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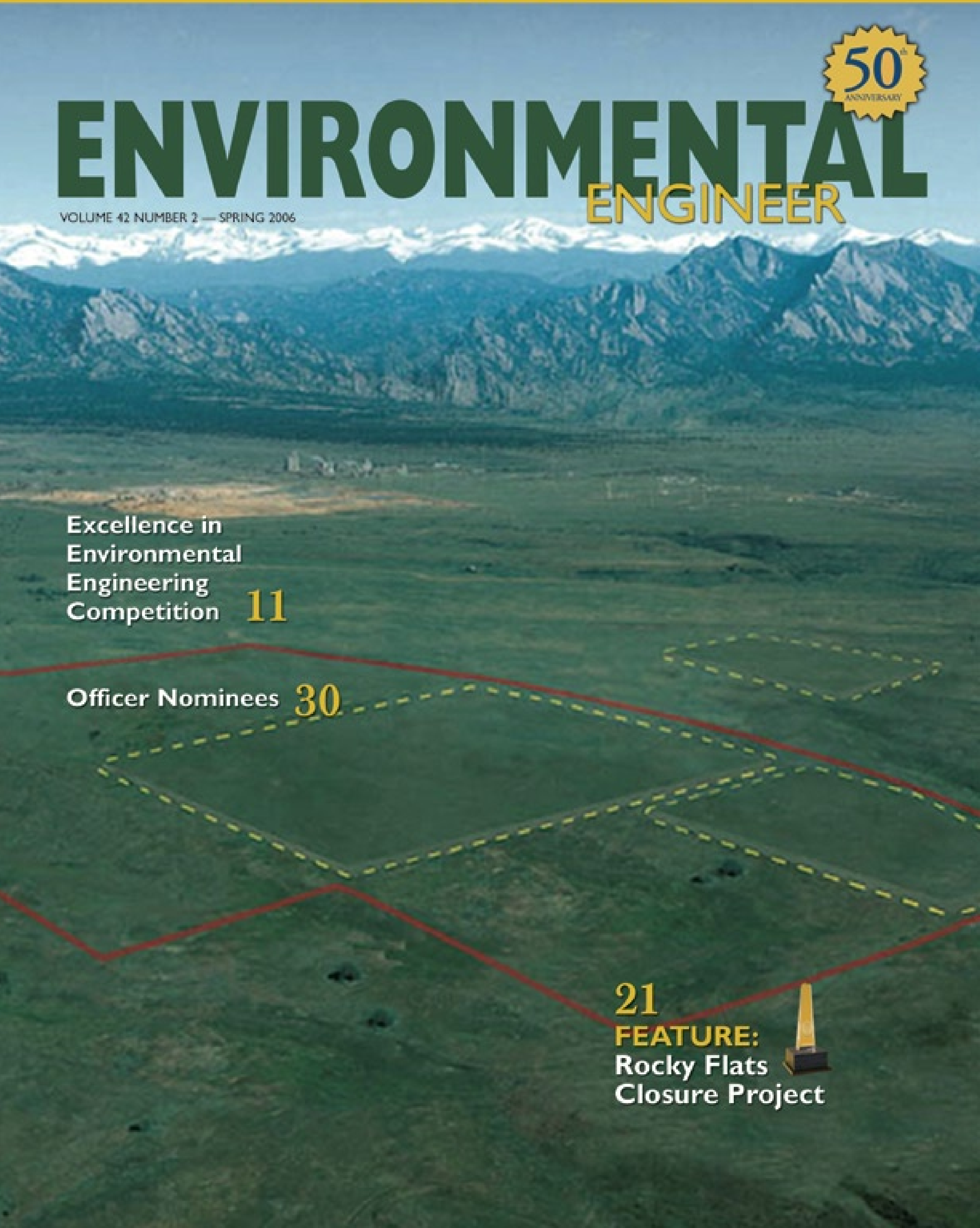
50th ANNIVERSARY

ENVIRONMENTAL ENGINEER

VOLUME 42 NUMBER 2 — SPRING 2006



ENVIRONMENTAL ENGINEER

BY ALAN H. VICORY, JR., P.E., BCEE

STRIVING FOR EXCELLENCE

Setting the Academy apart from many, if not most other organizations, is the fact that seeking and obtaining specialty certification is not mandatory for practice.

THIS TIME OF YEAR, SPRING, the Academy pauses to recognize, award and celebrate individuals who have contributed and achieved the extraordinary as well as environmental engineering projects judged to reflect excellence in management and design (see article in this issue of *The Environmental Engineer*). As the AAEE is the organization whose members comprise so many of the leaders of the profession in the United States (and several residing beyond our shores), awards and recognitions the Academy bestows carries with it enhanced meaning.

Setting the Academy apart from many, if not most other organizations, is the fact that seeking and obtaining specialty certification is not mandatory for practice. Certainly, all of us who have attained certification have our reasons for doing so. Myself, as the chief executive of a governmental interstate water pollution control commission with regulatory authority, I feel it imperative to posses the highest credentials available. After all, if I am to be involved in engineering investigations, development of orders, or court proceedings, is it not wise to be armed with such vetted qualifications? In your case, I suspect you have your own practice-specific rationale.

However, beyond the specifics of our respective practice and employment situation, I have found environmental engineers who would seek and obtain specialty certification by the AAEE to, generally, have a common characteristic; that is, great pride in our profession and the desire to strive for and achieve excellence. Inevitably, such individuals so internally motivated rise to leadership and one needs only to take in hand a copy of the Academy's "Who's Who in Environmental Engineering," in which our members are listed, turn to any page, to find environmental engineers in leadership positions in their respective organizations. Thus, as I have the pleasure of initially meeting fellow Diplomates or Board Certified Members, I may not necessarily know what they specifically do professionally, but I do know a bit about who they are.

So, while the Academy will pause on May 3rd, to honor and congratulate its 2006 project awardees for Excellence in Environmental Engineering, the recipients of the Academy's Gordon Maskew Fair and Stanley E. Kappe awards, and Honorary Diplomate status, it is also a celebration of the Academy itself, and you, its members, who, every day, strive for excellence.

A

ENVIRONMENTAL ENGINEER

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DAVID ASSELIN LEAVING EXECUTIVE DIRECTOR POSITION AT AAEE

After nearly two and a half years as Executive Director, David Asselin will be stepping down in May to take a position with another non-profit organization in the Washington, DC area. "This was not an easy decision to make," said Asselin. "I have really enjoyed working with everyone at AAEE and I think together we accomplished a lot of good things in a short amount of time."

Mr. Asselin will be leaving after the May 4th Board of Trustees meeting to become the Vice President and Executive Director of the Council of Manufacturing Associations in Washington, DC. The CMA is a division of the National Association of Manufactures.

SEARCH ORGANIZED FOR NEW EXECUTIVE DIRECTOR

The AAEE Executive Committee has begun a search for a new Executive Director. Resumes are being accepted through May 23rd at the AAEE office in Annapolis. The Committee expects to make a final choice by the end of June.

For a complete description of the Job Posting, call Sammi Olmo at AAEE at 410-266-3311.

APPLICATIONS FOR 2006 ARE CLOSED

The application period for BCEE/BCM for 2006 closed on March 31st. AAEE received 97 applications by the deadline, down slightly from last year. However, there are a significant number of holdovers from 2005 that did not take the exam last year. They will be added into the class for 2006.

The AAEE office will begin scheduling exams in May. The exam period will run through September and the successful exam candidates will be reviewed and certified by the Board at it's Annual Meeting in Cincinnati this coming November.

UPCOMING MEETINGS

The following AAEE-sponsored events will be happening at Organization Meetings throughout the year.

May 21, 2006: EWRI Congress, Omaha, Nebraska. AAEE Reception. Please see the EWRI ad on the Back Page.

June 14, 2006: AWWA Conference, San Antonio, TX. AAEE Luncheon Seminar.

June 20,2006: A&WMA Conference, New Orleans, LA. AAEE Luncheon Seminar.

October 23, 2006: WEFTEC Conference, Dallas, TX. AAEE/AIDIS Breakfast Seminar.

For more information on these activities or to register, please contact the appropriate Sponsoring Organization.

A

BY DAVID A. ASSELIN

OPPORTUNITIES

With there being so much consensus on this issue [Global Warming], the next logical question is: What can we do about it?

IT'S OFFICIAL. GLOBAL WARMING EXISTS, AND IT'S HERE TO STAY. For my entire lifetime, environmentalists, scientists and lawmakers have been arguing, fighting, proposing and denying the fact that humans have (or will) cause global climate changes that are detrimental to our planet. Now, apparently, the debate is over.

How do I know? *Time Magazine* told me so.

In it's April 3, 2006 edition, *Time Magazine*'s cover story on Global Warming proclaimed: "Be Worried. Be Very Worried." A new Time/ABC News/Stamford University poll shows that 85% of respondents believe global warming is happening.

The evidence seems overwhelming; rising annual temperatures, warmer oceans, melting polar ice caps, increased areas of drought, declining species and the list goes on. Most all of this seems to have been precipitated by a dramatic rise in CO2 emissions since 1950. An excess of CO2 in the atmosphere traps in the sun's heat and the earth's warming gets more and more obvious.

With there being so much consensus on this issue, the next logical question is: What can we do about it?

The Chinese ideogram for "Crisis" is made up of two other ideograms meaning "Danger" and "Opportunity." Is there danger in global warming? Definitely. Is it a crisis? Some will argue it already is, some argue that the crisis is still decades away. Whichever, there is plenty of opportunity for something to be done.

Why bring this subject up now? Because, increasingly, the politicians and the public are going to be looking to environmental scientists and engineers to design the systems that will slow, and eventually alleviate, our problems.

The good news is, the environmental engineering profession is poised to act. Just look at the innovative projects highlighted this year in the Excellence in Environmental Engineering Awards. New technologies to clean up hazardous wastes, increase the health of our drinking water supplies, make our waste treatment plants more advanced and run more efficiently are all highlighted this year.

The next steps are to adapt new technologies to cut greenhouse gas emission, create better air pollution control measures and have the public sector work hand-in-hand with government regulators and industry to curb excessive energy usage and cut down on dangerous byproducts. Together, we must all work to keep our world's environment healthy and vibrant for many generations to come.

On a much more personal note, I have had my own opportunity present itself and I am leaving AAEE in May of this year. I have enjoyed working with the Academy volunteers, members and staff over the last two and a half years and would like to thank all of you for giving me the chance to be a part of the AAEE family.

