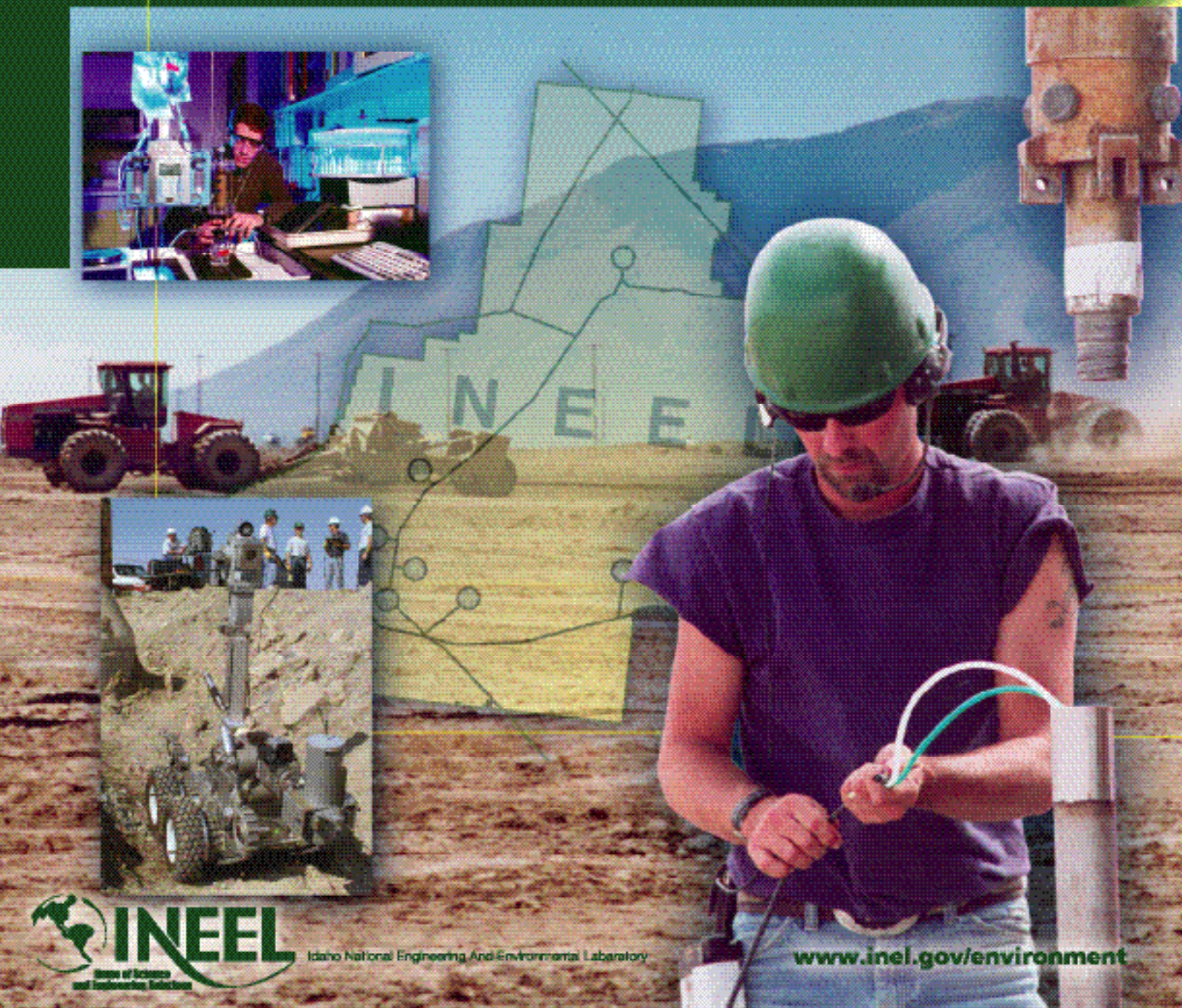




A Decade of *Progress*

A Status Report of
Environmental Management at the INEEL

July 2002



Idaho National Engineering and Environmental Laboratory

www.inel.gov/environment

Manager's Message

July 2002

Dear Citizens,

A decade ago, the Idaho National Engineering and Environmental Laboratory was just beginning the process of identifying and investigating environmental contamination. At that time, I was a manager for the U.S. Department of Energy's newly created environmental restoration program. Today, with a decade of changes in governors and presidents and yearly budget challenges, the INEEL has successfully completed 99 percent of its enforceable regulatory milestones. One of the three missed milestones was renegotiated and is now met.

In the 2001 fiscal year — from Oct. 1, 2000, through Sept. 30, 2001 — the INEEL achieved all of its environmental management goals with an unprecedented safety record. All of the milestones and commitments required by the INEEL Site Treatment Plan, the Federal Facility Agreement and Consent Order, and the Voluntary Consent Order with the state of Idaho were completed on or ahead of schedule and always within budget.

Several large projects were completed significantly under budget. The cleanup program spent approximately \$9.4 million less than expected, and the cost of transferring Three Mile Island-II spent nuclear fuel to dry storage was \$1.5 million less than expected. This money allowed work that was scheduled for later to begin sooner.

The DOE and its regulators — the Idaho Department of Environmental Quality and the U.S. Environmental Protection Agency — continued to work together to help the INEEL improve the quality, speed and cost-effectiveness of cleanup. The best example of this was the decision to use new technology to remediate groundwater at Test Area North.

These accomplishments speak for themselves, but there is room to improve. The Bush Administration and Secretary of Energy Spencer Abraham asked the INEEL and other sites to review their environmental management programs from top to bottom to find ways to further accelerate cleanup and save money. Though this may seem contradictory, the goals actually support each other. When a remediation goal is reached quickly and unused facilities are eliminated, money is saved. The savings can be applied to accelerating cleanup, which results in further savings, even better solutions, and reduced risks to people and the environment.

As Congress and the Bush Administration work on determining how DOE will achieve quicker cleanup while reducing costs and risks, we will continue our environmental management work at the INEEL. The DOE-Idaho Operations Office and the INEEL will continue to ask you — the public — how you think we can best accomplish this while reducing potential risks to human health and the environment.

Jerry Lyle
Assistant Manager for Environmental Management
DOE-Idaho Operations Office

A Long way Down the Road



Remediation at the CFA Transformer Yard

Transuranic waste shipment to WIPP



One Decade Later

Ten years ago, on Dec. 9, 1991, the U.S. Department of Energy, the Idaho Department of Environmental Quality and the U.S. Environmental Protection Agency signed the Federal Facility Agreement and Consent Order. It launched the cleanup portion of the INEEL's Environmental Management program — establishing remediation schedules and defining how to conduct cleanup investigations.

Today, more than a decade later, the INEEL has completed 85 percent of its environmental remediation decisions and has cleaned up more than 70 percent of the sites identified as potentially contaminated.

Four Remediation Decisions Remain

Only four of 26 decisions about how to remediate contaminated areas remain:

- **Areas outside facility boundaries and Experimental Breeder Reactor-I/Boiling Water Reactor Experiment.** The agencies are currently addressing public comments

and should reach a final decision in 2002.

- **Remediation of the Subsurface Disposal Area at the Radioactive Waste Management Complex.** Remediation alternatives will be presented to the public by 2005. After the public has had an opportunity to share their views, the agencies will select an alternative. This process is scheduled to be completed by 2007.
- **Sitewide groundwater and Snake River Plain Aquifer contamination.** A decision will be made after a remedial alternative is selected for the Subsurface Disposal Area.
- **Soil contamination at the Idaho Nuclear Technology and Engineering Center tank farm.** A decision is scheduled to be made by 2010. The INEEL is taking numerous interim steps to limit the spread of contamination and reduce risks to workers.

Though the most challenging decisions remain, the INEEL is committed to turning past decisions into remedial actions while protecting worker and public safety.

Waste Volume is Reduced

The INEEL's Environmental Management program also manages historic waste and newly generated waste that by law must be treated and disposed of as it is generated.

With the opening of the Waste Isolation Pilot Plant in New Mexico, the INEEL is moving the transuranic waste it has stored for more than three decades out of the state.

The INEEL's inventory of liquid high-level waste stored at the Idaho Nuclear Technology and Engineering Center tank farm is at its lowest level since 1958.

Spent Nuclear Fuel Managed Wisely

Until a permanent disposal facility becomes available, the INEEL will continue managing spent nuclear fuel so it is stored safely. It is moving its inventory from older wet storage facilities to modern dry storage. The first step to achieving this was met in FY 2001 when 82 metric tonnes of heavy metal of Three Mile Island-II spent nuclear fuel and core debris was moved into dry storage. This accomplishment met an Idaho Settlement Agreement milestone ahead of schedule.

