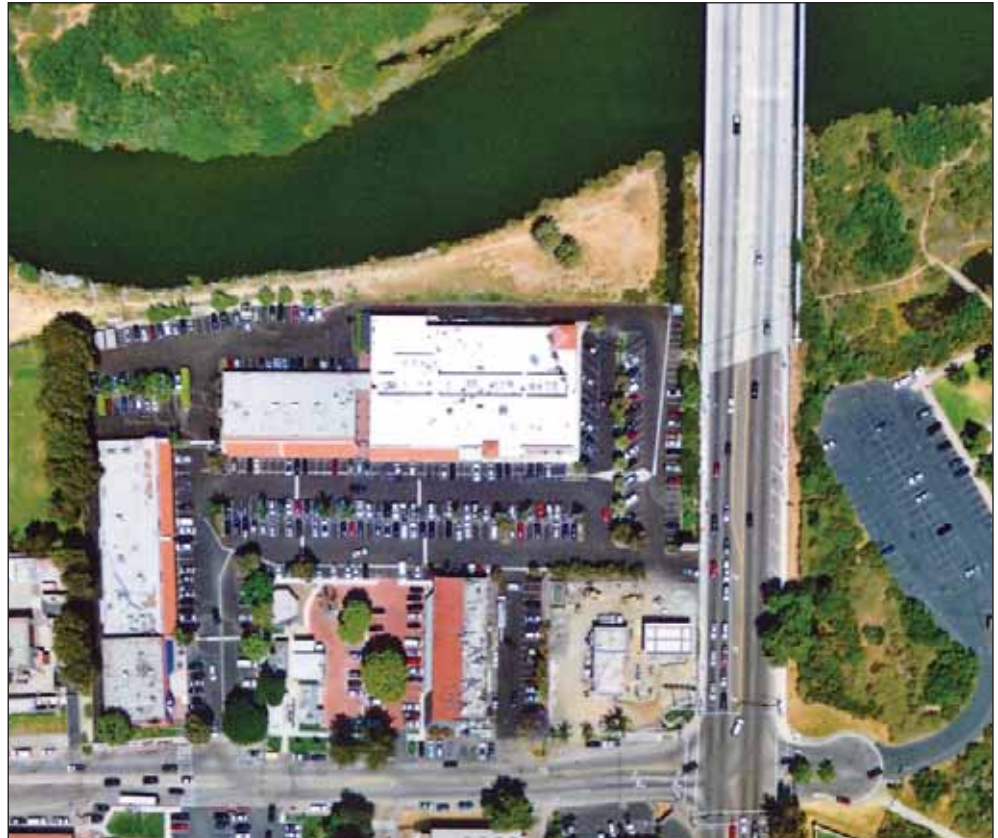
### Facility Overview

The Malibu Creek Plaza is a retail shopping complex located on Pacific Coast Highway in Malibu, CA, approximately 10 miles north of Santa Monica. The facility is a major shopping area in the Civic Center area of Malibu whose tenants include three sit down restaurants, a movie theatre, and various retail businesses. The original OWTS was composed of septic tanks and leachfields located onsite beneath the parking lots. The total capacity of the system was estimated at 20,000 gpm.

### Site Challenges

There were many challenges associated with the project which needed to be addressed during construction to satisfy all the stakeholders:

**Tidal and Creek Influence** – The site sits along the southern leg of Malibu Creek which flows from the mountainous area surrounding Malibu down to the Pacific Ocean. During the winter months when



Malibu Creek Plaza is adjacent to the intersection of Pacific Coast Highway and Malibu Creek

there is rainfall, the creek rises and breaches a sandbar which forms during the dry summer months. When the creek breaches in the winter season, the groundwater levels actually drop approximately one to two feet which is contrary to what is typical for most other sites. Construction was started in January to take advantage of the lower groundwater levels and reduced impact on dewatering.

**Dewatering** – Groundwater at the site averaged between seven and ten feet below grade, which depending upon the

specific size tank being installed, required dewatering. The tank excavations ranged between nine to fourteen feet below grade, which meant that all tank excavations required some level of dewatering. In addition, the subsurface conditions varied so that some areas could be drawn down at a pump rate of 400 gpm while others were as high as 850 gpm. Once the water was pumped down it was stored, tested, and treated using an on-site treatment system provided by

*continued on page 2*



Malibu Creek is adjacent to the project site

Pure Effect, Inc. of Orange, CA. The treatment train was complex and needed to address a variety of contaminants that were present in the groundwater before being discharged under an NPDES permit into Malibu Creek. Specifically, the treatment train included up to 40,000 gallons of storage capacity, granulated activated carbon beds for hydrocarbon removal, coagulation technology, ion exchange bed, sand filter, and bag filter to address suspended solids, trace heavy metals, inorganics, total suspended solids, and turbidity.