PAUL A. DOMBROWSKI, P.E, P.L.S., BCEE, was honored with the Alfred E. Peloquin Award at the New England Water Environment Association's Annual Awards Luncheon in Boston. Mr. Dombrowksi, Senior Project Manager at Tighe & Bonde, is an Active member and has been certified in Water Supply and Wastewater since 2000.

IN MEMORIAM

HARRY H. CURTIN, JR., P.E., BCEE, passed away on November 29, 2005. Mr. Curtin was a Life Member, certified in 1966 in Sanitary Engineering.

ERNEST B. GLYNN, P.E., CRA, BCEE, passed away on April 2, 2006. Mr. Glynn was certified in 1981 in Solid Waste Management.

SUSAN E. STUTZ-MCDONALD, P.E., BCEE, passed in February 2005. Ms. Stutz-McDonald was an Active Member. She was certified in 1989 in Water Supply and Wastewater.

2006 Environmental Engineer ABET/EAC Evaluator Training and Education Workshop

Sunday, October 22, 2006
8:00 a.m. to 5:00 p.m.
Dallas, Texas

Instructor
William C. Boyle, Ph.D., P.E., BCEE
ABET Engineering Accreditation Commission

Workshop fee of $150 includes breakfast, lunch, breaks, and copies of course materials.
Registration deadline is September 29, 2006

FOR PROGRAM EVALUATORS, FACULTY, DEPARTMENT CHAIRS, AND OTHER UNIVERSITY PERSONNEL

2006 GORDON MASKEW FAIR AWARD RECIPIENT

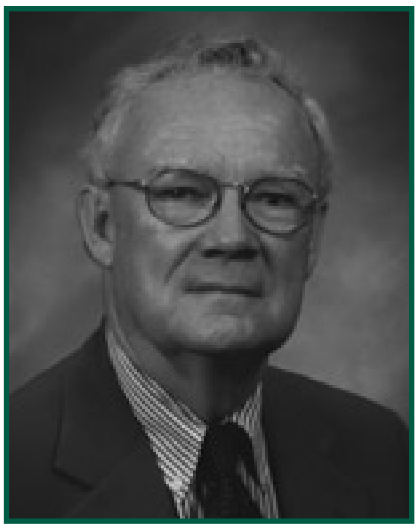
Philip C. Singer, Ph.D., P.E., BCEE

DR. PHILIP C. SINGER is the Dan Okun Distinguished Professor of Environmental Engineering in the Department of Environmental Sciences and Engineering in the School of Public Health at the University of North Carolina at Chapel Hill. He directed the Water Resources Engineering Program for 19 years and currently directs UNC's Drinking Water Research Center. He has conducted research on the chemical aspects of water and wastewater treatment and on aquatic chemistry for the past 40 years, and has published more than 180 papers and reports in these areas. In 1993, Dr Singer was selected for the Freese Lecture by the American Society of Civil Engineers, in 1995 he was given the A.P. Black Research Award by the American Water Works Association, in 1999 he received the Fuller Award from the NC section of the American Water Works Association, and in 2003 he was selected as the distinguished visiting lecturer of the Association of Environmental Engineering and Science Professors. In 1995, Dr. Singer was inducted into the National Academy of Engineering.

He has been active in the American Water Works Association, serving as a past Chair and Trustee of the Research Division, and has served on the Research Advisory Council of the American Water Works Association Research Foundation. He was an associate editor of Environmental Science and Technology, and is a past member of the Water Science and Technology Board of the National Research Council, the Board of Directors of the Water Environment Research Foundation, and the National Research Council's Committee on Drinking Water Contaminants. He currently serves on the EPA Science Advisory Board's Drinking Water Committee, the National Drinking Water Advisory Council, and is President-Elect of the Association of Environmental Engineering and Science Professors.

2006 STANLEY E. KAPPE AWARD RECIPIENT

Wayne F. Echelberger, Jr., Ph.D., P.E., BCEE



WAYNE F. ECHELBERGER, JR., PH.D., P.E., BCEE, Professor Emeritus of Civil and Environmental Engineering (Department Chairman, 1989-96) at the University of South Florida, received his B.S. in Civil Engineering from South Dakota School of Mines and Technology (1956), M.S.E. (Civil/Environmental Engineering, 1959), M.P.H. (Environmental Health, 1960) and Ph. D. (Civil/Environmental Engineering, 1964) from the University of Michigan.

Prior to joining the University of South Florida, Dr. Echelberger was Professor and Chairman of Civil Engineering at the University of Texas at El Paso (1983 - 89), and a member of the teaching and research faculties at Indiana University (1973 - 83), the University of Notre Dame (1965 - 73) and the University of Michigan (1964 - 65).

Honors and awards bestowed on Dr. Echelberger include: Water Environment Federation (formerly Water Pollution Control Federation) Harrison Prescott Eddy Medal for noteworthy research; South Dakota School of Mines and Technology Centennial 100 Alumni Award; listed in American Men and Women in Science, Who's Who in Engineering, Who's Who in Environmental Engineering; 1992 Engineer of the Year, Florida Section, American Society of Civil Engineers; 1992 Engineer of the Year, West Coast Branch, Florida Section, American Society of Civil Engineers; 1991 Florida West Coast Engineer of the Year, Tampa Bay Engineering Societies; 1976 Engineer of the Year, St. Joseph Valley Chapter Indiana Society of Professional Engineers; elected Diplomate American Academy of Environmental Engineers; membership in Sigma Xi and Chi Epsilon; South Dakota School of Mines and Technology 2003 Distinguished Alumni Award Recipient; ASCE Journal of Environmental Engineering 2004 Editor's Award; Florida Section/ ASCE 2005 Byron Spangler Award for special lifetime accomplishments in engineering and public service.

Dr. Echelberger has two children: Jeffrey, Dentist in Louisville; Michael, CPA in Dallas; and five grandchildren. A

2006 HONORARY BOARD CERTIFIED ENVIRONMENTAL ENGINEER

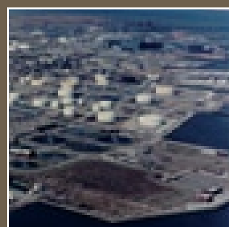
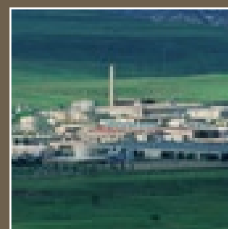
James L. Barnard, Ph.D., P.R.Eng.

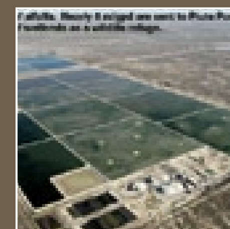
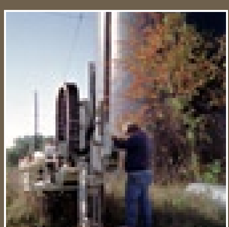
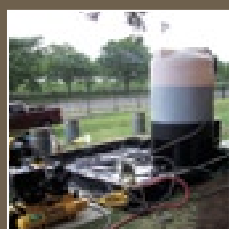
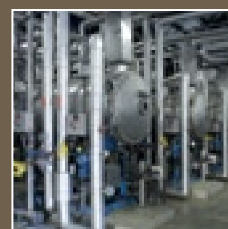
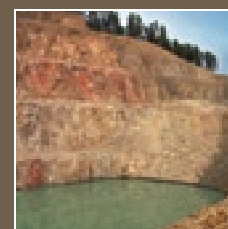
DR. JAMES L. BARNARD, P.R.ENG., graduated from the University of Stellenbosch in 1956. His interest in wastewater treatment developed when involved with the first application of the anaerobic upflow process at the Town of Bellville near Cape Town. He enrolled for an MS in Sanitary Engineering at Texas and followed this with a Ph.D. from Vanderbilt University. Upon returning to South Africa he developed the BARDENPHO Process (BARnard DENitrification and PHOsphorus removal), Phoredox (including AO and A2O), the Modified Balakrishnan/Eckenfelder (MLE) process and the Westbank Process. He is currently employed as Global Technology and Practice Leader by Black & Veatch in Kansas City, MO, USA.

With over 44 years of experience, Dr. Barnard has done process design for more than 100 nutrient removal plants and extensions around the world and introduced BNR to North America with the design of the Palmetto plant in Florida and the Kelowna plant in British Columbia for nitrogen and phosphorus removal. He presents courses and seminars on BNR at various universities and institutions around the world.

He served or is serving on the Technical Advisory Committee for Nitrogen Removal for the City of New York, District of Columbia Water and Sewage Authority (DCWASA), Winnipeg MB, Canada, Los Angeles and Jacksonville FL. Previous Employment: Reid Crowther/Vancouver B.C./ Director/1993-1998 and Wates, Meiring & Barnard, South Africa, Director, 1974-1993.

2006 Excellence in Environmental Engineering®

SUPERIOR ACHIEVEMENT FOR EXCELLENCE IN ENVIRONMENTAL ENGINEERING
is awarded to the best entry.

A GRAND PRIZE
is awarded in each category.

AN HONOR AWARD
is awarded to others deserving of commendation.

THE EXCELLENCE IN ENVIRONMENTAL ENGINEERING® competition of the American Academy of Environmental Engineers exists to identify and reward the best of today's environmental engineering. Its criteria define what it takes to be the best in environmental engineering practice: a holistic environmental perspective, innovation, proven performance and customer satisfaction, and contribution to an improved quality of life and economic efficiency.

The competition, begun in 1989, is organized around the normal phases of development and implementation of environmental management projects and programs: research, planning, design, and operations and management. This year's entrants to the competition displayed a wide range of projects from innovative designs in waste treatment plants to new water treatment technologies to a one-of-a-kind Superfund site cleanup. At the same time, we see that today's engineers are more and more becoming significantly integrated in a team/project approach, allowing for greater flexibility and efficiency in project management. The application of new technologies combined with experienced environmental engineering practices make these projects the award winners they are.

Those chosen for prizes in 2006 by an independent panel of distinguished experts, addressed the broad range of modern challenges inherent in providing life-nurturing services for humans and protection of the environment. They are but a small percentage of the many projects involving environmental engineers around the world. Nevertheless, their innovations and performance illustrate the essential role of environmental engineers in providing a healthy planet. These award winners testify to the genius of humankind and best exemplify the Excellence in Environmental Engineering® criteria.