Getting the Work Done

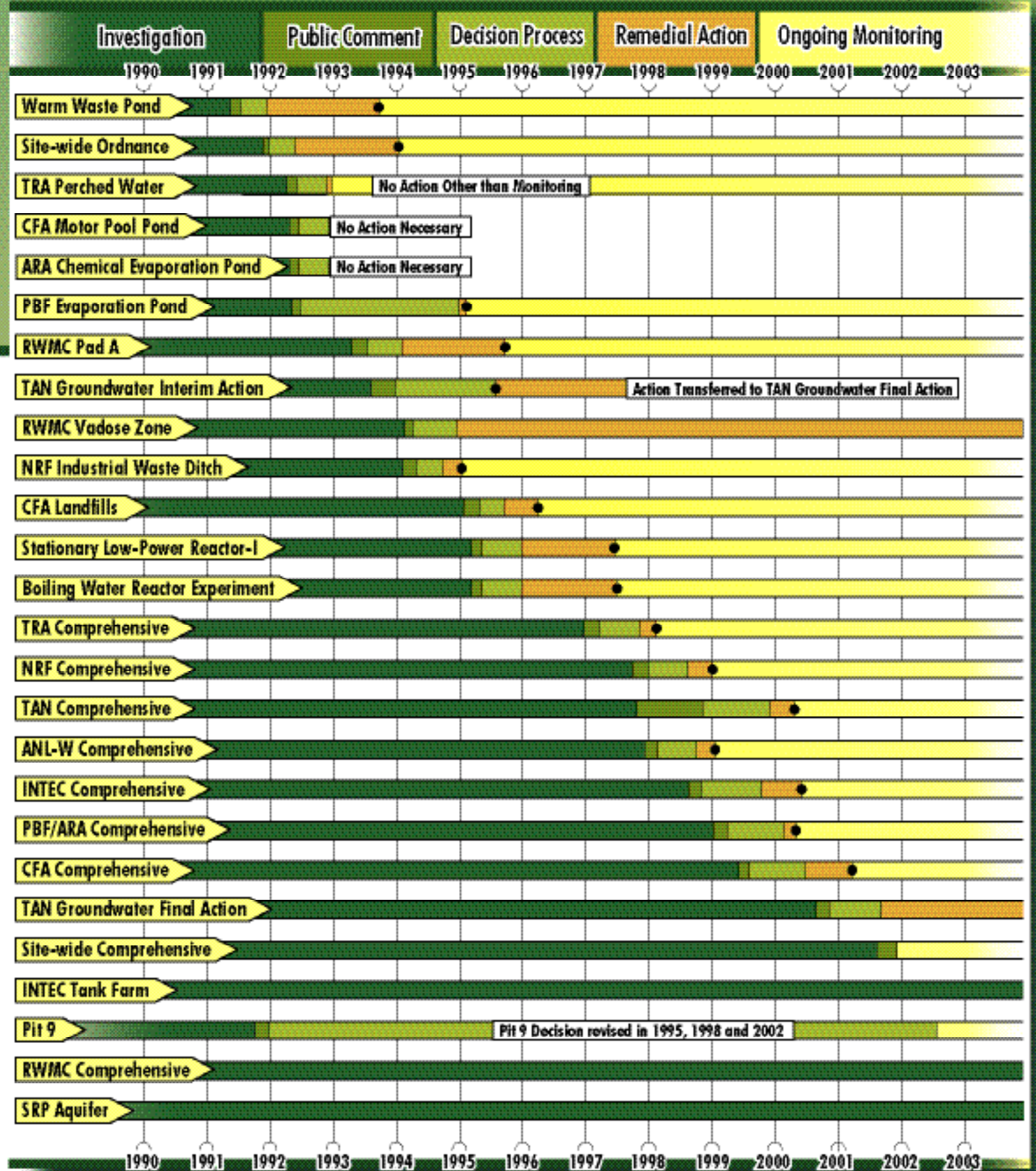


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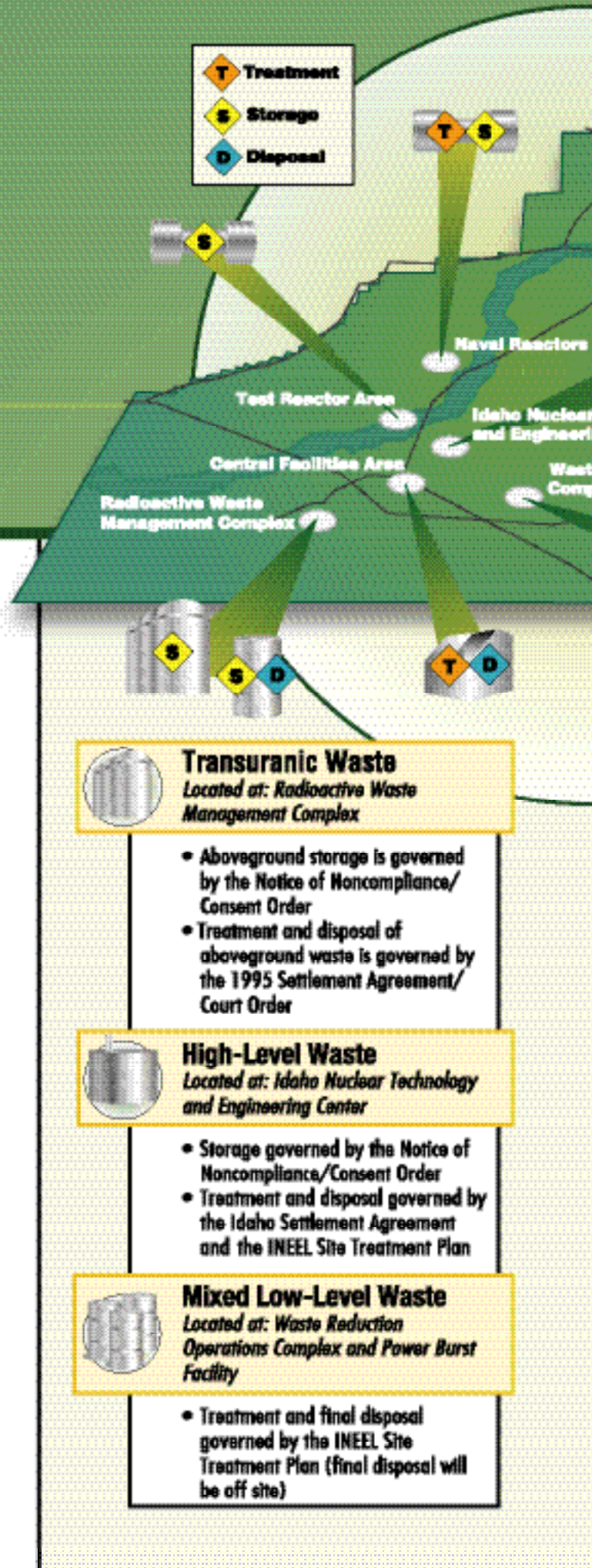
History of Cleanup at the INEEL

● Remedial Action Completed



The Agreements

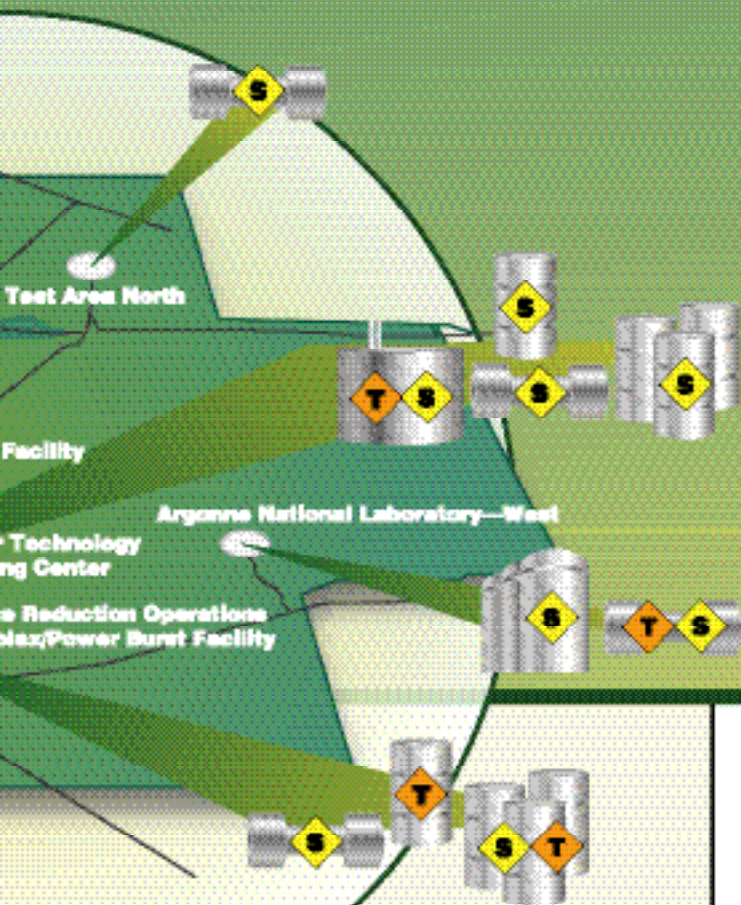
Idaho's three recent governors have signed agreements guiding environmental management at the INEEL



Agreements Guide Environmental Management at the INEEL

- **The Federal Facility Agreement and Consent Order.** A 1991 three-party Comprehensive Environmental Response, Compensation and Liability Act agreement with the U.S. Environmental Protection Agency and Idaho Department of Environmental Quality defining the regulatory path and action plan for assessing and cleaning up historical release sites and waste from remediation activities.
- **Idaho Settlement Agreement.** A 1995 three-party court-ordered settlement agreement between the U.S. Department of Energy, the state of Idaho and U.S. Navy governing the receipt and disposition of spent nuclear fuel, and the treatment and disposal of transuranic and high-level waste.
- **Notice of Noncompliance/Consent Order.** A 1992 three-party Resource Conservation and Recovery Act agreement with IDEQ establishing actions and milestones to resolve 1989 RCRA inspection issues, including configuration of stored transuranic waste and high-level liquid waste in the Idaho Nuclear Technology and Engineering Center tank farm.
- **INEEL Site Treatment Plan.** A 1995 RCRA agreement with IDEQ implementing Federal Facility Compliance Act requirements governing the treatment and disposal of mixed low-level waste and some high-level waste.
- **Voluntary Consent Order.** A 2000 agreement under RCRA with IDEQ governing the closure of self-disclosed RCRA issues, principally 912 of the INEEL's 3,500 tanks.