**Shoring** – The subsurface conditions and depth of excavation required shoring to be installed for worker safety and structural integrity of the excavation. IWS excavated from 9 to 14 feet deep, de-

pending upon tank sizing. IWS utilized Slip Sheet Shoring to secure the side-walls during the excavation.

**Utility Relocation** – Site work required relocating a large PG&E transformer and main sub-feed to one of the tenant buildings. IWS worked with the engineer to recommend some site modifications to avoid having to relocate water, telephone, and gas utility lines.

**Existing Retail Complex** – IWS executed the project while the businesses remained open, which required a delicate balance of traffic control, close communication with the property manager and tenants to schedule work and service issues, logistical coordination with crane contractor and concrete tank manufacturer. Parking space was at a premium so laydown area was minimal and any work in the parking lot had a potential impact on the tenants and their business.

**Concrete Tank Installation** – Concrete treatment tanks were used due to requirements to minimize the depth of the excavation and accommodate the available space for the treatment system. The tanks were shipped in pieces and sealed in the field. Each "half" of the tank weighed over 51,000 lbs which required special handling and precautions which included a 300 Ton crane, extended transportation trailers to accommodate the load, and other safety precautions.



The Double Whammy – Box shoring and Dewatering required for tank installation

### Scope of Work

IWS self performed all construction activities for the project which included piping, excavation, concrete, electrical, setting tanks, and other miscellaneous site work. The scope of work for construction included modifications to the collection system, installation of a new treatment system, and retrofit of the existing dispersal fields as follows:

**Collection** – The existing facility utilized conventional septic tanks for primary treatment only. The system upgrade included installing new grease tanks and primary septic tanks along with new collection piping and effluent pumping systems.

**Treatment** – The OWTS upgrade included the installation of a secondary treatment system composed of: 14, Orenco AX-100 units at grade; a denitrification system composed of 5, 15,000 gallon tanks; 2, Recirc tanks (16,000 and 8,000 gal); 1, Dosing tank (2,000 gal); 1, Equalization tank (16,000 gal); and 1, Ozone/UV Disinfection system housed in a control building. The system included a sophisticated control system which required over 50,000 linear feet of control and power wire between the control panel and all pumps, valves, and instrumentation measurement points.



Pure Effect Dewatering Treatment Train





*Drainfield installation in parking lot area*

**Dispersal** – The system upgrade included excavating the existing pressure dosed drainfields and replacing with new drainfield material and all associated piping. The drain fields are located under the asphalted parking lot areas due to space constraints at the site. Approximately 10,000 ft<sup>2</sup> of drain field area was replaced.

#### **Project Team**

The success of the project required a team effort of a variety of players which included: Steve Braband of BioSolutions (consultant to the client and provider of equipment and O&M services); Steve Soboroff (Owner); Cindy McAfee of McAfee Management (Property Manager); Lombardo Associates; Mike Slaby



*Large concrete tanks required special transport and handling*

of Pure Effect (dewatering treatment system); and Integrated Water Services, Inc. (provided the turn-key construction of the system).

#### **Regulatory**

During the construction phase, IWS maintained open communication with various departments within the City of Malibu which included: Craig George, Environmental and Building Safety Manager; Andrew Sheldon, Environmental

Health Specialist; and Mark Kumo, Building Inspector.

#### **Schedule**

The project was constructed ahead of schedule and completed within 6 months from initiation to start-up. Despite the numerous changes in scope that occurred during the project, IWS maintained the projected schedule. Cindy McAfee, Property Manager for Malibu Creek, said “IWS really worked well with the Owner and the tenants to minimize the impact to their ongoing retail business while getting the project completed on schedule. IWS had the resources and expertise to complete this complex project on schedule and maintained great communication with all the stakeholders to make for a very smooth project”.

#### **Celebrity Watch**

No article about Malibu would be complete without mention of celebrity sightings. Our crews had the pleasure of seeing Dick Van Dyke, Gary Busey, Sam Elliott, Pierce Brosnan, and Lindsay Lohan during the course of the project. We knew the paparazzi weren't there for the OWTS. ●



*Orenco Advantex Treatment Pods prior to fence installation*



## IWS Design-Build Approach is a Winner for Sustainable Development in New Mexico

The past year has been a busy one for IWS in working with stakeholders in the New Mexico wastewater community and executing on several Design-Build projects. In addition, IWS has had the opportunity to work on some cutting-edge projects that leverage the sustainability aspects of onsite wastewater systems. New Mexico seems to be leading the country in their approach to sustainable development and the role of water reuse.