2006 Excellence in Environmental Engineering®

SUPERIOR ACHIEVEMENT AWARD

ENTRANT: Kaiser-Hill Company, LLC
ENGINEER IN CHARGE: Michael Keating, P.E.
PROJECT NAME: Rocky Flats Environmental Technology Site
LOCATION: Broomfield, Colorado

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE
Broomfield, CO

The Rocky Flats Environmental Technology Site was a Superfund site located 16 miles northwest of Denver, CO and within 50 miles of 2.5 million people. The site consisted of over 700 structures located on a 385-acre industrial area, which is surrounded by 6,200 acres of controlled open space. In 1994, the US Department of Energy (DOE) ranked Rocky Flats as one of the Nation's most significant nuclear vulnerabilities.

In 1995, DOE hired Kaiser-Hill Company, LLC, a joint venture between CH2M HILL and IFC Kaiser, to clean up and close Rocky Flats. DOE projected a 70-year closure schedule at an estimated cost of $36 billion for cleanup. Kaiser-Hill's mission was to stabilize & ship radioactive materials, deactivate and decommission nuclear facilities, clean up contaminated areas and close the site.

After five years of study, in 2002 DOE and Kaiser-Hill signed a first-of-its-kind incentive fee contract to complete a safe, accelerated cleanup by December 15, 2006 (60 years less than the DOE projection) at a cost of $3.96 billion (roughly 10% of DOEs original estimate).

The Rocky Flats team took an active role in facilitating public understanding of cleanup decisions to allow early resolution of issues and create widespread support for the closure goals. The team actively engaged stakeholders at all levels in site cleanup operations and completed more than 60 million person-hours of work with no life-threatening worker injuries or environmental releases.

The Rocky Flats team completed closure in October 2005 (14 months ahead of schedule) at a cost of $3.44 billion (a half-million dollars under budget). For more detailed information on this project, see our feature article on page 21.

TOP LEFT
The Rocky Flats Environmental Technology Site is located 16 miles northwest of Denver, Colo., and within 50 miles of 2.5 million people.

BOTTOM LEFT
The site was once a top-secret factory that processed plutonium enriched uranium into nuclear detonators.

BOTTOM RIGHT
Kaiser-Hill drained, stabilized, packaged and shipped over 30,000 liters of plutonium and enriched uranium metals and oxides into 1,895 containers for long-term storage.

GRAND PRIZE research

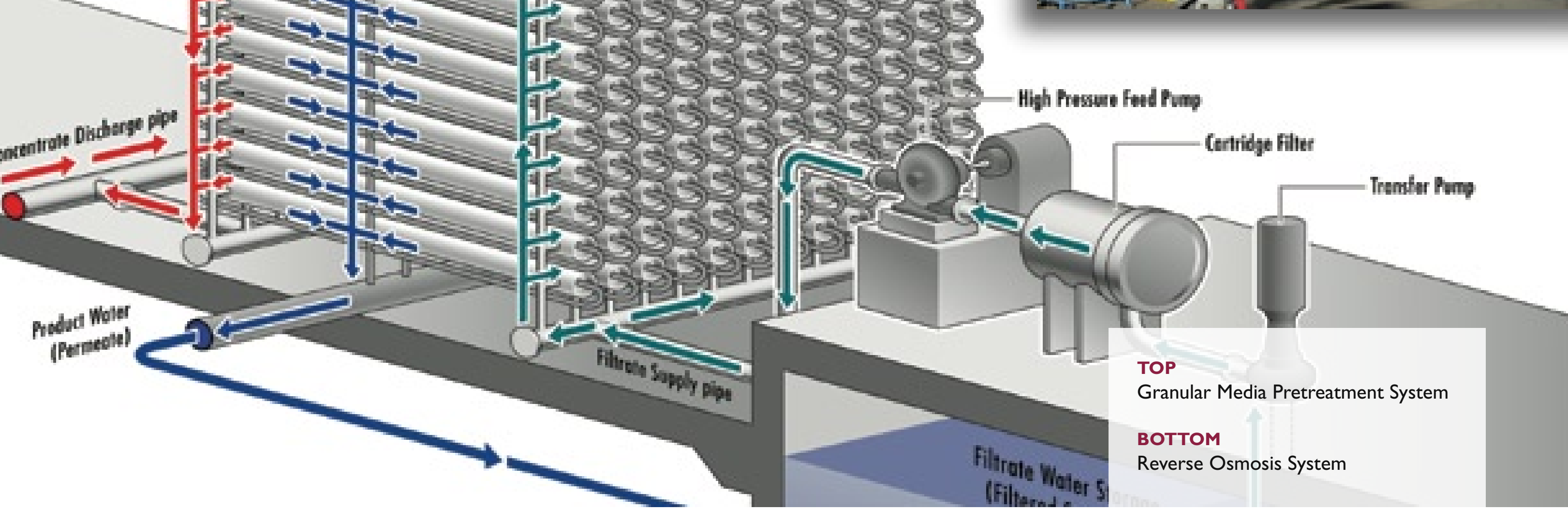
ENTRANT: Poseidon Resources Corporation
ENGINEER IN CHARGE: Nikolay Voutchkov, P.E., BCEE
PROJECT NAME: Carlsbad Seawater Desalination Demonstration Facility
LOCATION: Carlsbad, California

CARLSBAD SEAWATER DESALINATION DEMONSTRATION FACILITY
Carlsbad, CA

Since 1998, Poseidon Resources, Inc. has been working with the City of Carlsbad on a public-private partnership to construct a 50 Million Gallon per Day (MGD) saltwater desalination plant at the site of the Encina Power Station, which would provide a cost-certain, locally controlled, drought-proof supply of water. In January 2003, a pilot desalination facility began operating on site, providing a unique opportunity to demonstrate the desalination process and showcase the important balance of environmental protections inherent in the larger project, including protection of the Agua Hedionda Lagoon and offshore marine environment.

The Pilot Plant has allowed Poseidon Resources to better study the effects of the desalination facility on the surrounding environment through numerous scientific and engineering studies. The Environmental Impact Report, which was independently prepared by another firm for the City of Carlsbad, concludes that the proposed plant can be constructed and operated with no significant impacts related to thirteen different areas studied including noise, traffic, growth-inducement, air & water quality, land use, public utilities and natural resources.

The large-scale plant is now scheduled to be completed and producing potable water by 2008.



TOP
Granular Media Pretreatment System

BOTTOM
Reverse Osmosis System

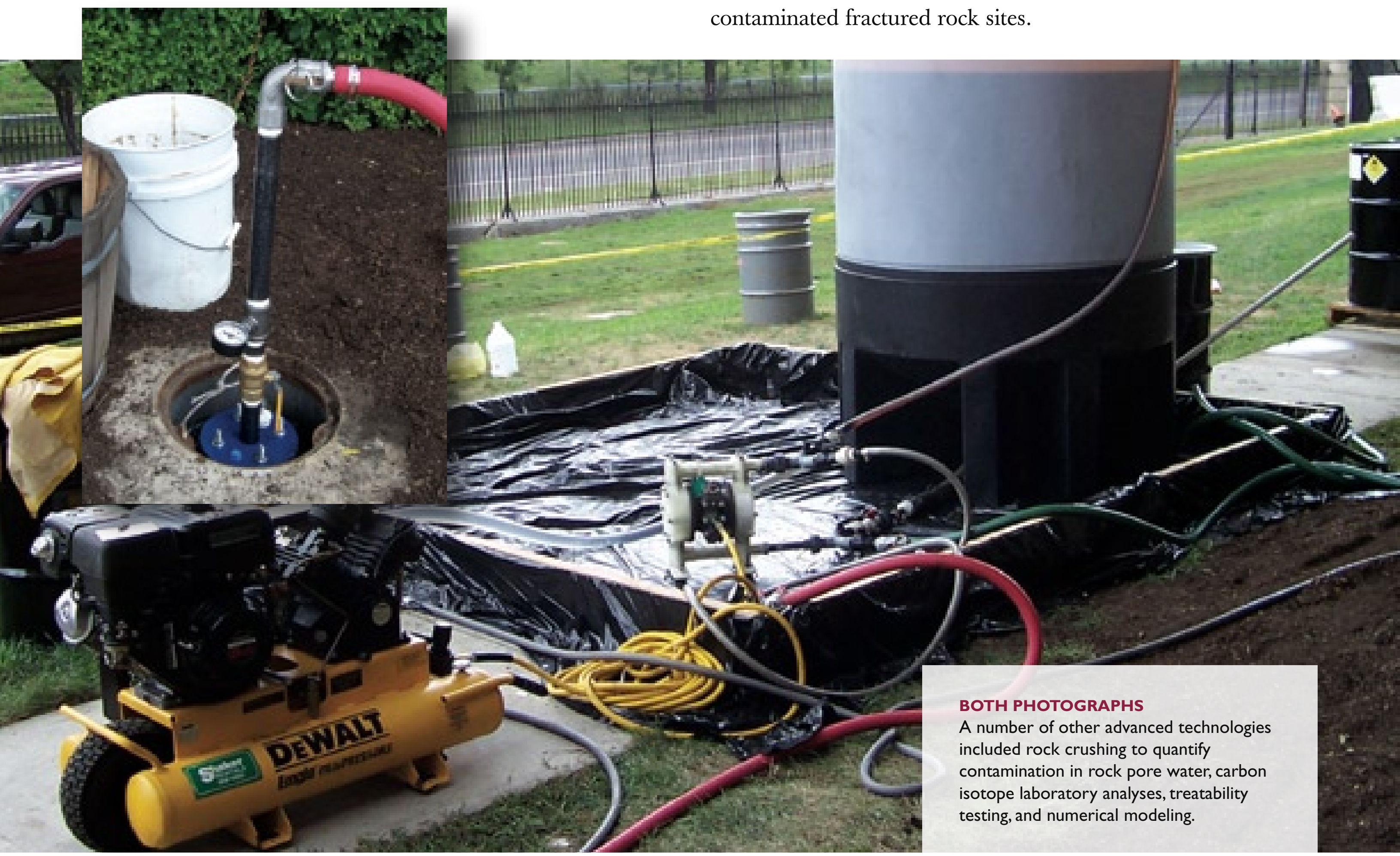
HONOR AWARD research

ENTRANT: Malcolm Pirnie, Inc.
ENGINEER IN CHARGE: Kenneth Goldstein
PROJECT NAME: Watervliet Arsenal Chemical Oxidation Remediation Project
LOCATION: Watervliet, New York

WATERVLIET ARSENAL CHEMICAL OXIDATION REMEDIATION PROJECT
Watervliet, NY

Conditions at the Watervliet Arsenal (WVA) in New York State were such that up until now, they would have been considered technically infeasible to remediate. Groundwater contaminated by volatile organic compounds (VOCs) from operations at the Arsenal had infiltrated the site's fractured bedrock and diffused throughout the bedrock pore matrix and associated pore water, turning the rock itself into a source of continuing contamination spread.