2001 Milestones Met



Three Mile Island-II spent nuclear fuel is placed in dry storage

Low-Level Waste
 Located at: Radioactive Waste Management Complex

- Disposed of off site or at the INEEL
- Governed by DOE Orders

Hazardous Waste
 Located at: Central Facilities Area

- Characterized and shipped out of Idaho to commercial treatment and disposal facilities within a 90-day time frame after generation

Industrial Waste
 Located at: Central Facilities Area

- Disposed of at the INEEL or at off-site landfills

Spent Nuclear Fuel
 Located at: Idaho Nuclear Technology and Engineering Center, Naval Reactors Facility and Test Area North

- Treatment, storage and future disposal governed by the Idaho Settlement Agreement (final disposal will be off site)

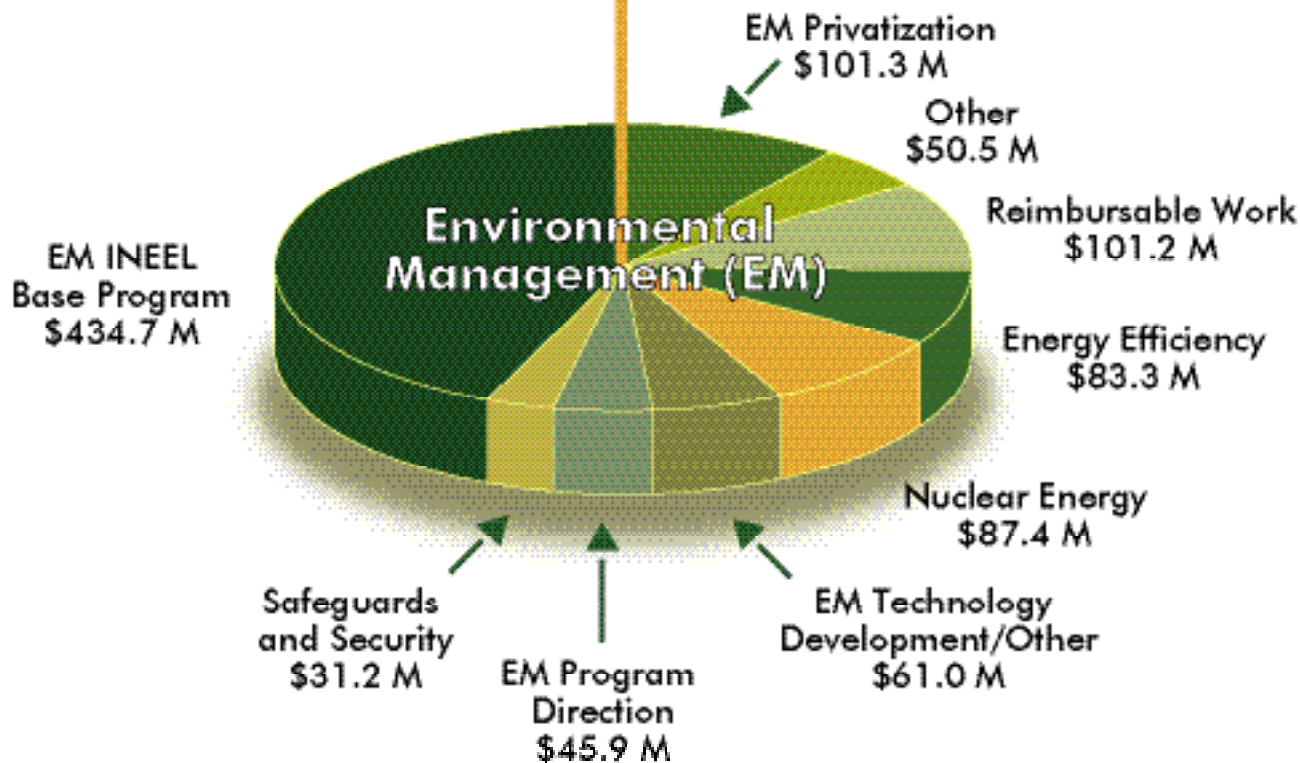
Milestones Met for all Major Agreements

- **The Federal Facility Agreement and Consent Order.**
 Completed all 54 milestones and contractor performance milestones and commitments for FY 2001
- **Idaho Settlement Agreement.**
 Completed all milestones for FY 2001
 - Transferred 27 cask shipments of Three Mile Island-II spent nuclear fuel — from Test Area North to dry storage at the Idaho Nuclear Technology and Engineering Center — six weeks ahead of schedule
 - Shipped 687 cubic meters of stored transuranic waste to the Waste Isolation Pilot Plant for permanent disposal, bringing the total shipped to 1,282 cubic meters. Another 511 cubic meters was characterized and ready for shipment (toward the 3,100 cubic meters commitment)
- **Notice of Noncompliance/Consent Order.**
 Completed all milestones for FY 2001, including emptying two pillar and panel tanks as far as possible — “heel” level (all five pillar and panel tanks emptied by January 2002)
- **INEEL Site Treatment Plan.**
 Completed all nine milestones for FY 2001
 - Treated 48 spent high-efficiency particulate air (HEPA) filters, eight more than required and completed a month ahead of schedule
 - Processed 490,000 gallons of high-level liquid waste at the High-Level Liquid Waste Evaporator, three months ahead of the goal (processed 605,007 gallons — 1,855 cubic meters — by the end of the year)
 - Dispositioned 4 cubic meters of lead, completing actions for the entire lead cask waste stream
- **Voluntary Consent Order.**
 Completed 14 milestones for FY 2001 and two milestones for FY 2002

Funding

FY 2002
\$996.5 M
 (total estimated
 funding for
 INEEL programs)

Note: These two charts show only
 DOE-Idaho Operations Office cleanup
 funding. No funding or projected funding
 is shown for other EM programs.



Priorities for the Future

(identified in the Letter of Intent signed May 2002 by the state of Idaho, EPA and DOE)

- Continue cleanup and protection of the Snake River Plain Aquifer
- Consolidate EM activities to the Idaho Nuclear Technology and Engineering Center, reducing the actively managed EM footprint by more than 51 percent
- Remove and stabilize sodium-bearing liquid wastes from the Idaho Nuclear Technology and Engineering Center tank farm and complete RCRA closure of the tanks
- Place EM-managed DOE spent nuclear fuel (240 metric tonnes of heavy metal) into dry storage
- Transfer all EM-managed Special Nuclear Material off site
- Complete shipments of transuranic waste required by section B.1 of the Settlement Agreement entered in Public Services of Colorado v. Batt, Nos. 91-0035-S-EJL & 91-0054-S-EJL (Oct. 17, 1995)
- Make significant progress in buried waste remediation in accordance with the comprehensive Remedial Investigation/Feasibility Study and Record of Decision for the Radioactive Waste Management Complex.

Science & Technology



Subsurface science research is conducted at many laboratory scales

Research and Development at the INEEL

There are many challenges associated with handling, treating and disposing of radioactive and hazardous wastes. Technologies for these problems can be extremely expensive and in some cases are nonexistent.

The INEEL delivers science-based, engineered solutions for DOE, the agencies and private industries. The research focus is on reducing costs, risks and schedules related to cleaning up the environment and managing waste. Research is often a collaborative effort involving other national laboratories, universities or private companies.

Technology Highlights

In FY 2001, the INEEL deployed 45 innovative environmental technologies or practices. Each provided significant reductions in risk, while helping to reach goals more quickly and cost-effectively.

The INEEL is collecting data in the subsurface with a variety of state-of-the-art probing technologies at the Subsurface Disposal Area at the Radioactive Waste Management

Complex and INEEL-developed advanced tensiometers are monitoring the Snake River Plain Aquifer.

The Heated Gas Generation Test and Enhanced Real-Time Radiography systems are helping the INEEL prepare more waste for shipment to the Waste Isolation Pilot Plant.

Future tank remediation activities at the Idaho Nuclear Technology and Engineering Center will use a newly-developed washball and directional spray nozzle.

The INEEL constructed a new data-gathering network of wells and boreholes containing geophysical instruments next to the Idaho Nuclear Technology and Engineering Center's new percolation ponds. The network will support ongoing operations at the Idaho Nuclear Technology and Engineering Center and research and development through the Subsurface Science Initiative.



The INEEL's Subsurface Science Initiative is a major research undertaking to expand the understanding of subsurface contaminant fate and transport. Its goal is to develop and validate reliable predictive models, design effective containment systems and devise reliable, durable monitoring systems. These advances are critical to the success of the DOE's environmental quality mission.

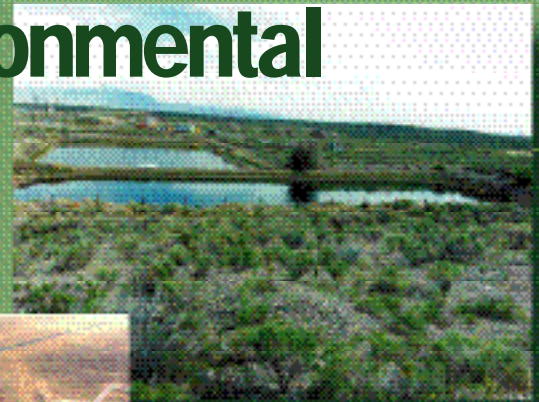
The SSI research effort incorporates a broad range of scientific disciplines — geology, geophysics, hydrology, biology, chemistry and computational science — to address the DOE's nationwide environmental management needs. A world-class peer review board and recommendations from the National Research Council help guide the program.

1991 — The Roots of Environmental Management

Pad A retrieval demonstration (1979)



CFA landfills prior to closure



Warm waste pond (1991)

A Considerable and Complex Task Ahead

In 1991, more than a decade ago, the INEEL faced a considerable task and the issues were complex. The Federal Facility Agreement and Consent Order had just been signed. The agreement organized cleanup activities around the nine INEEL facility areas, and included a separate organizational unit for miscellaneous sites including the Snake River Plain Aquifer.

> Sites requiring environmental cleanup sites had been identified, and needed assessment and disposition.

Across the INEEL's 890-square-mile area — excluding Argonne National Laboratory–West and Naval Reactors Facility areas — 355 potential contaminant release sites were identified. These consisted of:

- millions of gallons of contaminated groundwater
- hundreds of acres of contaminated soil
- 88 acres of uncharacterized radioactive waste burial ground, and
- numerous uncharacterized landfills, wastewater ponds, underground storage tanks

and unexploded ordnance sites.

> Waste remaining from the Cold War needed treatment options.

Large amounts of waste needed to be stored more safely or prepared for final disposal. This included:

- 2.3 million gallons of high-level liquid waste at the Idaho Nuclear Technology and Engineering Center tank farm,
- 65,000 cubic meters of uncharacterized transuranic waste in temporary storage with no place to go, and
- large amounts of low-level and mixed low-level radioactive waste, much of it awaiting shipment off site.

> Spent nuclear fuel needed more reliable storage configurations.

Few plans had been made for how to deal with spent nuclear fuel, and most was stored in old, unreliable underwater facilities.

> Unnecessary facilities needed to be removed.

Hundreds of unused and contaminated buildings were sitting idle and needed attention.

Agencies Adopt Policy of 'Bias For Action'

As part of the Federal Facility Agreement and Consent Order, the strategy for cleanup was to show a "bias for action." This meant that while final actions on the issues were still being considered, the INEEL would aggressively pursue interim cleanup steps to protect human health and the environment.