Although our projects have included a variety of locations in New Mexico, IWS has been very active in the Santa Fe area and currently is under Design-Build contracts to design, construct, and start-up three Wastewater Treatment Facilities. All of the projects have a sustainability aspect to them and utilize advance treatment of wastewater and implement reuse of the effluent following treatment.

### **Rancho Encantado – A World Class Resort**

Rancho Encantado is a legendary resort known as a peaceful retreat for the rich and famous. The resort has hosted some of the world's most influential people including Prince Rainer, Princess Grace and the Dalai Lama. In 2006, the resort began a \$35 million renovation to upgrade all the lodging, restaurants, and spa facilities.

IWS was awarded a Design-Build contract for the wastewater system and is currently in the final stages of constructing the system. IWS provided all the engineering and construction with in-house resources. From notice to proceed to final construction the project will be com-



*Aerial view of the Rancho Encantado Resort during renovation*

pleted within 6 months. IWS was able to accelerate the schedule by: a) fast tracking the project through NMED by responding quickly to comments; and b) utilizing the Design-Build contracting mechanism.

The facilities include 69 rooms and over 300 seats of restaurant capacity. The system was designed to treat 20,000 gallons per day with the following treatment train: a) 2, 20,000 gallon primary septic tanks; b) 1, 20,000 gallon anoxic tank; c) 1, 20,000 gallon recirculation tank; d) 6, Orenco Advantex pods; e) 1, upflow nitrogen reduction filter; f) 1, 5,000 gallon dosing tank; and g) 12,000 ft<sup>2</sup> of Geoflow subsurface drip irrigation system.

This project offers an exciting opportunity for IWS as it is a showpiece for our newly designed innovative Nitrogen Reduction Upflow Filter to be implemented within the treatment process to meet the ever reducing nitrogen limits. The Nitrogen Reduction Filter will follow the Advantex textile filters and is expected to reduce the post Advantex nitrogen effluent concentrations by as much as 60 – 70% with a single pass.

Construction of the wastewater treatment facility is on schedule to be com-

pleted in the Fall. The reopening of the resort is scheduled for Summer of 2008.

IWS worked closely with Roger Shafer of SCG Enterprises ([scgenterprises.com](http://scgenterprises.com)), the local representative for wastewater treatment equipment in New Mexico and Colorado. Roger was a great technical resource for this project as well as the others that IWS is currently executing in New Mexico.

### **Vista De Sangres – Single Family Development**

Vista De Sangres is a residential development located near the Santa Fe Airport that has 25 single family homes and includes walking trails and a park. Treated effluent from the wastewater system is



*Installation of four 20,000 Gallon Tanks (Primary and Recirc)*



*Construction of the outer perimeter of the Upflow Nitrogen Reduction Filter*



being re-used for irrigation in the development's open space areas.

IWS and Worrell Water Technologies (WWT) of Charlottesville, VA were the Design-Build team for the project, with WWT providing the treatment system design and IWS providing the dispersal system design and construction of the overall system. IWS often teams with local engineering firms to provide clients best value and additional resources to complete the project.



*IWS preparing to install drip irrigation with vibratory plow*

The design flow of the system is 10,000 gallons per day, and is treated with the following treatment process: a) 1, 25,000 gallon primary septic/anoxic tank (20,000/5,000); b) 1, 12,000 gallon recirculation tank (7,000 recirc/5,000 discharge); c) 1, 8,000 gallon dosing tank; d) 4, Orenco Advantex pods; and e) 4.8 acres of Geoflow subsurface drip irrigation.

Dave Maciolek, Senior Environmental Engineer for WWT, commented on the sustainability issues related to the project "We utilized the treated wastewater to create some irrigated grasslands which

enhanced the native vegetation at the site".

The project has been permitted and designed, and construction is nearly complete. The system is comprised of primary treatment tanks as well as advanced treatment utilizing Advantex textile filters. The treated effluent is recycled as subsurface irrigation for an open space area.

### ***La Pradera – A model of Sustainable Development***

In July, IWS began the initial steps of their Design-Build contract for the Wastewater Treatment Facility serving the La Pradera Phases 2 – 6 Development in Santa Fe, New Mexico. The project is environmentally sensitive focusing on water management and conservation. The subdivision will consist of 157 single family homes, on the south end of Santa Fe. The homes are environmentally-conscious with innovative water conservation technologies throughout. The average wastewater flow per home is estimated to be 120 gallons per day which is low relative to standard wastewater flows. The wastewater treatment plant will treat and recycle the effluent for landscape irrigation and potentially to reuse in the homes for toilets.

