



American Society of Civil Engineers

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# Columbia Section

Since October 10, 1950

## Newsletter

March, 2003

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### Columbia Section March Meeting

**Date:** March 19, 2003, Wednesday, 11:30 am

**Place:** Shilo Inn, George Washington Way, Richland

**Meal:** Buffet ≈\$9 per person.

**Topic:** Mathematical Analysis of Surgical Implants

**Speaker: Prof. William C. Kinsel,** Washington State University, Richland.

**About the Speaker:** William C.(Bill) Kinsel is a life member of ASCE. He has lived in the TriCities area for the past thirty five years. For the past twenty years, he has been a professor in the Civil and Mechanical Engineering programs at Washington State University-TriCities. Prior to joining WSU, Bill was an engineering manager for both Battelle and Westinghouse and was also an engineering consultant for Exxon Nuclear.

**RSVP:** Not required, but please help Jocelyne Gray (509)-783-2144 for a head count by March 18.

### Tri-Cities Engineer-of-the-Year Award goes to our Past-President Bill Kinsel

Bill was nominated by us and also by ASME. A long-time professor at WSU, Bill's students are almost every where. His contributions toward civil and mechanical engineering are well-known. He was the President of our Section last year, and organized seminars and meetings. Bill is very active at Kennewick Irrigation District.

On February 21 in the banquet hall at Shilo Inn filled with 250 engineers, their spouses and friends, and MathCounts winners, Eric Schmieman and Gilbert Chang made the announcement for the joint nomination from ASCE and ASME, and both of them presented an account of Bill's contributions to engineering, and the public. Other two nominations were from International Council on Systems Engineering and Society of Women Engineers. And Bill was announced the winner.



Bill accepts the Engineer-of-the-Year Award



A Group Photo: (L to R) Indra Ghosh, Don Kurkjian, Virginia and Del Ballard, Cherrie DeFigh-Price, Eric Schmieman, Shirley and Bill Kinsel

**CONGRATULATIONS, BILL**

## ASCE COLUMBIA SECTION HONORS BERTRAM HOARE AT THE ENGINEERS WEEK BANQUET

One of the most active and respected member of the Columbia Section, Mr. Bertram Hoare was honored by the Section at the Engineers Week Banquet on February 21 held at Shilo Inn, Richland. At the age of 92 Mr. Hoare is the oldest known member of the Section. Because of his failing health, he could not come to the Banquet. One of his good friends, Mr. Frank McElwee received a framed certificate of achievement on his behalf from our President Eric Schmieman. Mr. McElwee was the Walla Walla District Head of the Corps of Engineers when Mr. Hoare was the Chief of the Construction Branch. Our Historian Del Ballard knows Mr. Hoare personally, and he spoke about Mr. Hoare's lifelong achievements in the following words:

Bert has been a gigantic contributor to the profession of Civil Engineering and to our Society. He graduated from the University of Illinois in 1932 and spent almost his entire professional career with the Army Corps of Engineers.

In 1944 during WWII he commanded the 338<sup>th</sup> Engineer regiment. His regiment was presented the Engineer Meritorious Service Award for their outstanding construction activities in Africa and Italy.

In 1945 he received the Army Legion of Merit Medal for work on bombed out port facilities at Livorno, Italy.

His post war career entailed work on the Panama Canal, major dam construction on the Columbia and Snake Rivers, and major construction projects in Europe and Asia. In 1969 he returned to the US as Chief of Construction, Walla Walla district for construction of John Day and the Lower Monumental Dams. After 30 years of service he retired from the U.S. Army Reserves with the rank of Colonel.

Bert served as Columbia Section President in 1959 and as Chairman of ASCE Pacific Northwest Council in 74-75.

He retired in 1975 and currently resides in Walla Walla with his wife Marian.



*Mr. Hoare speaks at the Pacific NW Council dinner meeting, 1974, Marcus Whitman Hotel, Walla Walla. Mrs Marian Hoare is seated on the left.*

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### Jocelyne Gray, our Vice -President, never slows down .....

- Future City Competition: She took two teams to Seattle for the Future City Competition. She mentored two teams from Carmichael Middle School in Richland - 7<sup>th</sup>/8<sup>th</sup> grade boys and 8<sup>th</sup> grade girls. Each team created their own future cities using a computer software. They balanced the budget with taxes not too high, solved the traffic congestion and pollution problems, and provided residential, commercial, industrial and government sectors. The regional (Washington and Idaho States) competition was held January 25, 2003 in Seattle. Eighteen teams competed, and Carmichael girls' team bagged the 3<sup>rd</sup> place with their future city called Smartsville.

Ben Volk, our President-Elect, also mentored one team from St. Patrick's School.