2001 — One Decade Later



Waste drums are inspected and characterized

Warm waste pond (2001)



Workers remove tanks and soil during remediation activities

Enormous Effort Produces Significant Results

Today, the INEEL has addressed every issue it faced in 1991 and more. A decade of action has reduced the risk to workers, the public and the environment.

> Environmental cleanup has been addressed by:

- Completing more than 70 percent of the Federal Facility Agreement and Consent Order enforceable remediation milestones identified in 1991. Originally, 347 potentially contaminated release sites were identified. Since 1991, another 125 potential release sites have been identified. To date, 315 sites have been remediated, or no action was determined to be necessary.
- Deciding what remedies to apply in 22 of the 26 major areas needing remediation. The decisions — known as Records of Decision — are agreed to by DOE and the agencies. Remediation has been completed for 10 decisions, is ongoing for another eight, and four decisions are in the remedial design phase. Only four decisions remain to be made.

- Removing more than 107,000 pounds of volatile organic compounds from beneath the Radioactive Waste Management Complex
- Completing treatment of more than 119 million gallons of contaminated groundwater
- Capping, backfilling, grouting or otherwise stabilizing three landfills, two wastewater ponds, two burial grounds and an aboveground storage pad for transuranic waste
- Exploding or removing significant volumes of unexploded ordnance remaining from the INEEL's historic use as a gunnery range.
- > **Waste has been addressed by:**
 - Reducing the volume of liquid waste in the Idaho Nuclear Technology and Engineering Center tank farm from approximately 2.3 million gallons to less than 1 million gallons.
 - Emptying five of 11 high-level waste tanks to "heel" level, down to the residue at the bottom of the tanks
 - Shipping more than 1,800 cubic meters of transuranic waste to the Waste Isolation Pilot Plant

- Completing 58 percent of the construction on the Advanced Mixed Waste Treatment Project, which will prepare transuranic waste for shipment to the Waste Isolation Pilot Plant
- Treating and disposing of 2,780 cubic meters of mixed radioactive and hazardous waste off site
- Disposing of more than 25,000 cubic meters of low-level waste.
- > **Spent nuclear fuel has been addressed by:**
 - Moving 82 metric tonnes heavy metal of Three Mile Island-II spent nuclear fuel and core debris into dry storage
 - Repackaging spent nuclear fuel in the Material Test Reactor Canal to prepare it for dry storage
 - Emptying spent nuclear fuel from the CPP-603 underwater storage basin.
- > **Finally, facilities that were unused or contaminated have been addressed by:**
 - Decontaminating and decommissioning 103 structures, of which 223,000 square feet were contaminated.

Test Area North

FFACD Designation: Waste Area Group 1



Established: 1951

Original Mission: Aircraft Nuclear Propulsion Program

Later Mission: Investigated Three Mile Island-II reactor core material; tested reactors and nuclear fuel; manufacturing

Current Mission: Inspecting and storing spent nuclear fuel; manufacturing armor for military vehicles



Final shipment of Three Mile Island-II spent nuclear fuel



Three Mile Island-II Fuel Transferred Ahead of Schedule

On April 1, 2001, six weeks before the June 1 deadline, the INEEL transferred the last of 341 canisters holding Three Mile Island-II spent nuclear fuel and core debris from Test Area North to the Idaho Nuclear Technology and Engineering Center. This concluded a complex, six-year effort to meet a milestone established by the Idaho Settlement Agreement.

Workers moved the Three Mile Island-II core debris from an aging storage pool to a new, dry storage facility licensed by the Nuclear Regulatory Commission. Dry storage is a safer configuration for the fuel and will save nearly \$4 million per year in maintenance costs. In addition, the fuel is a step closer to being ready for shipment when a final repository becomes available.

Agencies Agree to New Remedy for Contaminated Groundwater

In September 2001, the DOE, EPA and IDEQ signed a Record of Decision that modifies the original remedy for groundwater

contamination at Test Area North. The groundwater is contaminated from past wastewater disposal activities.

The agencies selected monitored natural attenuation and in situ bioremediation as additional remedies to be combined with the pump-and-treat technology originally selected. The proposed changes are expected to work better and faster than pump-and-treat alone. To make sure of this, they will conduct periodic reviews. The combination of remedies is expected to save \$23 million.

The agencies selected in situ bioremediation after making a decision to find more efficient remediation technologies. Laboratory testing at the INEEL and elsewhere indicated that using

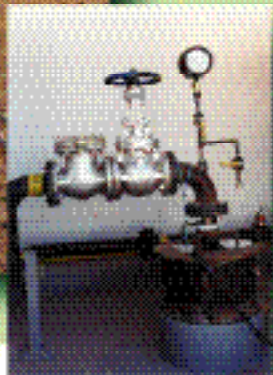
Natural attenuation is the natural decay process of contaminants.
In situ bioremediation takes advantage of natural biological processes that break down trichloroethene when bacteria already present in groundwater are given an appropriate food source. The process also helps dissolve the contaminant, which further accelerates its degradation.
Pump-and-treat pumps the contaminated water to the surface, treats it to remove the contaminants and then reinjects it.

bioremediation on trichloroethene, the primary contaminant of concern, had a potential for success. When it was tested in the field, the results far exceeded expectations — trichloroethene concentrations in the source area dropped below detection limits. The process used at Test Area North is called Bioavailability Enhancement Technology™.

Remediation Progress Monitored with Improved Technologies

The INEEL is using several new technologies to support groundwater remediation. A real-time monitoring technology, called an autodialer, ensures that operations fall within acceptable parameters so regulatory requirements are met. If there is a problem, the autodialer sends an alarm. This technology will save the INEEL nearly \$100,000 by eliminating weekly visits to the facility.

Scientists are using two new technologies to monitor the progress of the remediation. The technologies reduce costs and concerns about worker safety



Sampling activities at a v-tank



Sampling activities at a burn pit

A well used for bioremediation

because less time and effort is needed to collect field samples.

A vertical profile sampling technique, developed at the INEEL, monitors the overall effectiveness of natural attenuation. It permits scientists to develop 3-D maps of the contaminated areas to verify that degradation is taking place as predicted.

The FLUTE™ liner system is used in conjunction with the vertical profile sampling technique. It allows scientists to take samples at various depths from a single well.

Numerous Facilities Underwent Deactivation, Decommissioning and Dismantlement

The INEEL eliminated several unnecessary facilities in FY 2001. One of these was the 9,000-square-foot Process Experimental Pilot Plant demonstration facility. The facility was used in 1988 for waste treatment and never processed radioactive material. However, the facility treated circuit boards containing hazardous materials, such as lead, chromium, cadmium, silver, arsenic and selenium.

During the decontamination process, workers removed and disposed of all residual wastes in compliance with applicable regulations.

By decommissioning this and other facilities at Test Area North, INEEL protects the environment and saves money that would otherwise be used to continue monitoring these facilities.

Other Remediation Continues

The INEEL continued remediation efforts at eight contaminated areas identified in the 1999 comprehensive investigation Record of Decision for Test Area North. Workers collected samples from the burn pits and v-tanks and analyzed them to determine the best course of action.

The agencies determined that tank V-9 does not pose a risk of criticality. The tank's contents were scheduled to be shipped to an off-site commercial waste treatment facility, but it has since closed. The INEEL is seeking an alternative for this waste.

FY 2001 Highlights

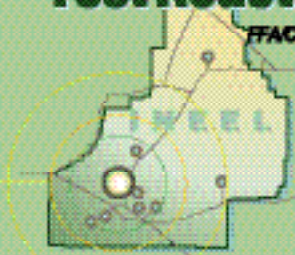
- Completed transfer of Three Mile Island-II spent nuclear fuel to dry storage (Settlement Agreement)
- Issued Record of Decision Amendment for final remediation of groundwater contamination (FFA/CO)
- Began operation of the new pump-and-treat facility (FFA/CO)
- Continued remediation of contaminated sites documented in the 1999 comprehensive Record of Decision (FFA/CO)
- Began sampling v-tanks (FFA/CO)
- Characterized low-level radioactive waste treatment system (VCO)
- Began sampling and characterizing 118 tanks or ancillary equipment (VCO)

FY 2002 Goals

- Continue remediation of contaminated sites and groundwater (FFA/CO)
- Begin D&D of TAN-615
- Begin moving spent nuclear fuel from TAN-607 wet storage to interim dry storage at TAN-791 (Settlement Agreement)
- Begin hazardous waste determinations for TAN-616 system to prepare for 2004 closure (VCO)
- Characterize wastes in 19 tanks and begin closure process (VCO)
- Transfer Loss-of-Fluid Test/commercial/epoxied spent nuclear fuel into interim dry storage

Test Reactor Area

FFACO Designation: Waste Area Group 2



Established: 1952

Original Mission: Studied radiation's effect on materials, fuels and equipment using various reactors

Current Mission: Conducting research using the Advanced Test Reactor; producing isotopes for medical and industrial use



The TRA-660 canal is drained and back-filled

Lead is shipped off site for recycling

Deactivation, Decommissioning and Dismantlement Completed; Research Activities Supported

The INEEL completed a complex D&D&D project at TRA-660. The facility housed two low-powered reactors with an interconnecting water canal, sometimes used for spent nuclear fuel storage. Workers drained approximately 30,000 gallons of contaminated water and removed the reactors. During the process, they discovered 18 irradiated capsules and placed them in safe temporary storage to be evaluated.

After the canal was cleared of materials, workers cleaned and filled it with gravel to create a neutron experiment area. The INEEL plans to use the area to test variations of the Portable Isotopic Neutron Spectroscopy system. The innovative, award-winning technology analyzes the contents of sealed containers to detect chemical weapons.

The INEEL completed this D&D&D project early and under budget.

Deadlines Met; Goals Exceeded

The INEEL met a deadline two months early by repackaging 105 cans of spent nuclear fuel material from the Material Test Reactor. The effort resolved a storage issue and allowed work scheduled for FY 2003 to be moved to FY 2002.

In addition, workers nearly doubled the planned number of shipments of spent nuclear fuel from the Advanced Test Reactor to CPP-666 interim storage — 22 shipments versus the 12 shipments planned. The extra shipments permit the Advanced Test Reactor to continue its planned FY 2002 activities without any impact.