IWS is currently in the design phase with construction to begin in late fall. The treatment system includes 3, 25,000 gallon primary tanks; 1, 10,000 gallon anoxic tank; 1, 25,000 gallon recirculation tank; 9, AX-100 Advantex Filter Pods and 1, 15,000 gallon dosing tank.

Jamie Miller, PE (New Mexico), Princi-



*Construction of treatment system nears completion*

pal Engineer at IWS says, "The environmental conservation, planning, and engineering demonstrated at La Pradera is taking hold nationwide. Santa Fe is at the forefront of this environmental wave due to the environmentally knowledgeable residents coupled with the County and State's progressive regulations that tend to allow the implementation of more innovative methods of treating and disposing of wastewater".

IWS believes that as regulators across the county begin to notice the innovative solutions that are being implemented for projects like La Pradera, they will become increasingly focused on encouraging similar sustainable solutions for developments everywhere. In addition to a friendly regulatory environment in New Mexico, private developers are beginning to realize that they can implement cost effective methods for treatment and disposal of wastewater while improving the environmental sustainability of their developments. IWS is excited to be at the forefront of the movement. ●



*Aerial view of the La Pradera Development*

# IWS "Capped Cost Approach" Saves Clients Time and Money

## New Approach for Onsite

Integrated Water Services, Inc. (IWS) has introduced an innovative "Capped Cost Approach" to developers and commercial owners interested in locking in a fixed price for a turn-key project solution for onsite wastewater treatment systems (OWTS) – permitting, design, engineering, construction, and start-up.

As Dave Patton, CEO, explains, "The Capped Cost Approach mirrors in many respects what is known as a Design-Build project execution. The Capped Cost Approach is basically a design-build contract that limits the overall cost of the project where the prime contractor assumes most of the risk and isolates those risk components that are unknowns."



Dave Patton, CEO of IWS

For investors purchasing commercial properties or developers looking to expand existing facilities, IWS can complete a preliminary wastewater investigation during the due diligence or project evaluation phase and then provide a capped, not to exceed price to design, permit and construct the new wastewater system or system upgrades. IWS can, by providing a "Capped Cost" to investors and developers prior to closing, eliminate our clients' assumed risk for wastewater upgrades costs after closing and thus minimize post closing contingencies.

For example, depending upon site location, dewatering can be a project variable that remains an unknown until subsurface exploration is completed and either a pump test or depth to groundwater is established. In those instances when the extent of dewatering is an unknown, that risk is isolated and the means for addressing it is spelled out in the contract.

Other issues that often need to be addressed include utility relocation, subsurface obstructions, subsurface conditions, rock, weather, and other related variables.

"Because our business focus is onsite wastewater treatment systems (OWTS), we have a good understanding of cost and project execution and are able to assume the business risks to deliver a permitted, operating, OWTS" says Patton.

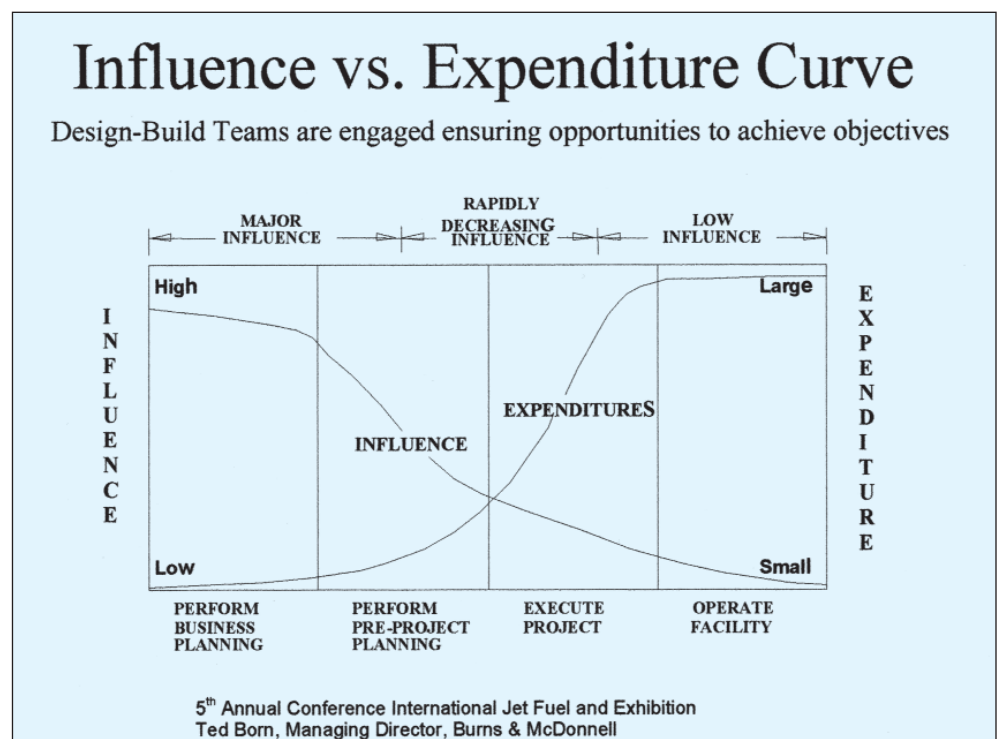
**Interests Aligned with Owner**  
The interests of the client and prime contractor are aligned under the Capped Cost Approach, both parties are interested in executing the scope of work on a timely basis and getting the permits and engineering completed so that the project can get constructed. The Prime Contractor attempts to streamline the permitting process by providing a full design upfront for regulatory review, thereby reducing the number of comment cycles from the regulators and third party reviewers.