Working in a joint effort with the US Army Corps of Engineers and researchers from the University of Waterloo in Ontario Canada, a team from Malcolm Pirnie employed an integrated suite of innovative site characterization tools, field pilot study data, laboratory studies, carbon isotope analyses and numerical modeling. Pilot studies and treatability tests proved the effective delivery and reaction of the oxidant permanganate with VOCs in the rock matrix, a first-of-its-kind in-situ oxidation remedial strategy. As a result, this study has furthered the state-of-the-science for characterization and remediation of VOC-contaminated fractured rock sites.



BOTH PHOTOGRAPHS
A number of other advanced technologies included rock crushing to quantify contamination in rock pore water, carbon isotope laboratory analyses, treatability testing, and numerical modeling.

GRAND PRIZE planning

ENTRANT: JMT/KCI Joint Venture
ENGINEER IN CHARGE: Thomas Sprehe, P.E., BCEE
PROJECT NAME: Enhanced Nutrient Removal for the Patapsco Wastewater Treatment Plant
LOCATION: Baltimore, Maryland

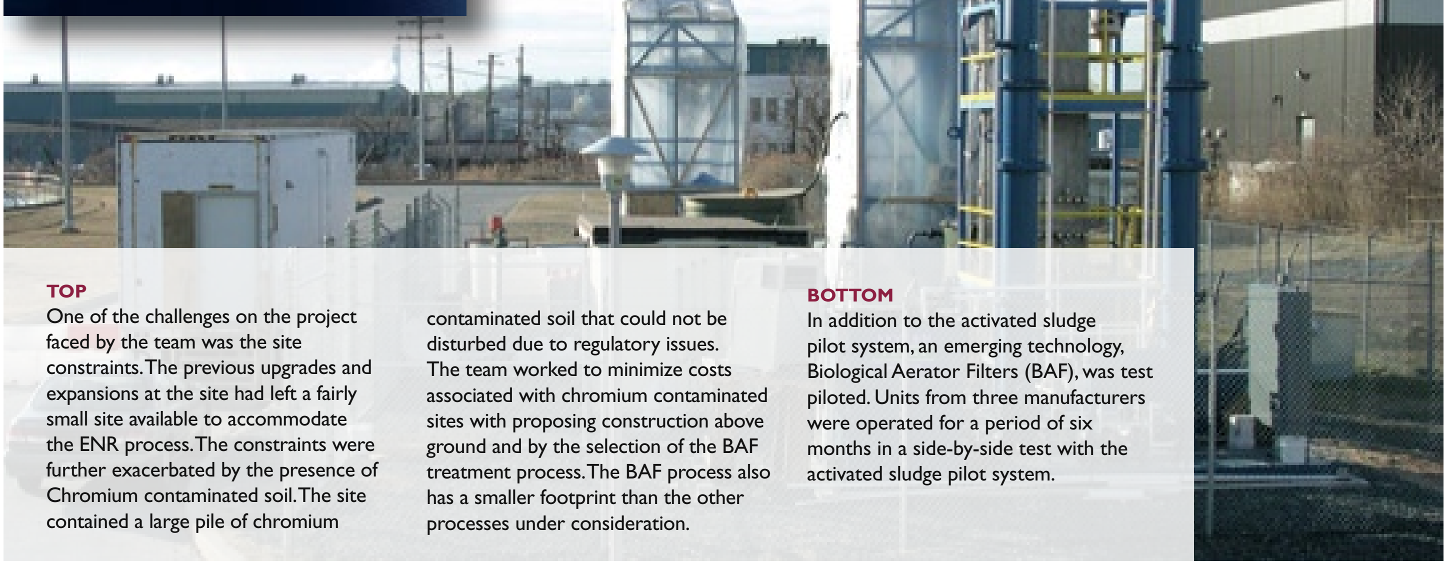
ENHANCED NUTRIENT REMOVAL FOR THE PATAPSCO WASTEWATER TREATMENT PLANT

Baltimore, MD

The Joint Venture Team of Johnson Mirmiran & Thompson, Inc. and KCI Technologies, Inc. completed a comprehensive process evaluation and prepared preliminary designs for Enhanced Nutrient Removal (ENR) for the City of Baltimore's Patapsco Wastewater Treatment Plant (WWTP). The project is part of Maryland's ENR program which set new discharge goals for updated WWTPs by the year 2010 and will contribute to the health of the Chesapeake Bay by treating wastewater discharges into bodies of water that lead into the Bay.

Completed in 2005, the project involved concept design development, detailed process modeling, bench scale testing, a one year pilot testing program and detailed cost evaluations to provide the best treatment ENR option. This joint Venture Team conducted an alternatives evaluation and prepared preliminary designs for the recommended facilities, which involve a Biological Aeration Filter (BAF) process. Only one other US plant similar in size to Patapsco has implemented this type of advanced nutrient removal system.

When implemented, the Patapsco plant's ENR facilities will remove 31% of the nitrogen proposed to be removed by ALL 66 plants involved in the ENR program. This keystone project will play a significant role in meeting the 2010 nutrient reduction goals.



TOP
One of the challenges on the project faced by the team was the site constraints. The previous upgrades and expansions at the site had left a fairly small site available to accommodate the ENR process. The constraints were further exacerbated by the presence of Chromium contaminated soil. The site contained a large pile of chromium contaminated soil that could not be disturbed due to regulatory issues. The team worked to minimize costs associated with chromium contaminated sites with proposing construction above ground and by the selection of the BAF treatment process. The BAF process also has a smaller footprint than the other processes under consideration.

BOTTOM
In addition to the activated sludge pilot system, an emerging technology, Biological Aerator Filters (BAF), was test piloted. Units from three manufacturers were operated for a period of six months in a side-by-side test with the activated sludge pilot system.

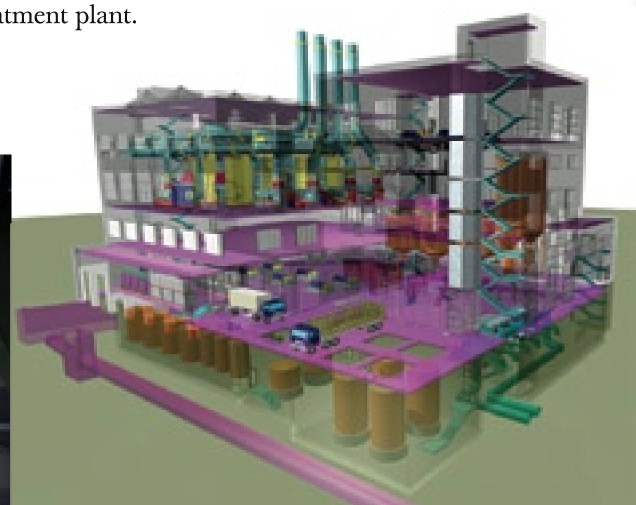
GRAND PRIZE design

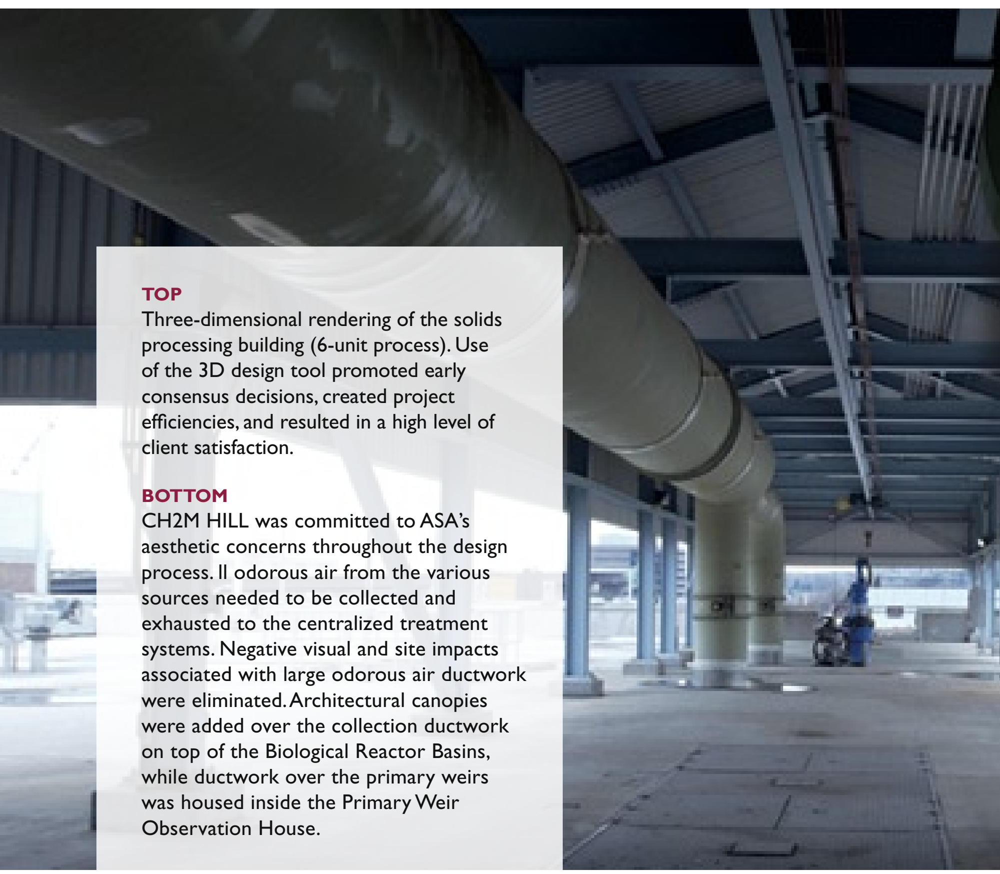
ENTRANT: CH2M Hill
ENGINEER IN CHARGE: Martin Moore, P.E.
PROJECT NAME: ASA Advanced Wastewater Treatment Facility Upgrade
LOCATION: Alexandria, Virginia

ASA ADVANCED WASTEWATER TREATMENT FACILITY UPGRADE
Alexandria, VA

The Alexandria Sanitation Authority (ASA) in Alexandria, VA needed to upgrade its advanced 54 mgd wastewater treatment facility to meet the increasingly stringent water quality requirements established by the Potomac Embayment Standards and the Chesapeake Bay Agreement. The $275 million facility upgrade focusing on nitrogen removal was accomplished over an eight-year period. The primary goal was to construct a new biological nutrient removal system. Throughout the process, CH2M HILL maintained plant operations during improvements, worked within extremely limited space and staging area constructions, completed the nitrogen removal facilities on time and retained maximum bidder participation to keep costs down.