Workers completed hazardous waste determinations and disposed of 50 percent of the items identified in the Voluntary Consent Order two months ahead of schedule. They also completed assessments at six potential release sites identified in FY 2000 and began asbestos abatement activities.

The INEEL eliminated the entire lead waste stream, shipping 54,000 pounds of lead off site for recycling. The shipment included the Material Test Reactor shielded storage container and plug beam assemblies.

FY 2001 Highlights

- Completed decontamination of TRA-660 canal (reactivity measurement facilities)
- Completed disposal of legacy low-level waste
- Completed assessment of a potentially contaminated site (FFA/CO)
- Repackaged 105 cans of Material Test Reactor spent nuclear fuel
- Continued groundwater monitoring
- Shipped eight drums of phenolic resin waste off site for treatment and disposal
- Eliminated INEEL's entire lead waste stream, after shipping 54,000 lbs of lead off site for recycling (Site Treatment Plan)
- Began sampling and characterizing 157 tanks or ancillary equipment (VCO)

FY 2002 Goals

- Continue characterizing legacy waste items for eventual disposal
- Continue closure processes (VCO)
- Complete characterization of TRA-660 canal capsules for eventual disposal
- Characterize 22 hazardous waste tanks and begin planning closure (VCO)
- Remove all spent nuclear fuel from the Material Test Reactor canal and send to the Idaho Nuclear Technology and Engineering Center

Idaho Nuclear Technology and Engineering Center

FFACO Designation: Waste Area Group 3



A newly-developed washball and directional nozzles for cleaning tanks

Established: Early 1950s

Original Mission: Reprocessed spent nuclear fuel (separating reusable uranium) at Idaho Chemical Processing Plant; calcined high-level waste

Current Mission: Storing spent nuclear fuel, and low-level, mixed low-level and high-level waste; developing treatment methods for high-level waste

Milestones Significantly Exceeded; Waste Inventory Lowest in 40 Years

The INEEL completed two FY 2001 Site Treatment Plan milestones significantly early. Three months before the deadline, workers met a Sept. 30 goal to treat 490,000 gallons of high-level liquid waste. By the deadline, they had processed 605,000 gallons, 25 percent more than required. As a result, for the first time since August 1958, the total volume of liquid sodium-bearing waste in the tank farm is less than one million gallons. Five of 11 high-level waste tanks have been emptied to "heel" level.

Workers overcame many technical challenges to achieve this, including making an upgrade to the C40 valve box to ensure that liquid waste continues to be transferred smoothly from the tank farm to the High-Level Liquid Waste Evaporator.

The second milestone was to treat and prepare 40 spent HEPA filters for disposal. The INEEL accomplished this one month before the deadline, and also treated and prepared an additional eight spent HEPA filters for disposal.

The INEEL also far exceeded its goal for reducing newly generated waste, accomplishing a reduction of 88 percent versus its goal of 50 percent.

Pillar and Panel Vaulted Tanks Emptied and Closure Planned

Five underground radioactive liquid waste storage tanks at the tank farm were emptied to the lowest extent possible in January 2002, nearly 18 months ahead of the June 30, 2003 deadline. The stainless steel tanks are enclosed in pillar and panel concrete vaults, one of three types of concrete vaults enclosing the tank farm's eleven 300,000-gallon underground tanks. Emptying the five tanks was the first step to removing all radioactive liquid waste from the tank farm by 2012 as required by the 1995 Idaho Settlement Agreement.

The next step to final tank closure is to remove the sludge-type residuals or "heels" remaining in the five pillar and panel vaulted tanks. INEEL researchers successfully tested new tank cleaning technologies that will be used to remove the majority of tank residuals. A washball was tested on

a pillar and panel vaulted tank and then enhanced with rotating directional nozzles to clean the tank's bottom and walls. Tank cleaning will begin in 2002 and closure of the first tank is planned for 2003.

Safe Storage for Spent Nuclear Fuel

The INEEL received spent nuclear fuel from various sources for storage, including a three-cask shipment of foreign research reactor spent nuclear fuel from Germany that was placed in dry storage. In addition, the last of the Three Mile Island-II spent nuclear fuel was transferred from Test Area North and placed in dry storage, completing an Idaho Settlement Agreement milestone. (See Test Area North, page 12.)

Workers also placed 22 Advanced Test Reactor fuel shipments from the Test Reactor Area and 17 Navy fuel shipments in interim storage.

DOE awarded a privatized contract to Foster Wheeler Environmental Corporation to design, build and operate a dry storage facility for spent nuclear fuel. Design is already well under

Surface gamma mapping protects workers at tank farm



Construction activities at INEEL CERCLA Disposal Facility

way as well as a Nuclear Regulatory Commission review of the facility. The facility should be operating by 2005.

New Percolation Ponds Constructed

Workers completed construction of two new percolation ponds. The ponds, which are nearly two miles from the Idaho Nuclear Technology and Engineering Center, will allow a million gallons of clean cooling water to slowly seep into the ground.

The existing percolation ponds are located near contaminated soil. The water seeping from these ponds is keeping the ground partially saturated — possibly forcing the contaminants to move laterally. This issue will be eliminated with the new ponds.

Scientists will also use the new ponds as a vadose zone research park. They will study how water moves from the ground surface to the aquifer to find solutions for issues at Idaho Nuclear Technology and Engineering Center and other facilities, such as the Radioactive Waste Management Complex.

Perched Water Studied

In four years, the agencies must make a decision about groundwater that is “perched” in zones above the aquifer under the Idaho Nuclear Technology and Engineering Center. It is possible that the perched water is carrying contaminants to the aquifer, requiring a need for further action. However, there may be no need if the water dries up.

To better understand the perched water system, scientists are measuring how tightly water is held by soil or rock. They are using an INEEL-developed advanced tensiometer — an R&D 100 award winner — that allows continuous measurements up to 400 feet below the surface. The measurements provide information that can be used to improve groundwater modeling and reduce uncertainty when selecting remediation alternatives. The new tensiometer improves on conventional tensiometers, which cannot be installed far below the surface and are not very accurate.

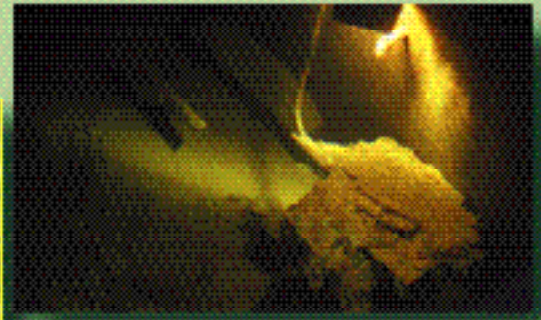
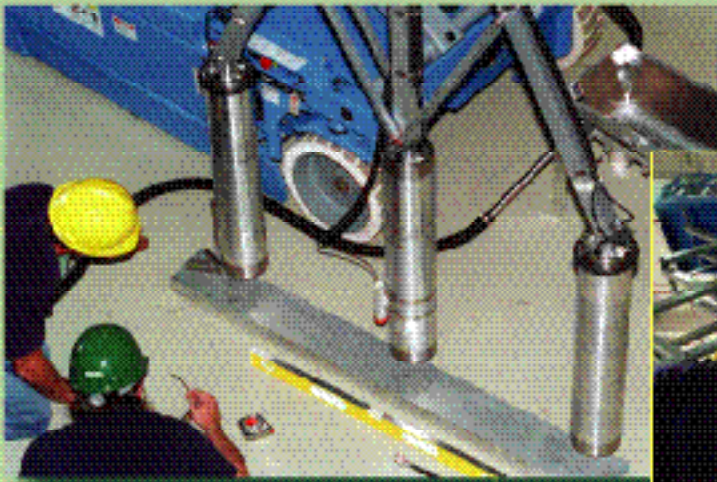
Preventing Contaminant Spread and Worker Exposure

Workers completed actions to reduce the potential spread of contamination from runoff water at the tank farm. In addition to building a run-off retention pond and installing a pump station, they installed 1,200 feet of culverts.

Scientists used the Surface Gamma Mapping system to safeguard workers during construction. The system records surface radiation levels as it is moved across the soil surface and generates a detailed map.

Construction of CERCLA Disposal Facility Begins

The INEEL began construction of a 40-acre CERCLA Disposal Facility for consolidating onsite remediation waste. The facility, which is scheduled to open in 2003, will have a disposal capacity of 510,000 cubic yards. It will include a landfill (primarily for contaminated soils), evaporation ponds (for liquids only) and a facility where contaminated debris can be broken down into smaller parts for disposal.



Scientists use a new inspection technology, which detects spent nuclear fuel elements in CPP-603 basin sludge

In August and November 2001, the INEEL held information workshops to discuss the facility with public. It is expected to save taxpayers \$377 million.

D&D&D Supported by New Technologies

DOE prepared a draft environmental assessment for the planned D&D&D of the CPP-603 basins, which have been used to store spent nuclear fuel. Unlike modern wet storage facilities, the 1950s-era concrete basins have no liners or leak detection systems. The INEEL held a public meeting to gather comments on alternatives.

As workers prepared to remove sludge from the basins, they discovered three radioactive objects. Scientists used a newly-developed underwater gamma gauge, called TUGGS, to analyze the objects in place, saving approximately \$475,000 in transportation, characterization and disposal costs.