## Reduce Cost and Accelerate Schedule

By combining the engineering and construction under one entity, the project runs more smoothly and really encourages collaboration and teamwork to get the project completed. It is not uncommon to have initial meetings with all the stakeholders to prepare a strategic approach to the project and get input from various perspectives. This collaboration adds value to the process and results in a higher quality project with fewer last minute changes and cost over-runs. Typical stakeholders include the owner, owner rep, architect, IWS engineers and project managers, operation and maintenance personnel, regulators, and key vendors.

## Simplified Contracting and Single Source Responsibility

The IWS Capped Cost Approach enables the client to have one point of contact for all his wastewater issues, from permitting through design and construction. All the initial field investigation work, permitting, engineering, design, construction, and start-up is all under one Design-Build agreement. This simplified contracting mechanism eliminates the finger pointing that sometimes occurs between the engineer and contractor when the project goes to the field. A single source of responsibility reduces issues to out of scope items which are generally identified upfront in the detailed proposal. •



The earlier IWS gets involved with the project the greater the positive impact for the Owner



## State-of-the-Art Water Treatment System Critical For Baldy Mesa Water District

At the end of 2006 Integrated Water Services, Inc. (IWS) completed the installation of a state-of-the-art Arsenic Removal system for the Baldy Mesa Water District in Hesperia, CA under contract with the technology provider, Basin Water (Nasdaq: BWTR). Construction included the installation of a patented Ion Exchange (IX - Basin Water) System, and various system support components including the Brine Processing and Chemical Feed System, Exterior Salt and Waste Storage Tanks (UniPure), and Raw Water Pre-Filter Pipe and Manifold Assembly (Hayward/Eaton).



*Completed Ion Exchange Treatment Trains*

The process and treatment system was installed in a 60' x 105' CMU structure that also provided an enclosed area for electrical power and controls, chemical storage and feed system, sludge storage and press apparatus, and space for an additional IX process train in the event the plant treatment capacity is expanded to its design capacity.

The raw water was introduced to the facility from several point sources in the Baldy Mesa District and flows through a 2,000 GPM four-point pumping system. After leaving the pumping platform, the raw water enters eight stainless steel Hayward/Eaton Pre-Filter Strainers via a 45' x 24" steel pipe manifold assembly with individual 8" feeder lines and steel gate valves that sits on the exterior of the building.

The arsenic treatment system installed by IWS consisted of three independent Basin Water IX Train assemblies each having sixteen treatment vessels, for a total of 48 vessels. These trains process the raw water and remove the arsenic and other by-products, discharge



*Pre-filters and Influent Manifold Assemblies*

the finished water, and manage the regeneration of the treatment media via the Brine Processing Unit (BPU) through the associated Brine Processing Rack attached to each train. The 48 vessels have a treatment capacity of 6,000 GPM, with an expandable volume of 8,000 GPM with the installation of the future train.

The BPU system allows for the cleansing and regeneration of the arsenic treatment media within the vessels, and separation and removal of the concentrated arsenic from the system, as well as eventual removal from the plant. This is accomplished through the use of the 3, 2,000 gallon reactor tanks that provide for chemical mixing and settling of the arsenic, and the ultimate transfer of waste material to the sludge press for processing and removal to a hazardous waste burial site.