Aesthetics and visual impacts to the public were of paramount importance on the project. Improvements were designed to ensure they were in keeping with the existing "Old Town Alexandria" architecture, and negative visual impacts were eliminated or minimized wherever possible. For example, architectural canopies were used to screen ducts and piping from public view, and all process equipment was completely housed inside buildings. The plant now blends into the surrounding area, looking more like a college campus than a wastewater treatment plant.





TOP
Three-dimensional rendering of the solids processing building (6-unit process). Use of the 3D design tool promoted early consensus decisions, created project efficiencies, and resulted in a high level of client satisfaction.

BOTTOM
CH2M HILL was committed to ASA's aesthetic concerns throughout the design process. ll odorous air from the various sources needed to be collected and exhausted to the centralized treatment systems. Negative visual and site impacts associated with large odorous air ductwork were eliminated. Architectural canopies were added over the collection ductwork on top of the Biological Reactor Basins, while ductwork over the primary weirs was housed inside the Primary Weir Observation House.

HONOR AWARD design

ENTRANT: Newport News Waterworks and Malcolm Pirnie, Inc.
ENGINEER IN CHARGE: James P. Noonan, P.E., BCEE
PROJECT NAME: Lee Hall Water Treatment Plant
LOCATION: Newport News, Virginia

LEE HALL WATER TREATMENT PLANT
Newport News, VA

In the mid 1990's, the Newport News Waterworks recognized that its aging 54 mgd plant needed to be modernized, both to improve operating efficiency and reliability and to meet upcoming new federal drinking water standards from EPA. The design team from Malcolm Pirnie worked closely with Waterworks' operations & management staff to find a unique solution to this project.

The solution was a new plant at the same site using innovative technologies – the first application in Virginia of Dissolved Air Filtration (DAF) technology and ozone disinfection with biologically active granular media filtration. DAF uses tiny air bubbles to cause microscopic particles and Cryptosporidium to float to the surface, where they can be removed. Ozone disinfection technology is more effective than the previously used chlorine at killing microorganisms. The change eliminates potentially carcinogenic chlorine by-products, helping to meet EPA requirements, and also eliminates the need to store chlorine gas which can pose a threat of hazardous leaks.

TOP
The application of dissolved air flotation (DAF) technology provides the first treatment barrier for removal of microbial contaminants.

BOTTOM
Ozone generation equipment converts oxygen to ozone for improved disinfection and taste and odor control.

GRAND PRIZE operation & management

ENTRANT: Sanitation Districts of LA County
ENGINEER IN CHARGE: James F. Stahl, P.E., BCEE
PROJECT NAME: The Power of Innovation – Antelope Valley Green Energy Program
LOCATION: Los Angeles, California

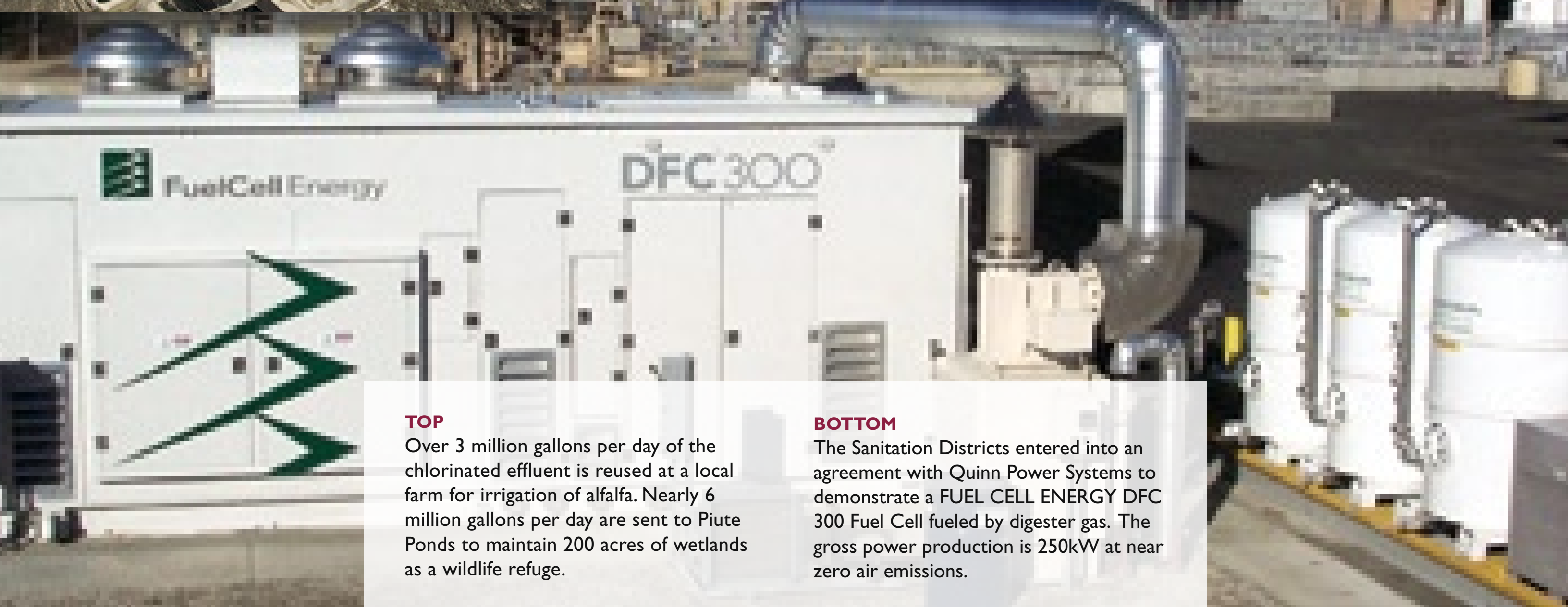
THE POWER OF INNOVATION ANTELOPE VALLEY GREEN ENERGY PROGRAM

Los Angeles, CA

Recent technology advances have allowed energy recovery at wastewater reclamation plants where it was not previously feasible. As part of the LA County Sanitation Districts' Antelope Valley Green Energy Program, a 250 kW fuel cell was installed at the Palmdale Water Reclamation Plant and a 230 kW microturbine was installed at the Lancaster WRP. Both units include waste heat recovery for digester heating.

Each of these installations is the first of its type to use digester gas as fuel. The projects include innovative systems to clean trace contaminants from the digester gas stream, produce zero to ultra-low air emissions and can be operated remotely. Preliminary estimates indicate the microturbine operation will save approximately $200,000 per year in retail electricity costs.

By adopting these advanced technologies, the LA Sanitation Districts provide leadership to the wastewater treatment industry and open the door for large-scale, industry-wide reductions in fossil fuel usage, air emissions and energy related expenses.



TOP
Over 3 million gallons per day of the chlorinated effluent is reused at a local farm for irrigation of alfalfa. Nearly 6 million gallons per day are sent to Piute Ponds to maintain 200 acres of wetlands as a wildlife refuge.

BOTTOM
The Sanitation Districts entered into an agreement with Quinn Power Systems to demonstrate a FUEL CELL ENERGY DFC 300 Fuel Cell fueled by digester gas. The gross power production is 250kW at near zero air emissions.

GRAND PRIZE small projects

ENTRANT: Leggette, Brashears & Graham, Inc.
ENGINEER IN CHARGE: J. Kevin Powers
PROJECT NAME: Triple Espresso of Oxygen: Super-Saturated Water Knocks Out Toluene Plume
LOCATION: Evart, Michigan

TRIPLE ESPRESSO OF OXYGEN
Evart, MI

Using an innovative environmental clean up technology, Daimler Chrysler Corporation and Leggate Brashears & Graham, Inc. (LBG) successfully remediated groundwater toluene contamination at a former company facility in central Michigan.

Borrowing from technologies in a wide array of engineering fields, LBG developed a new remedial technology that had not yet been applied to environmental clean ups. LBG proposed a gas/liquid contacting process commonly used in chemical engineering. The contacting process increases the dissolved oxygen concentration of municipal water from 5 up to 40 mg/l by contacting the water with oxygen in a high efficiency plunging liquid jet gas/liquid contactor.

The super-oxygenated water was injected into the aquifer to deliver large quantities of dissolved oxygen to the impacted areas. The system was intended to run for a minimum of two years, but had fully remediated the sight within 16 months. This remediation timeline is remarkable, considering that more “traditional” technologies could have taken from two to twenty years to achieve the same results.

TOP
Underground piping installation.

BOTTOM
Injection Well Installation. Modern equipment was used to strategically install injection wells as required by the model results and system design.

HONOR AWARD small projects

ENTRANT: CDM
ENGINEER IN CHARGE: Steven Fundingslund
PROJECT NAME: Gilt Edge Acid Rock Drainage Treatment
LOCATION: Deadwood, South Dakota

GILT EDGE ACID ROCK DRAINAGE TREATMENT
Deadwood, SD

Revolutionizing site cleanup and reclamation, CDM, Jointly with the US EPA and ARCADIS US, Inc., led the successful management of an industry first for a pit-lake of nitrate- and metal-contaminated acid rock drainage (ARD) water using a novel in-situ bioremediation approach that cleans ARD water innovatively and cost-effectively through the application of inexpensive materials such as molasses, alcohol and lime kiln dusts.

In 1999, the US EPA had declared the abandoned Gilt Edge Mine a Superfund site. Using the innovative bioremediation approach, CDM demonstrated cost-effective remediation of an acidic open pit-lake to EPA aquatic standards – applied for the first time at this scale. Never before has contaminated water been treated to such clean discharge quality without an expensive water treatment plant and use of costly operations & maintenance. To date, CDM has neutralized and substantially removed metals from more than 70 million gallons and has discharged 14 million gallons of the treated, high-quality water which meets all discharge standards.

TOP
130 years ago, hopefuls from across the country sought gold, copper, and tungsten at the Gilt Edge mine in Deadwood, South Dakota. In recent years, it was discovered that these operations had contaminated the nearby headwaters of cold-water fisheries with millions of gallons of lethal acid rock drainage water.