FY 2001 Highlights

- Completed transfer of Three Mile Island-II spent nuclear fuel and core debris from TAN to a dry storage facility (Settlement Agreement)
- Received 17 Navy and 22 Advanced Test Reactor spent nuclear fuel shipments
- Treated 605,007 gallons (1,855 cubic meters) of liquid high-level waste, reducing the total volume in the tank farm to less than 1 million gallons, the lowest level since 1958 (Site Treatment Plan)
- Reduced newly-generated liquid waste by 88 percent, exceeding the goal of 50 percent
- Completed leaching of 48 HEPA filters (Site Treatment Plan)
- Installed new monitoring wells in perched water zone and continued groundwater monitoring
- Completed construction of new percolation ponds
- Initiated field activities at three sites
- Completed construction of tank farm interim actions (FFA/CO)
- Began construction of INEEL CERCLA Disposal Facility (FFA/CO)
- Completed construction of INEEL CERCLA Disposal Facility Landfill Cell 1 (FFA/CO)
- Began characterizing CPP-603 filter material (VCO)
- Moved calcine samples to permitted storage (VCO)
- Began characterizing 413 tanks or ancillary equipment (VCO)

FY 2002 Goals

- Begin D&D&D of CPP-603
- Continue processing liquid sodium-bearing waste through evaporation (Site Treatment Plan)
- Begin using new percolation ponds
- Investigate treatment alternatives for newly generated liquid waste and calcine
- Receive two containers of spent nuclear fuel from the West Valley project
- Receive 10 Navy and 14 Advanced Test Reactor spent nuclear fuel shipments
- Empty two pillar and panel tanks down to heel level (all five now emptied)
- Perform cleanup activities for Tanks WM-182 and WM-183
- Characterize 44 tanks and begin isolation and closure (VCO)

Central Facilities Area

FFACD Designation: Waste Area Group 4



Established: 1940s

Original Mission: Lodged U.S. Navy personnel during World War II

Current Mission: Treating and disposing of nonhazardous commercial/industrial waste; providing support services for the INEEL (medical, construction, workshops, warehouses and landfills)

Groundwater Protected at Landfills

The Central Facilities Area landfills are used to dispose of nonhazardous commercial and industrial wastes, including nonrecyclable materials such as office wastes. Scientists have installed vertical time domain reflectometers at two closed landfills to monitor moisture in the landfill covers. The instruments allow scientists to download data directly from the field to office computers.

Remediation Almost Complete

The INEEL continued cleanup at three areas identified in the 2000 comprehensive investigation Record of Decision for the Central Facilities Area. Workers excavated lead- and cadmium-contaminated soil at the Transformer Yard, which completed one remedial action. They also removed the Hot Laundry sewer line and began designing an engineered barrier for the Sewage Treatment Plant Drainfield.

Workers remove contaminated soil at the CFA Transformer Yard



FY 2001 Highlights

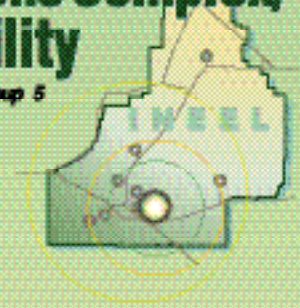
- Began remediating three areas documented in 2000 Record of Decision; one area completed (FFA/CO)
- Completed characterization of all tanks (VCO)

FY 2002 Goals

- Continue remedial actions at areas documented in 2000 Record of Decision (FFA/CO)

Waste Reduction Operations Complex/ Power Burst Facility

FFACO Designation: Waste Area Group 5



Field sampling activities use new ISOCART™ system

Demolition activities at WERF incinerator



Workers remove ARA-16 piping as part of the remediation activity

Established: Late 1950s

Original Mission: Originally known as the Power Burst Facility/Auxiliary Reactor Area; conducted research in reactors and reactor safety; treated DOE's solid mixed low-level waste

Current Mission: Storing spent nuclear fuel, and mixed low-level and low-level waste

Cleanup Well Under Way

Cleanup is well underway at the sites identified in the 2000 comprehensive investigation Record of Decision for the Power Burst Facility/Auxiliary Reactor Area. Workers completed remediation of the ARA-16 radionuclide tank site. They excavated the ARA-16 piping, prepared to ship sludge off site for treatment and disposal, and completed demolition of the ARA-25 hot cell. The rubble was broken into small pieces and shipped to the Radioactive Waste Management Complex for disposal.

Risk Reduced, Time and Money Saved

To decontaminate the ARA-16 tank and piping before they were excavated, INEEL scientists designed a specialized nozzle that could be attached to a high-pressure commercial sprayer. The modified sprayer produced 50 percent less wastewater — reducing both wastewater disposal costs and the risk to workers. It also saved \$783,000 in off-site decontamination costs.

Workers also used another new technology during the cleanup

process — the ORTEC® ISO-CART™ system. The system is used to conduct field analysis of samples of materials contaminated with gamma-emitting radionuclides. The new system takes just minutes instead of the weeks necessary for analysis at a laboratory. Because nearly 100 sites required sampling, it also saved money and reduced handling and transportation risks.

INEEL and Russian Scientists Work Together

Scientists from the INEEL and Russia combined technologies to assess two contaminated areas. The INEEL's ATRV-Jr™ carried two Russian-developed sensing technologies: a gamma locating device and an isotopic identification device. The combined technologies may improve the efficiency of D&D projects, reduce costs and improve safety.

5-Year Review Completed

The INEEL conducted an annual inspection of the Stationary Low Power-1 and Boiling Water Reactor Experiment-I burial grounds to make sure its remedial actions continue to be effective. No

deficiencies were identified. The INEEL met a milestone that required a 5-year review summary report on the sites one month early.

Incinerator Closure Begins

The INEEL began the closure process for the Waste Experimental Reduction Facility (WERF) in 2001. It is expected to take three years. The facility treated low-level waste from 1985 to June 2000.

FY 2001 Highlights

- Continued remedial actions at seven sites; completed two (FFA/CO)
- Treated 1,353 cubic meters of low-level waste, exceeded milestone by 153 cubic meters (Site Treatment Plan)
- Met all treatment and disposal goals for mixed low-level waste (Site Treatment Plan)
- Continue characterization of tanks and components; completed actions on 13 of 44 items (VCO)

FY 2002 Goals

- Continue PBF-620 canal water evaporation
- Begin/complete D&D at PBF-620
- Begin shipping spent nuclear fuel to interim dry storage at Idaho Nuclear Technology and Engineering Center (complete by December 2003)
- Continue characterization of tanks and components (VCO)
- Begin planning WERF closure

Radioactive Waste Management Complex

FFACO Designation: Waste Area Group 7



Established: Late 1952

Original Mission: Disposed of solid, low-level radioactive waste; buried transuranic waste and hazardous substances (e.g., organic and inorganic chemicals) until 1970; stored transuranic waste on aboveground pad and disposed of other waste in 20 pits, 58 trenches and 21 soil vault rows from 1970 to present

Current Mission: Temporarily storing transuranic waste until it is shipped to the Waste Isolation Pilot Plant for permanent disposal

A TRUPACT-II is loaded for shipment to WIPP



3,100 m³ Project on Track

The INEEL continues to characterize, certify and ship transuranic waste to the Waste Isolation Pilot Plant for permanent disposal to meet a 1995 Settlement Agreement milestone. By Dec. 31, 2002, 3,100 cubic meters (about 15,000 barrels) of transuranic waste must be removed from Idaho. In spite of significant challenges, the INEEL removed 687 cubic meters from Idaho during FY 2001, bringing the cumulative total to more than 1,800 cubic meters.

The INEEL was able to speed up shipments during the summer of 2001. The INEEL's workers began building a shippable inventory in March 2001, in anticipation that the state of New Mexico would approve new shipping requirements in May. As a result, the INEEL was able to increase its shipments to seven per week in June and to 10 per week in July. At the end of FY 2001, the INEEL still had 511 cubic meters of shippable waste in its inventory.

New Technologies Support 3,100 m³ Project

Scientists and researchers at the INEEL have developed new

technologies to allow more drums to be certified for shipment to the Waste Isolation Pilot Plant. One of these technologies is the Enhanced Real-Time Radiography System, which can measure the liquid or sludge levels in a 55- or 85-gallon waste drum while it is in a shielded enclosure.

Another new technology is the Heated Gas Generation Test System. The system heats and captures gases released from vented waste drums and analyzes the levels of potentially flammable gases.

Pit 9 Dispute Resolved

In February 2001, the INEEL requested that the Pit 9 schedule be extended because of design complexities. When the state of Idaho and EPA denied the request, DOE sought formal dispute resolution.

The dispute was resolved April 16, 2002, with the signing of an Agreement to Resolve Disputes. The agreement sets new enforceable deadlines for both Pit 9 and the comprehensive remedial investigation and feasibility study for the Subsurface Disposal Area.

The agencies also agreed on a technical approach — the Glovebox

Excavator Method — for a retrieval demonstration at Pit 9. Workers will remotely excavate wastes and examine them in a shielded confinement structure, or "glovebox". The glovebox operates under negative air pressure to prevent contamination from escaping. Then the waste will be treated so it can be shipped to the Waste Isolation Pilot Plant.

State and DOE Resolving Buried Waste Issue

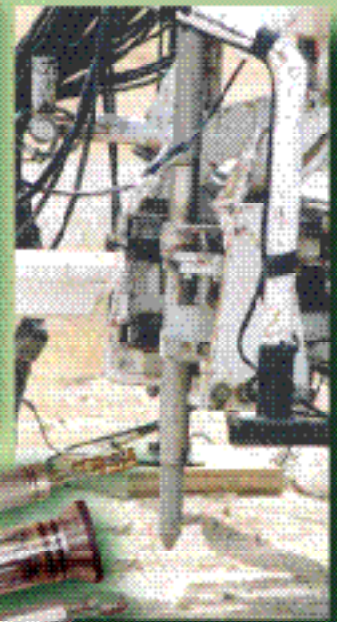
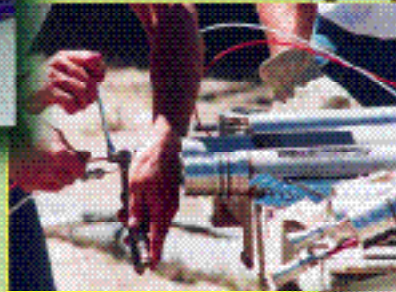
In April 2002, the governor of the state of Idaho asked a U.S. District Court to provide a declaratory ruling on different interpretations of the waste addressed in section B.1 of the 1995 Idaho Settlement Agreement. The Agreement requires DOE to treat and ship 65,000 cubic meters of transuranic waste out of Idaho by 2018 at the latest. There is no specific language requiring excavation of buried waste.

DOE believes the Agreement refers to 65,000 cubic meters of waste that was stored aboveground in 1995 and managed as transuranic waste. In contrast, the state of Idaho believes that both stored and buried



The Heated Gas Generation Test System helps DOE meet its transuranic waste shipment milestones

Probes are installed in the Subsurface Disposal Area



transuranic waste must be shipped off site.