- Elementary School Project: On February 21 and 28 Jocelyne introduced 3<sup>rd</sup> grade students at Sunset View Elementary to the world of engineering. She spoke about what engineers do, showed a video about high school students working with NASA on a materials experiment to be tested on the International Space Station, and had them work in teams to build bridges out of popsicle sticks. Then we discussed what they learned about engineering and team work.
- Carmichael Middle School Science Fair Judging: On January 21, Jocelyne was a judge for Mrs. Eaton's science classes science fair held in the school library. She spoke to the students about their projects and graded them on their displays, presentation, and difficulty of project. Projects ranged from the best cleaner to developing a new light switch, and covered physics, biology, chemistry, and nutrition.

On February 26, 2003 she was a judge at the science fair for the entire school.

- Expanding Your Horizon: On March 15, 2003 Jocelyne will be presenting civil engineering at the annual Expanding Your Horizons held at WSU Tri-Cities. This event introduces middle school girls (6<sup>th</sup>-8<sup>th</sup> grades) to professional careers in science, engineering, health science, public service, business, and trades. Each student attends four 40-minute workshops highlighting a career. The opening presentation is the Pacific Science Center with "Radical Reactions". This will be Jocelyne's second year of presentation. She will about her career and have the students build bridges. Last year, they worked in teams to build bridges out of candy, crackers, and frosting. This year it will be popsicle sticks.

Jocelyne solicits from the members new ideas to present to the students. Please contact her: [jgray@jub.com](mailto:jgray@jub.com), Phone: 783-2144.

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## Yakima Branch exploring options on presentations in March and April

- Yakima Water treatment Works (Bob Wuebena) OR
- Columbia Water Diversion Project (Darryl Olson).

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### About our February 19<sup>th</sup> Meeting ..... *Thank you, Mr. Jamison*

**Columbia Section Meeting/Presentation:** February 19, 2003, 11:30 am, Shilo Inn, Richland

Topic: *Hanford's Accelerated Waste Management Program: New Challenges and New Initiatives.*

Speaker: Fred Jamison, Waste Management Project Manager, Washington State Department of Ecology, Nuclear Waste Program

Mr. Jamison provided a brief overview of Ecology's Waste Management Project, including examples of types of waste, facilities and proposals initiated to accelerate waste cleanup at the Hanford Site.

#### Overview

Ecology's Waste Management (WM) project provides regulatory oversight and state guidance on Hanford waste management practices. In particular, Ecology is concerned that Hanford's waste management facilities work to achieve cleanup progress and operate in a manner that is protective of the environment and worker safety.

#### Types of Waste

Two major categories of waste types: solid (radioactive and hazardous) waste and liquid waste.

**Solid Waste** in the Waste Management Project primarily includes:

**Low Level Waste (LLW):** *Radioactive waste that is not high-level waste, spent nuclear fuel, transuranic waste, or byproduct material as defined under the Atomic Energy Act. Low Level Waste can range from very low to high radioactive concentrations, but is generally the kind of waste acceptable for shallow land disposal.*

**Mixed Low Level Waste (MLLW):** *This is Low Level Waste that contains both radionuclides subject to the Atomic Energy Act and a hazardous component subject to Resource Conservation and Recovery Act. The hazardous component would be mainly be chemicals known to be dangerous to public health and the environment.*

**Transuranic (TRU) Waste:** *Radioactive waste containing radionuclides with atomic numbers greater than uranium (92) and half-lives greater than 20 years, in concentrations greater than 100 nanocuries per gram of waste.*

**Immobilized Low Level Activity (ILAW) Waste:** *Defined as a specific MLLW stream that is generated during the treatment of tank waste. This majority of this waste consists of non-radioactive materials (~90%) from the tanks with only residual radioactivity (~2%).*

**Used WTP Melters:** *These are defined as a specific MLLW stream from the WTP. The melters used in the WTP for vitrification of both high and low activity waste will occasionally need to be replaced and it is these used melters that make up the waste stream.*

#### Primary Facilities

**Storage** - The main facility at Hanford for solid mixed waste storage is the Central Waste Complex (CWC). Storage for these waste also exists at WRAP, the T Plant Complex and in the LLBG's. Waste volumes stored in CWC are: 7350 m<sup>3</sup> MLLW and 1560 m<sup>3</sup> TRU. The total capacity of CWC is 16,700 m<sup>3</sup>.

**Treatment and Processing** – These facilities include The Waste Receiving and Processing (WRAP) Facility, T Plant complex, the Effluent Treatment Facility (ETF) and Commercial treatment (ATG). Treatment and processing facilities are used to treat MLLW to regulatory standards.

**Disposal** – Facilities used for LLW and MLLW disposal at Hanford consist of the Low Level Burial Grounds (LLBG's) and the Environmental Restoration Disposal Facility (ERDF). TRU waste are disposed at the Waste Isolation Pilot Project (WIPP) Facility in New Mexico.

**Liquid Waste** operations include:

The Hanford Site Liquid Waste Processing Facilities receive, treat, and dispose of liquid effluents from onsite programs and projects. Facilities include the Liquid Effluent Retention Facility (LERF), the Effluent Treatment Facility(ETF), the Treated Effluent Disposal Facility (TEDF), and the 242-A Evaporator. These are all state-permitted facilities.