*UniPure Brine processing unit (BPU)*

The BPU sits within a separate containment area within the treatment building. Its manner of chemical processing and media regeneration is achieved through the introduction and management of ferric chloride and ferrous chloride via 2, 500 gallon, double-contained tanks, and sulfuric acid contained in a

similar 1,000 gallon tank. These chemical storage tanks were also installed as a part of the IWS scope, and are located in separate rooms adjacent to the BPU Area.

The Sludge Press receives the concentrated waste products allowed to settle out in the BPU reactor tanks, and is temporarily stored in a 750 gallon sludge storage tank. The sludge is moved to the press, which compresses the waste to remove all remaining water within the slurry. This allows for the formation a concentrated "cake" for proper collection and removal into a 55 gallon steel drum. This reactor vessel and sludge press system allows for a 90% capture of this processed water thus providing a direct cost savings by reducing waste water loss. A steel jib crane with attached electrical hoist- also installed by IWS will lift the drum out of the containment area for removal by a contracted hauler.

The exterior Salt and Waste Storage containers consist of 4, 16,000 gallon polyethylene tanks and associated pumps that are situated within a 24' x 80' containment pit, 4' 0" below finished grade along the northern half of the facility. The Salt Tank provides the sodium product by which the arsenic media is regenerated once it reaches its maximum limit limits, and the three Waste Tanks store the excess waste water and other by-products formed by the process not slated for reused. This waste material is not designed to be released into the municipal wastewater collection system, and will be removed by a contracted entity.

The installation of the chlorination and flushing system included:

- 360 MOV's, (electrically operated mechanical valves)
- 7 Pumping systems
- 3 chemical mixer motors
- Pneumatic Sludge Press and accompanying compressor system

The entire mechanical system was disinfected and hydrostatically tested before being put into operation.

Pat Kelly, General Manager of Basin Water said of the project " IWS worked as a team player with Basin Water and the Baldy Mesa Water District to make this project a success" . •

## Fully Integrated Approach Saves Largest School District in CA Over \$1.1 Million

### Project

IWS recently completed construction of a \$1.3mm onsite wastewater system upgrade at the Clear Creek Outdoor Education Center, located in the Angeles National Forest in La Cañada for the Los Angeles Unified School District (LAUSD), the State of California's largest school district. The facility was established in 1925, and is the oldest, continuously operated outdoor school in the United States. Clear Creek offers environmental education programs to students in the LAUSD.

### Competitive Price Offering

IWS competed against five other firms in a public bid and won the project with a low bid that saved the district over \$1.1 mm from the next highest bidder. In all, the bids ranged from \$2.4 mm to \$5mm. Peter Balas, COO says "We were able to provide a very competitive price to the client because we self perform all of our work and have developed efficiencies and expertise based on our exclusive focus on these onsite water and wastewater systems. Even though our cost was much lower than our competitors, the project economics worked out very well for us and our shareholders".

### Team Approach

The project success was due in large part to the team work of all stakeholders which included: LAUSD - John Fernandez (Project Manager) and Dan Crawford (Construction Manager); Civil Engineers - Davvd Khiaban and Norman Patel of Jones/Khiaban Engineers, Inc.; Wastewater Design Engineer - Kevin Poffenbarger of EPD Consultants, Inc.; Dale Hemstad, Construction Manager for IWS; and Equipment Supplier – Steve Braband of BioSolutions, Inc. The construction of the system was completed in six months, but the overall project permitting, design, and regulatory approval was a five year process.

### Upgrade Required

Prior to the upgrade, the facility was utilizing conventional septic tanks for treatment with dispersal in seepage pits and traditional leach fields. The project was considered an Emergency Repair



*The facility is located in rugged terrain in the Los Angeles National Forest. This picture shows the camp engulfed in a water drop during a forest fire response by CDF*

and the system was no longer in compliance with the Los Angeles County regulations. The camp operates year round and provides service for up to 200 students per session.

### New System Configuration

Renovation of the wastewater system involved: the installation of an advanced treatment system; replacement of over a thousand feet of existing collection lines; seven new fiberglass tanks ranging from

1,500 gallons to 11,000 gallons; and a 10,000 ft<sup>2</sup> drip dispersal system.