The buried waste is being remediated under the Federal Facility Agreement and Consent Order with the state of Idaho and EPA as active partners. The Federal Facility Agreement and Consent Order uses the CERCLA process, which examines options to find the best solution for reducing risk to workers, the public and the environment.

The use of the CERCLA process to select a remedial action (whether excavation, some method of in-situ immobilization, or a combination) was reaffirmed by the state of Idaho in the April 2002 dispute resolution settlement.

Comprehensive Investigation Continues

The INEEL continued preparing the comprehensive remedial investigation, baseline risk assessment and feasibility study for the Subsurface Disposal Area. The study identifies remediation options and analyzes the associated risks.

The Pit 9 dispute resolution established new enforceable deadlines: Aug. 31, 2005, as the final date for releasing the draft

remedial investigation and baseline risk assessment; Dec. 31, 2005, as the final date for issuance of a draft feasibility study; and Dec. 31, 2006, as the final date for a draft record of decision.

Large-Scale Research Effort Under Way

In FY 2001, the INEEL continued to gather information about the composition and condition of the buried wastes at the Subsurface Disposal Area and the surrounding soils. Workers installed 98 Type A probes — capped pipes into which workers can lower nuclear logging instruments — to help characterize the waste. They also installed 165 Type B probes. These consisted of:

- 78 soil-moisture probes, which monitor moisture and temperature for potential contaminant releases
- 32 vadose zone tensiometers, which monitor subsurface soil tension
- 30 vapor-port probes, which are used to collect soil gas samples
- 18 lysimeter probes, which are used to collect one-liter water samples

FY 2001 Highlights

- Shipped 1,160 cubic meters of transuranic waste to WIPP (1,282 cubic meters cumulative by the end of FY 2001) (Settlement Agreement)
- Disposed of 3,186 cubic meters of low-level waste
- Removed 100,000 lbs. (220,000 kg) of organic contamination in the vadose zone

FY 2002 Goals

- Continue cleanup of organic contamination in the vadose zone (FFA/CO)
- Complete shipment of 3,100 cubic meters of stored transuranic waste to the Waste Isolation Pilot Plant (Settlement Agreement)
- Continue construction of AMWTP (will begin operating in 2003 (Settlement Agreement)

- 7 visual probes, which allow scientists to view waste and soils.

The INEEL estimates that the probes will provide an \$8.5 million cost-savings during the next four years and improve worker safety by reducing the risks associated with taking core samples and handling core materials.

The INEEL is also using new portable technologies — a field-sampling glove bag and a real-time analysis system — to reduce risks and costs associated with time-



New catalytic oxidizer treats organic vapors extracted from the vadose zone

Advanced Mixed Waste Treatment Project construction is nearly complete



consuming laboratory analysis. These technologies will save nearly \$1 million.

Organic Vapor Removal and Treatment Gets Boost

The INEEL used its vapor vacuum extraction system to remove and treat almost 100,000 pounds of volatile organic compounds from the vadose zone during FY 2001. Nearly 62,200 pounds of the volatile organic compounds were carbon tetrachloride.

The INEEL upgraded the vapor vacuum extraction system in FY 2001 with a catalytic oxidizer. The new oxidizer handles twice the flow rate and is more effective at destroying organic vapors. The upgrade will save \$43,500 annually, nearly \$652,000 over its 15-year life span.

The INEEL is saving another \$320,000 per month, almost \$40 million in the project's expected lifetime, by using the B&K Gas Analyzer. The real-time analysis system is used to analyze hundreds of vapor samples each month.

AMWTP Nearly Complete

Workers will soon begin retrieving waste at the Advanced Mixed Waste Treatment Project facility, though construction of the treatment facility will not be completed until later in 2002. The new facility will treat 65,000 cubic meters of the INEEL's stored transuranic and mixed waste so it can be shipped to the Waste Isolation Pilot Plant for disposal. BNFL, Inc., which holds the treatment contract, has an option to treat up to 120,000 cubic meters of additional mixed wastes.

Workers installed a 62-ton supercompactor in April 2002. It can reduce a 55-gallon drum and its contents into a "puck" about one-fifth its original size (approximately 11 gallons). Nearly 70 percent of the waste will be compacted before it is shipped.

Waste Backlog Decreases

The INEEL met its FY 2001 goal for characterizing and disposing of mixed waste by removing 900 cubic meters for disposal off site. Cost-effective treatment subcontracts for volume reduction, mixed waste macro-encapsulation and

stabilization helped the INEEL meet its goal. Improved acceptance and disposal processes also helped the INEEL dispose of nearly 4,400 cubic meters of low-level waste in the low-level waste disposal area at the Radioactive Waste Management Complex.

Argonne National Laboratory–West

FFACO Designation: Waste Area Group 9

Naval Reactors Facility

FFACO Designation: Waste Area Group 8



Naval Reactors Facility

Established: 1949

Operated by: Bechtel Bettis Inc. for DOE's Office of Naval Reactors

Original Mission: Tested materials and trained operators for U.S. Navy Nuclear Propulsion Program; prepared Naval spent nuclear fuel for fissile material recovery

Current Mission: Inspecting, examining, researching and storing Naval spent nuclear fuel; storing special case waste

Argonne National Laboratory–West

Established: 1957

Operated by: University of Chicago for DOE

Original Mission: Tested nuclear reactors and reactor safety systems

Current Mission: Stabilizing, managing and storing spent nuclear fuel; storing transuranic waste; developing large-scale advanced reactors

Argonne National Laboratory–West

Argonne National Laboratory–West continued its 12-year campaign to treat 60 tons of sodium-bonded spent nuclear fuel from its Experimental Breeder Reactor–II. Current plans are to treat nearly five metric tons annually.

Argonne engineers began developing the conceptual design for a new treatment facility. The facility will be used to sort, characterize, treat and repackage stored remote-handled waste generated by DOE's hot cell

operations and analytical laboratories.

Workers continued conducting phytoremediation activities at five contaminated soil sites. They have been growing *Kochia scoparia* plants to extract cesium-137, and willows to extract chromium, mercury and selenium. Though remediation is expected to be complete in 2002, the sites will be comprehensively sampled and reviewed to ensure that the phytoremediation activities met the goals.

FY 2001 Highlights

- Continued electrometallurgical treatment of EBR-II sodium-bonded spent nuclear fuel (Settlement Agreement)
- Completed all Site Treatment Plan milestones for waste backlog
- Treated 750 metric tons of stored sodium mixed waste from the EBR-II and Fermi-I reactors (Site Treatment Plan)
- Continued supporting the INEEL's transuranic waste program

FY 2002 Goals

- Continue supporting the INEEL's transuranic waste program
- Continue electrometallurgical treatment of EBR-II sodium-bonded spent nuclear fuel

Naval Reactors Facility

The U.S. Navy continued preparations for a dry storage facility for spent nuclear fuel. When the new facility has been built, the INEEL will transfer spent nuclear fuel that is currently in temporary storage at the Idaho Nuclear Technology and Engineering Center to the Naval Reactors Facility. The fuel will

be stored at the dry storage facility until it is eventually moved to a permanent repository outside Idaho.

FY 2001 Highlights

- Received three shipments of Navy-owned spent nuclear fuel from U.S.Navy

FY 2002 Goals

- Receive four shipments of Navy-owned spent nuclear fuel from U.S.Navy
- Continue preparing for dry storage of spent nuclear fuel

Areas Outside Facility Boundaries and the Snake River Plain Aquifer

FFACO Designation: Waste Area Group 10

and Experimental Breeder Reactor-I/ Boiling Water Reactor Experiment

FFACO Designation: Waste Area Group 6



Established: 1940s

Original Mission: U.S. Navy proving ground and gunnery range; conducted nuclear reactor research as National Reactor Testing Station

Current Mission: Protecting national security interests and the public with a buffer area; site of Experimental Breeder Reactor-I National Historic Landmark, the first nuclear reactor to produce usable amounts of electricity

Comprehensive Investigation Completed

In August 2001, the agencies completed the remedial investigation/feasibility study for the Snake River Plain Aquifer and Miscellaneous Sites including the Experimental Breeder Reactor-I/Boiling Water Reactor Experiment facilities, former reactor research facilities. The INEEL has completed remedial actions at the former research facilities.

The remedial investigation/feasibility study included surface contamination sites outside the separate facility boundaries and covered approximately 325 square miles of the INEEL's soil that is contaminated with unexploded ordnance and explosive materials remaining from past detonations. It also included a former gun range containing fragments of lead bullets.

The Agencies' Proposals

In January 2002, the agencies issued a plan describing the surface contamination sites and the proposed cleanup options:

- **Unexploded ordnance sites**
Detected ordnance will be

removed and institutional controls such as restricted access signs will be installed. The agencies also considered conducting no action or a limited action involving maintaining institutional controls and only removing ordnance in areas where there might be construction.

- **TNT- and RDX-contaminated soil sites**
Contaminated soil will be removed, treated and disposed of on site, institutional controls will be installed, and the TNT and RDX fragments will be detonated in a remote location at the INEEL. The agencies also considered conducting no action, incinerating or composting the contaminated soils, or disposing of the contaminated soils off site.
- **Gun range**
Metal fragments will be removed and recycled, and the lead-contaminated soil stabilized with cement and disposed of in the Central Facilities Area Landfill. The agencies also considered conducting no action, or using an acid wash process to treat

the metal fragments and contaminated soil.

The agencies are currently addressing comments from the public and should reach a final decision on the remediation later in the year.

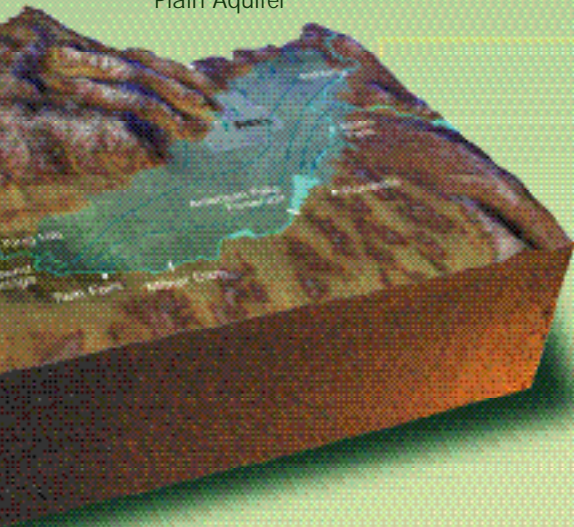
Coordinating Efforts to Protect the Aquifer

The INEEL's new Water Integration Project is coordinating the efforts to protect the Snake River Plain Aquifer. The project will help ensure that cleanup decisions made today will be effective in the future.