BOTTOM
Using this innovative bioremediation approach, the Gilt Edge mine site saved $1 million on treatment of a single pitlake. This project introduces reliable and affordable treatment technology to thousands of sites around the world, producing water safe for recreational use and habitable to fish and macro-invertebrates, while transforming once-toxic sites into valuable community resources.

ROCKY FLATS CLOSURE PROJECT

BEFORE (1995) AND AFTER (2005) PHOTOS OF THE ROCKY FLATS SITE: The Rocky Flats site near Denver, Colo., consisted of a 385-acre industrial area surrounded by 6,000 acres of buffer zone. Closure of the site involved removing tons of radioactive material, more than 800 structures and restoring the land to its original condition. It will soon become a national wildlife refuge.

BY ED BODEY

ROCKY FLATS CLEANUP ACHIEVED DECADES AHEAD OF SCHEDULE

The U.S Department of Energy and the Kaiser-Hill Company made environmental cleanup history in late 2005 by successfully completing a 10-year project to clean up and close down the Rocky Flats Environmental Technology Site near Denver, Colorado. It was one of the most contaminated nuclear sites in the country.

DOE's contractor, Kaiser-Hill, a joint venture of CH2M HILL and Kaiser Engineers, completed the work decades sooner and for billions of dollars less than many believed could be possible. Heavily contaminated structures were decontaminated and demolished. Hundreds of thousands of cubic meters of radioactive waste were shipped off site. Acres of contaminated soil were cleaned to levels set by federal and state regulators and endorsed by local communities. And all surface water leaving the site meets stringent water quality standards.

Soon, most of the U.S. Department of Energy's 6,200-acre site will be transferred to the U.S. Fish & Wildlife Service for management as a wildlife refuge.

The cleanup of Rocky Flats is the first major DOE weapons complex facility to be successfully cleaned up and closed. The approach created a new model for environmental cleanup and demonstrated that teamwork between government, its contractor, regulatory agencies and the public can do what U.S. Senator Wayne Allard of Colorado called, "making the impossible possible."

A vault containing weapons-usable plutonium is among many similar vaults at Rocky Flats. In 1995 the site contained more than 21 tons of special nuclear materials. Most of the weapons-usuable material was packaged for long-term storage and shipped to the Savannah River Site in South Carolina. Some was shipped to U. S. Department of Energy national laboratories.

Workers demolish Rocky Flats Building 371. The 300,000 square foot structure was one of the most contaminated at Rocky Flats.

Rocky Flats workers wearing state-of-the-art protective equipment package radioactive waste into containers for shipment to an off-site disposal facility.

A radiation protection professional examines the walls of a air filter plenum at Rocky Flats Building 371. Airborne radiation levels in some areas of the plutonium facilities at Rocky Flats were too high to allow entry by personnel. The airborne contamination was stabilized by spraying fixative into these areas.

ROCKY FLATS: A NUCLEAR WASTELAND

Built in the early 1950s in a wave of Cold War expansionism, Rocky Flats produced plutonium and uranium components for the U.S. nuclear weapons arsenal. Essentially a high-precision machining operation, Rocky Flats workers transformed raw plutonium and uranium into the parts that initiate the nuclear explosion in modern nuclear weapons.

Forty years of production left a daunting legacy of radioactive waste and heavily contaminated structures and the environment.

When Kaiser-Hill arrived in 1995, Rocky Flats contained:

- More than 21 tons of Special Nuclear Materials – Rocky Flats' inventory of highly-protected, weapons-usable plutonium and enriched uranium.
- Approximately 106 tons of materials called plutonium residues. Residues were scraps from the production process – lathing, machining, molding, casting – that contained enough plutonium to warrant recovery using chemical processes.
- 30,000 liters of plutonium and enriched uranium solutions
- 550,000 cubic meters of low-level radioactive waste, some mixed with hazardous waste
- 15,000 cubic meters of transuranic waste
- More than 800 structures, including five of the most radioactively contaminated buildings in the country
- 13 "infinity" rooms – sealed and abandoned rooms in plutonium processing facilities so highly contaminated that they couldn't be measured by radiation detection equipment used at Rocky Flats 20-to-30 years ago
- Nearly 700 contaminated tanks, some as tall as three-story buildings with capacities of more than 30,000 gallons
- Nearly 1,500 highly contaminated glove boxes – large, stainless steel enclosures where workers handled nuclear materials. Some glove boxes were the size of 18-wheel tractor trailers
- Hundreds of acres contaminated with radioactive and hazardous materials.

An operator brushes oxide from a plutonium button. The plutonium button was the raw material shipped from the Department of Energy's Hanford or Savannah River sites.

Areas in former plutonium processing facilities at Rocky Flats contained extremely high levels of contamination. Some areas were known as "infinity rooms" because radiation levels pegged measurement equipment used at Rocky Flats 20 years ago.

The situation was exacerbated by the sudden shutdown of operations in 1989 following a raid by the Federal Bureau of Investigation and the Environmental Protection Agency to investigate allegation of environmental crimes. This left plutonium metals and other radioactive waste inadequately packaged and plutonium liquids stopped mid-stream in process piping systems or tanks. The shutdown lasted weeks, then months, then years, creating extremely hazardous conditions. Tanks and pipes began to leak. Plutonium was escaping its packaging. Radioactive materials were producing hydrogen from the process of radiolysis that compounded the hazards.

In 1994 DOE conducted an analysis of plutonium vulnerabilities in its facilities. Two Rocky Flats buildings were named the top two vulnerabilities in the nation. Three other Rocky Flats buildings were ranked in the top ten.

INNOVATIVE CONTRACTING STRATEGIES

Kaiser-Hill arrived at Rocky Flats in 1995 as a result of successfully winning the first of DOE's new contracting models – the performance-based Integrated Management Contract. Unlike other DOE contracts at the time, the 1995 Integrated Management Contract allowed the contractor to earn payment only by completing specific, measurable units of work. DOE contracts up to that time were known as Management and Operations contracts that rewarded contractors for general management of a site. Payment was mostly based on subjective performance evaluation with little incentive for contractors to do things differently than they had done for years.

Under this new pay-for-performance model, Kaiser-Hill got Rocky Flats working again. Plutonium solutions stored in leak-prone tanks and piping systems were drained and stabilized. Drums of radioactive and chemical waste such as uranium and cyanide were unearthed from burial trenches, safely packaged and disposed of. Scientists started analyzing the massive inventory of plutonium residues and developed strategies to stabilize, package and ship this material. The first steps were taken to deactivate, decommission and decontaminate facilities such as Building 779, which was the first of Rocky Flats' five large plutonium-contaminated buildings to be demolished.

During the course of the five-year contract, Kaiser-Hill also began questioning why it would take more than a half of a century and tens of billions of dollars to ultimately clean up and close the site. (Planning estimates prior to Kaiser-Hill's arrival at Rocky Flats forecast closure of the site to take more than 65 years and cost more than $36 billion).

The company developed a series of strategic planning models and specific project plans which verified that closure could be accelerated by decades at a significantly reduced cost.

Based on its record of getting work done and developing an aggressive yet credible plan to clean up and close Rocky Flats by the end of 2006, Kaiser-Hill was awarded the Rocky Flats Closure Contract in 2000. The Closure Contract model was the next generation in contract reform at DOE and was innovative in a number of ways. There were strong financial incentives for minimizing cost and severe penalties for unsafe performance. The contract authorized Kaiser-Hill to perform the entire scope of the closure project rather than requiring DOE approval each year for annual work plans. This allowed Kaiser-Hill

ROCKY FLATS **Historical Timeline**

1951	Ground broken
1952-1989	Factory in operation – Top-secret manufacturing of plutonium and enriched uranium components for nuclear weapons
1989	FBI raid – nuclear operations shut down for safety and environmental concerns
	Rocky Flats placed on EPA National Priorities list
1992	President Bush announces termination of weapons production, effectively ending any hope of Rocky Flats restart; Department of Energy announces new Rocky Flats mission of environmental cleanup
1995	The Department of Energy awards a first-ever performance-based contract to Kaiser-Hill, LLC (CH2M HILL and Kaiser Engineering). Major subcontractors include Westinghouse, BWXT, Morrison-Knudsen, BNFL and Dyncorp.
1996	The Rocky Flats Cleanup Agreement is signed between the Department of Energy, the Environmental Protection Agency and the Colorado Department of Public Health and Environment
1995-1999	Kaiser-Hill reduces most pressing risks, starts facility decontamination and decommissioning and begins detailed planning for accelerated closure
2000	First-ever DOE Closure Contract awarded to Kaiser-Hill. Contract includes a target cost of $3.9 billion, a target schedule of December 2006, and incentives for safe, cost-effective, accelerated closure
2001	Congress passes legislation declaring Rocky Flats a national wildlife refuge upon closure
June 2005	Demolition of Building 371 begins (last major building)
October 2005	Project completion
December 2005	Project completion certified by DOE

"The Department of Energy and its prime contractor, Kaiser-Hill, have done an excellent job in remediating Rocky Flats and reducing the extensive risks that the sites posed. It is easy to lose sight of the daunting task they have performed."

ROCKY FLATS COALITION OF LOCAL GOVERNMENTS REPRESENTING THE CITIES AND COUNTIES SURROUNDING THE ROCKY FLATS SITE, JANUARY 2005

Acre upon acre of land at Rocky Flats is covered with a coconut mat that slowly disintegrates to control erosion while seeds take root. Rocky Flats workers "hydro-seeded" the entire area with seeds collected from native species in the unique high-prairie ecosystem.

Transuranic waste, the Rocky Flats waste stream with the highest levels of radioactivity, is packaged in specially-designed vessels for shipment to the Waste Isolation Pilot Plant in New Mexico. Rocky Flats contained four types of radioactive materials: Special Nuclear Materials that consisted of weapons-usable plutonium or enriched uranium; Transuranic radioactive waste; low-level radioactive waste, and low-level mixed (containing hazardous materials) radioactive waste.

the flexibility to maximize efficiencies as work progressed. As an example, unforeseen technical innovations early in the project allowed Kaiser-Hill to deviate from its baseline planning to accelerate work originally scheduled to occur during the final years of closure.

A STREAMLINES REGULATORY FRAMEWORK

Kaiser-Hill supported DOE with the development of the Rocky Flats Cleanup Agreement in 1995. When it was signed by the state of Colorado, the U.S. Environmental Protection Agency and the DOE in 1996, it created a new regulatory framework for planning and executing work. The agreement outlined a unified vision of the Rocky Flats end-state, created clear roles and responsibilities, set side-wide standards for the performance of work and streamlined the decision-making process. A hallmark of this partnership was its consultative process. Regulators worked in offices on site, allowing daily interaction as complex issues were discussed and work plans were developed. Working together, this partnership moved waste, not piles of paper.