The existing collection system piping was replaced with new lines connecting a combination of new tanks and existing tanks, in a STEP collection configuration. Effluent was then either gravity flowed or pumped to the treatment system. The following tanks were installed as part of the STEP collection system: 1,000, 1,500, 5,000, and 11,000 gallon Xerxes



*The new wastewater system included primary and secondary treatment*



fiberglass tanks. IWS installed new collection lines in areas that had existing utilities and other obstructions (rocks), which complicated the installation. Blasting was ruled out due to the proximity to existing structures, so jack hammers and a backhoe outfitted with a breaker bar were used to get through the rocks that couldn't be removed.

The treatment system selected was the Orenco Advantex AX-100 unit, which is a textile filter based technology for treating the effluent from the STEP collection system. Two AX-100's were required to accommodate the facility loading. Once the effluent was treated by the Advantex system, it passed through a UV disinfection system to meet the regulatory requirements.

The effluent was dispersed in a 10,000 ft<sup>2</sup> drip dispersal field which was composed of 5 separate zones. Geoflow was the supplier of the drip dispersal system. Installation of the drip dispersal field required the removal of some existing structures, large trees, boulders, and other debris. From a design perspective, the drip dispersal field was approximately 100' lower in elevation than the treatment system, which required the installation of pressure reducing valves to regulate the flow to the field and to maintain adequate pressure for the return line back up the hill to the treatment system. The supply line from the treatment system to the dispersal field required an insulated cover and special design features because it was above grade and ran down a steep grade.

### Site Challenges

**Access** - The project site presented many challenges to the design and construction of the system. The site is remote and located in the Angeles National Forest which is a 12 mile ride off of Highway 210 up a winding and relatively steep grade. Once at the entrance to the camp it is a 1 mile drive down a tree and rock lined, winding, and narrow road (one lane in many places). To enable access for the heavy equipment, fiberglass tanks, and equipment LAUSD trimmed trees along the road as required to enable access – which turned out to be quite fortuitous.

**Subsurface conditions** – The hard



*Steep grade and environmental conditions required insulated pipe and special design features*

bedrock and subsurface conditions required alternatives to conventional seepage pit or leachfield dispersal. As discussed earlier, the pipeline and tank installation required extra effort to make it work in the rocky environment. Many areas required hand digging due to access limitations of equipment.

**Grade elevation change** – There were a number of challenging hydraulic design issues that need to be addressed due to differential in elevation between drip dispersal field and treatment system (100 vertical feet). In general, the site was located on a downward sloping grade.

**Wildlife** – The natural environment pre-



*IWS and LAUSD Review the Project (left to right) – Mark Gardina (Outdoor School Center Manager), Dale Hemstad (IWS), and Scott Wilson (Maintenance Manager)*

sented an opportunity to experience all of nature's beauty which included rattlesnakes (we caught three of them), scorpions, black widows, bobcats (wanted nothing to do with us) and deer. **Fire Danger** – The area we were working in was a fire prone region in an isolated canyon in the Los Angeles National Forest. IWS had to take extra precautions to reduce the potential of any fire, spark, or activity that might cause ignition of the dry groundcover. All IWS personnel were trained in fire response activities in the event of a fire. Half way through the project, much to our dismay, were we alerted by the CDF that we needed to prepare to evacuate the area due to a forest fire heading our way. Thirty-five action packed minutes later we were off the site. It was fortunate that the trees were cut back to allow for better access to the site along the entrance road for our equipment because CDF put 200 plus firemen and a dozen firetrucks throughout the facility in less than 30 minutes and was able to save the camp from the firestorm.

John Fernandez, the LAUSD Project



*The IWS Team (left to right) – Jay Alman, Dave Patton, Dale Hemstad*

Manager, said of the project, "The staff at Clear Creek, along with Maintenance & Operations, are very proud of this project, but even more, they enjoyed the experience of working with Integrated Water Services, especially the professionalism displayed by their crew." ●

## Proactive Value Engineering Saves Client 25% of Construction Budget

In the Fall of 2005, Integrated Water Services, Inc. (IWS) responded to a Request for Proposal issued by The Yolo County Housing Authority (YCHA), to provide improvements to a drinking water supply system serving the Fred R. Rehman Migrant Center, a migrant farm workers housing facility located in Dixon, CA. IWS reviewed the Bid Documents, plans and specifications, and submitted our proposal to the YCHA. IWS was awarded the bid for \$670,000 as the lowest responsive responsible bidder. This amount was nearly \$200,000 over the available funds for the project.



*Piping configuration from well head to storage tank*

IWS initiated discussions with the Housing Authority and suggested we could provide value engineering services to further reduce the project costs and improve the drinking water system's constructability. As a partner with the YCHA Engineer (Dave Dauwalder), IWS assisted with the value engineering and design and reduced the overall construction costs by \$174,000, which represented a 25% overall project cost savings for the client. The value engineering focused on the electrical and programable control system costs, which were reduced by simplifying the configuration. The net result was an affordable constructed cost for the client and simple and affordable future operating costs.