To find out where there are gaps in the science and data, the INEEL is identifying the various projects dealing with water issues — surface water, the vadose zone (the area between the surface and the aquifer) and the aquifer itself. A plan for filling the gaps quickly and cost-effectively will be made when the survey is complete.

The Water Integration Project team is emphasizing independent review of water-related technical activities at the INEEL to make sure that state-of-the-art technologies are being employed. Participation is welcomed. Team meetings began in

The eastern Snake River Plain Aquifer



Old ordnance, such as bombs and shells, and explosive residues are remnants of the past



January 2002 and are held each Wednesday in Idaho Falls. Meeting minutes are posted weekly on the project's web site as are other important project documents.

The INEEL has also completed a draft public participation plan so the public and stakeholder groups can become more involved in the project.

More information on the Water Integration Project — team meetings, the minutes of past meetings and the draft public participation plan — is available on the web at www.inel.gov/environment/water/.

The agencies are expected to make a decision on sitewide groundwater and Snake River Plain Aquifer contamination by 2005.

FY 2001 Highlights

- Completed investigation of surface contamination areas (FFA/CO)
- Completed sitewide ecological risk assessment (FFA/CO)
- Issued proposed plan based on the comprehensive investigation of sitewide ecological risk, miscellaneous surface sites and the EBR-1/BORAX facilities (FFA/CO)

FY 2002 Goals

- Submit draft remedial investigation/feasibility study for sitewide groundwater (FFA/CO)
- Complete Record of Decision for sitewide ecological risk, miscellaneous surface sites and the EBR-1/BORAX facilities (FFA/CO)



Working Safely

The INEEL achieved Voluntary Protection Program Star status in August 2001 — the highest safety award that can be achieved by any workplace in the DOE complex. The INEEL is one of the largest employee groups in the nation to earn the VPP Star. To earn the award, worksites must exceed all Occupational Safety and Health Administration standards and continue to show improvement.

Public Involvement

For more information, call the INEEL toll-free number at 1(800) 708-2680.



An INEEL town meeting

INEEL Asks Public for Input on Permits

The INEEL held two meetings, in December 2000 and June 2001, to ask the public for its input on changing the hazardous waste permit for the Idaho Nuclear Technology and Engineering Center's Liquid Waste Management system from an interim to a fully-permitted status.

Other meetings were also held to gain the public's input on:

- extending the Waste Reduction Operations Complex hazardous waste permit, and
- relocating an area at Los Alamos National Laboratory where research, development and application of experiments on nuclear criticality is conducted.

Agencies Ask Public For Input on Cleanup Projects

The DOE, EPA and IDEQ issued a proposed plan in November 2000 to amend a previous decision for the remediation of a contaminated groundwater plume at Test Area North. Public meetings were held in Idaho Falls and Twin Falls and the public's comments were

considered. The agencies issued a Record of Decision in August 2001 with a more effective remedy.

The INEEL also held public workshops in Idaho Falls, in July and November 2001, to discuss the INEEL CERCLA Disposal Facility, a contaminated soil and debris landfill being constructed at the Idaho Nuclear Technology and Engineering Center.

In August 2001, the DOE, EPA and IDEQ issued a comprehensive remedial investigation/feasibility study for the Snake River Plain Aquifer and Miscellaneous Sites, including the Experimental Breeder Reactor-I/Boiling Water Reactor Experiment facilities. The agencies followed this with a proposed plan, which was issued in January 2002 for public comment.

DOE Asks Public For Input on Environmental Assessments

In 2001, DOE issued two draft environmental assessments for the deactivation, decommissioning and dismantlement of the CPP-603 spent nuclear fuel storage basins at the Idaho Nuclear Technology and Engineering Center. Proposed

alternatives for the disposal of 1.5 million gallons of water in the storage basins, and for sludge and other wastes generated by the dismantlement and decontamination process will follow. The final environmental assessments are expected in mid-2002.

Idaho High-Level Waste Environmental Impact Statement Effort Resumes

Work on the Idaho High-Level Waste Environmental Impact Statement was halted during 2001 while DOE conducted a complex wide review of environmental restoration programs. The study analyzes treatment alternatives for high-level and sodium-bearing waste. Work began again in January 2002 and a final environmental impact statement is expected to be issued in mid-2002.

Wildfires Addressed

DOE and the U.S. Bureau of Land Management established an interagency wildfire suppression program in 2001. Wildfires have burned more than 136,000 acres at the INEEL since 1994. The two

Links/Resources

Get Involved (public involvement information)	www.inel.gov/get-involved
INEEL	www.inel.gov
INEEL publications	www.inel.gov/publications
INEEL public documents	www.inel.gov/publicdocuments
U.S. Department of Energy	www.energy.gov
U.S. Department of Energy–Idaho Operations Office	www.id.doe.gov/doeid
Idaho Department of Environmental Quality	www2.state.id.us/deq
State of Idaho	www.state.id.us
Waste Isolation Pilot Plant	www.wipp.carlsbad.nm.us/index.htm
Argonne National Laboratory–West	www.anlw.anl.gov
Advanced Mixed Waste Treatment Project	www.amwtp.com/index.cfm
U.S. Environmental Protection Agency	www.epa.gov
• drinking water standards	www.epa.gov/safewater/mcl.html
• drinking water contaminants	www.epa.gov/OGWDW/hfacts.html
• contaminant descriptions	www.epa.gov/enviro/html/emci/chemref/index.html
Federal information database	www.access.gpo.gov/su_docs/index.html
INEEL technical library	www.inel.gov/library

INEEL Technical Library
DOE Public Reading Room
1776 Science Center Drive
Idaho Falls, ID 83415
(208) 526-1185

Albertsons Library
Boise State University
1910 University Drive
Boise, ID 83725
(208) 426-1621

University of Idaho
Campus Library
434 2nd Street
Moscow, ID 83843
(208) 885-6344

agencies began preparing a draft wildfire management plan environmental assessment. It will be available for public review and comment by May 2002.

The BLM reseeded 14,000 acres, including an area immediately south of Route 26, adjacent to the INEEL.

Stakeholder Input Important for Future Waste Management

DOE is pursuing a plan to remove and dispose of the INEEL's mixed waste without using incineration. The plan is based on recommendations from an advisory group, known as the Blue Ribbon Panel on Emerging Technological Alternatives to Incineration.

An important part of DOE's plan is stakeholder involvement. It includes establishing a citizens' committee, and conducting national forums for stakeholders to discuss proposed treatment options. DOE held the first citizens' committee meeting in February 2002 and scheduled the first national forum for June 2002.

Public Has Opportunity to Comment on DOE's Plan to Accelerate Cleanup

DOE-Idaho Operations Office and its contractors developed a draft Performance Management Plan for accelerating cleanup of the INEEL. The draft plan differs from previous plans to complete cleanup work by 2070.

The draft plan envisions that all materials will be placed in safe storage and ready for disposal by 2012. All active cleanup work will be completed by 2020 or even potentially by 2016. The remaining cleanup work — shipping spent nuclear fuel to a repository; retrieving, treating, packaging and shipping high level waste calcine to a repository; and the final dismantlement of buildings used for Environmental Management activities — will be completed by 2035.

The plan to accelerate cleanup has two objectives: 1) risk reduction and continued protection of the Snake River Plain Aquifer, and 2) consolidation of Environmental Management activities and reinvestment of the savings into cleanup. It will be implemented through nine

“strategic initiatives” developed to meet these objectives. (See Priorities for the Future on page 8.) Successful implementation will result in the cleanup being completed decades earlier and costs reduced by up to \$19 billion.

In May 2002, DOE, DEQ and EPA signed a letter of intent formalizing an agreement to pursue accelerated risk reduction and cleanup at the INEEL. The letter does not change existing agreements, but provides the foundation for a collaborative plan to more efficiently integrate the implementation of those agreements.

Public meetings were held in Idaho Falls and Twin Falls during June to explain the draft plan and give the public an opportunity to comment. The next revision of the plan will be issued in August.

Information on the draft Environmental Management Performance Management Plan for Accelerating Cleanup of the INEEL can be found at www.inel.gov/environment/accelerating-cleanup/

Learn More!

> **Public meetings and briefings.**

The INEEL gives presentations on a wide range of topics. In 2001, 29,241 people, including 16,634 students, attended 274 presentations. For information, contact Lane Allgood at (208) 526-9760, (800) 708-2680 or at allgooml@inel.gov.

> **Tours.** The Experimental Breeder Reactor-I is a National Historic Landmark open to the public from Memorial Day through Labor Day. It attracted nearly 7,000 visitors in 2001.

The INEEL offers guided tours, which can address a variety of interests, including science and engineering research, archeology, and wildlife and ecosystem management. For information, contact Don Miley at (208) 526-5523 or at vdm@inel.gov.

> **Independent advisory, oversight and citizen groups.**

Several independent groups provide monitoring information, and make recommendations on issues affecting the INEEL, DOE-Idaho, EPA Region 10 and the state of Idaho. One group, the INEEL Citizens' Advisory Board, addresses issues ranging from buried waste at the Radioactive Waste Management Complex's Subsurface Disposal Area to proposed cleanup plans and contaminated groundwater.

More information about these groups is available at www.inel.gov/get-involved/.

> **Fact Sheets and Publications.**

A variety of publications, fact sheets and notices are available on the INEEL's web site at www.inel.gov/environment. Two recent fact sheets address groundwater contamination across the INEEL and at Test Area North.

Get Involved!

Information about ways to become involved is available at www.inel.gov/get-involved.

Upcoming opportunities for involvement include:

- the agencies proposed plan for the Snake River Plain Aquifer and Miscellaneous Sites including the EBR-I/BORAX facilities
- INEEL's Long-Term Stewardship Program
- INEEL's Water Integration Project, and
- the federal budget for FY 2003.

The INEEL's Events Calendar and Seminar Series are good ways to plan for upcoming events.

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Address Service Requested