ENGAGING THE WORK FORCE

Kaiser-Hill inherited a Rocky Flats work force that, in 1995, was demoralized from the termination of the weapons mission and the uncertain future of the site.

To refocus workers from weapons production to cleanup and closure, Kaiser-Hill established a close relationship with the site's employees, giving them a beneficial stake in the safe and accelerated completion of the project. Kaiser-Hill shared nearly 20 percent of the company's profits with employees and provided spot incentives for outstanding performance. Workers performing the hands-on

Decontamination efforts could not remove all areas of contamination at Rocky Flats Building 771. With regulator and community approval, Rocky Flats workers marked areas of contamination to allow demolition crews to retrieve contaminated pieces as the building was being demolished.

> "The demolition of Building 771 represents a historic milestone in closing Rocky Flats and the most significant cleanup accomplishment to date in the DOE complex."
>
> **SPENCER ABRAHAM, FORMER SECRETARY OF ENERGY, JULY 2004**

work became partners in all stages of work planning, creating ownership and capitalizing on their unique institutional knowledge.

Kaiser-Hill changed the symbols, tearing down buildings on its first day on the job and making it clear that a new era had begun. Soon, the Rocky Flats work force embraced cleanup and closure as patriotically and earnestly as they performed weapons production work.

As a result, these Cold War heroes, who had never missed a production deadline and believed they helped bring an end to the arms race, gained a reputation as world-class decommissioning workers. Worker innovations in finding safer and more cost effective solutions came in rapid succession. Many Rocky Flats innovations were imported to other DOE sites, saving cost and accelerating schedules across the former weapons complex. And safety dramatically improved as workers became more involved in planning the work and identifying hazards.

As cleanup progressed and closure became more of a reality, Kaiser-Hill recognized that the success of safe operations depended on employees who were focused on their work rather than what would happen to them when it was over. The company created a successful work force transition program to help workers prepare for life after Rocky Flats, greatly reducing anxiety about the future.

OVERCOMING TECHNICAL CHALLENGES

Some of the problems at Rocky Flats seemed insurmountable. There were no previous planning models or solutions to some of the site's most difficult problems. No one in DOE had faced 100 tons of plutonium residues that the Defense Nuclear Facility Safety Board, an oversight organization created by Congress, called one of the key vulnerabilities in the complex. No one had packaged plutonium for long-term storage. No one had dealt with rooms containing lethal levels of airborne radioactivity, nor encountered the extent of plutonium contamination that was found at Rocky Flats. No one had dismantled

Rocky Flats workers developed a spray-on polyurea coating to package large piece of contaminated equipment. The coating will serve as Department of Transportation-approved packaging for shipment of the piece to a radioactive waste site in Utah. The ability to ship large pieces of equipment intact rather than cutting into pieces that fit inside of standard waste containers significantly improves worker safety.

Part of the Rocky Flats cleanup effort included removing 1,457 highly-contaminated glove boxes. These were large, stainless-steel enclosure where workers handled nuclear materials and operated processing equipment. Some glove boxes were the size of 18-wheel tractor trailers.

plutonium-contaminated facilities the size and complexity of those at Rocky Flats. If that wasn't enough, the site harbored some wastes called "orphans" because there was no known treated or disposal facility.

Rocky Flats workers overcame these potential roadblocks through determination and by attempting to approach problems with new perspectives.

INNOVATIVE USE OF NEW TECHNOLOGY

DOE and Kaiser-Hill found that they didn't need to spend millions of dollars on research and development to solve some of the site's problems. Instead, the answers often involved adapting existing technology to nuclear cleanup in ways never attempted before.

Workers adapted a spray-on coating, the type used to protect pickup truck bed liners, to become the over-the-road packaging material for large pieces of contaminated equipment. It eliminated the need to cut up equipment into pieces that fit inside waste containers and the hazards that this work presented.

Workers decontaminating Rocky Flats' 1,457 glove boxes – stainless steel containers with gloves and viewing ports where most nuclear operations were performed – developed a low-lost, low-tech chemical decontamination solution that cleaned deeply contaminated surfaces to levels not possible before. This allowed the company to dispose of glove boxes as low-level radioactive waste, the least difficult to package and ship.

There are countless other examples of employees finding a new use for an off-the-shelf product. Concrete shaving equipment used to level uneven concrete or smooth damaged concrete highways was adapted to shave layers of contaminations from structural concrete in plutonium-contaminated facilities. Battery-operated wireless fire and smoke alarm systems allowed workers to disconnect the power to a building prior to dismantling, eliminating the potential for electric shock when they removed building components.

These ideas saved millions of dollars at Rocky Flats. DOE's Office of Science and Technology played a key role in supporting workers' ideas.

Water spray is used to control fugitive dust during demolition of a Rocky Flats building. Workers adapted snow-making equipment used at ski resorts to deliver some of the spray while manually-operated fire hoses delivered the rest.

Workers removed nearly 700 contaminated tanks, some as tall as three-story buildings with capacities of more tnan 30,000 gallons.

Drums of depleted uranium are retrieved from a disposal trench at Rocky Flats. Because the material is pyrophoric, planning for the retrieval activity was extensive.

“Rocky Flats is the best example of a nuclear cleanup success story ever… These workers labored tirelessly to clean up and close one of the most dangerous sites in America, demonstrating that the impossible is possible when people cooperate in order to meet a common goal.”

U.S. SENATOR WAYNE ALLARD, OCTOBER 2005

Workers spray jets of water to eliminate dust during demolition of Building 776/7777 at Rocky Flats. A fire in 1969 spread contamination throughout the facility, making it impossible to thoroughly decontaminate prior to demolition. Workers encapsulated nearly all of the structure's walls and ceilings with a fioxitive spray to eliminate the potential for contamination spread during demolition.

PARTNERING WITH THE COMMUNITY

DOE and Kaiser-Hill chose early on in the project to operate with total transparency. Because of the unique history of Rocky Flats – top-secret operations, history of past leaks and spills, widespread mistrust – there was skepticism is the public about whether the cleanup could be done safely, if at all. Management elected to go the extra distance in making information widely available.

Kaiser-Hill and DOE created a new era of openness with citizens, local elected officials and other stakeholders by routinely involving them in the details of site cleanup planning and execution. Public understanding allowed issues to be resolved early and helped to create public support for Rocky Flats' goals.

SAFETY

The most important aspect of the accelerated Rocky Flats cleanup and closure is that it was performed safely. When Kaiser-Hill arrived in 1995, the accident rate at rocky Flats was 7.6 per 200,000 work hours. In 2004, the rate was below 1.0 and ranked among the nest in DOE operations.

Kaiser-Hill achieved improved safety while performing some of the most dangerous work on earth by listening to employees, engaging the site's unions and working tirelessly to identify hazards and implement controls.

Often, Kaiser-Hill worked on parallel paths to find the safest way to get the job done. The company invested in robotic equipment to help operators cut up and package highly-radioactive glove boxes. At the same time, it explored incorporating plasma arc cutting and chemical decontamination, which ultimately made robotics unnecessary. As workers were performing the high-hazard task of removing lead, a material used to shield radiation, from glove boxes, Kaiser-Hill campaigned and received approval to dispose of the glove boxes with the lead shielding intact. This solution eliminated hundreds of hours of worker exposure to radiation and other health hazards. A review of cleanup initiatives in the DOE Complex hailed Kaiser-Hill's advocacy for safety as “taking Integrated Safety management to the next level.” A

OFFICER NOMINEES FOR 2007

The Academy's Nominating Committee is chaired by Timothy G. Shea. It's members include Jeanette Brown, Raymond C. Loehr, Robert P. Gardner, Neal E. Armstrong, and Jeffrey H. Greenfield. The committee recommends the following slate of candidates:

President Elect	William P. Dee
Vice President	Cecil Lue-Hing
	Debra R. Reinhart
Trustee-at-Large	Thomas E. Decker
	LeRoy C. Feusner
	H. Lanier Hickman, Jr.
	Michael W. Selna

PRESIDENT-ELECT

WILLIAM P. DEE received his B.S. in Civil Engineering (1970) and M.S. in Environmental Engineering (1972) from Manhattan College. He joined Malcolm Pirnie, Inc. as an entry level engineer in 1970 in White Plains, New York and has risen through the ranks of that organization to become its President and CEO.

Early in his career, Mr. Dee specialized in industrial wastewater treatment and was involved in projects for the pulp and paper industry. His areas of expertise include process design, detailed civil/environmental design, construction administration, and start up/operations. He later transitioned to serving the municipal sector where he was responsible for significant wastewater projects involving innovative treatment technologies and complex solids handling facilities. Mr. Dee also was responsible for a variety of environmental projects which involved solid waste disposal and hazardous waste remediation.

Mr. Dee is a registered engineer in six states and has been a Diplomate since 1988. He has served as the Academy's State Representative for Ohio and has been involved with the Excellence in Environmental Engineering Awards Committee since 1994, becoming Chair in 1999. He won the AAEE Stanley E. Kappe Award in 2001 for extraordinary and outstanding service contributions to the advancement of Academy objectives.

Mr. Dee is active member of several professional environmental organizations including the Water Environment Foundation, American Water Works Association and the International Water Association. He is also on the Board of Directors for the National Action Council for Minorities in Engineering (NACME) which is dedicated to improving the representation of minorities in engineering.

VICE PRESIDENT

CECIL LUE-HING is the former Director of Research and Development of the Metropolitan Water Reclamation District of Greater Chicago (District), a position he occupied between 1971 and 1999. He currently operates as a private practitioner environmental consultant as President of Cecil Lue-Hing, and Associates Inc., a sole proprietorship Chicago-based Illinois Corporation. Prior to Chicago, he was a Vice President of Ryckman, Edgerley, Tomlinson and Associates, an environmental consulting firm in St. Louis Missouri. Cecil has earned degrees from Marquette, Case Western Reserve, and Washington University in St. Louis, in Civil, and Environmental & Sanitary Engineering. His career in private practice, government, and applied research has given him the opportunity to experience and appreciate the varied interests and challenges of the profession.