- The 242-A Evaporator concentrates tank waste to reduce overall storage requirements. The facility has a volume reduction capacity of 70,000 gallons per day. From 1994 through 2000, over 11 million gallons of high-level waste has been treated. This treatment activity has provided a savings in tank space equivalent to 12 double shell tanks.
- LERF consists of three basins with a usable capacity of ~23 million gallons. LERF receives and temporarily stores wastewater from the 242-A Evaporator, groundwater from the site pump and treat projects, leachate from onsite solid waste disposal facilities and from site cleanup activities.
- ETF is a treatment facility that removes hazardous and radioactive contaminants and has a design capacity to process 56 million gallons per year. The ETF treatment process includes filtration (removal of suspended solids), ultraviolet light/peroxide (destruction of organics), reverse osmosis (removal of dissolved solids), and ion exchange (radioactivity removal).
- TEDF is a collection and disposal system for non-hazardous, non-radioactive waste streams. Its processing system has the capacity to handle up to 1.8 billion gallons per year.

## Hanford Federal Facility Agreement and Consent Order

The Hanford Federal Facility Agreement and Consent Order – known as the Tri-Party Agreement – is an agreement between DOE, the US Environmental Protection Agency (EPA), and the Washington State Department of Ecology (Ecology) for achieving compliance at the Hanford Site with two federal cleanup laws - the Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) - and the Washington State Hazardous Waste Management Act (Revised Code of Washington, Chapter 70.105 RCW). The TPA 1) defines CERCLA and RCRA cleanup commitments and sets due dates, 2) established responsibilities among the agencies, and 3) reflects the goal of achieving regulatory compliance and completing remediation activities with enforceable milestones.

## Hazardous Waste Management

Hazardous waste management at Hanford is regulated by Ecology and EPA pursuant to RCRA and the Washington State Hazardous Waste Management Act. In addition, Ecology regulates industrial waste discharges and non-radioactive air emissions.

## Challenges and Initiatives

- *Immediate Challenge: **Show Major Cleanup Progress at Hanford Site***
- *Initiative: Accelerate Cleanup Activities, Minimize Risk, and Reduce Costs*
- *2001 – Cleanup, Constraints, Challenges Team (C3T): Plan Development*
- *2002 – Hanford Performance Management Plan (HPMP)*

Key Actions:

- ◆ *Accelerate Columbia River Corridor Cleanup* ◆ *Accelerate Tank Waste Treatment*
- ◆ *Accelerate Stabilization and De-Inventory of Nuclear Materials* ◆ *Accelerate Waste Disposal*
- ◆ *Accelerate Central Plateau Cleanup* ◆ *Accelerate Cleanup and protection of Hanford Groundwater*

## Specific Action: Accelerated Waste Disposal

- Initiate retrieval of buried, suspect transuranic waste by April 20, 2003
- Initiate construction of lined mixed low-level waste/low-level disposal facilities by April 2005
- Complete characterization, retrieval, storage, and disposal of 15,000 drum-equivalents of suspect transuranic waste by September 30, 2006
- Initiate use of lined mixed low level waste/low-level waste disposal facilities by September 30, 2007
- Complete treatment and/or disposal of all stored mixed low-level waste (~7000m<sup>3</sup>) and newly generated mixed low-level waste (forecasted to be ~7000m<sup>3</sup>) by September 30, 2008
- Complete retrieval of post-1970 suspect, contact-handled transuranic waste from the Low-Level Burial Grounds by September 30, 2010
- Complete certification and shipment of all legacy, contact-handled transuranics waste (~7500m<sup>3</sup>) to WIPP by September 30, 2013

## Moving Forward: New Initiatives Now In Process

### **1) Pilot Project: 183-H Solar Evaporation Waste Disposal**

The focus of this project is to determine practical ways DOE, Contractors, Ecology and EPA can work together to move treated and/or stabilized low-level mixed waste to disposal. In this case, we are jointly evaluating 12,000 drums of low-level mixed waste now stored in the Central Waste Complex (CWC), for disposal in the Environmental Restoration Disposal Facility (ERDF) - a lined disposal facility. The objective is to do this on an accelerated, cost-effective basis that is protective of the environment and worker safety.

This waste was generated during the closure of the 183-H Solar Evaporator Basin as part of 100 Area CERCLA cleanup actions, completed in 1985. These drums represent around 50% of all waste now stored at CWC. Removal of this waste from storage will free up significant storage capacity and save operating dollars better used to treat other waste.

### **2) ETF De-listing Petition**

Ecology and EPA have been working with DOE on an EPA rule-making petition to expand the list of constituents associated with multi-source leachate to be treated by the ETF Facility at Hanford. As I mentioned earlier, the ETF treatment facility processes and removes hazardous and radioactive contaminants.

This rule modification will increase the ETF treatment capacity by adding an expanded range of dangerous/hazardous waste codes to be managed by ETF. In turn, this will allow the treatment of far greater volumes of leachate, thereby contributing to waste cleanup.

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