The Migrant Center is utilized seasonally by migrant workers during the spring

and summer each year. The project was funded in partnership with the State Department of Housing and Community Development, Office of Migrant Services. The existing water service for the housing facility had been provided via connection to an adjacent US Navy facility. The YCHA, as part of their site requirements, installed two new wells and completed an initial design for the new well head improvements, water treatment, and distribution system improvements needed

to accommodate the planned disconnection from the Navy's supply.

The IWS scope of work included the installation of two new 50 hp Goulds deep well turbine pumps, control system, well head improvements, disinfection equipment, two 5,000 gallon hydropneumatic tanks, well discharge piping, site preparation, grading, access road construction, and tie in connections to the distribution grid. ●



*Reconfigured electrical and programmable control system*



*5,000 gallon hydronematic water storage and distribution tanks*





**Ron Seale** has joined IWS as a Project Manager for our California operations. Ron comes to IWS with over 21 years of construction experience in large commercial water and waste water treatment system projects. Ron holds a California State Contractors B License. Ron will be a key resource for the company as we continue to expand our California operations.



**Michael Glaser, PE** has joined IWS and will be splitting time between our California and Colorado office. Michael has over 20 years experience as a civil engineer serving both private and public sector clients in the civil, environmental, and geotechnical markets. Michael's experience

includes wastewater treatment systems, environmental soil and groundwater remedial design and construction, and classic civil/geotechnical construction design and construction. Michael is PE licensed in California and Colorado. Michael will be the technical point of contact for projects when we team with other engineering firms and also lead our in-house engineering efforts in California.



**Chris Palmer, CEG, HG, PG, RG** has joined IWS and is based in California and will be assisting on projects with a focus on hydrogeologic and geology issues which includes mounding analysis, dewatering requirements, soil stability, infiltration studies, and other related topics. Chris has over 25 years diversified experience in hydrogeologic and engineering geologic studies in northern California and other States. He has performed or supervised numerous environmental compliance investigations. Mr. Palmer has taught classes on contaminant hydrogeology and subsurface investigations approach to academic, industrial, and regulatory groups as well as published several text books on hydrogeology.



**Peter C. Balas, PE (COO)** has just completed, as Editor, his second issue of the California Onsite Wastewater Association (COWA) newsletter which is the largest (20 pages) to date and has received support from major sponsors in the onsite industry. IWS continues to support COWA and other state and national organizations focusing on the onsite wastewater industry.

**Looking for a new opportunity?** IWS is always looking for talented onsite wastewater professionals including technical, sales, and construction backgrounds. If you have an interest in learning more about working with IWS please contact Gwen Rogers at 720-207-5052.

**New Corporate Office** - In January 2007, IWS relocated to our new headquarters in Avon, Colorado. Our corporate address is PO Box 9570, Avon, CO 81620. IWS's main phone number 720-207-5052.

## Regulatory Alert

**California** – The California State Water Resources Control Board (SWRCB) is developing state wide regulations for onsite wastewater systems under Assembly Bill AB885. The SWRCB was to set minimum State standards for onsite sewage disposal systems by January 1, 2004, but due to the diversity of site conditions in the nine Regional Water Quality Control Board areas and current policies in the 58 California Counties, this rule has yet to be

finalized. We are anticipating a final ruling in Spring of 2008.

**Colorado** – Changes to ammonia criteria have been adopted by Colorado's Water Quality Control Commission at the June 2005 Basic Standards Rulemaking Hearing. These changes are expected to have significant impacts on some ammonia limits for new facilities and facilities renewing their discharge permits. Facilities im-

pacted by the stricter treatment standards may require capital improvements to meet the new ammonia limits.

**Questions?** - If you have questions regarding how new regulations will impact your project or operation please feel free to call us for more information.

## About Us

Integrated Water Services, Inc. (IWS) provides services to municipalities, developers, communities, and businesses to address their water and wastewater needs. IWS leverages its extensive experience in permitting, engineering, construction, project management, site development, and project finance to provide a range of services to its clients with the ultimate objective of providing a solution that meets all the stakeholders' needs. IWS teams with engineering firms, consultants, suppliers, and other contractors to provide the client best value for their specific project needs.

## Corporate Information

Please visit our web site ([www.integratedwaterservices.com](http://www.integratedwaterservices.com)) for additional information or contact us at the following locations:

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