Cecil has made many notable contributions to wastewater technology including two patents, by his scores of publications in the professional journals, eight books on a wide range of subjects in environmental engineering/science, and has given freely of his time to the cause of professional development through volunteer service to AAEE- Board of Trustees, Chair Eminence and Planning Committees; ASCE- Past President EWRI, Past Chair Environmental Engineering EXCOM; WEF- Past Chair Board of Editorial Review; IWA- Past Secretary Treasurer of USANC; AMSA-Past President, Past Chair Biosolids Management Committee; and USEPA- former member SAB Environmental Engineering Committee. His awards include AAEE-Kappe Lecturer 2003, G.Maskew Fair Award 2001; ASCE-Natl. Govt. Civil Engineer of the Year 1996, Simon Freese Award and Lecturer 1992; WEF-Chas. Emerson Medal 1996, and AMSA- Environmental Award 1999 and 1998, President's Award 1992.

Cecil is an Honorary Member of ASCE, was certified a Diplomate by the Academy in 1982, and was elected a Member of the National Academy of Engineering in 2000.

As Vice President of AAEE, Cecil will be committed to strengthening the Academy's position as the nation's premier certifying body for Environmental Engineers while extending its influence to better embrace and keep pace with the changing culture, demographics, and engineering/science demands of the profession.

DR. DEBBIE REINHART has been a member of the University of Central Florida faculty since 1989. In 1996 she became the Associate Dean for Research for the College of Engineering and Computer Science. From 2003-2005 she served as the interim Chair of Civil and Environmental Engineering. During the past sixteen years, she has been teaching and conducting research in the solid and hazardous waste fields. Dr. Reinhart received her B.S. in Environmental Engineering from UCF and M.S. and Ph.D. degrees in Environmental Engineering from the Georgia Institute of Technology. She is a registered professional engineer in Florida and Georgia, a Diplomate of the American Academy of Environmental Engineers, and a Fellow of ASCE. Dr. Reinhart has authored four books and over 100 journal and proceeding articles.

Debbie has served on the boards of two national organizations (American Academy of Environmental Engineers and the Association of Environmental Engineering and Science Professors); a national research foundation (the Environmental Research and Education Foundation); and one state organization (Florida section of the Air and

Waste Management Association). She has also chaired two national American Society of Civil Engineer committees (Solid Waste and External Organization Coordinating Committees). Debbie has served as a reviewer for more than 25 journals and organizations. She is a professional engineer and certified in solid waste management by the American Academy of Environmental Engineering. She has been on the editorial board for three archival journals.

Debbie has been an active member of AAEE. She has been a member of the Board of Trustees for a total of seven years, three as the ASCE Trustee and four as the AEESP trustee. She is currently a member of the Board of Trustee's Executive Committee. She served as the chair of the American Academy of Environmental Engineers Diversity Task Force and attended two Diversity Summits convened by the American Society of Engineering Education, representing AAEE. She currently serves on the Recertification Committee and has served on the Body of Knowledge Task Force and the Sponsoring Organization Task Force. In addition she is an ABET Environmental Engineering Program Evaluator.

TRUSTEE-AT-LARGE

THOMAS E. DECKER has been involved in the environmental engineering field for more than 30 years in a diverse array of capacities.

Mr. Decker is a Vice President with CH2M HILL and is based in Herndon, VA. He currently serves as Area Manager in the Washington, D.C. metropolitan area.

During his career, Mr. Decker has been involved with the operations and maintenance of water and wastewater treatment facilities, design of treatment processes, facilities planning, and management consulting for water and wastewater utilities. He has also been responsible for water-related marketing and business development at a national level and has served as a regional manager for a 24 state territory.

He is frequently requested speaker for professional groups and associations on the trends and issues affecting the water and wastewater marketplace.

Mr. Decker is a member of WEF, AWWA, and ASCE. For WEF, he is a Past President of the Missouri WEA, a former Director on WEF's Board of Directors (now the House of Delegates) and a former member of that Board's Executive Committee. He has chaired two WEF committees and is presently active on committees for WEF and ASCE.

For AAEE, he served on the Excellence in Environmental Engineering competition committee and is the current Chair of the Outreach Committee.

He is committed to the growth and development of college students through his participation on the Dean's Advisory Committee for the College of Engineering at the University of Missouri-Columbia. Furthermore, he is a Past National President of the Delta Sigma Phi fraternity where he led a transformation of the mission and the culture of that organization.

Mr. Decker has also been on the board of directors of several not-for-profit organizations.

He received a B.S. in Civil Engineering for the University of Missouri-Columbia in 1972 and a M.S. in Civil Engineering from the same institution in 1974.

LEROY C. FEUSNER, P.E., BCEE, is an environmental/chemical engineer with 38 years of environmental engineering experience in the public sector and military service. He received his B.S. in Chemical Engineering from the University of Wyoming in 1968. After graduation, he was commissioned into the Air Force as a Bioenvironmental Engineer. He earned several distinguished military decorations during his 27-year military service, including USAFR Outstanding Bioenvironmental Engineer during his Operation Desert Storm deployment in 1991.

Since 1978, he has worked for the Wyoming Department of Environmental Quality, Water Quality Division as a district office engineering supervisor (1978 to 1986); environmental quality emergency response supervisor (1986 to 1990); and Storage Tank Program Engineering Supervisor (1990 to March 2006). In this capacity, was responsible for over $102 million in complex environmental remediation contract work. In that position, he organized, developed, implemented, and continues to manage the technical and administrative aspects of the Wyoming storage tank remediation and compliance programs. Currently, Mr. Feusner serves the State of Wyoming as the Administrator of the Solid and Hazardous Waste Division within the department.

Mr. Feusner is a licensed professional engineer in South Dakota and Wyoming. He worked with NCEES in the early 1990s to help define environmental engineering and establish the professional knowledges for the national environmental engineering license examination. He is a member of the American Institute of Chemical Engineers, the National Groundwater Association, and the Wyoming cancer surveillance committee within the Wyoming Health Department.

Since becoming a Diplomate in 1984, he has served as Chair of the Hazardous Waste Sub-Committee, the Examination Committee, and Wyoming Membership, as well as the academy representative on the NCEES Participating Organizations Liaison Council. Mr. Feusner is currently Chair of the Re-Certification Committee and considers it a personal and professional honor to have received the first Academy certification in hazardous waste management in 1987.

During the Academy's current period of membership growth development discussions and transition, his many years of professional environmental engineering work experience and his continuing involvement in Academy committee work activities are strong indicators of his dedication and support for the Academy's mission and future.

He and his wife, Lynnette, a successful Creative Memories Director, have been married for 38 years with two grown daughters. Mr. Feusner is also active in several community youth activities sponsored locally by the Cheyenne Kiwanis Club.

H. LANIER HICKMAN, JR., was the Executive Director and Chief Executive Officer of the Solid Waste Association of North America until he retired on September 30, 1996. He was responsible for the management, administration, and guided their policy, technical and research affairs. During his leadership, SWANA grew from a small western-based association of some 900 members to its current size of almost 7,000 members in all states and Canadian provinces and some 10 foreign countries. In addition, his particular interest in training resulted in the establishment of

❖ *Continued on 34* ❖

Officer Nominees, *continued from page 31*

SWANA as the leading solid waste training organization in the U.S.

Mr. Hickman now devotes his time to writing, teaching, speaking and lecturing. Mr. Hickman also serves on a number of committees of the American Academy of Environmental Engineers. He also provides consulting assistance to local governments.

Prior to joining SWANA in 1978, Mr. Hickman was Director of Operations for the federal solid waste management program in USEPA and was responsible for budgeting, legislation and administration. He was also responsible for the development of the technical assistance, state assistance, training, and technical information programs. Mr. Hickman was involved in the development of the Resource Conservation and Recovery Act (RCRA) and its early implementation and development of the RCRA mandated solid waste landfill criteria.

Mr. Hickman holds a BS in Civil Engineering from the University of Oklahoma and an MS in Sanitary Engineering from the University of Michigan. He is a registered professional engineer and an AAEE Diplomate. He has also served as an Adjunct Professor at the University of Maryland at College Park, MD, and at Rochester Institute of Technology, Rochester, NY. He has published over 500 articles and reports on solid waste management issues, policies, practices, and technologies. With over 35 years in solid waste management Mr. Hickman is recognized as a leading authority on the collection and management of solid waste. He is the principal author and editor of five books on solid waste management. *Managing Landfill Operations*, *Managing Municipal Solid Waste Collection Systems*, and *Managing Integrated Solid Waste Management Systems* are utilized by SWANA as manuals for their professional certification training programs. *The Principles of Integrated Solid Waste Management* (1999) is used by a number of universities as a textbook. His second text and reference book, *The Complete Handbook on Solid Waste Collection and Transfer*, was published in early 2001. He is currently working on a series of articles for MSW Management Journal that chronicles the progress of solid waste management in the US during the last 50 years of the second millennium.

MICHAEL W. SELNA, P.E., BCEE is the Deputy Assistant Chief Engineer of the Los Angeles County Sanitation Districts, an agency serving the wastewater treatment and solid waste management needs of 5.1 million constituents. He has served on the staff of the Sanitation Districts for 33 years since earning a B.S. in Civil Engineering at the University of California Berkeley in 1970 and an M.S. in Environmental Engineering at University of California Davis in 1973. Mr. Selna's career has included research on virus removal by tertiary treatment systems, development of environmental control systems to allow operation of landfills in the urban environment, siting and development of California's first refuse-to-energy facility, and the oversight of in-house design and construction management of approximately $100 million per year of wastewater collection and treatment and solid waste management infrastructure.

Mr. Selna has a keen interest in the stimulation of participation by young people in the Environmental Engineering profession. He has been at the heart of developing a program, Environmental Engineers of the Future (E2F), which provides funding for Masters Degree candidates willing to take courses preparing them to practice environmental engineering and willing to work for one of the funding participants for three years after graduation. The program is a partnership among public agencies and private firms involved in water, wastewater, and solid waste management as well as universities from across the nation. Mr. Selna is a member of the AAEE Engineering Education Committee, and has involved AAEE in the administration of the E2F program.

Mr. Selna serves on the Board of Directors of the 7800-member California Water Environment Association (CWEA) and is the Association's 2006-07 Treasurer. His committee work includes former vice chair of WEF's Disinfection Committee, MOP 8 Task Force member for the 1992 and 1998 editions, Clarifier MOP task force, and former chair of the CWEA Engineering and Research Committee. He was a contributor to the team effort that led to his agency's winning of WEF's George Schroepfer medal for innovative design in 2004. A

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